ATTACHMENT E

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Final Program Environmental Impact Report for Proposed 2022 Air Quality Management Plan

November 2022
State Clearinghouse No. 2022050287

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PREFACE

This document constitutes the Final Program Environmental Impact Report (Final Program EIR) for the 2022 Air Quality Management Plan.

The Draft Program EIR was circulated for a 46-day public review and comment period from September 16, 2022 to November 1, 2022. Six comment letters were received during the comment period. The comments and responses relative to the Draft SEA are included in Appendix C of this Final Program EIR.

While changes have been made to the 2022 AQMP since the Draft Program EIR was released to the public, the changes do not: impact emission reductions, create new adverse environmental impacts or worsen environmental impacts previously identified, affect the number or type of sources regulated by the 2022 AQMP, or exceed the effects of the range of alternatives analyzed in the Draft Program EIR. Updates to the CEQA analysis has been made due to public comments as well as minor modifications for consistency. To facilitate identification of the changes between the Draft Program EIR and the Final Program EIR, modifications to the document are included as underlined text and text removed from the document is indicated by ~~strikethrough text~~. To avoid confusion, minor formatting changes are not shown in underline or strikethrough mode.

Staff has reviewed the modifications to the proposed project, and concluded that none of the revisions constitute significant new information, because: 1) no new significant environmental impacts would result from the proposed project, 2) there is no substantial increase in the severity of an environmental impact, 3) no other feasible project alternative or mitigation measure was identified that would clearly lessen the environmental impacts of the project and was considerably different from others previously analyzed, and 4) the Draft Program EIR did not deprive the public from meaningful review and comment. In addition, revisions to the proposed project in response to verbal or written comments would not create new, unavoidable significant effects. As a result, these revisions to the Draft Program EIR merely clarify, amplify, or make insignificant modifications which do not require recirculation of the Draft Program EIR pursuant to CEQA Guidelines Section 15088.5. Therefore, the Draft Program EIR has been revised to include the aforementioned modifications such that it is now a Final Program EIR.

2022 AIR QUALITY MANAGEMENT PLAN (AQMP)

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1.1 INTRODUCTION

The California Legislature created the South Coast Air Quality Management District (South Coast AQMD) in 1977[1] as the agency responsible for developing and enforcing air pollution control rules and regulations in the South Coast Air Basin (Basin), and portions of the Salton Sea Air Basin (SSAB) and Mojave Desert Air Basin (MDAB). By statute, the South Coast AQMD is required to adopt an Air Quality Management Plan (AQMP) demonstrating compliance with all federal and state ambient air quality standards for the areas under the jurisdiction of the South Coast AQMD[2]. Furthermore, the South Coast AQMD must adopt rules and regulations that carry out the AQMP.[3] The AQMP is a regional blueprint for how the South Coast AQMD will achieve air quality standards and healthful air; it contains multiple goals promoting reductions of criteria air pollutants including nitrogen oxides (NOx) and volatile organic compounds (VOC), as well as co-benefits of reducing greenhouse gases (GHGs) and toxic air contaminants (TACs).

In 1977, amendments to the Federal Clean Air Act (CAA) included requirements for submitting State Implementation Plans (SIPs) for nonattainment areas that failed to meet all federal ambient air quality standards [CAA Section 172], and similar requirements exist in state law [Health and Safety Code Section 40462]. The Federal CAA was amended in 1990 to specify attainment dates and SIP requirements for ozone, carbon monoxide (CO), nitrogen dioxide (NO2), and particulate matter (PM) with an aerodynamic diameter of less than 10 microns (PM10). In 1997, the United States Environmental Protection Agency (U.S. EPA) promulgated ambient air quality standards for PM with an aerodynamic diameter less than 2.5 microns (PM2.5 or fine particulate matter). U.S. EPA is required to periodically update the national ambient air quality standards (NAAQS).

In addition, the California Clean Air Act (CCAA), which was adopted in 1988, requires the South Coast AQMD to achieve and maintain state ambient air quality standards for ozone, CO, sulfur dioxide (SO2), and NO2 by the earliest practicable date.[4] The CCAA requires air districts, including South Coast AQMD, to achieve and maintain state standards by the earliest practicable date and for extreme nonattainment areas, to include all feasible measures pursuant to Health and Safety Code Sections 40913, 40914, and 40920.5. While not defined in these sections of the Health and Safety Code, the term "feasible" is defined in the California Environmental Quality Act (CEQA) pursuant to Public Resources Code Section 21061.1 and CEQA Guidelines[5] Section 15364, as a measure capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.

In 2015, the U.S. EPA lowered the primary and secondary 8-hour ozone standard to 70 parts per billion (ppb) for ground-level ozone. As such, the South Coast AQMD developed the 2022 AQMP (referred to herein as the proposed project) which contains a variety of control measures designed to bring the region into attainment with this standard by 2037 for the Basin and the Coachella Valley, and to comply with the federal and state ambient air quality standards for ozone. NOx emissions are a precursor to the formation of ozone, and reductions in NOx remain

[1] The Lewis-Presley Air Quality Management Act, 1976 Cal. Stats., Ch. 324 (codified at Health and Safety Code Section 40400-40540).
[2] Health and Safety Code Sections 40460(a); 40001
[3] Health and Safety Code Section 40440(a).
[4] Health and Safety Code Section 40910
[5] The CEQA Guidelines are codified at Title 14 California Code of Regulations Section 15000 *et seq.*

key to attain the 2015 federal 8-hour ozone standard. The proposed control measures in the 2022 AQMP therefore primarily focus on reducing NOx emissions from existing emission sources and promoting the use of the cleanest available new emission sources. Specifically, the proposed control measures focus on maximizing the implementation of existing zero, low, or ultra-low NOx technologies in combination with the potential for the ongoing development of additional zero emission and low NOx technologies.

Implementation of the proposed control measures which comprise the 2022 AQMP may affect existing and new development as well as stationary and mobile sources within South Coast AQMD's jurisdiction. The proposed project may result in emission reductions and environmental benefit, but also cause potential environmental impacts which are required to be evaluated pursuant to CEQA. As such, the South Coast AQMD has prepared this Final Program Environmental Impact Report (Final Program EIR).

1.2 CALIFORNIA ENVIRONMENTAL QUALITY ACT

Pursuant to the California Environmental Quality Act (CEQA), this Final Program EIR has been prepared to address the potential environmental impacts associated with the South Coast AQMD's 2022 Air Quality Management Plan (AQMP). The 2022 AQMP is the planning document that sets forth policies and measures to achieve federal and state ambient air quality standards in the region. CEQA Public Resources Code Section 21000 et seq., requires that the potential environmental impacts of proposed projects be evaluated and that feasible methods to reduce or avoid identified significant adverse environmental impact from these projects be identified.

To fulfill the purpose and intent of CEQA, the South Coast AQMD staff has prepared this Final Program EIR to address the potential environmental impacts associated with the 2022 AQMP. Prior to making a decision on the 2022 AQMP, the lead agency decision makers must review and certify the Program EIR as providing adequate information on the potential adverse environmental impacts of the 2022 AQMP.

1.2.1 NOTICE OF PREPARATION/INITIAL STUDY

The Notice of Preparation and Initial Study (NOP/IS) were distributed to responsible agencies and interested parties for a 32-day public review with the comment period starting on May 13, 2022 and ending on June 14, 2022. The Initial Study (see Appendix A) identified potential adverse impacts in the following environmental topics: air quality and greenhouse gas emissions; energy; hazards and hazardous materials; hydrology and water quality; noise; and solid/hazardous waste. The Final Program EIR also includes comments and responses to comment letters received on the Initial Study (see Appendix B).

1.2.2 PROGRAM EIR FORMAT

The overall format of the Program EIR is as follows:

- Executive Summary
- Chapter 1: Introduction
- Chapter 2: Project Description

- Chapter 3: Environmental Setting
- Chapter 4: Environmental Impacts and Mitigation Measures
- Chapter 5: Alternatives
- Chapter 6: References
- Chapter 7: Acronyms

1.3 EXECUTIVE SUMMARY: CHAPTER 2 – PROJECT DESCRIPTION

In 2015, the U.S. EPA strengthened the 8-hour NAAQS for ground-level ozone by lowering the primary and secondary ozone standard levels to 70 ppb. The Basin is classified as an "extreme" nonattainment area and the Coachella Valley is classified as a "severe-15" nonattainment area for the 2015 ozone NAAQS. The South Coast AQMD is requesting a voluntary reclassification of the Coachella Valley Portion of the Salton Sea Air Basin from "severe-15" to "extreme" nonattainment for the 2015 8-hour ozone standard, with an extension of the ozone attainment date from August 3, 2033 to August 3, 2038. The Coachella Valley is also pending a voluntary reclassification from "severe" to "extreme" nonattainment for the 2008 8-hour ozone standard which ~~is scheduled to be considered~~ was approved by the South Coast AQMD Governing Board at the public hearing ~~scheduled for~~held on November 4, 2022~~ (subject to change)~~. The 2022 AQMP focuses on attaining the 2015 8-hour ozone NAAQS by 2037, and addressing the state Clean Air Act requirements.

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest available new emission sources. The proposed control measures in the 2022 AQMP focus on maximizing the implementation of existing zero emission and low NOx technologies. It also recognizes that new low NOx and zero emitting technologies and ultra-low NOx technologies may still need to be invented or may not yet be commercially available to achieve the necessary reductions in order to achieve the ambient air quality standards for ozone (e.g., 70 ppb for both the federal and state standards). Because NOx emissions are a precursor to the formation of ozone and a key component to reduce ozone levels low enough to meet the standard, the 2022 AQMP primarily focuses on achieving NOx emission reductions in order to attain the ozone standard. Preliminary analyses indicate that in order to achieve the ozone standards by 2037, approximately 67 percent of additional NOx emission reductions will be needed, above and beyond the previously adopted measures in the 2016 AQMP.

VOC emissions are also a precursor to the formation of ozone such that achieving emission reductions of VOCs can help contribute to the overall goal of attaining the ozone standard and reduce exposure to harmful air pollutants. As such, some of the proposed control measures in the 2022 AQMP focus on achieving VOC emission reductions. However, VOC emission reductions are much less effective at reducing ozone at the low NOx levels needed for attainment.

Traditional air quality planning relies on a combination of controlling emissions at the tailpipe or exhaust stack, new engine technologies, and improvements to existing fuels. These traditional approaches are effective to an extent but since most affected sources are already equipped with NOx control equipment, traditional approaches are not expected to be able to achieve the additional reduction of 67 percent needed to achieve the ozone standard. Under the 2022 AQMP, the proposed control measures would:

- accelerate the replacement of high-emitting mobile sources with zero emission or low NOx technologies;

- encourage the use of lower-emitting alternative fuels;
- affect stationary sources at existing commercial/industrial facilities and residential developments;
- develop incentives to remove/replace higher-emitting equipment;
- establish greater control of industrial stationary sources;
- control indirect sources of emissions;
- improve detection and procedures; and
- establish educational and outreach programs.

In order to attain the ozone standards, the majority of NOx emission reductions must come from mobile sources, including ships, aircraft, and locomotive engines, all of which are primarily regulated by federal and international laws, depending on the applicable jurisdiction, with limited authority by CARB at the state level and the South Coast AQMD at the local level. Attainment is not possible without significant reductions from these sources. The South Coast AQMD will continue to work closely with CARB in their efforts to further control mobile source emissions where federal or state actions do not meet regional needs.

1.3.1 CURRENT CONTROL STRATEGY

The 2022 AQMP control measures consist of three main components: 1) the stationary and mobile source control measures that would be implemented by the South Coast AQMD; 2) CARB-developed control measures and strategies from CARB's 2022 Strategy for the State Implementation Plan which include state and federal mobile source control measures; and 3) SCAG-developed TCMs from SCAG's 2020 RTP/SCS.

The 2022 AQMP control measures primarily rely on the acceleration of zero emission and low NOx technologies, incentive programs, and advanced technologies. A summary of the proposed control measures is provided in the following subsections. The following bullet points summarize the major components of the 2022 AQMP:

- The air pollutant emissions baseline (e.g., 2018 data);
- Updated emission inventories using 2018 as the baseline year and reflecting control measures that have been implemented since the 2016 AQMP;
- New South Coast AQMD measures for stationary and mobile sources to be incorporated into the 2022 AQMP;
- SCAG's 2020 RTP/SCS based on Final 2020-2045 RTP/SCS, and related TCMs;
- CARB's Proposed 2022 State Strategy;
- Analysis of emission reductions necessary to achieve the federal 8-hour ozone air quality standard;
- Overview of state and federal planning requirements; and,
- Implementation schedule for adoption of the proposed control measures.

1.3.2 2022 AQMP CONTROL STRATEGY

A control measure is an emission reduction program based on specific technologies and methods identified for potential implementation to achieve reductions in air pollutant emissions to attain an air quality standard. The proposed stationary source ozone measures are designed to assist to attain the 2015 8-hour ozone standard (70 ppb) via reductions in emissions of NOx and VOC. Since NOx and VOC are primary precursor pollutants to form ground-level ozone, the stationary source ozone measures are identified by the primary pollutant targeted to achieve emission reductions (e.g., primarily NOx but some focus on VOC). These measures target a number of source categories, including Combustion Sources (CMB), Energy and Climate Change Programs (ECC), Petroleum Operations and Fugitive VOC Emissions (FUG), Coatings and Solvents (CTS), Compliance Flexibility Programs and Public Outreach (FLX), Multiple Component Sources (MCS), and Biogenic Sources (BIO). Combustion Sources are further divided into Residential Combustion Sources (R-CMB), Commercial Combustion Sources (C-CMB), and Large Combustion Sources (L-CMB). Each control measure may rely on several control methods. For the 2022 AQMP, the South Coast AQMD proposed a total of 48 control measures. Out of the 48 proposed control measures, 30 target reductions from stationary sources with the majority anticipated to be developed in the next several years and implemented prior to 2037. Table 2.7-1 provides a list of the South Coast AQMD proposed ozone measures for stationary sources along with the proposed adoption date, proposed implementation timeframe, and emission reductions in 2032 and 2037.

1.4 EXECUTIVE SUMMARY: CHAPTER 3 – EXISTING SETTING

Chapter 3 provides a detailed description of the existing setting of environmental resources identified as having potential significant impacts from the proposed project.

To determine the significance of the impacts associated with a proposed project, it is necessary to evaluate the proposed project's impacts against the backdrop of the environment as it exists at the time the environmental analysis is commenced. CEQA Guidelines Section 15360 defines environment as "the physical conditions that exist within the area which will be affected by a proposed project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance." [*See also* Public Resources Code Section 21060.5]. Furthermore, a CEQA document must include a description of the physical environment in the vicinity of the proposed project, as it exists at the time the environmental analysis is commenced, from both a local and regional perspective. [CEQA Guidelines Section 15125]. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant. The description of the environmental setting shall be no longer than is necessary to provide an understanding of the significant effects of the proposed project and its alternatives.

The existing setting is the physical environmental conditions as they existed at the time the NOP was published, or if no NOP is published, at the time the environmental analysis is commenced. [CEQA Guidelines Section 15125]. The NOP for the Draft Program EIR for the 2022 AQMP was published on May 13, 2022, and generally serves as the existing setting. The environmental setting (or existing setting) serves as the baseline to determine the impacts of the proposed project. For this Program EIR, the existing setting uses the most representative, published, verifiable, available data to establish the baseline for each environmental topic area to represent the conditions at the time the NOP was released.

1.4.1 AIR QUALITY AND GREENHOUSE GAS EMISSIONS

It is the responsibility of the South Coast AQMD to ensure that state and federal ambient air quality standards are achieved and maintained in its geographical jurisdiction. Health-based air quality standards have been established by California and the federal government for the following criteria air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO2), PM10, PM2.5, sulfur dioxide (SO2), and lead. These standards were established to protect sensitive receptors with a margin of safety from adverse health impacts due to exposure to air pollution. The California standards are more stringent than the federal standards and in the case of PM10 and SO2, far more stringent. California has also established standards for sulfates, visibility reducing particles, hydrogen sulfide, and vinyl chloride.

South Coast AQMD also has a general responsibility pursuant to H&S Section 41700 to control emissions of air contaminants and prevent endangerment to public health. Additionally, state law requires South Coast AQMD to implement airborne toxic control measures (ATCM) adopted by CARB, and to implement the Air Toxics "Hot Spots" Act. As a result, South Coast AQMD has regulated pollutants other than criteria pollutants such as TACs, GHG, and stratospheric ozone depleting compounds. South Coast AQMD has developed a number of rules to control non-criteria pollutants from both new and existing sources. These rules originated through state directives, CAA requirements, or the South Coast AQMD rulemaking process.

Two inventories are prepared for the 2022 AQMP for the purpose of regulatory and SIP performance tracking, including transportation conformity: an annual average inventory and a summer planning inventory. The summer planning inventory is used to capture emission levels during the high ozone season (May to October) when higher evaporative VOC emissions and more sunlight favor ozone formation. Baseline emissions data presented in the 2022 AQMP are based on seasonally adjusted summer planning inventory emissions. Summer planning inventories are used to develop an attainment strategy, estimate the cost-effectiveness of ozone control measures, and to report emission reduction progress as required by the federal and California Clean Air Acts.

The emission inventory is divided into two major source classifications: stationary and mobile sources. Stationary sources include point sources and area sources. Point sources are permitted facilities with one or more emission sources at an identified location (e.g., power plants, refineries, and industrial processes factories). Area sources consist of many small emission sources (e.g., residential water heaters, architectural coatings, and consumer products) which are distributed across the region and are not required to individually report their emissions.

Emissions data from mobile sources include on-road emissions and off-road emissions. On-road sources are from vehicles that are licensed to drive on public roads. Off-road sources are typically registered with the state and cannot be typically driven on public roads (construction & mining equipment, lawn & gardening equipment, ground support equipment, agricultural equipment).

In the 2018 base year model of the 2022 AQMP, total mobile sources account for 46 percent of VOC and 85 percent of NOx emissions. The off-road mobile sources contribute 26 percent with the on-road mobile sources contributing 20 percent of the VOC emissions. For NOx emission, the on-road mobile sources contribute 44 percent with the off-road mobile sources contributing

41 percent. Mobile sources contribute 94 percent of the CO emissions (49 percent from off-road mobile sources and 45 percent from on-road sources). For directly emitted PM2.5, mobile sources represent 37 percent (19 percent from off-road mobile sources and 18 percent from on-road mobile sources) with another ten percent due to vehicle-related entrained road dust.

Demographic growth forecasts for various socioeconomic categories (e.g., population, housing, employment by industry), developed by SCAG for the 2020 RTP/SCS, were used. Industry growth factors for 2018 and 2037 were also provided by SCAG. Current forecasts indicate that this region will experience a population growth of 12 percent between 2018 and 2037, with a five percent increase in vehicles miles traveled (VMT). Housing units show the largest change of the socioeconomic indicators with a projected 17 percent increase from 2018 to 2037.

Without any additional control measures, VOC and NOx emissions are expected to decrease due to existing South Coast AQMD and CARB regulations and programs, such as controls for on- and off-road equipment, new vehicle standards, and Rule 1109.1 for refinery emissions. SOx and ammonia (NH3) baseline emissions increase by four percent and 10 percent, respectively, between 2018 and 2037. These emission increases are driven by increases in population and economic activity that outpace emission reductions from introducing cleaner equipment and vehicles. The increase in NH3 emissions is primarily driven by increased on-road NH3 emissions from adoption of NOx control from heavy-duty vehicles. The contribution of mobile sources declines from 46 percent of Basin total VOC emissions in 2018 to only 27 percent in 2037, both off-road and on-road sources show approximately 10 percent decline in their contribution to VOC emissions in 2037. Mobile sources continue to be a major contributor to total NOx emissions. On-road contributions decrease from 44 percent to 20 percent in 2037, while contributions from off-road sources increase from 41 percent to 58 percent. The off-road source category also accounts for a larger fraction of CO emissions in 2037 (53 percent) compared to 2018 (49 percent), indicating that off-road mobile sources, including aircraft, ocean going vessels (OGV), and locomotives, account for a larger fraction of the entire inventory.

Inventories were developed for 2018, the base year for attainment demonstration, 2037, the attainment year for the 2015 NAAQS 8-hour ozone standard of 70 ppb, and milestone years to demonstrate Reasonable Further Progress (RFP).

1.4.2 ENERGY

Federal and state agencies regulate energy use and consumption through various means and programs. On the federal level, the United States Department of Transportation (U.S. DOT), United States Department of Energy (U.S. DOE), and U.S. EPA are three agencies with substantial influence over energy policies and programs. Generally, federal agencies influence transportation energy consumption through: 1) establishment and enforcement of fuel economy standards for automobiles and light trucks; 2) funding of energy related research and development projects; and 3) funding for transportation infrastructure projects.

On the state level, the California Public Utilities Commission (CPUC) and California Energy Commission (CEC) are two agencies with authority over different aspects of energy. The CPUC regulates privately-owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies. The CEC collects and analyzes energy-related data; forecasts future energy needs; promotes energy efficient and conservation by setting appliance and building energy efficiency standards; supports energy research; develops renewable energy

resources, promotes alternative and renewable transportation fuels and technologies; certifies thermal power plants 50 megawatts and larger; and plans for and directs state response to energy emergencies.

Power plants in California provided approximately 72 percent of the total in-state electricity demand in 2019 of which 32.1 percent came from renewable sources such as biomass, geothermal, small hydro, solar, and wind. The Pacific Northwest provided another nine percent of the total electricity demand of which 44 percent came from renewable sources. The Southwest provided 19 percent of the total electricity demand, with 31 percent coming from renewable sources. SCE is the largest electricity utility within South Coast AQMD's jurisdiction with a service area that covers 50,000 square miles and service to more than 15 million people.

Sources in the Southwestern U.S. supply most of natural gas demand to South Coast AQMD's jurisdiction (about 42 percent in 2019), followed by the Rocky Mountains (approximately 38 percent in 2019), with most of the remainder from California sources. There are numerous pipelines that transport natural gas into California from the out-of-state sources of natural gas. Southern California Gas Company is the primary distributor of natural gas service in South Coast AQMD's jurisdiction. SoCalGas estimates that total gas demand will decline at an annual rate of one percent from 2020 to 2035 due to more stringent building codes and standards, renewable electricity goals, a decline in commercial and industrial demand, and conservation savings.

Renewable energy includes geothermal plants, solar, small hydroelectric (under 30 MW), wind, and biomass. In 2020, California produced 63,655 GWh of renewable electricity, 46 percent of which was solar, 22 percent wind, 18 percent geothermal, nine percent biomass, and five percent small hydroelectric.

One of the key areas of concern in the energy sector is reducing the amount of petroleum-based fuels. Consumption of these fuels is a major factor in the amount of criteria pollutants in southern California. Alternative fuels, including electricity, biodiesel, renewable diesel, natural gas, and hydrogen, are expected to play an important role in the strategy to reach attainment of ambient air quality standards within South Coast AQMD's jurisdiction.

1.4.3 HAZARDS AND HAZARDOUS MATERIALS

The potential for hazards exists in the production, use, storage, and transportation of hazardous materials. Hazardous materials may be found at industrial production and processing facilities. Some facilities produce hazardous materials as their end product, while others use such materials as an input to their production process. Examples of hazardous materials used as consumer products include gasoline, solvents, and coatings/paints. Hazardous materials are stored at facilities that produce such materials and at facilities where hazardous materials are a part of the production process. Specifically, storage refers to the bulk handling of hazardous materials before and after they are transported to the general geographical area of use. Currently, hazardous materials are transported throughout the district via all modes of transportation including rail, highway, water, air, and pipeline.

Hazard concerns are related to the risks of explosions or the release of hazardous substances or exposure to air toxics. State law requires detailed planning to ensure that hazardous materials are properly handled, used, stored, and disposed of to prevent or mitigate injury to health or the environment in the event that such materials are accidentally released. Federal laws, such as the

Emergency Planning and Community-Right-To-Know Act of 1986 (also known as Title III of the Superfund Amendments and Reauthorization Act or SARA) impose similar requirements. These requirements are enforced by the California Emergency Management Agency (CalEMA). Numerous other state and federal laws are also aimed at minimizing exposure of individuals to hazardous materials (see Subchapter 3.4, Section 3.4.1 for further details).

The movement of hazardous materials implies a degree of risk, depending on the materials being moved, the mode of transport, and numerous other factors (e.g., weather and road conditions). According to the Office of Hazardous Materials Safety (OHMS) in the U.S. DOT, hazardous materials shipments can be regarded as equivalent to deliveries, but any given shipment may involve one or more movements or trip segments, which may occur by different routes (e.g., rail transport with final delivery by truck). According to the Commodity Flow Survey data, there were more than 2.9 billion tons of hazardous materials shipments in the United States in 2017 (the last year for which data is available). In California, 83 percent of hazardous materials are moved by pipeline.

In 2019, there were a total of 946 incidents reported for Los Angeles, Orange, Riverside, and San Bernardino counties. In 2020, there were a total of 1,007 incidents reported for Los Angeles, Orange, Riverside, and San Bernardino counties, and in 2021, a total of 935 incidents for these four counties. Over the three-year period, San Bernardino and Los Angeles counties accounted for the largest number of incidents, followed by Orange and Riverside counties.

1.4.4 HYDROLOGY AND WATER QUALITY

Water resources are regulated by an overlapping network of local, state, and federal laws and regulations. Potable water supply is managed through the following agencies and water districts: the California Department of Water Resources (DWR), the California Department of Health Services (DHS), the State Water Resources Control Board (SWRCB), the U.S. EPA, and the U.S. Bureau of Reclamation. The DWR manages the State Water Project (SWP) and compiles planning information on water supply and water demand within the state. Water rights applications are processed through the SWRCB for properties claiming riparian rights. Applicable laws and regulations associated with hydrology are summarized in Table 3.5-1.

California is divided into ten hydrologic regions corresponding to the state's major water drainage basins. The hydrologic regions define a river basin drainage area and are used as planning boundaries, which allows consistent tracking of water runoff, and the accounting of surface water and groundwater supplies. The Basin lies within the South Coast Hydrologic Region. The South Coast Hydrologic Region is California's most urbanized and populous region. More than half of the state's population resides in the region (about 19.6 million people or about 54 percent of the state's population), which covers 11,000 square miles or seven percent of the state's total land. The South Coast Hydrologic Region includes 19 major rivers and watersheds and extends from the Pacific Ocean east to the Transverse and Peninsular Ranges, and from the Ventura-Santa Barbara County line south to the international border with Mexico and includes all of Orange County and portions of Ventura, Los Angeles, San Bernardino, Riverside, and San Diego counties.

The majority of runoff from snowmelt and rainfall flows down mountain streams into low gradient valleys and either percolates into the ground or is discharged to the sea. This percolating flow is stored in alluvial groundwater basins. Groundwater accounts for most of the local fresh

water within Southern California and there are four watersheds in the region: Central Coast, South Lahontan, South Coast, and Colorado River. The Central Coast and South Lahontan watersheds most heavily rely on groundwater for urban and agricultural use, although all four watersheds are dependent upon it. Drought conditions in recent years have led to groundwater overdraft and associated subsidence, in which the groundwater basin collapses and renders it unusable. Improved groundwater management and water reduction measures have assisted in lessening groundwater overdraft; however, overdraft is still a major concern across the state.

Water demand in Southern California is met through the use of groundwater and surface water supplies. Integrated Regional Water Management Plans (IRWMPs) and Urban Water Management Plans (UWMPs), developed for cities and counties throughout the region, help guide water management and supply and demand projections. Water is imported by the Metropolitan Water District of Southern California (MWD) and the SWP, and groundwater is pumped from various local wells. The increase in California's water demand is due primarily to the increase in population. According to the 2018 California Water Plan Update, statewide future annual water demands range from an increase of fewer than one million acre-feet to an increase of about six million acre-feet under the Expansive Growth scenario by year 2050.

Southern California is served by many water suppliers, both retail and wholesale, with the Metropolitan Water District (MWD) being the largest. MWD serves the urbanized coastal plain from the city of Oxnard on the north to the border with Mexico on the south and reaches as far as 70 miles inland from the coast. The total service area is approximately 5,200 square miles and includes portions of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties. MWD provides water to about 86 percent of the urban population of Southern California, approximately 19 million people. There are 36 active water treatment facilities in the Southern California region which can treat approximately 182 million gallons per day (mgd) of water. For the South Coast Hydrologic Region, urban water uses are the largest component of the developed water supply, while agricultural water use is a smaller portion of the total. Imported water supplies and groundwater are the major components of the water supply for this region, with minor supplies from local surface waters and recycled water.

A majority of wastewater within the Southern California region is treated by one of the 57 major wastewater treatment facilities in the area, with a combined design flow of approximately 2,700 million gallons per day. Such facilities are often located in densely populated areas and in close proximity to bodies of water for simple discharge of treated water. Within each county, various smaller municipal wastewater systems and agencies manage wastewater from cities on a smaller scale, and private on-site sewage disposal systems are also available to serve wastewater generators without access to a municipal system.

1.4.5 NOISE

Noise is a by-product of urbanization and there are numerous noise sources and receptors in an urban community. Noise is generally defined as unwanted sound. The federal government sets noise standards for transportation-related noise sources that are closely linked to interstate commerce, such as aircraft, locomotives, and trucks, and, for those noise sources, the state government is preempted from establishing more stringent standards. The state government sets noise standards for those transportation noise sources that are not preempted from regulation, such as automobiles, light trucks, and motorcycles. Noise sources associated with industrial,

commercial, and construction activities are generally subject to local control through noise ordinances and general plan policies.

Environmental noise levels typically fluctuate across time of day; different types of noise descriptors are used to account for this variability, and different types of descriptors have been developed to differentiate between cumulative noise over a given period and single noise events. Individual noise events, such as train pass-bys or aircraft overflights, are further described using single-event and cumulative noise descriptors.

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. The Federal Transit Administration (FTA) states that in contrast to airborne noise, ground-borne vibration is not a common environmental problem, and most people consider groundborne vibration to be an annoyance that may affect concentration or disturb sleep. However, high levels of vibration may damage fragile buildings or interfere with equipment that is highly sensitive to groundborne vibration.

South Coast AQMD's jurisdiction includes 135 cities and covers a diverse array of land uses that range from quiet, undeveloped rural areas to loud, dense, urban areas. Ambient noise levels for areas where sensitive receptors may be located can range from 46 dBA for a small town or quiet suburban area to greater than 87 dBA for an urban area next to a freeway.

The main sources of noise in Southern California, of which South Coast AQMD's jurisdiction is a subset, are associated with transportation (i.e., freeways, airports, seaports and railroads). The most common noise sources within the Southern California region is traffic on highways and on arterial roadways. Higher levels of noise from traffic are generally due to higher traffic volumes, faster travel speeds, and greater number of trucks. Southern California has over 73,000 lane miles of freeways, highways, and arterial roadways. Traffic noise can be reduced by distance, terrain, vegetation, and intervening obstructions (e.g., buildings). However, traffic noise can be a major concern where buffers (vegetation, buildings, terrain, etc.) are inadequate or where the distance to sensitive receptors is minimal. With typical daily traffic volumes of 10,000 to 40,000 vehicle trips, noise levels along arterial roadways typically range from 65 to 60 decibels at a distance of 50 feet from the roadways centerlines.

1.4.6 SOLID AND HAZARDOUS WASTE

A total of 28 Class III active landfills and one waste incinerator are located within the South Coast AQMD's jurisdiction with a total capacity of 100,332 tons per day and 2,240 tons per day, respectively. Since the enactment of AB 939 in 1989, local governments have implemented recycling programs on a widespread basis, making efforts to meet the 25 percent and 50 percent diversion mandates of AB 939. CalRecycle reports that the per-capita disposal rate per California resident is 6.7 pounds per day with a recycling rate of 37 percent.

Permit requirements, capacity and surrounding land use are three of the dominant factors limiting the operations and life of landfills in the South Coast Air Basin. Landfills are permitted by the local enforcement agencies with concurrence from CalRecycle. Local agencies establish the maximum amount of solid waste that can be received by a landfill each day, and the operational life of a landfill. Landfills are operated by both public and private entities. Landfills in South

Coast AQMD's jurisdiction are also subject to requirements of the South Coast AQMD as they pertain to gas collection systems, dust and nuisance impacts.

There are no hazardous waste disposal sites within the jurisdiction of the South Coast AQMD. Hazardous waste generated at area facilities, which is not reused on-site, or recycled off-site, is disposed of at a licensed in-state hazardous waste disposal facility. Two such facilities in California are the Chemical Waste Management, Inc. (CWMI) Kettleman Hills facility in King's County, and the Clean Harbors Buttonwillow LLC facility in Buttonwillow (Kern County). Kettleman Hills has a maximum permitted capacity of about 10,700,000 cubic yards of hazardous waste spanning 555 acres and is also permitting for municipal wastes. The Clean Harbors Buttonwillow facility is designated as a Class I landfill spanning 320 acres, has a maximum permit capacity of 13,250,000 cubic yards with a maximum throughput of 10,500 tons per day, and is permitted to receive industrial, contaminated soil, other hazardous, and other designated wastes. Hazardous waste also can be transported to permitted disposal facilities located outside of California, the nearest of which is the U.S. Ecology Nevada, Inc. landfill, located in Beatty, Nevada; Clean Harbors Grassy Mountain located in Knolls, Utah; U.S. Ecology Idaho, in Grandview, Idaho; Chemical Waste Management Inc. in Sulphur, Louisiana; and Waste Control Specialists in Andrews, Texas.

While the DTSC has primary responsibility in the state for regulating the generation, transfer, storage and disposal of hazardous materials, DTSC may further delegate enforcement authority to local jurisdictions. In addition, the DTSC is responsible and/or provides oversight for contamination cleanup and administers state-wide hazardous waste reduction programs. The DTSC conducts annual inspections of hazardous waste facilities.

California Department of Transportation (Caltrans) sets standards for trucks transporting hazardous wastes in California. The regulations are enforced by the California Highway Patrol (CHP). Trucks transporting hazardous wastes are required to maintain a hazardous waste manifest. The manifest is required to describe the contents of the material within the truck so that wastes can readily be identified in the event of a spill.

1.5 EXECUTIVE SUMMARY: CHAPTER 4 – ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The CEQA Guidelines require environmental documents to identify significant environmental effects that may result from a proposed project. [CEQA Guidelines Section 15126.2(a)]. Direct and indirect significant effects of a project on the environment should be identified and described, with consideration given to both short- and long-term impacts. This Program EIR, in particular Chapter 4, analyzes the potential environmental impacts that may occur from implementing all of the control measures which comprise the 2022 AQMP and its goal to address the 2015 federal 8-hour ozone standard to satisfy the planning requirements of the federal CAA. The focus of review in this Program EIR is conducted on a regional, programmatic level (e.g., within South Coast AQMD's jurisdiction). The analysis in the Program EIR will rely on multiple sources of data, including but not limited to statewide data from CARB and other state agencies, regionwide data from SCAG, county-specific data from the four-counties located within South Coast AQMD's jurisdiction (e.g., Los Angeles, Orange, Riverside and San Bernardino counties), and data from previously certified CEQA documents for individual projects when South Coast AQMD was lead agency, when applicable.

Chapter 4 provides a detailed review of the environmental topics that were identified in the NOP/IS (see Appendix A) as requiring further analysis in the Program EIR due to potentially significant impacts that may occur if the 2022 AQMP is implemented including air quality and greenhouse gas emissions, energy, hazards and hazardous materials, hydrology and water quality, noise, and solid and hazardous waste. The following subsections provide a brief discussion of the potential environmental impacts and mitigation measures for each environmental category analyzed.

Subchapter 4.1 provides an introduction for the environmental impacts chapter and identifies the control measures that were identified to have no impacts on the environment.

1.5.1 AIR QUALITY AND GREENHOUSE GAS EMSSIONS

Subchapter 4.2 identifies and quantifies direct air quality impacts associated with the implementation of the proposed control measures in the 2022 AQMP. This subchapter also examines indirect or secondary air quality impacts, that is, potential air pollutant emission increases that could occur as a consequence of efforts to improve air quality. The analysis of air quality and greenhouse gas (GHG) impacts in the Program EIR identifies the net effect on air quality (e.g., criteria pollutants, GHGs, and toxic air contaminants (TACs)) from implementing the 2022 AQMP. The NOP/IS (see Appendix A) concluded that the air quality impacts of the proposed project are potentially significant. In particular, some control measures were identified in the NOP/IS as having the potential to result in secondary air quality impacts associated with: 1) generating emissions from construction equipment needed to build infrastructure and/or install new or modify existing equipment; 2) generate additional emissions from power plants that would need to expand to produce additional electricity to operate zero and low NOx technologies; and, 3) generate additional toxic air contaminants (e.g., increased ammonia use and additional TACs associated with the use and manufacture of alternative fuels and the reformulation of products). The Program EIR analyzed these potential secondary air quality impacts identified in the NOP/IS as well as cumulative adverse air quality impacts associated with increased emissions of air contaminants (e.g., criteria pollutants, GHGs, and TACs) during the construction and operation phases of the proposed project. Potential adverse health impacts to sensitive receptors are also included in the analysis.

A detailed analysis of the potential construction and operational air quality impacts associated with the 2022 AQMP control measure areas is provided in ~~this~~ Ssubchapter 4.2. The analysis is divided into the following sections: 2022 AQMP Control Measures with Potential Air Quality and GHG Emissions Impacts, Significance Criteria, Future Air Quality Emission Inventories, 2022 AQMP Air Quality Modeling Results, Potential Air Quality and GHG Emissions Impacts and Mitigation Measures, Summary of Air Quality and GHG Emissions Impacts, and Cumulative Air Quality and GHG Emissions Impacts and Mitigation Measures.

It is expected that many 2022 AQMP control measures will be promulgated as rules, laws, or ordnances by state (California), regional (South Coast AQMD, special districts, and counties), and local (cities) agencies. Because requirements of rules, laws, and ordinances can be enforced by the adopting agency, a conservative approach maximizing potential air quality and GHG impacts is the appropriate approach to analyzing potential secondary air quality impacts in this Program EIR. A number of control measures, however, involve incentives or voluntary compliance to achieve emission reductions. Since these types of control measures are not enforceable as they do not involve adoption by applicable agencies, the magnitude of impacts is

uncertain. To further provide a conservative analysis of potential air quality and GHG impacts from adopting and implementing the 2022 AQMP, incentive or voluntary control measures will be treated like control measures that are expected to be adopted by applicable agencies, thus, maximizing potential impacts from these control measures.

Implementing the 2022 AQMP control measures is expected to decrease operational criteria pollutant and GHG emissions over the long-term, resulting in a substantial benefit to air quality. However, in order to realize this benefit, various types of construction activities will also be necessary to implement the control measures, and these are generally characterized as temporary, short-term activities which will contribute to adverse air quality impacts. Implementation of some of the control measures in the 2022 AQMP may require construction activities involving: 1) the demolition or removal of components from existing buildings, or structures, such as equipment, mechanical systems, cooking devices, clothes dryers, water and/or space heating systems, and pool heaters; 2) the installation of new energy efficient equipment, mechanical systems, cooking devices, clothes dryers, water and/or space heating systems; and pool heaters; 3) the construction of additional infrastructure to produce more alternative fuels to support alternative-fueled vehicles (e.g., electric, hydrogen, natural gas); 4) the construction of additional infrastructure to produce more electricity to support electric vehicles and the electrification of new sources (e.g., additional on-road vehicles and marine vessels, "wayside" electric power such as catenary lines); 5) the construction of air pollution control equipment at stationary sources (e.g., SCRs), the retrofit of existing equipment with low NOx technology (e.g., low or ultra-low NOx burners) or the use of cleaner stationary sources (e.g., Tier 4 engines and newer boilers); and 6) construction for the replacement of higher emitting combustion equipment with low NOx equipment. Implementation of mitigation measures AQ-1 to AQ-26 would reduce construction emissions but the overall construction air quality impacts after mitigation would likely remain significant.

The majority of the activities associated with implementing the 2022 AQMP control measures are projected to have operational air quality impacts that are less than significant and would result in substantial emission reductions of criteria pollutants and GHGs. Three activities associated with implementing the proposed control measures have potentially significant operational air quality impacts (i.e., additional production and use of electricity generation from natural gas combustion (prior to the full conversion to renewable sources), additional production and use of alternative fuels, and reformulation of coatings, adhesives, sealants, and lubricants). However, the extent of potential air quality impacts from these three activities is dependent upon the type, size and overall design of any future projects implemented in response to the proposed control measures, the details of which are unknown at this time and cannot be forecasted. For this reason, the quantities of the potential air quality impacts cannot be estimated at this time. Nonetheless, when the effects of all of the proposed control measures are considered together, a net NOx emission reduction of 124 tons per day is expected, which is an order of magnitude greater than any of the potentially significant air quality impacts from implementing some of the individual control measures. Overall, the 2022 AQMP is expected to result in a sizable air quality benefit. Thus, operational activities resulting from implementation of all of the proposed control measures in the 2022 AQMP are expected to ~~be~~ generate less than significant air quality operational impacts for criteria pollutants.

Implementation of control measures in the 2022 AQMP is expected to result in substantial GHG emission reductions from replacing diesel- and gasoline-fueled equipment with electric-powered and alternative fueled equipment which, over the long-term, will offset potentially significant

short-term increases in GHG emissions from construction projects, additional production and use of electricity generation from natural gas combustion (prior to the full conversion to renewable sources), additional production and use of alternative fuels, and replacements of existing combustion equipment with new lower emitting combustion equipment, resulting in an overall reduction of GHG emissions.

The 2022 AQMP control measures would result in significant adverse air quality impacts during construction and, when combined with past, present, and reasonably foreseeable activities, in particular with transportation projects projected in the Connect SoCal Plan and the Proposed 2022 State SIP Strategy, would contribute to cumulatively considerable impacts to air quality related to criteria pollutant emissions during construction, a significant, unavoidable cumulative impact.

Emission increases would be expected from implementation of the 2022 AQMP as described in Section 4.2.5; however, the overall emission reductions associated with implementation of the 2022 AQMP, as well as the SIP measures developed by CARB and the Regional Transportation Strategy and Transportation Control Measures developed by SCAG, are expected to result in a substantial reduction in criteria pollutant emissions. These measures are expected to result in a reduction of 124 tons per day of NOx, or about a 67 percent reduction over 2018 levels and about an 83 percent decrease below current levels in the South Coast Air Basin (see 2022 AQMP, Chapter 4). Therefore, the overall emission reductions are expected to outweigh any emission increases and provide an overall benefit. Therefore, the cumulative air quality impacts are less than significant.

The Proposed 2022 State Strategy also considered GHG emissions reductions to be beneficial. However, the GHG emissions reductions in the SCAG Connect SoCal Plan were considered significant because they did not reach the mandated target. The 2022 AQMP is not cumulatively considerable to the significant impact and in fact is expected to improve the goal towards the mandated GHG reduction target. Therefore, the cumulative GHG impact is considered beneficial and less than significant.

1.5.2 ENERGY

Subchapter 4.3 examines impacts on the supply and demand of energy sources from implementing the proposed control measures in the 2022 AQMP. The NOP/IS for the 2022 AQMP (Appendix A) identified the following activities associated with implementing the proposed control measures as having potentially significant energy impacts: 1) the use of electricity and fossil fuels associated with construction activities; 2) the demand for electricity due to the use of more zero emission technologies including vehicles, airport ground equipment, and marine vessels; 3) the use of natural gas demand to generate additional electricity and hydrogen; and 4) the use of alternative fuels in lieu of gasoline or diesel.

Project-specific and cumulative energy impacts associated with the projected increased uses of energy are evaluated in Subchapter 4.3 of the Program EIR. Control measures in the 2022 AQMP were evaluated to determine whether or not they could contribute to direct or indirect energy impacts. Some control measures would require ~~the~~ increased energy use (e.g., replacement of residential appliances with electric appliances, increased use of zero emission technologies). Other measures would alter the form of energy used (e.g., switching from gasoline or diesel power to alternative fuels). Evaluation of control measures was based on examination

of the impact of the control measures and technologies in light of current energy needs. All control measures ~~identified~~ determined to have energy impacts were analyzed to identify both beneficial effects (energy conserving) and adverse impacts (energy consuming).

Implementation of the 2022 AQMP will result in less than significant energy resource impacts from: 1) short-term construction-related activities; and 2) demand for petroleum fuels, biodiesel and renewable diesel, ethanol, propane, methanol, biomethane, and renewable natural gas. However, the increase in electricity demand, natural gas demand in the short-term, and hydrogen demand are expected to result in significant adverse energy resource impacts. Implementation of mitigation measures E-1 to E-12 would reduce energy resource impacts, but impacts after mitigation would likely remain significant.

Implementation of the 2022 AQMP control measures, the TCMs in the Connect SoCal Plan, the SIP strategies, and the state policies identified in Table 4.3-4, when combined with other past, present, and reasonably foreseeable activities, would result in a significant increase in electricity, natural gas, and hydrogen demand which may not currently be available, and would contribute to cumulatively considerable impacts. No additional mitigation measures to reduce the significant cumulative impacts to energy have been identified. Cumulative impacts to energy demand for past, present, and reasonably foreseeable future projects would remain significant and unavoidable for electricity, natural gas, and hydrogen demand.

1.5.3 HAZARDS AND HAZARDOUS MATERIALS

Subchapter 4.4 identifies the potential hazards and hazardous materials impacts as a result of implementing the control measures in the 2022 AQMP. The NOP/IS for the 2022 AQMP identified the following types of control measures as having potentially significant hazards and hazardous materials impacts: 1) the routine transport, storage, and use of ammonia in air pollution control equipment (e.g., SCRs); 2) the production, storage, and use of alternative fuels including but not limited to natural gas and hydrogen to produce electricity and to fuel on- and off-road mobile sources; 3) disposal of batteries, fluids, and spent catalyst; 4) increased use of lower-VOC containing products reformulated with flammable materials; and 5) conducting chipping and grinding of wood and greenwaste in fire hazard areas.

Project-specific and cumulative hazards and hazardous materials impacts associated with these projected increased transport, storage, use, and disposal of hazardous materials are evaluated in Subchapter 4.4 of the Program EIR. Tank ruptures, transportation related accidental releases, and fires were identified to have significant hazards and hazardous materials impacts.

Increased ammonia usage could generate significant adverse hazards impacts in the event of accidental release during routine transport or catastrophic rupture of an ammonia tank at a facility since off-site receptors could be exposed to concentrations that would exceed the ERPG-2 toxic endpoint concentration for ammonia. Implementation of mitigation measures HZ-1 to HZ-6 would reduce hazard impacts, but impacts after mitigation would likely remain significant.

New natural gas pipelines may need to be constructed to service new hydrogen plants, resulting in potentially significant impacts as natural gas pipelines are located within and adjacent to residential areas and other sensitive receptors. The increased transportation of liquefied natural gas (LNG) is expected to generate significant adverse hazard impacts in the event of an accident. Because of the extensive state and federal requirements on new (and existing) natural gas

pipelines and hazardous materials transport, no other feasible mitigation measures have been identified, and the impacts would remain significant.

The hazards associated with the use of hydrogen, ethanol and ethanol blends, compressed natural gas (CNG), propane (LPG), biodiesel, and renewable diesel as fuels are considered safer than or equivalent to conventional fuels. Therefore, increased use of these fuels with a concurrent decline in the use of conventional fuels would not result in significant hazard impacts. The increased transport of LNG for use as an alternative fuel was determined to be potentially significant.

While the continued and potential increased use of water-based coatings and products would generally be expected to reduce the overall hazard impacts associated with solvent-based products, the potential reformulation of coatings and products to products that are more flammable (e.g., acetone) could result in a significant impact on fire hazard impacts. Implementation of mitigation measures HZ-7 and HZ-8 would reduce hazard impacts, and impacts after mitigation are expected to be less than significant.

Implementation of the 2022 AQMP control measures, the TCMs in the Connect SoCal Plan, the SIP strategies, the state policies identified in Table 4.3-4 (see Energy Impacts, Subchapter 4.3), when combined with other past, present, and reasonably foreseeable activities, would result in a significant increase in the use of hazards and hazardous materials. Feasible mitigation measures have been developed for implementation of the above projects in the relative CEQA documents to reduce the significant hazard impacts. No additional feasible mitigation measures have been identified to further reduce cumulative hazard impacts. Therefore, cumulative impacts to hazards and hazardous materials for past, present, and reasonably foreseeable future projects would remain significant and unavoidable.

1.5.4 HYDROLOGY AND WATER QUALITY

Subchapter 4.5 identifies the potential hydrology and water quality impacts as a result of implementing the control measures in the 2022 AQMP. The NOP/IS for the 2022 AQMP evaluated all of the proposed control measures and determined that some of the control measures would involve the following activities and equipment which collectively could cause potentially significant hydrology and water quality impacts: 1) potential increase in water demand; 2) potential increase in wastewater discharge and related water quality impacts; 3) water quality impacts associated with increased use of and accidental releases of alternative fuels; 4) water quality impacts associated with accidental releases of ammonia from operation of SCR technology; 5) water quality impacts associated with accidental releases from battery disposal and processing including acid spills; and, 6) water quality impacts associated the use and clean-up of reformulated products. Project-specific and cumulative hydrology and water quality impacts associated with these activities are evaluated in Subchapter 4.5 of the Program EIR.

Overall, implementation of Control Measures L-CMB-01, L-CMB-05, L-CMB-06, CTS-01, MCS-02, MOB-05, MOB-06, MOB-07, and MOB-08 combined has the potential to cause potentially significant water demand and water supply impacts after combining the amount of water that may be needed during both construction and operation. While increased water demand may not be exceeded for an individual project at a facility, the collective water use has the potential to exceed the 262,820 gallons per day of potable water demand significance threshold. Mitigation measures are proposed, but the specific ones that would be implemented depend on

the specific characteristics of individual projects, the volume and type of water expected to be used, and whether there is sufficient supply of water given the ongoing extreme drought conditions. Water demand and water supply impacts are therefore expected to remain significant after mitigation measures are applied.

In addition, implementation of Control Measures L-CMB-01, L-CMB-05, L-CMB-06, CTS-01, MCS-02, MOB-05, MOB-06, MOB-07, and MOB-08 combined has the potential to cause potentially significant water quality impacts such that mitigation measures are required. While potential changes in water quality volume and concentration levels may not require all affected facilities to modify their industrial waste discharge permit or NPDES permit, it is possible that some facilities may need to do so. Mitigation measures are proposed, but the specific ones that would be implemented depend on the specific characteristics of individual projects, the wastewater volume and concentration levels expected to be discharged, and whether there is sufficient capacity in the existing wastewater treatment and storm water collection systems to handle the increased volume. If sufficient capacity does not exist, then a facility will be faced with physically modifying their wastewater treatment and/or storm water collection systems which would require discretionary approvals and potentially, further CEQA review. Therefore, wastewater treatment and water quality impacts are expected to remain significant after mitigation measures are applied.

The 2022 AQMP control measures would result in significant adverse hydrology, specifically water demand and water supply, and water quality impacts. When combined with past, present, and reasonably foreseeable activities, and in particular with the Connect SoCal Plan, would contribute cumulatively considerable impacts to water quality impacts identified in the Connect SoCal Plan. Therefore, cumulative significant impacts to water demand, water supply, and water quality are expected. No additional mitigation measures to reduce the significant cumulative impacts to water demand, water supply, and water quality have been identified. Therefore, cumulative impacts to past, present, and reasonably foreseeable future projects would remain significant and unavoidable for water demand, water supply, and water quality.

1.5.5 NOISE

Subchapter 4.6 identifies the potential noise impacts as a result of implementing the control measures in the 2022 AQMP. The NOP/IS for the 2022 AQMP evaluated all of the proposed control measures and determined that a majority would involve physical modifications requiring construction activities to occur and that the use of construction equipment could generate potentially significant noise impacts. Project-specific and cumulative noise impacts associated with the various types of construction activities and associated equipment that may be required to implement the proposed control measures in the 2022 AQMP are evaluated in Subchapter 4.6 of the Program EIR.

Implementing the 2022 AQMP is expected to require construction activities that include: 1) installation of new equipment or devices; 2) removal of older equipment or devices; 3) modification or retrofit of existing equipment and facilities; and 4) modification of existing roadways to install new equipment and roadway infrastructure. The potential noise impact of construction activities would vary depending on the existing noise levels in the environment and the location of sensitive receptors (e.g., residences, hotels, hospitals, etc.) with respect to construction activities. Because no specific projects are currently proposed, the noise impacts are speculative. Potential modifications would occur at facilities typically located in appropriately

zoned industrial or commercial areas, so construction noise impacts at stationary sources on sensitive receptors are expected to be less than significant. In addition, some of the control measures could result in minor construction activities that could create some minimal noise associated with replacing appliances such as water heaters, space heaters, cooking equipment, and pool heaters located in residential settings. Sources of noise for appliance replacement activities would be relatively brief and comprised of trucks delivering new appliances and hauling away old appliances, electronic hand trucks to maneuver the appliances to/from the truck to the residential location, and hand-tools to disconnect the old appliance and connect new appliance to the necessary electronic and plumbing components, as applicable. For these reasons, construction noise impacts at residences are also expected to be less than significant.

The construction of roadway infrastructure would result in additional construction noise sources near transportation corridors, and it is not uncommon for residences and other sensitive receptors to be located within several hundred feet of the existing roadways, so noise levels associated with construction activities could increase three dBA or greater and generate potentially significant noise impacts, although temporary. Vibration from construction activities could exceed the 72 VdB threshold for structures and sensitive receptors within 200 feet of construction activities if certain types of construction equipment are used and so is considered potentially significant. Therefore, the noise and vibration impacts during construction activities are considered significant.

As noted in Section 4.6.3, nearly all noise impacts associated with the proposed control measures in the 2022 AQMP are associated with construction activities except for Control Measure MCS-02 – Wildfire Prevention, which is designed as a preventative measure to thin out forestland by chipping and grinding greenwaste and wood waste to reduce the amount of fuel available for wildfires. Thinning and chipping activities typically require the use of chainsaws, dozers, and chippers/grinders. The noise levels for this type of equipment ranges from 85 to 110 dBA. The thinning and chipping activities should not require blasting, pile driving, or heavy earthmoving, and therefore, should not generate significant vibrations. The areas that are most likely to require additional thinning and chipping are in San Bernardino Urban Wildland Interface where there are few sensitive receptors. For areas in forestlands where sensitive receptors are present, the areas surrounding existing structures are already required to be periodically cleared of woodwaste and greenwaste in order to maintain a defensible space around any structures. Therefore, Control Measure MCS-02 is not expected to result in significant operational noise impacts. Based upon these considerations, significant adverse noise impacts relating to noise associated with operational activities are not expected from implementing the proposed project.

Implementing control measures from the 2022 AQMP could result in significant adverse noise and vibration impacts due to associated construction activity. Implementation of the 2022 AQMP control measures, the TCMs in the Connect SoCal Plan, and the 2022 SIP Strategy, when combined with other past, present, and reasonably foreseeable activities, would result in a potentially significant increase in noise and vibration associated with construction and would contribute to cumulatively considerable impacts to noise and vibration. No additional mitigation measures to reduce the significant cumulative adverse impacts to construction noise and vibration have been identified. Therefore, cumulative impacts due to past, present, and reasonably foreseeable future projects would remain significant and unavoidable for construction noise and vibration.

1.5.6 SOLID AND HAZARDOUS WASTE

Subchapter 4.7 examines potential solid and hazardous waste impacts from implementing the proposed control measures in the 2022 AQMP. The NOP/IS for the 2022 AQMP evaluated all of the proposed control measures and determined that a majority would involve the following activities which collectively could cause potentially significant solid and hazardous waste impacts: 1) increase in construction waste; 2) increase in waste associated with the disposal of old equipment; 3) increase in waste from catalysts; 4) increase in waste from filters; 5) increase in greenwaste associated with chipping activities; and 6) increase in waste due to vehicle/equipment scrapping and disposal of car batteries. Project-specific and cumulative solid and hazardous waste impacts associated with the various types of control measures in the 2022 AQMP are evaluated in Subchapter 4.7 of the Program EIR.

Project-specific and cumulative solid and hazardous waste impacts associated with construction and operational activities have been evaluated in Subchapter 4.7 of the Program EIR. Control measures in the 2022 AQMP were evaluated to determine whether or not they could contribute to direct or indirect solid and hazardous waste impacts.

Implementation of the 2022 AQMP control measures is expected to result in construction activities that may include installation of air pollution control equipment (e.g., low NOx burners, SCR systems, electrification of sources); replacement of existing equipment; installation of roadway infrastructure (wayside power and catenary lines or other similar technologies); installation of battery charging infrastructure; and installation of alternative fuel infrastructure. For purposes of evaluating potential solid and hazardous waste impacts, it has been assumed herein that no new industrial facilities or corridors will be constructed, but rather some existing facilities and corridors will be modified to include installation of new equipment and roadway infrastructure. Because it is difficult to quantify the construction and demolition waste generated by implementing control measures from the 2022 AQMP, solid and hazardous waste impacts from construction are concluded to be significant.

The extent of solid and hazardous waste impacts from early retirement of equipment is difficult to quantify, but concluded to generate potentially significant adverse impact because available landfill space is limited with only four solid waste landfills in Southern California having capacity past 2039. Implementation of mitigation measures SHW-1 to SHW-3 would reduce solid and hazardous waste impacts, but impacts after mitigation would likely remain significant.

The 2022 AQMP could result in significant adverse solid and hazardous waste impacts because of potential increases in waste produced during construction and operation activities. Implementation of the 2022 AQMP control measures, the TCMs in the Connect SoCal Plan, the SIP strategies, when combined with other past, present, and reasonably foreseeable activities, would result in a significant increase in solid and hazardous waste, and would contribute to cumulatively considerable impacts to solid and hazardous waste. No additional mitigation measures to reduce the significant cumulative impacts to solid and hazardous waste have been identified. Cumulative impacts to solid and hazardous waste for past, present, and reasonably foreseeable future projects would remain significant and unavoidable for solid and hazardous waste.

1.5.7 POTENTIAL ENVIRONMENTAL IMPACTS FOUND NOT TO BE SIGNIFICANT

Subchapter 4.8 presents the environmental topic areas that would either have no impacts or less than significant impacts from implementing the control measures in the 2022 AQMP. The analysis provided in the NOP/IS concluded that the following environmental topic areas would either have no impacts or less than significant impacts: aesthetics, agriculture and forestry resources, biological resources, cultural and tribal cultural resources, geology and soils, land use and planning, mineral resources, population and housing, public services, recreation, transportation, and wildfire. The reasons for concluding either no impacts or less than significant impacts for each of these environmental topic areas are explained in Subchapter 4.8 of the Program EIR.

1.5.8 OTHER CEQA TOPICS

Subchapter 4.9 presents the analysis of growth-inducing impacts of a proposed project that "could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth." [CEQA Guidelines Section 15126.2(e)]. In addition, this subchapter also presents the significant environmental effect which cannot be avoided and the relationship between short-term and long-term productivity. [CEQA Guidelines Sections 15126(c) and 15126 (a)(2), respectively].

1.6 EXECUTIVE SUMMARY: CHAPTER 5 – ALTERNATIVES

1.6.1 ALTERNATIVES EVALUATED IN THE PROGRAM EIR

This Program EIR provides a discussion of alternatives to the proposed project as required by CEQA. The alternatives discussion includes measures for attaining the objectives of the proposed project and provides a means for evaluating the comparative merits of each alternative. A 'no project' alternative must also be evaluated. The range of alternatives must be sufficient to permit a reasoned choice, but need not include every conceivable project alternative. CEQA Guidelines Section 15126.6(c) specifically notes that the range of alternatives required in a CEQA document is governed by a 'rule of reason' and only necessitates that the CEQA document set forth those alternatives necessary to permit a reasoned choice. The key issue is whether the selection and discussion of alternatives fosters informed decision making and public participation. A CEQA document need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative. [CEQA Guidelines, Section 15126.6(f)(3)]. A total of four alternatives were evaluated in the Program EIR.

Alternative 1 – No Project Alternative: CEQA requires the evaluation of the No Project Alternative, which consists of what would occur if the proposed project was not approved; in this case, not adopting the 2022 AQMP. The net effect of not adopting the 2022 AQMP would be a continuation of the 2016 AQMP.

Alternative 2 – Mobile Source Reductions Only: Under Alternative 2, no stationary control measures would be implemented. Only the mobile source control measures proposed by both CARB and the South Coast AQMD would be implemented.

Alternative 3 – Early Implementation of Control Measures: Under Alternative 3, the proposed control measures identified in the project description (see Chapter 2) would be unchanged but the timeframe for implementing the proposed control measures would occur three years earlier so that all measures would be fully implemented by 2034. This shift in implementation would provide for the project emissions reductions to be achieved sooner than what is contemplated by the proposed project. Early implementation of Alternative 3 means that construction activities, including the removal and replacement of equipment would also occur over a shorter period of time.

Alternative 4 – All Regulatory Non-Incentive Alternative: The focus of Alternative 4 would be limited to control measures that could be directly implemented by the South Coast AQMD or CARB and for which the South Coast AQMD has the authority to regulate or for which CARB has the authority to regulate. Therefore, the control measures under this alternative would be primarily limited to stationary source control measures, plus mobile source measures for which the South Coast AQMD and CARB have the authority to implement. The incentive measures would be eliminated under this alternative.

1.6.2 ALTERNATIVES ANALYSIS SUMMARY

Of the project Alternatives, Alternative 1 would generate the least severe and fewest number of environmental impacts compared to the 2022 AQMP. However, compared to the other project alternatives, Alternative 1 would achieve none of the project objectives (see Chapter 2 for the comprehensive list of objectives) and would not accomplish critical objective of complying with the federal 8-hour ozone standard (70 ppb).

Alternative 3 would be expected to generate equivalent impacts to the proposed project in all environmental topic areas because it would implement the same control measures in a faster manner. Air quality, noise, and solid waste impacts could be greater under Alternative 3 as they would be more concentrated in time. Alternative 3 would provide greater air quality and health benefits by complying with the federal 8-hour ozone standard three years sooner than the proposed project or other alternatives and would achieve all of the project objectives.

The analysis of potential impacts from each of the project alternatives concludes that Alternative 2 (Mobile Source Reductions Only) is the environmentally superior alternative. This conclusion is based on the fact that removing the stationary source control measure would reduce the potentially significant hazard impacts associated with the storage and transportation of ammonia and eliminate further hazards from reformulated coatings and products. Other impacts would be less than the proposed project, although still significant, including construction emissions, short-term GHG emissions, construction noise, and solid and hazardous waste impacts associated with construction debris and the early retirement of equipment. Alternative 2 would achieve over 90 tons per day of NOx emission reductions, but additional emission reductions through implementing CAA Section 182(e)(5) measures (an estimated 37 pounds to achieve the carrying capacity of the Basin) would be needed to comply with the federal 8-hour ozone standard (70 ppb). Alternative 2 would meet some of the project objectives with the exception that it would not demonstrate attainment of the 2015 federal 8-hour ozone standard unless other control measures are implemented; and would not achieve widespread adoption of zero emission and low NOx technologies across all stationary sources.

Alternative 4 would have similar impacts to the proposed project with slightly fewer impacts in construction emissions, electricity demand, natural gas demand, alternative fuels, water demand, water quality impacts, construction waste generation, spent vehicle batteries, and early retirement of equipment as the incentive measures would not be implemented. In addition, Alternative 4 would result in 6.8 tons per day fewer NOx reduction emissions and would be the closest Alternative to meeting the federal 8-hour ozone standard, other than Alternative 3. Therefore, an additional 6.8 tons per day of NOx emission reductions through implementing CAA Section 182(e)(5) measures would be required. Alternative 4 would achieve most of the project objectives with the exception of: attainment of the 2015 federal 8-hour ozone standard (70 ppb); seeking substantial funding for incentives to implement early deployment and commercialization of zero and low NOx emission technologies; and prioritizing distribution of incentive funding to environmental justice areas, as the Alternative 4 would not include incentive funding.

Based on the above information and discussion, the proposed project has been proven to be the most effective project that achieves the all the project objectives relative to environmental impacts generated. While adverse secondary impacts will be difficult to avoid, mitigation measures are proposed and an overall air quality benefit will result along with reductions in toxics and GHGs. The proposed project will satisfy the CAA and not put the region in legal vulnerability that could harm the environment, communities and businesses.

1.7 EXECUTIVE SUMMARY: CHAPTERS 6 AND 7

Chapter 6 provides the references relied upon to prepare this Program EIR. Chapter 7 provides the acronyms that are used throughout this Program EIR.

CHAPTER 2

PROJECT DESCRIPTION

2.1 INTRODUCTION

The California Legislature created the South Coast AQMD in 1977[1] as the agency responsible for developing and enforcing air pollution control rules and regulations in the South Coast Air Basin (Basin) and portions of the Salton Sea Air Basin (SSAB) and Mojave Desert Air Basin (MDAB). By statute, the South Coast AQMD is required to adopt an Air Quality Management Plan (AQMP) demonstrating compliance with all federal and state ambient air quality standards for the areas under the jurisdiction of the South Coast AQMD[2]. Furthermore, the South Coast AQMD must adopt rules and regulations that carry out the AQMP[3]. The AQMP is a regional blueprint for how the South Coast AQMD will achieve air quality standards and healthful air; it contains multiple goals promoting reductions of criteria air pollutants including nitrogen oxides (NOx) and volatile organic compounds (VOC), as well as co-benefits of reducing greenhouse gases (GHGs) and toxic air contaminants (TACs).

In 1977, amendments to the Federal Clean Air Act (CAA) included requirements for submitting State Implementation Plans (SIPs) for nonattainment areas that failed to meet all federal ambient air quality standards (CAA Section 172), and similar requirements exist in state law. [Health and Safety Code Section 40462]. The Federal CAA was amended in 1990 to specify attainment dates and SIP requirements for ozone, carbon monoxide (CO), nitrogen dioxide (NO2), and particulate matter (PM) with an aerodynamic diameter of less than 10 microns (PM10). In 1997, the United States Environmental Protection Agency (U.S. EPA) promulgated ambient air quality standards for PM with an aerodynamic diameter less than 2.5 microns (PM2.5 or fine particulate matter). U.S. EPA is required to periodically update the national ambient air quality standards (NAAQS).

In addition, the California Clean Air Act (CCAA), which was adopted in 1988, requires the South Coast AQMD to achieve and maintain state ambient air quality standards for ozone, CO, sulfur dioxide (SO2), and NO2 by the earliest practicable date.[4] The CCAA requires air districts, including South Coast AQMD, to achieve and maintain state standards by the earliest practicable date and for extreme nonattainment areas, to include all feasible measures pursuant to Health and Safety Code Sections 40913, 40914, and 40920.5. While not defined in these sections of the Health and Safety Code, the term "feasible" is defined in the California Environmental Quality Act (CEQA) pursuant to Public Resources Code Section 21061.1 and CEQA Guidelines[5] Section 15364, as a measure capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.

In 2015, the U.S. EPA lowered the primary and secondary 8-hour ozone standard from 75 to 70 parts per billion (ppb) for ground-level ozone. As such, the South Coast AQMD developed the 2022 AQMP (referred to herein as the proposed project) which contains a variety of control measures designed to bring the region into attainment with this standard by 2037 for the Basin and the Coachella Valley and comply with the federal and state ambient air quality standards for ozone. NOx emissions are a precursor to the formation of ozone and reductions in NOx remain

[1] The Lewis-Presley Air Quality Management Act, 1976 Cal. Stats., Ch. 324 (codified at Health and Safety Code Section 40400-40540).
[2] Health and Safety Code Sections 40460(a); 40001
[3] Health and Safety Code Section 40440(a).
[4] Health and Safety Code Section 40910
[5] The CEQA Guidelines are codified at Title 14 California Code of Regulations Section 15000 *et seq.*

key to achieve attainment of the 2015 8-hour ozone standard. The proposed control measures in the 2022 AQMP therefore primarily focus on reducing NOx emissions from existing emission sources and promoting the use of the cleanest available new emission sources. Specifically, the proposed control measures focus on maximizing the implementation of existing zero, low, or ultra-low NOx technologies in combination with the potential for the ongoing development of additional zero emission and low NOx technologies.

Implementation of the proposed control measures which comprise the 2022 AQMP may affect existing and new development as well as stationary and mobile sources within South Coast AQMD's jurisdiction and may result in emission reductions, an environmental benefit, but may also cause potential environmental impacts which are required to be evaluated pursuant to CEQA. As such, the South Coast AQMD has prepared this Final Program Environmental Impact Report (Final Program EIR).

2.2 HISTORY OF PREVIOUS AQMPS AND ATTAINMENT STRATEGIES

The Federal CAA requires areas that do not meet the health-based NAAQS to develop and implement an emission reduction strategy to attain healthful levels of air quality in a timely manner. California also requires areas that do not meet the California ambient air quality standards (CAAQS or state standards) to take all feasible measures towards achieving the CAAQS at the earliest practicable date. AQMPs provide the strategy and the underlying technical analysis for how the region will meet federal standards by the required dates and continue progress to achieve the state standards. As the U.S. EPA is required by law to review the NAAQS every five years, an AQMP is usually developed every four to six years to address requirements of a new NAAQS.

2.2.1 TIMELINE OF PREVIOUS AQMPS AND AQMP-RELATED ACTIVITIES

The South Coast AQMD Governing Board adopted the first AQMP in 1979 and the 2022 AQMP will be the twelfth plan prepared by the South Coast AQMD. In between the adoption and amendment of the various AQMPs over the years, other AQMP-related actions were taken to modify the SIP for specific pollutants, e.g., PM10 for the Coachella Valley and for the Basin, CO, and lead for Los Angeles County. The following bullets provide a historical summary of the main components of the AQMP development activities, including updates and revisions, that have occurred over the years:

- The 1982 AQMP was developed to reflect better data and modeling tools. However, in 1987, a federal court ordered the U.S. EPA to disapprove the 1982 AQMP because it did not demonstrate attainment of all NAAQS by 1987 as required by the Federal CAA. This, in part, led to the preparation of the 1989 AQMP.

- The 1989 AQMP was specifically designed to attain all NAAQS and included three "tiers" of control measures needed to attain all standards by relying on significant future technology advancement to attain these standards.

- The 1991 AQMP was developed to comply with the CCAA. Shortly after its adoption, the 1991 AQMP was amended to add a control measure containing market incentive programs which was subsequently adopted as South Coast AQMD's Regulation XX - Regional Clean Air Incentives Market (RECLAIM).

- The 1994 AQMP was developed to comply with the CCAA three-year update requirement and to meet the Federal CAA requirement for an ozone SIP, and included the following:
  - All geographical areas under the jurisdiction of the South Coast AQMD, compared to just the Basin;
  - While the basic control strategies remained the same, an updated reference to the three-tiered structure of control measures, which were previously referred to as Tiers I, II, and III, was replaced with short-term, intermediate-term, and long-term;
  - Updated and refined control measures carried over from the 1991 AQMP;
  - Best Available Control Measure PM10 Plan;
  - Ozone Attainment Demonstration Plan;
  - Amendments to the federal Reactive Organic Compound Rate-of-Progress Plan (also referred to as the VOC Rate-of-Progress Plan); and
  - Attainment Demonstration Plans for the federal PM10, NO2, and CO air quality standards.

- The 1997 AQMP was designed to comply with the three-year update requirements specified in the CCAA as well as to include an attainment demonstration for PM10 as required by the Federal CAA. When compared to the 1994 AQMP relative to ozone, the 1997 AQMP contained the following changes to the control strategies:
  - Less reliance on transportation control measures (TCMs);
  - Less reliance on long-term control measures that rely on future technologies as allowed under Federal CAA Section 182(e)(5); and
  - Removal of other infeasible control measures and indirect source measures that had been substantially impacted by the state legislature in enacting new provisions in the Health and Safety Code.

- The 1999 Amendment to the 1997 AQMP revised the ozone portion of plan in response to U.S. EPA's partial disapproval, a settlement of litigation by environmental groups challenging the 1997 AQMP, and to address the state's requirements for a triennial plan update. The 1999 amendment was approved by U.S. EPA in 2000 and provided the following:
  - Greater emission reductions in the near-term than would occur under the 1997 AQMP;
  - Early adoption of the measures that would otherwise be contained in the next three-year update of the AQMP; and
  - Additional flexibility relative to substituting new measures for infeasible measures and recognition of the relevance of cost effectiveness in determining feasibility.

- The 2003 AQMP was approved and adopted by the South Coast AQMD Governing Board but was never fully approved by the U.S. EPA as part of the SIP. Instead, the 2003 AQMP was partially approved and partially disapproved by U.S. EPA, based on the California Air Resources Board's (CARB's) withdrawal of mobile source measures after the 1-hour ozone standard was revoked. The 2003 AQMP addressed the following control strategies:

- Attaining the federal PM10 ambient air quality standard for the Basin and Coachella Valley and these portions were initially approved by the U.S. EPA but then the attainment demonstration was disapproved for both areas after the CARB withdrew its measures;
- Attaining the federal 1-hour ozone standard;
- Control measures from the 1997 AQMP and 1999 AQMP that were not yet implemented;
- Revisions to the Post-1996 VOC Rate-of-Progress Plan and SIP for CO; and
- Initial analysis of emission reductions necessary to attain the PM2.5 and 8-hour ozone standards.

- The 2007 AQMP focused on reducing ozone and PM10. When CARB adopted their State Strategy for the 2007 SIP, they also adopted the 2007 AQMP as part of the SIP which was forwarded to U.S. EPA for approval. The following summarizes the major components of the 2007 AQMP:
  - Used the most current air quality setting at the time (i.e., 2005 data);
  - Updated emission inventories using 2002 as the base year, which also incorporated measures adopted since adopting the 2003 AQMP;
  - Updated emission inventories of stationary and mobile on-road and off-road sources;
  - 2003 AQMP control measures not yet implemented (eight of the control measures originally contained in the 2003 AQMP were updated or revised for inclusion into the 2007 AQMP);
  - 24 new measures which were incorporated into the 2007 AQMP based on replacing the South Coast AQMD's long-term control measures from the 2003 AQMP with more defined or new control measures and control measure adoption and implementation schedules;
  - South Coast AQMD's recommended control measures to reduce emissions from sources that are primarily under state and federal jurisdiction, including on-road and off-road mobile sources, and consumer products;
  - Southern California Association of Governments' (SCAG) regional transportation strategy and control measures; and
  - Analysis of emission reductions necessary and attainment demonstrations to achieve the federal 8-hour ozone and PM2.5 air quality standards.

- The March 2011 Revisions to the 2007 PM2.5 and Ozone SIP for the Basin and Coachella Valley were adopted which consisted of the following:
  - Updated implementation status of South Coast AQMD control measures necessary to meet the 2015 PM2.5 attainment date;
  - Revised the control measure adoption schedule;
  - Changed the emission inventory resulting from CARB's December 2010 revisions to the on-road truck and off-road equipment rules; and
  - A South Coast AQMD commitment to its "fair share" of additional NOx emission reductions, if needed, in the event U.S. EPA does not voluntarily accept the "federal assignment."

- The October 2011 Further Revisions to the PM2.5 and Ozone SIP for the Basin and Coachella Valley followed a three-prong approach for identifying contingency measures which:
  - Identified equivalent emission reductions achieved through improvements in air quality;
  - Relied on committed emissions reductions for the 2007 ozone plan; and
  - Quantified excess emissions reductions achieved by existing rules and programs that were not originally included in the 2007 PM2.5 SIP.

- The 2012 AQMP was primarily designed to meet all requirements to demonstrate attainment of the 2006 24-hour PM2.5 standard of 35 micrograms per cubic meter ($\mu g/m^3$). In 2013, Control Measure IND-01 – Backstop Measure for Indirect Sources of Emissions from Ports and Port-Related Facilities, was incorporated into the Final 2012 AQMP. The following summarizes the major components of the 2012 AQMP :
  - Incorporated the most current science and analytical tools;
  - Contained a comprehensive strategy aimed at controlling pollution from stationary (point) sources, on-road and off-road mobile sources and area sources;
  - Demonstrated attainment with the federal 24-hour PM2.5 standard by 2014 in the Basin through adoption of control measures;
  - Updated the U.S. EPA approved 8-hour ozone control plan with new measures designed to reduce reliance on Federal CAA Section 182 (e)(5) long-term measures for achieving NOx and VOC reductions;
  - Addressed several state and federal planning requirements by incorporating new scientific information, primarily in the form of updated emissions inventories, ambient measurements, and new meteorological air quality models;
  - Updated the air quality status of the SSAB in the Coachella Valley;
  - Discussed the emerging issues of ultrafine particles and near-roadway exposures;
  - Analyzed the energy supply and demand issues that face the Basin and their relationship to air quality;
  - Demonstrated attainment with the 1-hour ozone standard and vehicle miles travelled (VMT) emission offsets, per U.S. EPA requirements based on the court case of Association of Irritated Residents (AIR) vs. U.S. EPA (2012); and
  - Specified measures to further implement the ozone strategy in the 2007 AQMP.

- The 2015 Supplement to the 24-Hour PM2.5 (35 $\mu g/m^3$) SIP demonstrated attainment with the 2006 24-hour PM2.5 NAAQS by 2015 pursuant to the Federal CAA (Title 1, Part D, Subpart 4) by including a discussion of the effects of the drought on the attainment date, in response to a court case. The 2015 Supplement also included new transportation conformity budgets for 2015.

- In January 2016, the South Coast AQMD requested and received from the U.S. EPA a redesignation of the 24-hour PM2.5 standard to serious nonattainment area with a new attainment deadline of 2019.

- The 2016 AQMP was developed to demonstrate attainment of the 1-hour and 8-hour ozone NAAQS, as well as the latest 24-hour and annual PM2.5 standards. The following summarizes the major components of the 2016 AQMP:
  - Promoted emission reductions in criteria pollutants, GHG, and toxic air contaminants to improve human health in the region;
  - Recognized the importance of reducing emissions from mobile sources and worked closely with CARB and the U.S. EPA to reduce mobile source emissions, especially along transportation corridors and related to goods movement;
  - Encouraged transition of vehicles, building, and industrial facilities to cleaner technologies; and
  - Included TCMs developed by SCAG from the 2016 Regional Transportation Plan/Sustainable Communities Strategies (RTP/SCS).

- The 2018 Update to the 1-hour Ozone Standard Attainment Demonstration from the 2016 AQMP included: 1) a revised emission inventory; 2) revised air quality modeling; and 3) an updated attainment strategy to be consistent with the final emissions inventory in the 2016 AQMP that was used for the 8-hour ozone and PM2.5 standards attainment demonstrations.

- The November 2019 Contingency Measure Plan addressed the contingency measure requirements for the 1997 8-hour ozone NAAQS for the Basin so as to achieve the 108 tons per day (tpd) of NOx reductions allocated to Federal CAA Section 182(e)(5) measures needed to attain the 1997 8-hour ozone standard in 2023 and includes: 1) newly identified emission reduction strategies; 2) additional incentive funding to further accelerate the transition to the cleanest available technologies; and 3) federal measures and/or significant level of funding to achieve the required reductions from sources under federal responsibility.

- The 2019 Reclassification of the Coachella Valley from a Severe nonattainment area to an Extreme nonattainment area for the 1997 8-hour ozone standard extended the attainment date to June 15, 2024 from June 15, 2019.

- The June 2020 Reasonably Available Control Technology (RACT) Demonstration and Emissions Statement Certification for 2015 8-Hour Ozone Standard was developed to be consistent with the Federal CAA and the U.S. EPA's guidelines, and is required as part of the 2022 AQMP.

- The December 2020 the Coachella Valley Extreme Area Plan was developed to demonstrate attainment of the 1997 8-hour ozone standard before the required deadline of June 15, 2024, and to address the new Federal CAA requirements for the Extreme nonattainment areas. In addition, the December 2020 Attainment Plan for the 2006 24-hour PM2.5 Standard for the Basin was developed to demonstrate attainment of the 2006 24-hour PM2.5 standard by 2023 and to address other federal Clean Air Act requirements through the continued implementation of existing regulations and programs.

- In June 2021, the 2021 PM10 Maintenance Plan for the Basin was developed because the Basin was redesignated in 2013 as attainment for the 24-hour average PM10 NAAQS and the Federal CAA requires California to submit a subsequent maintenance plan eight years

after an attainment redesignation to provide for maintenance of the NAAQS for the next 10 years after the period covered by the first maintenance plan (2023-2033). The 2021 PM10 Maintenance Plan included a maintenance demonstration that the Basin will continue to attain the standard, verification of continued attainment, a commitment to a future monitoring network, a contingency plan, and provisions for contingency plan implementation.

- In November 2021, the 2021 Redesignation Request and Maintenance Plan for the 2006 and 1997 PM2.5 Standards for the Basin sought to redesignate the Basin as attainment, and included the following: 1) a maintenance demonstration that the Basin will maintain attainment through 2035; 2) a mechanism to verify continued attainment; 3) a commitment to continue monitoring PM2.5; 4) a contingency plan in case the standard is violated in the future; and 5) provisions for contingency plan implementation.

2.2.2 PROGRESS IMPLEMENTING THE 2016 AQMP

The 2016 AQMP was adopted in March 2017, approved by CARB the same month, and submitted to the U.S. EPA in April 2017. The 2016 AQMP included a comprehensive control strategy with specific control measures to attain ozone and PM2.5 NAAQS. The ozone portion and the 24-hour PM2.5 standard elements of the 2016 AQMP have been approved by the U.S. EPA into the SIP. The "moderate" annual PM2.5 elements of the 2016 AQMP have also been approved by the U.S. EPA, and in 2020, the U.S. EPA approved the Basin's re-designation as a "serious" nonattainment area for the annual PM2.5 standard. These approvals include SIP revisions submitted in response to the U.S. EPA's initial findings.

Since its adoption, the South Coast AQMD has continued to implement the controls described in the 2016 AQMP control strategy. Progress toward fulfilling the 2016 AQMP commitments is tracked by emissions reductions that have occurred and are expected to occur from the implementation of adopted regulations. A particular area of focus the past several years has been on implementing Control Measure CMB-05 for transitioning facilities from the RECLAIM Program to Best Available Retrofit Control Technology (BARCT) level controls. That transition is expected to achieve five tons per day of NOx reductions in addition to the reduction on the RECLAIM allocation cap as specified in the 2015 Regulation XX amendment. The recent amendments of rules applicable to the RECLAIM facilities also address in part the requirements set by the AB 617 Community Emissions Reductions Programs. From 2018 to 2021, a total of twelve rules (Rules 1109.1, 1110.2, 1117, 1118.1, 1134, 1135, 1146, 1146.1, 1146.2, 1147.1, 1150.3, and 1179.1) were adopted/amended to establish BARCT NOx emission limits.

With the exception of Rule 1109.1, the total emission reductions resulting from these rules are about 5.9 tons per day, which are anticipated to be achieved by 2024 (reductions from Rule 1118.1 are allocated to CMB-03). Implementation of Rule 1109.1, adopted on November 5, 2021, is estimated to reduce NOx emissions by approximately 7.7 to 7.9 tons per day upon final implementation, with 3.7 to 3.8 tons per day expected by 2023. 2.6 tons per day out of the total 7.7 to 7.9 tons per day reductions will be used to fulfill the RECLAIM shave commitment set by the 2015 amendment of Regulation XX. Furthermore, four additional rules (Rules 1147, 1147.2, 1153.1, and 1159.1) are currently under development and are scheduled for amendment/adoption in calendar year 2022.

Table 1-2 in the 2022 AQMP lists the South Coast AQMD's 2016 AQMP commitments and the control measures or rules that were adopted through 2021. Emission reduction commitments and reductions achieved through adopted measures are based on the emission inventories and milestone years from the 2016 AQMP. The new control strategy and attainment demonstrations in the 2022 AQMP are expected to supersede any previous commitments not achieved and not re-introduced in the proposed control strategy.

TABLE 2.2-1
2022 AQMP Emission Reductions for South Coast AQMD Control Measures (tons/day)

Pollutant	Commitment		Achieved	
	2021	2025	2021	2025
NOx	23.1	31.0	22.3 to 23.1	13.6 to 15.1
VOC	6.4	9.6	2.4	--
PM2.5	TBD	3.3	--	--

Source: Revised Draft 2022 AQMP, Chapter 1, Table 1-2
TBD = to be determined

2.3 AGENCY AUTHORITY

2.3.1 AGENCY AUTHORITY – 2022 AQMP

The 2022 AQMP sets forth emission reduction programs which require the cooperation of all levels of government: local, regional, state, and federal, as well as public engagement. Each level is represented in the AQMP by the appropriate agency or jurisdiction that has the authority over specific emissions sources. Accordingly, each agency or jurisdiction commits to specific planning and implementation responsibilities.

At the federal level, U.S. EPA is charged with establishing emission standards including motor vehicle standards; train, airplane, and ship pollutant exhaust and fuel standards; and regulation of non-road engines less than 175 horsepower. CARB, representing the state level, also oversees development of 2022 AQMP control measures for on-road vehicle emission standards in California; motor vehicle fuel specifications; some off-road source emission standards and fuel standards, including marine vessels; and consumer product standards. At the regional level, the South Coast AQMD is responsible primarily for non-vehicular sources and has limited authority over mobile sources (e.g., fleet regulations, incentives for accelerated vehicle turnover, reduction in average vehicle ridership, etc.). In addition, the South Coast AQMD has lead responsibility for developing stationary, some area, and indirect source control measures and coordinating the development and adoption of the 2022 AQMP. Lastly, at the local level, the cities and counties and their various departments (e.g., harbors and airports) have a dual role related to transportation and land use. Their efforts are coordinated through the regional metropolitan planning organization for the Basin, SCAG, which is responsible for preparing the TCM component of the 2022 AQMP. Interagency commitment and cooperation are keys to success of the 2022 AQMP.

2.3.2 AGENCY AUTHORITY – CEQA

The California Environmental Quality Act (CEQA) is comprised of Public Resources Code Section 21000 *et seq.* and CEQA Guidelines which are codified at Title 14 California Code of Regulations, Section 15000 *et seq.* CEQA requires all potential adverse environmental impacts

of proposed projects be evaluated and methods to reduce or avoid identified significant adverse environmental impacts of these projects be implemented, if feasible. [Public Resources Code Section 21061.1 and CEQA Guidelines Section 15364]. The purpose of the CEQA process is to inform decision makers, public agencies, and interested parties of potential adverse environmental impacts that could result from implementing a proposed project and to identify feasible mitigation measures or alternatives, when an impact is significant.

The proposed adoption of the 2022 AQMP is a discretionary action subject to South Coast AQMD Governing Board consideration, which has the potential for resulting in direct or indirect change to the environment and, therefore, is considered a "project" as defined by CEQA. [CEQA Guidelines Section 15378]. The lead agency is the "public agency that has the principal responsibility for carrying out or approving a project that may have a significant effect upon the environment." [Public Resources Code Section 21067]. Since the South Coast AQMD Governing Board has the primary responsibility for approving the entire project as a whole, the South Coast AQMD is the most appropriate public agency to act as lead agency for the proposed project. [CEQA Guidelines Section 15051(b)].

A Program Environmental Impact Report (Program EIR) for the 2022 AQMP is considered to be the appropriate document pursuant to CEQA Guidelines Section 15168(a)(3), because the 2022 AQMP constitutes a series of actions that can be characterized as one large project in connection with the issuance of rules, regulations, plans, or other general criteria required to govern the conduct of a continuing program. The use of a Program EIR provides several advantages including:

- Providing an occasion for a more exhaustive consideration of effects and alternatives than would be practical in an EIR on an individual action;
- Ensuring a consideration of cumulative impacts that might be slighted in a case-by-case analysis;
- Avoiding duplicative reconsideration of basic policy considerations;
- Allowing consideration of broad policy alternatives and program-wide mitigation measures at an early time when the Lead Agency has greater flexibility to deal with basic problems of cumulative impacts; and
- Allowing its use with a later activity if the later activity is within the scope of the project analyzed in the Program EIR without requiring further environmental documents.

As the lead agency for the proposed project, South Coast AQMD released the Notice of Preparation/Initial Study (NOP/IS) for the 2022 AQMP on May 13, 2022 for a 32-day public review and comment period. A copy of the NOP/IS can be found in Appendix A. Comments and responses to comments received on the NOP/IS can be found in Appendix B.

2.4 PROJECT LOCATION

The proposed project is located with South Coast AQMD's jurisdiction, which covers an area of approximately 10,743 square miles, and includes the four-county Basin (all of Orange County and the non-desert portions of Los Angeles, Riverside and San Bernardino counties), and the Riverside County portion of the SSAB and the non-Palo Verde, Riverside County portion of the MDAB. The Basin is a subarea of South Coast AQMD's jurisdiction; it is bounded by the Pacific

Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. The Riverside County portion of the SSAB, which is a federal nonattainment area known as the Coachella Valley Planning Area, is bounded by the San Jacinto Mountains to the west and spans the eastern boundary of the Coachella Valley up to the Palo Verde Valley (see Figure 2-1).

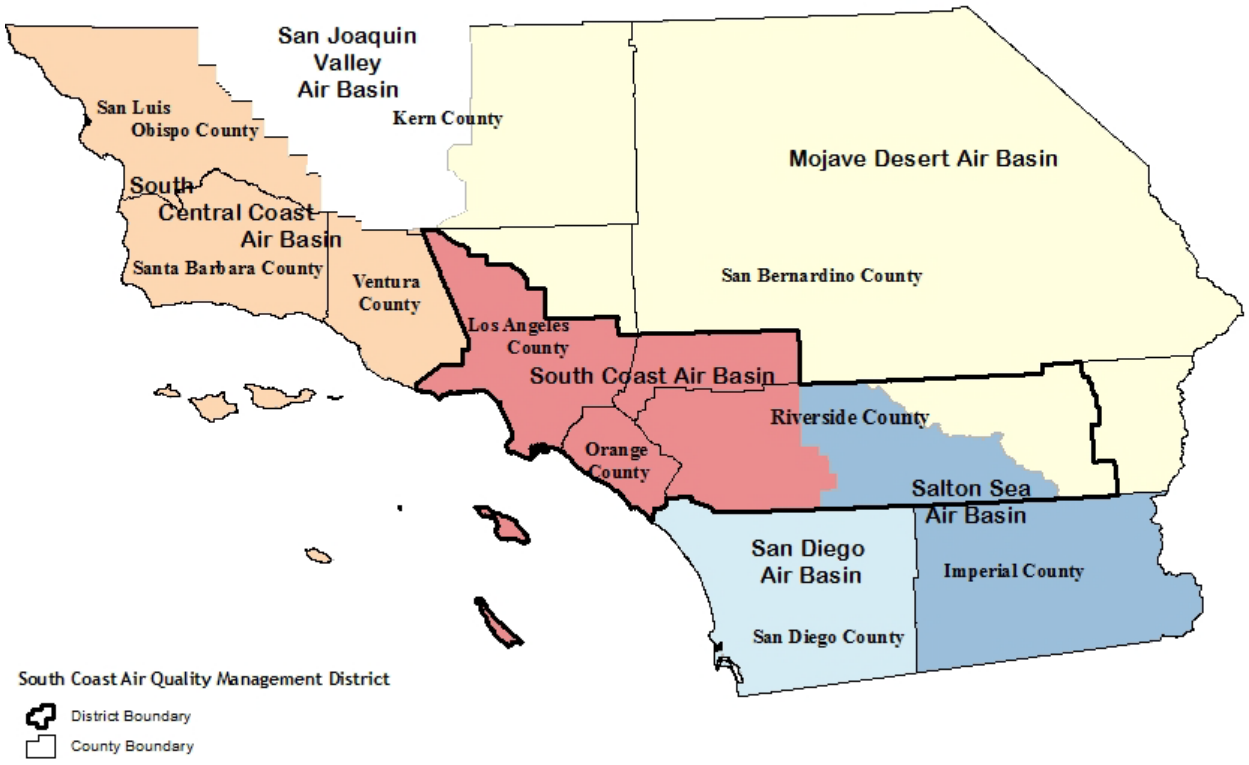


FIGURE 2-1
Southern California Air Basins and South Coast AQMD's Jurisdiction

2.5 DEVELOPMENT OF 2022 AQMP AND PROPOSED ATTAINMENT STRATEGY

In 2015, the U.S. EPA strengthened the 8-hour NAAQS for ground-level ozone by lowering the primary and secondary ozone standard levels to 70 ppb. The Basin is classified as an "extreme" nonattainment area and the Coachella Valley is classified as a "severe-15" nonattainment area for the 2015 ozone NAAQS. The South Coast AQMD is requesting a voluntary reclassification of the Coachella Valley Portion of the Salton Sea Air Basin from "severe-15" to "extreme" nonattainment for the 2015 8-hour ozone standard, with an extension of the ozone attainment date from August 3, 2033 to August 3, 2038. The Coachella Valley is also pending a voluntary reclassification from "severe" to "extreme" nonattainment for the 2008 8-hour ozone standard which ~~is scheduled to be considered~~was approved by the South Coast AQMD Governing Board at the public hearing ~~scheduled for~~ held on November 4, 2022~~ (subject to change)~~. The 2022 AQMP focuses on attaining the 2015 8-hour ozone NAAQS by 2037, and addressing the state Clean Air Act requirements.

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest available new emission sources. The proposed control measures in the 2022 AQMP focus on maximizing the implementation of existing zero emission and low NOx technologies. It also recognizes that new low NOx and zero emitting technologies and ultra-low NOx technologies may still need to be invented or may not yet be commercially available to achieve the necessary reductions in order to achieve the ambient air quality standards for ozone (e.g., 70 ppb for both the federal and state standards). Because NOx emissions are a precursor to the formation of ozone and a key component to reduce ozone levels low enough to meet the standard, the 2022 AQMP primarily focuses on achieving NOx emission reductions in order to attain the ozone standard. Preliminary analyses indicate that in order to achieve the ozone standards by 2037, approximately 67 percent of additional NOx emission reductions will be needed, above and beyond the previously adopted measures in the 2016 AQMP.

VOC emissions are also a precursor to the formation of ozone such that achieving emission reductions of VOCs can help contribute to the overall goal of attaining the ozone standard and reduce exposure to harmful air pollutants. As such, some of the proposed control measures in the 2022 AQMP focus on achieving VOC emission reductions. However, VOC emission reductions are much less effective at reducing ozone at the low NOx levels needed for attainment.

Traditional air quality planning relies on a combination of controlling emissions at the tailpipe or exhaust stack, new engine technologies, and improvements to existing fuels. These traditional approaches are effective to an extent but since most affected sources are already equipped with NOx control equipment, traditional approaches are not expected to be able to achieve the additional reduction of 71 percent needed to achieve the ozone standard. Under the 2022 AQMP, the proposed control measures would:

- accelerate the replacement of high-emitting mobile sources with zero emission or low NOx technologies;
- encourage the use of lower-emitting alternative fuels;
- affect stationary sources at existing commercial/industrial facilities and residential developments;
- develop incentives to remove/replace higher-emitting equipment;
- establish greater control of industrial stationary sources;
- control indirect sources of emissions;
- improve detection and procedures; and
- establish educational and outreach programs.

In order to attain the ozone standards, the majority of NOx emission reductions must come from mobile sources, including ships, aircraft, and locomotive engines, all of which are primarily regulated by federal and international laws, depending on the applicable jurisdiction, with limited authority by CARB at the state level and the South Coast AQMD at the local level. Attainment is not possible without significant reductions from these sources. The South Coast AQMD will continue to work closely with CARB in their efforts to further control mobile source emissions where federal or state actions do not meet regional needs.

2.6 PROJECT OBJECTIVES

CEQA Guidelines Section 15124(b) requires an EIR to include a statement of objectives, which describes the underlying purpose of the proposed project. The purpose of the statement of objectives is to aid the lead agency in identifying alternatives and the decision-makers in preparing a statement of findings and a statement of overriding considerations, if necessary. The objectives of the proposed 2022 AQMP are summarized in the following bullet points. These objectives may be refined or modified as part of the Program EIR preparation process.

- Reduce ozone and its precursors on an expeditious implementation schedule.
- Demonstrate attainment of the 2015 federal 8-hour federal ozone standard (70 ppb) in the South Coast Air Basin by 2037.
- Redesignate the Coachella Valley to "extreme" nonattainment and demonstrate attainment of the 2015 federal 8-hour federal ozone standard (70 ppb) by 2037.
- Reduce the population's exposure to nonattainment pollutants (e.g., ozone and ozone precursor pollutants) according to the prescribed schedule and minimize adverse health impacts.
- Update planning assumptions and the best available information such as SCAG's 2020 Connect SoCal RTP/SCS.
- Utilize SCAG's growth forecast to project future baseline emissions. Update emission inventories using 2018 as the base year and incorporate emission reductions achieved from all applicable rules and regulations and the latest demographic forecasts.
- Achieve widespread adoption of zero emission and low NOx technologies across all mobile sectors and stationary sources large and small.
- Seek substantial funding for incentives to implement early deployment and commercialization of zero and low NOx emission technologies.
- Update any remaining control measures from the 2016 AQMP and incorporate into the 2022 AQMP as appropriate.
- Calculate and take credit for co-benefits from other planning efforts (e.g., GHG reduction targets, energy efficiency, and transportation).
- Prioritize distribution of incentive funding in environmental justice areas and see opportunities to focus benefits on the most disadvantaged communities.
- Continue to work closely with businesses and industry groups to identify the most cost effective and efficient path to meeting clean air goals while being sensitive to economic concerns.
- Develop a strategy with fair-share emission reductions at the federal, state, and local levels.
- Comply with federal contingency measure requirements.

- Enhance the socioeconomic analysis and pursue the most efficient and cost-effective path to achieve multi-pollutant and multi-deadline targets.
- Prioritize regulatory opportunities and innovative non-regulatory "win-win" approaches for emission reduction.

2.7 PROJECT DESCRIPTION

The 2022 AQMP control measures consist of three main components: 1) the stationary and mobile source control measures that would be implemented by the South Coast AQMD; 2) CARB-developed control measures and strategies from CARB's 2022 Strategy for the State Implementation Plan which include state and federal mobile source control measures; and 3) SCAG-developed TCMs from SCAG's 2020 RTP/SCS.

The 2022 AQMP control measures primarily rely on the acceleration of zero emission and low NOx technologies, incentive programs, and advanced technologies. A summary of the proposed control measures is provided in the following subsections. The following bullet points summarize the major components of the 2022 AQMP:

- The air pollutant emissions baseline (e.g., 2018 data);
- Updated emission inventories using 2018 as the baseline year and reflecting control measures that have been implemented since the 2016 AQMP;
- New South Coast AQMD measures for stationary and mobile sources to be incorporated into the 2022 AQMP;
- SCAG's 2020 RTP/SCS based on Final 2020-2045 RTP/SCS, and related TCMs;
- CARB's Proposed 2022 State Strategy;
- Analysis of emission reductions necessary to achieve the federal 8-hour ozone air quality standard;
- Overview of state and federal planning requirements; and,
- Implementation schedule for adoption of the proposed control measures.

2.7.1 SOUTH COAST AQMD STATIONARY SOURCE CONTROL MEASURES

A control measure is an emission reduction program based on specific technologies and methods identified for potential implementation to achieve reductions in air pollutant emissions to attain an air quality standard. The proposed stationary source ozone measures are designed to assist to attain the 2015 8-hour ozone standard (70 ppb) via reductions in emissions of NOx and VOC. Since NOx and VOC are primary precursor pollutants to form ground-level ozone, the stationary source ozone measures are identified by the primary pollutant targeted to achieve emission reductions (e.g., primarily NOx but some focus on VOC). These measures target a number of source categories, including Combustion Sources (CMB), Energy and Climate Change Programs (ECC), Petroleum Operations and Fugitive VOC Emissions (FUG), Coatings and Solvents (CTS), Compliance Flexibility Programs and Public Outreach (FLX), Multiple Component Sources (MCS), and Biogenic Sources (BIO). Combustion Sources are further divided into

Residential Combustion Sources (R-CMB), Commercial Combustion Sources (C-CMB), and Large Combustion Sources (L-CMB). Each control measure may rely on several control methods. For the 2022 AQMP, the South Coast AQMD proposed a total of 48 control measures. Out of the 48 proposed control measures, 30 target reductions from stationary sources with the majority anticipated to be developed in the next several years and implemented prior to 2037. Table 2.7-1 provides a list of the South Coast AQMD proposed ozone measures for stationary sources along with the proposed adoption date, proposed implementation timeframe, and emission reductions in 2032 and 2037.

TABLE 2.7-1
South Coast AQMD Proposed Stationary Source 8-Hour Ozone Control Measures

Control Measure Number	Control Measure Title	Proposed Adoption Date	Proposed Implementation Timeframe	Emission Reductions (tpd) (2032/2037)
R-CMB-01	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances - Residential Water Heating [NOx]	2024	2029	0.46 / 1.25
R-CMB-02	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Residential Space Heating	2024	2029	0.44 / 1.17
R-CMB-03	Emission Reductions from Residential Cooking	2024	2029	0.29 / 0.79
R-CMB-04	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Residential Other Combustion Sources	2024	2029	1.15 / 3.09
C-CMB-01	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances - Commercial Water Heating [NOx]	2025	2031	0.04 / 0.25
C-CMB-02	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances - Commercial Space Heating [NOx]	2025	2031	0.04 / 0.21
C-CMB-03	Emission Reductions from Commercial Cooking Devices [NOx]	2025	2031	0.21 / 0.64
C-CMB-04	Emission Reductions from Small Internal Combustion Engines [NOx]	2025	2026	0 / 2.25
C-CMB-05	NOx Reductions from Small Miscellaneous Commercial Combustion Equipment (Non-Permitted) [NOx]	2027	2037	0 / 5.14
L-CMB-01	NOx Reductions from RECLAIM Facilities [NOx]	2022	2025	0 / 0.31
L-CMB-02	Reductions from Boilers and Process Heaters (Permitted) [NOx]	2027	2037	0 / 0.45
L-CMB-03	NOx Emission Reductions from Permitted Non-Emergency Internal Combustion Engines [NOx]	2026	2031	0 / 0.34

TABLE 2.7-1 (concluded)
South Coast AQMD Proposed Stationary Source 8-Hour Ozone Control Measures

Control Measure Number	Control Measure Title	Proposed Adoption Date	Proposed Implementation Timeframe	Emission Reductions (tpd) (2032/2037)
L-CMB-04	Emission Reductions from Emergency Standby Engines (Permitted) [NOx, VOC]	2025	2031	0.0 / 2.04 [NOx] 0.0 / 0.1 [VOC]
L-CMB-05	NOx Emission Reductions from Large Turbines [NOx]	2027	2037	0 / 0.07
L-CMB-06	NOx Emission Reductions from Electric Generating Facilities [NOx]	2027	2037	0.09 / 0.91
L-CMB-07	Emission Reductions from Petroleum Refineries [NOx]	2027	2037	0 / 0.89
L-CMB-08	NOx Emission Reductions from Combustion Equipment at Landfills and Publicly Owned Treatment Works [NOx]	2025	2037	0 / 0.33
L-CMB-09	NOx Reductions from Incinerators [NOx]	2024	2029	0 / 0.90
L-CMB-10	NOx Reductions from Miscellaneous Permitted Equipment [NOx]	2027	2037	0 / 1.01
ECC-01	Co-Benefits from Existing and Future Greenhouse Gas Programs, Policies, and Incentives [NOx]	2023	2023	TBD / TBD[b]
ECC-02	Co-Benefits from Existing and Future Residential and Commercial Building Energy Efficiency Measures [NOx, VOC]	2024	2024	TBD / TBD
ECC-03	Additional Enhancements in Reducing Existing Residential Building Energy Use [NOx, VOC]	2025	2029	TBD / TBD
FUG-01	Improved Leak Detection and Repair [VOC]	2023	2028	0.6 / 0.6
FUG-02	Emission Reductions from Industrial Cooling Towers [VOC]	2026	2031	TBD / TBD
CTS-01	Further Emission Reductions from Coatings, Solvents, Adhesives, and Lubricants [VOC]	2023	2031	0.5 / 0.5
FLX-02	Stationary Source VOC Incentives [VOC]	2024	2025	TBD / TBD
BIO-01	Assessing Emissions from Urban Vegetation [VOC]	2025	2025	TBD / TBD
MCS-01	Application of All Feasible Measures [All Pollutants]	2023	2037	TBD / TBD
MCS-02	Wildfire Prevention [NOx, PM]	2026	2031	N/A / N/A
FLX-01	Improved Education and Public Outreach [All Pollutants]	2023	2023	N/A / N/A

Key: tpd = tons per day; TBD = to be determined; N/A = not applicable

The following text provides a brief description of the proposed control measures presented in

Table 2.7-1. Details of the following control measures are in Appendix IV-A[6] of the 2022 AQMP.

R-CMB-01: Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Residential Water Heating: This control measure seeks to reduce NOx emissions from residential building water heating sources that are subject to Rule 1121 – Control of Oxides of Nitrogen (NOx) from Residential Type, Natural Gas-Fired Water Heaters. The measure proposes to: 1) develop a rule to require zero emission water heating units for installations in both new and existing residences; and 2) allow low NOx technologies as a transitional alternative when installing a zero emission unit is determined to be infeasible (e.g., colder climate zones, or architecture design obstacles). This control measure would include incentive funds to facilitate the transition to zero emission technologies and promote further emission reductions earlier than required. A primary zero emission residential water heating technology is currently available with the all-electric heat pump water heater.

R-CMB-02: Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Residential Space Heating: This control measure seeks to reduce NOx emissions from residential space heating sources regulated by Rule 1111 – Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces (Rule 1111). This control measure proposes to: 1) develop a rule to require zero emission space heating units for installations in both new and existing residences; and 2) allowing low NOx technologies as a transitional alternative when installing a zero emission unit is determined to be infeasible. This control measure would also provide incentive funds to facilitate adoption of zero emission technologies that would promote further emission reductions earlier than required.

R-CMB-03: Emissions Reductions from Residential Cooking Devices: This control measure seeks to reduce NOx emissions from residential cooking devices including stoves, ovens, griddles, broilers, and others in new and existing buildings. Replacing gas burners with electric cooking devices, induction cooktops, or low NOx gas burner technologies will reduce NOx emissions. NOx reductions will be pursued through a combination of regulatory approaches and incentive programs. Proposed method of control consists of two steps: step one includes a technology assessment of emissions testing of various cooking devices to establish emissions rates. Once emissions rates are defined, step two supports future rule development and incentive programs. The rule would apply to manufacturers, distributors, and installers establishing emission limits. The incentive programs would provide funds to encourage and promote adoption of zero and low NOx emission technologies.

R-CMB-04: Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Residential Other Combustion Sources: This control measure seeks to reduce NOx emissions from residential combustion sources that are not water heating (see R-CMB-01), space heating (see R-CMB-02) and cooking equipment (see R-CMB-03). The types of sources subject to Control Measure R-CMB-04 are miscellaneous, but are primarily comprised of natural gas and liquefied petroleum gas (LPG) fired swimming pool heaters, laundry dryers, and barbecue grills. The measure proposes to: 1) develop a rule to require zero emission technologies for some emission sources in both new and existing residences; and 2) allow low NOx

[6] Revised Draft 2022 AQMP Appendix IV-A: South Coast AQMD's Stationary and Mobile Source Control Measures. http://www.aqmd.gov/2022aqmp.

technologies as an alternative for the rest of emission sources. Mitigation fees may be required for certain lower NOx technology applications which will be evaluated during the future rulemaking process. During the rulemaking, staff will assess the universe of equipment. Incentive funds will be considered to facilitate adoption of zero emission technologies that would promote further emission reductions earlier than required.

C-CMB-01: Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Commercial Water Heating: This control measure seeks to reduce NOx emissions from commercial building water heating sources that are subject to Rule 1146.2 – Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters (Rule 1146.2). The measure proposes to: 1) develop a rule to require zero emission commercial water heating units for installations in both new and existing buildings; and 2) allow low NOx technologies as a transitional alternative when installing a zero emission unit is determined to be infeasible. This control measure would also provide incentive funds to facilitate adoption of zero emission technologies that would promote further emission reductions earlier than required.

C-CMB-02: Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Commercial Space Heating: This control measure seeks to reduce NOx emissions from commercial building space heating sources. (i.e., forced air furnaces) with a rated heat input capacity between 175,000 and 2,000,000 British Thermal Units per hour (BTU/hr). Those sources are currently not subject to the South Coast AQMD NOx rules. The measure proposes to: 1) develop rules to require zero emission commercial space heating units for installations in both new and existing buildings; and 2) allow low NOx technologies as a transitional alternative when installing a zero emission unit is determined to be infeasible. This control measure would also provide incentive funds to facilitate adoption of zero emission technologies that would promote further emission reductions earlier than required. Heat pumps have been broadly applied in commercial applications as the primary zero emission technology.

C-CMB-03: Emission Reductions from Commercial Cooking Devices: This control measure seeks to reduce NOx emissions from commercial cooking devices including stoves, ovens, griddles, broilers, and others in new and existing buildings. Replacing gas burners with electric cooking devices, induction cooktops, or low NOx gas burner technologies will reduce NOx emissions. NOx reductions will be pursued through a combination of regulatory approaches and incentive programs. Proposed method of control consists of two steps: step one includes a technology assessment of emissions testing of various cooking devices to establish emissions rates. Once emissions rates are defined, step two supports future rule development and incentive programs. The rule will apply to manufacturers, distributors, and installers establishing emission limits. The incentive programs would provide funds to encourage and promote adoption of zero and low NOx emission technologies.

C-CMB-04: Emission Reductions from Small Internal Combustion Engines: This control measure seeks to reduce NOx emissions from non-permitted engines rated 50 brake horsepower (bhp) or less. Such engines may be used in generators, pumps, or air compressors. Operators of these engines can include private residences or business and governmental entities. Because these small engines are not subject to South Coast AQMD regulations, approaches to reducing emissions will focus on education and outreach and incentive programs to encourage consumers to purchase zero emission technologies. Improved technologies and resulting cost reductions are anticipated to ease the transition towards zero emission alternative technologies.

C-CMB-05: NOx Reductions from Small Miscellaneous Commercial Combustion Equipment (Non-Permitted): This control measure seeks to reduce NOx emissions by replacing combustion with zero and low NOx emission technologies on miscellaneous unpermitted combustion equipment. Such equipment includes ovens, furnaces, dryers, and other fuel combustion equipment too small to require a permit. Zero emission technologies, including electrification will be used where and when such technology is feasible and cost-effective. This control measure will develop rules to require zero and low NOx emission technologies at point-of-sale, establish incentive programs to facilitate adoption of cleaner technologies, and reassess permit and source-specific exemption thresholds.

L-CMB-01: NOx Reductions for RECLAIM Facilities: This control measure reduces NOx emissions by transitioning NOx RECLAIM facilities to a command-and-control regulatory structure requiring BARCT level controls. Source categories covered by this control measure include metal melting and heating furnaces, food ovens, and nitric acid tanks. The following rules would implement this control measure: Proposed Amended Rule 1147.2 – NOx Reductions from Metal Melting and Heating Furnaces (PAR 1147.2); Proposed Amended Rule 1153.1 – Emissions of Oxides of Nitrogen from Commercial Food Ovens (PAR 1153.1); and Proposed Rule 1159.1 – Control of NOx Emissions from Nitric Acid Tanks (PR 1159.1). Staff is proposing to evaluate a variety of different NOx control technologies depending on the type of NOx source.

L-CMB-02: Reductions from Boilers and Process Heaters (Permitted): This control measure reduces NOx emissions by replacing or retrofitting boilers and process heaters used in industrial, institutional, and commercial operations with zero and low NOx emission technologies. It would apply to units with a rated heat input greater than or equal to 2 million British Thermal Units per hour (MMBtu/hr). Boilers and process heaters used in industrial, institutional, and commercial operations with a rated heat input greater than or equal to 2 MMBTU/hr are currently regulated under Rules 1146 and 1146.1. This control measure will establish rules to set standards for new equipment, replacements, or retrofits of boilers and process heaters.

L-CMB-03: NOx Emission Reductions from Permitted Non-Emergency Internal Combustion Engines: This control measure targets emission reductions from permitted non-emergency internal combustion engines rated over 50 bhp regulated by Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines (Rule 1110.2). Low NOx and zero emission technologies may be available in the future and will be evaluated to determine feasibility of implementation.

L-CMB-04: Emission Reductions from Emergency Standby Engines (Permitted): This control measure seeks reductions of NOx emissions from emergency standby engines rated over 50 bhp. Over 12,000 internal combustion engines are permitted for emergency standby power in the South Coast AQMD, however due to the essential nature, limited operations of these engines, and high replacement costs, multiple approaches are proposed to reduce emissions from this source category. The approaches involve an education and outreach program to encourage the transition to zero-emission technologies. Regulatory strategies include replacing older, higher emitting engines with cleaner engines or with alternative technologies, requiring the use of lower emission fuels, and a future prohibition of the use of internal combustion engines for emergency backup power. As alternative technologies mature and new technologies emerge, the South Coast AQMD will undertake rulemaking to maximize emission reductions utilizing zero emission

equipment where cost-effective and feasible and low NOx emission equipment in all other applications.

L-CMB-05: NOx Emission Reductions from Large Turbines: This control measure aims to reduce NOx from turbines in the South Coast AQMD subject to Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines (Rule 1134). Fuel cells and electrification are ways to shift away from combustion sources generating NOx emissions, wherever feasible. As older higher emitting turbines reach the end of their equipment life, it is expected that some facilities will opt to replace turbines with fuel cells or electrify facility operations.

L-CMB-06: NOx Emission Reductions from Electricity Generating Facilities: This control measure reduces NOx emissions from electric generating units regulated by Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities (Rule 1135). This measure proposes to develop a rule to implement low NOx and zero emission technologies at electricity generating facilities. The target of this approach is to replace boiler units with lower-emitting turbines, implement zero emission technologies such as fuel cells or electrification for 10 percent of gas-fired sources and other lower NOx emission technologies for the rest of gas-fired sources, and require stricter emission requirements from diesel internal combustion engines.

L-CMB-07: Emission Reductions from Petroleum Refineries: The goal of this measure is to assess and identify potential actions to further reduce NOx emissions by 20 percent for large refinery heaters and boilers with a maximum rated heat input of 40 MMBTU/hour. This would be accomplished by developing a rule requiring a lower NOx concentration limit of two parts per million (ppm). South Coast AQMD staff identified three potential technological approaches to further reduce emissions for the large heaters and boilers category. The three approaches include next-generation ultra-low NOx burners, advanced SCR, and transition to zero emission technology.

L-CMB-08: NOx Emission Reductions from Combustion Equipment at Landfills and Publicly Owned Treatment Works: This control measure aims to reduce NOx emissions through a regulatory approach. The source categories for this control measure are biogas fueled combustion equipment, specifically boilers, turbines, and engines, which are regulated by Rule 1150.3 – Emissions of Oxides of Nitrogen from Combustion Equipment at Landfills (Rule 1150.3) and Rule 1179.1 – Emission Reductions from Combustion Equipment at Publicly Owned Treatment Works Facilities (Rule 1179.1).

L-CMB-09: NOx Reductions from Incinerators: This control measure seeks emission reductions of NOx by replacing or retrofitting incinerators and other combustion equipment associated with incinerators with zero and low NOx emission technologies. Incinerators are used to burn waste material at high temperatures until reduced to ash. This control measure will achieve reductions by developing a rule, and implementation of low NOx burner systems or ultra-low NOx burner systems.

L-CMB-10: NOx Reductions from Miscellaneous Permitted Equipment: The goal of this measure is to assess and identify potential actions to further reduce NOx emissions associated with miscellaneous permitted equipment located in the South Coast AQMD jurisdiction. South Coast AQMD staff will convene a stakeholder working group to discuss and identify actions or approaches to further reduce NOx emissions from these sources. Miscellaneous permitted

equipment is regulated under Rule 1147 – NOx Reductions from Miscellaneous Sources (Rule 1147) with NOx emission limits depending on equipment category.

ECC-01: Co-Benefits from Existing and Future Greenhouse Gas Programs, Policies, and Incentives: This control measure seeks to quantify and take credit for the criteria pollutant co-benefits associated with programs to reduce GHG emissions. The processes that emit criteria pollutants and their precursors also typically emit GHGs. Mandates and programs that reduce GHG emissions will also reduce criteria pollutant emissions. Significant efforts are currently being planned and implemented to reduce GHG emissions under state programs such as California Governor Executive Order B-55-18 and Senate Bill (SB) 100 California Renewables Portfolio Standard Program: Emissions of Greenhouse Gases, which established reduction goals for 2030, 2045, and 2050.

ECC-02: Co-Benefits from Existing and Future Residential and Commercial Building Energy Efficiency Measures: This control measure seeks to quantify and take credit for criteria pollutant co-benefits resulting from the implementation of energy efficiency mandates such as California's Title 24 program. In addition, there are multiple programs that provide incentives, rebates, and loans for residential and commercial building efficiency projects. Improvements in weatherization and other efficiency measures provide emission reductions through reduced energy use for heating, cooling, lighting, cooking, and other needs. South Coast AQMD staff will work with agencies, utilities, and other stakeholders to implement innovative measures that provide energy savings along with emission reductions.

ECC-03: Additional Enhancements in Reducing Existing Residential Building Energy Use: This control measure seeks to provide incentive funding to enhance the objectives of ECC-02. Incentives will be used to further promote programs reducing energy use associated with space heating, water heating, and other large residential energy sources, achieving emission reductions beyond the levels expected from program mandates. Residential incentive programs would be developed to facilitate weatherization, replace older appliances with highly efficient technologies and encourage renewable energy adoption. Incorporating efficient appliance technologies, improving weatherization, and encouraging renewables such as solar thermal heating and photovoltaic panels will reduce energy demand and provide additional emission reductions within the residential sector. The South Coast AQMD will collaborate with utilities, agencies, and organizations to help leverage funding and coordinate incentives with existing programs.

FUG-01: Improved Leak Detection and Repair: This proposed control measure seeks to reduce emissions of VOCs from fugitive leaks from process and storage equipment located at a variety of sources including, but not limited to, oil and gas production, petroleum refining, chemical products processing, storage and transfer, marine terminals, and other. Some of these facilities are subject to leak detection and repair (LDAR) requirements established by the South Coast AQMD and the U.S. EPA that include periodic VOC concentration measurements using an approved portable organic vapor analyzer (OVA) to identify leaks. This measure would implement the use of advanced leak detection technologies including optical gas imaging devices (OGI), open path detection devices, and gas sensors for earlier detection of VOC emissions from leaks.

FUG-02: Emission Reductions from Industrial Cooling Towers: This proposed control measure seeks to reduce VOC emissions from industrial cooling towers through enhanced leak identification and repair requirements. Industrial cooling towers remove heat absorbed in the

circulating cooling water systems at power plants, petroleum refineries, petrochemical plants, natural gas processing plants, and a wide variety of industrial operations. This control measure proposes to first assess the need for additional monitoring and practices to reduce industrial cooling tower VOC emissions. The assessment will include a review of the emissions inventory, costs for monitoring equipment, and the control requirements established by other governmental agencies. Findings from this assessment will be the basis of potential future rulemaking activities.

CTS-01: Further Emission Reductions from Coatings, Solvents, Adhesives, and Lubricants: This proposed control measure seeks VOC emission reductions by focusing on select coating, adhesive, solvent, and sealant categories by further limiting the allowable VOC content in formulations or incentivizing the use of super-compliant technologies. Categories to be considered include but are not limited to, metal part and product coatings, automotive refinishing coatings, adhesives, and sealants. Use of super-compliant zero and low VOC materials, such as powder coating, aqueous coatings, and some ultraviolet light, electron beam, and light emitting diode cured coatings, eliminate or substantially reduce emissions compared to similar products that are not zero or low VOC products. There are several product categories where these materials perform as well as traditional products and are widely available in the market. The proposal is anticipated to be accomplished with a multi-phase adoption and implementation schedule. Tightening regulatory exemptions that may be used as loopholes and enhanced enforcement can also lead to reduced emissions.

FLX-02: Stationary Source VOC Incentives: This control measure seeks to provide incentive funding to facilitate the adoption of clean, low VOC emission technologies from stationary sources. Facilities would be able to qualify for incentive funding if they use equipment or accept permit conditions which result in cost-effective emission reductions that are beyond existing requirements. The program would establish procedures for quantifying emission benefits from clean technology implementation and develop cost-effectiveness thresholds for funding eligibility. Mechanisms will be explored to incentivize businesses to choose the cleanest technologies as they replace equipment and upgrade facilities, and to provide incentives to encourage businesses to move into these technologies sooner. Potential incentive concepts include incentive funding, permitting and fee incentives and enhancements, New Source Review (NSR) incentives and enhancements, branding incentives, and recordkeeping and reporting incentives.

BIO-01: Assessing Emissions from Urban Vegetation: This control measure seeks to improve the understanding of VOCs emitted by trees and vegetation (biogenic sources) and their contribution to PM and ozone formation. Certain VOCs emitted by biogenic sources are highly reactive and potent ozone precursors. A recent analysis of municipal tree inventories across the Basin demonstrated that many recently planted species are either high emitters (e.g., *Quercus ilex, Quercus agrifolia, Platanus* species) or are trees for which emission factors are unknown or highly uncertain (e.g., *Koelreuteria bipinnata, Cercis canadensis, Pistacia chinensis, Podocarpus gracilor, Hymenosporum flavum*). High resolution data combined with accurate emissions factor measurements of common tree species will be used to improve the biogenic VOC emissions inventory. Based on these findings, the South Coast AQMD will explore the need for tree planting programs that promote the planting of low VOC emitting tree species.

MCS-01: Application of All Feasible Measures: This control measure is to address the state's requirement to take all feasible measures to reduce ozone. Existing rules and regulations for

pollutants including VOC and NOx reflect current BARCT. However, BARCT continually evolves as new technology becomes available that is feasible and cost-effective. South Coast AQMD staff will continue to review new emission limits or controls introduced through federal, state or local regulations to determine if South Coast AQMD regulations remain equivalent or more stringent than rules in other regions. If not, a rulemaking process will be initiated to perform a BARCT analysis and potential rule amendments if deemed feasible. In addition, the South Coast AQMD will consider adopting and implementing new retrofit technology control standards, based on research and development and other information, that are feasible and cost-effective.

MCS-02: Wildfire Prevention: This proposed control measure will seek to reduce the impacts of wildfires on PM and ozone levels from efforts to reduce wildfire fuel. Fuel reduction efforts include hand-thinning, mechanical thinning, and the use of chipping equipment (chipping) to mitigate excess fuels at properties located in the residential urban-wild-interface areas of the San Bernardino National Forest. To support efforts of wildfire prevention and aid compliance with Zone 0 defensible space requirements of California Assembly Bill (AB) 3074, incentive funding will be provided for a pilot project of approximately 1,400 acres. The South Coast AQMD will identify and coordinate implementation of the pilot project with established organizations and their contractors such as the Inland Empire Fire Safe Alliance, Mountain Rim Fire Safe Council, and Big Bear Fire Authority to provide fuel load reducing curbside chipping services to residents of these urban-wild-interface areas.

FLX-01: Improved Education and Public Outreach: This control measure seeks to provide education, outreach, and incentives for consumers, business owners, and residences to contribute to clean air efforts. Examples include informing consumer choices such as the use of energy efficient products and appliances, new lighting technology, and "super-compliant" coatings. In addition, this measure intends to increase the effectiveness of energy conservation programs through public education and awareness as to the environmental and economic benefits of conservation. Educational and incentive tools to be used include social comparison applications such as comparing your personal environmental impacts with other individuals, social media, and public/private partnerships. These efforts will be complemented with currently available incentive programs.

2.7.2 SOUTH COAST AQMD MOBILE SOURCE CONTROL MEASURES

The proposed South Coast AQMD mobile source measures are based on a variety of control technologies that are commercially available and/or technologically feasible to implement prior to the attainment year of 2037. The focus of these measures includes accelerated retrofits or replacement of existing vehicles or equipment, acceleration of vehicle turnover through voluntary vehicle retirement programs, and greater use of cleaner fuels in the near-term. The measures will encourage greater deployment of low NOx and zero emission vehicle and equipment technologies to the maximum extent feasible as such technologies are commercialized and available everywhere else. In the longer-term, there is a need to significantly increase the penetration and deployment of low NOx and zero emission vehicles, greater use of cleaner technologies, and substantial emission reductions from federal and international sources such as locomotives, ocean-going vessels (OGVs), and aircraft. While shifting to zero emission is necessary where feasible and available, low NOx and ultra-low NOx technology are inevitable for sectors where zero emission technologies are not available or mature commercially.

A total of 18 measures are proposed as actions to reduce mobile source emissions (see Table 2.7-2). Three emission growth management measures (EGM-01 to EGM-03) are proposed to identify actions to help mitigate and potentially provide emission reductions due to new development and redevelopment projects, projects subject to general conformity requirements, and clean construction policy. Four facility-based mobile source measures (FBMSMs) (MOB-01 to MOB-04) seek to identify actions that will result in additional emission reductions at commercial marine ports, rail yards and intermodal facilities, warehouse distribution centers, and commercial airports. FBMSMs for marine ports and intermodal rail yards are currently undergoing an Indirect Source Rule development process. Six on-road and off-road mobile measures focus on on-road light/medium/heavy-duty vehicles, international shipping vessels, passenger locomotives and small off-road engines. Additionally, incentive-based measures such as MOB-11 will use established protocols such as Carl Moyer Program guideline and report to the Governing Board periodically. MOB-12, Pacific Rim Initiative for Maritime Emission Reductions seeks NOx emission reductions from partnership with local, state, federal and international entities. Three other measures (MOB-13 to MOB-15) focus on fugitive VOC emissions from tanker vessels, fleet vehicles mitigation options, and the development of a work plan to support and accelerate the deployment of zero emission infrastructure needed for the widespread adoption of zero emission vehicles and equipment that is described in more detail in Appendix IV-A[7] of the 2022 AQMP. A summary of the mobile source control measures to be implemented as part of the 2022 AQMP is provided in Table 2.7-2.

TABLE 2.7-2
South Coast AQMD Proposed Mobile Source 8-Hour Ozone Control Measures

Control Measure Number	Control Measure Title	Proposed Adoption Date	Proposed Implementation Timeframe	Emission Reductions (tpd) (2032/2037)
EGM-01	Emission Reductions from New Development and Redevelopment [All Pollutants]	2025	2026-2037	TBD / TBD
EGM-02	Emission Reductions from Projects Subject to General Conformity Requirements [All Pollutants]	2026	2026-2037	TBD / TBD
EGM-03	Emission Reductions from Clean Construction Policy [All Pollutants]	2025	2025-2037	TBD / TBD
MOB-01	Emission Reductions at Commercial Marine Ports [NOx]	2023	2023-2037	
MOB-02A	Emission Reductions at New Rail Yards and Intermodal Facilities [NOx, PM]	2022-2024	2023-2037	TBD / TBD
MOB-02B	Emission Reductions at Existing Rail Yards and Intermodal Facilities [NOx, PM]	2022-2024	2023-2037	TBD / TBD
MOB-03	Emission Reductions at Warehouse Distribution Centers [NOx]	Adopted 2021 (Reassess every 3 years)	2022-2037	TBD / TBD

[7] Revised Draft 2022 AQMP Appendix IV-A: South Coast AQMD's Stationary and Mobile Source Control Measures. http://www.aqmd.gov/2022aqmp.

TABLE 2.7-2 (concluded)
South Coast AQMD Proposed Mobile Source 8-Hour Ozone Control Measures

Control Measure Number	Control Measure Title	Proposed Adoption Date	Proposed Implementation Timeframe	Emission Reductions (tpd) (2032/2037)
MOB-04	Emission Reductions at Commercial Airports [All Pollutants]	Approved 2019 (Reassess in 2027)	2020-2037	TBD / TBD
MOB-05	Accelerated Retirement of Older Light-Duty and Medium-Duty Vehicles [NOx, PM]	N/A	Ongoing	0.20 / 0.11 [NOx]
MOB-06	Accelerated Retirement of Older On-Road Heavy-Duty Vehicles [NOx, PM]	N/A	Ongoing	TBD / TBD
MOB-07	On-Road Mobile Source Emission Reduction Credit Generating Program [NOx, PM]	TBD	TBD	TBD / TBD
MOB-08	Small Off-Road Engine Equipment Exchange Program [VOC, NOx, PM]	N/A	Ongoing	TBD / TBD
MOB-09	Further Emission Reductions from Passenger Locomotives [NOx, PM]	N/A	Ongoing	TBD / TBD
MOB-10	Off-Road Mobile Source Emission Reduction Credit Generation Program [NOx, PM]	TBD	TBD	TBD / TBD
MOB-11	Emission Reductions from Incentive Programs [NOx, PM]	N/A	Ongoing	7.11 / 6.69 [NOx]
MOB-12	Pacific Rim Initiative for Maritime Emission Reductions	N/A	Ongoing	TBD / TBD
MOB-13	Fugitive VOC Emissions from Tanker Vessels [VOC]	2024	2024-2037	TBD / TBD
MOB-14	Rule 2202 – On-Road Motor Vehicle Mitigation Options [VOC, NOx, CO]	2023	2023-2037	TBD / TBD
MOB-15	Zero-Emission Infrastructure for Mobile Sources [All Pollutants]	N/A	Ongoing	TBD / TBD

Key: tpd = tons per day; TBD = to be determined

The following text provides a brief description of the proposed mobile source control measures presented in Table 2.7-2. Details of the measures are in Appendix IV-A[8] of the 2022 AQMP.

EGM-01: Emission Reductions from New Development and Redevelopment: The goal of this measure is to identify emission reduction opportunities and to mitigate and, where appropriate, reduce emissions from new development or redevelopment projects such as residential, commercial, and industrial projects that are otherwise not included in other FBMSMs identified in the 2022 AQMP. Based on Governing Board direction, South Coast AQMD staff has held three Working Group meetings for the development of EGM-01 and released a Request for Proposal in 2019 to profile the universe of off-road construction equipment available in the

[8] Revised Draft 2022 AQMP Appendix IV-A: South Coast AQMD's Stationary and Mobile Source Control Measures. http://www.aqmd.gov/2022aqmp.

South Coast Air Basin and identify the incremental cost to upgrade existing off-road construction equipment to Tier 4 standards; no proposals were received on the Request for Proposal. South Coast AQMD staff will re-convene the Working Group to continue the information gathering process and work towards the development of a method of control for EGM-01. The amount of emission reductions that can be achieved and their SIP creditability will be determined dependent on the final method of control to be implemented.

EGM-02: Emission Reductions from Projects Subject to General Conformity Requirements: General conformity is a process intended to prevent the air quality impacts of a proposed federal project from causing or contributing to new violations of the air quality standards, exacerbating existing violations, or interfering with the purpose of the applicable implementation plan. The 2016 AQMP established a SIP set-aside account, with an initial balance of 2.0 tons per day of NOx and 0.5 ton per day of VOC each year from 2017 to 2030, and 0.5 ton per day of NOx and 0.2 ton per day of VOC in 2031, to accommodate projects with a positive conformity determination (i.e., emissions that exceed the de minimis threshold). This measure seeks to undertake a rulemaking process in order to accommodate general conformity determinations using mechanisms other than the current set-aside account. Mitigation or offset mechanisms including those adopted by other air districts in California will be explored during the rulemaking process. Such mechanisms may include the imposition of fees to fund air quality improvement programs or a requirement to purchase surplus emission reduction credits.

EGM-03: Emission Reductions from Clean Construction Policy: The purpose of this control measure is to identify potential approaches to mitigate and control emissions from construction activities in the South Coast Air Basin. This control measure will seek to develop a Clean Construction Policy (CCP) which can be utilized for reference and voluntary implementation by local municipalities and public agencies. The South Coast AQMD will work in collaboration with local municipalities and agencies, construction industry, and other affected stakeholders to develop such a policy and will consider existing control measures and best management practices that are currently being implemented by entities throughout California.

MOB-01: Emission Reductions at Commercial Marine Ports: This measure seeks to reduce NOx, VOC, and PM emissions related to on-road heavy-duty vehicles, OGVs, cargo handling equipment, locomotives, and harbor craft that go to and from the Ports of Los Angeles and Long Beach (Ports). As a follow up to implementation of MOB-01 from the 2016 AQMP, the South Coast AQMD is working on an indirect source rule (Proposed Rule 2304) to address emissions from marine ports. Through a public rulemaking process, rule concepts will be proposed to address emissions from these sources. Rule development will continue to focus on deploying the cleanest technologies possible and supporting zero emissions fuel charging infrastructure as quickly as feasible. Incentive funding that supports the transition to cleaner technologies will also continue to be pursued to assist in implementing this measure.

MOB-02A: Emission Reductions at New Rail Yards and Intermodal Facilities: This measure seeks to reduce NOx and PM emissions related to on-road heavy-duty vehicles, off-road equipment, and locomotives at new rail yards and intermodal facilities. Through the public process, the South Coast AQMD will assess and identify potential actions that limit additional emissions created by the new operations. To implement this measure, staff will continue rule development for Proposed Rule 2306 for new railyards. Rule development will continue to focus on implementation of cleanest locomotives, switchers, on-road heavy-duty trucks, cargo-

handling equipment, and transportation refrigeration units requiring necessary infrastructure to support zero and low NOx emission technologies.

MOB-02B: Emission Reductions at Existing Rail Yards and Intermodal Facilities: The goal of this measure is to reduce NOx and PM emissions related to on-road heavy-duty vehicles, off-road equipment, and locomotives located at existing rail yards and intermodal facilities. Through a public rulemaking process, rule concepts will be proposed to address emissions from these sources. Rule development will focus on transitioning locomotives, switchers, on-road heavy-duty trucks, cargo-handling equipment, transportation refrigeration units to zero and low NOx emission technologies. The rule development will include necessary infrastructure measures to support the transition.

MOB-03: Emission Reductions at Warehouse Distribution Centers: The goal of this measure is to reduce NOx and PM emissions related to mobile sources and other equipment associated with warehouses. The strategy utilizes a menu-based point system in Rule 2305 – Warehouse Indirect Source Rule - Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program, adopted in May 2021 to implement MOB-03 from the 2016 AQMP (Rule 2305) where warehouses subject to the rule must annually earn points based on the amount of truck traffic at their facility. The menu includes actions that warehouse operators can take to reduce emissions, or to facilitate emission reductions from their operations. The menu of actions may result in emission reductions when compared to conventional diesel technology, assist in implementation of other related measures, promote the demand for zero emission and low NOx technology, foster early actions of compliance, and encourage infrastructure installation to support new or emerging zero emission technologies. Implementation of this measure will include ensuring that applicable warehouses comply with Rule 2305, quantifying the air quality benefits of Rule 2305 as they occur and seeking to incorporate those benefits as SIP-creditable emission reductions, and evaluating the state of technology every three years to identify if Rule 2305 should potentially be amended to increase the air quality benefits.

MOB-04: Emission Reductions at Commercial Airports: The FBMSM for Commercial Airports, which controls non-aircraft mobile sources at commercial airports, was adopted by the South Coast AQMD on December 6, 2019. The measure consists of MOUs between the South Coast AQMD and five commercial airports in the Basin to develop and implement air quality improvement plans. The MOUs were executed with Los Angeles International Airport, John Wayne Orange County Airport, Hollywood Burbank Airport, Ontario International Airport, and Long Beach Airport. Each MOU contains performance targets for cleaner ground support equipment, airport shuttle buses, and heavy-duty trucks. Based on the measures in the MOUs, the South Coast AQMD committed to achieve 0.52 and 0.37 ton per day NOx reductions in 2023 and 2031, respectively. This measure seeks to estimate emission reductions through 2037, beyond the term of the MOUs, based on continued implementation of the airports' Air Quality Improvement Plans/Measures. Opportunities for additional feasible emission reductions will be explored through the Airport MOU Working Group.

MOB-05: Accelerated Retirement of Older Light-Duty and Medium-Duty Vehicles: The purpose of this control measure is to achieve emission reductions by accelerating retirement of older gasoline- and diesel-powered vehicles with up to 8,500 lbs. gross vehicle weight rating (GVWR). These vehicles include passenger cars, sports utility vehicles, vans, and light-duty pick-up trucks. The South Coast AQMD has been implementing the Replace Your Ride Program since 2015 which provides a rebate to low- and moderate-income applicants for replacing their

existing cars with newer, cleaner conventionally powered vehicles, plug-in hybrid electric vehicles or dedicated zero emission vehicles. This measure seeks to retire up to 2,000 light- and medium-duty vehicles annually through continued implementation of the Replace Your Ride Program with incentives up to $9,500 provided which includes $5,000 for residents in a disadvantaged community zip code. For plug-in hybrid and battery electric vehicles, an additional incentive of up to $2,000 is also provided for the installation of electric vehicle charging equipment. As an alternative, the Replace Your Ride program also offers a voucher of up to $7,500 for other clean modes of transportation, such as car-sharing, public transportation or e-bikes, in exchange for the retirement of an old vehicle.

MOB-06: Accelerated Retirement of Older On-Road Heavy-Duty Vehicles: This proposed control measure seeks additional emission reductions from existing heavy-duty vehicles with GVWR greater than 8,500 lbs through an accelerated vehicle replacement program with zero emission or low NOx vehicles. A new pilot program, the Trade Up Program for On-Road Heavy-Duty Vehicles, is proposed to achieve enforceable emission reductions by replacing old, high-polluting vehicles with a new, low-NOx CNG powered vehicles through a three-way exchange approach. Under this pilot program, qualified participants can trade in their model year 2014 or newer heavy-duty diesel truck to a South Coast AQMD-approved dealership and receive an incentive toward the purchase of a new low NOx emission (0.02 gram NOx) natural gas-powered truck. The dealer then sells the trade-in diesel truck to an owner or fleet with a model year 2009 or older truck that will be scrapped by an approved dismantler to ensure permanent and enforceable reductions. The objective of this pilot program is to accelerate the turnover of 2009 and older heavy-duty diesel trucks while also increasing the deployment of low NOx natural gas-powered heavy-duty trucks and maximizing emission reductions. If proven successful, this program can be further expanded to include other alternative-fuel vehicles including battery electric and fuel cell trucks.

MOB-07: On-Road Mobile Source Emission Reduction Credit Generating Program: This proposed measure seeks to accelerate the early deployment of low NOx and zero emission on-road heavy-duty trucks through the generation of mobile source emission reduction credits (MSERCs) which can be used as an alternative means of compliance with certain South Coast AQMD regulations. These MSERCs will be used only by entities affected by the 2022 AQMP control measures MOB-01 through MOB-04, EGM-01, and EGM-03. The need for MOB-07 will be evaluated as these other control measures are implemented. South Coast AQMD staff will develop amendments to Rule 1612 – Credits for Clean On-Road Vehicles (Rule 1612) and Rule 1612.1 – Mobile Source Credit Generation Pilot Program (Rule 1612.1) to reflect the latest advanced low NOx and zero emission technologies and quantification methodologies. MSERCs generated will be discounted to provide additional benefits to the environment and to help meet air quality standards.

MOB-08: Small Off-Road Engine Equipment Exchange Program: This measure seeks to reduce NOx emissions by promoting and expanding the accelerated turn-over of in-use small off-road engines and other engines, through expanded voluntary exchange programs. Examples of these types of engines include those used in larger diesel-powered lawn and garden equipment. Since 2003, the South Coast AQMD has sponsored lawn mower buyback programs for residential users of old lawn mowers. This program has resulted in over 57,000 high polluting gasoline-powered lawn mowers taken out of service from 2003 to the present. The South Coast AQMD also launched the Commercial Electric Lawn and Garden Equipment Incentive and Exchange Program (Commercial L&G Equipment Program) in 2018 to accelerate the

replacement of old gasoline- or diesel-powered commercial lawn and garden equipment with zero emission, battery electric technology. This program provides a point-of-sale discount of up to 75 percent off the purchase price of a variety of new electric equipment. More recently, the South Coast AQMD has also started a new battery rebate program for commercial lawn and garden equipment that funds up to 75 percent of the rechargeable battery cost with a maximum limit of three batteries per equipment. Moving forward, the South Coast AQMD will increase the number of outreach and exchange events as well as continue to seek additional funding opportunities and resources to expand the scope and types of equipment and engines that can be funded by these programs.

MOB-09: Further Emission Reductions from Passenger Locomotives: This measure seeks to promote voluntary replacement or upgrade of existing passenger locomotives with Tier 4 or cleaner locomotives including zero emission locomotives. The South Coast AQMD continues to work collaboratively with technology providers and other stakeholders to explore the feasibility of zero and low NOx emission locomotive technologies such as battery electric or fuel cell engine-driven systems. For example, since 2018, the South Coast AQMD has been actively participating in the development and demonstration of zero emission battery-operated switcher locomotives in CARB-funded projects in the San Pedro Bay Ports. Through this measure, the South Coast AQMD will continue to promote accelerated replacement or upgrade of existing passenger trains with Tier 4 locomotives and support the development and adoption of zero emission or low NOx technologies.

MOB-10: Off-Road Mobile Source Emission Reduction Credit Generation Program: This measure seeks to develop mechanisms to incentivize the early deployment of Tier 4, low NOx, and zero emissions off-road equipment, where applicable, through the generation of MSERCs. These MSERCs will be used only by entities affected by the 2022 AQMP control measures MOB-01 through MOB-04, EGM-01, and EGM-03; and cannot be used to offset emissions from stationary sources. These MSERCs will be discounted to provide additional emission reductions to help meet air quality standards. South Coast AQMD staff will develop amendments to Rule 1620 – Credits for Clean Off-Road Mobile Equipment (Rule 1620) to reflect the latest advanced low NOx and zero emission technologies and revise the quantification methodologies in Rule 1620.

MOB-11: Emission Reductions from Incentive Programs: This control measure seeks to quantify and take credit for the emission reductions achieved through the implementation of South Coast AQMD-administered incentive programs for SIP purposes. The South Coast AQMD has been implementing a variety of incentive programs including, but not limited to, Carl Moyer Memorial Air Quality Standards Attainment Program, Proposition 1B, Lower Emission School Bus, Community Air Protection Program, and Volkswagen Environmental Mitigation Trust. Examples of projects funded by these programs include heavy-duty vehicle/equipment replacements, installation of retrofit units, and engine repowers. The emission reductions from these incentive programs are calculated in two parts. First, the actual emission reductions associated with existing projects that will have remaining useful life in 2031, 2032, and 2037 are quantified. Second, potential reductions that are projected from the implementation of future projects are quantified. These reductions are estimated based on the projected level of funding for these incentive programs and average emission reductions from existing projects, discounted by control factors for future years. These incentive programs result in substantial emission reductions that are typically not eligible for credit in plans to attain ozone standards because they

are not required by regulation. However, actual emission reductions that are realized and quantified may qualify for credit.

MOB-12: Pacific Rim Initiative for Maritime Emission Reductions: This measure seeks to reduce emissions from OGV through an incentive-based program to encourage the deployment of cleaner OGV to the Ports. This approach includes collaborating with international port authorities and shipping lines to establish common goals to reduce criteria pollutants from OGV. Incentives could be monetary (e.g., a per-visit payment for cleaner ships) or non-monetary (e.g., preferred berthing for cleaner ships). The cleanest commercially available OGV currently meet Tier III emission standards, however this class of vessels is not expected to be widely deployed for many years, in part due to the high cost of constructing new vessels and the difficulty in retrofitting existing vessels to Tier III standards. This measure would quicken the return on investment for these cleaner vessels by ensuring that shipping lines receive a benefit for every clean ship visit to a port with an incentive program. Clean ships could include Tier III vessels, retrofitted vessels that surpass Tier II standards, and eventually zero emissions shipping when it becomes available.

MOB-13: Fugitive VOC Emissions from Tanker Vessels: The goal of this measure is to quantify fugitive VOC emissions from petroleum tanker vessels during venting events and from other leaks and to better control these VOC emissions through enhanced monitoring and reporting, and inspections as well as changes to vessel operating procedures. Ocean-going petroleum tankers and barges transport approximately 400 million barrels per year of crude oil, refined petroleum products and unfinished petroleum products through the Ports. While these tanker vessels are in transit and at anchorage, temperature variations from day to night and other operational factors can cause pressure fluctuations in the vessels' cargo storage tanks. Vessels that transport volatile products such as crude oil and gasoline are most susceptible to pressure increases and these vessels must vent to the atmosphere to control cargo tank pressure that may result in the release of several tons of VOCs in a 15-to-30-minute period. The South Coast AQMD will collaborate with industry representatives, pressure vent valve manufacturers, environmental/community organizations and other stakeholders to develop control strategies and best management practices to control these VOC emissions.

MOB-14: Rule 2202 – On-Road Motor Vehicle Mitigation Options: This control measure proposes to reduce emissions by evaluating potential amendments to Rule 2202. Rule 2202 has been developed to reduce emissions associated with work commute trips. Specifically, larger employers in the region with more than 250 employees are required to mitigate employee commute trips into the worksite. Rule 2202 provides employers with a menu of options to select from to implement a combination of emission reduction strategies in order to meet the emission reduction target for their worksite. During the Coronavirus Disease 2019 (COVID-19) pandemic in 2020 and 2021, many Rule 2202 regulated employers (where applicable) incorporated widespread telecommuting practices which can further reduce emissions by reducing commute trips into the worksite. While Rule 2202 currently provides credit for telecommuting, future rule amendments may include a larger focus on telecommuting strategies and provide additional incentives for regulated employers to adopt telecommuting policies. Other future rule amendments may include enhancements on current basic support and direct strategies, as well as streamlined compliance and reporting options. Options for gaining credit for emission reductions associated with Rule 2202 for the purposes of plans to meet ozone standards will also be explored.

MOB-15: Zero Emission Infrastructure for Mobile Sources: This control measure proposes to develop a work plan to support and accelerate the deployment of zero emission infrastructure needed for the widespread adoption of zero emission vehicles and equipment. The work plan will, in conjunction with the California Energy Commission, the California Public Utilities Commission, and other partner agencies, assess the present and future zero emission infrastructure needs of the air basin and use information gathered to support market acceptance of zero emission vehicles and equipment. The work plan will further investigate the basin-wide costs of the infrastructure needed to support a widespread adoption of zero emission vehicles and equipment, including on-road, off-road and stationary applications. The work plan is anticipated to require coordination with all stakeholders and identify informational gaps and challenges in the planning and development of zero emission infrastructure. This plan will also aim to support the state's goals and requirements for zero emission vehicles and equipment. Information gathered can then be used to create or support policies and incentives that will ease this transition. AB 2127 estimated that the state will need 157,000 electric vehicle charging stations for medium and heavy-duty vehicles by 2030. AB 8 assessed the fueling needs for hydrogen fuel cell vehicles and found that 1,700 hydrogen stations will be needed to support 1.8 million fuel cell electric vehicles statewide by 2035. The proposed measure seeks to address these concerns and identify the unique challenges and opportunities for zero emission infrastructure development in the South Coast Air Basin, particularly as it relates to zero emission medium and heavy vehicle deployments.

2.7.3 FEDERAL AND STATE REGIONAL MOBILE SOURCE CONTROL MEASURES

2.7.3.1 State Measures

As previously discussed, in order to attain the 8-hour federal ozone standard, the majority of NOx emission reductions must come from mobile sources, including ships, aircraft, and locomotive engines, that are primarily regulated under federal and international jurisdiction, with limited authority for CARB and the South Coast AQMD. Attainment is not possible without significant reductions from these sources. For California to achieve the ambient air quality standards, it is imperative that the federal government act to reduce emissions from regulated sources of air pollution which are primarily regulated at the federal level. Absent federal action, in 2020, NOx emissions from primarily federally-regulated sources exceeded emissions from California-regulated mobile sources statewide and by 2030, NOx emissions from primarily federally-regulated sources will be double California-regulated mobile sources.

CARB has prepared the Proposed 2022 State Strategy for the State Implementation Plan (Proposed 2022 State Strategy) which describes the state's strategy and commitments to reduce emissions from state-regulated sources needed to support attainment of the 70 ppb 8-hour ozone standard (see Table 2.7-3).[9] The 2022 State Strategy was approved by CARB's Board on September 22, 2022. With the Proposed 2022 State Strategy, CARB is exploring and proposing an unprecedented variety of new measures to reduce emissions from sources under their authority using all mechanisms available. Since mobile sources account for about two-thirds of the NOx emissions statewide, significant mobile source emission reductions are needed to meet the 70 ppb ozone standard. While the Proposed 2022 State Strategy is being developed primarily as a roadmap for attaining the 70 ppb ozone standard, the emissions reductions will also support attainment of other ozone and fine particulate matter national air quality standards and make progress towards the state air quality standards.

[9] Proposed 2022 State Strategy for the State Implementation Plan, August 12, 2022. Available at: https://ww2.arb.ca.gov/sites/default/files/2022-08/2022_State_SIP_Strategy.pdf.

TABLE 2.7-3
CARB Proposed 2022 State Strategy Measures and Estimated Emission Reductions

CARB Proposed Measures	2037 Estimated Emission Reductions (tpd)	
	NOx	VOC
On-Road Heavy-Duty		
Advanced Clean Fleets Regulation	19.3	1.7
Zero Emissions Trucks Measure	14.3	1.3
On-Road Light-Duty		
On-Road Motorcycle New Emissions Standards	2.3	5.8
Clean Miles Standard	<0.1	0.2
Off-Road Equipment		
Tier 5 Off-road Vehicles and Equipment	10.4	NYQ
Amendments to the In-Use Off-road Diesel-Fueled Fleets Regulation	4.0	0.3
Transport Refrigeration Unit Regulation Part 2	15.2	2.0
Commercial Harbor Craft Amendments	8.7	0.5
Cargo Handling Equipment Amendments	0.7	0.5
Off-Road Zero Emission Targeted Manufacturer Rule	NYQ	NYQ
Clean off-Road Fleet Recognition Program	NYQ	NYQ
Spark-Ignition Marine Engine Standards	2.1	4.2
Other Categories		
Consumer Products Standards	-	20.0
Zero Emission Standard for Space and Water Heaters	13.5	1.5
Enhanced Regional Emission Analysis in SIP	NYQ	NYQ
Pesticides: 1,3-Dichloropropene Health Risk Mitigation	-	NYQ
Primarily-Federally and Internationally Regulated Sources – CARB Measures		
In-Use Locomotive Regulation	63.2	2.5
Future Measures for Aviation Emission Reductions	NYQ	NYQ
Future Measures for OGV Emission Reductions	NYQ	NYQ
Primarily-Federally and Internationally Regulated Sources – Federal Action Needed		
On-Road Heavy-Duty Vehicle Low NOx Engine Standards	3.8	<0.1
On-Road Heavy-Duty Vehicle Zero-Emission Requirements	NYQ	NYQ
Off-Road Equipment Tier 5 Standard for Preempted Engines	1.5	NYQ
Off-Road Equipment Zero Emission Standards Where Feasible	2.2	NYQ
More Stringent Aviation Engine Standards	NYQ	NYQ
Cleaner Fuel and Visit Requirements for Aviation	10.2	NYQ
Zero Emission On-Ground Operation Requirements at Airports	NYQ	NYQ
Airport Aviation Emissions Cap	9.1	NYQ
More Stringent National Locomotive Emission Standards	NYQ	NYQ
Zero Emission Standards for Locomotives	NYQ	NYQ
Address Unlimited Locomotives Remanufacturing	NYQ	NYQ
More Stringent NOx and PM Standards for OGVs	0.8	NYQ
Cleaner Fuel and Vessel Requirements for OGVs	23.6	NYQ
AGGREGATE EMISSION REDUCTIONS:	**205.6**	**40.9**

Key: tpd = tons per day; NYQ = not yet quantified

The Proposed 2022 State Strategy effort builds on the measures and commitments already made in the 2016 State SIP Strategy and expands on the scenarios and concepts included in the 2020 Mobile Source Strategy, CARB's multi-pollutant planning effort that identifies the pathways forward to achieve the state's air quality, climate, and community risk reduction goals. CARB finalized the 2020 Mobile Source Strategy in October 2021, as a conceptual road map for potential future measures. The measure concepts in the 2020 Mobile Source Strategy form the basis for the measures in the Proposed 2022 State Strategy. CARB estimates that the mobile source control measures will achieve almost 50 percent reduction in total NOx emissions needed to attain the standard in 2037. Those reductions include a variety of on-road mobile, off-road mobile and other sources and reflect CARB's commitment identified in the 2016 State SIP Strategy and the Proposed 2022 State Strategy. However, more NOx emission reductions from sources under local, state, and federal jurisdiction will be needed to attain the 8-hour ozone standard. Table 2.7-3 summarizes the Proposed 2022 State Strategy measures and the expected emission reductions.

The Proposed 2022 State Strategy measures are summarized below.

2.7.3.1.1 On-Road Heavy-Duty

Control measures in this class are summarized in the following bullet points:

- Advanced Clean Fleets Regulation: This measure accelerates zero emission vehicle adoption in the medium- and heavy-duty sectors by setting zero emission requirements for fleets and 100 percent zero emission vehicle sales requirements in California for manufacturers of Class 2b through 8 vehicles, using a phased-in approach. All drayage trucks operating at seaports and intermodal railyards would be required to be zero emission by 2035. The Advanced Clean Fleets Regulation would also include a requirement that 100 percent of Class 2b and above vehicle manufacturer sales in California be zero emissions starting in 2040.
- Zero Emission Trucks Measure: This measure would increase the number of zero emission vehicles and require cleaner engines to achieve emission reductions from fleets that are not affected by the proposed Advanced Clean Fleets measure. This would be a transitional strategy to achieve zero emissions medium- and heavy-duty vehicles wherever feasible by 2045.

2.7.3.1.2 On-Road Light–Duty

Control measures in this class are summarized in the following bullet points:

- On-Road Motorcycles New Emissions Standards: This measure would reduce emissions from new, on-road motorcycles by adopting more stringent exhaust and evaporative emissions standards along with limited on-board diagnostics requirements and zero emissions sales thresholds with an associated credit program to help accelerate the development of zero emissions motorcycles. This measure also proposes significant zero emission motorcycle sales thresholds beginning in 2028 and increasing gradually through 2035.

- Clean Miles Standard: The Clean Miles Standard was adopted by CARB on May 20, 2021. The primary goals of this measure are to reduce GHG emissions from ride-hailing services offered by transportation network companies and promote electrification of the fleet by setting an electric vehicle mile target, while achieving criteria pollutant co-benefits. Transportation network companies would be required to achieve zero grams CO2 emissions per passenger mile traveled and 90 percent electric vehicle miles traveled by 2030.

2.7.3.1.3 Off-Road Equipment

Control measures in this class are summarized in the following bullet points:.

- Tier 5 Off-Road Vehicles and Equipment: This measure would reduce NOx and PM emissions from new off-road compression-ignition engines by adopting more stringent exhaust standards for all power categories, including those that do not currently utilize exhaust after treatment such as diesel particulate filters and selective catalytic reduction. It is expected that this off-road Tier 5 regulation would rely heavily on technologies manufacturers are developing to meet the recently approved low NOx standards for on-road heavy-duty engines.

- Amendments to the In-Use Off-Road Diesel-Fueled Fleets Regulation: This measure would further reduce emissions from the in-use off-road diesel equipment sector by adopting more stringent regulations. These amendments would phase-out the oldest engines, add provision for Tier 3 and 4 vehicles, include requirements for fleets to use renewable diesel, and provide flexibility provisions for fleet adoption of zero emission vehicles.

- Transport Refrigeration Unit Regulation Part 2 (Non-Truck TRUs): This measure is the second part of a two-part rulemaking to transition diesel-powered transport refrigeration units (TRUs) to zero emission technologies. This measure would require zero emission equipment for non-truck TRUs (trailer TRUs, domestic shipping container TRUs, railcar TRUs, TRU generator sets, and direct-drive refrigeration units).

- Commercial Harbor Craft Amendments: This measure proposes that starting in 2023 and phasing in through 2031, most commercial harbor crafts (except for commercial fishing vessels) would be required to meet the cleanest possible standard (Tier 3 or 4) and retrofit with diesel particulate filters based on a compliance schedule. The amendments would also remove the current exemption for engines less than 50 hp.

- Cargo Handling Equipment Amendments: This measure would start transitioning Cargo Handling Equipment to full zero emission in 2026, with over 90 percent penetration of zero emission equipment by 2036.

- Off-Road Zero Emission Targeted Manufacturer Rule: This measure would accelerate the development and production of zero emission off-road equipment and powertrains. Existing zero emission regulations and regulations currently under development target a variety of sectors (e.g., forklifts, cargo handling equipment, off road fleets, Small Off-Road Engines (SORE), etc.). As technology advancements occur, more sectors including wheel loaders, excavators, and bulldozers could be accelerated. Fully addressing control

of emissions from new farm and construction equipment under 175 horsepower that are preempted, will require partnership on needed Federal zero emission standards for off-road equipment.

- Clean Off-Road Fleet Recognition Program: This measure would create a non-monetary incentive to encourage off-road fleets to go above and beyond existing regulatory fleet rule compliance and adopt advanced technology equipment with a strong emphasis on zero emission technology. The Clean Off-Road Fleet Recognition Program would encourage entities with fleets to incorporate advanced technology and zero emission vehicles into their fleets, prior to or above and beyond regulatory mandates based on fleet size.

- Spark-Ignition Marine Engine Standards: For this measure, CARB will develop and propose catalyst-based standards for outboard and personal watercraft engines less than or equal to 40 kilowatts in power that will gradually reduce emission standards to approximately 70 percent below current levels. In addition, CARB is considering actions consistent with Executive Order N-79-20 that would require a percentage of outboard and personal watercraft vessels to be propelled by zero emission technologies for certain applications.

2.7.3.1.4 Other Equipment

Control measures in this category are summarized in the following bullet points:

- Consumer Products Standards: This measure will further reduce VOC and equivalent VOC emissions from consumer products to expedite attainment of NAAQS for ozone. Staff will consider the merits of proposing VOC content standards as well as reactivity limits. Staff will work with stakeholders to explore mechanisms that would encourage the development, distribution, and sale of cleaner, very low, or zero-emitting products.

- Zero Emission Standard for Space and Water Heaters: For this measure, CARB would develop and propose zero GHG emission standards for space and water heaters sold in California. Beginning in 2030, 100 percent of sales of new space and water heaters (for either new construction or replacement of equipment that has reached its end-of-life in existing buildings) would need to meet zero emission standards. It is expected that this regulation would rely heavily on heat pump technologies currently being sold to electrify new and existing homes.

- Enhanced Regional Emissions Analysis in SIPs: The primary goal of this measure is to reduce criteria pollutant and GHG emissions that come from on-road mobile sources through reductions in VMT by: 1) evaluating the development of the Motor Vehicle Emissions Budget requirement to meet NAAQS; 2) assessing and improving the Reasonably Available Control Measures (RACM) analysis in the SIP by providing a comprehensive list of TCMs; and 3) updating the guidelines for the California Motor Vehicle Registration Fee Program and the Congestion Mitigation and Air Quality Improvement Program to fund a broader range of transportation and air quality projects that advance new approaches and technologies in reducing air pollution.

- 1,3-Dichloropropene Health Risk Mitigation: 1,3-Dichloropropene is a soil fumigant used to control for pests and is commonly injected into soil or applied through drip irritation

prior to planting. Due to the chemical's potential for volatilization and therefore, off-site transport and human exposure, the California Department of Pesticide Regulation is developing a regulation to address cancer and acute risk to non-occupational bystanders. The regulation would require applicators to use totally impermeable film tarpaulins or other mitigation measures that would provide comparable protection from exposure.

2.7.3.1.5 Primarily-Federally and Internationally Regulated Sources (CARB Measures)

In addition to reducing emissions from the above sources, it is critical to achieve emission reductions from sources that are primarily regulated at the federal and international level. CARB and the air districts in California have taken actions to not only petition federal agencies for action, but also to directly reduce emissions using programmatic mechanisms. CARB continues to explore additional actions, many of which may require a waiver or authorization under the Clean Air Act, as described in the following bullet points:

- In-Use Locomotive Regulation: This measure would accelerate the adoption of advanced, cleaner technologies, and include zero emission technologies, for locomotive operations. The In-Use Locomotive Regulation would apply to most locomotives operating in California with engines that have a total rated power of greater than 1,006 horsepower (with a few exceptions). The measure reduces emissions by phasing in the use of cleaner diesel locomotives and zero emission locomotives through a spending account, in-use operational requirements, and by an idling limit.

- Future Measures for Aviation Emission Reductions: CARB would work with the U.S. EPA, air districts, airports, and industry stakeholders in a collaborative effort to develop regulations, voluntary measures, and incentive programs to reduce emissions from main aircraft engines, auxiliary power units, and airport ground transportation. Emission reductions can be achieved by pursuing incentive and regulatory measures, e.g., cleaner engines and fuels.

- Future Measures for Ocean-Going Vessel (OGVs) Emissions Reductions: Future measures for OGVs could achieve additional reductions through the use of operational changes and new technologies currently in development, including advances in exhaust capture and control, mobile shore power connections, cleaner fuels (such as liquefied natural gas, hydrogen, methanol, ammonia, etc.), alternative power sources (including batteries and fuel cells), as well as potential vessel side technologies (such as water-in-fuel emulsion). In pursuing regulatory measures, CARB would work with the U.S. EPA, California air districts, seaports, and industry stakeholders in a collaborative effort to determine which measure would provide the most effective emission reductions, as well as CARB's ability to implement each potential measure. Advocacy at the federal and international levels may be necessary to achieve additional emission reductions from OGVs given the international nature of sea trade.

2.7.3.1.6 Primarily-Federally and Internationally Regulated Sources (Federal Actions Needed)

For California to meet air quality standards, it is imperative that the federal government and other relevant regulatory entities act to reduce emissions from these primarily-federally and internationally regulated sources of air pollution. Absent further action, statewide NOx emissions from primarily-federally regulated sources will be double the emissions from California-

regulated mobile sources by 2030. For the following measures, CARB would petition and/or advocate to the U.S. EPA and other federal and international entities for actions to control emissions as described below.

- On-Road Heavy-Duty Vehicle Low-NOx Engine Standards: In the 2016 State SIP Strategy, CARB included a measure to petition for federal low-NOx standards that would apply to all new heavy-duty trucks sold nationwide starting in 2024 or later. In June 2016, the South Coast, San Joaquin Valley and Bay Area air districts and nine other state and local air control agencies formally petitioned the U.S. EPA to adopt 0.02 g/bhp-hr NOx standards for medium- and heavy-duty truck engines nationally. In November 2018, the U.S. EPA announced the national program, known as the Cleaner Trucks Initiative, which was updated on August 5, 2021 to the Clean Trucks Plan (CTP). On March 3, 2022, the U.S. EPA published a Notice of Proposed Rulemaking that includes two proposed options for levels at which the emissions standard could be set and implementation timelines. CARB will advocate to align the federal CTP with CARB's low-NOx omnibus regulations to the maximum degree possible.

- On-Road Heavy-Duty Vehicle Zero Emission Requirements: CARB would petition and/or advocate to the U.S. EPA for federal zero emission on-road heavy-duty vehicle requirements, along with more stringent GHG standards for medium- and heavy-duty vehicles that would apply to new heavy-duty trucks sold nationwide. Additionally, CARB would advocate that the U.S. EPA enable state leadership on zero emission trucks by prioritizing federal grants toward zero emission technology and their associated infrastructure.

- More Stringent Emission Standards for Preempted Off-Road Engines: CARB would petition and/or advocate to U.S. EPA to promulgate off-road equipment Tier 5 compression-ignition standards and new spark-ignition standards for preempted engines to achieve the needed NOx emissions reductions for the South Coast in 2037, akin to those that CARB is pursuing for equipment under state authority to prevent the availability of equipment meeting a less stringent standard.

- Off-Road Equipment Zero Emission Standards Where Feasible: CARB would also petition and/or advocate to the U.S. EPA to require zero emission standards for off-road equipment where the technology is feasible. Zero emission technology is maturing and penetrating the off-road equipment categories, and federal zero emission standards for off-road equipment would provide a clear path for zero emission technology to continue maturing.

- More Stringent Aviation Engine Standards: CARB would petition and/or advocate to the U.S. EPA/International Civil Aviation Organization for more stringent criteria and GHG standards for aircraft engines. With innovative research and advanced optimization of engine design, it has been demonstrated that NOx emissions can be further reduced beyond the Committee on Aviation Environmental Protection No. 8 standards as seen under the Federal Aviation Agency's Continuous Lower Energy, Emissions, and Noise Phase II Program.

- Cleaner Fuel and Visit Requirements for Aviation: In addition to needing more stringent engine standards, there are other mechanisms by which regulatory entities could require emission reductions from aircraft in California. CARB would petition and/or advocate to

the U.S. EPA to require aircraft to use cleaner fuels when travelling through California, and to require visits from cleaner aircraft.

- Zero Emission On-Ground Operation Requirements at Airports: The on-ground operations at airports present additional opportunities for emission reductions for aviation. Requirements could include airplanes to switch to on-board rechargeable batteries as the power supply to reduce the use of the gas turbines and the related emissions. Emissions from taxiing could be reduced through reduced power during taxiing, improved taxi-time, and the use of new technologies such as Taxi-bot. Taxi-bot is utilized during pushback operations and allows immediate taxiing with the engines stopped. CARB would petition and/or advocated to the U.S. EPA to require zero emission on-ground operation at California airports.

- Airport Aviation Emissions Cap: In addition to the three proposed aviation actions above, CARB would petition and/or advocate to appropriate agencies, including the U.S. EPA, for additional actions to control emissions from aviation, such as requiring an aviation emissions cap at each California airport to achieve the needed NOx emissions reductions for the South Coast in 2037. This emissions cap would set an emissions level for all aircraft activities related to the airports preventing emissions to increase with airport growth and reduce existing emissions by replacing airport activities with cleaner combustion and zero emission technologies. These additional reductions could potentially also be achieved through incentivized turnover of aircraft or upgrades to cleaner engines, or other available regulatory mechanisms.

- More Stringent National Locomotive Emission Standards: The goal of a more stringent national locomotive emission standard is to reduce emissions from locomotives in order to meet air quality and climate change goals. On April 13, 2017, CARB petitioned the U.S. EPA to promulgate both Tier 5 national emission standards for newly manufactured locomotives, and more stringent national requirements for remanufactured locomotives, to reduce criteria and toxic pollutants, fuel consumption, and GHG emissions. CARB is waiting for the U.S. EPA to act on the petition to promulgate Tier 5 national emission standards for newly manufactured locomotives and more stringent national requirements for remanufactured locomotives.

- Zero Emission Standards for Locomotives: Switchers move railcars and sections of trains in and around railyards. Switchers that account for about 10 percent of freight diesel use could be converted to electric. For this measure, CARB would petition and/or advocate to the U.S. EPA to promulgate national zero emission standards for switchers to reduce criteria and toxic pollutants, fuel consumption, and GHG emissions.

- Address Locomotive Remanufacturing: Federal rules currently define remanufactured locomotives as "new" when they are remanufactured, and do not set limits on how often locomotives can be remanufactured. The result is continued remanufacturing of old and polluting locomotives to the same pollution tier standards, and persistent pollution from these sources. For this measure, CARB would petition and/or advocate to the U.S. EPA to remove this regulatory loophole.

- More Stringent NOx and PM Standards for Ocean-Going Vessels: CARB would petition and/or advocate to the U.S. EPA and International Maritime Organization for cleaner marine standards. While marine Tier 3 is considerably cleaner than Tier 2, the Tier 3 NOx standard is still 5 to 10 times higher than the standards for other diesel equipment

sectors. CARB will work with the U.S. EPA, U.S. Coast Guard, and other partners to urge the International Maritime Organization to adopt more stringent Tier 4 marine standard and establish efficiency requirements for existing vessels.

- Cleaner Fuel and Vessel Requirements for Ocean-Going Vessels: CARB would petition and/or advocate to the U.S. EPA to require vessels to use cleaner fuels and visits from cleaner OGVs. To the maximum extent possible all Tier 0, Tier 1, and Tier 2 vessel visits should be replaced with visits made by Tier 3 or cleaner vessels by 2031. These reductions may be achieved by incentivizing visits from Tier 2 vessels that have been retrofitted to reduce NOx emissions. Current retrofit technologies for marine engines include water-in-fuel emulsion, exhaust gas recirculation, and SCR. Both exhaust gas recirculation and SCR technologies have shown potential to reduce emissions by up to 80 percent. Biofuels, renewable hydrogen, and other hydrogen-derived fuels such as ammonia, methanol, batteries, and fuel cells are being considered as potential fuel choices for vessels. All options need to be considered to achieve the needed emission reductions.

2.7.4 SCAG's REGIONAL TRANSPORTATION PLAN/SUSTAINABLE COMMUNITIES STRATEGY (RTP/SCS) AND TRANSPORTATION CONTROL MEASURES

SCAG, the Metropolitan Planning Organization (MPO) for the Southern California region, is mandated to comply with federal and state transportation and air quality regulations. In consultation with federal, state, and local transportation and air quality planning agencies and other stakeholders, SCAG developed the Final 2020–2045 2020 RTP/SCS, also known as Connect SoCal, and the 2021 Federal Transportation Improvement Program (FTIP), with TCMs to address the 2015 8-hour ozone standards in the Basin and these are included in three sections of Appendix IV-C of the 2022 AQMP[10] which are described in the following subsections. SCAG is in the process of updating the RTP/SCS and is currently preparing the 2024-2050 RTP/SCS (Connect SoCal 2024) for the region, which will expand on the policies, strategies and projects established in Connect SoCal 2020. The updated plan is anticipated to be adopted in April 2024.

2.7.4.1 Section I - Introduction

As required by federal and state laws, SCAG is responsible for ensuring that the regional transportation plan, program, and projects are supportive of the goals and objectives of applicable AQMPs and State Implementation Plans (AQMPs/SIPs). SCAG is also required to develop demographic projections and regional transportation strategy and control measures for the South Coast AQMD's AQMP/SIP.

SCAG is obligated to develop an RTP/SCS every four years. The RTP/SCS is a long-range regional transportation plan that provides for the development and integrated management and operation of transportation systems and facilities that will function as an intermodal transportation network for the SCAG region (which includes all of the South Coast AQMD jurisdiction and the non-South Coast AQMD-jurisdiction portions of Los Angeles and San Bernardino counties, and all of Ventura and Imperial counties). The RTP/SCS also outlines

[10] Revised Draft 2022 AQMP Appendix IV-C: South Coast AQMD's Stationary and Mobile Source Control Measures. http://www.aqmd.gov/2022aqmp.

certain land use growth strategies that provide for more integrated land use and transportation planning and enhances transportation investments. The RTP/SCS is required by federal laws to demonstrate transportation conformity and under state law is also required to achieve regional GHG reduction targets set by the CARB pursuant to SB 375. Pursuant to the California Health and Safety Code, the RTP/SCS constitutes the RTP/SCS and TCMs of the South Coast AQMD's AQMPs.

In addition, SCAG biennially develops the FTIP, which contains a list of multimodal capital improvement projects to be implemented over a six-year period. The FTIP implements the programs and projects in the RTP/SCS.

2.7.4.2 Section II - Regional Transportation Plan/Sustainable Communities Strategy and Transportation Control Measures (TCMs)

Connect SoCal was developed to provide a blueprint to integrate land use and transportation strategies to help achieve a coordinated and balanced regional transportation system. Connect SoCal was adopted by SCAG's governing board, the Regional Council on May 7, 2020 for transportation conformity purposes only and on September 3, 2020 for all purposes.

Connect SoCal includes a Core Vision that centers on maintaining and better managing the transportation network for moving people and goods, while expanding mobility choices by locating housing, jobs and transit closer together and increasing investment in transit and complete streets; five Key Connections that augment the Core Vision to address trends and emerging challenges while closing the gap between what can be accomplished through intensification of core planning strategies alone and what must be done to meet increasingly aggressive greenhouse gas reduction goals; as well as action-oriented transportation strategies and Sustainable Communities Strategy.

Core Vision

- Sustainable Development
- System Preservation and Resilience
- Demand and System Management
- Transit Backbone
- Complete Streets
- Goods Movement

Key Connections

- Smart Cities and Job Centers
- Housing Supportive Infrastructure
- Go Zones
- Accelerated Electrification
- Shared Mobility and Mobility as a Service

Transportation Strategies

- Preserve and Optimize Our Current System

  - Congestion Management
  - Congestion Pricing
  - Transportation Demand Management (TDM)
  - Transportation System Management (TSM)

- Completing Our Transportation System
  - Transit
  - Passenger Rail
  - Active Transportation
  - Transportation Safety
  - Highway and Arterial Network
  - Regional Express Lane Network
  - Goods Movement
  - Aviation
  - Technological Innovations and Emerging Technology

Sustainable Communities Strategy

- Focus Growth Near Destinations & Mobility Options
- Promote Diverse Housing Choices
- Leverage Technology Innovations
- Support Implementation of Sustainability Policies
- Promote a Green Region

2.7.4.2.1 Transportation Control Measures (TCMs)

Connect SoCal includes, as a subset of transportation strategies, SIP-committed transportation programs and projects that reduce vehicle use or change traffic flow or congestion conditions for the purposes of reducing emissions from transportation sources and improving air quality, better known as Transportation Control Measures or "TCMs." In the Basin, TCMs include the following three main categories of transportation improvement projects and programs that have funding programmed for right-of-way and/or construction in the first two years of the 2021 FTIP:

1. Transit and non-motorized modes;
2. High Occupancy Vehicle (HOV) Lanes and their pricing alternatives; and
3. Information-based strategies (e.g., traffic signal synchronization).

Attachment A of Appendix IV-C of the 2022 AQMP contains a list of TCM projects that are from SCAG's 2021 FTIP and specifically identified and committed to in the 2022 AQMP. Per the Federal CAA, these committed TCMs are required to receive funding priority and be implemented in a timely manner. In the event that a committed TCM cannot be delivered or will be significantly delayed, there must be a substitution for the TCM. It is important to note that as the SCAG's FTIP is updated every two years, new committed TCMs are automatically added to the applicable SIP from the previous FTIP.

2.7.4.2.2 Plan Emissions Reduction Benefits

The Connect SoCal Plan is estimated to yield a reduction in NOx emissions by about 1.5 tpd in 2025, 4.1 tpd in 2035, and 6.8 tpd in 2045 compared with their respective baselines without the Connect SoCal Plan. However, if accounting for mandated future improvement in vehicle fleet mix and emission factors, the estimated NOx emission reduction from Connect SoCal is reduced by 60 to 73 percent, because the vehicles as a whole are becoming much cleaner and reduction of every vehicle mile traveled from Connect SoCal yields less reduction in NOx emissions.

2.7.4.2.3 Plan Investment

The total expenditure for the various strategies in Connect SoCal is forecasted to be $638.9 billion for the entire six-county SCAG region. Connect SoCal has identified the same amount of total revenues from both existing and several new funding sources that are reasonably expected to be available.

2.7.4.2.4 Cost-Benefit Analysis

To demonstrate how effective Connect SoCal would be toward achieving regional goals, SCAG conducted a Connect SoCal vs. Connect SoCal Baseline cost-benefit analysis utilizing the Cal-B/C Model to calculate regional network benefits by essentially comparing how the region would perform with and without implementation of the Connect SoCal. Compared with the alternative without the Plan, Connect SoCal would result in significant benefits to the SCAG region, not only with respect to mobility and accessibility, but also in the areas of air quality, economic growth and job creation, sustainability, and environmental justice.

2.7.4.3 Section III - TCM Reasonably Available Control Measure (RACM) Analysis

As required by the Federal CAA, a RACM analysis must be included as part of the overall control strategy in the ozone SIP to ensure that all potential control measures are evaluated for implementation and that justification is provided for those measures that are not implemented. Appendix IV-C of the 2022 AQMP contains the TCM RACM component for the South Coast ozone control strategy. In accordance with the U.S. EPA procedures, this analysis considers TCMs in Connect SoCal, measures identified by the Federal CAA, and relevant measures adopted in other ozone nonattainment areas of the country. Based on this comprehensive review, it is determined that the TCMs being implemented in the Basin are inclusive of all TCM RACM.

2.7.5 OVERALL EMISSION REDUCTIONS

Tables 2.7-4 and 2.7-5 identify projected reductions for the South Coast Air Basin based on the summer planning inventory for NOx and VOC emissions for the year of 2032 and 2037, respectively. These reductions reflect the emission reductions associated with implementation of control measures under local, state, and federal jurisdiction. Emission reductions represent the difference between the projected baseline and the remaining emissions.

TABLE 2.7-4
Emission Reductions For 2032 Based On Summer Planning Inventory (tons per day)

Sources	NOx	VOC
Year 2032 Baseline [a]	199	345
Emission Reductions:		
South Coast AQMD Stationary Sources	3	1
South Coast AQMD Mobile Sources	7	0
Sources under CARB's Direct Authority	24	5.5
Primarily Federally and Internationally Regulated Sources – CARB Measures	10	0.5
Primarily Federally and Internationally Regulation Sources – Federal Action Needed [b]	41	2
Total Reductions (all measures)[c]	85	10
2032 Remaining Emissions	114	336

[a] Emission assumptions from SCAG's 2020 RTP/SCS are already reflected in the AQMP baseline, including TCMs

[b] 182(e)(5) reductions from federal measures are allowed only for "extreme" nonattainment area. Include 26.2 tons per day NOx reduction from Ocean Going Vessel and 14.6 tons per day NOx reduction from aircraft emissions interpolated from 2022 to 2037.

[c] Numbers may not sum due to rounding

TABLE 2.7-5
Emission Reductions For 2037 Based On Summer Planning Inventory (tons per day)

Sources	NOx	VOC
Year 2037 Baseline [a]	184	339
Emission Reductions:		
South Coast AQMD Stationary Sources [b]	22	1
South Coast AQMD Mobile Sources	7	0
Sources under CARB's Direct Authority [c]	30	17.5
Primarily Federally and Internationally Regulated Sources – CARB Measures	11	0.5
Primarily Federally and Internationally Regulation Sources – Federal Action Needed	51	3
South Coast Stationary Sources – Further Deployment of Cleaner Technology	3	0
Total Reductions (all measures)	125	22
Set-Aside Accounts [d]	-0.5	-4
2037 Remaining Emissions [e]	63	321

[a] Emission assumptions from SCAG's 2020 RTP/SCS are already reflected in the AQMP baseline, including TCMs.

[b] Count 3.2 tons per day as the combined reduction from CARB and South Coast AQMD measures for Zero Emission building. South Coast AQMD measures C-CMB-01, C-CMB-02, R-CMB-01 and R-CMB-02 provides aggregated total 2.88 tons per day reductions. cap.

[c] Exclude 3.2 tons per day reduction from CARB proposed Zero Emission Standard for Space and Water Heaters control measure to avoid double counting. See detail in Chapter 4 Table 4-9.

[d] SIP reserve for potential technology assessment and phase-out of toxics for VOC.

[e] Numbers may not sum due to rounding.

2.7.6 SOUTH COAST AQMD PROPOSED CONTINGENCY MEASURES

Pursuant to Federal CAA Section 172(c)(9), contingency measures are emission reduction measures that are to be automatically triggered and implemented if an area fails to attain the NAAQS by the applicable attainment date, or fails to make reasonable further progress toward attainment. To address contingency measure requirements given recent court decisions and current U.S. EPA guidance, CARB and local air districts would need to develop a measure or measures that, when triggered by a failure to attain or failure to meet RFP, will achieve one year's worth of emission reductions for the given nonattainment area, or approximately 3 percent of total baseline emissions. In the Proposed 2022 State Strategy, CARB's three largest NOx reduction measures, In-Use Locomotive Regulation, Zero Emission Standards for Space and Water Heaters and Advanced Clean Fleets, rely on accelerated turnover of older engines/trucks. Buildup of infrastructure and equipment options limit the availability to have significant emission reductions in a short amount of time. Unless the U.S. EPA changes its historic stance calling for one year's worth if reductions, or finds a reasoned justification for requiring less than the stated amount, adopting a single triggered measure that can be implemented and achieve the necessary reductions in the time frame required is scarce in California and may not be possible.

There are few sources remaining without a control measure implemented by CARB, and those that do remain are primarily-federally regulated sources. This includes interstate trucks, ships, locomotives, aircraft, and certain categories of off-road equipment, constituting a large source of potential emission reductions. Since these are primarily regulated at the federal and, in some cases, international level, options to implement a contingency measure with reductions approximately equivalent to one year's worth of emission reductions are limited.

For the 2022 AQMP, attainment contingency measures rely on Federal CAA Section 182(e)(5) and will be developed three years prior to attainment. RFP contingency measures will be addressed separately in a parallel process. Chapter 4 of the 2022 AQMP discusses in detail how the contingency measure requirements are addressed for the 8-hour ozone NAAQS.

CHAPTER 3

EXISTING SETTING

3.1 INTRODUCTION

To determine the significance of the impacts associated with a proposed project, it is necessary to evaluate the proposed project's impacts against the backdrop of the environment as it exists at the time the environmental analysis is commenced. CEQA Guidelines Section 15360 defines environment as "the physical conditions that exist within the area which will be affected by a proposed project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance." [See also Public Resources Code Section 21060.5]. Furthermore, a CEQA document must include a description of the physical environment in the vicinity of the proposed project, as it exists at the time the environmental analysis is commenced, from both a local and regional perspective. [CEQA Guidelines Section 15125]. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant. The description of the environmental setting shall be no longer than is necessary to provide an understanding of the significant effects of the proposed project and its alternatives.

The existing setting is the physical environmental conditions as they existed at the time the NOP was published, or if no NOP is published, at the time the environmental analysis is commenced. [CEQA Guidelines Section 15125]. The NOP for the Draft Program EIR for the 2022 AQMP was published on May 13, 2022 and generally serves as the existing setting. The environmental setting (or existing setting) serves as the baseline to determine the impacts of the proposed project. For this Program EIR, the existing setting uses the most representative, published, verifiable, available data to establish the baseline for each environmental topic area to represent the conditions at the time the NOP was released.

This chapter is organized into subchapters for each environmental topic area identified in the NOP/IS (see Appendix A) as being expected to have potentially significant adverse impacts if the proposed project is implemented. Each subchapter includes a description of the existing environmental setting for the following environmental topic areas: air quality and GHG emissions; energy; hazards and hazardous materials; hydrology and water quality; noise; and solid and hazardous waste.

SUBCHAPTER 3.2

AIR QUALITY AND GREENHOUSE GAS EMISSIONS

Criteria Air Pollutants

Greenhouse Gas Emissions

3.2 AIR QUALITY AND GREENHOUSE GAS EMISSIONS

Ambient air quality standards have been adopted at the state and federal levels for criteria air pollutants. In addition, both the state and federal government regulate the release of toxic air contaminants and GHG emissions. Projects within South Coast AQMD's jurisdiction are subject to the rules and regulations imposed by the South Coast AQMD as well as regulations adopted by CARB and U.S. EPA. Federal, state, regional, and local laws, regulations, plans, or guidelines that are potentially applicable to the proposed project are summarized in this section.

3.2.1 CRITERIA AIR POLLUTANTS

The 2022 AQMP is designed to build upon measures already in place from previous AQMPs by identifying further opportunities for reducing emissions from existing emission sources and promoting the use of the cleanest available new emission sources. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emission and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the federal 8-hour ozone standard of 70 ppb. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial and industrial facilities, and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

The emissions inventory is divided into two major source classifications: stationary and mobile sources. Stationary sources include point sources and area sources. The 2018 base year point source emissions from the facilities subject to South Coast AQMD's Rule 301 are reported emissions through the South Coast AQMD's Annual Emissions Reporting (AER) Program. Area source emissions are estimated jointly by CARB and the South Coast AQMD using established inventory methods. See 2022 AQMP Appendix III for details.

Emissions data from mobile sources include on-road emissions and off-road emissions. On-road emissions are calculated using CARB's EMFAC2017 model and travel activity data provided by the Southern California Association of Governments (SCAG) from their adopted 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS, also called SoCal Connect). CARB's regulations adopted by December 2021 and since the release of EMFAC2017 were reflected on the baseline emissions using off-model adjustments. CARB provides emissions inventories for off-road sources, which include construction and mining equipment, industrial and commercial equipment, lawn and garden equipment, agricultural equipment, ocean-going vessels, commercial harbor craft, locomotives, cargo handling equipment, pleasure craft, recreational vehicles, and fuel storage and handling. Aircraft emissions are based on an updated analysis by the South Coast AQMD developed in conjunction with commercial airports in the region.

Future emissions forecasts are primarily based on demographic and economic growth projections provided by SCAG as well as the energy consumption projections by Southern California Gas Company (SoCalGas). In addition, emission reductions resulting from the South Coast AQMD's regulations amended or adopted by October 2020 and Rule 1109.1, and CARB regulations adopted by December 2021 are included in the future projections. The South Coast AQMD's

Rule 1109.1 - Emissions of Oxides of Nitrogen from Petroleum Refineries and Related Operations, was adopted in November 2021. Considering the substantial emission reductions from the implementation of the rule, its rule impact is reflected in the baseline emissions inventory.

3.2.1.1 Assumptions Used to Develop Current Emission Inventories

Two inventories are prepared for the 2022 AQMP for the purpose of regulatory and State Implementation Plan (SIP) performance tracking, including transportation conformity: an annual average inventory and a summer planning inventory. The summer planning inventory is used to capture emission levels during the high ozone season (May to October) when higher evaporative VOC emissions and more sunlight favor ozone formation. Baseline emissions data presented in this chapter are based on seasonally adjusted summer planning inventory emissions. The 2022 AQMP uses the summer planning inventories to develop an attainment strategy, estimate the cost-effectiveness of ozone control measures, and to report emissions reductions progress as required by the federal and California Clean Air Acts.

Detailed information regarding the emissions inventory development for base and future years and emissions by major source category in the base year and future baseline emission inventories are presented in Appendix III of the 2022 AQMP. In an emissions inventory, base year is the year from which the future emissions are projected. Attachments A and B to Appendix III of the 2022 AQMP list annual average and summer planning emissions by major source category for 2018, 2023, 2024, 2025, 2031, 2032, 2035, and 2037. Attachment C to Appendix III of the 2022 AQMP lists the top VOC and NOx point source facilities that emitted greater than or equal to 10 tons per year in 2018. Attachment D to Appendix III of the 2022 AQMP contains on-road emissions by vehicle class and pollutant. Attachment E to Appendix III of the 2022 AQMP shows emissions associated with diesel fuel internal combustion engines for various source categories. Attachment F to Appendix III of the 2022 AQMP provides a summary of road construction dust emissions in the South Coast Air Basin.

3.2.1.1.1 Stationary Sources

Stationary sources are divided into two major subcategories: point sources and area sources. Point sources are permitted facilities with one or more emission sources at an identified location (e.g., power plants, refineries, and industrial processes factories). These facilities generally have annual emissions of four tons or more of either VOC, nitrogen oxides (NOx), sulfur oxides (SOx), or total particulate matter (PM), or annual emissions of over 100 tons of carbon monoxide (CO). As set forth in South Coast AQMD Rule 301(e), facilities are required to report their criteria pollutant emissions and selected air toxics to the South Coast AQMD on an annual basis, subject to audit, if any of the annual thresholds in Rule 301(e)(5) are exceeded. This Program EIR relies on the 2018 AER data for the stationary source emission inventory.

Area sources consist of many small emission sources (e.g., residential water heaters, architectural coatings, consumer products, and permitted sources with emissions less than the annual thresholds established in Rule 301(e)(5)) which are distributed across the basins and are not required to individually report their emissions. CARB and the South Coast AQMD jointly develop emissions estimates for approximately 400 area source categories. Emissions from these area sources are estimated using latest activity information and representative emission factors, if available. Activity data are obtained from survey data or scientific reports such as U.S. Energy Information Administration (EIA) reports for fuel consumption other than natural gas fuel,

natural gas consumption data from Southern California Gas Company (SoCalGas), and solvent, sealant and architectural coatings sales reports required under the South Coast AQMD rules (Rules 314, 1113 and 1168). Some activity data, such as population, housing, and VMT, as well as a large portion for area sources are from SCAG. Emission factors are based on rule compliance factors, source tests, manufacturer's product or technical specification data, default values which are mostly from U.S. EPA's AP-42 – Compilation of Air Emissions Factors, or weighted emission factors derived from point source facilities' annual emissions reports. Additionally, emissions within a given area or region may be calculated using socioeconomic data, such as population, number of households, or employment in different industry sectors.

Appendix III of the 2022 AQMP provides further details on emissions from specific source categories such as architectural coatings, dairy cattle, oil and gas production operations, gasoline dispensing facilities, green waste composting, and livestock. Since the 2016 AQMP was finalized, the following updates to the area source inventory include:

- Consumer Products: Consumer product emissions were updated by CARB using data from the latest survey conducted in 2015. Consumer products survey categories were grouped into seven different series. The "Personal Care Products" series followed by the "Household and Institutional Products" series showed the largest quantity of VOC emissions with the potential to form ozone. Baseline VOC emissions in 2018 increased by around 20 tons per day compared with projected 2018 emissions of 87.56 tons per day in the 2016 AQMP.

- Fugitive Emissions from Tanker Ships: A new emission category was created to estimate the pressure-related fugitive VOC emissions through the mast riser, pressure vacuum (P/V) valves, and other components of ocean-going vessel (OGV) tankers during marine transit of crude oil and other petroleum products. This category does not include fugitive emissions occurring when the tanker ships are at-berth. VOC emissions in 2018 from this category are estimated to be 7.83 tons per day.

- Paved and Unpaved Road Dust: PM emissions from paved road dust were updated using 2018 traffic volume data for road segments within the South Coast AQMD jurisdiction provided by SCAG. Emissions were adjusted according to the time of day (morning, midday, afternoon, evening, and night) using the U.S. EPA's AP-42 emission factors. PM emissions from unpaved (non-farm) road dust were calculated according to the methodology outlined in CARB's unpaved (non-farm) roads guidance document. Unpaved road mileage for each source category was calculated using publicly available Geographic Information System (GIS) data.

- Architectural Coatings: Annual quantity and emissions data reported pursuant to Rule 314 were used to determine annual reported VOC emissions for 62 subcategories of emissions source (CES) codes in the architectural coatings category. Sales volumes for solvent-based and waterborne coatings reported annually per Rule 314 were used to estimate the total volume of thinning, additive, and cleanup solvents using typical usage ratios. Emissions from colorants were estimated by applying the assumption that colorant is added to 80 percent of all coatings, with four ounces of colorant added to each liter of coating according to the current VOC quantity limit (with the unit grams per liter) per Rule 1113. See 2022 AQMP Appendix III, Attachment H for details.

- Adhesives and Sealants: VOC emissions from adhesive and sealant applications were updated based on reported solvent- and water-based adhesive and sealants sales data for 2018. The South Coast AQMD Rule 1168 requires annual sales data to be reported. VOC emissions were calculated based on the volume and percent VOC by weight contained in each product sold.

- Natural Gas Combustion - Commercial and Industrial: Natural gas consumption data for 2018 was provided by SoCalGas for six emission source categories in the industrial and commercial sectors, including industrial/commercial internal combustion engines, space heating, water heating, and other/unspecified sectors. To eliminate point source contributions, the sector-specific Annual Emissions Reporting (AER) throughput was subtracted from the total. The internal/external combustion ratio derived from AER throughput data was then applied to calculate the throughputs for the respective categories. The most current NOx emission factors, which reflect the applicable emission standards set forth in several South Coast AQMD rules, including Rules 1146.2, 1110.2, and 1147, were applied in the emission calculations.

- Natural Gas Combustion – Residential: PM, SOx, NOx, total organic gases (TOG), and CO emissions from natural gas combustion in residential space heating, water heating, cooking, and other sectors were estimated from 2018 natural gas throughput data provided by SoCalGas. The most current NOx emission factors, which reflect the applicable emission standards set forth in South Coast AQMD Rules 1111 and 1121, were applied.

- Green Waste Composting, Co-Composting, and Chipping and Grinding: VOC and ammonia (NH_3) emissions from green waste composting operations and co-composting operations were estimated according to the methodology developed in the AER guideline document for green waste composting operations[11] and the South Coast AQMD Rule 1133.3 requirements.[12] Emissions from chipped and ground mulch were estimated following the methodology developed for the 2016 AQMP Control Measure BCM-10.[13] Annual throughput data for 2018 was reported directly by facilities according to reporting requirements set forth in South Coast AQMD Rule 1133.

- LPG combustion - Industrial, Commercial and Residential: The total liquefied petroleum gas (LPG) consumed in California in both the industrial and commercial sectors was obtained from the Energy Information Administration (EIA) of the U.S. Department of Energy for 2018. LPG combustion emissions were determined by multiplying the estimated area source consumption in external and internal combustion portions of the industrial and commercial sectors by their respective AP-42 default emission factors.

[11] South Coast AQMD, 2020. Guidelines for Calculating Emission from Greenwaste Composting and Co-Composting Operations, https://www.aqmd.gov/docs/default-source/planning/annual-emission-reporting/guidelines-for-calculating-emissions-from-greenwaste-composting-and-co-composting-operations---december-2020.pdf, accessed on June 10, 2022.

[12] South Coast AQMD, 2011. Rule 1133.3 – Emission Reductions from Greenwaste Composting Operations, http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1133-3.pdf, accessed on June 10, 2022.

[13] South Coast AQMD, 2017. 2016 AQMP, http://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/final-2016-aqmp, accessed on June 10, 2022.

- LPG Transfer Dispensing-Fugitive Loss: VOC emissions from LPG transfer and dispensing–fugitive losses at residential, commercial, industrial, chemical, agricultural, and retail sales facilities were estimated using activity data for 2018. See 2022 AQMP Appendix III, Attachment H for details.

- Livestock: PM10, NH3, and VOC emissions from dairy cattle, layers (i.e., chickens raised to produce eggs), and swine were updated using the latest available head count from the Santa Ana Water Control Board for 2018, and emission factors from the South Coast AQMD 2011 Technology Assessment report.

3.2.1.1.2 Mobile Sources

Mobile sources consist of two subcategories: on-road sources and off-road sources. On-road vehicle emissions were calculated with CARB's EMFAC2017 model and travel activity data provided by SCAG from their adopted 2020 RTP/SCS. The Emission Spatial and Temporal Allocator (ESTA, https://github.com/mmb-carb/ESTA) tool developed by CARB was used to spatially and temporally distribute emissions to generate inputs for attainment demonstration air quality simulations. Off-road emissions were calculated using CARB's category-specific inventory models.

3.2.1.1.3 On-Road

CARB's EMFAC2017 model has undergone extensive revisions from the previous version (EMFAC2014) to make it more user-friendly and flexible and to allow incorporation of larger amounts of data demanded by current regulatory and planning processes. The U.S. EPA approved the EMFAC2017 emissions model for SIP and conformity purposes in August 2019. EMFAC2017 calculates exhaust and evaporative emission rates by vehicle type for different vehicle speeds and environmental conditions. Temperature and humidity profiles are used to produce monthly, annual, and episodic inventories. Emission rate data in EMFAC2017 is collected from various sources, such as individual vehicles in a laboratory setting, tunnel studies, and certification data. The EMFAC2017 model interface and overall design has not significantly changed as compared to EMFAC2014, however, EMFAC2017 includes more state-of-the-art information to better represent the real-world emissions from on-road sources. Major improvements include:

- New data and significant methodology changes for motor vehicle emission calculations and revisions to implementation data for control measures;

- Updated emission factors and activity data for cars and trucks, including emission reductions associated with new regulations on heavy-heavy duty diesel trucks and buses. New emission factors were developed based on data from U.S. EPA's In-Use Vehicle Program, CARB's Vehicle and Truck and Bus Surveillance Programs, CARB's Portable Emissions Measurement Systems and Transit Bus testing, and Integrated Bus Information Systems of West Virginia and Altoona; and,

- Updates to the motor vehicle fleet age, vehicle types, and vehicle population based on 2013-2016 California Department of Motor Vehicle (DMV) data, International Registration Plan data, Truck Regulation Upload, Compliance, and Reporting System data, Port Vehicle Identification Number data, California Highway Patrol School Bus Inspections, and National

Transit Database information. Each of these changes affects emission factors for each area in California.

More detailed information on the changes incorporated in EMFAC2017 can be found at https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/msei-modeling-tools-emfac-software-and. ~~https://ww3.arb.ca.gov/msei/msei.htm.~~ The 2022 AQMP on-road emissions incorporated regulations adopted post EMFAC2017, such as Advanced Clean Trucks (ACT)[14], Heavy-Duty Low NOx Omnibus Regulations[15] and Heavy-Duty Inspection and Maintenance Regulation.[16]

Figure 3.2-1 shows 2018 on-road emissions estimated using EMFAC2014 in the 2016 AQMP and EMFAC2017 in the 2022 AQMP (top panel), as well as estimated emissions for 2037 for the 2022 AQMP only (bottom panel). It should be noted that the comparison for on-road emissions reflects changes in EMFAC model update as well as the updated vehicle miles traveled (VMT) from SCAG's 2020 RTC/SCS.

The estimates presented in the 2022 AQMP indicate fewer emissions of NOx and VOCs in 2018 than projected levels from the 2016 AQMP based on EMFAC2014. For 2037, emissions are substantially less than base-year 2018 emissions. These emission reductions can be attributed to ongoing implementation of regulations and programs such as CARB's 2010 Truck and Bus rule, Advanced Clean Cars Program, Federal Phase 2 GHG Standards, Advanced Clean Truck and Low NOx Omnibus Regulations and Heavy Duty Inspection and Maintenance. Despite growth in the number of vehicles and their use, emissions from on-road mobile sources are expected to decrease in future years. NOx and VOC emissions in 2037 are 76 and 56 percent lower than in 2018, respectively.

3.2.1.1.4 Off-Road

As explained in the 2022 AQMP, emissions from off-road vehicle categories are primarily based on estimated activity levels and emission factors for a suite of category-specific models or, where a new model was not available, the OFFROAD2007 model. Separate models have been developed for estimating emissions from different categories of off-road mobile sources. More information on these models can be found at the following link: https://ww3.arb.ca.gov/msei/msei.htm. Several of the newer models have been updated to support recent regulations since the adoption of the 2016 AQMP. Major updates have been made to the inventories for aircraft, ocean-going vessels, locomotives, in-use off-road equipment, harbor craft, small off-road engines and others. Updates made by CARB to specific off-road categories are summarized below:

- Aircraft: An updated aircraft emissions inventory was developed for the 2018 base year and 2037 attainment year based on the latest available activity data from airports and Federal Aviation Administration (FAA) databases and application of the FAA's Aviation Environmental Design Tool for airports with detailed aircraft activity data for commercial air carrier/taxi operations. For smaller general aviation and military airports,

[14] Advanced Clean Trucks, https://ww2.arb.ca.gov/our-work/programs/advanced-clean-trucks.
[15] Heavy-Duty Low NOx Omnibus Regulations, Available at: https://ww2.arb.ca.gov/rulemaking/2020/hdomnibuslownox.
[16] Heavy-Duty Inspection and Maintenance Regulations, Available at: https://ww2.arb.ca.gov/rulemaking/2021/hdim2021.

the U.S. EPA's average landing and takeoff emission factors were used to calculate emissions. Further details are available in Appendix III of the 2022 AQMP Aircraft Emissions Inventory Report.[17]

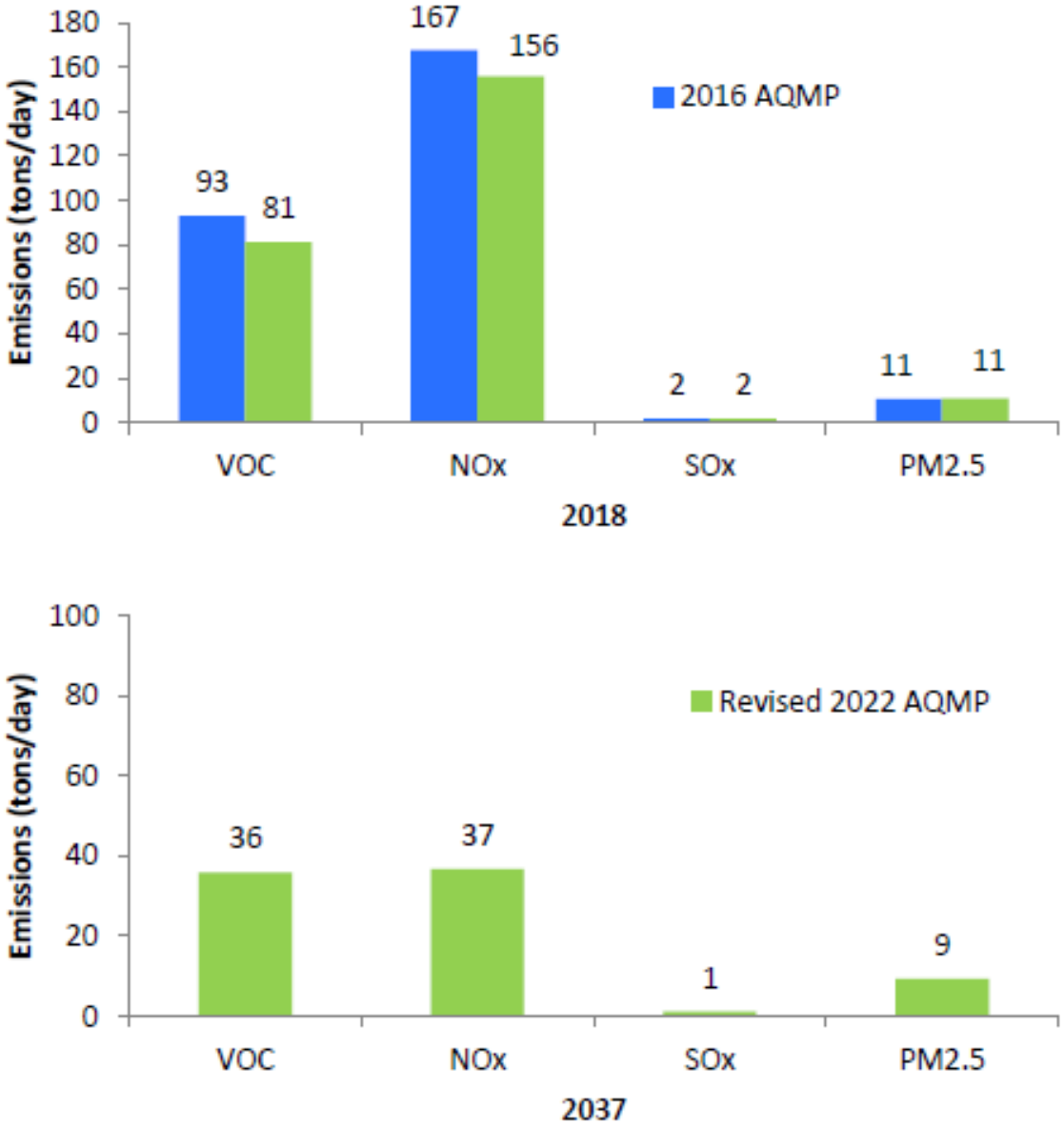


FIGURE 3.2-1
Comparison of On-Road Emissions Between 2016 AQMP and ~~Revised Draft~~ 2022 AQMP Summer Planning Inventory

[17] South Coast AQMD, 2022. Revised Draft 2022 AQMP Aircraft Emissions Inventory Report. http://www.aqmd.gov/docs/default-source/Agendas/aqmp/2022-aqmp-ag/revised-draft-2022-aqmp-aircraft-emissions-inventory-report.pdf, accessed on June 10, 2022.

- Ocean-Going Vessels (OGVs): OGV emissions were updated in 2021 based on Automatic Identification System transponder data. This data, along with vessel information supplied by the South Coast AQMD and the company IHS Fairplay, provides vessel visit counts, speed, engine size, and other vessel characteristics. The inventory relies on the U.S. EPA's methodology for emissions based on vessel speed, engine model year, and horsepower. The inventory includes transit, maneuvering, anchorage, and at-berth emissions. The comprehensive national model Freight Analysis Framework was used to develop growth rates for forecasting.[18]

- Locomotives: All locomotive inventories were updated in 2020 and include linehaul (large national companies), switchers (used in railyards), passenger, and Class 3 locomotives (smaller regional companies). Data for each sector was supplied by rail operations, including Union Pacific and Burlington Northern, and Santa Fe Railway (BNSF) for linehaul and switcher operations. Data for other categories was supplied by the locomotive owners. Emission factors for all categories were based on the U.S. EPA emission factors for locomotives. The inventory reflects the 2005 Memorandum of Understanding (MOU) with Union Pacific and BNSF. Growth rates were primarily developed from the comprehensive national model Freight Analysis Framework. A new category includes military and industrial locomotive emission inventory and relies on the annual fuel consumption and engine information collected from 2011 to 2018. The military and industrial locomotive data was supplied by 39 private companies and four military rail groups, with a total of 85 locomotives. The subject locomotives typically consist of smaller, older switchers and medium horsepower (e.g., 2,301 to 3,999 horsepower) locomotives operating within the boundaries of a granary, plant, or industrial facility. CARB is in the process of updating the military and industrial locomotive methodology which, upon its completion, will be available on CARB's website.

- Commercial Harbor Craft (CHC): CHC are grouped into 18 vessel types: articulated tug barge (ATB), bunker barge, towed petrochemical barge, other barge, dredge, commercial passenger fishing, commercial fishing, crew and supply, catamaran ferry, monohull ferry, short run ferry, excursion, ATB tug, push and tow tug, escort/ship assist tug, pilot boat, research boat, and work boat.

  The CHC inventory was updated in 2021 and includes vessels used around harbors such as tug and tow boats, fishing vessels, research vessels, barges, and similar. The inventory was updated based on CARB's reporting data for these vessels, as well as inventories from the Ports of Los Angeles, Long Beach, Oakland, and Richmond. This supplied vessel characteristics, and the population was scaled up to match U.S. Coast Guard data on the annual number of vessels in California waters. Activity and load factors were based on a mix of reporting data and port-specific inventories. Emission factors were

[18] CARB, 2022. 2021 Ocean Going Vessels Emission Inventory, Marcy 3, 2022, https://ww2.arb.ca.gov/sites/default/files/2022-03/CARB_2021_OGV_Documentation_ADA.pdf, accessed August 5, 2022.

based on certification data for harbor craft engines. Population and activity growth factors were estimated based on historical trends in the past decade.[19]

- Small Off-Road Engines (SORE): SORE are spark-ignition engines rated at or below 19 kilowatts (which is equivalent to 25 horsepower). Typical engines in this category are used in lawn and garden equipment as well as other outdoor power equipment and cover a broad range of equipment. The majority of this equipment belongs to the Lawn and Garden (e.g., lawnmower, leaf blower, trimmer) and Light Commercial (e.g., compressor, pressure washer, generator) categories of CARB's 2020 Emissions Model for Small Off-Road Engines (SORE2020).

  The newly developed, stand-alone SORE2020 Model reflects the recovering California economy from the 2008 economic recession and incorporates emission results from CARB's recent in-house testing as well as CARB's most recent Certification Database. CARB also has conducted an extensive survey of SORE operating within California through the Social Science Research Center at the California State University, Fullerton. Data collected through this survey provides the most up-to-date information regarding the population and activity of SORE equipment in California. The final SORE emissions included the adopted SORE rule in December 2021 as well as the 15-day changes after the CARB Governing Board hearing which allowed the pressure washers (rated at greater than five horsepower) extra time for meeting the regulation. The SORE annual sales were forecasted using historic growth of the number of California households (California Department of Finance household forecasts, 2000–2008 and 2009–2018). For the t 2022 AQMP, the emission benefits of adopted SORE rule are reflected into the baseline emissions update.

- Diesel Agricultural Equipment: The agricultural equipment inventory includes all off-road vehicles used on farms or first processing facilities for all fuel types and was updated in 2021 with data from a 2019 survey of California farmers and rental facilities, and the 2017 U.S. Department of Agriculture (USDA) agricultural census. Emission factors are based on the 2017 off-road diesel emission factor update. The inventory reflects incentive programs for agricultural equipment that were implemented prior to August 2019. Agricultural growth rates were developed using historical data from the County Agricultural Commissioners' reports.

- In-Use Off-Road Equipment: The category of in-use off-road equipment includes off-road diesel vehicles rated at great than 25 horsepower for use in the construction, mining, industrial, and oiling drilling categories. CARB'S Off-Road Diesel (ORD) Regulation requires reporting to the DOORS online tool, which was established for registering vehicle inventories. The inventory was updated in 2022 with data from the DOORS registration program. The activity data was updated based on a 2021 survey of registered equipment owners, and emission factors were based on the 2017 off-road diesel emission factor update. The inventory reflects the In-Use Off-Road Equipment Regulations, as amended in 2011.

[19] CARB, 2021. Public Hearing to Consider the Proposed Amendments to the Commercial Harbor Craft Regulation Staff Report: Initial Statement of Reasons, Appendix H, September 21 2021, available at: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2021/chc2021/apph.pdf, accessed August 5, 2022.

- Cargo Handling Equipment (CHE): The CHE inventory covers equipment for all fuel types used at California ports and intermodal railyards, such as cranes, forklifts, container handling equipment, and more. The inventory population and activity were updated in 2021 based on the inventories for the Ports of Los Angeles, Long Beach, and Richmond, and the CARB reporting data for other ports and railyards. Load factors were based on the previous inventory in 2007, and emission factors were based on the 2017 off-road diesel emission factor update. The inventory reflects the CHE Airborne Toxic Control Measures (ATCM) adopted by CARB in 2005 and completed in 2017.

- Transportation Refrigeration Units (TRU): The TRU inventory was updated in 2020 based on CARB's TRU reporting program. The activity data was developed from the 2010 surveys of facilities served by TRUs and from 2017 to 2019 telematics data purchased from TRU manufacturers. Emission factors were developed specifically for TRUs based on TRU engine certification data reported to the U.S. EPA as of 2018. The inventory reflects the TRU ATCM and 2021 amendments adopted by CARB. Forecasting was based on IBISWorld reports forecast for related industries, and turnover forecasting was based on the past 20 years of equipment population trends.

- Portable Equipment: The portable equipment inventory includes non-mobile diesel equipment, such as generators, pumps, air compressors, chippers, and other miscellaneous equipment rate at or greater than 50 horsepower. This inventory was developed in 2017 based on CARB's registration program, the 2017 survey of registered owners for activity and fuel, and the 2017 off-road diesel emission factor update. The inventory also reflects the Portable ATCM and 2017 amendments adopted by CARB.

  Because registration in Portable Equipment Registration Program (PERP) is voluntary, the PERP registration data were used as the basis for the equipment population, with an adjustment factor used to represent the remaining portable equipment in the state. Estimates of future emissions beyond the base year were made by adjusting base year estimates for population growth, activity growth, and the purchases of new equipment (i.e., natural and accelerated turnover).

- Large Spark Ignition/Forklifts: The large spark ignition (LSI) inventory includes gasoline and propane forklifts, sweeper/scrubbers, and tow tractors. The inventory was updated in 2020 based on the LSI/forklift registration in CARB's DOORS online reporting tool, and the sales data was provided by the Industrial Truck Association. Activity data was based on a survey of equipment owners in the DOORS system, and emission factors were based on the U.S. EPA's latest guidance for gasoline and propane engines. The inventory reflects the CARB's LSI regulation requirements and 2016 amendments.

- Recreational Marine Vessels (RMV): Pleasure craft or RMV is a broad category of marine vessels that includes gasoline-powered spark-ignition marine watercraft, diesel-powered marine watercraft, outboards, sterndrives, personal watercraft, jet boats, and sailboats with auxiliary engines. This emissions inventory was last updated in 2014 to support CARB's evaporative control measures. The population, activity, and emission factors were revised using new surveys, DMV registration information, and emissions testing data. Economic data from a 2014 UCLA Economic Forecast was relied upon to estimate the near-term annual sales of RMV (from 2014 to 2019). To forecast long-term

annual sales from 2020 and later, an estimate of California's annual population growth was utilized as a surrogate.

- Recreational Vehicles: Off-highway recreational vehicles include off-highway motorcycles (OHMC), all-terrain vehicles (ATV), off-road sport vehicles, off-road utility vehicles, sand cars, golf carts, and snowmobiles. A new model was developed by CARB in 2018 to update emissions from recreational vehicles. Input factors such as population, activity, and emission factors were re-assessed using new surveys, DMV registration information, and emissions testing. OHMC population growth was calculated from incoming population as estimated by future annual sales and the scrapped vehicle population as estimated by the survival rate.

- Fuel Storage and Handling: Emissions from portable fuel storage containers (gas cans) were estimated based on past surveys and CARB in-house testing. This inventory uses a composite growth rate that depends on occupied household (or business units), percent of households (or businesses) with gas cans, and average number of gas cans per household (or business) units.

Figure 3.2-2 presents the estimated off-road baseline emissions for 2018 in the 2016 AQMP and the 2022 AQMP, as well as projected emissions for 2037 (2022 AQMP only). Overall, estimated off-road VOC emissions and off-road NOx emissions for 2018 are 6 percent and 3 percent higher in the 2022 AQMP compared to the 2016 AQMP, respectively. SOx and PM2.5 emissions are 23 percent and 21 percent lower, respectively. It should be noted that the comparison for 2018 reflects changes in methodology and activity data.

Estimated emissions in 2037 are less than 2018 emissions for all pollutants, except SOx, due to ongoing implementation of regulations and programs, and anticipated growth. SOx emissions are expected to increase by 25 percent from 2018 to 2037 due to increased emissions from aircraft, ships, and commercial boats. However, this seemingly large increase corresponds to less than one ton per day of additional SOx. The growth in SOx emissions from the OGV sector is expected to dominate the marginal growth in SOx emissions from stationary sources.

3.2.1.1.5 Uncertainty in the Inventory

An effective AQMP relies on a complete and accurate emissions inventory. Methods for quantifying different emission sources continue to improve, allowing for development of more effective control measures. Increased use of continuous monitoring and source testing has contributed to improved point source inventories. Providing technical assistance to facilities combined with conducting audits of reported emissions have also improved the accuracy of the emissions inventory. Area source inventories that rely on average emission factors and regional activities have inherent uncertainty. Industry-specific surveys and source-specific studies during rule development have provided much-needed refinement to these emissions estimates. Emission factors for many area sources are adapted from the U.S. EPA's AP-42, but some categories have not been updated for extended periods of time, posing additional uncertainties in estimated emissions. Mobile source inventories are also continuously updated and improved. As described earlier, many improvements are included in the on-road mobile source model EMFAC2017, which estimates emissions from trucks, automobiles, and buses. Improvements and updates are also included in the off-road emissions models for locomotives, ocean going vessels, commercial harbor craft, pleasure craft and off-highway recreational vehicles, cargo handling equipment, and

farm equipment. Overall, the 2022 AQMP inventory is based on the most current data and methodologies, resulting in the most accurate inventory available.

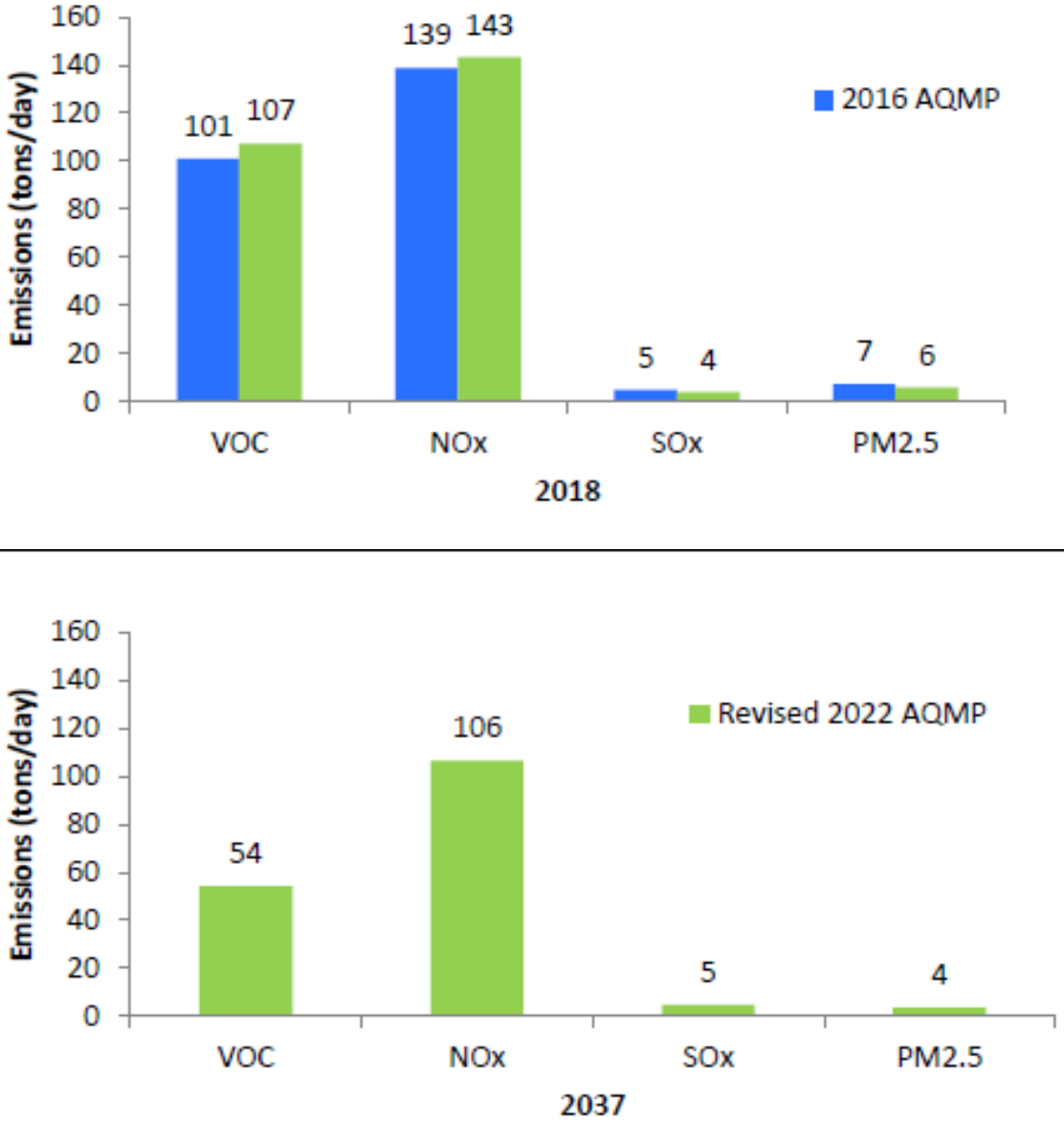


FIGURE 3.2-2
Comparison of Off-Road Emissions Between 2016 AQMP and ~~Revised Draft~~ 2022 AQMP Summer Planning Inventory
(*No Emission Projection for 2037 in 2016 AQMP*)

There are many challenges inherent in making accurate projections based on future growth, such as where vehicle trips will occur, the distribution between various modes of transportation (such as trucks and trains), as well as estimates for population growth and the number and type of jobs. Forecasts are made with the best information available; nevertheless, there is uncertainty in emissions projections. AQMP updates are generally developed every three to four years, thereby allowing for frequent updates and improvements to the inventories.

3.2.1.1.6 Gridded Emissions

The air quality modeling domain extends to southern Kern County in the north, the Arizona and Nevada borders to the east, northern Mexico to the south and more than 100 miles offshore to the west. The modeling domain is divided into a grid system comprised of 4 kilometer (km) by 4 km grid cells. Both stationary and mobile source emissions are allocated to individual grid cells within this system. In general, emissions are modeled as total daily emissions. Variations in temperature, hours of operation, speed of motor vehicles, or other factors are considered in developing gridded motor vehicle emissions. The "gridded" emissions data used for the ozone attainment demonstration differ from the annual average day or planning inventory emission data in several ways: 1) the modeling region covers larger geographic areas than the Basin; 2) emissions represent day-specific instead of average or seasonal conditions; and 3) emissions are adjusted with daily meteorological conditions such as temperature and humidity. The summer planning inventory is used to generate the gridded emission ozone modeling applications. The summer planning inventory reflects emissions for an operating day during the high ozone season from May to October. This season typically has higher evaporative VOC emissions and more sunlight playing an important role in ozone formation.

3.2.1.2 Base Year Emissions - 2018 Emission Inventory

Table 3.2-1A compares the summer planning emissions in the 2022 AQMP base year inventory and projected 2018 emissions in the Final 2016 AQMP by major source category for VOC and NOx. Table 3.2-1B shows this comparison for SOx and PM2.5 emissions. Emission comparisons for 2018 reflect updates in methodology, activity data, differences between growth projections and actual data, and adopted rules since the release of the 2016 AQMP.

Overall, the VOC emissions stay almost unchanged between the 2016 AQMP and the 2022 AQMP projections. Estimates of stationary source and mobile source VOC emissions show three percent increase and three percent decrease, respectively. Among stationary sources, fuel combustion and consumer products emissions source categories show the largest changes, with 52 percent lower and 23 percent higher VOC emissions compared to 2016 AQMP projected emissions, respectively. The increase in consumer products source category emissions reflects updated estimates based on category-wide 2015 survey data, which led to approximately 20 tons per day higher VOC emissions in 2018. Architectural coatings emissions were updated for the 2022 AQMP using information provided as part of the South Coast AQMD Rule 314 – Fees for Architectural Coatings annual reports, resulting in reduced VOC emission estimates (eight percent). Total NOx emissions show a modest four percent decrease between 2016 AQMP projections and the 2022 AQMP inventory. Stationary source NOx emissions have decreased by almost 14 percent. Notable emission changes are attributed to the stationary source categories associated with South Coast AQMD Regulation XX - Regional Clean Air Incentives Market (RECLAIM) source categories and natural gas and LPG combustion sources. The RECLAIM emissions cap was used to project NOx emissions for future years. The 2018 RECLAIM

emissions from the 2016 AQMP inventory were the allocation caps as defined in Rule 2002, while the 2022 AQMP uses actual reported emissions for 2018, which were less than the cap by six tons per day for NOx. Use of additional actual reported information in lieu of projected emissions explains most of the remaining emission differences. Further detail can be found in Appendix III of the 2022 AQMP.

TABLE 3.2-1A
Comparison of VOC and NOx Emissions by Major Source Category of 2018 Base Year in ~~Revised Draft~~ 2022 AQMP and Projected 2018 in Final 2016 AQMP Summer Planning Inventory (tons/day[1])

Source Category	2016 AQMP	2022 AQMP	% Change	2016 AQMP	2022 AQMP	% Change
	VOC			NOx		
Stationary Sources						
Fuel Combustion	11.3	5.4	-52%	22.8	20.1	-12%
Waste Disposal	15.4	16.6	8%	2.5	1.5	-38%
Cleaning and Surface Coatings	42.3	38.1	-10%	0.1	0.0	-69%
Petroleum Production and Marketing	21.1	20.6	-2%	0.3	0.3	-10%
Industrial Processes	12.3	10.8	-12%	0.1	0.1	13%
Solvent Evaporation:						
Consumer Products	87.6	107.4	23%	0.0	0.0	0%
Architectural Coatings	11.5	10.6	-8%	0.0	0.0	0%
Others	2.7	2.3	14%	0.0	0.0	0%
Misc. Processes	7.1	5.7	-20%	10.3	11.5	11%
RECLAIM Sources	0.0	0.0	0%	24.2	18.2	-25%
Total Stationary Sources	**211**	**218**	**3%**	**60**	**52**	**-14%**
Mobile Sources						
On-Road Vehicles	93	81	-13%	167	156	-7%
Off-Road Vehicles	101	107	6%	139	143	3%
Total Mobile Sources	**194**	**188**	**-3%**	**306**	**299**	**-2%**
Total	**405**	**406**	**0%**	**366**	**351**	**-4%**

[1] Values may not sum due to rounding

TABLE 3.2-1B
Comparison of SOx and PM2.5 Emissions by Major Source Category of 2018 Base Year in ~~Revised Draft~~ 2022 AQMP and Projected 2018 in 2016 AQMP Summer Planning Inventory (tons per day[1])

Source Category	2016 AQMP	2022 AQMP	% Change	2016 AQMP	2022 AQMP	% Change
	SOx			PM2.5		
Stationary Sources						
Fuel Combustion	2.0	2.5	22%	5.6	5.4	-3%
Waste Disposal	0.6	0.5	-22%	0.3	0.3	8%
Cleaning and Surface Coatings	0.0	0.0	0%	1.7	1.6	-9%
Petroleum Production and Marketing	0.4	0.3	-30%	1.5	0.9	-40%
Industrial Processes	0.12	0.14	18%	7.4	5.0	-32%
Solvent Evaporation:						
Consumer Products	0	0	0%	0	0	0%
Architectural Coatings	0	0	0%	0	0	0%
Others	0	0	0%	0	0	0%
Misc. Processes	0.3	0.2	-55%	27.8	29.1	5%
RECLAIM Sources	6.8	5.5	-19%	0	0	0%
Total Stationary Sources	**10**	**9**	**-12%**	**44**	**42**	**-4%**
Mobile Sources						
On-Road Vehicles	1.9	1.7	-9%	10.9	11.0	1%
Off-Road Vehicles	3.7	3.8	4%	5.5	5.8	6%
Total Mobile Sources	**6**	**6**	**-1%**	**16**	**17**	**3%**
Total	**17**	**15**	**-15%**	**62**	**59**	**-5%**

[1] Values may not sum due to rounding

For the mobile source category, updates to EMFAC2017 and travel activity data from the SCAG 2020 RTP/SCS resulted in 13 percent and seven percent reductions in VOC and NOx emissions from on-road sources, respectively. Updates for off-road sources resulted in a six percent increase in off-road VOC emissions and three percent increase in off-road NOx emissions compared to projected emissions from the 2016 AQMP. The increase of VOC emission from off-road sources was mainly driven by an update to the emission estimates methodology for the SORE sector. The new emission category, tanker transit loss, which added 8 tons per day emissions to the OGV VOC, contributed to the increased VOC emissions compared to 2016 AQMP.

Due to the use of actual reported information in lieu of the allocation cap for RECLAIM sources, estimates of SOx emissions in the 2022 AQMP emissions inventory are 15 percent lower when compared to 2016 AQMP projections. Due to the increases in the paved and unpaved road dust

emission estimates and decreases in industrial process and petroleum production and marketing emission estimates, direct PM2.5 emissions from stationary and mobile sources are five percent lower in the 2022 AQMP when compared to 2016 AQMP projections.

Table 3.2-2 presents the 2018 summer planning emissions inventory by major source category. Stationary sources are subdivided into point sources (e.g., petroleum production and electric utilities) and area sources (e.g., architectural coatings, residential water heaters, consumer products, and permitted sources with emissions less than the annual emission reporting threshold – generally four tons per year). Mobile sources consist of on-road (e.g., passenger cars and heavy-duty trucks) and off-road sources (e.g., locomotives and ships).

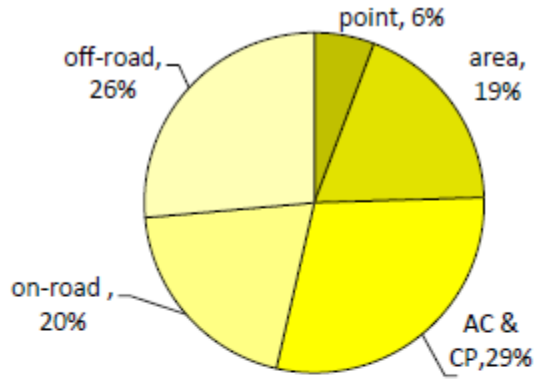
TABLE 3.2-2
Summary of Emissions by Major Source Category: 2018 Base Year
Summer Planning (Tons Per Day[1])

Source Category	Summer Planning					
	VOC	NOx	CO	SOx	PM2.5	NH_3
Fuel Combustion	5	20	81	6	5	8
Waste Disposal	17	2	1	0	0	6
Cleaning and Surface Coatings	38	0	0	0	2	0
Petroleum Production and Marketing	21	0	3	1	1	0
Industrial Processes	11	0	1	0	5	9
Solvent Evaporation:						
Consumer Products	107	0	0	0	0	0
Architectural Coatings	11	0	0	0	0	0
Others	2	0	0	0	0	1
Misc. Processes[2]	6	11	19	0	29	36
RECLAIM Sources	0	18	0	6	0	0
Total Stationary Sources	**218**	**52**	**104**	**9**	**42**	**61**
On-Road Vehicles	81	156	747	2	11	16
Off-Road Vehicles	107	143	807	4	6	0
Total Mobile Sources	**188**	**299**	**1553**	**6**	**17**	**16**
Total	**406**	**351**	**1658**	**15**	**59**	**77**

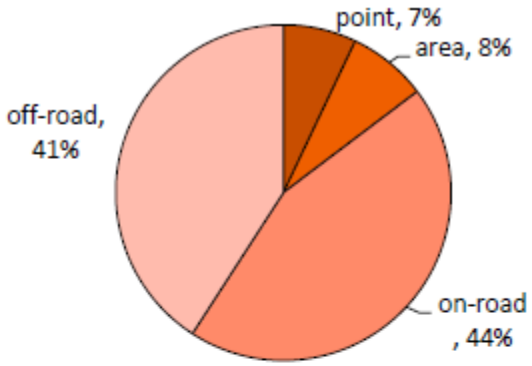
[1] Values may not sum due to rounding
[2] Includes entrained road dust

Figure 3.2-3 illustrates the relative contribution of each source category to the 2018 inventory. Area sources, including architectural coatings and consumer products subcategories, are the major contributor to VOC emissions. Mobile sources, stationary point source, and stationary area source categories are the top contributors to NOx, SOx, and PM2.5 emissions, respectively. Overall, total mobile source emissions account for almost 46 percent of VOC emissions and 85 percent of NOx emissions, as well as 89 percent of CO emissions. The on-road mobile category alone contributes over 20 percent and 44 percent of VOC and NOx emissions, respectively. For directly emitted PM2.5, mobile sources represent 29 percent of total emissions with an additional 18 percent from vehicle-related entrained dust from paved and unpaved roads. Stationary sources are responsible for most of the SOx emissions in the Basin, with the point source category (larger facilities subject to AER requirements) contributing 49 percent of total SOx emissions. Non-vehicle related area sources, such as commercial cooking are the predominant source of directly emitted PM2.5 emissions, contributing 41 percent of total emissions.

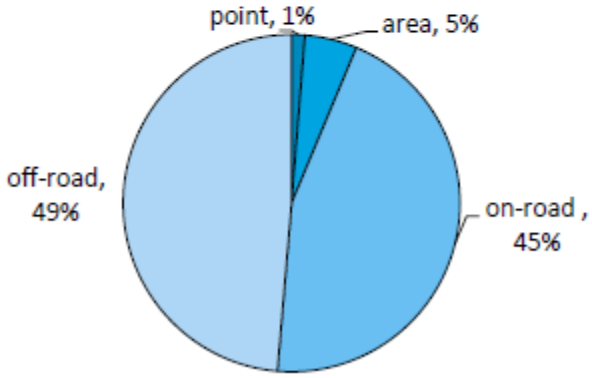
Figure 3.2-4 presents the fraction of the 2018 inventory by agency with primary responsibility or authority for regulating for VOC, NOx, SOx, and directly emitted PM2.5 emissions. NOx and VOC are important precursors to ozone and PM2.5 formation, and SOx and directly emitted PM2.5 contribute to the region's PM2.5 nonattainment challenges. The U.S. EPA and CARB have primary authority to regulate emissions from mobile sources, while the South Coast AQMD has limited authority to regulate some mobile source emissions via fleet rules and facility-based mobile source measures. The U.S. EPA's authority applies to aircraft, locomotives, ocean-going vessels, military harbor craft, and other mobile categories, including California International Registration Plan and out-of-state medium and heavy-duty trucks and pre-empted off-road equipment rated at less than 175 horsepower. CARB has authority over the remainder of mobile sources and consumer products, portions of area sources related with fuel combustion, and petroleum production and marketing. The South Coast AQMD has authority over most area sources and all point sources. As shown in Figure 3.2-4, most NOx and VOC emissions in the Basin are from sources that are under the primary jurisdiction of the U.S. EPA or CARB. For example, 86 percent of NOx and 77 percent of VOC emissions are from sources primarily regulated by CARB and the U.S. EPA. Conversely, 61 percent of SOx emissions and 72 percent of directly emitted PM2.5 emissions are from sources primary regulated by the South Coast AQMD. The differences in regulatory authority illustrate how actions at the local, state, and federal level are needed to ensure the region attains the federal ambient air quality standards.



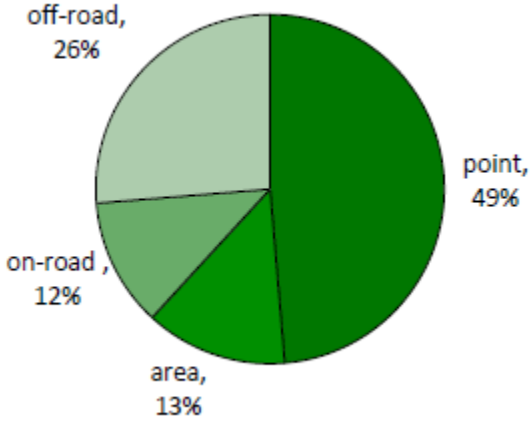
VOC Emissions: 406 tons/day



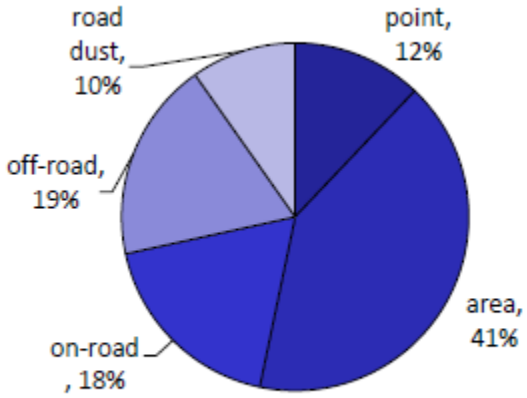
NOx Emissions: 351 tons/day



CO Emissions: 1658 tons/day



SOx Emissions: 15 tons/day



Directly Emitted PM2.5 Emissions: 59 tons/day

FIGURE 3.2-3
Relative Contribution by Source Category to 2018 Emissions Inventory
(*AC = Architectural Coatings and Related Solvent, CP = Consumer Products*)
(*Summer Planning, values are rounded to nearest integer and may not sum due to rounding*)

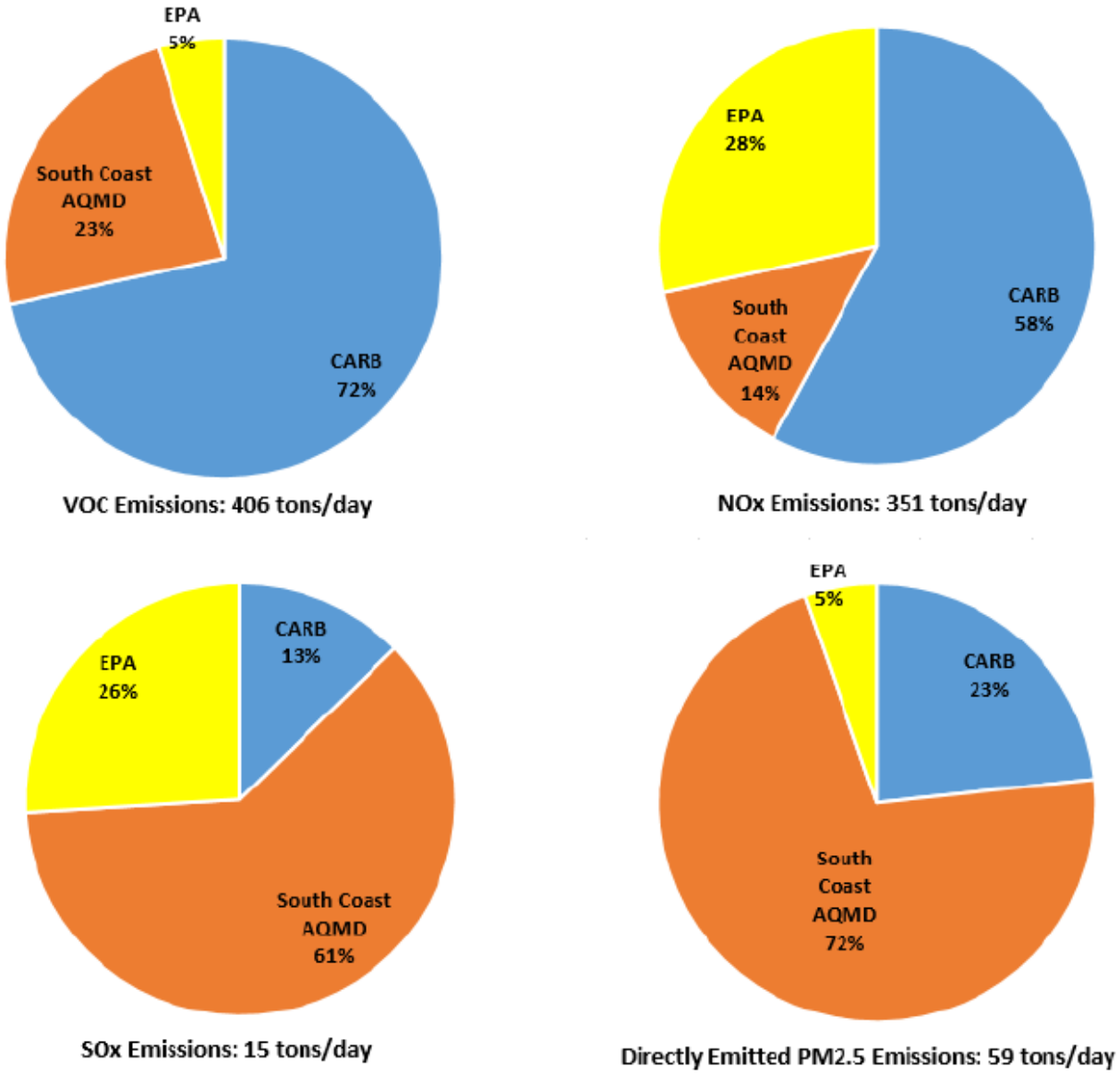


FIGURE 3.2-4
2018 Emission Inventory Agency Primary Responsibility
(*Summer Planning, values are rounded to nearest integer and may not sum due to rounding*)

3.2.1.3 Future Emissions

3.2.1.3.1 Inventory Development

Inventories were developed for 2018, the base year for attainment demonstration, 2037, the attainment year for the 2015 National Ambient Air Quality Standard (NAAQS) 8-hour ozone standard of 70 ppb, and milestone years to demonstrate Reasonable Further Progress (RFP). Detailed emissions inventories for RFP years are provided in Appendix III of the 2022 AQMP.

Future-year emissions in 2037 were derived using: 1) emissions from the 2018 base year; 2) expected controls after implementation of the South Coast AQMD rules adopted after the 2016 AQMP through October 2020 plus Rule 1109.1 and CARB regulations adopted by December 2021; and 3) activity growth in various source categories between the base and future years.

One of the major changes to stationary source emission projections between the 2016 AQMP and 2022 AQMP is the treatment of point source NOx and SOx emissions under the RECLAIM program, which mainly include fuel combustion emissions from power plants, oil and gas production, petroleum refining, and manufacturing and industrial and service sectors. In the 2016 AQMP, RECLAIM source emissions were projected using allocation caps prescribed by the South Coast AQMD Rule 2002. The 2016 AQMP inventory reflects the December 2015 amendments to the NOx RECLAIM program which reduced the NOx allocation cap by 12 tons per day by 2022. Following the Governing Board's direction, NOx emissions from RECLAIM are subject to an additional five tons per day of reductions by 2025 under the 2016 AQMP CMB-05 - Further NOx Reductions from RECLAIM Assessment. The South Coast AQMD Governing Board also directed the RECLAIM program to be converted to a traditional command and-control regulatory structure. Years 2025 and 2026 will be the first years with no RECLAIM programs for NOx and SOx, respectively. In the 2022 AQMP, stationary source emission projections for attainment year 2037 are all subject to conventional control and growth, as there will be no RECLAIM universe in the emissions inventory reporting. However, to be transparent and consistent with the 2016 AQMP, emission projections under the previous RECLAIM program are provided here separately and are identified as "former-RECLAIM" emissions. The South Coast AQMD adopted Rule 1109.1 in November 2021 to reduce NOx emissions from petroleum refineries and related operations in the Basin, which are the main drivers of former-RECLAIM NOx emission reductions in post-RECLAIM years. Former-RECLAIM SOx emission projections for 2037 were not subject to any additional controls since SOx is not an ozone precursor per U.S. EPA.

Future growth projections were based on demographic growth forecasts for various socioeconomic categories (e.g., population, housing, employment by industry) developed by SCAG for their 2020 RTP/SCS. Industry growth factors for 2018 and 2037 were also provided by SCAG. Table 3.2-3 summarizes key socioeconomic parameters used in the 2022 AQMP emissions inventory development. Appendix III of the 2022 AQMP provides further detail on growth surrogates for different source sectors.

TABLE 3.2-3
Baseline Demographic Forecasts in the ~~Revised Draft~~ 2022 AQMP

Category (Millions)	2018	2037	2037 % Growth from 2018
Population	16.7	18.6	12%
Housing Units	5.3	6.2	17%
Total Employment	7.7	8.6	11%
Daily VMT	388	406	5%

Current forecasts indicate that this region will experience population growth of 12 percent between 2018 and 2037, with a five percent increase in VMT. Housing units show the largest change of the socioeconomic indicators with a projected 17 percent increase from 2018 to 2037.

3.2.1.3.2 Summary of Future Baseline Emissions

To illustrate trends in future baseline summer planning inventories, emissions data by source category and pollutant for 2037 are presented in Table 3.2-4. Future baseline inventories are projected future emissions that reflect already adopted regulations and programs but do not incorporate additional controls proposed in the 2022 AQMP. The 2018 base year emission inventory, which captures actual 2018 emissions, is used as the basis for future projections.

Without any additional control measures, VOC and NOx emissions are expected to decrease due to existing South Coast AQMD and CARB regulations and programs, such as controls for on- and off-road equipment, new vehicle standards, and Rule 1109.1 for refinery emissions. SOx and NH_3 baseline emissions increase by four percent and 10 percent, respectively, between 2018 and 2037. These emission increases are driven by increases in population and economic activity that outpace emission reductions from introducing cleaner equipment and vehicles. The increase in NH3 emissions is primarily driven by increased on-road NH3 emissions from adoption of NOx control from heavy-duty vehicles. Figure 3.2-5 shows relative contributions to the 2037 baseline inventory by source category. A comparison of Figures 3.2-3 and 3.2-5 indicates that area sources, including the consumer products category, continue to be the major contributor to VOC emissions. Contribution of mobile sources decline from 46 percent of Basin total VOC emissions in 2018 to 27 percent in 2037; both off-road and on-road sources show approximately 10 percent decline in their contribution to VOC emissions in 2037. Mobile sources continue to be a major contributor to total NOx emissions. On-road contributions decrease from 44 percent to 20 percent in 2037, while contributions from off-road sources increase from 41 percent to 58 percent. The off-road source category also accounts for a larger fraction of CO emissions in 2037 (53 percent) compared to 2018 (49 percent), indicating that off-road mobile sources, including aircraft, OGV, and locomotives, account for a larger fraction of the entire inventory.

TABLE 3.2-4
Summary of Emissions by Major Source Category: 2037 Baseline
Summer Planning (tons per day[1])

Source Category	Summer Planning					
	VOC	NOx	CO	SOx	PM25	NH_3
Fuel Combustion	6	28	72	6	5	7
Waste Disposal	18	2	1	0	0	7
Cleaning and Surface Coatings	41	0	0	0	2	0
Petroleum Production and Marketing	20	1	3	2	1	0
Industrial Processes	11	1	1	1	6	9
Solvent Evaporation:						
Consumer Products	132	0	0	0	0	0
Architectural Coatings	12	0	0	0	0	0
Others	3	0	0	0	0	1
Misc. Processes[2]	5	10	19	0	32	37
Total Stationary Sources	**249**	**41**	**96**	**9**	**46**	**61**
On-Road Vehicles	36	37	336	1	9	23
Off-Road Vehicles	54	106	492	5	4	0
Total Mobile Sources	**90**	**143**	**827**	**6**	**13**	**24**
TOTAL	**339**	**184**	**923**	**15**	**59**	**85**

[1] Values are rounded to nearest integer and may not sum due to rounding
[2] Includes entrained road dust

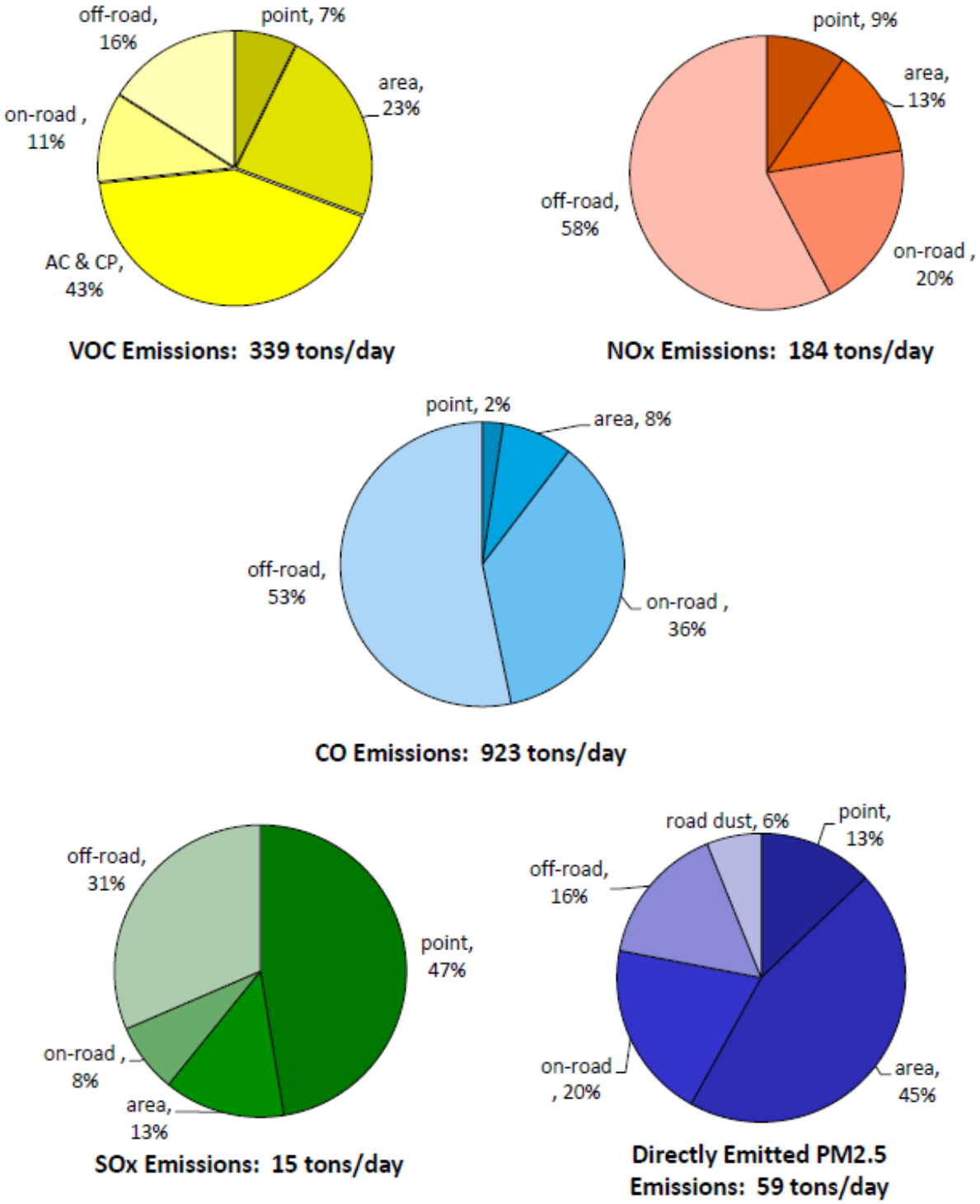


FIGURE 3.2-5
Relative Contribution by Source Category to 2037 Emissions Inventory
(*AC = Architectural Coatings and Related Solvent, CP = Consumer Products*)
(Summer Planning, values are rounded to nearest integer and may not sum due to rounding)

For directly emitted PM2.5, mobile sources account for 22 percent of total emissions in the 2037 inventory, a seven percent decrease from the total mobile source contribution in 2018. This does not account for entrained dust emissions from paved and unpaved road, which shows a modest increase from 18 percent in the 2018 inventory to 20 percent in the 2037 inventory. Area sources excluding paved/unpaved road dust sources are projected to remain the predominant source of directly emitted PM2.5, contributing 41 percent of emissions in 2018 and 45 percent in 2037. Stationary sources are projected to remain the predominant source of SOx, with point sources contributing more than half of total SOx emissions in the Basin in 2037. However, OGVs are significant source of SOx emissions in the Basin, and growing OGV activity in future years is expected to increase SOx emissions at a faster rate than growth in point source emissions. The highest-ranking source categories in the 2018 and 2037 inventories are discussed in a later section.

Figure 3.2-6 shows the fraction of the 2037 inventory by responsible agency for VOC, NOx, SOx, and directly emitted PM2.5 emissions. In 2037, slightly larger fractions of NOx and VOC emissions will fall under the South Coast AQMD control (30 percent for VOC and 20 percent for NOx) due to different relative rates of emission reductions among sources controlled by the three agencies. However, the majority of VOC and NOx emissions will remain primarily under CARB and EPA jurisdiction. NOx sources under federal control, such as OGVs (31 tons per day), locomotives (16 tons per day), aircraft (28 tons per day), out-of-state and international heavy-duty trucks (five tons per day), military portion of commercial harbor craft (1 ton per day), and pre-empted off-road equipment (four tons per day) contribute 46 percent of total NOx emissions in the Basin in 2037, compared to 28 percent in 2018, indicating growing disparity between regulations on federal sources and sources under state and local control. VOC emissions from consumer products, which are regulated by CARB, are projected to reach 132 tons per day in 2037, representing 39 percent of total VOC emissions in the Basin. This increase in emissions, which mostly originate from the use of personal care, hygiene, and cleaning products, indicates population growth in the region. The fraction of SOx emissions that falls under the South Coast AQMD regulatory authority will remain largely unchanged from the 2018 base year inventory. Area sources, including entrained road dust, are projected to remain the largest contributor to PM2.5 emissions.

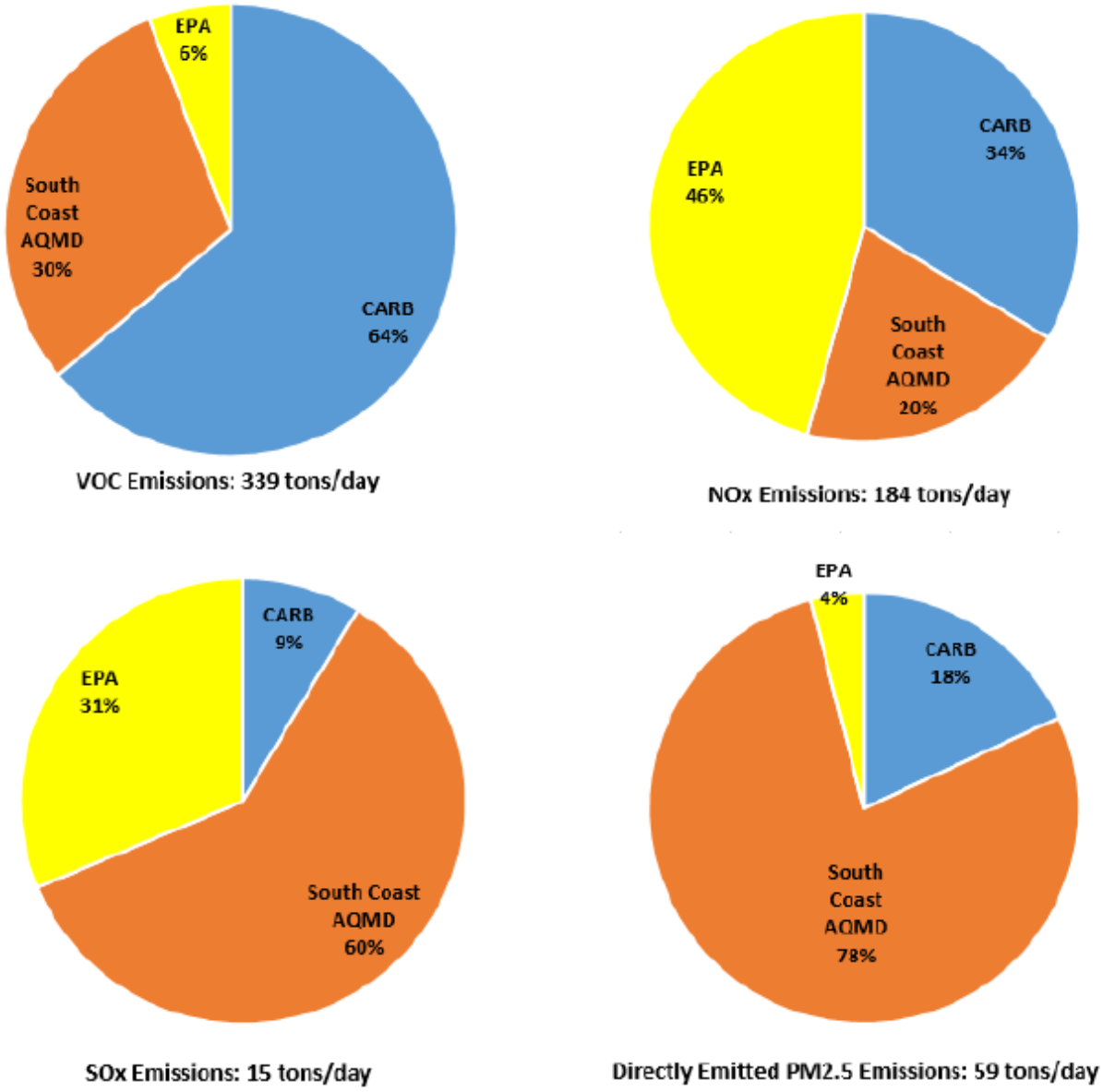


FIGURE 3.2-6
2037 Emissions Inventory Agency Responsibility
(*Summer Planning, values are rounded to nearest integer and may not sum due to rounding*)

3.2.1.4 Air Quality Monitoring

South Coast AQMD has the responsibility to ensure that state and federal ambient air quality standards (AAQS or standards) are achieved and maintained in its geographical jurisdiction. Health-based air quality standards have been established by California and the federal government for the following criteria air pollutants: ozone (O3), carbon monoxide (CO), nitrogen dioxide (NO2), particulate matter (PM, which includes PM10 and PM2.5), sulfur dioxide (SO2), and lead (Pb). These standards were established to protect sensitive receptors with a margin of safety from adverse health impacts due to exposure to air pollution. The California standards are sometimes more stringent than the federal standards, and in the case of PM10 and SO2, far more stringent. However, for ozone, the current 8-hour California Ambient Air Quality Standard (CAAQS) and the 2015 8-hour NAAQS are at an equivalent level and for PM2.5, the current annual CAAQS and the 2012 annual NAAQS are also at an equivalent level. As a result, the South Coast AQMD relies on the same measures to meet both federal and state ozone and PM2.5 standards. California has also established standards for sulfates, visibility reducing particles, hydrogen sulfide, and vinyl chloride. The state and federal standards for each of these pollutants and their effects on health are summarized in Table 3.2-5.

South Coast AQMD monitors levels of various criteria pollutants at 38 monitoring stations. The 2020 air quality data (the latest data available) from South Coast AQMDs monitoring stations are presented in Tables 3.2-6 through 3.2-12 for the individual criteria air pollutants monitored by South Coast AQMD.

TABLE 3.2-5
State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	State Standard[a]	Federal Primary Standard[b]	Most Relevant Effects
Ozone (O3)	1-hour	0.09 ppm (180 µg/m^3)	0.12 ppm	(a) Short-term exposures: 1) Pulmonary function decrements and localized lung edema in humans and animals; and 2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; and (d) Property damage.
	8-hour	0.070 ppm (137 µg/m^3)	0.070 ppm (137 µg/m^3)	
Suspended Particulate Matter (PM10)	24-hour	50 µg/m^3	150 µg/m^3	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; and (b) Excess seasonal declines in pulmonary function, especially in children.
	Annual Arithmetic Mean	20 µg/m^3	No Federal Standard	
Suspended Particulate Matter (PM2.5)	24-hour	No State Standard	35 µg/m^3	(a) Increased hospital admissions and emergency room visits for heart and lung disease; (b) Increased respiratory symptoms and disease; and (c) Decreased lung functions and premature death.
	Annual Arithmetic Mean	12 µg/m^3	12 µg/m^3	
Carbon Monoxide (CO)	1-Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; and (d) Possible increased risk to fetuses.
	8-Hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	

TABLE 3.2-5 (concluded)
State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	State Standard[a]	Federal Primary Standard[b]	Most Relevant Effects
Nitrogen Dioxide (NO2)	1-Hour	0.18 ppm (339 µg/m^3)	0.100 ppm (188 µg/m^3)	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; and (c) Contribution to atmospheric discoloration.
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	
Sulfur Dioxide (SO2)	1-Hour	0.25 ppm (655 µg/m^3)	75 ppb (196 µg/m^3)	Broncho-constriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma.
	24-Hour	0.04 ppm (105 µg/m^3)	No Federal Standard	
Sulfates	24-Hour	25 µg/m^3	No Federal Standard	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; and (f) Property damage
Hydrogen Sulfide (H_2S)	1-Hour	0.03 ppm (42 µg/m^3)	No Federal Standard	Odor annoyance.
Lead (Pb)	30-Day Average	1.5 µg/m^3	No Federal Standard	(a) Increased body burden; and (b) Impairment of blood formation and nerve conduction.
	Calendar Quarter	No State Standard	1.5 µg/m^3	
	Rolling 3-Month Average	No State Standard	0.15 µg/m^3	
Visibility Reducing Particles	8-Hour	Extinction coefficient of 0.23 per kilometer - visibility of ten miles or more due to particles when relative humidity is less than 70 percent.	No Federal Standard	The statewide standard is intended to limit the frequency and severity of visibility impairment due to regional haze. This is a visibility-based standard not a health-based standard. Nephelometry and AISI Tape Sampler; instrumental measurement on days when relative humidity is less than 70 percent.
Vinyl Chloride	24-Hour	0.01 ppm (26 µg/m^3)	No Federal Standard	Highly toxic and a known carcinogen that causes a rare cancer of the liver.

ppb = parts per billion parts of air, by volume
ppm = parts per million parts of air, by volume
µg/m3 = micrograms per cubic meter
mg/m3 = milligrams per cubic meter

[a] The California ambient air quality standards for O3, CO, SO2 (1-hour and 24-hour), NO2, PM10, and PM2.5 are values not to be exceeded. All other California standards shown are values not to be equaled or exceeded.

[b] The national ambient air quality standards, other than O3 and those based on annual averages are not to be exceeded more than once a year. The O3 standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standards is equal to or less than one.

Carbon Monoxide

CO is a primary pollutant, meaning that it is directly emitted into the air, not formed in the atmosphere by chemical reaction of precursors, as is the case with ozone and other secondary pollutants. Ambient concentrations of CO in the Basin exhibit large spatial and temporal variations due to variations in the rate at which CO is emitted and in the meteorological conditions that govern transport and dilution. Unlike ozone, CO tends to reach high concentrations in the fall and winter months. The highest concentrations frequently occur on weekdays at times consistent with rush hour traffic and late night during the coolest, most stable portion of the day.

Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise and electrocardiograph changes indicative of worsening oxygen supply to the heart. Inhaled CO has no direct toxic effect on the lungs but exerts its effect on tissues by interfering with oxygen transport by competing with oxygen to combine with hemoglobin present in the blood to form carboxyhemoglobin (COHb). Hence, conditions with an increased demand for oxygen supply can be adversely affected by exposure to CO. Individuals most at risk include patients with diseases involving heart and blood vessels, fetuses, and patients with chronic hypoxemia (oxygen deficiency) as seen in high altitudes. Reductions in birth weight and impaired neurobehavioral development have been observed in animals chronically exposed to CO resulting in COHb levels similar to those observed in smokers. Recent studies have found increased risks for adverse birth outcomes with exposure to elevated CO levels. These include preterm births and heart abnormalities.[20,21,22]

On August 12, 2011, U.S. EPA issued a decision to retain the existing NAAQS for CO, determining that those standards provided the required level of public health protection. However, U.S. EPA added a monitoring requirement for near-road CO monitors in urban areas with population of one million or more, utilizing stations that would be implemented to meet the 2010 NO2 near-road monitoring requirements. The two new CO monitors are at the I-5 near-road site, located in Orange County near Anaheim, and the I-10 near-road site, located near Etiwanda Avenue in San Bernardino County near Ontario, Rancho Cucamonga, and Fontana.

As summarized in Table 3.2-6, CO concentrations were measured at 23 locations in the South Coast Air Basin and neighboring Salton Sea Air Basin in 2020 but did not exceed the state or federal standards in 2020. The highest 1-hour average CO concentration recorded was 4.5 ppm (at the South Central Los Angeles County station), less than the federal and state 1-hour CO standards of 35 ppm and 20 ppm, respectively. The highest 8-hour average CO concentration recorded was 3.1 ppm at the South Central Los Angeles County station, less than the federal and state 8-hour CO standards of 9.0 ppm. All areas within the South Coast AQMD's jurisdiction are in attainment for both the federal and state 1-hour and 8-hour CO standards.

[20] U.S. Environmental Protection Agency. 2020. Criteria Air Pollutants. https://www.epa.gov/criteria-air-pollutants, accessed on June 10, 2022.

[21] South Coast AQMD. 2015. Health Effects of Air Pollution. http://www.aqmd.gov/docs/default-source/publications/brochures/the-health-effects-of-air-pollution-brochure.pdf, accessed on June 10, 2022.

[22] South Coast AQMD. 2005, May. Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. https://www.aqmd.gov/home/research/guidelines/planning-guidance/guidance-document, accessed on June 10, 2022.

TABLE 3.2-6
South Coast AQMD – 2020 Air Quality Data – CO[23]

CARBON MONOXIDE (CO)[a]				
Source Receptor Area No.	**Location of Air Monitoring Station**	**No. Days of Data**	**Max. Conc. in ppm 1-hour**	**Max. Conc. in ppm, 8-hour**
LOS ANGELES COUNTY				
1	Central Los Angeles	359	1.9	1.5
2	Northwest Coastal Los Angeles County	365	2.0	1.2
3	Southwest Coastal Los Angeles County	364	1.6	1.3
6	West San Fernando Valley	363	2.0	1.7
8	West San Gabriel Valley	361	2.6	2.2
9	East San Gabriel Valley 1	349	2.4	2.0
9	East San Gabriel Valley 2	310	2.3	1.9
10	Pomona/Walnut Valley	363	1.5	1.1
11	South San Gabriel Valley	362	3.1	1.7
12	South Central Los Angeles County	364	4.5	3.1
13	Santa Clarita Valley	363	1.2	0.8
ORANGE COUNTY				
16	North Orange County	347	2.1	1.2
17	Central Orange County	361	2.3	1.7
17	I-5 Near Road[##]	359	2.4	2.0
19	Saddleback Valley	366	1.7	0.8
RIVERSIDE COUNTY				
23	Metropolitan Riverside County 1	361	1.9	1.4
23	Metropolitan Riverside County 3	359	1.8	1.5
25	Elsinore Valley	358	0.9	0.7
30	Coachella Valley 1**	365	0.8	0.5
SAN BERNARDINO COUNTY				
32	Northwest San Bernardino Valley	364	1.5	1.1
33	I-10 Near Road[##]	363	1.5	1.2
34	Central San Bernardino Valley 1	358	1.7	1.2
34	Central San Bernardino Valley 2	360	1.9	1.4
DISTRICT MAXIMUM[(b)]			**4.5**	**3.1**
SOUTH COAST AIR BASIN[(c)]			**4.5**	**3.1**
ppm = parts per million of air, by volume		**Salton Sea Air Basin		

[##] Four near-road sites measuring one or more of the pollutants PM2.5, CO, and/or NO2 are operating near the following freeways: I-5, I-10, CA-60, and I-710.
[a] The federal 8-hour standard (8-hour average CO > 9 ppm) and state 8-hour standard (8-hour average CO > 9.0 ppm) were not exceeded. The federal and state 1-hour standards (35 ppm and 20 ppm) were not exceeded either.
[b] District Maximum is the maximum value calculated at any station in the South Coast AQMD jurisdiction.
[c] Concentrations are the maximum value observed at any station in the South Coast Air Basin. Number of daily exceedances are the total number of days that the indicated concentration is exceeded at any station in the South Coast Air Basin.

Ozone

Ozone (O3), a colorless gas with a sharp odor, is a highly reactive form of oxygen. High ozone concentrations exist naturally in the stratosphere. Some mixing of stratospheric ozone downward through the troposphere to the earth's surface does occur; however, the extent of ozone transport is limited. At the earth's surface in sites remote from urban areas ozone concentrations are normally very low (e.g., from 0.03 ppm to 0.05 ppm).

[23] South Coast AQMD, 2021. "2020 Air Quality - South Coast Air Quality Management District – CO," Historical Air Quality Data for Year 2020 at locations where CO was monitored; http://www.aqmd.gov/docs/default-source/air-quality/historical-data-by-year/aq2020card_final.pdf, accessed on June 10, 2022

Ozone is highly reactive with organic materials, causing damage to living cells and ambient ozone concentrations in the Basin are frequently sufficient to cause health effects. Ozone enters the human body primarily through the respiratory tract and causes respiratory irritation and discomfort, makes breathing more difficult during exercise, and reduces the respiratory system's ability to remove inhaled particles and fight infection. Individuals exercising outdoors, children, and people with preexisting lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the most susceptible subgroups for ozone effects. Short-term exposures (lasting for a few hours) to ozone at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. In recent years, a correlation between elevated ambient ozone levels and increases in daily hospital admission rates, as well as mortality, has also been reported. An increased risk for asthma has been found in children who participate in multiple sports and live in high ozone communities. Elevated ozone levels are also associated with increased school absences. Ozone exposure under exercising conditions is known to increase the severity of the previously mentioned observed responses. Animal studies suggest that exposures to a combination of pollutants which include ozone may be more toxic than exposure to ozone alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes.[24,25,26]

As summarized in Table 3.2-7, O3 concentrations were measured at 29 locations in the South Coast Air Basin and the Coachella Valley portion of the Salton Sea Air Basin in 2020. Maximum ozone concentrations for all areas monitored were below the stage 1 episode level (0.20 ppm) and below the health advisory level (0.15 ppm). All counties in the Basin, as well as the Coachella Valley, exceeded the level of the 2015 federal 8-hour O3 (0.070 ppm), the state 1-hour O3 standard (0.09 ppm), and the state 8-hour O3 standard (0.070 ppm) in 2020. All but one station (Southwest Coast LA County) exceed the former 2008 federal 8-hour O3 standard (0.075 ppm).

Maximum 1-hour average and 4th highest 8-hour[27] average ozone concentrations were 0.185 ppm and 0.125 ppm, respectively (at the Central LA station and East San Bernardino Valley station, respectively), which are greater than the federal 1-hour and 8-hour ozone NAAQS of 0.12 ppm and 0.070 ppm, respectively. The federal 8-hour standard is met at an air quality monitor when the 3-year average of the annual fourth-highest daily maximum 8-hour average is less than 0.070 ppm. The maximum 1-hour concentration also exceeded the state 1-hour ozone standard of 0.09 ppm. All areas within South Coast AQMD's jurisdiction are in nonattainment for both the federal and state 1-hour and 8-hour ozone standards.

[24] U.S. Environmental Protection Agency. 2020. Criteria Air Pollutants https://www.epa.gov/criteria-air-pollutants, accessed on June 10, 2022.
[25] South Coast AQMD. 2015. Health Effects of Air Pollution. http://www.aqmd.gov/docs/default-source/publications/brochures/the-health-effects-of-air-pollution-brochure.pdf, accessed on June 10, 2022.
[26] South Coast AQMD. 2005, May. Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. https://www.aqmd.gov/home/research/guidelines/planning-guidance/guidance-document, accessed on June 10, 2022.
[27] The 4th highest 8-hour average concentration is the design value form of 8-hour NAAQS for Ozone.

TABLE 3.2-7
South Coast AQMD – 2020 Air Quality Data – O3[28]

OZONE (O3)[(a)]										
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. in ppm 1-hr	Max. Conc. in ppm 8-hr	4th High Conc. ppm 8-hr	No. Days Standard Exceeded				
						Federal (ppm)			State (ppm)	
						Old > 0.124 1-hr	Current > 0.070 8-hr*	2008 > 0.075 8-hr	Current > 0.09 1-hr	Current > 0.070 8-hr
LOS ANGELES COUNTY										
1	Central LA	332	0.185	0.118	0.093	1	22	16	14	22
2	Northwest Coastal LA County	357	0.134	0.092	0.078	1	8	5	6	8
3	Southwest Coastal LA County	350	0.117	0.074	0.066	0	2	0	1	2
4	South Coastal LA County 4	332	0.105	0.083	0.071	0	4	2	4	4
6	West San Fernando Valley	345	0.142	0.115	0.097	0	49	23	14	49
7	East San Fernando Valley	359	0.133	0.108	0.102	5	49	33	31	49
8	West San Gabriel Valley	354	0.163	0.115	0.108	9	60	44	41	60
9	East San Gabriel Valley 1	347	0.168	0.125	0.105	11	61	43	53	61
9	East San Gabriel Valley 2	348	0.173	0.138	0.124	17	97	71	76	97
10	Pomona/Walnut Valley	353	0.180	0.124	0.106	10	84	53	51	84
11	South San Gabriel Valley	356	0.169	0.114	0.089	3	23	15	20	23
12	South Central LA County	354	0.152	0.115	0.072	1	4	3	3	4
13	Santa Clarita Valley	348	0.148	0.122	0.106	10	73	56	44	73
ORANGE COUNTY										
16	North Orange County	340	0.171	0.133	0.088	3	23	19	15	23
17	Central Orange County	356	0.142	0.097	0.079	2	15	4	6	15
19	Saddleback Valley	364	0.171	0.122	0.090	1	32	25	20	32
RIVERSIDE COUNTY										
23	Metropolitan Riverside County 1	348	0.143	0.115	0.102	6	81	59	46	81
23	Metropolitan Riverside County 3	350	0.140	0.117	0.103	7	89	62	51	89
24	Perris Valley	358	0.125	0.106	0.097	1	74	48	34	74
25	Elsinore Valley	355	0.130	0.100	0.093	1	52	30	18	52
26	Temecula Valley	364	0.108	0.091	0.084	0	37	20	5	37
29	San Gorgonio Pass	358	0.150	0.115	0.104	3	68	48	29	68
30	Coachella Valley 1**	360	0.119	0.094	0.089	0	49	28	9	49
30	Coachella Valley 2**	358	0.097	0.084	0.081	0	42	17	2	42
SAN BERNARDINO COUNTY										
32	Northwest San Bernardino Valley	360	0.158/	0.123	0.116	15	114	87	82	114
34	Central San Bernardino Valley 1	348	0.151	0.111	0.105	8	89	65	56	89
34	Central San Bernardino Valley 2	359	0.162	0.128	0.122	15	128	110	89	128
35	East San Bernardino Valley	361	0.173	0.136	0.125	16	141	127	104	141
37	Central San Bernardino Mountains	364	0.159	0.139	0.117	7	118	97	69	118
DISTRICT MAXIMUM[(b)]			**0.185**	**0.139**	**0.125**	**17**	**141**	**127**	**104**	**141**
SOUTH COAST AIR BASIN[(c)]			**0.185**	**0.139**	**0.125**	**27**	**157**	**142**	**132**	**157**

ppm = parts per million of air, by volume
**Salton Sea Air Basin

[a] The current (2015) O3 federal standard was revised effective December 28, 2015.
[b] District Maximum is the maximum value calculated at any station in the South Coast AQMD jurisdiction.
[c] Concentrations are the maximum value observed at any station in the South Coast Air Basin. Number of daily exceedances are the total number of days that the indicated concentration is exceeded at any station in the South Coast Air Basin.

[28] South Coast AQMD, 2021. 2020 Air Quality, South Coast Air Quality Management District, Historical Air Quality Data for Year 2020 at locations where O3 was monitored; http://www.aqmd.gov/docs/default-source/air-quality/historical-data-by-year/aq2020card_final.pdf, accessed on June 10, 2022.

Nitrogen Dioxide

NO2 is a reddish-brown gas with a bleach-like odor. Nitric oxide (NO) is a colorless gas, formed from the nitrogen (N_2) and oxygen (O_2) in air under conditions of high temperature and pressure which are generally present during combustion of fuels; NO reacts rapidly with the oxygen in air to form NO2. NO2 is responsible for the brownish tinge of polluted air. The two gases, NO and NO2, are referred to collectively as NOx. In the presence of sunlight, NO2 reacts to form nitric oxide and an oxygen atom. The oxygen atom can react further to form O3, via a complex series of chemical reactions involving hydrocarbons. Nitrogen dioxide may also react to form nitric acid (HNO3) which reacts further to form nitrates, components of PM2.5 and PM10.

Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposures to NO2 at levels found in homes with gas stoves, which are higher than ambient levels found in Southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO2 in healthy subjects. Larger decreases in lung functions are observed in individuals with asthma and/or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these subgroups. More recent studies have found associations between NO2 exposures and cardiopulmonary mortality, decreased lung function, respiratory symptoms, and emergency room asthma visits. In animals, exposure to levels of NO2 considerably higher than ambient concentrations result in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of ozone exposure increases when animals are exposed to a combination of ozone and NO2.[29,30,31]

With the revised NO2 federal standard in 2010, near-road NO2 measurements were required to be phased in for larger cities. The four near-road monitoring stations are: 1) I-5 near-road, located in Orange County near Anaheim; 2) I-710 near-road, located at Long Beach Blvd. in Los Angeles County near Compton and Long Beach; 3) State Route 60 (SR-60) near-road, located west of Vineyard Avenue near the San Bernardino/Riverside County border near Ontario, Mira Loma, and Upland; and 4) I-10 near-road, located near Etiwanda Avenue in San Bernardino County near Ontario, Rancho Cucamonga, and Fontana.

As summarized in Table 3.2-8, NO2 concentrations were measured at 27 locations in the South Coast Air Basin and neighboring Salton Sea Air Basin in 2020 with one station (CA-60 Near Road) exceeding the federal 1-hour standard in 2020. There have been exceedances of the peak 1-hour standard at the I-710 near-road station in 2017, and the CA-60 near-road in 202; however, the 98th percentile value has not exceeded the standard.[32] The highest annual average NO2 concentration recorded was 29.1 ppb (at the CA-60 Near Road station), which is less than the federal and state annual NO2 standards of 53 ppb and 30 ppb, respectively. All areas within

[29] U.S. Environmental Protection Agency. 2020. Criteria Air Pollutants, https://www.epa.gov/criteria-air-pollutants, accessed on June 10, 2022.

[30] South Coast AQMD. 2015. Health Effects of Air Pollution. http://www.aqmd.gov/docs/default-source/publications/brochures/the-health-effects-of-air-pollution-brochure.pdf, accessed on June 10, 2022.

[31] South Coast AQMD. 2005, May. Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. https://www.aqmd.gov/home/research/guidelines/planning-guidance/guidance-document

[32] See pg. 2-49 of the 2022 Draft Air Quality Management Plan, accessed on June 10, 2022.

South Coast AQMD's jurisdiction are in attainment for both the federal and state 1-hour and annual NO2 standards.

TABLE 3.2-8
South Coast AQMD – 2020 Air Quality Data – NO2[33]

NITROGEN DIOXIDE (NO2)[a]					
Source Receptor Area No.	**Location of Air Monitoring Station**	**No. Days of Data**	**Max. Conc. in ppb 1-hour**	**98th Percentile Conc. in ppb 1-hour [b]**	**Annual Average AAM Conc. ppb**
LOS ANGELES COUNTY					
1	Central LA	364	61.8	54.7	16.9
2	Northwest Coastal LA County	360	76.6	43.9	10.6
3	Southwest Coastal LA County	364	59.7	50.9	9.5
4	South Coastal LA County 4	357	75.3	56.3	12.8
4	I-710 Near Road##	355	90.3	79.1	22.3
6	West San Fernando Valley	365	57.2	50.1	12.1
7	East San Fernando Valley	357	60.4	52.4	14.5
8	West San Gabriel Valley	354	61.2	49.7	13.6
9	East San Gabriel Valley 1	347	64.8	54.1	13.6
9	East San Gabriel Valley 2	366	50.4	41.9	8.5
10	Pomona/Walnut Valley	355	67.9	59.8	18.3
11	South San Gabriel Valley	365	69.2	573.8	17.8
12	South Central LA County	362	72.3	60.5	14.5
13	Santa Clarita Valley	361	46.3	35.9	9.4
ORANGE COUNTY					
16	North Orange County	347	57.2	50.1	12.7
17	Central Orange County	364	70.9	52.1	13.3
17	I-5 Near Road##	365	69.9	52.6	18.8
RIVERSIDE COUNTY					
23	Metropolitan Riverside County 1	359	66.4	54.1	13.6
23	Metropolitan Riverside County 3	352	58.1	49.9	12.3
25	Elsinore Valley	345	43.6	37.9	7.4
29	San Gorgonio Pass	363	51.1	47.1	8.5
30	Coachella Valley 1**	365	47.4	34.3	6.6
SAN BERNARDINO COUNTY					
32	Northwest San Bernardino Valley	364	55.4	44.8	13.9
33	I-10 Near Road##	345	94.2	75.1	28.7
33	CA-60 Near Road##	346	101.6	78.0	29.1
34	Central San Bernardino Valley 1	360	66.4	57.9	18.7
34	Central San Bernardino Valley 2	35	54.0	45.6	14.9
DISTRICT MAXIMUM[(c)]			**101.6**	**86.3**	**29.1**
SOUTH COAST AIR BASIN[(d)]			**101.6**	**86.3**	**29.1**

ppb = parts per billion
AAM = Annual Arithmetic Mean
-- Pollutant not monitored

*Incomplete data
**Salton Sea Air Basin

Four near-road sites measuring one or more of the pollutants PM2.5, CO, and/or NO2 are operating near the following freeways: I-5, I-10, CA-60, and I-710.

a The NO2 federal 1-hour standard is 100 ppb and the annual standard is annual arithmetic mean NO2 > 0.0534 ppm (53.4 ppb). The state 1-hour and annual standards are 0.18 ppm (180 ppb) and 0.030 ppm (30 ppb).

b The design value form of the 1-hour NAAQS is the annual 98th percentile of the daily maximum 1-hour average concentrations.

c District Maximum is the maximum value calculated at any station in the South Coast AQMD jurisdiction.

d Concentrations are the maximum value observed at any station in the South Coast Air Basin. Number of daily exceedances are the total number of days that the indicated concentration is exceeded at any station in the South Coast Air Basin.

[33] South Coast AQMD, 2021. 2020 Air Quality, South Coast Air Quality Management District, Historical Air Quality Data for Year 2020 at locations where NO2 was monitored; http://www.aqmd.gov/docs/default-source/air-quality/historical-data-by-year/aq2020card_final.pdf, accessed on June 10, 2022.

Sulfur Dioxide

SO2 is a colorless gas with a sharp odor. It reacts in the air to form sulfuric acid (H2SO4), which contributes to acid precipitation, and sulfates, which are components of PM10 and PM2.5. Most of the SO2 emitted into the atmosphere is produced by burning sulfur-containing fuels.

Exposure of a few minutes to low levels of SO2 can result in airway constriction in some asthmatics. All asthmatics are sensitive to the effects of SO2. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, is observed after acute higher exposure to SO2. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO2. Animal studies suggest that despite SO2 being a respiratory irritant, it does not cause substantial lung injury at ambient concentrations. However, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract. Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO2 levels. In these studies, efforts to separate the effects of SO2 from those of fine particles have not been successful. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.[34,35,36]

As summarized in Table 3.2-9, SO2 concentrations were measured at five locations in 2020. No exceedances of 1-hour federal or state standards of 75 ppb and 250 ppb respectively, for SO2 occurred in 2020 at any of the five locations monitored the Basin. The maximum 1-hour SO2 concentration was 6.0 ppb recorded at the Southwest Coast LA County station. The 99th percentile of 1-hour SO2 concentration was 9.4 ppb recorded at the South Coastal Los Angeles County 3 station. Though SO2 concentrations remain well below the standards, SO2 is a precursor to sulfate, which is a component of fine particulate matter, PM10, and PM2.5. Historical measurements showed concentrations to be well below standards and monitoring has been discontinued at other stations. All areas within South Coast AQMD's jurisdiction are in attainment for both the federal and state 1-hour SO2 standards.

[34] U.S. Environmental Protection Agency. 2020. Criteria Air Pollutants, https://www.epa.gov/criteria-air-pollutants, accessed on June 10, 2022.

[35] South Coast AQMD. 2015. Health Effects of Air Pollution. http://www.aqmd.gov/docs/default-source/publications/brochures/the-health-effects-of-air-pollution-brochure.pdf, accessed on June 10, 2022.

[36] South Coast AQMD. 2005. May. Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. https://www.aqmd.gov/home/research/guidelines/planning-guidance/guidance-document, accessed on June 10, 2022.

TABLE 3.2-9
South Coast AQMD – 2020 Air Quality Data – SO2[37]

SULFUR DIOXIDE (SO2)[a]				
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Maximum Conc. ppb, 1-hour	99th Percentile Conc. ppb, 1-hour
LOS ANGELES COUNTY				
1	Central LA	333	3.8	3.3
3	Southwest Coastal LA County	361	6.0	3.3
4	South Coastal LA County 3	--	--	9.4
RIVERSIDE COUNTY				
23	Metropolitan Riverside County 1	356	2.2	1.7
34	Central San Bernardino Valley 1	363	2.5	1.7
DISTRICT MAXIMUM[b]			**6.0**	**3.3**
SOUTH COAST AIR BASIN[c]			**6.0**	**3.3**
ppb = parts per billion		-- = Pollutant not monitored		

[a] The SO2 federal 1-hour standard is 75 ppb. The state 1-hour and 24-hour standards are 0.25 ppm (250 ppb) and 0.04 ppm (40 ppb), respectively.
[b] District Maximum is the maximum value calculated at any station in the South Coast AQMD jurisdiction.
[c] Concentrations are the maximum value observed at any station in the South Coast Air Basin.

Particulate Matter (PM10 and PM2.5)

Of great concern to public health are particles small enough to be inhaled into the deepest parts of the lung. Respirable particles (particulate matter less than about 10 micrometers in diameter (PM10)) can accumulate in the respiratory system and aggravate health problems such as asthma, bronchitis, and other lung diseases. Children, the elderly, exercising adults, and those suffering from asthma are especially vulnerable to adverse health effects of particulate matter.

A consistent correlation between elevated ambient fine particulate matter (PM2.5) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks, and the number of hospital admissions has been observed in different parts of the United States and various areas around the world. Studies have reported an association between long-term exposure to air pollution dominated by PM2.5 and increased mortality, reduction in lifespan, and an increased mortality from lung cancer. Daily fluctuations in PM2.5 concentrations have also been related to hospital admissions for acute respiratory conditions, to school and kindergarten absences, to a decrease in respiratory function in normal children, and to increased medication use in children and adults with asthma. Studies have also shown lung function growth in children is reduced with long-term exposure to particulate matter. In addition to children, the elderly and people with preexisting respiratory and/or cardiovascular disease appear to be more susceptible to the effects of PM10 and PM2.5.[38,39,40]

[37] South Coast AQMD, 2021. 2020 Air Quality, South Coast Air Quality Management District, Historical Air Quality Data for Year 2020 at locations where SO2 was monitored; http://www.aqmd.gov/docs/default-source/air-quality/historical-data-by-year/aq2020card_final.pdf, accessed on June 10, 2022.
[38] U.S. Environmental Protection Agency. 2020. Criteria Air Pollutants, https://www.epa.gov/criteria-air-pollutants, accessed on June 10, 2022.
[39] South Coast AQMD. 2015. Health Effects of Air Pollution. http://www.aqmd.gov/docs/default-source/publications/brochures/the-health-effects-of-air-pollution-brochure.pdf, accessed on June 10, 2022.
[40] South Coast AQMD. 2005, May. Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. https://www.aqmd.gov/home/research/guidelines/planning-guidance/guidance-document, accessed on June 10, 2022.

As summarized in Table 3.2-10, PM10 concentrations were measured at 23 locations in 2020. While the Coachella Valley Portion of the Salton Sea Air Basin is in nonattainment, the South Coast Air Basin has remained in attainment for the federal 24-hour PM10 standard (150 $\mu g/m^3$) since 2006, and it was not exceeded in 2020. The maximum 24-hour PM10 concentration of 259 $\mu g/m^3$ was recorded at the Coachella Valley 3 station, but this high reading was attributed to high winds and is excluded in accordance with the U.S. EPA Exceptional Event Rule. Also, due to rounding considerations, the federal standard is technically 155 $\mu g/m^3$. The state 24-hour PM10 (50 $\mu g/m^3$) standard was exceeded at several of the monitoring stations. All areas within South Coast AQMD's jurisdiction are in nonattainment for the state 24-hour PM10 standard, which was exceeded at 19 of the monitoring stations in 2020.

The maximum annual average PM10 concentration of 52.2 $\mu g/m^3$ was recorded at the Metropolitan Riverside County 3 station. The federal annual PM10 standard has been revoked. The state annual PM10 standard (20 $\mu g/m^3$) was exceeded in most stations in each county in the Basin and in the Coachella Valley. All areas within South Coast AQMD's jurisdiction are in nonattainment for the state annual PM10 standard, which was exceeded at most stations in each county in the South Coast Air Basin and in the Coachella Valley in 2020.

On December 14, 2012, U.S. EPA strengthened the annual NAAQS for PM2.5 to 12 $\mu g/m^3$ and, as part of the revisions, a requirement was added to monitor near the most heavily trafficked roadways in large urban areas. Particle pollution is expected to be higher along these roadways because of direct emissions from cars and heavy-duty diesel trucks and buses. South Coast AQMD installed the two required PM2.5 monitors at locations selected based upon the heavy-duty diesel traffic, which are: 1) I-710, located at Long Beach Blvd. in Los Angeles County near Compton and Long Beach; and 2) SR-60 or CA-60 near-road, located west of Vineyard Avenue near the San Bernardino/Riverside County border near Ontario, Mira Loma, and Upland.

As summarized in Table 3.2-11, PM2.5 concentrations were measured at 19 locations in 2020. While the Coachella Valley Portion of the Salton Sea Air Basin is in attainment, the South Coast Air Basin is in nonattainment for federal and state PM2.5 standards. The maximum 98^{th} percentile 24-hour PM2.5 concentration of 34.7 $\mu g/m^3$ was recorded at the Metropolitan Riverside County station, less than the federal 24-hour PM2.5 standard of 35 $\mu g/m^3$. There is no state 24-hour standard for PM2.5. The maximum annual average PM2.5 concentration of 14.36 $\mu g/m^3$ was recorded at the CA-60 Near Road station, greater than the federal and state annual PM2.5 standard of 12 $\mu g/m^3$.

TABLE 3.2-10
South Coast AQMD – 2020 Air Quality Data – PM10[41]

SUSPENDED PARTICULATE MATTER PM10[a+]						
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. µg/m³, 24-hour	No. (%) Samples Exceeding Standard		Annual Average AAM Conc.[b] µg/m³
				Federal > 150 µg/m³, 24-hour	State > 50 µg/m³, 24-hour	
LOS ANGELES COUNTY						
1	Central LA	337	77	0	24 (7%)	23.0
3	Southwest Coastal LA County	37	43	0	0	22.3
4	South Coastal LA County 2	42	59	0	2 (5%)	24.9
4	South Coastal LA County 3	12	54	0	2 (17%)	27.8
9	East San Gabriel Valley 1	43	95	0	8 (19%)	37.7
9	East San Gabriel Valley 2	333	105	0	9 (3%)	25.2
13	Santa Clarita Valley	36	48	0	0	22.5
ORANGE COUNTY						
17	Central Orange County	329	120	0	13 (4%)	23.9
19	Saddleback Valley	42	53	0	1 (2%)	16.8
RIVERSIDE COUNTY						
22	Corona/Norco Area	44	100	0	10 (23%)	39.1
23	Metropolitan Riverside County 1	320	104	0	110 (34%)	30.0
23	Metropolitan Riverside County 3	304	124	0	154 (51%)	52.2
24	Perris Valley	37	77	0	6 (16%)	35.9
25	Elsinore Valley	334	84	0	7 (2%)	22.0
29	San Gorgonio Pass	42	46	0	0	19.2
30	Coachella Valley 1**	251	48	0	0	20.4
30	Coachella Valley 2**	317	77	0	8 (3%)	29.1
30	Coachella Valley 3**	320	259	1 (0%)	69 (22%)	38.0
SAN BERNARDINO COUNTY						
32	Northwest San Bernardino Valley	305	63	0	12 (4%)	30.5
34	Central San Bernardino Valley 1	40	61	0	6 (15%)	35.8
34	Central San Bernardino Valley 2	320	80	0	81 (25%)	38.7
35	East San Bernardino Valley	40	57	0	1 (3%)	23.4
37	Central San Bernardino Mountains	40	51	0	1 (3%)	18.1
DISTRICT MAXIMUM[c]			**259**	**1**	**154**	**52.2**
SOUTH COAST AIR BASIN[d]			**124**	**0**	**173**	**52.2**

µg/m³ = micrograms per cubic meter of air
AAM = Annual Arithmetic Mean
**Salton Sea Air Basin

\+ High PM10 (≥ 155 µg/m³) data recorded in Coachella Valley (due to high winds) and the Basin (due to Independence Day fireworks) are excluded in accordance with the U.S. EPA Exceptional Event Rule.

[a] PM10 statistics listed above are based on combined Federal Reference Method (FRM) and Federal Equivalent Method (FEM) data. Filter-based measurements for PM 10 from March 28, 2020 to June 2, 2020 are not available due to COVID-19 Pandemic.
[b] State annual average (AAM) PM10 standard is > 20 µg/m³. Federal annual PM10 standard (AAM > 50 µg/m³) was revoked in 2006.
[c] District Maximum is the maximum value calculated at any station in the South Coast AQMD jurisdiction.
[d] Concentrations are the maximum value observed at any station in the South Coast Air Basin.

[41] South Coast AQMD, 2021. 2020 Air Quality, South Coast Air Quality Management District, Historical Air Quality Data for Year 2020 at locations where PM10 was monitored; http://www.aqmd.gov/docs/default-source/air-quality/historical-data-by-year/aq2020card_final.pdf, accessed on June 10, 2022.

TABLE 3.2-11
South Coast AQMD – 2020 Air Quality Data – PM2.5[42]

SUSPENDED PARTICULATE MATTER PM2.5 [a]						
Source Receptor Area No.	**Location of Air Monitoring Station**	**No. Days of Data**	**Max. Conc. µg/m³, 24-hour**	**98th Percentile Conc. in µg/m³ 24-hr**	**No. (%) Samples Exceeding Federal Std > 35 µg/m³, 24-hour**	**Annual Average AAM Conc.[b] µg/m³**
LOS ANGELES COUNTY						
1	Central LA	353	47.30	28.00	2 (1%)	12.31
4	South Coastal LA County 1	117	28.10	26.10	0	11.26
4	South Coastal LA County 2	357	39.00	28.00	1 (0%)	11.38
4	I-710 Near Road##	356	44.00	31.50	2 (1%)	12.93
6	West San Fernando Valley	116	27.60	26.40	0	10.13
8	West San Gabriel Valley	117	34.90	31.20	0	11.06
9	East San Gabriel Valley 1	116	33.00	25.80	0	11.13
11	South San Gabriel Valley	116	35.40	30.50	0	13.22
12	South Central LA County	352	43.20	34.10	7 (2%)	13.57
ORANGE COUNTY						
17	Central Orange County	355	41.40	27.10	1 (0%)	11.27
19	Saddleback Valley	120	35.00	32.70	0	8.81
RIVERSIDE COUNTY						
23	Metropolitan Riverside County 1	357	41.00	29.60	4 (1%)	12.63
23	Metropolitan Riverside County 3	358	38.70	34.70	5 (1%)	14.03
30	Coachella Valley 1**	122	23.90	16.90	0	6.42
30	Coachella Valley 2**	121	25.60	20.20	0	8.41
SAN BERNARDINO COUNTY						
33	CA-60 Near Road##	356	53.10	3.70	4 (1%)	14.36
34	Central San Bernardino Valley 1	117	46.10	27.40	1 (1%)	11.95
34	Central San Bernardino Valley 2	115	25.70	24.70	0	11.66
38	East San Bernardino Mountains	58	24.30	20.40	0	7.62
DISTRICT MAXIMUM[(c)]			**53.1**	**34.1**	**7**	**14.36**
SOUTH COAST AIR BASIN[(d)]			**53.1**	**34.1**	**13**	**14.36**

µg/m³ = micrograms per cubic meter of air
**Salton Sea Air Basin
AAM = Annual Arithmetic Mean

[a] PM2.5 statistics listed above are for the FRM data only with the exception of Central Orange County, I-710 Near Road, Metropolitan Riverside County 1 and 3, CA-60 Near Road, and South Coastal LA Count 2 where FEM PM2.5 measurements are used to supplement missing FRM measurements because they pass the screening criteria for the South Coast AQMD Continuous Monitor Comparability Assessment and Request for Waiver dated July 1, 2021.
[b] Federal and State standards are annual average (AAM) > 12.0 µg/m³.
[c] District Maximum is the maximum value calculated at any station in the South Coast AQMD jurisdiction.
[d] Concentrations are the maximum value observed at any station in the South Coast Air Basin. Number of daily exceedances are the total number of days that the indicated concentration is exceeded at any station in the South Coast Air Basin.

Lead

Under the federal Clean Air Act, lead is classified as a "criteria pollutant." Lead causes observed adverse health effects at ambient concentrations. Lead is also deemed a carcinogenic toxic air contaminant (TAC) by the Office of Environmental Health Hazard Assessment (OEHHA). Lead in the atmosphere is a mixture of several lead compounds. Leaded gasoline and lead smelters have been the main sources of lead emitted into the air. Due to the phasing out of leaded gasoline, there was a dramatic reduction in atmospheric lead in the Basin over the past three decades. In fact, there were no violations of the lead standards at South Coast AQMD's regular air monitoring stations from 1982 to 2020, primarily due to the removal of lead from gasoline.

[42] South Coast AQMD, 2021. 2020 Air Quality, South Coast Air Quality Management District, Historical Air Quality Data for Year 2020 at locations where PM2.5 was monitored; http://www.aqmd.gov/docs/default-source/air-quality/historical-data-by-year/aq2020card_final.pdf, accessed on June 10, 2022.

Fetuses, infants, and children are more sensitive than others to the adverse effects of lead exposure. Exposure to low levels of lead can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased lead levels are associated with increased blood pressure. Lead poisoning can cause anemia, lethargy, seizures, and death. It appears that there are no direct effects of lead on the respiratory system. Lead can be stored in the bone from early-age environmental exposure, and elevated blood lead levels can occur due to breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland), and osteoporosis (breakdown of bone tissue). Fetuses and breast-fed babies can be exposed to higher levels of lead because of previous environmental lead exposure of their mothers.[43, 44 45]

As summarized in Table 3.2-12, South Coast AQMD monitored lead concentrations at eight monitoring stations in 2020. The South Coast Air Basin (Los Angeles County area) is currently in nonattainment for lead. This nonattainment designation was due to the operations of specific stationary sources of lead emissions. The Mojave Desert Air Basin and Salton Sea Air Basin are both in attainment for lead. The South Coast AQMD has petitioned U.S. EPA for a redesignation to attainment for the federal lead standard for the Los Angeles County nonattainment area. Stringent South Coast AQMD rules governing lead-producing sources will help to ensure that there are no future violations of the federal standard. At the time of this report, South Coast AQMD has not yet received a response from U.S. EPA regarding the petition. The current lead concentrations in Los Angeles County are below the federal 3-month rolling average standard of 0.15 $\mu g/m^3$. Further, the state 30-day standard of 1.5 $\mu g/m^3$ was not exceeded in any areas under the jurisdiction of the South Coast AQMD in 2020.

[43] U.S. Environmental Protection Agency. 2020. Criteria Air Pollutants, https://www.epa.gov/criteria-air-pollutants, accessed on June 10, 2022.
[44] South Coast AQMD. 2015. Health Effects of Air Pollution. http://www.aqmd.gov/docs/default-source/publications/brochures/the-health-effects-of-air-pollution-brochure.pdf, accessed on June 10, 2022.
[45] South Coast AQMD. 2005, May. Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. https://www.aqmd.gov/home/research/guidelines/planning-guidance/guidance-document, accessed on June 10, 2022.

TABLE 3.2-12
South Coast AQMD – 2020 Air Quality Data – Lead and Sulfates[46]

		LEAD[a++]		SULFATES[b]	
Source Receptor Area No.	**Location of Air Monitoring Station**	**Max. Monthly Average Conc. [m] µg/m³**	**Max. 3-Month Rolling Average [m] µg/m³**	**No. Days of Data**	**Max. Conc. µg/m³, 24-hour**
LOS ANGELES COUNTY					
1	Central LA	0.013	0.011	45	3.3
3	Southwest Coastal LA County	0.008	0.005	--	--
4	South Coastal LA County 2	0.008	0.006	--	--
4	South Coastal LA County 3	--	--	14	2.3
9	East San Gabriel Valley 1	0.010	0.007	45	3.1
11	South San Gabriel Valley	0.012	0.011	--	--
12	South Central LA County	0.010	0.009	--	--
ORANGE COUNTY					
17	Central Orange County	--	--	44	3.3
RIVERSIDE COUNTY					
23	Metropolitan Riverside County 1	0.016	0.010	84	5.2
30	Coachella Valley 2**	--	--	89	2.7
SAN BERNARDINO COUNTY					
34	Central San Bernardino Valley 1	--	--	44	3.0
34	Central San Bernardino Valley 2	0.010	0.09	--	--
DISTRICT MAXIMUM[(c)]		**0.016**	**0.011**		**5.2**
SOUTH COAST AIR BASIN[(d)]		**0.016**	**0.011**		**5.2**

µg/m³ = micrograms per cubic meter of air
-- Pollutant not monitored
** Salton Sea Air Basin

++ Higher lead concentrations were recorded at near-source monitoring sites immediately downwind of stationary lead sources. Maximum monthly and 3-month rolling averages recorded were 0.96 µ/m³ and 0.059 µ/m³.

[a] Federal lead standard is 3-months rolling average > 0.15 µg/m³; state standard is monthly average ≥ 1.5 µg/m³. Lead standards were not exceeded.
[b] State sulfate standard is 24-hour ≥ 25 µg/m³. There is no federal standard for sulfate.
[c] District Maximum is the maximum value calculated at any station in the South Coast AQMD jurisdiction.
[d] Concentrations are the maximum value observed at any station in the South Coast Air Basin. Number of daily exceedances are the total number of days that the indicated concentration is exceeded at any station in the South Coast Air Basin.

Sulfates

Sulfates are chemical compounds which contain the sulfate ion and are part of the mixture of solid materials which make up PM10. Most of the sulfates in the atmosphere are produced by oxidation of SO2. Oxidation of sulfur dioxide yields sulfur trioxide (SO3), which reacts with water to form sulfuric acid, which then contributes to acid deposition. The reaction of sulfuric acid with basic substances such as ammonia yields sulfates, a component of PM10 and PM2.5.

Most of the health effects associated with fine particles and SO2 at ambient levels are also associated with sulfates. Thus, both mortality and morbidity effects have been observed with an increase in ambient sulfate concentrations. However, efforts to separate the effects of sulfates from the effects of other pollutants have generally not been successful.[47,48,49]

[46] South Coast AQMD, 2021. 2020 Air Quality, South Coast Air Quality Management District, Historical Air Quality Data for Year 2020 at locations where lead and sulfates were monitored; http://www.aqmd.gov/docs/default-source/air-quality/historical-data-by-year/aq2020card_final.pdf.
[47] U.S. Environmental Protection Agency. 2020. Criteria Air Pollutants, https://www.epa.gov/criteria-air-pollutants, accessed on June 10, 2022.

As summarized in Table 3.2-12, South Coast AQMD monitored sulfate at seven monitoring stations in 2020. The state 24-hour sulfate standard of 25 $\mu g/m^3$ was not exceeded in the South Coast Air Basin, which is in attainment for sulfate. The Mojave Desert Air Basin and Salton Sea Air Basin are also in attainment for sulfate. There are no federal sulfate standards.

Vinyl Chloride

Vinyl chloride is a colorless, flammable gas at ambient temperature and pressure. It is also highly toxic and is classified by the American Conference of Governmental Industrial Hygienists (ACGIH) as A1 (confirmed carcinogen in humans) and by the International Agency for Research on Cancer (IARC) as 1 (known to be a human carcinogen).[50] At room temperature, vinyl chloride is a gas with a sickly-sweet odor that is easily condensed. However, it is stored as a liquid. Due to the hazardous nature of vinyl chloride to human health there are no end products that use vinyl chloride in its monomer form. Vinyl chloride is a chemical intermediate, not a final product. It is an important industrial chemical chiefly used to produce polymer polyvinyl chloride (PVC). The process involves vinyl chloride liquid fed to polymerization reactors where it is converted from a monomer to a polymer PVC. The final product of the polymerization process is PVC in either a flake or pellet form. Billions of pounds of PVC are sold on the global market each year. From its flake or pellet form, PVC is sold to companies that heat and mold the PVC into end products such as PVC pipe and bottles.

In the past, vinyl chloride emissions have been associated primarily with sources such as landfills. Risks from exposure to vinyl chloride are considered to be localized impacts rather than regional impacts. Because landfills in the South Coast AQMD are subject to Rule 1150.1 – Control of Gaseous Emissions from Municipal Solid Waste Landfills, which contain stringent requirements for landfill gas collection and control, potential vinyl chloride emissions are expected to be below the level of detection. Therefore, South Coast AQMD does not monitor for vinyl chloride at its monitoring stations.

Volatile Organic Compounds

There are no state or NAAQS for VOCs because they are not classified as criteria pollutants. VOCs are regulated, however, because VOCs are a precursor to the formation of ozone in the atmosphere. VOCs are also transformed into organic aerosols in the atmosphere, contributing to higher PM10 and lower visibility levels.

Although health-based standards have not been established for VOCs, health effects can occur from exposures to high concentrations of VOCs because of interference with oxygen uptake. In general, ambient VOC concentrations in the atmosphere are suspected to cause coughing, sneezing, headaches, weakness, laryngitis, and bronchitis, even at low concentrations. Some hydrocarbon components classified as VOC emissions are thought or known to be hazardous. Benzene, for example, one hydrocarbon component of VOC emissions, is known to be a human carcinogen.

[48] South Coast AQMD. 2015. Health Effects of Air Pollution. http://www.aqmd.gov/docs/default-source/publications/brochures/the-health-effects-of-air-pollution-brochure.pdf, accessed on June 10, 2022.
[49] South Coast AQMD. 2005, May. Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. https://www.aqmd.gov/home/research/guidelines/planning-guidance/guidance-document, accessed on June 10, 2022.
[50] International Agency for Research on Cancer. Vinyl Chloride Exposure Data, https://monographs.iarc.who.int/wp-content/uploads/2018/06/mono100F-31.pdf, accessed on June 10, 2022.

Non-Criteria Pollutants

Although South Coast AQMD's primary mandate is attaining the state and NAAQS for criteria pollutants within the Basin, South Coast AQMD also has a general responsibility pursuant to Health and Safety Code Section 41700 to control emissions of air contaminants and prevent endangerment to public health. Additionally, state law requires South Coast AQMD to implement ATCMs adopted by CARB and to implement the Air Toxics "Hot Spots" Act. As a result, South Coast AQMD has regulated pollutants other than criteria pollutants such as TACs, GHGs, and stratospheric ozone depleting compounds. South Coast AQMD has developed several rules which are designed to control non-criteria pollutants from both new and existing sources. These rules originated through state directives, CAA requirements, or the South Coast AQMD rulemaking process.

In addition to promulgating non-criteria pollutant rules, South Coast AQMD has been evaluating control measures in the 2016 AQMP as well as existing rules to determine whether they would affect, either positively or negatively, emissions of non-criteria pollutants. For example, rules which target the VOC components of coating materials and that allow for the replacement of the VOC components with a non-photochemically reactive chlorinated substance would reduce the impacts resulting from ozone formation, but could increase emissions of toxic compounds or other substances that may have adverse impacts on human health.

Carcinogenic Health Risks from TACs: One of the primary health risks of concern due to exposure to TACs is the risk of contracting cancer. The carcinogenic potential of TACs is a public health concern because it is currently believed by many scientists that there is no 'safe' level of exposure to carcinogens. Any exposure to a carcinogen poses some risk of causing cancer. It is currently estimated that about one in four deaths in the United States is attributable to cancer. The proportion of cancer deaths attributable to air pollution has not been estimated using epidemiological methods.

Non-cancer Health Risks from TACs: Unlike carcinogens, for most non-carcinogens it is believed that there is a threshold level of exposure to the compound below which it will not pose a health risk. CalEPA's OEHHA develops Reference Exposure Levels (RELs) for TACs are health-conservative estimates of the levels of exposure at or below which health effects are not expected. The non-cancer health risk due to exposure to a TAC is assessed by comparing the estimated level of exposure to the REL. The comparison is expressed as the ratio of the estimated exposure level to the REL, called the hazard index (HI).

Multiple Air Toxics Exposure Study (MATES): In 1986, South Coast AQMD conducted the first MATES report to determine the risks associated with major airborne carcinogens in the South Coast Air Basin. The most current version (MATES V[51]) consists of a monitoring program, an updated emissions inventory of TACs, and a modeling effort to characterize risk across the South Coast Air Basin. The study focuses on the carcinogenic risk from exposure to air toxics but does not estimate mortality or other health effects from criteria pollutant exposures which are conducted as part of the 2016 AQMP. Two key updates were implemented in MATES V. First, cancer risk estimations now take into account multiple exposure pathways. Previous MATES studies quantified the cancer risks based on the inhalation pathway only; a cumulative

[51] South Coast AQMD, MATES V, Multiple Air Toxics Exposure Study in the South Coast AQMD, Final Report, August 2021. http://www.aqmd.gov/docs/default-source/planning/mates-v/mates-v-final-report.pdf, accessed on June 10, 2022.

cancer risk accounting for inhalation and non-inhalation pathways is approximately 8% higher than the inhalation-only calculation for the MATES V data. Second, along with cancer risk estimates, MATES V includes information on the chronic non-cancer health impacts from inhalation and non-inhalation pathways for the first time. The cumulative chronic hazard index accounting for the inhalation and non-inhalation pathways is approximately twice the inhalation-only calculation for the MATES V data.

3.2.1.5 Regulatory Setting

3.2.1.5.1 Agency Responsibilities

The federal and state Clean Air Acts provide the principal framework for national, state, and local efforts to protect public health from harmful air pollution. Authority to reduce emissions from various sectors is spread across different agencies.

South Coast AQMD: Local air districts are responsible for preparing the portion of the State Implementation Plan (SIP) applicable within their boundaries. SIPs are comprehensive plans that describe how an area will attain NAAQS. The 2022 AQMP will be the portion of the SIP for the Basin and Coachella Valley.[52] The South Coast AQMD has primary authority to reduce local emissions by adopting control regulations for stationary sources. Stationary sources include point sources, such as power plants and refineries, and selected area sources, such as gas stations, dry cleaners, and paints and coatings. The South Coast AQMD also has limited authority to address mobile sources through fleet rules such as Rule 1191, 1194 and 1195, incentive programs and implementation of indirect source and transportation control measures (e.g., employee ridesharing rules and fleet rules). Mobile source emissions such as cars, trucks, trains, and off-road vehicles and equipment are instead regulated primarily by state and federal authorities. Ships and airplanes are regulated by international authorities.

Southern California Association of Governments (SCAG): Under federal law (23 U.S. Code Section 134 and 49 U.S. Code Section 5303), SCAG is designated as the Metropolitan Planning Organization (MPO) and is designated as a Regional Transportation Planning Agency and a Council of Governments under state law (California Government Code Section 29532 et. seq.). SCAG is responsible for preparing the portion of the SIP that addresses transportation control measures, land use, and growth projections. SCAG is responsible for the portion of SIP that addresses transportation control measures, land use, and growth projections within certain districts that have not met air quality standards. In particular, SCAG develops long-range regional transportation plans including sustainable communities strategy and growth forecast components, regional transportation improvement programs, regional housing needs allocations, and a portion of the South Coast AQMD's AQMPs. SCAG provides plans for six counties and 26 planning areas according to the attainment status of ozone, PM10, and PM2.5 NAAQS. South Coast Air Basin and Coachella Valley are both included in their planning areas.

California Air Resources Board (CARB): CARB is a state level agency primarily responsible for adopting motor vehicle emission standards, promulgating Airborne Toxic Control Measures (ATCMs), compiling the SIP for submission to the U.S. EPA, approving district air quality plans

[52] The Riverside portion of the MDAB is not classified as nonattainment for 2015 8-hour ozone standard and so does not need a SIP. https://www3.epa.gov/airquality/greenbook/jbtcw.html, accessed on June 10, 2022.

as sufficient to meet state legal requirements, and providing general oversight of districts. CARB establishes state air quality regulations addressing certain categories of consumer products and mobile sources such as heavy-duty trucks, light-duty cars, construction equipment, and small off-road engines. CARB has also established state ambient air quality standards for criteria pollutants which are generally more stringent than the national ambient air quality standards.

United States Environmental Protection Agency (U.S. EPA): The federal Clean Air Act requires the U.S. EPA to set standards, also known as NAAQS, for pollutants which are considered harmful to human health and the environment. The U.S. EPA is also responsible for ensuring that these air quality standards are met, or attained (in cooperation with state, Tribal, and local governments) through national standards and strategies to control pollutant emissions from selected on-road mobile sources, facilities, and other mobile sources. In addition, the federal CAA requires states or the U.S. EPA (depending on the program) to set emissions standards or limits for air pollution sources such as power plants, industrial facilities, and motor vehicles. For example, the U.S. EPA is responsible for setting federal emission standards for mobile sources such as light-duty vehicles, heavy-duty engines and vehicles, and non-road engines and vehicles.

In the South Coast Air Basin, mobile sources account for over 80 percent of smog-forming pollution. This means that the South Coast AQMD lacks direct authority to regulate the sources of emissions responsible for high levels of air pollution. Given each agency's primary responsibilities, the South Coast AQMD, CARB, the U.S. EPA, international agencies, and other public agencies must all work together to achieve the needed reductions to ensure that air quality standards are met in the region.

3.2.1.5.2 Ambient Air Quality Standards Addressed in the 2022 AQMP

The U.S. EPA is required by law to review the NAAQS every five years. The purpose of the review is for the U.S. EPA to evaluate the latest scientific data to ensure that the NAAQS are set at levels that are protective of public health. In the review, the U.S. EPA considers the most recent scientific and health effects information, air quality information, and quantitative risk (e.g., size of at-risk groups affected). The U.S. EPA must consider the uncertainties and limitations of the scientific evidence as well as conclusions from the U.S. EPA experts and advice from the Clean Air Scientific Advisory Committee (CASAC). At the conclusion of the review, the U.S. EPA determines if the current standards are "requisite to protect public health with an adequate margin of safety."[53]

In 1979, the U.S. EPA approved a 1-hour ozone standard (120 ppb) that was replaced in 1997 with a more stringent 8-hour ozone standard (80 ppb). The U.S. EPA subsequently revoked the 1-hour standard entirely, effective in 2005 based on research demonstrating that the 1-hour standard was inadequate for protecting public health, and that ozone can affect human health at lower levels and over longer exposure times than one hour. Still, in order to avoid losing clean air progress achieved under the 1-hour standard, the U.S. EPA requires that certain emissions control requirements for areas designated as nonattainment or maintenance for the revoked 1-hour standard must remain in place. The 8-hour ozone standard was subsequently lowered to 75 ppb in 2008 and to 70 ppb in 2015. The U.S. EPA concluded that the 70 ppb ozone standard was

[53] https://www.epa.gov/sites/default/files/2015-10/documents/overview_of_2015_rule.pdf.

sufficient to protect health in 2020. However, the U.S. EPA is currently in the process of revisiting that determination.

Within two years of setting a new or revised NAAQS, Title I of the CAA requires the U.S. EPA to designate areas as meeting (attainment) or not meeting (nonattainment) the standard. Areas are classified based on their design values for each standard. Figure 3.2-7 illustrates the nonattainment classifications for the 2015 8-hour ozone standard based on design values.

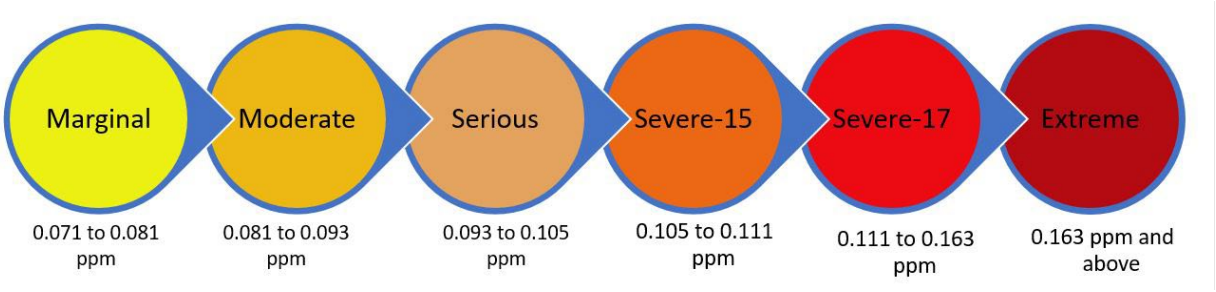


FIGURE 3.2-7
Ozone Nonattainment Classifications for 2015 8-Hour Standard Based on Design Values

As shown in Table 3.2-13, South Coast Air Basin and Coachella Valley have been classified as "extreme" and "severe" nonattainment for the 2015 ozone standard, respectively. As an "extreme" ozone nonattainment area, the South Coast AQMD has until August 3, 2038 to attain the 2015 ozone standard for the Basin, which is 20 years from the designation as an "extreme" nonattainment area. The U.S. EPA requires that all control measures in the attainment demonstration must be implemented no later than the beginning of the attainment year ozone season. The U.S. EPA also defines the attainment year ozone season as the ozone season immediately preceding a nonattainment area's maximum attainment date, which is August 3, 2038. Therefore, 2037 is considered the attainment year for the Basin and 2032 is the attainment year for Coachella Valley. Chapter 3 of the 2022 AQMP provides the emission inventory for the attainment year and Chapter 5 of the 2022 AQMP provides the modeled projected air quality in that year to demonstrate attainment of the standard. The 2022 AQMP focuses on developing plans to address the 2015 ozone standard (highlighted in Table 3.2-13). Other ozone and PM standards have been addressed in prior AQMPs.

TABLE 3.2-13
Ozone Nonattainment Classifications for South Coast Air Basin and Coachella Valley

Standard	Level	South Coast Classification	Coachella Valley Classification	Attainment Date
2015 8-hour Ozone	70 ppb	Extreme	Severe	August 3, 2038 (South Coast) August 3, 2033 (Coachella Valley)
2008 8-hour Ozone	75 ppb	Extreme	Severe^	July 20, 2032 (South Coast) July 20, 2027 (Coachella Valley)
1997 8-hour Ozone	80 ppb	Extreme	Extreme*	June 15, 2024 (both South Coast and Coachella Valley)
1979 1-hour Ozone	120 ppb	Extreme	Attainment	December 31, 2022 (South Coast)

^ Pending voluntary reclassification from "severe" to "extreme" in November 2022.
* Voluntary reclassification from "severe" to "extreme" in July 2019.

3.2.1.5.3 South Coast AQMD Rules and Regulations

Under the federal CAA, the U.S. EPA establishes health-based air quality standards that all states must achieve. The CCAA also establishes statewide requirements for cities and counties. South Coast AQMD was created by the state legislature to facilitate compliance with the federal CAA and to implement the state air quality program. Toward that end, South Coast AQMD develops regulations designed to achieve these public health standards by reducing emissions from stationary sources and implementation of indirect source and transportation control measures (e.g., employee ridesharing rules).

At South Coast AQMD, a regulation is composed of rules, each of which deals with a specific topic within that regulation. South Coast AQMD staff develops rules based on control measures identified in the AQMP and which are designed to reduce air pollution from specific sources.

The 2016 AQMP was adopted in March 2017, approved by CARB the same month, and submitted to the U.S. EPA in April 2017. The 2016 AQMP included a comprehensive control strategy with specific control measures to attain ozone and PM2.5 NAAQS. The ozone portion and the 24-hour PM2.5 standard elements of the 2016 AQMP have been approved by the U.S. EPA into the SIP.[54] The "moderate" annual PM2.5 elements of the 2016 AQMP have also been approved by the U.S. EPA, and in 2020 the U.S. EPA approved the Basin's re-designation as a "serious" nonattainment area for the annual PM2.5 standard.[55] These approvals include SIP revisions submitted in response to the U.S. EPA's initial findings.

Since the 2016 AQMP adoption, South Coast AQMD has continued to implement the controls described in the 2016 AQMP control strategy. Progress toward fulfilling the 2016 AQMP commitments is tracked by emissions reductions that have occurred and are expected to occur

[54] 84 FR 52005.
[55] 85 FR 71264.

from the implementation of adopted regulations. In the past several years, a particular area of focus has been implementing Control Measure CMB-05 for transitioning facilities from the Regional Clean Air Incentives Market (RECLAIM) Program to Best Available Retrofit Control Technology (BARCT) level controls. That transition is expected to achieve five tons per day of NOx reductions in addition to the reduction on the RECLAIM allocation cap as specified in the 2015 Regulation XX amendment. The recent amendments of rules applicable to the RECLAIM facilities also address in part the requirements set by the AB 617 Community Emissions Reductions Programs. From 2018 to 2021, South Coast AQMD adopted/amended a total of twelve rules to establish BARCT NOx emission limits (e.g., Rules 1109.1, 1110.2, 1117, 1118.1, 1134, 1135, 1146, 1146.1, 1146.2, 1147.1, 1150.3, and 1179.1).

Excluding Rule 1109.1, the total emission reductions resulting from these rules are about 5.9 tons of NOx per day, which are anticipated to be achieved by 2024 (reductions from Rule 1118.1 are allocated to CMB-03). Implementation of Rule 1109.1, adopted on November 5, 2021, is estimated to reduce NOx emissions by approximately 7.7 to 7.9 tons per day upon final implementation, with 3.7 to 3.8 tons per day expected by 2023. 2.6 tons per day out of the total 7.7 to 7.9 tons per day reductions will be used to fulfill the RECLAIM shave commitment set by the 2015 amendment of Regulation XX. Further reductions in NOx are anticipated by developing four additional rules (Rules 1147, 1147.2, 1153.1, and 1159.1). These rules are scheduled for amendment/adoption in calendar year 2022. More details on the RECLAIM Program and associated emissions can be found in Chapter 3 of the 2022 AQMP.

South Coast AQMD has taken several innovative actions to implement the facility-based mobile source measures included in the 2016 AQMP to achieve further reductions from mobile sources. These are measures aimed at reducing emissions from indirect sources, which are facilities which do not themselves directly emit significant air pollution, but attract substantial mobile sources. Rules focused on emissions reductions from indirect sources are referred to as indirect source rules (ISR). South Coast AQMD has been pursuing implementation of facility-based mobile source measures in five key areas as described below:

- Marine Ports: On May 4, 2018, the South Coast AQMD Governing Board directed staff to pursue both regulatory and voluntary approaches for some of the Basin's largest indirect sources, which include marine ports and airports. In August 2021, the South Coast AQMD Governing Board directed staff to pursue a Memorandum of Understanding (MOU) with the ports of Los Angeles and Long Beach for another four months and, if a draft MOU (or draft MOUs) is not ready for full execution by all parties, to begin evaluation of a marine ports ISR in December 2021. Per the South Coast AQMD Governing Board's direction, emissions reductions from marine ports pivoted fully to an ISR approach in February 2022 due to the lack of progress in developing MOUs with the ports.

- Commercial Airports: Following South Coast AQMD Governing Board's direction given on May 4, 2018, emissions reductions from the operations of commercial airports were pursued using a collaborative and voluntary approach with five major commercial airports in the Basin. As a result, MOUs with five commercial airports were developed and adopted at the December 6, 2019 Governing Board meeting, with

a projected NOx emission reduction of 0.52 and 0.37 ton per day in 2023 and 2031, respectively.

- Warehouses/Distribution Centers: Rule 2305 Warehouse Indirect Source Rule – Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program was adopted in May 2021 to reduce NOx and diesel emissions associated with warehousing activities, with estimated NOx reductions of 1.5 to three tons per day by 2031.

- Railyards: Rulemaking is currently underway for new rail yards.

- New and Re-development: The measure is currently under development.

The 2022 AQMP facilitates new regulatory development to advance the emission reductions necessary to meet attainment with the ozone standards.

3.2.2 GREENHOUSE GAS EMISSIONS

Greenhouse gases (GHGs) trap heat in the atmosphere, which in turn heats the surface of the Earth. Some GHGs occur naturally and are emitted to the atmosphere through natural processes, while others are created and emitted solely through human activities. The latter, anthropogenic sources of GHGs, is the focus of impacts under CEQA. Traditionally, GHGs and other global warming pollutants are perceived as solely global in their impacts, and that increasing emissions anywhere in the world contributes to climate change anywhere in the world. A study conducted on the health impacts of CO_2 'domes' that form over urban areas showed that they cause increases in local temperatures and local criteria pollutants, which have adverse health effects.[56]

3.2.2.1 Climate Change

Global climate change is a change in the average weather of the Earth, which can be measured by wind patterns, storms, precipitation, and temperature. Historical records have shown that temperature changes have occurred in the past, such as during previous ice ages. Data indicate that the current temperature record differs from previous climate changes in rate and magnitude.

Gases that trap heat in the atmosphere are often called greenhouse gases (GHGs), comparable to a greenhouse, which captures and traps radiant energy. GHGs are emitted by natural processes and human activities. The accumulation of greenhouse gases in the atmosphere regulates the earth's temperature. Global warming is the observed increase in average temperature of the earth's surface and atmosphere. The primary cause of global warming is an increase of GHGs in the atmosphere. The six major GHGs are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons (HFCs), and perfluorocarbon (PFCs). The GHGs absorb longwave radiant energy emitted by the Earth, which warms the atmosphere. The GHGs also emit longwave radiation both upward to space and back down toward the surface of the Earth. The downward part of this longwave radiation emitted by the atmosphere is known as the "greenhouse effect." Emissions from human activities such as fossil fuel combustion for electricity production and vehicles have elevated the concentration of these gases in the atmosphere.

- **Carbon dioxide (CO_2)** is an odorless, colorless greenhouse gas. Natural sources include the following: decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic (human caused) sources of CO_2 include burning coal, oil, gasoline, natural gas, and wood.
- **Methane (CH_4)** is a flammable gas and is the main component of natural gas.
- **Nitrous Oxide (N_2O)**, also known as laughing gas, is a colorless greenhouse gas. Some industrial processes such as fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions also contribute to the atmospheric load of N_2O.
- **Sulfur hexafluoride (SF_6)** is an inorganic, odorless, colorless, nontoxic, nonflammable gas. SF_6 is used for insulation in electric power transmission and distribution equipment,

[56] Jacobsen, Mark Z. "Enhancement of Local Air Pollution by Urban CO_2 Domes," Environmental Science and Technology, as described in Stanford University press release on March 16, 2010 available at: http://news.stanford.edu/news/2010/march/urban-carbon-domes-031610.html, accessed on June 10, 2022.

in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

- **Hydrofluorocarbons (HFCs)** are synthetic man-made chemicals composed of hydrogen, fluorine, and carbon that are used as a substitute for chlorofluorocarbons (whose production was stopped as required by the Montreal Protocol) for use in automobile air conditioners and refrigerants.
- **Perfluorocarbons (PFCs)** are synthetic man-made chemicals composed of fluorine and carbon that are used as a substitute for chlorofluorocarbons in producing aluminum and manufacturing semiconductors.

Scientific consensus, as reflected in recent reports issued by the United Nations Intergovernmental Panel on Climate Change, is that the majority of the observed warming over the last 50 years can be attributable to increased concentration of GHGs in the atmosphere due to human activities. Human activities are directly altering the chemical composition of the atmosphere through the buildup of climate change pollutants. In the past, gradual changes in temperature changed the distribution of species, availability of water, etc. However, human activities are accelerating this process so that environmental impacts associated with climate change no longer occur in a geologic time frame but in a human's lifetime. Industrial activities, particularly increased consumption of fossil fuels (gasoline, diesel, coal, etc.), have heavily contributed to the increase in atmospheric levels of GHGs. The United Nations Intergovernmental Panel on Climate Change constructed several emission trajectories of greenhouse gases needed to stabilize global temperatures and climate change impacts. It concluded that a stabilization of greenhouse gases at 400 to 450 ppm carbon dioxide-equivalent (CO_2eq) concentration is required to keep global mean warming below two degrees Celsius, which has been identified as necessary to avoid dangerous impacts from climate change.[57]

The potential health effects from global climate change may arise from temperature increases, climate-sensitive diseases, extreme events, air quality impacts, and sea level rise. There may be direct temperature effects through increases in average temperature leading to more extreme heat waves and less extreme cold spells. Those living in warmer climates are likely to experience more stress and heat-related problems (e.g., heat rash and heat stroke). In addition, climate sensitive diseases may increase, such as those spread by mosquitoes and other insects. Those diseases include malaria, dengue fever, yellow fever, and encephalitis. Extreme events such as flooding, hurricanes, and wildfires can displace people and agriculture, which would have negative consequences. Drought in some areas may increase, which would decrease water and food availability. Global warming may also contribute to air quality problems from increased frequency of smog and particulate air pollution.[58] Effects of climate change include rising sea levels and changes in snowpack.[59] The extent of climate change impacts at specific locations remains unclear.

[57] Intergovernmental Panel on Climate Change (IPCC). 2014. *Fifth Assessment Report: Climate Change 2014*. New York: Cambridge University Press, https://issuu.com/unipcc/docs/syr_ar5_final_full_wcover, accessed on June 10, 2022.

[58] Center for Disease Control. 2016. Climate Change Decreases the Quality of the Air We Breathe. https://www.cdc.gov/climateandhealth/pubs/AIR-QUALITY-Final_508.pdf, accessed on June 10, 2022.

[59] Office of Environmental Health Hazards Assessment, 2018. Indicators of Climate Change in California. https://oehha.ca.gov/media/downloads/climate-change/report/2018caindicatorsreportmay2018.pdf, accessed on June 10, 2022.

Federal, state, and local agencies are working towards more precisely quantifying impacts in various regions. As an example, the California Department of Water Resources is expected to formalize a list of foreseeable water quality issues associated with various degrees of climate change. Once state government agencies make these lists available, they could be used to more precisely determine to what extent a project creates global climate change impacts.

3.2.2.1.1 Statewide Inventory

GHG emissions in the state have been inventoried by CARB. As shown in Figure 3.2-8, CO_2 accounts for 83 percent of the total 418.2 million metric tons (MT) of CO_2eq emissions in the state in 2019. Figure 3.2-9 illustrates that transportation (primarily on-road travel) is the single largest source of CO_2 emissions in the state. Upstream transportation emissions from the refinery and oil and gas sectors are categorized as CO_2 emissions from industrial sources and constitute about 50 percent of the industrial source emissions. When these emissions sources are attributed to the transportation sector, the emissions from the transportation sector amount to approximately half of statewide GHG emissions. In addition to transportation, electricity production, and industrial and residential sources also are important contributors to CO_2 emissions. Figures 3.2-8 and 3.2-9 show state GHG emission contributions by GHG and sector based on the 2019 Greenhouse Gas Emission Inventory. The emissions presented in Figure 3.2-9 are depicted by Scoping Plan sector, which includes separate categories for high-global warming potential (GWP) and recycling/waste emissions that are otherwise typically included within other economic sectors.

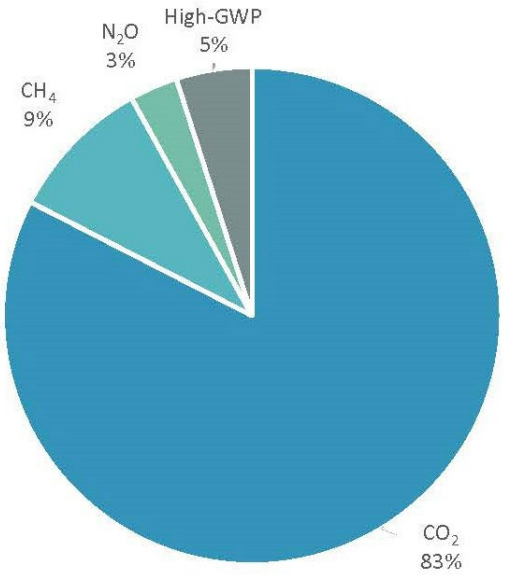


FIGURE 3.2-8
2019 Statewide GHG Emission Contributions by GHG[60]

[60] CARB, 2022. Draft 2022 Scoping Plan Update, Figure 1-7, page 33, https://ww2.arb.ca.gov/sites/default/files/2022-05/2022-draft-sp.pdf, accessed on June 10, 2022.

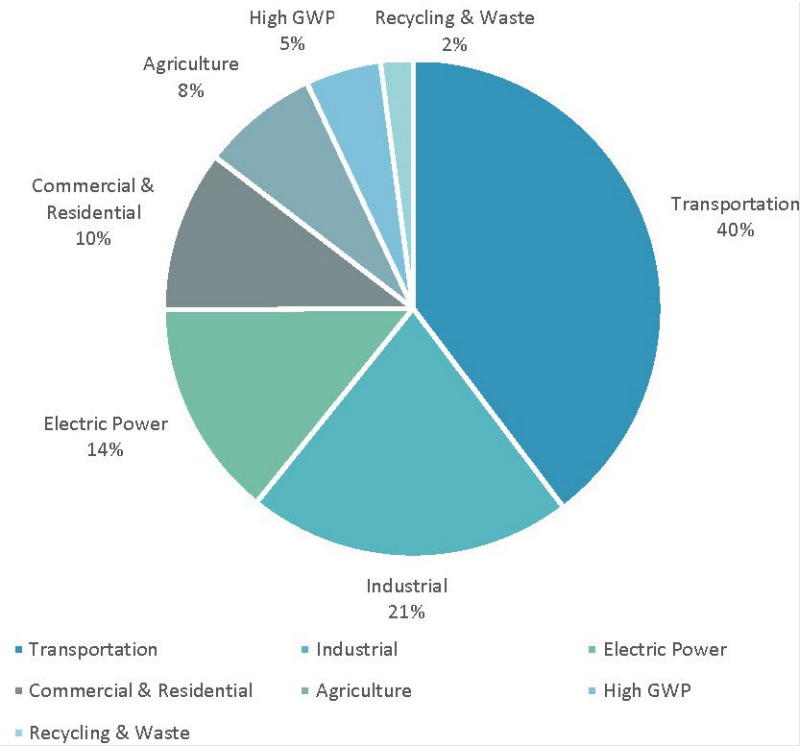


FIGURE 3.2-9
2019 Statewide GHG Emission Contributions by Scoping Plan Sector[61]

The GHG emission inventory encompasses emission sources within the state's border, as well as imported electricity consumed in the state. Statewide GHG emissions calculations use many data sources, including data from other state and federal agencies. However, the primary source of data comes from reports submitted to CARB through the CARB Regulation for the Mandatory Reporting of GHG Emissions, which requires facilities and entities with more than 10,000 metric tons of CO_2eq to report emissions directly to CARB. Reported emissions greater than 25,000 metric tons are required to be verified by a CARB-accredited third-part verification body.

3.2.2.2 Regulatory Setting

3.2.2.2.1 Federal

Greenhouse Gas Endangerment Findings: On December 7, 2009, the U.S. EPA Administrator signed two distinct findings regarding greenhouse gases pursuant to the federal Clean Air Act (CAA) Section 202(a). The Endangerment Finding stated that CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6 taken in combination endanger both the public health and the public welfare of current and future generations. The *Cause or Contribute Finding* stated that the combined emissions from motor vehicles and motor vehicle engines contribute to the greenhouse gas air pollution that endangers public health and welfare. These findings were a prerequisite for implementing GHG standards for vehicles. The U.S. EPA and the National Highway Traffic Safety Administration (NHTSA) finalized emission standards for light-duty vehicles in May 2010 and for heavy-duty vehicles in August of 2011. Subsequently, the U.S. EPA rolled back the light duty GHG

[61] CARB, 2022. Draft 2022 Scoping Plan Update, Figure 1-8, page 34, https://ww2.arb.ca.gov/sites/default/files/2022-05/2022-draft-sp.pdf, accessed on June 10, 2022.

standards, a decision which is currently under litigation. In August 2021, the U.S. EPA proposed replacement GHG standards for light-duty vehicles and announced plans to reduce GHG emissions from heavy-duty trucks through a series of major rulemakings over the next three years with the first to be finalized in 2022.[62] On March 7, 2022, the U.S. EPA proposed the first step in the U.S. EPA's "Clean Trucks Plan" that would revise existing GHG standards for model year 2027 and beyond trucks in subsectors where electrification is advancing at a more rapid pace. The sectors include school buses, transit buses, commercial delivery trucks, and short-haul tractors.

Renewable Fuel Standard: The Renewable Fuel Standard (RFS) program was established under the Energy Policy Act (EPAct) of 2005 and required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012. Under the Energy Independence and Security Act (EISA) of 2007, the RFS program was expanded to include diesel, required that the volume of renewable fuel blended into transportation fuel be increased from nine billion gallons in 2008 to 36 billion gallons by 2022, established new categories of renewable fuel, and required U.S. EPA to apply lifecycle GHG performance threshold standards so that each category of renewable fuel emits fewer greenhouse gases than the petroleum fuel it replaces. In a separate measure, the U.S. EPA will be setting new GHG emission standards for heavy-duty vehicles as soon as model year 2030, which will more comprehensively address the long-term trend towards zero emission vehicles across the heavy-duty sector.[63]

GHG Tailoring Rule: On May 13, 2010, U.S. EPA finalized the GHG Tailoring Rule to phase in the applicability of the Prevention of Significant Deterioration (PSD) and Title V operating permit programs for GHGs. The GHG Tailoring Rule was tailored to include the largest GHG emitters, while excluding smaller sources (restaurants, commercial facilities and small farms). The first phase (from January 2, 2011 to June 30, 2011) addressed the largest sources that contributed 65 percent of the stationary GHG sources. Title V GHG requirements were triggered only when affected facility owners/operators were applying, renewing or revising their permits for non-GHG pollutants. PSD GHG requirements were applicable only if sources were undergoing permitting actions for other non-GHG pollutants and the permitted action would increase GHG emission by 75,000 metric tons of CO_2 equivalent emissions (CO_2eq) per year or more. The Tailoring Rule originally included a second phase for sources that were not otherwise major sources but had the potential to emit 100,000 metric tons of CO_2eq per year. In 2014, the U.S. Supreme Court held that U.S. EPA was limited to phase 1.

GHG Reporting Program: U.S. EPA issued the Mandatory Reporting of Greenhouse Gases Rule (40 CFR Part 98) under the 2008 Consolidated Appropriations Act. The Mandatory Reporting of Greenhouse Gases Rule requires reporting of GHG data from large sources and suppliers under the Greenhouse Gas Reporting Program. Suppliers of certain products that would result in GHG emissions if released, combusted or oxidized; direct emitting source categories; and facilities that inject CO_2 underground for geologic sequestration or any purpose other than

[62] U.S. EPA, 2021. EPA to Overhaul Pollution Standards for Passenger Vehicles and Heavy-Duty Trucks, Paving Way for Zero-Emission Future, News Release, August 5, 2021. https://www.epa.gov/newsreleases/epa-overhaul-pollution-standards-passenger-vehicles-and-heavy-duty-trucks-paving-way, accessed on June 10, 2022.

[63] U.S. EPA, 2022. EPA Proposes Stronger Standards for Heavy-Duty Vehicles to Promote Clean Air, Protect Communities, and Support Transition to Zero-Emissions Future, News Release, March 7, 2022. https://www.epa.gov/newsreleases/epa-proposes-stronger-standards-heavy-duty-vehicles-promote-clean-air-protect, accessed on June 10, 2022.

geologic sequestration are included. Facilities that emit 25,000 metric tons or more per year of GHGs as CO_2eq are required to submit annual reports to U.S. EPA.

Ozone-Depleting Substances: Under the CAA Title VI, the U.S. EPA is assigned responsibility for implementing programs that protect the stratospheric ozone layer. 40 CFR Part 82 contains U.S. EPA's regulations specific to protecting the ozone layer. These U.S. EPA regulations phase out the production and import of ozone-depleting substances (ODSs) consistent with the Montreal Protocol.[64] ODSs are typically used as refrigerants or as foam-blowing agents. ODS are regulated as Class I or Class II controlled substances. Class I substances have a higher ozone-depleting potential and have been completely phased out in the United States, except for exemptions allowed under the Montreal Protocol. Class II substances are HCFCs, which are transitional substitutes for many Class I substances and are being phased out.

3.2.2.2.2 State

Statewide GHG Reduction Targets

Executive Order S-3-05: In June 2005, Governor Schwarzenegger signed Executive Order S-3-05, which established emission reduction targets. The goals would reduce GHG emissions to 2000 levels by 2010, then to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

Assembly Bill (AB) 32 – Global Warming Solutions Act: On September 27, 2006, AB 32, the California Global Warming Solutions Act of 2006, was signed by Governor Schwarzenegger. AB 32 expanded on Executive Order S-3-05. The California legislature stated that "global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California." AB 32 represented the first enforceable statewide program in the U.S. to cap all GHG emissions from major industries that includes penalties for non-compliance. While acknowledging that national and international actions will be necessary to fully address the issue of global warming, AB 32 laid out a program to inventory and reduce GHG emissions in California and from power generation facilities located outside the state that serve California residents and businesses.

Consistent with the requirement to develop an emission reduction plan, CARB prepared a Scoping Plan indicating how GHG emission reductions will be achieved through regulations, market mechanisms, and other actions. The 2008 Scoping Plan called for reducing GHG emissions to 1990 levels by 2020. This means cutting approximately 30 percent from business-as-usual (BAU) emission levels projected for 2020, or about 15 percent from 2005 to 2008 levels.[65]

Senate Bill (SB) 32 and AB 197: In September 2016, Governor Brown signed Senate Bill 32 and Assembly Bill 197, making the Executive Order goal of reducing GHG emissions to 40 percent below 1990 levels by 2030 into a statewide, mandated legislative target. AB 197 established a joint legislative committee on climate change policies and requires the CARB to prioritize direct emissions reductions rather than the market-based cap-and-trade program for

[64] The Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol) is an international treaty designed to phase out halogenated hydrocarbons such as chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs), which are considered ODSs. The Montreal Protocol was first signed on September 16, 1987 and has been revised seven times. The U.S. ratified the original Montreal Protocol and each of its revisions.

[65] California Air Resources Board. 2008, December. Climate Change Scoping Plan, A Framework for Change.

large stationary, mobile, and other sources. CARB prepared a 2017 Climate Change Scoping Plan Update, which outlines potential regulations and programs, including strategies consistent with AB 197 requirements, to achieve the 2030 target. The 2017 Scoping Plan establishes a new emissions limit of 260 million $MTCO_2eq$ for the year 2030, which corresponds to a 40 percent decrease in 1990 levels by 2030.[66]

California's climate strategy will require contributions from all sectors of the economy, including enhanced focus on zero emission and near-zero emission (ZE/NZE) vehicle technologies; continued investment in renewables such as solar roofs, wind, and other types of distributed generation; greater use of low carbon fuels; integrated land conservation and development strategies; coordinated efforts to reduce emissions of short-lived climate pollutants (methane, black carbon, and fluorinated gases); and an increased focus on integrated land use planning to support livable, transit-connected communities and conserve agricultural and other lands. Requirements for GHG reductions at stationary sources complement local air pollution control efforts by the local air districts to tighten criteria air pollutants and TACs emissions limits on a broad spectrum of industrial sources. Major elements of the 2017 Scoping Plan framework include:

- Implementing and/or increasing the stringency of the standards for the various strategies covered under the Mobile Source Strategy, which include increasing ZE buses and trucks.
- Low Carbon Fuel Standard (LCFS), with an increased stringency (18 percent by 2030).
- Implementation of SB 350, which expands the Renewables Portfolio Standard (RPS) to 50 percent RPS and doubles energy efficiency savings by 2030.
- California Sustainable Freight Action Plan, which improves freight system efficiency and utilizes near-zero emission technology and deployment of ZE trucks.
- Implementing the proposed Short-Lived Climate Pollutant Strategy, which focuses on reducing methane and hydrofluorocarbon emissions by 40 percent and anthropogenic black carbon emissions by 50 percent by year 2030.
- Post-2020 Cap-and-Trade Program that includes declining caps.
- Continued implementation of SB 375.
- Development of a Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.[67]

In addition to the statewide strategies listed above, the 2017 Climate Change Scoping Plan also identified local governments as essential partners in achieving the state's long-term GHG reduction goals and recommended local actions to reduce GHG emissions—for example, statewide targets of no more than six $MTCO_2eq$ or less per capita by 2030 and two $MTCO_2eq$ or less per capita by 2050. CARB recommends that local governments evaluate and adopt robust and quantitative locally appropriate goals that align with the statewide per capita targets and sustainable development objectives and develop plans to achieve the local goals. The statewide per capita goals were developed by applying the percent reductions necessary to reach the 2030

[66] CARB, 2017, California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target, https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf, accessed on June 10, 2022.

[67] CARB, 2017. California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target, https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf, accessed on June 10, 2022.

and 2050 climate goals (i.e., 40 percent and 80 percent, respectively) to the state's 1990 emissions limit established under AB 32. For CEQA projects, CARB states that lead agencies have discretion to develop evidenced-based numeric thresholds (mass emissions, per capita, or per service population) consistent with the Scoping Plan and the state's long-term GHG goals. To the degree a project relies on GHG mitigation measures, CARB recommends that lead agencies prioritize on-site design features that reduce emissions, especially from VMT, and direct investments in GHG reductions within the project's region that contribute potential air quality, health, and economic co-benefits. Where further project design or regional investments are infeasible or not proven to be effective, CARB recommends mitigating potential GHG impacts through purchasing and retiring carbon credits.[68]

The Scoping Plan scenario is set against what is called the business-as-usual (BAU) yardstick—that is, what would the GHG emissions look like if the state did nothing at all beyond the existing policies that are required and already in place to achieve the 2020 limit. It includes the existing renewables requirements, advanced clean cars, the LCFS, and the SB 375 program for more vibrant communities, among others. However, it does not include a range of new policies or measures that have been developed or put into statute over the past two years. The known commitments are expected to result in emissions that are 60 million $MTCO_2eq$ above the target in 2030. If the estimated GHG reductions from the known commitments are not realized due to delays in implementation or technology deployment, the post-2020 Cap-and-Trade Program would deliver the additional GHG reductions in the sectors it covers to ensure the 2030 target is achieved.

On May 10, 2022, CARB released the Draft 2022 Scoping Plan Update for public review and assessed progress toward the statutory 2030 target, while laying out a path to achieving carbon neutrality no later than 2045. As mentioned in the Executive Summary, the major elements of the Draft 2022 Scoping Plan Update include: 1) "the aggressive reduction of fossil fuels wherever they are currently used in California, building on and accelerating carbon reduction programs that have been in place here for a decade and a half"; and 2) "re-envisioning of our forests, shrublands/chaparral, croplands, wetlands, and other lands (referred to as Natural and Working Lands) to ensure that they play as robust a role as possible in incorporating and storing more carbon in the trees, plants, soil, and wetlands that cover 90 percent of the state's 105 million acres." Specifically, the Draft 2022 Scoping Plan:

- Identifies a path to keep California on track to meet its SB 32 GHG reduction target of at least 40 percent below 1990 emissions by 2030.
- Identifies a technologically feasible, cost-effective path to achieve carbon neutrality by 2045 or earlier.
- Focuses on strategies for reducing California's dependency on petroleum to provide consumers with clean energy options that address climate change, improve air quality, and support economic growth and clean sector jobs.
- Integrates equity and protecting California's most impacted communities as a driving principle throughout the document.

[68] CARB, 2017. California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target, https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf, accessed on June 10, 2022.

- Incorporates the contribution of natural and working lands to the state's GHG emissions, as well as its role in achieving carbon neutrality.
- Relies on the most up to date science, including the need to deploy all viable tools to address the existential threat that climate change presents, including carbon capture and sequestration as well a direct air capture.
- Evaluates multiple options for achieving our GHG and carbon neutrality targets, as well as the public health benefits and economic impacts associated with each.[69]

Mobile Sources

AB 1493 Vehicular Emissions: Prior to the U.S. EPA and NHTSA joint rulemaking in 2012, Governor Schwarzenegger signed Assembly Bill AB 1493 (2002). AB 1493 requires that CARB develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the state."[70] CARB originally approved regulations to reduce GHGs from passenger vehicles in September 2004, with the regulations to take effect in 2009 (see amendments to CCR Title 13 Sections 1900 and 1961, and the adoption of CCR Title 13 Section 1961.1 (13 CCR 1961.1)). California's first request to the U.S. EPA to implement GHG standards for passenger vehicles was made in December 2005 and subsequently denied by the U.S. EPA in March 2008. The U.S. EPA then granted California the authority to implement GHG emission reduction standards for new passenger cars, pickup trucks, and sport utility vehicles on June 30, 2009. On April 1, 2010, CARB filed amended regulations for passenger vehicles as part of California's commitment toward the national program to reduce new passenger vehicle GHGs from 2012 through 2016. In 2012, CARB approved the Low-Emission Vehicle (LEV) III regulations which include increasingly stringent emission standards for both criteria pollutants and greenhouse gases for new passenger vehicles of manufacture years 2017 through 2025.[71]

Low Carbon Fuel Standard (LCFS): In the 2008 Scoping Plan, CARB identified the LCFS as one of the nine discrete early action GHG reduction measures. The LCFS is designed to decrease the carbon intensity of California's transportation fuel pool and provide an increasing range of low-carbon and renewable alternatives, which reduce petroleum dependency and achieve air quality benefits. CARB approved the LCFS regulation in 2009 and began implementation on January 1, 2011 and has been amended several times since adoption. In 2018, CARB approved amendments to the regulation, which included strengthening and smoothing the carbon intensity benchmarks through 2030 in-line with California's 2030 GHG emission reduction target enacted through SB 32, adding new crediting opportunities to promote zero emission vehicle adoption, alternative jet fuel, carbon capture and sequestration, and advanced technologies to achieve deep decarbonization in the transportation sector. The LCFS is designed to encourage the use of cleaner low-carbon transportation fuels in California, encourage the production of those fuels, and therefore, reduce GHG emissions and decrease petroleum dependence in the transportation

[69] CARB 2022, Draft 2022 Scoping Plan Update, May 10, 2022, Executive Summary, https://ww2.arb.ca.gov/sites/default/files/2022-05/2022-draft-sp.pdf, accessed on August 5, 2022.

[70] California Legislative Information, AB-1493 Vehicular Emissions: Greenhouse Gases, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=200120020AB1493, accessed on June 10, 2022.

[71] CARB, Low-Emission Vehicle Greenhouse Gas Program, https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/lev-program/low-emission-vehicle-greenhouse-gas, accessed on June 10, 2022.

sector. The LCFS standards are expressed in terms of the "carbon intensity" of gasoline and diesel fuel and their respective substitutes. The program is based on the principle that each fuel has lifecycle greenhouse gas emissions that include CO_2, CH_4, N_2O, and other GHG contributors. This lifecycle assessment examines the GHG emissions associated with the production, transportation, and use of a given fuel. The lifecycle assessment includes direct emissions associated with producing, transporting, and using the fuels, as well as significant indirect effects on GHG emissions, such as changes in land use for some biofuels. The carbon intensity scores assessed for each fuel are compared to a declining carbon intensity benchmark for each year. Low carbon fuels below the benchmark generate credits, while fuels above the carbon intensity benchmark generate deficits. Providers of transportation fuels must demonstrate that the mix of fuels they supply for use in California meets the LCFS carbon intensity standards, or benchmarks, for each annual compliance period. A deficit generator meets its compliance obligation by ensuring that the amount of credits it earns or otherwise acquires from another party is equal to, or greater than, the deficits it has incurred.

EO S-1-07: Governor Schwarzenegger signed Executive Order S-1-07 in 2007 which established the transportation sector as the main source of GHG emissions in California. Executive Order S-1-07 proclaims that the transportation sector accounts for over 40 percent of statewide GHG emissions. Executive Order S-1-07 also establishes a goal to reduce the carbon intensity of transportation fuels sold in California by a minimum of 10 percent by 2020. Executive Order S-1-07 established the LCFS and directed the Secretary for Environmental Protection to coordinate the actions of the CEC, CARB, the University of California, and other agencies to develop and propose protocols for measuring the life-cycle carbon intensity of transportation fuels. The analysis supporting development of the protocols was included in the State Alternative Fuels Plan adopted by CEC on December 24, 2007 and was submitted to CARB for consideration as an early action item under AB 32. CARB adopted the LCFS on April 23, 2009.

EO B-16-2012: Executive Order B-16-2012 establishes long-term targets of reaching 1.5 million zero emission vehicles on California's roadways by 2025 and sets zero emission vehicle purchasing requirements for state government fleets. Executive Order B-16-2012 also sets a target for 2050 to achieve a reduction of GHG emissions from the transportation sector equaling 80 percent less than 1990 levels. In February 2013, an interagency working group developed the "Zero-Emission Vehicle Action Plan," which identified specific strategies and actions that state agencies needed to take to meet the milestones of this Executive Order. The Zero-Emission Vehicle Action Plan states: "*Zero-Emission Vehicles are crucial to achieving the state's 2050 greenhouse gas goal of 80 percent emission reductions below 1990 levels, as well as meeting federal air quality standards. Achieving 1.5 million Zero-Emission Vehicles by 2025 is essential to advance the market and put the state on a path to meet these requirements."* The 2013 ZEV Action Plan was later updated in 2016 and 2018 to reflect the significant progress in ZEV market and reaffirm California's commitment to ZEVs.

EO N-79-20: On September 23, 2020, Governor Newsom signed Executive Order N-79-20 which included the following goals: 1) 100 percent of in-state sales of new passenger cars and trucks transition to zero emission vehicles by 2035; 2) 100 percent of drayage trucks transition to zero emission vehicles by 2035; 3) 100 percent of medium- and heavy-duty vehicles transition to zero emission vehicles by 2045 for all operations in California, where feasible; and 4) 100 percent of off-road vehicles and equipment to transition to zero emission vehicles and equipment by 2035, where feasible.

SB 44: The California Legislature passed SB 44, acknowledging the ongoing need to evaluate opportunities for mobile source emissions reductions and requires CARB to update the 2016 Mobile Source Strategy by January 1, 2021, and every five years thereafter. Specifically, SB 44 requires CARB to update the 2016 Mobile Source Strategy to include a comprehensive strategy for the deployment of medium- and heavy-duty vehicles for meeting air quality standards and reducing GHG emissions. It also directs CARB to set reasonable and achievable goals for reducing emissions by 2030 and 2050 from medium- and heavy-duty vehicles that are consistent with the California's overall goals and maximizes the reduction of criteria air pollutants.

SB 375: SB 375, signed into law in September 2008, aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. As part of the alignment, SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS) which prescribes land use allocation in that MPO's Regional Transportation Plan (RTP). CARB, in consultation with MPOs, is required to provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years but can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets. CARB is also charged with reviewing each MPO's SCS or APS for consistency with its assigned GHG emission reduction targets. If MPOs do not meet the GHG reduction targets, transportation projects located in the MPO boundaries would not be eligible for funding programmed after January 1, 2012.

CARB appointed the Regional Targets Advisory Committee (RTAC), as required under SB 375, on January 23, 2009. The RTAC's charge was to advise CARB on the factors to be considered and methodologies to be used for establishing regional targets. The RTAC provided its recommendation to CARB on September 29, 2009. CARB was required to adopt final targets by September 30, 2010.[72]

CARB is required to update the targets for the MPOs every eight years. CARB adopted revised SB 375 targets for the MPOs in March 2018.[73,74] The updated targets became effective on October 1, 2018. The targets consider the need to further reduce VMT, as identified in the 2017 Scoping Plan Update (for SB 32), while balancing the need for additional and more flexible revenue sources to incentivize positive planning and action toward sustainable communities. Like the 2010 targets, the updated SB 375 targets are in units of percent per capita reduction in GHG emissions from automobiles and light trucks relative to 2005; this excludes reductions anticipated from implementation of state technology and fuels strategies, and any potential future state strategies, such as statewide road user pricing. The targets also call for greater per-capita GHG emission reductions from SB 375 than what were previously in place, which for 2035 translate into targets that either match or exceed the emission reduction levels in the MPOs' currently adopted SCS to achieve the SB 375 targets. For the next round of SCS updates,

[72] California Air Resources Board 2010, August. Staff Report Proposed Regional Greenhouse Gas Emission Reduction Targets for Automobiles and Light Trucks Pursuant to Senate Bill 375.
[73] California Air Resources Board, 2018, SB 375 Regional Greenhouse Gas Emissions Reduction Targets https://ww2.arb.ca.gov/sites/default/files/2020-06/SB375_Final_Targets_2018.pdf, accessed on June 10, 2022.
[74] California Air Resources Board, 2018, Updated Final Staff Report: Proposed Update to the SB 375 Greenhouse Gas Emissions Reduction Targets, https://ww2.arb.ca.gov/sites/default/files/2020-06/SB375_Updated_Final_Target_Staff_Report_2018.pdf, accessed on June 10, 2022.

CARB's updated targets for the SCAG region are an eight percent per capita GHG reduction in 2020 from 2005 levels (unchanged from the 2010 target) and a 19 percent per capita GHG reduction in 2035 from 2005 levels (compared to the 2010 target of 13 percent).[75] CARB adopted the updated targets and methodology on March 22, 2018. All SCSs adopted after October 1, 2018, are subject to these revised targets.

SCAG's Regional Transportation Plan / Sustainable Communities Strategy: SB 375 requires each MPO to prepare a sustainable communities strategy in its regional transportation plan. SCAG released the draft 2020-2045 RTP/SCS (Connect SoCal) on November 7, 2019. On September 3, 2020, SCAG's Regional Council unanimously voted to approve and fully adopt the Connect SoCal Plan.[76] In general, the SCS outlines a development pattern for the region that, when integrated with the transportation network and other transportation measures and policies, would reduce vehicle miles traveled from automobiles and light duty trucks and thereby reduce GHG emissions from these sources.

Connect SoCal focuses on the continued efforts of the previous RTP/SCSs to integrate transportation and land uses strategies in development of the SCAG region through horizon year 2045. Connect SoCal forecasts that the SCAG region will meet its GHG per capita reduction targets of eight percent by 2020 and 19 percent by 2035. Additionally, Connect SoCal also forecasts that implementation of the plan will reduce VMT per capita in year 2045 by 4.1 percent compared to baseline conditions for that year. Connect SoCal includes a "Core Vision" that centers on maintaining and better managing the transportation network for moving people and goods while expanding mobility choices by locating housing, jobs, and transit closer together, and increasing investments in transit and complete streets. SCAG is in the process of updating the RTP/SCS and is currently preparing the 2024-2050 RTP/SCS (Connect SoCal 2024) for the region, which will expand on the policies, strategies and projects established in Connect SoCal 2020. The updated plan is anticipated to be adopted in April 2024.

Adaptation

EO S-13-08: Governor Schwarzenegger signed Executive Order S-13-08 on November 14, 2008 which directed California to develop methods for adapting to climate change through preparation of a statewide plan. Executive Order S-13-08 directed OPR, in cooperation with the Resources Agency, to provide land use planning guidance related to sea level rise and other climate change impacts by May 30, 2009. Executive Order S-13-08 also directed the Resources Agency to develop a state Climate Adaptation Strategy by June 30, 2009 and to convene an independent panel to complete the first California Sea Level Rise Assessment Report. The assessment report was required to be completed by December 1, 2010 and required to meet the following four criteria:

1. Project the relative sea level rise specific to California by considering issues such as coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge, and land subsidence rates;
2. Identify the range of uncertainty in selected sea level rise projections;

[75] California Air Resources Board. 2018, February. Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets. https://www.arb.ca.gov/cc/sb375/sb375_target_update_final_staff_report_feb2018.pdf, accessed on June 10, 2022.
[76] Southern California Association of Governments (SCAG). 2020, September. Adopted Final Connect SoCal. https://scag.ca.gov/read-plan-adopted-final-plan, accessed on June 10, 2022.

3. Synthesize existing information on projected sea level rise impacts to state infrastructure (e.g., roads, public facilities, beaches), natural areas, and coastal and marine ecosystems; and
4. Discuss future research needs relating to sea level rise in California.

Energy

SB 1078, SB 107 and EO S-14-08: SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date from 2017 to 2010. In November 2008, Governor Schwarzenegger signed Executive Order S-14-08, which expands the state's Renewable Portfolio Standard from 20 percent by 2010 to 33 percent renewable power by 2020.

SB X1-2: SB X1-2 was signed by Governor Brown in April 2011. SB X1-2 created a new Renewables Portfolio Standard (RPS), which pre-empted CARB's 33 percent Renewable Electricity Standard. The new RPS applies to all electricity retailers in the state including publicly owned utilities (POUs), investor-owned utilities, electricity service providers, and community choice aggregators. These entities must adopt the new RPS goals of 20 percent of retails sales from renewables by the end of 2013, 25 percent by the end of 2016, and the 33 percent requirement by the end of 2020.

SB 1368: SB 1368 is the companion bill of AB 32 and was signed by Governor Schwarzenegger in September 2006. SB 1368 required the CPUC to establish a GHG emission performance standard for baseload generation from investor-owned utilities (IOUs) by February 1, 2007. The California Energy Commission (CEC) was also required to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the greenhouse gas emission rate from a baseload combined-cycle natural gas fired power plant. The legislation further required that all electricity provided to California, including imported electricity, must be generated from power plants that meet the standards set by the Public Utilities Commission (PUC) and CEC.

SB 350: Senate Bill 350 (de León) was signed into law September 2015 and establishes tiered increases to the RPS with 40 percent by 2024, 45 percent by 2027, and 50 percent by 2030. SB 350 also set a new goal to double the energy-efficiency savings in electricity and natural gas through energy efficiency and conservation measures.

SB 100: On September 10, 2018, Governor Brown signed SB 100. Under SB 100, the RPS for public-owned facilities and retail sellers consist of 44 percent renewable energy by 2024, 52 percent by 2027, and 60 percent by 2030. Additionally, SB 100 also established a new RPS requirement of 50 percent by 2026. Furthermore, the bill establishes an overall state policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045. Under the bill, the state cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

EO B-55-18: Executive Order B-55-18, signed September 10, 2018, sets a goal "to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net

negative emissions thereafter." Executive Order B-55-18 directed CARB to work with relevant state agencies to ensure future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal. The goal of carbon neutrality by 2045 is in addition to other statewide goals, meaning not only should emissions be reduced to 80 percent below 1990 levels by 2050, but that, by no later than 2045, the remaining emissions be offset by equivalent net removals of CO_2eq from the atmosphere, including through sequestration in forests, soils, and other natural landscapes.

AB 2127: This bill was approved in 2018 and requires the California Energy Commission (CEC), working with CARB and the California Public Utilities Commission (CPUC), to prepare and biennially update a statewide assessment of the electric vehicle charging infrastructure needed to support the levels of electric vehicle adoption required for the state to meet its goals of putting at least five million zero emission vehicles on California roads by 2030 and of reducing emissions of greenhouse gases to 40 percent below 1990 levels by 2030. The bill requires the CEC to regularly seek data and input from stakeholders relating to electric vehicle charging infrastructure.[77]

California Building Code – Building Energy Efficiency Standards: Energy conservation standards for new residential and non-residential buildings were adopted by the California Energy Resources Conservation and Development Commission (now the CEC) in June 1977 (Title 24, Part 6, of the California Code of Regulations [CCR]). Title 24 requires the design of building shells and building components to conserve energy. The CEC updates building energy efficiency standards in Title 24 (Parts 6 and 11) every three years to allow for consideration and possible incorporation of new energy efficiency technologies and methods. The 2019 Building Energy Efficiency Standards were adopted on May 9, 2018 and went into effect on January 1, 2020. The 2019 standards move toward cutting energy use in new homes by more than 50 percent and require installation of solar photovoltaic systems for single-family homes and multifamily buildings of three stories and less. The 2019 standards focus on four key areas: 1) smart residential photovoltaic systems; 2) updated thermal envelope standards (preventing heat transfer from the interior to exterior and vice versa); 3) residential and nonresidential ventilation requirements; 4) and nonresidential lighting requirements.[78]

In addition, the CEC adopted the 2022 Building Energy Efficiency Standards on August 11, 2021 but they do not go into effect until January 1, 2023. The 2022 Energy Code encourages efficient electric heat pumps, establishes electric-ready requirements for new homes, expands solar photovoltaic and battery storage standards, strengthens ventilation standards, and more. Buildings whose permit applications are submitted on or after January 1, 2023, must comply with the 2022 Energy Code.

California Building Code – CALGreen: On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (24 CCR Part 11, known as "CALGreen") was adopted as part of the California Building Standards Code. CALGreen established planning and design standards for sustainable

[77] California Legislative Information, September 14, 2018, AB-2127 Electric Vehicle Charging Infrastructure: Assessment, https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB2127, accessed on June 10, 2022.

[78] California Energy Commission (CEC). 2018. News Release: Energy Commission Adopts Standards Requiring Solar Systems for New Homes, First in Nation. https://www.energy.ca.gov/news/2018-05/energy-commission-adopts-standards-requiring-solar-systems-new-homes-first, accessed on June 10, 2022.

site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants.[79] The mandatory provisions of the California Green Building Code Standards became effective January 1, 2011 and were last updated in 2019. The 2019 CALGreen standards became effective January 1, 2020. Section 5.408 of CALGreen also requires that at least 65 percent of the nonhazardous construction and demolition waste from nonresidential construction operations be recycled and/or salvaged for reuse.

Short-Lived Climate Pollutants

SB 1383: On September 19, 2016, the Governor signed SB 1383 to supplement the GHG reduction strategies in the Scoping Plan to consider short-lived climate pollutants, including black carbon and methane. Black carbon is the light-absorbing component of fine particulate matter produced during incomplete combustion of fuels. SB 1383 required CARB, no later than January 1, 2018, to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants to achieve a reduction in methane by 40 percent, hydrofluorocarbon gases by 40 percent, and anthropogenic black carbon by 50 percent below 2013 levels by 2030, as specified. On March 14, 2017, CARB adopted the "Final Proposed Short-Lived Climate Pollutant Reduction Strategy," which identifies the state's approach to reducing anthropogenic and biogenic sources of short-lived climate pollutants. Anthropogenic sources of black carbon include on- and off-road transportation, residential wood burning, fuel combustion (charbroiling), and industrial processes. According to CARB, ambient levels of black carbon in California are 90 percent lower than in the early 1960s despite the tripling of diesel fuel use. In-use on-road rules are expected to reduce black carbon emissions from on-road sources by 80 percent between 2000 and 2020.

Ozone Depleting Substances (ODSs)

Refrigerant Management Program: As part of implementing AB 32, CARB also adopted a Refrigerant Management Program in 2009. The Refrigerant Management Program is designed to reduce GHG emissions from stationary sources through refrigerant leak detection and monitoring, leak repair, system retirement and retrofitting, reporting and recordkeeping, and proper refrigerant cylinder use, sale, and disposal.

HFC Emission Reduction Measures for Mobile Air Conditioning – Regulation for Small Containers of Automotive Refrigerant: The Regulation for Small Containers of Automotive Refrigerant applies to the sale, use, and disposal of small containers of automotive refrigerant with a GWP greater than 150. Emission reductions are achieved through implementation of four requirements: 1) use of a self-sealing valve on the container; 2) improved labeling instructions; 3) a deposit and recycling program for small containers; and 4) an education program that emphasizes best practices for vehicle recharging. This regulation went into effect on January 1, 2010 with a one-year sell-through period for containers manufactured before January 1, 2010. The target recycle rate is initially set at 90 percent and rose to 95 percent beginning January 1, 2012.

[79] The green building standards became mandatory in the 2010 edition of the code.

3.2.2.2.3 South Coast AQMD

The South Coast AQMD adopted a "Policy on Global Warming and Stratospheric Ozone Depletion" on April 6, 1990. The policy commits the South Coast AQMD to consider global impacts in rulemaking and in drafting revisions to the AQMP. In March 1992, the South Coast AQMD Governing Board reaffirmed this policy and adopted amendments to the policy to include support of the adoption of a California GHG emission reduction goal.

Basin GHG Policy and Inventory: The South Coast AQMD has established a policy, adopted by the South Coast AQMD Governing Board at its September 5, 2008 meeting, to actively seek opportunities to reduce emissions of criteria, toxic, and climate change pollutants. The policy includes the intent to assist businesses and local governments implementing climate change measures, decrease the agency's carbon footprint, and provide climate change information to the public.

Policy on Global Warming and Stratospheric Ozone Depletion: The South Coast AQMD adopted a "Policy on Global Warming and Stratospheric Ozone Depletion" on April 6, 1990. The policy targeted a transition away from CFCs as an industrial refrigerant and propellant in aerosol cans. In March 1992, the South Coast AQMD Governing Board reaffirmed this policy and adopted amendments to the policy to include the following directives for ODSs:

- Phase out the use and corresponding emissions of CFCs, methyl chloroform (1,1,1-trichloroethane or TCA), carbon tetrachloride, and halons by December 1995.
- Phase out the large quantity use and corresponding emissions of HCFCs by the year 2000.
- Develop recycling regulations for HCFCs.
- Develop an emissions inventory and control strategy for methyl bromide.

SUBCHAPTER 3.3

ENERGY

Energy Regulations

Energy Trends and Setting

3.3 ENERGY

The goal of the 2022 AQMP is to address the federal 2015 eight-hour ozone standard, to satisfy the planning requirements of the federal CAA by identifying ways to reduce emissions from existing emission sources and promoting the use of the cleanest available new emission sources and technologies. Several of the proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies may still need to be invented or made commercially available in order to achieve the necessary reductions to attain the 70 ppb ozone standard.

In particular, the 2022 AQMP is comprised of an assortment of control measures that are designed to accelerate the replacement of high-emitting mobile sources with low NOx and zero emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing and new commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

While the proposed control measures are intended to improve overall air quality in the region, direct or indirect energy impacts associated with their implementation may occur such as increasing energy demand in the region by encouraging the use of more electricity, natural gas, and cleaner, alternative fuels such as hydrogen.

The Initial Study for the 2022 AQMP control measures identified the following as potentially contributing to significant adverse energy impacts: 1) increase in regional energy demand, even after implementing energy efficiency and energy conservation measures, which may result in the need for new or substantially altered power or natural gas utility systems, create significant effects on peak and base period demands for electricity and other forms of energy; 2) increase the use of natural gas and alternative fuels; and 3) consume energy (e.g., gasoline, diesel, and electricity) during construction activities.

This subchapter describes the existing setting related to energy production and demand within California and South Coast AQMD's jurisdiction.

3.3.1 ENERGY REGULATIONS

3.3.1.1 Federal Regulations

Federal and state agencies regulate energy use and consumption through various means and programs. On the federal level, the United States Department of Transportation (U.S. DOT), United States Department of Energy (U.S. DOE), and United States Environmental Protection Agency (U.S. EPA) are three agencies with substantial influence over energy policies and programs. Generally, federal agencies influence transportation energy consumption through: 1) establishing and enforcing fuel economy standards for automobiles and light trucks; 2) funding energy-related research and development projects; and 3) funding transportation infrastructure projects.

Energy Policy and Conservation Act, and CAFE Standards: The Energy Policy and Conservation Act (EPCA) of 1975 established nationwide fuel economy standards in order to conserve oil. Pursuant to this Act, the National Highway Traffic and Safety Administration, part of the U.S. DOT, is responsible for revising existing fuel economy standards and establishing new vehicle fuel economy standards. The Corporate Average Fuel Economy (CAFE) program was established to determine vehicle manufacturer compliance with the government's fuel economy standards. Compliance with CAFE standards is determined based on each manufacturer's average fuel economy for the portion of their vehicles produced for sale in the United States. The U.S. EPA calculates a CAFE value for each manufacturer based on city and highway fuel economy test results and vehicle sales. The CAFE values are a weighted average of the U.S. EPA's city and highway fuel economy test results. Based on information generated under the CAFE program, the U.S. DOT is authorized to assess penalties for noncompliance. CAFE standards have been established for each model year for passenger cars and light trucks which include fuel economy standards in terms of minimum miles per gallon of gasoline.

Energy Policy Act of 1992 (EPACT92): EPACT92 aims to reduce United States dependence on petroleum and improve air quality by addressing all aspects of energy supply and demand, including alternative fuels, renewable energy, and energy efficiency. EPACT92 established regulations requiring certain federal, state, and alternative fuel provider fleets to build an inventory of alternative fuel vehicles. "Alternative fuels" were defined as: methanol, ethanol, and other alcohols; blends of 85 percent or more of alcohol with gasoline (E85); natural gas and liquid fuels domestically produced from natural gas; propane; hydrogen; electricity; biodiesel (B100); coal-derived liquid fuels; fuels, other than alcohol, derived from biological materials; and P-Series fuels, which were added to the definition in 1999. EPACT92 was amended several times in the Energy Conservation and Reauthorization Act of 1998 and via the Energy Policy Act in 2005, which emphasized alternative fuel use and infrastructure development.

Energy Policy Act of 2005: The Energy Policy Act of 2005 addresses energy efficiency; renewable energy requirements; oil, natural gas, and coal; alternative-fuel use; tribal energy, nuclear security; vehicles and vehicle fuels, hydropower and geothermal energy, and climate change technology. The Act provides revised annual energy reduction goals (two percent per year beginning in 2006), revised renewable energy purchase goals, federal procurement of Energy Star or Federal Energy Management Program-designated products, federal green building standards, and fuel cell vehicle and hydrogen energy system research and demonstration.

Clean Air Act: The federal Clean Air Act (CAA) Section 211(o), as amended by the Energy Policy Act of 2005, requires the Administrator of the U.S. EPA to annually determine a renewable fuel standard (RFS), which is applicable to refiners, importers, and certain blenders of gasoline, and publish the standard in the Federal Register by November 30 of each year. On the basis of this standard, each obligated party determines that the volume of renewable fuel it must ensure is consumed as motor vehicle fuel. This standard is calculated as a percentage, by dividing the amount of renewable fuel that the CAA requires to be blended into gasoline for a given year by the amount of gasoline expected to be used during that year, including certain adjustments specified by the CAA.

Energy Independence and Security Act of 2007 (EISA): The EISA of 2007 was signed into law on December 19, 2007. The objectives of the Act are to move the United States toward greater energy independence and security, increase the production of clean renewable fuels, protect consumers, increase the efficiency of products, buildings, and vehicles, promote greenhouse gas research, improve the energy efficiency of the Federal government, and improve vehicle fuel economy.

The renewable fuel standard in EISA requires transportation fuel sold in the United States to contain a minimum 36 billion gallons of ethanol per year by 2022, with corn-based ethanol limited to 15 billion gallons. The CAFE standard for light duty vehicles is 35 miles per gallon by 2020. EISA also specifies that vehicle attribute-based standards are to be developed separately for cars and light trucks. EISA creates a CAFE credit and transfer program among manufacturers and across a manufacturer's fleet. It allowed an extension through 2019 of the CAFE credits specified under the Alternative Motor Fuels Act. It established: 1) appliance energy efficiency standards for boilers, dehumidifiers, dishwashers, clothes washers, external power supplies, commercial walk-in coolers and freezers; 2) energy efficiency standards for federal buildings; 3) lighting energy efficiency standards for general service incandescent lighting in 2012; and 4) standards for industrial electric motor efficiency.

Other Federal Energy Acts: The American Recovery and Reinvestment Act of 2009 appropriated nearly $800 billion towards the creation of jobs, economic growth, tax relief, improvements in education and healthcare, infrastructure modernization, and investments in energy independence and renewable energy technologies. The Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010, the American Taxpayer Relief Act of 2012, the Tax Increase Prevention Act of 2014, the Consolidated Appropriations Act of 2016, the Further Consolidated Appropriations Act of 2020, and the Consolidated Appropriations Act of 2021 extended and reinstated a number of alternative fuel tax credits.

Moving Ahead for Progress in the 21st Century (MAP-21): MAP-21 replaces the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) as the nation's surface transportation program and extended the provisions for fiscal year (FY) 2012 with new provisions for FY 2013. MAP-21 funds surface transportation programs, and is intended to create a streamlined, performance-based, and multimodal program to address challenges facing the United States transportation system. These challenges include improving safety, maintaining infrastructure condition, reducing traffic congestion, improving efficiency of the system and freight movement, protecting the environment, and reducing delays in project delivery. MAP-21 addresses economic growth, accessibility, social equity, energy security, and public health by setting transparent performance benchmarks.

National Program for Medium- and Heavy-Duty Engines and Vehicles: The U.S. EPA adopted a national program for medium- and heavy-duty engines and vehicles on August 9, 2011 which established the first fuel efficiency requirements for medium- and heavy-duty vehicles beginning with the model year 2014. In addition, the U.S. DOT's National Highway Traffic Safety Administration finalized standards for medium- and heavy-duty vehicles that would

improve fuel efficiency and cut carbon pollution to reduce the impacts of climate change, while bolstering energy security and spurring manufacturing innovation.

U.S. EPA's Final Rule for Phase 2 Greenhouse Gas Emission Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles promotes cleaner, more fuel-efficient trucks by encouraging the development and deployment of new and advanced cost-effective technologies. The vehicle and engine performance standards would cover model years 2018-2027 for certain trailers and model years 2021-2027 for semi-trucks, large pickup trucks, vans, and all types and sizes of buses and work trucks. The final standards are expected to reduce carbon dioxide emissions by approximately 1.1 billion metric tons, save vehicle owners fuel costs of about $170 billion, and reduce oil consumption by up to two billion barrels over the lifetime of the vehicles sold under the program.

3.3.1.2 State Regulations

On the state level, the California Public Utilities Commission (CPUC) and California Energy Commission (CEC) are two agencies with authority over different aspects of energy. The CPUC regulates privately-owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies. The CEC collects and analyzes energy-related data; forecasts future energy needs; promotes energy efficient and conservation by setting appliance and building energy efficiency standards; supports energy research; develops renewable energy resources, promotes alternative and renewable transportation fuels and technologies; certifies thermal power plants 50 megawatts and larger; and plans for and directs state response to energy emergencies. Some of the more relevant federal and state transportation-energy-related laws and plans are discussed in the following subsections.

California Building Energy Efficiency Standards (Title 24): As the primary energy policy and planning agency, the CEC adopts standards every three years to cost-effectively increase energy efficiency and lower the carbon footprint of buildings. California established statewide building energy efficiency standards following legislative action. The 2019 Building Efficiency Standards are currently in place and became effective on January 1, 2020 for construction of new residential and non-residential buildings, and improved upon the 2016 Energy Standards.

The 2022 Energy Code was adopted in August 2021 and will become effective on January 1, 2023 for new buildings, additions, and alterations, replacing the 2019 Standards. The 2022 Energy Code focuses on four key areas in newly constructed homes and businesses: 1) encourages electric heat pump technology for space and water heating; 2) establishes electric requirements for single-family homes to position owners to use electric heating, cooking, and electric vehicle charging options; 3) expands solar photovoltaic system and battery storage standards to make clean energy available onsite; and 4) strengthens ventilation standards to improve indoor air quality.

California Green (CALGreen) Building Standards Code: CALGreen is a statewide regulatory code for all residential, commercial, hospital, and school buildings and includes both mandatory and voluntary components that can be adopted by local jurisdictions. The code was first adopted in January 2010 and is updated every three years. CALGreen is intended to encourage more

sustainable and environmentally friendly building practices, require low emitting substances that do not cause harm to the environment, conserve natural resources, and promote the use of energy-efficient materials and equipment. The code covers sustainable aspects including site selection, stormwater control, water efficiency of fixtures and appliances, electric vehicle charging stations, VOC limits, moisture control, construction waste recycling, indoor air quality, and environmental comfort as part of the mandatory measures. CALGreen became mandatory on January 1, 2011, for new residential and commercial construction, and the 2019 Green Building Standards Code contain the most recent requirements.

AB 1007 – Alternative Fuels Plan: The Alternative Fuels Plan, adopted in 2007 by the State Energy Resources Conservation and Development Commission and CARB as required under state law AB 1007 (Pavley 2005), recommended that the governor set targets on a gasoline gallon equivalent basis for use of ten different alternative motor fuels in the on-road and off-road sectors by nine percent by 2012, 11 percent by 2017, and 26 percent by 2022. The final Commission report was adopted on December 5, 2007.

AB 2514 – Energy Storage Systems: AB 2514 (Skinner 2010) was amended by AB 2227 (Bradford 2012) to encourage California to incorporate energy storage into the electricity grid. The law required the CPUC to adopt an energy storage system procurement target, if determined to be appropriate, to be achieved by each load-serving entity by December 31, 2015, and a second target to be achieved by December 31, 2020. The law required the governing board of a local publicly-owned electric utility to adopt an energy storage system procurement target, if determined to be appropriate, to be achieved by the utility by October 1, 2014. The law required each load-serving entity and local publicly-owned electric utility to report certain information to the CPUC, for a load-serving entity, or to the CEC, for a local publicly-owned electric utility.

Executive Order B-16-2012: Executive Order B-16-2012 establishes long-term targets of reaching 1.5 million zero emission vehicles on California's roadways by 2025 and sets zero emission vehicle purchasing requirements for State Government fleets. Executive Order B-16-2012 also sets a target for 2050 of a reduction of GHG emissions from the transportation sector equaling 80 percent less than 1990 levels. The 2018 Zero Emission Vehicle Action Plan is the most recent plan that outlines the steps that need to be taken to realize these goals.

AB 1493 – Vehicle Climate Change Standards: The Advanced Clean Cars Program under AB 1493 (referred to as Pavley I), requires CARB to develop and adopt standards for vehicle manufacturers to reduce GHG emissions coming from passenger vehicles and light-duty trucks at a "maximum feasible and cost-effective reduction" by January 1, 2005. Pavley I took effect for model years starting in 2009 to 2016 and Pavley II, which is now referred to as "LEV (Low Emission Vehicle) III GHG" will cover 2017 to 2025. Fleet average emission standards would reach 22 percent reduction by 2012 and 30 percent by 2016.

In January 2012, CARB adopted the Advanced Clean Cars program to extend AB 1493 through model years 2017 to 2025. This program will promote all types of clean fuel technologies such as plug-in hybrids, battery electric vehicles, compressed natural gas (CNG) vehicles, and hydrogen powered vehicles while reducing smog.

Renewables Portfolio Standard: California's renewables portfolio standard (RPS) required retail sellers of electricity to increase their procurement of eligible renewable energy resources by at least one percent per year so that 20 percent of their retail sales are procured from eligible renewable energy resources by 2017. If a seller fell short in a given year, they were required to procure more renewables in succeeding years to make up the shortfall. Once a retail seller reached 20 percent, they need not increase their procurement in succeeding years. RPS was enacted via SB 1078 (Sher 2002), signed in September 2002. The CEC and the CPUC jointly implemented the standard. In 2006, RPS was modified by SB 107 (Simitan 2006), to require retail sellers of electricity to reach the 20 percent renewables goal by 2010. In 2011, RPS was further modified by SB 2 (Atkins 2017) to require retailers to reach 33 percent renewable energy by 2020.

On September 10, 2018, Governor Brown signed SB 100. Under SB 100, the RPS for public-owned facilities and retail sellers consist of 44 percent renewable energy by 2024, 52 percent by 2027, and 60 percent by 2030. Additionally, SB 100 also established a new RPS requirement of 50 percent by 2026. Furthermore, the SB 100 established an overall state policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045. Under SB 100, the state cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

AB 327 revised a number of regulations associated with the California Renewables Portfolio Standard Program and how it is implemented by the Public Utilities Commission. Such modifications included revisions to allow higher rates to be charged for electricity and allowing the Public Utilities Commission to procure additional quantities of eligible renewable energy resources to achieve the targets established by the program. Previous laws prohibited the commission from increasing rates and requiring the procurement of eligible renewable energy resources in excess of specified quantities.

California SB 350: SB 350 (de León 2015) was approved on October 7, 2015. The promulgation of SB 350: 1) increased the standards of the California RPS program by requiring that the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources be increased to 50 percent by December 31, 2030; 2) required the State Energy Resources Conservation and Development Commission to establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas final end uses of retail customers by January 1, 2030; 3) provided for the evolution of the Independent System Operator (ISO) into a regional organization; and 4) required the state to reimburse local agencies and school districts for certain costs mandated by the state through procedures established by statutory provisions. An additional objective of SB 350 was to double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.

Executive Order B-18-12: Executive Order B-18-12 was signed on April 25, 2012, directing state agencies to reduce their grid-based energy purchases by at least 20 percent by 2018, as

compared to a 2003 baseline. Pursuant to Executive Order B-18-12, all new state buildings and major renovations beginning design after 2025 shall be constructed as Zero Net Energy facilities with an interim target for 50 percent of new facilities beginning design after 2020 to be Zero Net Energy. State agencies shall also take measures toward achieving Zero Net Energy for 50 percent of the square footage of existing state-owned building areas by 2025 and reduce water use by 20 percent by 2020. Additionally, the following measures relevant to energy are required:

- Any proposed new or major renovation of state buildings larger than 10,000 square feet shall use clean, on-site power generation, such as solar photovoltaic, solar thermal and wind power generation, and clean back-up power supplies, if economically feasible;

- New or major renovated state buildings and build-to-suit leases larger than 10,000 square feet shall obtain Leadership in Energy and Environmental Design (LEED) "Silver" certification or higher, using the applicable version of LEED;

- New and existing buildings shall incorporate building commissioning to facilitate improved and efficient building operation; and,

- State agencies shall identify and pursue opportunities to provide electric vehicle charging stations, and accommodate future charging infrastructure demand, at employee parking facilities in new and existing buildings.

3.3.1.3 Local Regulations

Clean Cities Programs: The U.S. DOE Clean Cities Program promotes voluntary, locally based government/industry partnerships for the purpose of expanding the use of alternatives to gasoline and diesel fuel by accelerating the deployment of alternative fuel vehicles and building a local alternative fuel vehicle refueling infrastructure. The mission of the Clean Cities Program is to advance the nation's energy security by supporting local decisions to adopt practices that contribute to the reduction of petroleum consumption. Clean Cities carries out this mission through a network of more than 75 volunteer coalitions, which develops public/private partnerships to promote alternative fuels and vehicles, fuel blends, fuel economy, hybrid vehicles, and idle reduction.

Local Sustainability Programs: In addition to the above, a number of cities have development sustainability programs, some of which are aimed at reducing energy use. For example, the City of Los Angeles has developed a Sustainability Plan that requires that 55 percent of its energy requirements be renewable by 2025, 80 percent by 2036, and 100 percent by 2045.[80]

3.3.2 ENERGY TRENDS AND SETTING

In 2019, 72 percent of the electricity used within California came from in-state sources, while 28 percent was imported into the state. In 2019, the electricity generated in-state totaled 200,475 gigawatt hours (GWh) while imported electricity totaled 77,229 GWh, with 23,930 GWh (31

[80] City of Los Angeles, L.A.'s Green New Deal, Sustainability Plan 2019, https://plan.lamayor.org/.

percent) coming from the Pacific Northwest, and 53,299 GWh (69 percent) coming from the Southwest (CEC, 2022a). For natural gas in 2019, 42 percent came from the Southwest, 38 percent came from the Rocky Mountains, with the remainder from California sources. [California Gas and Electric Utilities, 2020].

3.3.2.1 Electricity

Power plants in California provided approximately 72 percent of the total in-state electricity demand in 2019 of which 32.1 percent came from renewable sources such as biomass, geothermal, small hydro, solar, and wind. The Pacific Northwest provided another nine percent of the total electricity demand of which 44 percent came from renewable sources. The Southwest provided 19 percent of the total electricity demand, with 31 percent coming from renewable sources. In total, approximately 32 percent of the total in-state electricity demand for 2019 came from renewable sources. [CEC, 2022a].

Local electricity distribution service is provided to customers within South Coast AQMD's jurisdiction by both Investor-Owned Utilities (IOUs) and Publicly-Owned Utilities (POUs). The two IOUs operating in the region are Southern California Edison (SCE) and San Diego Gas and Electric (SDG&E). SCE is the largest electricity utility within South Coast AQMD's jurisdiction with a service area that covers 50,000 square miles and service to more than 15 million people. SCE provides service to all or nearly all of Orange and San Bernardino Counties, and most of Los Angeles and Riverside Counties. The SCE territory also includes areas outside of South Coast AQMD's jurisdiction region including Ventura, Inyo, Tulare, and Mono County as well as portions of Kern, Fresno, and Tuolumne Counties. In addition, portions of San Bernardino and Riverside Counties are outside the jurisdiction of the South Coast AQMD. SDG&E provides local distribution service to the southern portion of Orange County.[81]

Also in the region, the Southern California Public Power Authority (SCPPA) members consist of the municipal utilities of Anaheim, Azusa, Banning, Burbank, Cerritos, Colton, Glendale, Los Angeles, Pasadena, Riverside, and Vernon, and the Imperial Irrigation District. Together, these municipal utilities deliver electricity to over two million customers that spans an area of 7,000 square miles and has a total population that exceeds five million. The Los Angeles Department of Water and Power (LADWP) is the largest of the publicly-owned electric utility within South Coast AQMD's jurisdiction, serving a population of four million residents over a 473 square mile area.[82]

Table 3.3-1 shows the amount of electricity delivered in 2020 to residential and non-residential entities in the four counties located within the South Coast AQMD's jurisdiction (e.g., Los Angeles, Orange, Riverside and San Bernardino Counties).

[81] Southern California Edison, https://www.sce.com/about-us/who-we-are/leadership/our-service-territory
[82] Southern California Public Power Authority, Available at: http://www.scppa.org/page/About-Us

TABLE 3.3-1
2020 Electricity Use by County within South Coast AQMD's Jurisdiction (GWh)

Sector	Los Angeles	Orange	Riverside	San Bernardino	Total
Residential	22,913	7,765	8,843	6,103	45,624
Non-Residential	42,737	11,968	8,015	9,866	72,586
Total	65,650	19,733	16,858	15,969	**118,210**

Source: CEC, 2022a
Note: The data presented is for all of Riverside and San Bernardino Counties, not just those portions of the counties within South Coast AQMD jurisdiction.

3.3.2.2 Natural Gas

Gas supply to Southern California, which encompasses an area larger than South Coast AQMD's jurisdiction, includes sources from California (onshore and offshore), the Southwestern United States, the Rocky Mountains, and Canada, with a number of interstate pipelines that currently transport natural gas. The Southwestern U.S. sources supply most of natural gas demand to South Coast AQMD's jurisdiction (about 42 percent in 2019), followed by the Rocky Mountains (approximately 38 percent in 2019), with most of the remainder from California sources. There are numerous pipelines that transport natural gas into California from the out-of-state sources of natural gas. In addition to traditional sources of gas supply, multiple renewable gas interconnection projects in California are beginning to come online. [California Gas and Electric Utilities, 2020].

Southern California Gas Company (SoCalGas), a gas-only utility, is the primary distributor of natural gas service in South Coast AQMD's jurisdiction, except for the southern portion of Orange County, and portions of San Bernardino County. SDG&E provides natural gas service to the southern portion of Orange County. In San Bernardino County, Southwest Gas Corporation provides natural gas service to Big Bear, Victorville, Barstow, and Needles though the latter three cities are outside of South Coast AQMD's jurisdiction. LADWP utilizes natural gas for electricity generation in the City of Los Angeles (California Gas and Electric Utilities, 2020). In addition, the Long Beach Energy Resources Department provides natural gas service to approximately 500,000 residents and businesses in the cities of Long Beach and Signal Hill, in addition to portions of Los Alamitos, Bellflower, Compton, and other portions of Los Angeles County through over 1,800 miles of gas pipelines.[83]

Table 3.3-2 provides the estimated use of natural gas in California by residential, commercial, and industrial sectors. In 2020, approximately 30 percent of the natural gas consumed in California was for electricity generation purposes and 22 percent was for residential uses.

[83] Long Beach Energy Resources Department, https://www.longbeach.gov/energyresources/. Accessed May 18, 2022,

TABLE 3.3-2
California Natural Gas Demand 2020
(Million Cubic Feet per Day - MMcf/day)

Sector	Utility	Non-Utility	Total
Residential	1,139	--	1,139
Commercial	484	--	484
Natural Gas Vehicles	54	--	54
Industrial	998	--	998
Electricity Generation	1,166	318	1,484
Enhanced Oil Recovery (EOR) Streaming	32	633	665
Wholesale / International + Exchange	251	--	251
Company Use and Unaccounted-for	71	--	71
EOR Cogeneration / Industrial	--	60	60
Total	**4,195**	**1,011**	**5,206**

Source: 2020 California Gas Report - https://www.socalgas.com/regulatory/cgr

Table 3.3-3 provides the estimated use of natural gas by counties. Located in the South Coast Air Basin, Los Angeles County is the largest consumer of natural gas in South Coast AQMD's jurisdiction, accounting for approximately 65 percent of the natural gas used. Residential uses consume approximately 53 percent of natural gas, and non-residential uses (industrial, commercial, etc.) consume approximately 47 percent of natural gas use in South Coast AQMD's jurisdiction.

TABLE 3.3-3
2020 Natural Gas Use by County within South Coast AQMD's Jurisdiction
(Millions of Therms)

Sector	Los Angeles	Orange	Riverside	San Bernardino	Total
Residential	1,238	387.1	302	267.4	2,473.8
Non-Residential	1,698.7	207.5	134.9	259.9	2,197.7
Total	**2,936.7**	**594.6**	**436.9**	**527.3**	**4,671.5**

Source: CEC Gas Consumption by County, Available at: https://ecdms.energy.ca.gov/gasbycounty.aspx; Accessed May 20, 2022.
Note: The data presented is for all of Riverside and San Bernardino Counties, not just those portions of the counties within South Coast AQMD jurisdiction.

SoCalGas estimates that total gas demand will decline at an annual rate of one percent from 2020 to 2035. The decline in throughput demand is due to modest economic growth and CPUC-mandated energy efficiency standards/programs and SB350 goals. Other factors that contribute to the downward trend are more stringent standards created by periodic revisions to the Title 24 Building Codes and Standards, renewable electricity goals, a decline in core commercial and industrial demand, and conservation savings linked to advanced metering infrastructure. By comparison, the 2018 projected annual decline in gas demand was 0.74 percent over the forecast horizon of 2018 to 2035. [California Gas and Utilities Report, 2020].

After closure of the San Onofre Nuclear Generating Station in 2012, California has one operating nuclear power plant, Diablo Canyon. Diablo Canyon in located near San Luis Obispo and can generate approximately 2,160 megawatts of electricity (SCAG 2020). The plant's two units are operating pursuant to a long-term lease extension which allows continued operations through November 2024 for one of the units and August 2025 for the other.

3.3.2.3 Renewable Energy

Renewable energy includes geothermal plants, solar, small hydroelectric (under 30 MW), wind, and biomass. In 2020, California produced 63,655 GWh of renewable electricity, 46 percent of which was solar, 22 percent wind, 18 percent geothermal, 9 percent biomass, and five percent small hydroelectric. [CEC 2022a].

Geothermal Energy: California contains the largest amount of geothermal electricity generation capacity in the United States. Geothermal energy in California produced 11,345 GWh of electricity in 2020. There are a total of 40 operating geothermal power plants in California with an installed capacity of 2,712 MW. The largest concentration of geothermal plants is located north of San Francisco in the Geysers Geothermal Resource Area in Lake and Sonoma Counties.[84]

Solar: Solar electricity production in California falls into two categories: solar thermal, using the concentrated heat of sunlight to heat a fluid to make steam to turn a traditional steam turbine to convert energy to mechanical energy to drive an electric generator making electricity; and solar photovoltaic (PV), the direct conversion of sunlight into electricity. Additionally, the heat from the sun is used in solar thermal systems for hot water in homes and businesses and in heating swimming pools. Most electricity from PV production is not counted into the total electricity production of the utility companies as the solar panels are mounted on individual homes or businesses.

Solar thermal facilities are concentrated in the desert areas of the state in the Mojave area. In 2020, solar PV and solar thermal power plants produced 29,450 GWh of energy or 15.43 percent of California's in-state generation portfolio. In California, there are a total of 771 operating solar power plants, with an installed capacity of approximately about 14,060 megawatts.[85]

Hydroelectricity: Hydro facilities in California fall into one of two categories. Facilities smaller than 30 MW capacity are generally considered an eligible renewable energy resource and are referred to as small hydro. These small hydro facilities must be certified for the net MWh to count according to renewable energy portfolio standards. All other hydro facilities are referred to as large hydro. In 2020, hydro-produced electricity used by California totaled nearly 21,414 GWh, or 11.22 percent of California's in-state generation portfolio. In 2020, a total of 274 hydroelectric facilities were located in California, with an installed capacity of 14,042 megawatts (MW). The amount of hydroelectricity produced varies each year and is largely dependent on

[84] California Energy Commission. California Geothermal Energy Statistics and Data. Available online at: https://ww2.energy.ca.gov/almanac/renewables_data/geothermal/index_cms.php. Accessed May 18, 2022.

[85] California Energy Commission. California Solar Energy Statistics and Data. Available online at: https://ww2.energy.ca.gov/almanac/renewables_data/solar/index_cms.php. Access May 18, 2022.

snowmelt runoff and rainfall. The annual average hydroelectricity generation in California from 1983 through 2020 was 34,132.5 GWh. Hydro-produced electricity capacity in Los Angeles, Orange, Riverside, and San Bernardino Counties is approximately 2,500 MW, with about 80 percent of it produced in Los Angeles County and 19 percent in San Bernardino County.[86]

Wind Power: In 2020, wind energy generated within California totaled 13,708 GWh or 7.18 percent of California's in-state generation portfolio. Wind energy power plants generating in California during at least part of the year had a total capacity of 5,983 megawatts.[87] The major wind farms in California, are located in the San Gorgonio, Altamont, and Tehachapi passes. The wind farms in the San Gorgonio pass, located in Riverside County, produce electricity to the grid within South Coast AQMD's jurisdiction.

Biomass Electricity: A biomass power plant is the general term for waste-to-energy power plants that burn organic material. They are comprised of four specific types defined by the fuel they burn: Biomass; digester gas (anaerobic digestion); landfill gas; and municipal solid waste. In 2020, biomass-produced electricity in California totaled 5,626 GWh. A total of 87 biomass power plants with an installed capacity of 1,259 MW are operating in California.[88]

One such facility in Los Angeles County is the Southeast Resource Recovery Facility (SERRF) in Long Beach, California. The facility is operated under a joint powers agreement between the Los Angeles County Sanitation Districts and the City of Los Angeles. Solid waste is sent to the SERRF facility where it is processed (burned) through one of three boilers. The heat generated by burning the refuse converts water flowing through tubes in the boiler to steam. The steam is used to drive the turbine generator producing electricity. The SERRF facility has an extensive air pollution control system that includes a thermal DeNOx system, dry scrubber, and baghouses.[89]

3.3.2.4 Transportation Fuels

Petroleum-Based Fuels

In 2015, 15.1 billion gallons of gasoline (non-diesel) were sold in California. In 2015, California reported a total of 29,830,797 registered on-road vehicles, including light-duty cars (54 percent), light-duty trucks (43 percent), and medium- and heavy-duty trucks (three percent).[90] In 2018, approximately 4,456 thousand gallons of gasoline were sold daily. [California Gas and Utilities Report, 2020].

[86] California Energy Commission. California Hydroelectric Statistics and Data. Available online at https://ww2.energy.ca.gov/almanac/renewables_data/hydro/index_cms.php, accessed May 13, 2022.

[87] California Energy Commission, Electricity from Wind energy Statistics and Data. Available at: https://ww2.energy.ca.gov/almanac/renewables_data/wind/index_cms.php. Accessed May 18, 2022.

[88] California Energy Commission. California Biomass and Waste-to-energy Statistics and Data. Available online at: https://ww2.energy.ca.gov/almanac/renewables_data/biomass/index_cms.php. Accessed July 27, 2022.

[89] Southeast Resource Recovery Facility (SERRF) Brochure. Available at: https://www.lacsd.org/services/solid-waste/facilities/southeast-resource-recovery-facility-serrf/southeast-resource-recovery-facility-serrf-brochure. Accessed May 20, 2022.

[90] California Energy Commission. Summary of California Vehicle and Transportation Energy. Available online at: https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/summary-california-vehicle-and-transportation.

Alternative Clean Transportation Fuels

Assembly Bill 118 (Núñez 2007) created the Clean Transportation Program which authorized CEC to develop and deploy alternative and renewable fuels and advanced transportation technologies to help attain the state's climate change policies. Assembly Bill 8 (Perea 2013) reauthorizes the Clean Transportation Program to January 1, 2024.

Biodiesel and Renewable Diesel Fuels

Biodiesel and renewable diesel fuels are both replacements for diesel fuel. Biodiesel is produced by transesterification of vegetable oils and animal fats. Vegetable oils (mainly soybean oil) are the main feedstocks for U.S. biodiesel production. Other major U.S. biodiesel feedstocks include animal fats from meat processing plants and used/recycled cooking oil and yellow grease from restaurants. Rapeseed oil, sunflower oil, and palm oil are major feedstocks for biodiesel production in other countries. Biodiesel meets the American Society for Testing and Materials (ASTM) specification D6751 and is approved for blending with petroleum diesel/distillate.[91] Biodiesel is generally higher priced than diesel, especially for higher blends of biodiesel. Neat (100 percent) biodiesel is often transported via truck or rail for blending, which adds to the cost of biodiesel.

Renewable diesel and other (non-fuel ethanol) biofuels and biointermediates can be produced from nearly any biomass feedstock, including those used for biodiesel production, through a variety of processes such as hydrotreating, gasification, pyrolysis, and other biochemical and thermochemical technologies. Renewable diesel is a biomass-based diesel fuel similar to biodiesel, but with important differences. Unlike biodiesel, renewable diesel is a hydrocarbon that is chemically equivalent to petroleum diesel and can be used as a drop-in biofuel that does not require blending with petroleum diesel for use. This also means that it could be used in diesel engines without any modifications to the engines and could be transported via existing pipelines. Renewable diesel production uses a hydrogenation process rather than the esterification process used to produce biodiesel. Because renewable diesel is a drop-in fuel, it meets ASTM D975 specification for petroleum diesel and can be seamlessly blended, transported, and even co-processed with petroleum diesel.[92] There are a number of renewable fuel projects under development at existing refineries in California, including World Energy/Alt Air in Paramount, Marathon Martinez Refinery, and Phillips 66 Rodeo Refinery.

Natural Gas

Approximately one percent of the entire natural gas demand in California comes from the transportation sector, in one of two forms: compressed natural gas and liquefied natural gas. Liquified natural gas is used less frequently than compressed natural gas, but it may have applications as a fuel for larger trucks where driving range and fuel energy density are important. Due to the low temperature required for liquefied natural gas, pipeline transportation is not practical, and trucks are often used to transport the gas. Compressed natural gas is typically stored at 3,600 pounds per square inch. Natural gas costs are typically lower compared to gasoline on a gasoline gallon equivalent basis, and natural gas generally produces lower

[91] U.S. Energy Information Administration. Biofuels Explained, Biodiesel, Renewable Diesel, and other Biofuels. Available at: https://www.eia.gov/energyexplained/biofuels/biodiesel.php. Accessed May 18, 2022.
[92] Id.

greenhouse gas emissions. The biggest barrier to natural gas vehicle growth is the higher incremental cost of a natural gas vehicle compared to a conventional or flex-fuel vehicle. [CEC, 2021].

Electric Charging

California has the most public electric charging stations of any state; however, not all equipment and technologies associated with electric vehicles and electric vehicle support equipment have been standardized. California faces challenges and policy choices, including how best to support charging infrastructure development, where charging stations should be located, and how to support electric vehicle supply equipment expansion compared to vehicle deployment. [CEC, 2021].

Hydrogen

Hydrogen fuel cell electric vehicles are appealing because their tailpipe emissions are simply water vapor, and hydrogen can be produced from low-carbon energy resources. Fuel-cell electric vehicle refueling times are similar to conventional gasoline refueling times, and hydrogen fuel costs are comparable to gasoline on a per mile basis. Hydrogen challenges include the relatively expensive retail infrastructure cost ($2-3 million per station) and additional production and delivery components associated with the full supply chain, which can also be capital intensive. Although high-volume hydrogen pipelines exist for large volume users, hydrogen distribution for transportation use is typically done through truck delivery. Currently, most hydrogen is produced using a steam methane reforming process with natural gas as the energy feedstock, but future hydrogen production may be less carbon intensive using water electrolysis and renewable energy. [CEC, 2021].

As presented in Table 3.3-4, there are over 3,600 alternative fuel stations in in the four counties located within the South Coast AQMD's jurisdiction (e.g., Los Angeles, Orange, Riverside and San Bernardino Counties. Statewide data is also presented in Table 3.3-4 for context. 40 percent of California's alternative fuel stations are in Los Angeles, Orange, Riverside and San Bernardino Counties.

TABLE 3.3-4
Alternative Fueling Stations by County within South Coast AQMD's Jurisdiction

Alternative Fuel Type	Number of Stations
Los Angeles County	
Biodiesel	1
Compressed Natural Gas	87
E85 (fuels containing 85% ethanol)	56
Electric Charging	1,992
Hydrogen	12
Liquid Natural Gas	5
Liquid Petroleum Gas	60
Total Alternative Fuel Stations in Los Angeles County	2,213
Orange County	
Biodiesel	0
Compressed Natural Gas	26
E85	35
Electric Charging	651
Hydrogen	7
Liquid Natural Gas	0
Liquid Petroleum Gas	20
Total Alternative Fuel Stations in Orange County	739
Riverside County	
Biodiesel	1
Compressed Natural Gas	25
E85	24
Electric Charging	329
Hydrogen	0
Liquid Natural Gas	2
Liquid Petroleum Gas	14
Total Alternative Fuel Stations in Riverside County	395

TABLE 3.3-4 (concluded)
Alternative Fueling Stations by County within South Coast AQMD's Jurisdiction

Alternative Fuel Type	Number of Stations
San Bernardino County	
Biodiesel	3
Compressed Natural Gas	23
E85	26
Electric Charging	212
Hydrogen	0
Liquid Natural Gas	3
Liquid Petroleum Gas	17
Total Alternative Fuel Stations in San Bernardino County	284
Stations in South Coast AQMD's Jurisdiction	**3,631**
State of California	
Biodiesel	31
Compressed Natural Gas	323
E85	275
Electric Charging	7,995
Hydrogen	52
Liquid Natural Gas	41
Liquid Petroleum Gas	262
Stations in California	**8,979**

Source: USDOE Alternative Fuels Data Center - ttps://afdc.energy.gov/data_download

SUBCHAPTER 3.4

HAZARDS AND HAZARDOUS MATERIALS

Hazardous Materials Regulations

Emergency Response to Hazardous Materials and Waste Incidents

Hazardous Materials Incidents

Hazards Associated with Air Pollution Control, Product Reformulations, and Alternative Fuels

3.4 HAZARDS AND HAZARDOUS MATERIALS

The goal of the 2022 AQMP is to address the federal 2015 eight-hour ozone standard, to satisfy the planning requirements of the federal CAA by identifying ways to reduce emissions from existing emission sources and promoting the use of the cleanest available new emission sources and technologies. Several of the proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies may still need to be invented or made commercially available in order to achieve the necessary reductions to attain the 70 ppb ozone standard.

In particular, the 2022 AQMP is comprised of an assortment of control measures that are designed to accelerate the replacement of high-emitting mobile sources with low NOx and zero emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing and new commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

While the proposed control measures are intended to improve overall air quality in the region, direct or indirect hazards and hazardous materials impacts associated with their implementation may occur. The Initial Study for the 2022 AQMP identified the use of reformulated fuels, potential exposure to toxic air contaminants, flammability of reformulated products, add-on control devices (e.g., SCRs and catalysts), and use of alternative fuels as potentially contributing to significant adverse hazards and hazardous materials impacts.

Hazard concerns are related to the potential for fires, explosions, or the release of hazardous materials/substances in the event of an accident or upset conditions. The potential for hazards exists in the production, use, storage, and transportation of hazardous materials. Hazardous materials may be found at industrial production and processing facilities. Some facilities produce hazardous materials as their end product, while others use such materials as an input to their production process. Examples of hazardous materials used as consumer products include gasoline, solvents, and coatings/paints. Hazardous materials are stored at facilities that produce such materials and at facilities where hazardous materials are a part of the production process. Specifically, storage refers to the bulk handling of hazardous materials before and after they are transported to the general geographical area of use. Currently, hazardous materials are transported throughout the South Coast AQMD's jurisdiction in large quantities via all modes of transportation including rail, highway, water, air, and pipeline.

This subchapter describes the existing setting for hazards and hazardous materials in South Coast AQMD's jurisdiction.

3.4.1 HAZARDOUS MATERIALS REGULATIONS

Incidents of harm to human health and the environment associated with hazardous materials have created a public awareness of the potential for adverse effects from accidents and/or use of these substances. As a result, the manufacture, use, storage, and transport of hazardous materials are subject to numerous laws and regulations at all levels of government. The most relevant existing

hazardous materials laws and regulations include hazardous materials management planning, hazardous materials transportation, hazardous materials worker safety requirements, hazardous waste handling requirements, and emergency response to hazardous materials and waste incidents. Potential risk of upset is a factor in the production, use, storage, and transportation of hazardous materials. Risk of upset concerns are related to the risks of explosions or the release of hazardous substances in the event of an accident or upset. The most relevant hazardous materials laws and regulations are summarized in the following subsection of this section.

3.4.1.1 Definitions

A number of properties may cause a substance to be hazardous, including toxicity, ignitability, corrosivity, and reactivity. The term "hazardous material" is defined in different ways for different regulatory programs. For the purposes of this document, the term hazardous material refers to and encompasses both hazardous materials and hazardous wastes. A hazardous material is defined as hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local regulatory agency, or if it has characteristics defined as hazardous by such an agency. Hazardous material is defined in Health and Safety Code (HSC) Section 25501 as follows:

Hazardous material means any material that because of its quantity, concentrations, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. Hazardous materials include but are not limited to hazardous substances, hazardous waste, and any material which a handler or the administering agency has a reasonable basis for believing would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

Examples of the types of materials and wastes considered hazardous are hazardous chemicals (e.g., toxic, ignitable, corrosive, and reactive materials), and some radioactive materials. The characteristics of toxicity, ignitability, corrosivity, and reactivity are defined in California Code of Regulations (CCR), Title 22 Section 66261.20 – 66261.24 and are summarized below:

Toxic Substances: Toxic substances may cause short-term or long-lasting health effects, ranging from temporary effects to permanent disability, or even death. For example, such substances can cause disorientation, acute allergic reactions, asphyxiation, skin irritation, or other adverse health effects if human exposure exceeds certain levels. The levels depend on the substances involved and are chemical-specific. Carcinogens, substances that can cause cancer, are a special class of toxic substances. Examples of toxic substances include benzene which is a component of gasoline and a known carcinogen, and methylene chloride which is a common laboratory solvent and a potential carcinogen.

Ignitable Substances: Ignitable substances are hazardous because of their ability to burn. Gasoline, hexane, and natural gas are examples of ignitable substances.

Corrosive Materials: Corrosive materials can cause severe burns. Corrosives include strong acids and bases such as sulfuric acid (battery acid) or sodium hydroxide (lye), respectively.

Reactive Materials: Reactive materials may cause explosions or generate toxic gases. Explosives, pure sodium or potassium metals (which react violently with water), and cyanides are examples of reactive materials.

3.4.1.2 Federal Regulations

The USEPA is the primary federal agency charged with protecting human health and with safeguarding the natural environment over air, water, and land. The USEPA works to develop and enforce regulations that implement environmental laws enacted by Congress. The USEPA is responsible for researching and setting national standards for a variety of environmental programs, and delegates to states and Native American tribes the responsibility for issuing permits and for monitoring and enforcing compliance. Since 1970, Congress has enacted numerous environmental laws that pertain to hazardous materials for the USEPA to implement as well as for other agencies to implement at the federal, state, and local level, as described in the following subsections.

Toxic Substances Control Act

The Toxic Substances Control Act (TSCA) was enacted by Congress in 1976 (see 15 U.S.C. Section 2601 et seq.) and gave the USEPA the authority to protect the public from unreasonable risk of injury to health or the environment by regulating the manufacture, sale, and use of chemicals currently produced or imported into the United States. The TSCA, however, does not address wastes produced as byproducts of manufacturing. The types of chemicals regulated by the act fall into two categories: existing and new. New chemicals are defined as "any chemical substance which is not included in the chemical substance list compiled and published under [TSCA] section 8(b)." This list included all chemical substances manufactured or imported into the U.S. prior to December 1979. Existing chemicals include any chemical currently listed under section 8(b). The distinction between existing and new chemicals is necessary as the act regulates each category of chemicals in different ways. The USEPA repeatedly screens both new and existing chemicals and can require reporting or testing of those that may pose an environmental or human-health hazard. The USEPA can ban the manufacture and import of those chemicals that pose an unreasonable risk.

Emergency Planning and Community Right-to-Know Act

The Emergency Planning and Community Right-to-Know Act (EPCRA) is a federal law adopted by Congress in 1986 that is designed to help communities plan for emergencies involving hazardous substances. EPCRA establishes requirements for federal, state, and local governments, Indian tribes, and industry regarding emergency planning and "Community Right-to-Know" reporting on hazardous and toxic chemicals. The Community Right-to-Know provisions help increase the public's knowledge of and access to information on chemicals at individual facilities, their uses, and releases into the environment. States and communities, working with facilities, can use the information to improve chemical safety and protect public health and the environment. There are four major provisions of EPCRA:

1. Emergency Planning (Sections 301 – 303) requires local governments to prepare chemical emergency response plans, and to review plans at least annually. These sections also require state governments to oversee and coordinate local planning efforts. Facilities that maintain Extremely Hazardous Substances (EHS) on-site (see 40 CFR Part

355 for the list of EHS chemicals) in quantities greater than corresponding "Threshold Planning Quantities" must cooperate in the preparation of the emergency plan.

2. Emergency Release Notification (Section 304) requires facilities to immediately report accidental releases of EHS chemicals and hazardous substances in quantities greater than corresponding Reportable Quantities (RQs) as defined under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to federal, state, and local officials. Information about accidental chemical releases must be made available to the public.

3. Hazardous Chemical Storage Reporting (Sections 311 – 312) requires facilities that manufacture, process, or store designated hazardous chemicals to make Safety Data Sheets (SDSs) describing the properties and health effects of these chemicals available to state and local officials and local fire departments. These sections also require facilities to report to state and local officials and local fire departments, inventories of all on-site chemicals for which SDSs exist. Lastly, information about chemical inventories at facilities and SDSs must be available to the public.

4. Toxic Chemical Release Inventory (Section 313) requires facilities to annually complete and submit a Toxic Chemical Release Inventory Form for each Toxic Release Inventory (TRI) chemical that is manufactured or otherwise used above the applicable threshold quantities.

Implementation of EPCRA has been delegated to the State of California. The California Office of Emergency Services requires a Hazardous Materials Business Plan to be developed by any facility that manufactures, processes, or stores hazardous materials in quantities equal to or greater than 55 gallons, 500 pounds, or 200 cubic feet of gas or extremely hazardous substances above the threshold planning quantity. The Hazardous Materials Business Plan is required to be provided to State and local emergency response agencies and includes inventories of hazardous materials, an emergency plan, and an implementation training program for employees.

Hazardous Materials Transportation Act

The Hazardous Material Transportation Act (HMTA), adopted in 1975 (see 49 U.S.C. Sections 5101 – 5127), provided the Secretary of Transportation the regulatory and enforcement authority to provide adequate protection against the risks to life and property inherent in the transportation of hazardous material in commerce. The United States Department of Transportation (U.S. DOT) oversees the movement of hazardous materials at the federal level (see 49 CFR Parts 171 – 180). The HMTA requires carriers to report accidental releases of hazardous materials to the U.S. DOT at the earliest practical moment. Other types of incidents that must be reported include deaths, injuries requiring hospitalization, and property damage exceeding $50,000. The hazardous material regulations also contain emergency response provisions which include incident reporting requirements. Reports of major incidents are directed to the National Response Center, which in turn is linked with CHEMTREC, a public service hotline established by the chemical manufacturing industry for emergency responders to obtain information and assistance for emergency incidents involving chemicals and hazardous materials.

Hazardous materials regulations are implemented by the Research and Special Programs Administration (RSPA) branch of the U.S. DOT. The regulations cover the definition and

classification of hazardous materials, communication of hazards to workers and the public, packaging and labeling requirements, operational rules for shippers, and training. These regulations apply to interstate, intrastate, and foreign commerce by air, rail, ships, and motor vehicles, and apply to the transportation of hazardous waste. The Federal Aviation Administration Office of Hazardous Materials Safety is responsible for overseeing the safe handling of hazardous materials aboard aircraft. The Federal Railroad Administration oversees the transportation of hazardous materials by rail. The U.S. Coast Guard regulates the bulk transport of hazardous materials by sea. The Federal Highway Administration (FHWA) is responsible for highway routing of hazardous materials and issuing highway safety permits.

Hazardous Substance and Waste Regulations

Resource Conservation and Recovery Act: The Resource Conservation and Recovery Act (RCRA) was adopted in 1976 (see 40 CFR Parts 238 – 282) and authorizes the USEPA to control the generation, transportation, treatment, storage, and disposal of hazardous waste. The RCRA regulation specifies requirements for generators, including waste minimization methods, as well as for transporters and for treatment, storage, and disposal facilities. The RCRA regulation also includes restrictions on land disposal of wastes and used oil management standards. Under RCRA, hazardous wastes must be tracked from the time of generation to the point of disposal. In 1984, RCRA was amended with addition of the Hazardous and Solid Waste Amendments, which authorized increased enforcement by the USEPA, more strict hazardous waste standards, and a comprehensive Underground Storage Tank program. Likewise, the Hazardous and Solid Waste Amendments focused on waste reduction and corrective action for hazardous releases. The use of certain techniques for the disposal of some hazardous wastes was specifically prohibited by the Hazardous and Solid Waste Amendments. Individual states may implement their own hazardous waste programs under RCRA, with approval by the USEPA.

Comprehensive Environmental Response, Compensation and Liability Act: The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which is often commonly referred to as Superfund, is a federal statute that was enacted in 1980 to address abandoned sites containing hazardous waste and/or contamination. CERCLA was amended in 1986 by the Superfund Amendments and Reauthorization Act (SARA), and by the Small Business Liability Relief and Brownfields Revitalization Act of 2002.

CERCLA contains prohibitions and requirements concerning closed and abandoned hazardous waste sites; establishes liability of persons responsible for releases of hazardous waste at these sites; and creates a trust fund to provide for cleanup when no responsible party can be identified. The trust fund is funded largely by a tax on the chemical and petroleum industries. CERCLA also provides federal jurisdiction to respond directly to releases or impending releases of hazardous substances that may endanger public health or the environment.

CERCLA also enabled the revision of the National Contingency Plan (NCP) which provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants. The NCP also established the National Priorities List, which identifies hazardous waste sites eligible for long-term remedial action financed under the federal Superfund program.

Prevention of Accidental Releases and Risk Management Programs: Requirements pertaining to the prevention of accidental releases are promulgated in Section 112(r) of the Clean Air Act Amendments of 1990 [42 U.S.C. Section 7401 et. seq.]. The objective of these requirements was to prevent the accidental release and to minimize the consequences of any such release of a listed regulated substance. Under these provisions, facilities that produce, process, handle or store a regulated substance have a duty to: 1) identify hazards which may result from releases using hazard assessment techniques; 2) design and maintain a safe facility and take steps necessary to prevent releases; and 3) minimize the consequence of accidental releases that occur.

In accordance with the requirements in Section 112(r), USEPA adopted implementing guidelines in 40 CFR Part 68. Under this part, stationary sources with more than a threshold quantity of a regulated substance shall be evaluated to determine the potential for and impacts of accidental releases from any processes subject to the federal risk management requirements. Under certain conditions, the owner or operator of a stationary source may be required to develop and submit a Risk Management Plan (RMP). RMPs consist of three main elements: 1) a hazard assessment that includes off-site consequences analyses and a five-year accident history; 2) a prevention program; and 3) an emergency response program.

Hazardous Material Worker Safety Requirements

Occupational Safety and Health Administration Act: The federal Occupational Safety and Health Administration (OSHA) is an agency of the United States Department of Labor that was created by Congress under the Occupational Safety and Health Act in 1970. OSHA is the agency responsible for assuring worker safety and the handling and use of chemicals in the workplace. Under the authority of the Occupational Safety and Health Act of 1970, OSHA has adopted numerous regulations pertaining to worker safety (e.g., see 29 CFR Part 1910). These regulations set standards for safe workplaces and work practices, including the reporting of accidents and occupational injuries. Some OSHA regulations contain standards relating to hazardous materials handling to protect workers who handle toxic, flammable, reactive, or explosive materials, including workplace conditions, employee protection requirements, first aid, and fire protection, as well as material handling and storage. For example, facilities which use, store, manufacture, handle, process, or move hazardous materials are required to conduct employee safety training, have available and know how to use safety equipment, prepare illness and injury prevention programs, provide hazardous substance exposure warnings, prepare emergency response plans, and prepare a fire prevention plan.

OSHA's Hazard Communication Standard (HCS) requires chemical manufacturers, distributors, or importers to provide Safety Data Sheets (SDSs) (formerly known as Material Safety Data Sheets or MSDSs) to communicate the hazardous attributes of chemical products. As of June 1, 2015, the HCS requires new SDSs to be in a uniform format, and include the section numbers, the headings, and associated information under the following headings:

> **Section 1 - Identification** includes product identifier; manufacturer or distributor name, address, phone number; emergency phone number; recommended use; restrictions on use.
>
> **Section 2 - Hazard(s) identification** includes all hazards regarding the chemical; associated warning information.
>
> **Section 3 - Composition/information on ingredients** includes chemical ingredients; trade secret claims.

Section 4 - First-aid measures includes important symptoms/effects, acute, delayed; required treatment.

Section 5 - Fire-fighting measures lists suitable extinguishing techniques, equipment; chemical hazards from fire.

Section 6 - Accidental release measures lists emergency procedures; protective equipment; proper methods of containment and cleanup.

Section 7 - Handling and storage lists precautions for safe handling and storage, including incompatibilities.

Section 8 - Exposure controls/personal protection lists OSHA's Permissible Exposure Limits (PELs); ACGIH Threshold Limit Values (TLVs); and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the SDS where available as well as appropriate engineering controls; personal protective equipment (PPE).

Section 9 - Physical and chemical properties lists the chemical's characteristics.

Section 10 - Stability and reactivity lists chemical stability and possibility of hazardous reactions.

Section 11- Toxicological information includes routes of exposure; related symptoms, acute and chronic effects; numerical measures of toxicity.

Section 12 - Ecological information includes data from toxicity tests performed on aquatic and/or terrestrial organisms; potential to persist and degrade in the environment; results of tests of bioaccumulation potential; potential to move from soil to underground.[93]

Section 13 - Disposal considerations includes proper disposal practices, recycling or reclamation of the chemicals or its container; safe handling practices.[94]

Section 14 - Transport information includes classification information of shipping and transporting of hazardous chemical(s) by road, air, rail, or sea.[95]

Section 15 - Regulatory information includes safety, health, and environmental regulations specific for the product not elsewhere indicted on the SDS.

Section 16 - Other information includes the date of preparation or last revision.

It is important to note that since other agencies regulate the information presented in Sections 12 through 15, OSHA will not be enforcing these sections (see 29 CFR Part 1910, Section

[93] OSHA, Ecological Information Is Not Mandatory, OSHA Brief, accessed August 18, 2021. https://www.osha.gov/sites/default/files/publications/OSHA3514.pdf
[94] OSHA, Disposal Considerations Are Not Mandatory, OSHA Brief, accessed August 18, 2021. https://www.osha.gov/sites/default/files/publications/OSHA3514.pdf
[95] OSHA, Transport Information Is Not Mandatory, OSHA Brief, accessed August 18, 2021. https://www.osha.gov/sites/default/files/publications/OSHA3514.pdf

1910.1200(g)(2)). Employers must ensure that SDSs are readily accessible to employees. For a detailed description of SDS contents see 29 CFR Part 1910, Section 1910.1200, Appendix D.

Procedures and standards for safe handling, storage, operation, remediation, and emergency response activities involving hazardous materials and waste are promulgated in 29 CFR Part 1910, Subpart H. Some key subsections in 29 CFR Part 1910, Subpart H are Section 1910.106 – Flammable Liquids, and Section 1910.120 – Hazardous Waste Operations and Emergency Response. In particular, the Hazardous Waste Operations and Emergency Response regulations contain requirements for worker training programs, medical surveillance for workers engaging in the handling of hazardous materials or wastes, and waste site emergency and remediation planning, for those who are engaged in specific clean-up, corrective action, hazardous material handling, and emergency response activities (see 29 CFR Part 1910, Subpart H, Section 1910.120 (a)(1)(i-v) and Section 1926.65 (a)(1)(i-v)).

Process Safety Management: As part of the numerous regulations pertaining to worker safety adopted by OSHA, specific requirements that pertain to Process Safety Management (PSM) of Highly Hazardous Chemicals were adopted in 29 CFR Part 1910, Subpart H, Section 1910.119 and 8 CCR Section 5189 to protect workers at facilities that have toxic, flammable, reactive or explosive materials. PSM program elements are aimed at preventing or minimizing the consequences of catastrophic releases of chemicals and include process hazard analyses, formal training programs for employees and contractors, investigation of equipment mechanical integrity, and an emergency response plan. Specifically, the PSM program requires facilities that use, store, manufacture, handle, process, or move hazardous materials to conduct employee safety training; have an inventory of safety equipment relevant to potential hazards; have knowledge on use of the safety equipment; prepare an illness prevention program; provide hazardous substance exposure warnings; prepare an emergency response plan; and prepare a fire prevention plan.

Emergency Action Plan: An Emergency Action Plan (EAP) is a written document required by OSHA standards promulgated in 29 CFR Part 1910, Subpart E, Section 1910.38(a) to facilitate and organize a safe employer and employee response during workplace emergencies. An EAP is required by all that are required to have fire extinguishers. At a minimum, an EAP must include the following: 1) a means of reporting fires and other emergencies; 2) evacuation procedures and emergency escape route assignments; 3) procedures to be followed by employees who remain to operate critical plant operations before they evacuate; 4) procedures to account for all employees after an emergency evacuation has been completed; 5) rescue and medical duties for those employees who are to perform them; and 6) names or job titles of persons who can be contacted for further information or explanation of duties under the plan.

National Fire Regulations: The National Fire Codes (NFC), Title 45, published by the National Fire Protection Association (NFPA) contains standards for laboratories using chemicals, which are not requirements, but are generally employed by organizations in order to protect workers. These standards provide basic protection of life and property in laboratory work areas through prevention and control of fires and explosions, and also serve to protect personnel from exposure to non-fire health hazards.

In addition to the NFC, the NFPA adopted a hazard rating system which is promulgated in NFPA 704 – Standard System for the Identification of the Hazards of Materials for Emergency Response. NFPA 704 is a "standard (that) provides a readily recognized, easily understood system for identifying specific hazards and their severity using spatial, visual, and numerical methods to describe in simple terms the relative hazards of a material. It addresses the health, flammability, instability, and related hazards that may be presented as short-term, acute exposures that are most likely to occur as a result of fire, spill, or similar emergency."[96] In addition, the hazard ratings per NFPA 704 are used by emergency personnel to quickly and easily identify the risks posed by nearby hazardous materials in order to help determine what, if any, specialty equipment should be used, procedures followed, or precautions taken during the first moments of an emergency response. The scale is divided into four color-coded categories, with blue indicating level of health hazard, red indicating the flammability hazard, yellow indicating the chemical reactivity, and white containing special codes for unique hazards such as corrosivity and radioactivity. Each hazard category is rated on a scale from 0 (no hazard; normal substance) to 4 (extreme risk). Table 3.4-1 summarizes what the codes mean for each category of hazard.

In addition to the information presented in Table 3.4-1, there are also a number of other physical or chemical properties that may cause a substance to be a fire hazard. With respect to determining whether any substance is classified as a fire hazard, SDSs list the National Fire Protection Association 704 flammability hazard ratings (e.g., NFPA 704).

[96] NFPA, FAQ for Standard 704, 2007 edition. http://www.nfpa.org/Assets/files/AboutTheCodes/704/704-2007_FAQs.pdf

TABLE 3.4-1
NFPA 704 Hazards Rating Codes

Hazard Rating Code	Health (Blue)	Flammability (Red)	Reactivity (Yellow)	Special (White)
4 = Extreme	Very short exposure could cause death or major residual injury (extreme hazard)	Will rapidly or completely vaporize at normal atmospheric pressure and temperature, or is readily dispersed in air and will burn readily. Flash point below 73 °F.	Readily capable of detonation or explosive decomposition at normal temperatures and pressures.	**~~W~~** = Reacts with water in an unusual or dangerous manner.
3 = High	Short exposure could cause serious temporary or moderate residual injury	Liquids and solids that can be ignited under almost all ambient temperature conditions. Flash point between 73 °F and 100 °F.	Capable of detonation or explosive decomposition but requires a strong initiating source, must be heated under confinement before initiation, reacts explosively with water, or will detonate if severely shocked.	**OXY** = Oxidizer
2 = Moderate	Intense or continued but not chronic exposure could cause temporary incapacitation or possible residual injury.	Must be moderately heated or exposed to relatively high ambient temperature before ignition can occur. Flash point between 100 °F and 200 °F.	Undergoes violent chemical change at elevated temperatures and pressures, reacts violently with water, or may form explosive mixtures with water.	**SA** = Simple asphyxiant gas (includes nitrogen, helium, neon, argon, krypton and xenon).
1 = Slight	Exposure would cause irritation with only minor residual injury.	Must be heated before ignition can occur. Flash point over 200 °F.	Normally stable, but can become unstable at elevated temperatures and pressures	Not Applicable
0 = Insignificant	Poses no health hazard, no precautions necessary	Will not burn	Normally stable, even under fire exposure conditions, and is not reactive with water.	Not applicable

Although substances can have the same NFPA 704 Flammability Ratings Code, other factors can make each substance's fire hazard very different from each other. For this reason, additional chemical characteristics, such as auto-ignition temperature, boiling point, evaporation rate, flash point, lower explosive limit (LEL), upper explosive limit (UEL), and vapor pressure, are also considered when determining whether a substance is fire hazard. The following is a brief description of each of these chemical characteristics:

Auto-ignition Temperature: The auto-ignition temperature of a substance is the lowest temperature at which it will spontaneously ignite in a normal atmosphere without an external source of ignition, such as a flame or spark.

Boiling Point: The boiling point of a substance is the temperature at which the vapor pressure of the liquid equals the environmental pressure surrounding the liquid. Boiling is a process in which molecules anywhere in the liquid escape, resulting in the formation of vapor bubbles within the liquid.

Evaporation Rate: Evaporation rate is the rate at which a material will vaporize (evaporate, change from liquid to a vapor) compared to the rate of vaporization of a specific known material. This quantity is a represented as a unitless ratio. For example, a substance with a high evaporation rate will readily form a vapor which can be inhaled or explode, and thus have a higher hazard risk. Evaporation rates generally have an inverse relationship to boiling points (i.e., the higher the boiling point, the lower the rate of evaporation).

Flash Point: Flash point is the lowest temperature at which a volatile liquid can vaporize to form an ignitable mixture in air. Measuring the flash point of a liquid requires an ignition source. At the flash point, the vapor may cease to burn when the source of ignition is removed. There are different methods that can be used to determine the flashpoint of a solvent, but the most frequently used method is the Tagliabue Closed Cup standard (ASTM D56), also known as the TCC. The flashpoint is determined by a TCC laboratory device which is used to determine the flash point of mobile petroleum liquids with flash point temperatures below 175 degrees Fahrenheit (79.4 degrees Centigrade).

Flash point is a particularly important measure of the fire hazard of a substance. For example, the Consumer Products Safety Commission (CPSC) promulgated Labeling and Banning Requirements for Chemicals and Other Hazardous Substances in 15 U.S.C. Section 1261 and 16 CFR Part 1500. Per the CPSC, the flammability of a product is defined in 16 CFR Part 1500, Section1500.3(c)(6) and is based on flash point. For example, a liquid needs to be labeled as: 1) "Extremely Flammable" if the flash point is below 20 degrees Fahrenheit; 2) "Flammable" if the flash point is above 20 degrees Fahrenheit but less than 100 degrees Fahrenheit; or 3) "Combustible" if the flash point is above 100 degrees Fahrenheit up to and including 150 degrees Fahrenheit.

Lower Explosive Limit (LEL): The lower explosive limit of a gas or a vapor is the limiting concentration (in air) that is needed for the gas to ignite and explode or the lowest concentration (percentage) of a gas or a vapor in air capable of producing a flash of fire in presence of an ignition source (e.g., arc, flame, or heat). If the concentration of a substance in air is below the LEL, there is not enough fuel to continue an explosion. In other words, concentrations lower than

the LEL are "too lean" to burn. For example, methane gas has a LEL of 4.4 percent (at 138 degrees Centigrade) by volume, meaning 4.4 percent of the total volume of the air consists of methane. At 20 degrees Centigrade, the LEL for methane is 5.1 percent by volume. If the atmosphere has less than 5.1 percent methane, an explosion cannot occur even if a source of ignition is present. When the concentration of methane reaches 5.1 percent, an explosion can occur if there is an ignition source.

Upper Explosive Limit (UEL): The upper explosive limit of a gas or a vapor is the highest concentration (percentage) of a gas or a vapor in air capable of producing a flash of fire in presence of an ignition source (e.g., arc, flame, or heat). Concentrations of a substance in air above the UEL are "too rich" to burn.

Vapor Pressure: Vapor pressure is an indicator of a chemical's tendency to evaporate into gaseous form.

Health Hazards Guidance: In addition to fire impacts, health hazards can also be generated due to exposure of chemicals present in both conventional as well as reformulated products. Using available toxicological information to evaluate potential human health impacts associated with conventional solvents and potential replacement solvents, the toxicity of the conventional solvents can be compared to solvents expected to be used in reformulated products. As a measure of a chemical's potential health hazards, the following values need to be considered: the Threshold Limit Values (TLVs) established by the American Conference of Governmental Industrial Hygienists (ACGIH), OSHA's Permissible Exposure Limits (PELs), the Immediately Dangerous to Life or Health (IDLH) levels recommended by the National Institute of Occupational Safety and Health (NIOSH), and health hazards developed by the National Safety Council. The following is a brief description of each of these values.

Threshold Limit Values (TLVs): The TLV of a chemical substance is a level to which it is believed a worker can be exposed day after day for a working lifetime without adverse health effects. The TLV is an estimate based on the known toxicity in humans or animals of a given chemical substance, and the reliability and accuracy of the latest sampling and analytical methods. The TLV for chemical substances is defined as a concentration in air, typically for inhalation or skin exposure. Its units are in parts per million (ppm) for gases and in milligrams per cubic meter (mg/m^3) for particulates. The TLV is a recommended guideline by ACGIH.

Permissible Exposure Limits (PEL): The PEL is a legal limit, usually expressed in ppm, established by OSHA to protect workers against the health effects of exposure to hazardous substances. PELs are regulatory limits on the amount or concentration of a substance in the air. A PEL is usually given as a time-weighted average (TWA), although some are short-term exposure limits (STEL) or ceiling limits. A TWA is the average exposure over a specified period of time, usually eight hours. This means that, for limited periods, a worker may be exposed to concentrations higher than the PEL, so long as the average concentration over eight hours remains lower. A short-term exposure limit is one that addresses the average exposure over a 15- to 30-minute period of maximum exposure during a single work shift. A ceiling limit is one that may not be exceeded for any period of time, and is applied to irritants and other materials that have immediate effects. The OSHA PELs are published in 29 CFR Part 1910. Section 1910.1000, Table Z1.

Immediately Dangerous to Life or Health (IDLH): IDLH is an acronym defined by NIOSH as exposure to airborne contaminants that is "likely to cause death or immediate or delayed permanent adverse health effects or prevent escape from such an environment." IDLH values are often used to guide the selection of breathing apparatus that are made available to workers or firefighters in specific situations.

Oil and Pipeline Regulations and Oversight

Oil Pollution Act: The Oil Pollution Act was signed into law in 1990 to give the federal government authority to better respond to oil spills (see 33 U.S.C. Section 2701). The Oil Pollution Act improved the federal government's ability to prevent and respond to oil spills, including provision of money and resources. The Oil Pollution Act establishes polluter liability, gives states enforcement rights in navigable waters of the State, mandates the development of spill control and response plans for all vessels and facilities, increases fines and enforcement mechanisms, and establishes a federal trust fund for financing clean-up.

The Oil Pollution Act also establishes the National Oil Spill Liability Trust Fund to provide financing for cases in which the responsible party is either not readily identified or refuses to pay the cleanup/damage costs. In addition, the Oil Pollution Act expands provisions of the National Oil and Hazardous Substances Pollution Contingency Plan, more commonly called the National Contingency Plan, requiring the federal government to direct all public and private oil spill response efforts. It also requires area committees, composed of federal, state, and local government officials, to develop detailed, location-specific area contingency plans. In addition, the Oil Pollution Act directs owners and operators of vessels, and certain facilities that pose a serious threat to the environment, to prepare their own specific facility response plans. The Oil Pollution Act increases penalties for regulatory non-compliance by responsible parties; gives the federal government broad enforcement authority; and provides individual states the authority to establish their own laws governing oil spills, prevention measures, and response methods. The Oil Pollution Act requires oil storage facilities and vessels to submit to the Federal government plans detailing how they will respond to large discharges. The USEPA has published regulations for aboveground storage facilities and the U.S. Coast Guard has done the same for oil tankers.

Oil Pollution Prevention Regulation: In 1973, the USEPA issued the Oil Pollution Prevention regulation (see 40 CFR Part 112)**,** to address the oil spill prevention provisions contained in the Clean Water Act of 1972. The Spill Prevention, Control, and Countermeasure (SPCC) Rule is part of the Oil Pollution Prevention regulations (see 40 CFR Part 112, Subparts A – C). Any facility storing more than 1,320 gallons of petroleum product is required to prepare a plan for oil spill prevention, preparedness, and response to prevent oil discharges to navigable waters and adjoining shorelines. The SPCC Rule requires specific facilities to prepare, amend, and implement SPCC Plans. SPCC Plans require applicable facilities to take steps to prevent oil spills including: 1) using suitable storage containers/tanks; 2) providing overfill prevention (e.g., high-level alarms); 3) providing secondary containment for bulk storage tanks; 4) providing secondary containment to catch oil spills during transfer activities; and 5) periodically inspecting and testing pipes and containers.

U.S. Department of Transportation, Office of Pipeline Safety: The Office of Pipeline Safety, within the U.S. DOT, Pipeline and Hazards Material Safety Administration, has jurisdictional responsibility for developing regulations and standards to ensure the safe and secure movement

of hazardous liquid and gas pipelines under its jurisdiction in the United States. The Office of Pipeline Safety has the following key responsibilities:

- Support the operation of, and coordinate with, the U.S. Coast Guard on the National Response Center and serve as a liaison with the Department of Homeland Security and the Federal Emergency Management Agency on matters involving pipeline safety;

- Develop and maintain partnerships with other federal, state, and local agencies, public interest groups, tribal governments, and the regulated industry and other underground utilities to address threats to pipeline integrity, service, and reliability and to share responsibility for the safety of communities;

- Administer pipeline safety regulatory programs and develop regulatory policy involving pipeline safety;

- Oversee pipeline operator implementation of risk management and risk-based programs and administer a national pipeline inspection and enforcement program;

- Provide technical and resource assistance for state pipeline safety programs to ensure oversight of intrastate pipeline systems and educational programs at the local level; and

- Support the development and conduct of pipeline safety training programs for federal and state regulatory and compliance staff and the pipeline industry.

49 CFR Parts 178 – 185 relate to the role of transportation, including pipelines, in the United States. 49 CFR Parts 186 –199 establish minimum pipeline safety standards. The Office of the State Fire Marshal works in partnership with the Federal Pipeline and Hazardous Materials Safety Administration to assure pipeline operators are meeting requirements for safe, reliable, and environmentally sound operation of their facilities for intrastate pipelines within California.

Chemical Facility Anti-Terrorism Standards: The Federal Department of Homeland Security is responsible for implementing the Chemical Facility Anti-Terrorism Standards that were adopted in 2007 (see 6 CFR Part 27). These standards establish risk-based performance standards for the security of chemical facilities and require covered chemical facilities to prepare Security Vulnerability Assessments, which identify facility security vulnerabilities, and to develop and implement Site Security Plans.

3.4.1.3 State Regulations

Hazardous Materials and Waste Regulations

Hazardous Waste Control Law: California's Hazardous Waste Control Law is administered by the California Environmental Protection Agency (CalEPA) to regulate hazardous wastes within the State of California. While the California Hazardous Waste Control Law is generally more stringent than RCRA, both the state and federal laws apply in California. The California Department of Toxic Substances Control (DTSC) is the primary agency in charge of enforcing

both the federal and state hazardous materials laws in California. The DTSC regulates hazardous waste, oversees the cleanup of existing contamination, and pursues ways to reduce hazardous waste produced in California. The DTSC regulates hazardous waste in California under the authority of RCRA, the Hazardous Waste Control Law, and the HSC. Under the direction of the CalEPA, the DTSC maintains the Cortese and EnviroStor databases of hazardous materials and waste sites as specified under Government Code Section 65962.5.

The Hazardous Waste Control Law (22 CCR Chapter 11, Appendix X) also lists 791 chemicals and approximately 300 common materials which may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal, and transportation; and identifies some wastes that cannot be disposed of in landfills.

California Occupational Safety and Health Administration: The California Occupational Safety and Health Administration (CalOSHA) is the primary state agency responsible for worker safety in the handling and use of chemicals in the workplace. CalOSHA requires employers to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR Sections 337 – 340). The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings. CalOSHA's standards are generally more stringent than federal regulations.

In response to a 2012 refinery fire in Richmond, California, CalOSHA amended its Process Safety Management Regulation (Title 8 CCR Section 5189) in 2017 and introduced a new refinery safety order enforced by CalOSHA's Process Safety Management (PSM) Unit, adding Section 5189.1 to Title 8 of the CCR. The elements outlined in the regulation require refinery employers to:

- Conduct *Damage Mechanism Reviews* for processes that result in equipment or material degradation. Physical degradation, such as corrosion and mechanical wear, are common technical causes of serious process failures.

- Conduct a *Hierarchy of Hazard Controls Analysis* to encourage refinery management to implement the most effective safety measures when considering competing demands and costs when correcting hazards.

- Implement a *Human Factors Program,* which requires analysis of human factors such as staffing levels, training and competency, fatigue and other effects of shift work, and the human-machine interface.

- Develop, implement, and maintain written procedures for the *Management of Organizational Change* to ensure that plant safety remains consistent during personnel changes.

- Utilize *Root Cause Analysis* when investigating any incident that results in, or could have reasonably resulted in, a major incident.

- Perform and document a *Process Hazard Analysis* of the effectiveness of safeguards that apply to particular processes and identify, evaluate, and control hazards associated with each process.

- Understand the attitudes, beliefs, perceptions, and values that employees share in relation to safety and evaluate responses to reports of hazards by implementing and maintaining an effective Process Safety Culture Assessment program.[97]

Hazardous Materials Release Notification: Many California statutes require emergency notification when a hazardous chemical is released, including:

- HSC Sections 25270.7, 25270.8, 25510, and 25510.3;

- Vehicle Code Section 23112.5;

- Public Utilities Code Section 7673 (General Orders #22-B, 161);

- Government Code Sections 51018 and 8670.25.5(a); and

- Water Code Sections 13271 and 13272

California Accidental Release Prevention (CalARP) Program: The California Accidental Release Prevention Program (19 CCR Division 2, Chapter 4.5) requires the preparation of Risk Management Plans (RMPs). The CalARP Program requires stationary sources with more than a threshold quantity of a regulated substance to be evaluated to determine the potential for and impacts of accidental releases from any processes subject to state risk management requirements. RMPs are documents prepared by the owner or operator of a stationary source containing detailed information including: 1) regulated substances held onsite at the stationary source; 2) offsite consequences of an accidental release of a regulated substance; 3) the accident history at the stationary source; 4) the emergency response program for the stationary source; 5) coordination with local emergency responders; 6) hazard review or process hazard analysis; 7) operating procedures at the stationary source; 8) training of the stationary source's personnel; 9) maintenance and mechanical integrity of the stationary source's physical plant; and 10) incident investigation. The CalARP Program is implemented at the local government level by Certified Unified Program Agencies (CUPAs) and contract agencies known as Participating Agencies or Administering Agencies (AAs). Typically, local fire departments are the administering agencies of the CalARP Program because they frequently are the first responders in the event of a release. Each CUPA shall develop an integrated alerting and notification system, in coordination with local emergency management agencies, unified program agencies, local first response agencies, regulated facilities, and the public, to be used to notify the community surrounding a regulated facilities in the event of an incident warranting the use of the automatic notification system. The integrated alerting and notification system shall include the following:

[97] State of California, Department of Industrial Relations, News Release 2017-37, Landmark Workplace Safety and Health Regulation Approved to Reduce Risk of Major Incidents at Oil Refineries in California, May 18, 2017. https://www.dir.ca.gov/DIRNews/2017/2017-37.pdf, accessed November 9, 2020.

1. Text messaging;
2. Calls to landline and cellular telephones;
3. Activation of the Emergency Alert System;
4. National Weather Service alerts to National Oceanic and Atmospheric Administration radios;
5. Social media communications;
6. New technologies when developed; and
7. An audible alarm.

The integrated alerting and notification system shall alert and notify the communities surrounding a petroleum refinery, including schools, public facilities, hospitals, transient and special needs populations, and residential care homes. The area of the community to be alerted and notified shall be determined by the local implementing agency in coordination with unified program agencies, local first response agencies, petroleum refineries, and the public.

If an integrated alerting and notification system was not implemented by January 1, 2018, the local implementing agency shall, in coordination with the unified program agency, local first response agencies, petroleum refineries, and the public, determine an appropriate integrated alerting and notification system to be developed consistent with subdivisions (a) and (b), and on or before January 1, 2019, must develop a schedule for developing and implementing the integrated alerting and notification system.

The local implementing agency, through an interagency agreement or memorandum of understanding with the CUPA and the county's operational area coordinator, shall manage, operate, coordinate, and maintain the integrated alerting and notification system. A petroleum refinery shall immediately call the emergency 9-1-1 telephone number and notify the CUPA, in the event of an incident warranting the use of the integrated alerting and notification system.

Unified Hazardous Waste and Hazardous Materials Management Regulatory Program: The Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program) as promulgated by CalEPA in CCR, Title 27, Chapter 6.11 requires the administrative consolidation of six hazardous materials and waste programs (program elements) under one agency, a CUPA. The Unified Program administered by the State of California consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities for the state's environmental and emergency management programs, which include Hazardous Waste Generator and On-Site Hazardous Waste Treatment Programs ("Tiered Permitting"); Aboveground SPCC Program; Hazardous Materials Release Response Plans and Inventories (business plans); the CalARP Program; the UST Program; and the Uniform Fire Code Plans and Inventory Requirements. The Unified Program is implemented at the local government level by CUPAs.

Hazardous Materials Management Act: HSC, Division 20, Chapter 6.95 requires any business handling more than a specified amount of hazardous or extremely hazardous materials, to submit a Hazardous Materials Business Plan to its CUPA. Business plans must include an inventory of the types, quantities, and locations of hazardous materials at the facility. Businesses are required to update their business plans at least once every three years and the chemical portion of their plans every year. Also, business plans must include emergency response plans and procedures to be used in the event of a significant or threatened significant release of a hazardous material. These plans need to identify the procedures to follow for immediate notification to each school superintendent within one-half mile of an acutely hazardous material release [98], all appropriate agencies and personnel of a release, identification of local emergency medical assistance appropriate for potential accident scenarios, contact information for all company emergency coordinators, a listing and location of emergency equipment at the business, an evacuation plan, and a training program for business personnel. The requirements for hazardous materials business plans are specified in the HSC and 19 CCR.

Hazardous Materials Transportation in California: California regulates the transportation of hazardous waste originating or passing through the State in Title 13, CCR. The California Highway Patrol (CHP) and the California Department of Transportation (Caltrans) have primary responsibility for enforcing federal and State regulations and responding to hazardous materials transportation emergencies. The CHP enforces materials and hazardous waste labeling and packing regulations that prevent leakage and spills of material in transit and provide detailed information to cleanup crews in the event of an incident. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are all part of the responsibility of the CHP. Caltrans has emergency chemical spill identification teams at locations throughout California.

California Fire Code: While NFC Standard 45 and NFPA 704 are regarded as nationally recognized standards, the California Fire Code (24 CCR) also contains state standards for the use and storage of hazardous materials and special standards for buildings where hazardous materials are found. Some of these regulations consist of amendments to NFC Standard 45. California Fire Code regulations require emergency pre-fire plans to include training programs in first aid, the use of fire equipment, and methods of evacuation.

3.4.1.4 Local Regulations

3.4.1.4.1 South Coast AQMD

South Coast AQMD Rule 1166 – Volatile Organic Compound Emissions from Decontamination of Soil: Rule 1166 establishes requirements to control the emission of volatile organic compounds (VOCs) from excavating, grading, handling, and treating soil contaminated from leakage, spillage, or other means of VOCs deposition. Rule 1166 stipulates that any parties planning on excavating, grading, handling, transporting, or treating soils contaminated with VOCs must first apply for, obtain, and operate pursuant to a mitigation plan approved by the Executive Officer prior to commencement of operation. Best Available Control Technology

[98] HSC Section 25510.3. http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=HSC&sectionNum=25510.3.

(BACT) is required during all phases of remediation of soil contaminated with VOCs. Rule 1166 also sets forth testing, recordkeeping, and reporting procedures that must be followed at all times. Non-compliance with Rule 1166 can result in the revocation of the approved mitigation plan, the owner and/or the operator being served with a Notice of Violation for creating a public nuisance, or an order to halt the offending operation until the public nuisance is mitigated to the satisfaction of the Executive Officer.

South Coast AQMD Rule 1466 – Control of Particulate Emissions from Soils with Toxic Air Contaminants: Rule 1466 affects operations conducting earth-moving activities of soil that has been identified by the USEPA, the DTSC, the State Water Board, the Regional Water Board, or a county, local, or state regulatory agency to contain one or more of the applicable toxic air contaminants listed in the rule, and the site has been designated by one or more of the aforementioned agencies. While earth-moving activities occur, the owner or operator must conduct continuous direct-reading near real-time ambient monitoring. If PM10 concentration over two hours exceeds 25 $\mu g/m^3$, the earth-moving activities must cease, dust suppressant must be applied, or implement other dust control measures until the concentration decreases to below 25 $\mu g/m^3$ averaged over 30 minutes.

3.4.1.4.2 Los Angeles County

Office of Emergency Management: The Office of Emergency Management is responsible for organizing and directing the preparedness efforts of the Emergency Management Organization of Los Angeles County. Los Angeles County's policies towards hazardous materials management include enforcing stringent site investigations for factors related to hazards; limiting the development in high hazard areas, such as floodplains, high fire hazard areas, and seismic hazard zones; facilitating safe transportation, use, and storage of hazardous materials; supporting lead paint abatement; remediating Brownfield sites; encouraging the purchase of homes on the Federal Emergency Management Agency (FEMA) Repeat Hazard list and designating the land as open space; enforcing restrictions on access to important energy sites; limiting development downslope from aqueducts; promoting safe alternatives to chemical-based products in households; and prohibiting development in floodways. The county has defined effective emergency response management capabilities to include supporting county emergency providers with reaching their response time goals; promoting the participation and coordination of emergency response management between cities and other counties at all levels of government; coordinating with other county and public agency emergency planning and response activities; and encouraging the development of an early warning system for tsunamis, floods, and wildfires.

The Safety Element of the Los Angeles County General Plan 2035 Update, in conjunction with the All-Hazard Mitigation Plan prepared by the Chief Executive Office, Office of Emergency Management (CEO OEM), sets strategies for natural and man-made hazards in Los Angeles County. The All-Hazard Mitigation Plan, which has been approved by FEMA and the California

Emergency Management Agency (CalEMA), includes a compilation of known and projected hazards in Los Angeles County.[99]

Certified Unified Program Agencies: CUPAs within Los Angeles County require regulated facilities to conduct Program Level 4 inspections and audits pursuant to the CalARP Program (19 CCR Section 2762.0.1).[100] The purpose of Program Level 4 is to prevent major incidents at regulated facilities in order to protect the health and safety of communities and the environment (19 CCR Section 2762.0.2). "Major incident" means an event within or affecting a process that causes a fire, explosion, or release of a highly hazardous material, and has the potential to result in death or serious physical harm (as defined in California Labor Code Section 6432(e)), which describes "Serious physical harm," as meaning any injury or illness, specific or cumulative, occurring in the place of employment or in connection with any employment, that results in any of the following:

1) Inpatient hospitalization for purposes other than medical observation.
2) The loss of any member of the body.
3) Any serious degree of permanent disfigurement.
4) Impairment sufficient to cause a part of the body or the function of an organ to become permanently and significantly reduced in efficiency on or off the job, including but not limited to, depending on the severity, second-degree or worse burns, crushing injuries including internal injuries even though skin surface may be intact, respiratory illnesses, or broken bones.

Incidents resulting in an officially declared public shelter-in place, or evacuation order are also considered major incidents. [19 CCR Section 2735.3 (ii)].

3.4.1.4.3 Orange County

The Environmental Health Division was designated as the Certified Unified Program Agency (CUPA) for the County of Orange by the State Secretary for Environmental Protection on January 1, 1997. The CUPA is the local administrative agency that coordinates the regulation of hazardous materials and hazardous wastes in Orange County through the following six programs: 1) Hazardous Materials Disclosure; 2) Business Emergency Plan; 3) Hazardous Waste; 4) Underground Storage Tank; 5) Aboveground Petroleum Storage Tank; and 6) CalARP Program.

County and City Fire Agencies within Orange County have joined in partnership with the CUPA as Participating Agencies (PAs). In most Orange County cities, the Environmental Health Division administers all programs, with the exception of La Habra, Fullerton, Huntington Beach, Orange and Fountain Valley in which case the local Fire Agencies are responsible for the Hazardous Materials and Business Emergency Plan Programs. The Fire Agencies in the cities of

[99] Los Angeles County Department of Regional Planning, 2015 Los Angeles County General Plan. Available at: https://planning.lacounty.gov/generalplan/generalplan

[100] CCR, Title 19, Division 2, Chapter 4.5, Article 6.5 – CalARP Program 4 Prevention Program, accessed November 9, 2020. https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I0F501A53539C437A864E155B230DCBEA&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default)

Orange and Fullerton also administer the Underground Storage Tank Program and LA County Fire administers the CalARP and HMD/BEP programs for the City of La Habra.[101]

The Safety Element of the Orange County General Plan provides for the protection of people and property from risks associated with hazards and hazardous materials through the implementation of mitigation measures as outlined in the California Emergency Plan, the California Master Mutual Aid Agreement, the Orange County Emergency Plan, the Orange County Operational Area Plan, County of Orange and Orange County Fire Authority Hazard Mitigation Plan, and other emergency management plans. The Safety Element of the Orange County General Plan focuses primarily upon the County's planned response to extraordinary emergency situations associated with natural disasters, technological incidents, intentional acts of terrorism, and nuclear protection operations. To reduce the County's susceptibility and vulnerability to extraordinary emergency situations, the Safety Element recommends continued emphasis is placed on several coordinated efforts: mitigation; emergency planning; training of full-time, auxiliary, and reserve personnel; public awareness and education; and assuring the adequacy and availability of sufficient resources to cope with such emergencies. In May 2021, the County of Orange and Orange County Fire Authority prepared a new Hazard Mitigation Plan (HMP) in compliance with federal and state regulations.[102]

3.4.1.4.4 San Bernardino County

As a CUPA, San Bernardino County Fire Department manages six hazardous material and hazardous waste programs for the County including: 1) Hazardous Materials Business Plan; 2) Hazardous Waste and Onsite Treatment; 3) Aboveground Petroleum Storage Act; 3) Underground Storage Tank; 5) CalARP Program; and 6) Hazardous Materials Management Plan and Hazardous Materials Inventory Statements (California Fire Code). The CUPA program is designed to consolidate, coordinate, and uniformly and consistently administer permits, inspection activities, and enforcement activities throughout San Bernardino County. This approach strives to reduce overlapping and sometimes conflicting requirements of different governmental agencies independently managing these programs. The CUPA is charged with the responsibility of conducting compliance inspections for over 7000 regulated facilities in San Bernardino County.[103]

The San Bernardino County General Plan contains the Hazards Element which was amended in 2020 with goals such as avoiding new buildings in environmental hazard areas, require underground utilities to withstand seismic forces, hardening structures for fire risk, adhering to the goals, objectives and actions in the County's Hazard Mitigation Plan, minimizing the use of

[101] Orange County Health Care Agency, CUPA Homepage. Available at: https://ochealthinfo.com/about-hca/public-health-services/environmental-health-services/hazardous-materials. Accessed May 19, 2022.
[102] County of Orange and Orange County Fire Authority, Local Hazard Mitigation Plan. May 2021. Available at : https://www.ocsheriff.gov/sites/ocsd/files/2021-05/May%202021%20County%20of%20Orange%20Hazard%20Mitigation%20Plan%20PUBLIC%20REVIEW%20DRAFT.pdf. Accessed May 25, 2022.
[103] San Bernardino County Certified Unified Program Agency, Hazardous Materials. Available at: https://sbcfire.org/hazmatcupa/. Accessed May 19, 2022.

hazardous materials where feasible, designating truck routes for hazardous materials, and maintaining up-to-date databases on the storage, use, and production of hazardous materials.[104]

3.4.1.4.5 Riverside County

CalEPA designated the Riverside County Department of Environmental Health as the CUPA for Riverside County. The CUPA oversees two Participating Agencies, (Corona Fire and Riverside Fire Departments) that implement hazardous materials programs within the County. The Riverside County Department of Environmental Health Hazardous Materials Branch is responsible for overseeing the six hazardous materials programs in the County, including: 1) Aboveground Petroleum Storage Tanks; 2) CalARP Program; 3) Hazardous Materials Business Plan; 4) Emergency Response Team; 5) Underground Storage Tanks; 6) Waste Generator; and 7) Waste Treatment.

The Riverside County Department of Environmental Health Hazardous Materials Branch is responsible for inspecting facilities that handle hazardous materials, generate hazardous waste, treat hazardous waste, own/operate underground storage tanks, own/operate aboveground petroleum storage tanks, or handle other materials subject to the CalARP Program. In addition, the Branch maintains an emergency response team that responds to hazardous materials and other environmental health emergencies 24 hours a day, seven days a week.[105]

3.4.2 EMERGENCY RESPONSE TO HAZARDOUS MATERIALS AND WASTE INCIDENTS

3.4.2.1 Federal

The Federal Emergency Management Agency (FEMA) exists to "raise risk awareness, educate in risk reduction options, and help take action before disasters; alert, warn, and message, coordinate Federal response, and apply and manage resources during disasters; and coordinate Federal recovery efforts, provide resources, and apply insight to future risk after disasters."[106] In preparation for future incidents, FEMA has produced the Authorized Equipment List (AEL) which, along with the Standardized Equipment List created by the Interagency Board (IAB) for Emergency Preparedness and Response, provides equipment recommendations for various missions (e.g., law enforcement: preventive radiation/nuclear detection) and sublists (e.g., detection, decontamination, medical); FEMA offers Preparedness Grants for equipment types approved under the AEL. To address the issue of jurisdictions' limited resources, organizations are directed to implement the resource management principles of the National Incident Management System (NIMS) which connect neighboring jurisdictions through mutual aid agreement, private sector partnerships, and volunteer organization involvement. If an incident occurs, the organization responsible for the release is required by law to notify the National Response Center at 1-800-424-8802, a 24-hours per day center run by the United States Coast

[104] San Bernardino Hazard Element, October 2020. https://countywideplan.com/policy-plan/hazards/ Accessed May 25, 2022.
[105] Riverside County Department of Environmental Health, Hazardous Materials Programs. Available at: https://www.rivcoeh.org/OurServices/HazardousMaterials. Accessed May 19, 2022
[106] FEMA, "We are FEMA: Helping People Before, During and After Disasters" https://www.fema.gov/sites/default/files/2020-03/publication-one_english_2019.pdf

Guard (USCG). The National Response Center will contact a designated FEMA On-Scene Coordinator (OSC) in the region, alongside state, local, tribal, and territorial emergency personnel who determine the status of the response and how much Federal involvement is necessary. OSC evaluate whether the cleanup was appropriate, timely, and minimized human and environmental damage.[107] An OSC is an agent of either EPA or USCG: EPA OSC have primary responsibility for spills and releases to inland areas and waters while USCG OSC have responsibility for coastal waters and the Great Lakes.[108]

The National Incident Management System (NIMS) focuses on resource management before and during an incident. "Resource management preparedness involves: identifying and typing resources; qualifying, certifying, and credentialing personnel; planning for resources; and acquiring, storing, and inventorying resources." By identifying and typing resources, common language can be established for defining minimum capabilities expected of personnel, teams, facilities, equipment, and supplies; and enabling communities to plan for, request, and have confidence in the resources they receive. FEMA is responsible for developing and maintaining resource typing definitions. Training personnel and stockpiling resources ensure that, when an incident occurs, the most effective and efficient response can be executed. Personnel responding to an incident are organized according to a standardized approach to command, control, and coordination, the Incident Command System (ICS). Depending on the situation, a single Incident Commander or group of Unified Command will oversee a team consisting of a public information officer, safety officer, liaison officer, and operations, planning, logistics, and finance/administration teams each with their own chief. NIMS staff and representatives from other jurisdictions coordinate at Emergency Operations Centers (EOC). During an incident, the Incident Commander(s) identify, order, mobilize, and track resources; followed by demobilizing, and reimbursing and restocking supplies accordingly afterwards.[109]

The EPA Environmental Response Team (ERT) "responds to oil spills, chemical, biological, radiological, and nuclear incidents, and large-scale national emergencies, including homeland security incidents…when requested or when state and local first responder capabilities have been exceeded."[110] In addition to the EPA OSC, the ERT consists of technical experts who advise at the scene of hazardous substance releases. Special teams include: the Radiological Emergency Response Team (RERT), the Chemical, Biological, Radiological, and Nuclear Consequence Management Advisory Division (CBRN CMAD), and the National Criminal Enforcement Response Team (NCERT).[111]

3.4.2.2 State

The California Office of Emergency Services (CalOES) exists to enhance safety and preparedness in California through strong leadership, collaboration, and meaningful partnerships.

[107] FEMA, Hazardous Materials Incidents, Guidance for State, Local, Tribal, Territorial, and Private Sector Partners, August 2019. https://www.fema.gov/sites/default/files/2020-07/hazardous-materials-incidents.pdf
[108] USEPA, EPA's On-Scene Coordinators. https://www.epa.gov/emergency-response/epas-scene-coordinators-oscs
[109] FEMA, National Incident Management System, Third Edition, October 2017. https://www.fema.gov/sites/default/files/2020-07/fema_nims_doctrine-2017.pdf
[110] USEPA, EPA's Role in Emergency Response. https://www.epa.gov/emergency-response/epas-role-emergency-response
[111] USEPA, EPA's Role in Emergency Response – Special Teams. https://www.epa.gov/emergency-response/epas-role-emergency-response-special-teams

The goal of CalOES is to protect lives and property by effectively preparing for, preventing, responding to, and recovering from all threats, crimes, hazards, and emergencies. CalOES is under the Fire and Rescue Division, and coordinates statewide implementation of hazardous materials accident prevention and emergency response programs for all types of hazardous materials incidents and threats. In response to any hazardous materials emergency, CalOES is called upon to provide state and local emergency managers with emergency coordination and technical assistance.

Pursuant to the Emergency Services Act, the State of California has developed an Emergency Response Plan to coordinate emergency services provided by federal, state, and local government agencies and private persons. Response to hazardous materials incidents is one part of this plan. The Plan is administered by CalOES which coordinates the responses of other agencies. Six mutual aid and Local Emergency Planning Committee (LEPC) regions have been identified for California, as required by the federal Superfund Amendments and Re-authorization Act (SARA). California is divided into three areas of the state designated as the Coastal (Region II, which includes 16 counties with 151 incorporated cities and a population of about eight million people), Inland (Region III, Region IV and Region V, which includes 31 counties with 123 incorporated cities and a population of about seven million people), and Southern (Region I and Region VI, which includes 11 counties with 226 incorporated cities and a population of about 21.6 million people). At the federal level, the U.S. DOT has overlapping jurisdiction over portions of Region I and Region VI, which are also within the jurisdiction of South Coast AQMD.

In addition, pursuant to the Hazardous Materials Release Response Plans and Inventory Law of 1985, local agencies are required to develop "area plans" for response to releases of hazardous materials and wastes. These emergency response plans depend to a large extent on the business plans submitted by persons who handle hazardous materials. An area plan must include pre-emergency planning of procedures for emergency response, notification, coordination of affected government agencies and responsible parties, training, and follow-up.

With respect to suppliers and sellers of hazardous materials, HSC Section 25506 specifically requires all businesses handling hazardous materials to submit a business emergency response plan to assist local administering agencies in the emergency release or threatened release of a hazardous material. Business emergency response plans generally require the following:

1. Identification of individuals who are responsible for various actions, including reporting, assisting emergency response personnel, and establishing an emergency response team;

2. Procedures to notify the administering agency, the appropriate local emergency rescue personnel, and the CalOES;

3. Procedures to mitigate a release or threatened release to minimize any potential harm or damage to persons, property, or the environment;

4. Procedures to notify the necessary persons who can respond to an emergency within the facility;

5. Details of evacuation plans and procedures;

6. Descriptions of the emergency equipment available in the facility;

7. Identification of local emergency medical assistance; and

8. Training (initial and refresher) programs for employees in:

    a. The safe handling of hazardous materials used by the business;

    b. Methods of working with the local public emergency response agencies;

    c. The use of emergency response resources under control of the handler; and,

    d. Other procedures and resources that will increase public safety and prevent or mitigate a release of hazardous materials.

In general, every county or city and all facilities using a minimum amount of hazardous materials are required to formulate detailed contingency plans to eliminate, or at least minimize, the possibility and effect of fires, explosion, or spills. In cooperation with the CalOES, local jurisdictions have enacted ordinances that set standards for area and business emergency response plans. These requirements include immediate notification, mitigation of an actual or threatened release of a hazardous material, and evacuation of the emergency area.

3.4.2.3 Local

Los Angeles County

The Sheriff, Fire, Health Services, and Public Works departments, and the Chief Executive Office, Office of Emergency Management respond to emergencies in the County of Los Angeles. In particular, the Fire Department Hazardous Materials program addresses chemical and explosive threats, provides 24-hour emergency services, and operates at four locations distributed throughout county: Haz Mat 43 – 921 South Stimson Avenue, La Puente, CA 91746; Haz Mat 105 – 18915 South Santa Fe Avenue, Compton, CA 90221; Haz Mat 129 – 42110 6th Street West, Lancaster, CA 93534; and Haz Mat 150 – 19190 Golden Valley Road, Santa Clarita, CA 91387. [112]

Orange County

The Orange County Environmental Health Hazardous Materials Team (Health HazMat Team) addresses chemical and explosive threats, provides 24-hour emergency services, and operates out of two locations throughout the county: Haz Mat 20 and Haz Mat 220 operate out of Fire Station 20 at 7050 Corsair, Irvine, CA 92618; and Haz Mat 79 operates out of Fire Station 79 at 1320 E. Warner Avenue, Santa Ana, CA 92705, respectively.[113]

[112] County of Los Angeles Fire Department, Emergency Operations. https://fire.lacounty.gov/emergency-operations/

[113] Orange County, Hazardous Materials Emergency Response https://www.ochealthinfo.com/about-hca/public-health-services/environmental-health-services/hazardous-materials/emergency

Riverside County
The Countywide Hazmat Operations Group consists of hazmat teams from the Riverside County Emergency Management Department, CALFIRE/Riverside County Fire Department, Riverside County Sheriff's Hazardous Device Team, County of Riverside Department of Environmental Health, Riverside University Health System - Public Health, as well as the cities of Corona, Hemet, and Riverside.

The Riverside County Department of Environmental Health Hazardous Materials Emergency Response Team responds 24 hours a day, seven days a week throughout Riverside County to a variety of chemical related incidents and complaints and operates out of two locations throughout the county: HazMat 34 operate out of Fire Station 34 at 32655 Haddock Street, Winchester, CA 92596; and HazMat 81 operates out of Fire Station 81 at 37955 Washington Street, Palm Desert, CA 92211.[114]

San Bernardino County
The San Bernardino County Fire Office of the Fire Marshal Hazardous Materials Response Team responds to hazardous materials incidents that require control and containment, mitigation or remediation, and operates out of two locations throughout the county: 1) HazMat 73 operates out of Fire Station 73 at 8143 Banana Ave, Fontana, CA 92335; and 2) HazMat 62 operates out of Fire Station 22 at 12398 Tamarisk Rd, Victorville, CA 92395. [115]

3.4.3 HAZARDOUS MATERIALS INCIDENTS

Hazardous materials move through the region by a variety of modes: truck, rail, air, ship, and pipeline. The movement of hazardous materials implies a degree of risk, depending on the materials being moved, the mode of transport, and numerous other factors (e.g., weather and road conditions). According to the Office of Hazardous Materials Safety (OHMS) in the U.S. DOT, hazardous materials shipments can be regarded as equivalent to deliveries, but any given shipment may involve one or more movements or trip segments, which may occur by different routes (e.g., rail transport with final delivery by truck). According to the Commodity Flow Survey data, there were more than 2.9 billion tons of hazardous materials shipments in the United States in 2017 (the last year for which data is available). Table 3.4-2 indicates that trucks move more than 60 percent and pipeline accounts for approximately 23 percent of all hazardous materials transported from a location in the United States. By contrast, rail accounts for only three percent of transported materials.[116] In California, 83 percent of hazardous materials are moved by pipeline.

[114] Riverside County Department of Health https://www.rivcoeh.org/OurServices/HazardousMaterials/EmergencyResponseTeam
[115] San Bernardino County Hazardous Materials Response Team, https://sbcfire.org/hmemergencyresponse/
[116] USDOT, 2020. Table H1a: Hazardous Material Shipment Characteristics by Mode of Transportation for the United States: 2017. United States: 2017; 2017 Economic Census and 2017 Commodity Flow Survey. Issued September 2020. https://www.census.gov/content/dam/Census/library/publications/2017/econ/ec17tcf-us.pdf.

TABLE 3.4-2
Movement of Hazardous Materials in the United States and California in 2017

Mode	Hazardous Material Transported in the United States		Hazardous Materials Transported in California	
	Quantity of Hazardous Materials Transported (thousand tons)	Percent of Total Hazardous Materials Movement by Mode of Transportation	Quantity of Hazardous Materials Transported (thousand tons)	Percent of Total Hazardous Materials Movement by Mode of Transportation
Truck	1,814,848	61.1%	154.4	13.8%
Rail	90,387	3.0%	17.2	1.6%
Water	304,189	10.2%	15.6	1.4%
Pipeline	679,846	22.9%	931.5	83.2%
Total	**2,967,965**	**100.0%**	**1,118.7**	**100**

Single mode air, multiple modes, and other modes also comprise part of the total, but have not been listed.
Source: U.S. DOT [117]

California Hazardous Materials Incident Reporting System: The California Hazardous Materials Incident Reporting System (CHMIRS) is a post-incident reporting system to collect data on incidents involving the accidental release of hazardous materials in California. Information on accidental releases of hazardous materials is reported to and maintained by CalEMA. The U.S. DOT Pipeline and Hazardous Materials Safety Administration (PHMSA) provides access to retrieve data from the Incident Reports Database, which also includes non-pipeline incidents, e.g., truck and rail events. Incident data and summary statistics, e.g., release date, geographical location (state and county) and type of material released, are available online from the Hazmat Incident Database.

Table 3.4-3 provides a summary of the reported hazardous material incidents for Los Angeles, Orange, Riverside, and San Bernardino counties for 2019 through 2021 from the Hazmat Incident Database. Data presented is for the entire county and not limited to the portion of the county located within the jurisdiction of the South Coast AQMD.

TABLE 3.4-3
Reported Hazardous Materials Incidents for 2019 - 2021

County	2019	2020	2021
Los Angeles	405	389	287
Orange	84	84	103
Riverside	45	57	75
San Bernardino	412	477	470
Total	**946**	**1,007**	**935**

[117] USDOT, 2020. Table H1a: Hazardous Material Shipment Characteristics by Mode of Transportation for the United States: 2017. United States: 2017; 2017 Economic Census and 2017 Commodity Flow Survey. Issued September 2020. Available at https://www.census.gov/content/dam/Census/library/publications/2017/econ/ec17tcf-us.pdf

In 2019, there were a total of 946 incidents reported for Los Angeles, Orange, Riverside, and San Bernardino counties. In 2020, there were a total of 1,007 incidents reported for Los Angeles, Orange, Riverside, and San Bernardino counties, and in 2021, a total of 935 incidents for these four counties. Over the three-year period, San Bernardino and Los Angeles counties accounted for the largest number of incidents, followed by Orange and Riverside counties.

CalOES is required to collect hazardous materials release notifications from the public, businesses, and emergency response agencies to ensure local and state agencies are alerted to possible hazardous materials releases and to dispatch emergency resources for both notification and response to hazardous materials incidents. Reports of annual notifications are available to the public and can be downloaded for specific years.[118]

3.4.4 HAZARDS ASSOCIATED WITH AIR POLLUTION CONTROL, PRODUCTION REFORMULATIONS, AND ALTERNATIVE FUELS

The South Coast AQMD has evaluated the hazards analyses in CEQA documents prepared for previously developed AQMPs and various South Coast AQMD rules, and facility modification projects where the South Coast AQMD permits are required. The analyses covered a range of potential air pollution control technologies and equipment. For example, CEQA documents prepared for the previous AQMPs and South Coast AQMD rules, such as the March 2017 Program EIR for the 2016 AQMP and the December 2015 Final Program Environmental Assessment for NOx RECLAIM, have specifically evaluated hazard impacts from new or modified add-on air pollution control equipment that use hazardous materials (e.g., SCRs using ammonia and catalysts, scrubbers using chemicals, etc.).

Add-on pollution control technologies which have been previously analyzed for hazards include carbon adsorption, incineration, post-combustion flue-gas treatment, SCR and selective non-catalytic reduction (SNCR), wet gas and dry gas scrubbers (LoTOx^{TM} with WGS, and UltraCat^{TM} with DGS), baghouses and supplemental filters, and electrostatic precipitators. The use of add-on pollution control equipment may concentrate or utilize hazardous materials. A malfunction or accident when using add-on pollution control equipment could potentially expose people to hazardous materials, explosions, or fires. The South Coast AQMD has determined that the transport, use, and storage of ammonia, both aqueous and anhydrous, (used in SCR and SNCR systems) may have significant hazard impacts in the event of an accidental release. Further analyses have indicated that the use of aqueous ammonia (in lieu of anhydrous ammonia) can usually reduce the hazards associated with ammonia use in SCR and SNCR systems to less than significant.

The potential hazards associated with alternative coating methods have been analyzed including powder coatings, radiation-curable coatings, high solids coatings, and waterborne coatings. The greatest hazard associated with both current and alternative coating methods is flammability.

[118] CalOES, Spill Release Archive Files. https://www.caloes.ca.gov/Governments-Tribal/Plan-Prepare/Spill-Release-Reporting, accessed August 23, 2021.

Alternative fuels may be used to reduce emissions from both stationary source equipment and motor vehicles. The 2022 AQMP seeks emission reductions from low NOx and zero emission technologies that could be accomplished with alternative fuels and electric batteries. The alternative fuels which have been analyzed include reformulated gasoline, methanol, compressed natural gas, liquid petroleum gas (LPG) or propane, and electrically charged batteries. Like conventional fossil fuels, alternative fuels may create fire hazards, explosions, or accidental releases during fuel transport, storage, dispensing, and use. Electric batteries also present a slight fire and explosion hazards due to the presence of reactive compounds, which may be subjected to high temperatures.

3.4.4.1 Air Pollution Control Processes

The following chemicals are specifically associated with operating the aforementioned air pollution control equipment that may be employed as a result of implementing the proposed project.

Ammonia

At room temperature, ammonia is a colorless gas that is typically found in the form of water vapor or particulates; it is corrosive at high concentrations. Ammonia odor is pungent and irritating, and therefore provides precautionary warning of its presence in most cases. However, after prolonged exposure to this chemical, it is more difficult to detect due to olfactory fatigue or adaptation.

Ammonia is the primary hazardous chemical identified with the use of SCR systems. Ammonia, though not a carcinogen, can have chronic and acute health impacts. Therefore, a potential increase in the use of ammonia may increase the current existing risk setting associated with deliveries (e.g., truck and road accidents) and onsite or offsite spills for each facility that currently uses or will begin to use ammonia. Exposure to a toxic gas cloud is the potential hazard associated with this type of control equipment. A toxic gas cloud is the release of a volatile chemical such as anhydrous ammonia that could form a cloud that migrates off-site, thus exposing individuals. Anhydrous ammonia is heavier than air such that when released into the atmosphere, it would form a cloud at ground level rather than be dispersed. “Worst-case” conditions tend to arise when very low wind speeds coincide with the accidental release, which can allow the chemicals to accumulate rather than disperse. Though there are facilities that may be affected by the 2022 AQMP control measures that are currently permitted to use anhydrous ammonia, for any new construction, however, current South Coast AQMD policy no longer allows the use of anhydrous ammonia. Instead, to minimize the hazards associated with ammonia used in the SCR or SNCR process, aqueous ammonia, 19 percent by volume, is typically required as a permit condition associated with the installation of SCR or SNCR equipment for the following reasons: 1) 19 percent aqueous ammonia does not travel as a dense gas like anhydrous ammonia; and 2) 19 percent aqueous ammonia is not on any acutely hazardous materials lists unlike anhydrous ammonia or aqueous ammonia at higher percentages. Also, if released, aqueous ammonia is likely to pool in liquid form and would be captured in a surrounding berm. As such, the release impacts of an aqueous ammonia release are not as great as anhydrous ammonia release.

Acute inhalation of ammonia may lead to corrosive injury to the skin and mucus membranes of the eyes, lungs, and gastrointestinal tract. Exposure to very high concentrations may result in eye redness and lacrimation (tearing), nose and throat irritation, cough, choking sensation, dyspnea (labored breathing or shortness of breath), lung damage, or death. Fatalities from ammonia exposure are most commonly caused by pulmonary edema (fluid accumulation in the lung). People with asthma and other respiratory conditions such as cardiopulmonary disease or with no tolerance developed from recent exposure may be more sensitive to the toxic effects of ammonia.

Chronic exposure to ammonia may impact pulmonary function tests or lead to subjective symptomatology in workers. Chronic cough, asthma, lung fibrosis, and chronic irritation of the eye membranes and skin have also been reported. The most sensitive endpoints of chronic ammonia exposure are decreased pulmonary function, and eye, skin, and respiratory irritation, which were reported in an occupational inhalation study at a concentration of 6.5 mg/m^3.

Ammonia has been categorized as a slight fire hazard by the National Fire Protection Association with a lower explosive limit (LEL) equal to 15 percent, but this hazard is increased in the presence of oil or other combustible materials. The USEPA characterizes ammonia as an extremely hazardous substance, and vapors may form an explosive mixture with air. OSHA regulations require employees of facilities where ammonia is used to be trained in the safe use of ammonia (see 29 CFR Part 1910, Section 1910.120). Facilities that handle over 10,000 pounds of anhydrous ammonia, or more than 20,000 pounds of ammonia in an aqueous solution of 20 percent ammonia or greater must prepare a Risk Management Plan (RMP) and implement a Risk Management Program to prevent accidental releases. The CalARP Program threshold is more stringent at 500 pounds of anhydrous ammonia and facilities are evaluated for accident risk, and a determination is made whether an RMP is required.

Selective Catalysts – Vanadium Pentoxide

SCR catalysts typically contain heavy metal oxides such as vanadium and/or titanium, thus creating a potential human health and environmental risk related to the handling and disposal of spent catalyst. Vanadium pentoxide, the most commonly used SCR catalyst, is on the USEPA's list of Extremely Hazardous Materials. The quantity of waste associated with SCR is large, although the actual amount of active material in the catalyst bed is relatively small. This requires the use of licensed transport and disposal facilities and compliance with RCRA regulations. Facilities may face added costs by having to dispose of these materials out of state due to a lack of licensed disposal facilities that will handle these materials. This responsibility may not be borne by the plant since catalyst suppliers often collect and recycle spent catalyst as part of their contract.[119]

3.4.4.2 Reformulated Products

The potential hazards associated with alternative coating methods have been analyzed including powder coatings, radiation-curable coatings, high solids coatings, and waterborne coatings. The greatest hazard associated with both current and alternative coating methods is flammability. To meet the lowered VOC content limits, products are generally reformulated. While reformulated

[119] U.S. Department of Energy, National Energy Technology Laboratory, Nitrogen Oxides. https://netl.doe.gov/research/Coal/energy-systems/gasification/gasifipedia/nitrogen-oxides

products have lower VOC contents, the reformulations have widely varying flammability and health effects, depending on the chemical characteristics of the replacement solvents contained in the reformulated products. While some reformulations are made with water, which is not flammable or hazardous and does not have adverse health impacts, other reformulations have been made with a solvent that may be exempt from the definition of a VOC in South Coast AQMD Rule 102 – Definition of Terms, but still have hazardous properties. For example, acetone is a Group I exempt compound because of its low reactivity and is frequently used in reformulated products, but it is highly flammable. In addition, coatings, solvents, adhesives, and sealants can also be reformulated with other solvents that are not necessarily exempt from the definition of a VOC, but that also have flammability and potential health effects issues.

3.4.4.3 Fossil Fuels/Alternative Fuels

Fossil Fuels

Gasoline is a mixture of about 150 chemicals refined from crude oil. It evaporates easily, is highly flammable, and can possibly form explosive mixtures in air. Gasoline contains benzene, toluene, ethylbenzene, and xylene, referred to as BTEX compounds. How the gasoline is manufactured determined which chemicals are present and in what concentrations.

Gasoline is used as a fuel in cars, boats, lawn mowers, and other engines. Gasoline contains additives such as lubricants, anti-rust agents, and anti-icing agents to enhance the performance of cars. The most common additive used in gasoline is ethanol to increase octane and oxygen levels and reduce pollution emissions.

Many of the harmful effects seen after exposure to gasoline are due to the individual chemicals in the gasoline mixture, such as benzene. Inhaling or swallowing large amounts of gasoline can cause death. Inhaling high concentrations of gasoline is irritating to the lungs when breathed in and irritating to the lining of the stomach when swallowed. Gasoline is also a skin irritant. Breathing in high levels of gasoline for short periods or swallowing large amounts of gasoline may also cause harmful effects on the nervous system. Serious nervous system effects include coma and the inability to breathe, while less serious effects include dizziness and headaches. While gasoline itself is not considered to be a carcinogen, compounds within gasoline (e.g., benzene) are considered carcinogenic. [ATSDR, 1996].

Diesel fuel is a mixture of numerous chemicals made from crude oil. Diesel is heavier (i.e., less volatile) than gasoline, which means it evaporates slow and is less flammable than gasoline. Diesel fuel is any liquid fuel used in diesel engines, which use compression for fuel ignition, without a spark. Diesel has more energy per gallon than gasoline.

Biodiesel/Renewable Diesel

Biodiesel and renewable diesel fuels are both replacements for diesel fuel. Biodiesel meets the ASTM specification D6751 and is domestically produced, renewable fuel derived from biological sources such as vegetable oils, animal fats, or recycled restaurant greases. The process for creating biodiesel involves mixing the oil with alcohol (e.g., methanol or ethanol) in the presence of a chemical such as sodium hydroxide. This process produces a methyl ester when methanol is used or an ethyl ester when ethanol is used. Methyl ester from soy beans is more

economical to produce, and, therefore, is more common in the U.S. Like petroleum diesel, biodiesel is used to fuel compression-ignition engines, which run on petroleum diesel. Biodiesel is not flammable, is biodegradable, and reduces air pollutants such as particulates, carbon monoxide, hydrocarbons, and air toxics. However, the materials used to manufacture biodiesel may be hazardous, e.g., ethanol, methanol, sulfuric, and hydrochloric acids. The most common blended biodiesel is B20, which is 20 percent biodiesel and 80 percent conventional diesel.

Renewable diesel is a hydrocarbon that is chemically equivalent to petroleum diesel, meets the ASTM D975 specification for diesel, and can be used as drop-in biofuel that does not require blending with petroleum diesel for use. Because biodiesel and renewable diesel are chemically similar to diesel, their hazards are essentially the same. The feedstocks used to produce these fuels are often vegetable oils, beef fats, etc., and tend to have fewer hazards than crude oil.

Natural Gas

Natural gas is an odorless, gaseous mixture of hydrocarbons—predominantly made up of methane (CH_4). Two forms of natural gas are currently used in vehicles: compressed natural gas (CNG) and liquefied natural gas (LNG). While LNG and CNG are similar, their delivery and storage methods are different. LNG is frozen in order to turn it into liquid form, whereas CNG is pressurized to the point where it is very compact.

CNG is produced by compressing natural gas to less than one percent of its volume at standard atmospheric pressure. To provide adequate driving range, CNG is stored onboard a vehicle in a compressed gaseous state at a pressure of up to 3,600 pounds per square inch. CNG is used in light-, medium-, and heavy-duty applications. A CNG-powered vehicle gets about the same fuel economy as a conventional gasoline vehicle on a gasoline equivalent basis.

LNG is essentially no different from the natural gas used in homes and businesses every day, except that it has been refrigerated to minus 259 degrees Fahrenheit at which point it becomes a clear, colorless, and odorless liquid. As a liquid, natural gas occupies only one six-hundredth of its gaseous volume and can be transported economically between continents in special tankers. LNG weighs slightly less than half as much as water, so it floats on water. However, when LNG comes in contact with any warmer surface such as water or air, it evaporates very rapidly ("boil"), returning to its original, gaseous volume. As the LNG vaporizes, a vapor cloud resembling ground fog will form under relatively calm atmospheric conditions. The vapor cloud is initially heavier than air since it is so cold, but as it absorbs more heat, it becomes lighter than air, rises, and can be carried away by the wind. LNG vapor clouds can ignite within the portion of the cloud where the concentration of natural gas is between a five and a 15 percent (by volume) mixture with air. To catch fire, this portion of the vapor cloud must encounter an ignition source. Otherwise, the LNG vapor cloud will simply dissipate into the atmosphere. An ignited LNG vapor cloud is very dangerous, because of its tremendous radiant heat output and can cause extensive damage to life and property, if ignited.

LNG is considered a hazardous material. The potential hazards associated with LNG include heat from ignited LNG vapors and direct exposure of skin to a cryogenic (extremely cold) substance. Although not poisonous, exposure to LNG could cause asphyxiation due to the absence of oxygen. Generally, there are four requirements for safety associated with LNG, including

primary containment, secondary containment, safeguard systems and separation distance, which apply across the LNG value chain, from production, liquefaction and shipping, to storage and re-gasification. [Foss, 2012].

Electric Vehicles

Battery electric vehicles are becoming the dominant alternative energy vehicles. EVs have a fully electric powertrain and are powered by rechargeable batteries. Early EVs used nickel-metal hydride (NiMH) batteries. High voltage lithium ion batteries are now the standard power source for EVs. [NTSB, 2020].

Fires in electric vehicles powered by high-voltage lithium-ion batteries pose the risk of electric shock to occupants and emergency responders from exposure to the high-voltage components of a damaged lithium-ion battery. A further risk is that damaged cells in the battery can experience uncontrolled increases in temperature and pressure (thermal runaway), which can lead to hazards such as battery reignition/fire. The risks of electric shock and battery reignition/fire arise from the "stranded" energy that remains in a damaged battery.

The National Transportation Safety Board (NTSB) has studied electric vehicle crashes and has issues the following findings. [NTSB, 2020]:

- Manufacturers' emergency response guides provide sufficient vehicle-specific information for disconnecting an electric vehicle's high voltage system when the high-voltage disconnects are accessible and undamaged by crash forces.
- Crash damage and resulting fires may prevent first responders from accessing the high-voltage disconnects in electric vehicles.
- The instructions in most manufacturers' emergency response guides for fighting high-voltage lithium-ion battery fires lack necessary, vehicle-specific details on suppressing the fires.
- Thermal runaway and multiple battery reignitions after initial fire suppression are safety risks in high-voltage lithium-ion battery fires.
- The energy remaining in a damaged high-voltage lithium-ion battery, known as stranded energy, poses a risk of electric shock and creates the potential for thermal runaway that can result in battery reignition and fire.
- High-voltage lithium-ion batteries in electric vehicles, when damaged by crash forces or internal battery failure, present special challenges to responders because of insufficient information from manufacturers on procedures for mitigating the risks of stranded energy.
- Storing an electric vehicle with a damaged high-voltage lithium-ion battery inside the recommended 50-foot radius clear area may be infeasible at tow or storage yards.
- Although existing standards address damage sustained by high-voltage lithium-ion battery systems in survivable crashes, they do not address high-speed, high-severity crashes resulting in damage to high-voltage lithium-ion batteries and associated stranded energy.

Hydrogen

Hydrogen is the simplest, lightest, and most plentiful element in the universe. In its normal gaseous state, hydrogen is a colorless, odorless, tasteless, non-toxic and burns invisible. Most hydrogen is made from natural gas through a process known as steam reforming. Reforming separates hydrogen from hydrocarbons by adding heat. Hydrogen can also be produced from a variety of sources including water and biomass. Hydrogen can be used as a combustion fuel or in fuel cell vehicles to produce electricity to power electric motors. Hydrogen is a clean fuel with almost no emissions. The only emission from vehicles that use hydrogen as a fuel is water vapor.

Hydrogen is different from conventional gasoline and diesel fuels. It is a gas that must be stored at high pressure or as a cryogenic liquid. Most hazards stem from the fact that hydrogen gas is odorless, colorless, and tasteless, so leaks are not easily detected by human senses. As a gas, hydrogen tends to dissipate when released, since it is much lighter than air (under normal conditions), and does not pool.

As a cryogenic liquid, hydrogen hazards can include frostbite burns or hypothermia because of its very low temperature. The storage of hydrogen as a liquid in a vessel results in continuous evaporation. To equalize pressure, hydrogen gas must be vented to a safe location or temporarily collected. Storage vessels should be kept under positive pressure to prevent entering of air, thus producing flammable mixtures. [Rigas, F., and Amyotte, P.R., 2013].

Hydrogen has a much broader flammability range than conventional fuels, is flammable, and can cause a fire. Fire represents a hazard for gaseous fueled vehicles, including hydrogen, because, if not mitigated, it can cause fuel containers to explode. A hydrogen flame is nearly invisible in daylight but readily visible in the dark. Fire-fighting a hydrogen fire can be challenging during the daylight because the flames are difficult to see. Incidents involving hydrogen releases include pressure relief devices; hydrogen cylinders, piping, liquid hydrogen, industrial trucks, hydrogen compressors, laboratory incidents, and fueling station incidents. [Pacific Northwest National Laboratory, 2020].

Liquid Petroleum Gas (LPG)

LPG is a mixture of several gases that is generally called "propane," in reference to the mixture's chief ingredient. LPG changes to the liquid state at the moderately high pressures found in an LPG-powered vehicle's fuel tank. LPG is formed naturally, interspersed with deposits of petroleum and natural gas. Natural gas contains LPG, water vapor, and other impurities that must be removed before it can be transported in pipelines as a salable product.

Propane vehicles emit about one-third fewer reactive organic gases than gasoline-fueled vehicles. NOx and CO emissions are also 20 percent and 60 percent less, respectively. Unlike gasoline-fueled vehicles, there are no evaporative emissions while LPG vehicles are running or parked, because LPG fuel systems are tightly sealed. Small amounts of LPG may escape into the atmosphere during refueling, but these vapors are 50 percent less reactive than gasoline vapors, so they have less of a tendency to generate smog-forming ozone. LPG's extremely low sulfur content means that the fuel does not contribute significantly to SOx or PM emissions.

Many LPG-powered vehicles are converted gasoline-fueled vehicles. The relatively inexpensive conversion kits include a regulator/vaporizer that changes liquid propane to a gaseous form and an air/fuel mixer that meters and mixes the fuel with filtered intake air before the mixture is drawn into the engine's combustion chambers. Also included in conversion kits is closed-loop feedback circuitry that continually monitors the oxygen content of the exhaust and adjusts the air/fuel ratio as necessary. This device communicates with the vehicle's onboard computer to keep the engine running at optimum efficiency. LPG-powered vehicles additionally require a special fuel tank that is strong enough to withstand the LPG storage pressure of about 130 pounds per square inch. The gaseous nature of the fuel/air mixture in an LPG vehicle's combustion chambers eliminates the cold-start problems associated with liquid fuels. In contrast to gasoline engines, which produce high emission levels while running cold, LPG engine emissions remain similar whether the engine is cold or hot. Also, because LPG enters an engine's combustion chambers as a vapor, it does not strip oil from cylinder walls or dilute the oil when the engine is cold. This helps LPG-powered engines to have a longer service life and reduced maintenance costs. Also helping in this regard is the fuel's high hydrogen-to-carbon ratio (C_3H_8), which enables LPG-powered vehicles to have less carbon build-up than gasoline- and diesel-powered vehicles. LPG delivers roughly the same power, acceleration, and cruising speed characteristics as gasoline. It does yield a somewhat reduced driving range, however, because it contains only about 70-75 percent of the energy content of gasoline. Its high octane rating (around 105) means, though, that an LPG engine's power output and fuel efficiency can be increased beyond what would be possible with a gasoline engine without causing destructive "knocking." Such fine-tuning can help compensate for the fuel's lower energy density. Fleet owners find that propane costs are typically 5 to 30 percent less than those of gasoline.

Propane is an odorless, nonpoisonous gas that has the lowest flammability range of all alternative fuels. High concentrations of propane can displace oxygen in the air, though, causing the potential for asphyxiation. This problem is mitigated by the presence of ethyl mercaptan, which is an odorant that is added to warn of the presence of gas. While LPG itself does not irritate the skin, the liquefied gas becomes very cold upon escaping from a high-pressure tank, and may therefore cause frostbite, should it contact unprotected skin. As with gasoline, LPG can form explosive mixtures with air. Since the gas is slightly heavier than air, it may form a continuous stream that stretches a considerable distance from a leak or open container, which may lead to a flashback explosion upon contacting a source of ignition.

While LPG is classified as a fire hazard, it is not classified as a toxic or as a hazardous air pollutant. LPG is a regulated substance subject to both the California and Federal RMP programs in accordance with Title 19 CCR Section 2770.4.1 and 40 CFR Part 68, Section 68.1263. The threshold quantity for LPG (as propane) as a regulated substance for accidental release prevention is 10,000 pounds. However, when LPG is used as a fuel by an end user (as is frequently the case with residential portable and stationary storage tanks), or when it is held for retail sale as a fuel, it is excluded from these RMP requirements, even if the amount exceeds the threshold quantity. On June 1, 2012, South Coast AQMD adopted Rule 1177 - Liquefied Petroleum Gas Transfer and Dispensing to reduce fugitive VOC emissions released during the transfer and dispensing of LPG at residential, commercial, industrial, chemical, agricultural, and retail sales facilities. Rule 1177 applies to the transfer of LPG to and from stationary storage tanks, cylinders, and cargo tanks, including bobtails, truck transports, and rail tank cars, and into

portable refillable cylinders. In addition, Rule 1177 requires the use of low emission fixed liquid level gauges or equivalent alternatives during filling of LPG-containing tanks and cylinders, use of LPG low emission connectors, routine leak checks and repairs of LPG transfer and dispensing equipment, and recordkeeping and reporting to demonstrate compliance. With respect to suppliers and sellers of LPG, HSC Section 25506 specifically requires all businesses handling hazardous materials to submit a business emergency response plan to assist local administering agencies in the emergency release or threatened release of a hazardous material.

In general, every county or city and all facilities using a minimum amount of hazardous materials are required to formulate detailed contingency plans to eliminate, or at least minimize, the possibility and effect of fires, explosion, or spills. In conjunction with the California Office of Emergency Services, local jurisdictions have enacted ordinances that set standards for area and business emergency response plans. These requirements include immediate notification, mitigation of an actual or threatened release of a hazardous material, and evacuation of the emergency area. Lastly, operators who currently transfer and dispense LPG are well aware of the hazardous nature of LPG, including its flammability and receive periodic training for the safe handling of LPG for the following reasons. Facility operators with a dispensing system for LPG are required to comply with operating pressures pursuant to the standards developed by the American Society of Mechanical Engineers (ASME) Pressure Vessel Code, Section 8; NFPA 58 with regard to venting LPG to the atmosphere; and for LPG tanks that are subject to RMP requirements, the operators must obtain permits from, and submit RMPs to the local Certified Unified Program Agency (CUPA) which is typically the city or county fire department. For similar reasons, industrial and commercial customers on the receiving end of LPG deliveries are also well aware of the safety issues associated with LPG. Residential customers, through warning labels on the portable cylinders and on the units to which the portable cylinders connect, are notified of the flammability dangers associated with LPG.

Hazards Associated with Internal Combustion Engines

Internal combustion engines, whether fueled by gasoline diesel, propane, natural gas, or other fuels, can act as ignition sources. Examples include:

- Stationary engines such as compressors, generators, and pumps.
- Mobile equipment or transports such as vans, trucks, forklifts, cranes, drill rigs, excavators, portable generators, and welding trucks.
- Vehicles and motorized equipment.
- Emergency response vehicles such as fire engines, and ambulances.
- Vehicle-mounted engines on vacuum trucks, tanker trucks, and waste haulers.
- Small portable engines such as mowers, blowers, generators, compressors, welders, and pumps.

Internal combustion engines require a specific fuel-to-air ratio to work properly. Air enters the engine through the intake that leads to the combustion chambers (cylinders). If combustion engines operate in areas where flammable vapors or gases exist, the vapors and gases can enter the cylinders along with air. Additional flammable material in the cylinders provides an external

fuel source, increases the fuel-to-air ratio in the engine, potentially causing a fire or explosion. [OSHA, 2010].

SUBCHAPTER 3.5

HYDROLOGY AND WATER QUALITY

Regulatory Background

Hydrology

Water Demand and Forecasts

Recycled Water

Water Conservation

Water Quality

Wastewater

3.5 HYDROLOGY AND WATER QUALITY

The goal of the 2022 AQMP is to address the federal 2015 eight-hour ozone standard, to satisfy the planning requirements of the federal CAA by identifying ways to reduce emissions from existing emission sources and promoting the use of the cleanest available new emission sources and technologies. Several of the proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies may still need to be invented or made commercially available in order to achieve the necessary reductions to attain the 70 ppb ozone standard.

In particular, the 2022 AQMP is comprised of an assortment of control measures that are designed to accelerate the replacement of high-emitting mobile sources with low NOx and zero-emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing and new commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

While the proposed control measures are intended to improve overall air quality in the region, direct or indirect hydrology and water quality impacts associated with their implementation may occur from a potential increase in water demand and wastewater generation which could, in turn, impact water quality.

The Initial Study for the 2022 AQMP identified several control measures as possibly contributing to potentially significant adverse hydrology and water quality impacts associated with: 1) modifying and/or replacing existing steam turbines with new units; 2) disposing of batteries and fluids and accidental spills associated with retiring various types of vehicles and engines; 3) reformulating coatings, solvents, adhesives, and lubricants to be water-based; and 4) conducting composting. This subchapter describes the existing setting for hydrology and water quality resources in South Coast AQMD's jurisdiction.

3.5.1 REGULATORY BACKGROUND

Water resources are regulated by an overlapping network of local, state, and federal laws and regulations. Potable water supply is managed through the following agencies and water districts: the California Department of Water Resources (DWR), the California Department of Health Services (DHS), the State Water Resources Control Board (SWRCB), the U.S. EPA, and the U.S. Bureau of Reclamation. The DWR manages the State Water Project (SWP) and compiles planning information on water supply and water demand within the state. Water rights applications are processed through the SWRCB for properties claiming riparian rights. Applicable laws and regulations associated with hydrology are summarized in Table 3.5-1.

TABLE 3.5-1
Applicable Laws and Regulations for Hydrology

Applicable Laws and Regulations	Description
Federal	
Clean Water Act (CWA)	Administered primarily by U.S. EPA, the CWA pertains to water quality standards, state responsibilities, and discharges of waste to waters of the U.S. The U.S. EPA has delegated most of the administration of the CWA in California to the SWRCB.
State	
California Water Rights	The SWRCB administers water rights in California. SWRCB administers review, assessment, and approval of appropriative (or priority) surface water rights, permits/licenses for diversion and storage for beneficial use. Riparian water rights apply to the land and allow diversion of natural flows for beneficial uses without a permit, but users must share the resources equitably during drought. Groundwater management planning is a function of local government. Groundwater use by overlying property owners is not formally regulated, except in cases where the groundwater basin supplies are limited and uses have been adjudicated, or through appropriative procedures for groundwater transfers.
Public Trust Doctrine	The public trust doctrine is a legal principle establishing that certain resources, such as tide and submerged lands and navigable waterways, are preserved for public use. This body of common law requires the state to consider additional terms and conditions when issuing or reconsidering appropriative water rights to balance the use of the water for many beneficial uses irrespective of the water rights that have been established. Public trust resources have traditionally included navigation, commerce, and fishing and have expanded over the years to include protection of fish and wildlife, and preservation goals for scientific study, scenic qualities, and open-space uses.
Porter-Cologne Water Quality Control Act (Water Code Sections 13000, *et seq.* and Title 23 of the California Code of Regulations)	SWRCB is responsible for statewide water quality policy development and exercises the powers delegated to the state by the federal government under the CWA. Nine Regional Water Quality Control Boards (RWQCBs) adopt and implement water quality control plans (Basin Plans) which designate beneficial uses of surface waters and groundwater aquifers, and establish numeric and narrative water quality objectives for beneficial use protection.
SB 1168, Statutes of 2014 Chapter 346, Pavley	This bill requires all groundwater basins designated as high- or medium-priority basins by the DWR and are also designated as basins subject to critical conditions of overdraft to be managed under a groundwater sustainability plan or coordinated groundwater sustainability plans by January 31, 2020, and requires all other groundwater basins designated as high- or medium-priority basins to be managed under a groundwater sustainability plan or coordinated groundwater sustainability plans by January 31, 2022. This bill required a groundwater sustainability plan to be developed and implemented to meet sustainability goals, established as prescribed, and required the plan to include prescribed components.

TABLE 3.5-1 (concluded)
Applicable Laws and Regulations for Hydrology

Applicable Laws and Regulations	Description
AB 1739, Statutes of 2014, Dickinson, Chapter 347	This bill establishes groundwater reporting requirements for a person extracting groundwater in an area within a basin that is not within the management area of a groundwater sustainability agency or a probationary basin. The bill requires the reports to be submitted to the SWRCB or, in certain areas, to an entity designated as a local agency by the SWRCB.
SB 1319, Statutes of 2014, Chapter 348, Pavley	This bill allows the SWRCB to designate a groundwater basin as a probationary basin subject to sustainable groundwater management requirements. This bill also authorizes the SWRCB to develop an interim management plan in consultation with the DWR under specified conditions.
1991 Water Recycling Act	The 1991 Water Recycling Act established water recycling as a priority in California and encourages municipal wastewater treatment districts to implement recycling programs to reduce local water demands
California Water Code Section 10608.20	This section of the California Water Code requires each supplier of urban water supplier to demonstrate the availability of current and projected water supplies by adopting an Urban Water Management Plan.
Local	
Water Agencies	Water agencies enter into contracts or agreements with the federal and state governments to protect the water supply and to ensure the lands within the agency have a dependable supply of suitable quality water to meet present and future needs. Local cities, counties, and water districts may also provide guidance on CEQA projects regarding water resources. Many jurisdictions incorporate policies related to water resources in their municipal codes, development standards, stormwater pollution prevention requirements, and other regulations. Also, as required by the California Water Code Section 10608.20, local suppliers are required to adopt Urban Water Management Plans for their jurisdictions.

3.5.2 HYDROLOGY

Hydrologic resources within the South Coast AQMD's jurisdiction generally include surface water resources and groundwater resources.

3.5.2.1 Surface Water Sources

Surface water hydrology refers to surface water systems, including watersheds, floodplains, rivers, streams, lakes and reservoirs, and the inland Salton Sea. Surface waters occur as streams, lakes, ponds, coastal waters, lagoons, estuaries, floodplains, dry lakes, desert washes, wetlands, and other collection sites. Water bodies modified or developed by man, including reservoirs and aqueducts, are also considered surface waters.

Surface water resources are very diverse throughout the state due to the high variance in tectonics, topography, geology/soils, climate, precipitation, and hydrologic conditions. Overall,

California has the most diverse range of watershed conditions in the U.S., with varied climatic regimes ranging from Mediterranean climates with temperate rainforests in the north coast region to desert climates containing dry desert washes and dry lakes in the southern central region.

Federal, state, and local engineered water projects, aqueducts, canals, and reservoirs serve as the primary conduits of surface water sources to areas that have limited surface water resources. Most of the surface water storage is transported for agricultural, urban, and rural residential needs to the San Francisco Bay Area and to cities and areas extending to southern coastal California. Surface water is also transported to southern inland areas, including Owens Valley, Imperial Valley, and Central Valley areas.

California is divided into ten hydrologic regions corresponding to the state's major water drainage basins. The hydrologic regions define a river basin drainage area and are used as planning boundaries, which allows consistent tracking of water runoff, and the accounting of surface water and groundwater supplies.[120] [DWR 2010].

The Basin lies within the South Coast Hydrologic Region. The South Coast Hydrologic Region is California's most urbanized and populous region. More than half of the state's population resides in the region (about 19.6 million people or about 54 percent of the state's population), which covers 11,000 square miles or seven percent of the state's total land. The South Coast Hydrologic Region extends from the Pacific Ocean east to the Transverse and Peninsular Ranges, and from the Ventura-Santa Barbara County line south to the international border with Mexico and includes all of Orange County and portions of Ventura, Los Angeles, San Bernardino, Riverside, and San Diego counties. [DWR 2010].

Topographically, most of the South Coast Hydrologic Region is composed of several large, undulating coastal and interior plains. Several prominent mountain ranges comprise its northern and eastern boundaries and include the San Gabriel and San Bernardino mountains. Most of the region's rivers drain into the Pacific Ocean, and many terminate in lagoons or wetland areas that serve as important coastal habitat. Many river segments on the coastal plain, however, have been concrete-lined and in other ways modified for flood control operations. [DWR 2010].

There are 19 major rivers and watersheds in the South Coast Hydrologic Region. Many of these watersheds have densely urbanized lowlands with concrete-lined channels and dams controlling flood flows. The headwaters for many rivers, however, are within coastal mountain ranges and have remained largely undeveloped. [DWR 2010].

The cities of Ventura, Los Angeles, Long Beach, Santa Ana, San Bernardino, and Big Bear Lake are among the many urban areas in this section of the state, which contain moderate-sized mountains, inland valleys, and coastal plains. The Santa Clara, Los Angeles, San Gabriel, and Santa Ana rivers are among the area's hydrologic features. In addition to water sources within the South Coast Hydrologic Region, imported water makes up a major portion of the water used in the Basin. Water is brought into the South Coast Hydrologic Region from three major sources: the Sacramento-San Joaquin Delta (Delta), Colorado River, and Owens Valley/Mono Basin.

[120]California Water Plan Update, 2009. Integrated Water Management. Bulletin 160-109, DWR, 2010.

Most lakes in this area are actually reservoirs, made to hold water coming from the SWP, the Los Angeles Aqueduct (LAA), and the Colorado River Aqueduct (CRA) including Castaic Lake, Lake Mathews, Lake Perris, Silverwood Lake, and Diamond Valley Lake. In addition to holding water, Lake Casitas, Big Bear Lake, and Morena Lake regulate local runoff.

Watersheds

Watersheds refer to areas of land, or basin, in which all waterways drain to one specific outlet, or body of water, such as a river, lake, ocean, or wetland. Watersheds have topographical divisions such as ridges, hills or mountains. All precipitation that falls within a given watershed, or basin, eventually drains into the same body of water.[121] [SCAG 2020]. The major watersheds within Southern California region (referred to as hydrologic region codes or HUC), all of which are outlined and shaped by the various topographic features of the region, are shown in Figure 3.5-1. Watersheds are an essential part of the landscape, ecological composition, economy, and life in Southern California where arid conditions place great emphasis on the necessity of water.

Rivers

Because the climate of Southern California is predominantly arid, many of the natural rivers and creeks are intermittent or ephemeral, drying up in the summer or flowing only after periods of precipitation. For example, annual rainfall amounts vary depending on elevation and proximity to the coast. Some waterways such as the Los Angeles River maintain a perennial flow due to agricultural irrigation and urban landscape watering. [SCAG 2020]. Figure 3.5-2 presents a map of the major rivers within the district.

Most waterways in California have been diverted for agricultural and economic purposes. Surface waters such as the Los Angeles River, San Gabriel River, and the San Jacinto River have been dammed, redirected, and paved for human uses and as flood control measures. Other major natural surface waters like the Ventura River, Santa Clara River, Santa Ana River, and portions of the Santa Margarita River maintain more natural conditions and flows and support aquatic species and natural habitats. All surface water drainages suffer from water quality impacts such as overuse, erosion, and illegal dumping. [SCAG 2020].

[121] Final Draft Program Environmental Impact Report for Connect SoCal. SCAG, 2020. Available at: https://scag.ca.gov/program-environmental-impact-report-0

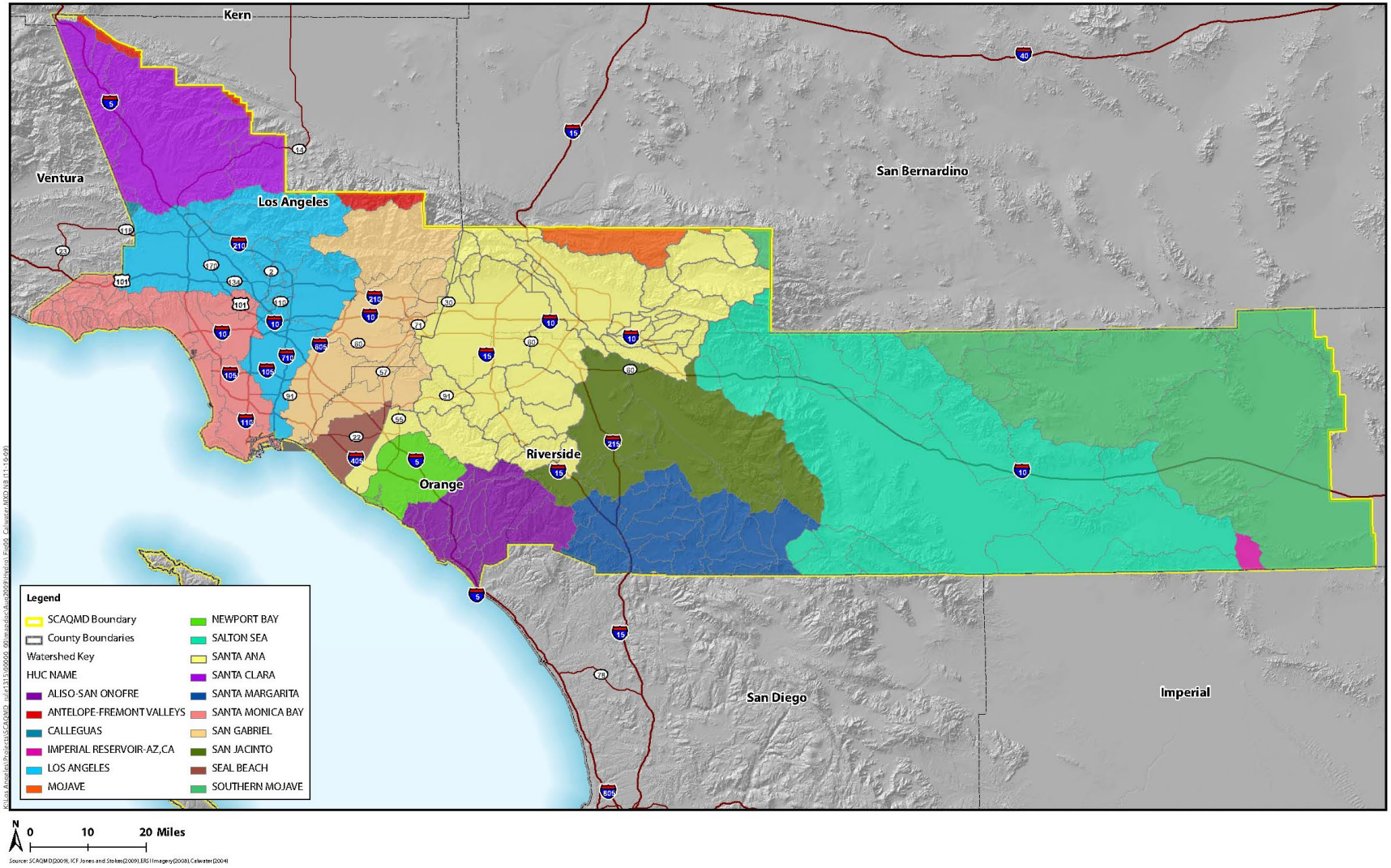


FIGURE 3.5-1
USGS Watersheds within the South Coast AQMD

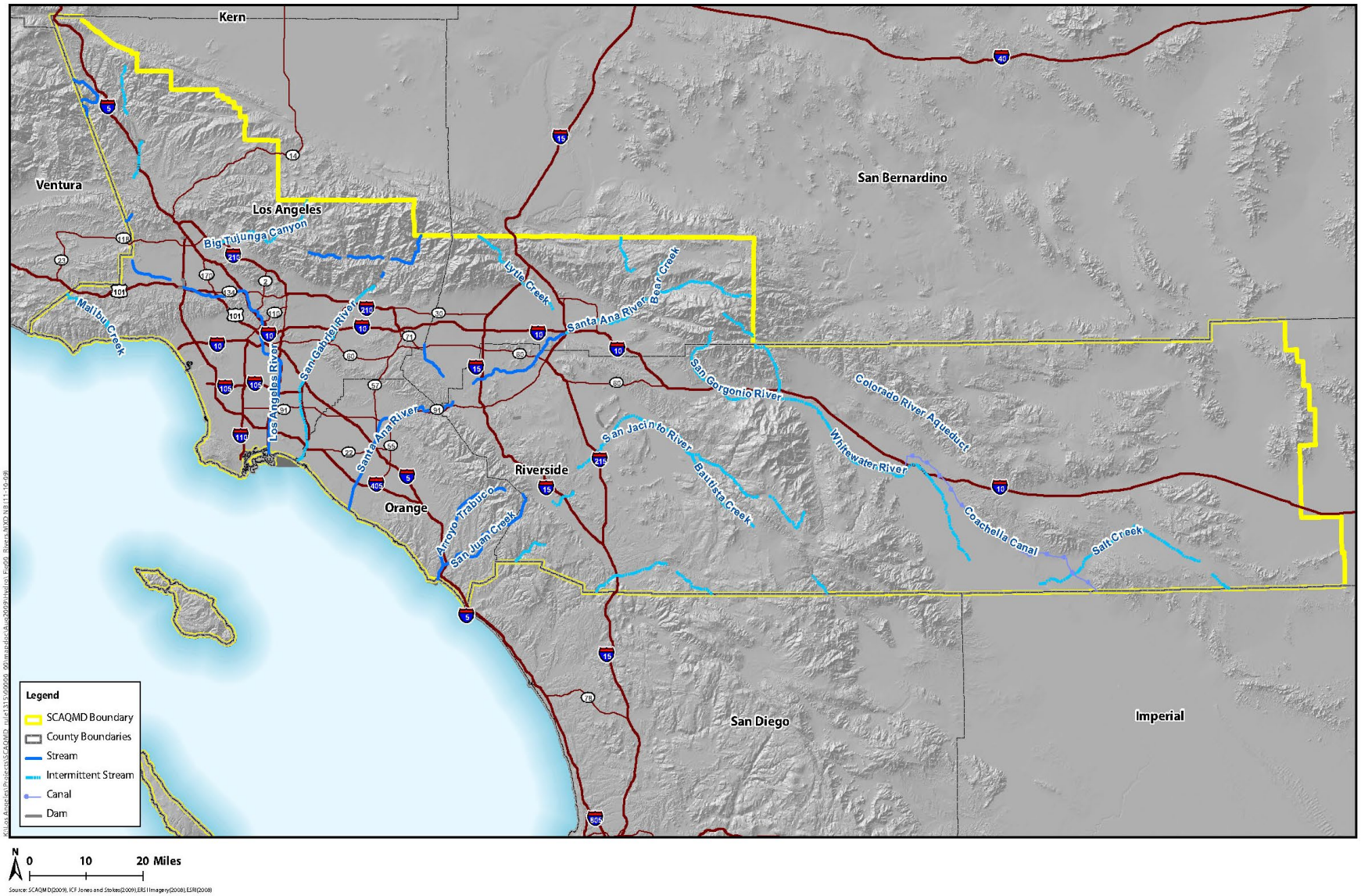


FIGURE 3.5-2
Rivers within the South Coast AQMD

Lakes and Reservoirs

Most lakes in Southern California have been created by humans through manual digging and/or the damming or rivers. Lakes and reservoirs serve as important habitat as well as recreational purposes, agricultural irrigation, flood control and storage for drinking water purposes. Some of the major lakes include Big Bear Lake, Lake Arrowhead, Lake Casitas, Diamond Valley Lake, and the Salton Sea. [SCAG 2020].

Big Bear Lake and Lake Arrowhead are located in San Bernardino County and were created via the damming of rivers. Big Bear Lake was completed in 1884 and has no tributary inflow, replenishing itself solely by snowmelt. The dam at Lake Arrowhead was completed in 1922 and the lake is still used for recreation and potable water. Damming also created Lake Casitas in Ventura County and the Salton Sea. Diamond Valley Lake is the newest and largest reservoir in Southern California, holding 800,000 acre-feet of water. While Diamond Lake is located in Riverside County, it is connected to the SWP and serves as an important resource for potable water and hydroelectric power. [SCAG 2020].

The Salton Sea is California's largest lake, nearly 400 square miles in size. The lake is over 200 feet below sea level, and has flooded and evaporated many times over, when the Colorado River overflows its banks during extreme flood years. This cycle of flooding and evaporation has re-created the Salton Sea several times during the last thousand years and has resulted in high levels of salinity. The principal inflow to the Salton Sea is agricultural drainage.

Coastal Waters

Portions of the Basin border the Pacific Ocean and contain coastal waters such as bays, estuaries, beaches, and open ocean. Santa Monica Bay comprises a large portion of the region's open coastal waters. Important harbors in Southern California include the Los Angeles/Long Beach Harbor Complex and Port Hueneme. Important estuaries, providing unique and critical habitat for wildlife, include coastal lagoons and wetlands.

Federally Protected Wetlands and Waterways

Under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Appropriation Act of 1899, some wetlands and waterways are federally protected by the U.S. Army Corps of Engineers. Special permits are required for discharging dredged or fill materials into designated waters, providing protection for such wetlands and waterways. Designated wetlands and waterways in Southern California are identified in Table 3.5-2.

TABLE 3.5-2
Federally Protected Wetlands and Waterways in Southern California

Major River or Lake
Imperial County
Salton Sea
Los Angeles County
Castaic Lake Morris Reservoir Puddingstone Reservoir Pyramid Lake San Gabriel Reservoir Los Angeles River San Gabriel River Santa Clara River
Orange County
Irvine Lake San Gabriel River Santa Ana River
Riverside County
Diamond Valley Lake Lake Elsinore Lake Matthews Perris Reservoir Salton Sea Skinner Reservoir Vail Lake Santa Ana River Santa Margarita River
San Bernardino County
Big Bear Lake Lake Arrowhead Silverwood Lake Santa Ana River

Source: Program EIR Connect SoCal, SCAG, 2020

3.5.2.2 Groundwater Hydrology

The majority of runoff from snowmelt and rainfall flows down mountain streams into low gradient valleys and either percolates into the ground or is discharged to the sea. This percolating flow is stored in alluvial groundwater basins. Groundwater recharge occurs more readily in areas underlain by coarse sediments, primarily in mountain base alluvial fan settings.

Groundwater accounts for most of the local fresh water within Southern California and there are four watersheds in the region: Central Coast, South Lahontan, South Coast, and Colorado River.

The Central Coast and South Lahontan watersheds most heavily rely on groundwater for urban and agricultural use, although all four watersheds are dependent upon it. Drought conditions in recent years have led to groundwater overdraft and associated subsidence, in which the groundwater basin collapses and renders it unusable. Improved groundwater management and water reduction measures, as well as wet weather conditions, have assisted in lessening groundwater overdraft, however, overdraft is still a major concern in Southern California and across the state, as climate change leads to more severe and volatile weather patterns and the population of the area continues to expand. [SCAG 2020].

The Sustainable Groundwater Management Act (SGMA) sets a framework for sustainable, groundwater management. SGMA requires governments and water agencies of high and medium priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. SGMA empowers local agencies to form Groundwater Sustainability Agencies to manage basins sustainably and requires those Agencies to adopt Groundwater Sustainability Plans for crucial groundwater basins in California.

To prevent seawater intrusion in coastal basins, recycled water is injected into the ground to form a mound of groundwater between the coast and the main groundwater basin. In Los Angeles County, imported and recycled water is injected to maintain a seawater intrusion barrier.

The groundwater basins that underlie the Southern California region provide an annual average supply of approximately 1.2 million acre-feet (2011-2020 average). Natural recharge of the groundwater basins is supplemented by active recharge of captured stormwater, recycled water, and imported water to support this level of annual production. Estimates indicate that available storage space in the region's groundwater basins in mid-2020 is approximately 4.7 million acre-feet. Successive dry years have resulted in groundwater depletions that will need to be replaced with natural recharge during wet years and active spreading of captured stormwater, recycled water, and imported water. Groundwater basin managers and water suppliers have taken steps to store water in advance of dry years to soften the potential impact on groundwater aquifers and to maintain reliable local water supplies during dry years. [MWD 2021].

3.5.3 WATER DEMAND AND FORECASTS

California relies on a complex network of water storage and conveyance systems to control, capture, and store water when it is available in the wet winter and spring for use during the dry summer and fall. Many of these systems are antiquated and were not designed to meet today's environmental requirements or the state's current needs. From 2012 through 2016, California has endured an unprecedented multi-year drought that threatened the water supplies of communities and residents. The drought also decreased agricultural production in certain areas; worsened groundwater overdraft and subsidence, with associated impacts on essential water, transportation, and other utility infrastructure; and harmed fish wildlife and ecosystems. [DWR 2019].

Precipitation, specifically snowpack and snowmelt from the Sierra Nevada, is the primary source of water supply and natural groundwater recharge in California, although it can vary from place to place, season to season, and year to year. The timing, quantity, and location of precipitation in California are largely misaligned with the location of agricultural and urban water uses.

Water demand in Southern California is met through the use of groundwater and surface water supplies. Integrated Regional Water Management Plans (IRWMPs) and Urban Water Management Plans (UWMPs), developed for cities and counties throughout the region, help guide water management and supply and demand projections. Water is imported by the Metropolitan Water District of Southern California (MWD) and the SWP, and groundwater is pumped from various local wells.

The increase in California's water demand is due primarily to the increase in population. By employing a multiple future scenario analysis, the California Water Plan Update 2018 (DWR, 2019) provides a growth range for future annual water demand. According to the 2018 California Water Plan Update, statewide future annual water demands range from an increase of fewer than one million acre-feet to an increase of about six million acre-feet under the Expansive Growth scenario by year 2050. [DWR 2019].

Executive Orders have declared official drought conditions in California in 2008, 2009, 2014, 2021 and 2022. During drought conditions, California has imposed a number of requirements over the years which included the following: 1) imposing requirements for water conservation; 2) conducting expedited review and processing of voluntary transfers of water and water rights by state water officials in 2013[122]; 3) providing assistance to farmers and communities that are economically impacted by dry conditions to ensure the state can respond if there are drinking water shortages; 4) directing state agencies to use less water, hire more firefighters, and expand water conservation public awareness campaigns; 4) providing more flexibility to state water officials to manage water supply throughout California; 5) periodically reducing fuels in high wildfire risk areas; 6) imposing new groundwater replenishment regulations; and 7) evaluating additional measures to allow for the use of recycled water and storm water capture to increase water supply availability.

Water districts, in response to the drought, have also taken actions throughout the state such as: 1) asking for voluntary reductions; 2) imposing mandatory restrictions or declaring a local emergency; 3) imposing agricultural rationing; 4) imposing drought rates, surcharges and fines; 5) limiting new development and requiring water efficient landscaping; 6) implementing a conservation campaign; 7) stopping water pumping from various streams; and 8) adjusting water contract allocations. In addition, water shortages have prompted cities to begin infrastructure improvements to secure future water supplies.

On April 12, 202l, May l0, 2021, and July 8, 202l, Governor Newsom issued multiple proclamations of states of emergency that continue and exist across all the counties of California, due to extreme and expanding drought conditions. However, these proclamations did not include Los Angeles, Orange, Riverside and San Bernardino counties. However, on October 19, 2021, Governor Newsom issued another proclamation of a state of emergency that recognized severe drought conditions in Los Angeles, Orange, Riverside, San Bernardino counties.[123]

[122] Governor Brown Issues Executive Order to Streamline Approvals for Water Transfers to Protect California's Farms; https://www.ca.gov/archive/gov39/2013/05/20/news18048/index.html

[123] Executive Department, State of California, Proclamation of a State of Emergency, October 19, 2021, https://www.gov.ca.gov/wp-content/uploads/2021/10/10.19.21-Drought-SOE-1.pdf

On July 8, 2021, Governor Newsom issued Executive Order N-10-21 which: 1) called on Californians to voluntarily reduce their water use by 15 percent from 2020 levels via irrigating landscapes more efficiently, running dishwasher and washing machines only when full, finding and fixing leaks, installing water-efficient showerheads and taking shorter showers, and using a shut-off nozzle on hoses and taking cars to commercial car washes which use recycled water; 2) directed state agencies to promote the Save Our Water conservation campaign; and 3) directed the DWR to monitor hydrologic conditions and the SWRCB to monitor progress on voluntary conservation.[124]

Following the driest first three months of 2022 in the state's recorded history, on March 28, 2022, Governor Newsom issued Executive Order N-7-22 which reaffirmed the proclamations made in these previous Executive Orders called on local water suppliers to activate drought contingency plans.[125] To drive water conservation at the local level, Executive Order N-7-22 called on local water suppliers to move to Level 2 of their Water Shortage Contingency Plans, which require locally-appropriate actions that will conserve water across all sectors, and directed the State Water Resources Control Board to consider a ban on the watering of decorative grass at businesses and institutions. To further conserve water and strengthen drought resiliency in this critically dry year, Governor Newsom also encouraged suppliers, where appropriate, to consider going above and beyond the Level 2 of their water shortage contingency plans, activating more ambitious measures. Governor Newsom also ordered state agencies to submit funding proposals to support the state's short- and long-term drought response, including emergency assistance to communities and households facing drought-related water shortages, facilitating groundwater recharge and wastewater recycling, improvements in water use efficiency, protecting fish and wildlife, and minimizing drought-related economic disruption. This executive order also included the following other provisions designed to protect all water users:

- Ensuring Vulnerable Communities Have Drinking Water by providing easier and immediate access to emergency hauled or bottled water;
- Safeguarding Groundwater Supplies by requiring local permitting authorities to coordinate with Groundwater Sustainability Agencies to ensure new proposed wells do not compromise existing wells or infrastructure, as 85 percent of public water systems rely heavily on groundwater during drought and streamlining permitting for groundwater recharge projects that help to refill aquifers when during rain events;
- Protecting Vulnerable Fish and Wildlife by expediting state agency approvals for necessary actions to protect fish and wildlife where drought conditions threaten their health and survival; and
- Preventing Illegal Water Diversions by directing the Water Board to expand site inspections in order to determine whether illegal diversions are occurring.

Governor Newsom also issued the California Comeback Plan which invests $5.2 billion over three years to support the immediate drought response and build water resilience, and includes

[124] Executive Department, State of California, Executive Order N-10-21, July 8, 2021. https://www.gov.ca.gov/wp-content/uploads/2021/07/7.8.21-Conservation-EO-N-10-21.pdf

[125] Executive Department, State of California, Executive Order N-7-22, March 28, 2022. https://www.gov.ca.gov/wp-content/uploads/2022/03/March-2022-Drought-EO.pdf.

funding to secure and expand water supplies; bolster drought contingency planning and multi-benefit land repurposing projects; support drinking water and wastewater infrastructure, with a focus on small and disadvantaged communities; advance Sustainable Groundwater Management Act implementation to improve water supply security and quality; and support wildlife and habitat restoration efforts, among other nature-based solutions.

Earlier in 2022, Governor Newsom advanced an additional $22.5 million to bolster the state's drought response. Of this funding, $8.25 million will be used to increase educational and outreach efforts, including through the Save Our Water campaign, which is providing Californians with water-saving tips via social media and other digital advertising. The Governor's California Blueprint proposal includes $750 million in additional drought funding, $250 million of which was set aside as a drought reserve to be allocated in the spring, based on conditions, and need.

Hotter and drier weather conditions spurred by climate change is project to diminish California's water supply by up to 10 percent by 2040. Over the last two years, California has invested over $8 billion to help store, recycle, de-salt and conserve the water it will need to keep up with the increasing pace of climate change, so as to generate enough water in the future for more than 8.4 million households by 2040.

On August 11, 2022, Governor Newsom announced California's Water Supply Strategy to increase water supply and adapt to more extreme weather patterns caused by climate change.[126] California's Water Supply Strategy outlines actions needed now to invest in new sources and transform water management practices in California to replace and replenish water loss to dry soils, vegetation, and the atmosphere.

3.5.3.1 Water Demand

Actual retail water demands within MWD's service area have increased from 2.9 million acre-feet in 1983 to 4.2 million acre-feet in 2007. Since the peak retail demand in 2007, a decrease in demand was observed during the economic recession of 2008-2012. Starting in 2012, the severe drought in California led to a massive conservation campaign and water use restriction by the state, MWD, and local water agencies resulting in a decrease in demand in 2015. In 2020, about 96 percent of the retail demands were used for municipal and industrial purposes, and four percent for agricultural purposes. The relative share of agricultural water use has declined due to urbanization and market factors, including the price of water. Agricultural water use accounted for 19 percent of total regional water demand in 1970, 12 percent in 1980, 10 percent in 1990, and four percent in 2010. [MWD 2021].

The South Coast Hydrologic Region is the most populous and urbanized region in California. In some portions of the region, water users consume more water than is locally available, which has resulted in an overdraft of groundwater resources and increasing dependence on imported water supplies. The distribution of water uses, however, varies dramatically across the South Coast's

[126] California's Water Supply Strategy, August 11. 2022. https://resources.ca.gov/-/media/CNRA-Website/Files/Initiatives/Water-Resilience/CA-Water-Supply-Strategy.pdf.

planning areas. As a result of recent droughts, South Coast water users have generally become more water efficient. Municipal water agencies are engaged in aggressive water conservation and efficiency programs to reduce per capita water demand. As a result of changes in plumbing codes, energy and water efficiency innovations in appliances, and trends toward more water efficient landscaping practices, urban water demand has become more efficient.

For the South Coast region, urban water uses are the largest component of the developed water supply, while agricultural water use is a smaller portion of the total. Imported water supplies and groundwater are the major components of the water supply for this region, with minor supplies from local surface waters and recycled water.

Residential Water Use

While single-family homes are estimated to account for about 60 percent of the total occupied housing stock in 2020, they are responsible for about 75 percent of total residential water demands. This is consistent with the fact that single-family households are known to use more water than multifamily households (e.g., those residing in duplexes, triplexes, apartment buildings, and condo developments) on a per housing-unit basis. This is because single-family households tend to have more persons living in the household; they are likely to have more water-using appliances and fixtures; and they tend to have more landscaping. [MWD 2021].

Non-Residential Water Use

Nonresidential water use represents approximately 18 percent of the total municipal and industrial demands in MWD's service area in 2020. This includes water that is used by businesses, services, government, institutions (such as hospitals and schools), and industrial (or manufacturing) establishments. Within the commercial/institutional category, the top water users include schools, hospitals, hotels, amusement parks, colleges, laundries, and restaurants. In Southern California, major industrial users include electronics, aircraft, petroleum refining, beverages, food processing, and other industries that use water as a major component of the manufacturing process. [MWD 2021].

3.5.3.2 Water Supplies

Water supply includes natural, managed, and reclaimed water. Natural sources consist of surface water bodies like rivers and lakes, and groundwater resources stored in underground aquifers. Manmade sources include run-off water that is captured, treated, and stored in reservoirs. Reclaimed water is wastewater, treated at a treatment plant and typically reused for uses like industrial operations and irrigation. As reclaimed water is often non-potable, it must be conveyed in a separate system to ensure no possibility of direct human consumption. Another source of potable freshwater that is being considered throughout California include additional desalination plants, which removes the dissolved salt in seawater. [SCAG 2020].

Surface and groundwater within Southern California are insufficient to support the region's growing population. Approximately 75 percent of potable water comes from imported sources in Southern California. Restrictions on imported water as well as drought conditions have necessitated water conservation measures, which have slightly lessened the use of potable water in many areas of the region. In addition, the demand for water is being partially fulfilled by the

increasing use of reclaimed water for non-potable purposes such as greenbelt irrigation and industrial processing and servicing.

3.5.3.2.1 Colorado River

The Colorado River is a major source of water for Southern California, and is imported via the Colorado River Aqueduct, owned and operated by the MWD. Under water delivery contracts with the United States, California entities had legal entitlements to Colorado River water, beginning with the 1922 Colorado River Compact. California was entitled to 4.4 million acre-feet, as well as half on any surplus, as defined by the U.S. Department of the Interior. Typically, the river's surplus has allowed California entities to take an additional 800,000 acre-feet annually. However, with increased urbanization in the Colorado River Basin states and limitation agreements between those states, surplus water for California was eliminated; the State will gradually return to its original allotment of 4.4 million acre-feet. Given these new terms, California water agencies are pursuing various strategies to offset this gradual, but certain loss of future water supply. Examples of these strategies include additional reservoir and storage agreements, new water transfers between agricultural and urban users, and more water conservation and recycling. The Colorado River Hydrologic Region (see discussion below) is of particular concern because it encompasses the Coachella Valley in the West Basin and the desert in the East Basin. Irrigation needs in the Coachella Valley are met almost exclusively by water imported from the Colorado River. Historical extraction of groundwater in the Coachella Valley has caused overdraft. Currently, an extensive groundwater recharge project is being undertaken by the Coachella Valley Water District that recharges Colorado River Water into spreading basins.

The Colorado River System has experienced a drying trend since 2000, leading to substantially decreased water levels in both Lakes Mead and Powell. [MWD 2021]. On August 16, 2021, the Bureau of Reclamation released its Colorado River Basin 24-Month Study. Because it is projected that the elevation in Lake Mead's water levels will decrease to 1,065 feet in January 1, 2022 (nine feet below the Lower Basin shortage determination trigger and 24 feet below the drought contingency plan trigger), Lake Mead will operate in a Level 1 Shortage Condition for 2022, the first time ever in its history. While there will be no effect on the water supply to MWD, water supply to Arizona will decrease by 512,000 acre-feet, Nevada by 21,000 acre-feet, and Mexico by 80,000 acre-feet.[127] California is not required to contribute supplies to Lake Mead under the Drought Contingency Plan, but a further lowering could trigger a required contribution in the future.[128] [MWD 2021].

3.5.3.2.2 State Water Project

The SWP supplies water to Southern California via the California Aqueduct, with delivery points in Los Angeles, San Bernardino, and Riverside Counties. SWP was constructed and is managed by the DWR, and is the largest state-owned, multipurpose water project in the country. The SWP has historically provided 25 to 50 percent of MWD's water, anywhere from 450,000 acre-feet to 1.75 million acre-feet annually. In 2019, the SWP allocated 75 percent, or 3.1 million acre-feet,

[127] https://www.usbr.gov/newsroom/#/news-release/3950
[128] https://www.mwdh2o.com/newsroom-press-releases/metropolitan-statement-on-colorado-river-shortage-declaration/

of water to the state supply due to the previous winter's robust storms that resulted in above average snowpack and reservoir levels. The SWP provides water to approximately 27 million people and irrigation water for roughly 750,000 acres of agricultural lands annually. [SCAG 2020].

3.5.3.2.3 Los Angeles Aqueduct

The Los Angeles Aqueduct, originally built in 1913, carries water 233 miles south from Owens Valley to the City of Los Angeles. The original aqueduct project was extended in 1940 to the Mono Basin. The system was supplemented by a second project, parallel to the first, completed in 1970. Los Angeles Aqueduct deliveries from the Mono Basin and Owens Valley have ranged from a 2015 low of 36,000 acre-feet and a high of 467,000 acre-feet in 1998. Since 1990, average deliveries have been approximately 240,000 acre-feet per year. Due to environmental considerations, approximately half of the Los Angeles Aqueduct water supply has been reallocated to supply environmental mitigation and enhancement projects. [SCAG 2020].

3.5.3.2.4 Water Transfers

In an effort to diversify water sources and reduce reliance on specific water imports, water agencies have engaged in water transfer agreements. These contractual agreements, made with irrigation districts, reduce water use on agricultural lands either through agricultural conservation or fallowing land. The water "freed" by these reductions is transferred to a municipal water district, where it may be used or stored in aquifers for future use, a practice called water banking. Water banking is also done during wet years, when rainwater is collected and directed toward recharge facilities for future use. [SCAG 2020].

3.5.3.3 Water Suppliers

Southern California is served by many water suppliers, both retail and wholesale, with MWD being the largest. Created by the California legislature in 1931, MWD serves the urbanized coastal plain from the city of Oxnard on the north to the border with Mexico on the south, and reaches as far as 70 miles inland from the coast. The total service area is approximately 5,200 square miles and includes portions of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties. MWD provides water to about 86 percent of the urban population of Southern California, approximately 19 million people. MWD is comprised of 26 member agencies, including 14 cities, 11 municipal water districts and one county water authority. The most populated cities in MWD's service area are Los Angeles, San Diego, Long Beach, Anaheim, Santa Ana, and Riverside. [MWD, 2021].

There are 36 active water treatment facilities in the Southern California region which can treat approximately 182 million gallons per day (mgd) of water. [SCAG 2020].

3.5.4 RECYCLED WATER

Recycling and groundwater recovery are local resources that add balance to Southern California's diverse water portfolio. In addition to replenishment of groundwater basins, water recycling provides extensive treated wastewater for applicable municipal and industrial uses. Local water recycling projects involve further treatment of secondary treated wastewater that

would be discharged to the ocean or streams and use it for direct non-potable uses such as landscape and agricultural irrigation, commercial and industrial purpose, and for indirect potable uses such as groundwater recharge, seawater intrusion barriers, and surface water augmentation.

Groundwater recovery employs additional treatment techniques to effectively use degraded groundwater supplies that were previously not considered viable due to high salinity or other contamination. While water recycling and groundwater recovery projects in the Southern California region are primarily developed by local water agencies, many newer projects have been developed with financial incentives provided through MWD's Local Resources Program. The Local Resources Program is a performance-based program that provides incentives to expand water recycling and support recovery of degraded groundwater, among other types of projects. In 2020, the regional water production from water recycling and groundwater recovery totaled approximately 552,000 acre-feet, of which 120,000 acre-feet was developed with MWD funding assistance. [MWD 2021].

3.5.4.1 Water Recycling Projects

Local water recycling projects involve further treatment of secondary treated wastewater that would be discharged to the ocean or streams and use it for direct non-potable uses such as landscape and agricultural irrigation, commercial and industrial purpose and for indirect potable uses such as groundwater recharge, seawater intrusion barriers, and surface water augmentation. [MWD, 2015]. Within MWD's service area, there are approximately 355,000 acre-feet of planned and permitted uses of recycled water supplies. Actual use is approximately 209,000 acre-feet, which includes golf course, landscape, and cropland irrigation; industrial uses; construction applications; and groundwater recharge, including maintenance of seawater barriers in coastal aquifers. MWD projects the development of 500,000 acre-feet of recycled water supplies (including groundwater recovery) by 2025. [DWR 2010]. Current average annual recycled water production in the MWD Los Angeles Planning Area is approximately 225 million gallons per day (mgd), which represents approximately 25 percent of the current average annual effluent flows. The Water Replenishment District (WRD) is permitted to recharge up to 50,000 acre-feet per year (45 mgd) of Title 22 recycled water for ground water replenishment of the Montebello Forebay. The West Basin Municipal Water District (WBMWD) operates the Edward C. Little Water Recycling Facility in El Segundo, which produces recycled water that is distributed either directly to their customers or transferred to one of three satellite facilities where the recycled water can be treated to meet customer specifications. The satellite facilities are the Torrance Refinery Water Recycling Plant in Torrance, CA, the Chevron Nitrification Treatment Plant in El Segundo, CA, and the Juanita Millender-McDonald Carson Regional Water Recycling Plant in Carson, CA. WBMWD provides recycled water to several locations including but not limited to the cities of Carson, El Segundo, and unincorporated areas of Los Angeles County within its service area. WBMWD's recycled water distribution infrastructure includes over 100 miles of pipelines and is separate from the potable water distribution system.

In 2020, the WBMWD produced approximately 28,046 acre-feet of recycled water. Recycled water use within WBMWD's service area is projected to increase to 76,300 acre-feet per year by 2045, representing 39 percent of total supplies. Approximately 15,000 acre-feet per year of the recycled water produced at this facility is purchased by WRD and injected into the West Coast Barrier. The use of recycled water by LADWP is projected to be approximately 60,700 acre-feet

per year by 2030. [WBMWD 2020]. Within Los Angeles County, recycled water is also distributed to industrial customers from the Harbor Refineries Recycled Water Pipeline (HRRWP) which is maintained by the Los Angeles Department of Water and Power (LADWP), in conjunction with the West Basin Municipal Water District. The LADWP/WBMWD provide approximately 35 mgd of recycled water to its industrial customers. The WBMWD has also expanded its Hyperion Pump Station to accommodate a throughput of 70 mgd of source water which would result in about 55 to 60 mgd of saleable recycled water if, and when needed to accommodate any increased need by their customers.

In Orange County, the following three water reuse projects have been implemented by the Orange County Water District (OCWD):

- The Groundwater Replenishment System (GWRS) takes highly treated wastewater that would have previously been discharged into the Pacific Ocean and purifies it using a three-step advanced treatment process for indirect, potable reuse. The GWRS currently produces 100 mgd of recycled water but upon completion of an ongoing expansion project, it will have the capacity to produce 130 mgd.[129]
- Green Acres Project (GAP) is a water reuse effort that provides recycled water for landscape irrigation at parks, schools and golf courses; industrial uses, such as carpet dying; toilet flushing; and power generation cooling. The GAP has a treatment plant design capacity of 7.5 mgd of recycled water. OCWD receives secondary treated wastewater effluent from the Orange County Sanitation District (OCSD) for use in both the GWRS and the GAP system. The GAP provides an alternate source of water to the approximately 100 different sites located in the cities of Costa Mesa, Fountain Valley, Huntington Beach, Newport Beach, and Santa Ana. The total annual demand for GAP water in Fiscal Year 2016-17 was 3.18 mgd.[130]
- Water Factory 21, which has been replaced by the GWRS, took treated wastewater from the Orange County Sanitation District (OCSD) and recycled it, blended it with imported water, and injected it into 23 wells in Fountain Valley, and Huntington Beach to combat seawater intrusion. [131]

In Riverside County, the Western Municipal Water District (WMWD) can treat up to three mgd of wastewater daily at its Western Water Recycling Facility and the recycled water is used for irrigating landscaping at places such as golf courses, cemeteries, groves, parks, and nurseries.

In addition, the Eastern Municipal Water District (EMWD) currently treats wastewater at four regional water reclamation facilities and the recycled water is used to irrigate agricultural fields and landscapes which frees up more drinking (potable) water supplies for customer use. EMWD is in the process of designing a new facility that will treating recycled water to eventually become drinking water. The treatment process is multi-staged that will use microfiltration and reverse osmosis technologies. Once the water has been purified, it will then be blended with

[129] Orange County Water District, Groundwater Replenishment System, https://www.ocwd.com/gwrs/.
[130] Orange County Water District, Green Acres Project, https://www.ocwd.com/what-we-do/water-reuse/green-acres-project.
[131] Orange County Water District, Water Factory 21 Brochure, https://www.ocwd.com/media/2451/water-factory-21-brochure.pdf.

other treated recycled water supplies and sent to replenishment ponds. The water will then seep into the ground and blend with other groundwater sources, traveling over several years as part of the natural purification process. The recycled water will be cleaned one last time before it is sent to homes. EMWD's French Valley Recycled Water Pipeline Project – Phase II, will install approximately 12,300 feet of recycled water pipeline to use recycled water instead of potable water for landscaping irrigation purposes at local parks and schools.

In the City of Riverside, the Jackson Street Recycled Water Pipeline Project will add approximately 26,000 linear feet of 8-inch and 24-inch diameter pipeline to provide an estimated 821 acre-foot a year (AFY) of recycled water to existing and future customers along its path to offset potable water use by supplying irrigation with recycled water and free up drinking water supplies that would otherwise be used for landscaping.

Also in Riverside County, the Coachella Valley Water District is implementing the Non-Potable Pipeline Connections Project which involves the construction of approximately 13 miles of pipeline to provide 4,850 acre-feet per year of non-potable that consists of a blend of tertiary treated recycled water and imported Colorado River water to h for irrigation purposes in lieu of utilizing groundwater.

In San Bernardino County, the Enhanced Stormwater Capture and Recharge Project (Recharge Project) is being implemented by the San Bernardino Valley Municipal Water District to enable the recharge of 2-1/2 times more stormwater into the large San Bernardino Basin. This project will have the capability of recharging up to 78,000 acre-feet of stormwater per year.

The East Valley Water District, in partnership with the San Bernardino Valley Municipal Water District to construct a new groundwater recharge facility for water produced from the Sterling Natural Resource Center and the City of San Bernardino Water Department.

The City of San Bernardino Water Department operates the Water Reclamation Plant and Rapid Infiltration and Extraction (RIX) Facility which reclaims millions of gallons of water a day which is used for industrial cooling systems, watering crops and large-scale landscaping such as at golf courses.

3.5.4.2 Desalination Plants

Seawater desalination represents a significant opportunity to diversify the region's water resource mix with a new, locally controlled, reliable potable supply. In December 2015, pursuant to its Water Purchase Agreement with the San Diego County Water Authority (SDCWA), Poseidon Resources began operation of the 56,000 acre-feet Claude "Bud" Lewis Seawater Desalination Plant in the City of Carlsbad. During fiscal years 2017 through 2019, the facility produced an annual average of 42,100 acre-feet, meeting nearly nine percent of SDCWA's service area demands.

Several other local water agencies are considering desalination projects. One of the largest of these is the Huntington Beach Seawater Desalination Project, proposed by Poseidon Resources LLC, which would produce 50 mgd of water. This project has the potential to help meet local

water supply goals; however, in May 2022, the California Coastal Commission rejected the coastal development permit for the project.

In the MWD Los Angeles Planning Area, the Robert W. Goldsworthy Desalter, owned and operated by the Water Replenishment District, processes approximately five mgd of brackish groundwater desalination for the purpose of remediating a saline plume located within the West Coast sub-basin. The plant is owned by the Water Replenishment District and operated by the City of Torrance, providing a local source of potable water source to Torrance.[132]

3.5.5 WATER CONSERVATION

In the MWD Los Angeles Planning Area, MWD assists member agencies with implementation of water conservation programs. MWD's conservation programs focus on two main areas: 1) residential programs, and 2) commercial, industrial, and institutional programs.

3.5.5.1 Residential Water Conservation

MWD's residential conservation activities consist of two major programs:

- SoCal Water$mart – This program is a region-wide residential rebate program to help offset the purchase of water-efficient devices. Since its inception in 2008, this program helped to replace over 277,000 toilets, 319,000 washing machines, 50,000 smart irrigation controllers, 459,000 rotating nozzles, and hundreds of thousands of other devices and appliances.
- Metropolitan-Funded Residential Programs Administered by Member Agencies –MWD's member and retail agencies also implement local residential water conservation programs within their respective service areas and receive incentives for qualified projects. Typical projects include premium high-efficiency toilet distributions, clothes washer direct installation programs, turf removal programs, high efficiency sprinkler nozzles, irrigation controllers, and residential water audits. [MWD 2021].

3.5.5.2 Commercial, Industrial and Institutional Water Conservation

MWD's commercial, industrial, and institutional conservation activities consist of three major rebate and incentive programs:

- SoCal Water$mart Program – The majority of the commercial conservation activity comes from MWD's regional SoCal Water$mart program, which also issues rebates to multifamily properties.
- Water Savings Incentive Program – The Water Savings Incentive Program provides financial incentives for customized landscape irrigation and industrial process improvements. This program allows large-scale water users to create their own conservation projects and receive incentives for up to 10 years of water savings for measured water-use efficiency improvements.

[132] Water Replenishment District. https://www.wrd.org/content/wrd-robert-w-goldsworthy-desalter

- Metropolitan-Funded Commercial Programs Administered by Member Agencies – Member and retail agencies also implement local commercial water conservation programs using MWD incentives. Projects target specific commercial sectors, with some programs also receiving assistance from state or federal grant programs. [MWD 2021].

MWD's commercial, industrial, and institutional conservation programs provide rebates for water-saving plumbing fixtures, landscaping equipment, food-service equipment, cleaning equipment, HVAC (heating, ventilation, air conditioning) equipment, and medical equipment.

3.5.6 WATER QUALITY

Point and non-point source pollution are different forms of pollution which can damage surface water and are regulated at the federal and local level. Point source pollution refers to contaminants that enter a watershed, usually through a specific location such as a pipe, and are usually regulated by the local RWQCB. Examples of point source pollution are discharges from sewage treatment plants and industrial facilities. Because point sources are much easier to regulate than non-point sources, they were the initial focus of the 1972 Clean Water Act. Regulation of point sources since then has dramatically improved the water quality of rivers and streams throughout the country. [SCAG 2020].

In contrast to point source pollution, non-point source pollution, also known as "pollution runoff," is diffuse. Non-point pollution comes from areas (such as contaminated runoff from urban areas) and is significantly influenced by land uses. A driveway or the road in front of a house may be a source of pollution if spilled oil, leaves, pet waste, or other contaminants are washed into a storm drain. The problem of non-point source pollution, specifically runoff pollution is especially acute in urbanized areas where a combination of impermeable surfaces, landscape irrigation, highway runoff, and illicit dumping increase the pollutant loads in stormwater. The SWRCB has identified the following pollutants found in urban runoff as being of concern (SCAG 2020):

- Sediment. Excessive sediment loads in streams can interfere with photosynthesis, aquatic life respiration, growth, and reproduction.
- Nutrients. Nitrogen and phosphorus can result in eutrophication of receiving waters (excessive or accelerated growth of vegetation or algae), reducing oxygen levels available for other species.
- Bacteria and viruses. Pathogens introduced to receiving waters from animal excrement in the watershed and by septic systems can restrict water contact activities.
- Oxygen demanding substances. Substances such as lawn clippings, animal excrement, and litter can reduce dissolved oxygen levels as they decompose.
- Oil and grease. Hydrocarbons from automobiles are toxic to some aquatic life.
- Metals. Lead, zinc, cadmium, and copper are heavy metals commonly found in stormwater. Other metals introduced by automobiles include chromium, iron, nickel, and manganese. These metals can enter waterways through storm drains along with sediment, or from atmospheric deposition.

- Toxic pollutants. Pesticides, phenols, and polynuclear aromatic hydrocarbons (PAHs) are toxic organic chemicals found in stormwater.
- Floatables. Trash in waterways increases metals and toxic pollutant loads in addition to undesirable aesthetic impacts.

U.S. EPA lists impaired and threatened waters under CWA Section 303(d). The state then identifies the pollutant causing the impairment and develops rules and guidelines towards its improvement. There are more than 200 impacted waterways and water bodies within the Southern California Region. Poor water management and overuse in Southern California has led to problems with salinity, polychlorinated biphenyls, pesticides, pathogens and bacteria, overwhelming nutrients, lead, sulfates, uranium, and disinfection by-products. See Table 3.5-3 for a list of impaired water bodies in Southern California.

Buildings, roads, sidewalks, parking lots, and other impervious surfaces define the urban landscape. Impervious surfaces also alter the natural hydrology and prevent the infiltration of water into the ground. Impervious surfaces change the flow of stormwater over the landscape. In underdeveloped areas, vegetation holds down soil, slows the flow of stormwater over land, and filters out some pollutants by both slowing the flow of the water and trapping some pollutants in the root system. Additionally, some stormwater filters through the soil, replenishing underground aquifers. As land is converted to other uses such as commercial or residential development, many of these natural processes are eliminated as vegetation is cleared and soil is paved over. As more impervious surface coverage is added to the landscape, more stormwater flows faster off the land. The greater volume of stormwater increases the possibility of flooding, and the high flow rates of stormwater do not allow for pollutants to settle out, meaning that more pollution gets concentrated in the stormwater runoff. Generally, the higher the percentage of impervious surface, the greater the degradation in stream water quality. On a regional or watershed level, greater overall water quality protection is achieved through more concentrated or clustered development. Concentrated development protects the watershed by leaving a larger percentage of it in its natural condition. [SCAG 2020].

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TABLE 3.5-3
Impaired Water Bodies in Southern California

Pollutant	Impaired Water Body
Los Angeles Region	
2-Methylnaphthalene	Los Angeles Harbor - Consolidated Slip
Algae	Echo Park Lake
	El Dorado Lakes
	Lake Hughes
	Lake Lindero
	Lake Sherwood
	Lindero Creek Reach 1 and 2
	Machado Lake (Harbor Park Lake)
	Malibou Lake
	Medea Creek Reach 1 and 2
	Medea Creek Reach 2 (Above confluence with Lindero)
	Westlake Lake
Ammonia	Alhambra Wash
	Balboa Lake
	Bull Creek (Los Angeles County)
	Calleguas Creek
	El Dorado Lakes
	Lake Calabasas
	Legg Lake
	Lincoln Park Lake
	Los Angeles River
	Los Cerritos Channel
	Machado Lake (Harbor Park Lake)
	Rio De Santa Clara/Oxnard Drain No. 3
	San Jose Creek Reach 1 (San Gabriel River confluence to Temple Street)
	Santa Clara River Estuary
	South San Jose Creek (Los Angeles County)
	Tujunga Wash (Los Angeles River to Hansen Dam)
	Westlake Lake
	Wildlife Lake
Arsenic	Santa Monica Bay Offshore/Nearshore
Benthic Community Effects	Compton Creek
	Dominguez Channel Estuary (unlined portion below Vermont Avenue)
	Las Virgenes Creek
	Lindero Creek Reach 1
	Los Angeles Harbor - Consolidated Slip
	Los Angeles River Reach 5 (within Sepulveda Basin)
	Los Angeles/Long Beach Inner Harbor
	Malibu Creek
	Malibu Lagoon
	Medea Creek Reach 1 (Lake to confluence with Lindero)
	Medea Creek Reach 2 (Above confluence with Lindero)
	San Gabriel River, East Fork
	Triunfo Canyon Creek Reach 1

TABLE 3.5-3
Impaired Water Bodies in Southern California

Pollutant	Impaired Water Body
	Triunfo Canyon Creek Reach 2
	Walnut Creek Wash (Drains from Puddingstone Reservoir)
Benzo(a)anthracene	Dominguez Channel Estuary (unlined portion below Vermont Avenue)
	Los Angeles Harbor - Consolidated Slip/Fish Harbor
Benzo(a)pyrene	Dominguez Channel Estuary (unlined portion below Vermont Avenue)
	Los Angeles Harbor - Cabrillo Marina/Consolidate Slip/Fish Harbor
	Los Angeles/Long Beach Inner Harbor
Bis(2ethylhexyl)phthalate (DEHP)	Los Cerritos Channel
	Sawpit Creek
Boron	Calleguas Creek Reach 7 and 8
	Fox Barranca (tributary to Calleguas Creek Reach 6)
	Santa Clara River Reach 11
Cadmium	Ballona Creek Estuary
	Los Angeles River Reach 1 (Estuary to Carson Street)
Cadmium (sediment)	Los Angeles Harbor - Consolidated Slip
ChemA	Calleguas Creek Reach 2
	Machado Lake (Harbor Park Lake)
	Santa Clara River Estuary
ChemA (tissue)	Calleguas Creek Reach 4, 5, 9A, 9B, 10, 11, 13
	Rio De Santa Clara/Oxnard Drain No. 3
Chlordane	Ballona Creek Estuary
	Calleguas Creek Reach 1, 2, 3, 4, 5, 6, 8, 9A, 9B, 10, 11, 12, 13
	Colorado Lagoon
	Dominguez Channel Estuary (unlined portion below Vermont Avenue)
	Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2
	Echo Park Lake
	Fox Barranca (tributary to Calleguas Creek Reach 6)
	Honda Barranca
	Los Cerritos Channel
	Los Angeles Harbor - Fish Harbor/Consolidated Slip
	Los Angeles River Estuary (Queensway Bay)
	Machado Lake (Harbor Park Lake)
	Marina del Rey Harbor - Back Basins
	McGrath Lake
	Peck Road Park Lake
	Puddingstone Reservoir
	Pyramid Lake
	Rio De Santa Clara/Oxnard Drain No. 3
	San Pedro Bay Near/Off Shore Zones
	Tapo Canyon
	Wheeler Canyon/Todd Barranca
Chloride	Calleguas Creek Reach 3, 6, 7, 8, 9B, 10, 13
	Lake Lindero
	Piru Creek (from gaging station below Santa Felicia Dam to headwaters)
	Santa Clara River Reach 3, 5, 6

TABLE 3.5-3
Impaired Water Bodies in Southern California

Pollutant	Impaired Water Body
	Sespe Creek (from 500 feet below confluence with Little Sespe Creek to headwaters)
	Tapo Canyon
Chlorpyrifos	Calleguas Creek Reach 4, 5, 6, 7, 8, 9A, 9B, 10
	Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2
	Ellsworth Barranca
	Honda Barranca
	Timber Canyon
Chromium	Los Angeles Harbor - Consolidated Slip
Chrysene (C1-C4)	Dominguez Channel Estuary (unlined portion below Vermont Avenue)
	Los Angeles Harbor - Consolidated Slip/Fish Harbor
	Los Angeles/Long Beach Inner Harbor
Coliform Bacteria	Big Rock Beach
	Malibu Lagoon Beach (Surfrider)
	Rio Hondo Reach 2 (At Spreading Grounds)
Copper	Aliso Canyon Wash
	Ballona Creek and Estuary
	Burbank Western Channel
	Calleguas Creek Reach 1 and 2
	Compton Creek
	Dominguez Channel
	Downtown Shoreline Marina (part of San Pedro Bay Near/Off Shore Zones)
	El Dorado Lakes
	Los Angeles Harbor - Consolidated Slip/Fish Harbor
	Los Angeles River Reach 1, 2, 3, 5, 6
	Los Angeles/Long Beach Inner Harbor
	Los Cerritos Channel
	Marina del Rey Harbor - Back Basins
	Rio Hondo Reach 1 (confluence with Los Angeles River to Santa Ana Freeway)
	San Gabriel River Estuary
	Sepulveda Canyon
	Torrance Carson Channel
	Tujunga Wash (Los Angeles River to Hansen Dam)
	Verdugo Wash Reach 1 (Los Angeles River to Verdugo Road)
Cyanide	Ballona Creek
	Burbank Western Channel
	Los Angeles River Reach 1 (Estuary to Carson Street)
	Rio Hondo Reach 2 (At Spreading Grounds)
	San Gabriel River Reach 2 (Firestone to Whittier Narrows Dam)
Cypermethrin	Wheeler Canyon/Todd Barranca
DDD (Dichlorodiphenyldichloroethane)/ DDE (Dichlorodiphenyldichloroethylene)	Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2
	Fox Barranca (tributary to Calleguas Creek Reach 6)
	Honda Barranca
	Rio De Santa Clara/Oxnard Drain No. 3
	Tapo Canyon

TABLE 3.5-3
Impaired Water Bodies in Southern California

Pollutant	Impaired Water Body
DDT (Dichlorodiphenyltrichloroethane) (including sediment and tissue)	Abalone Cove Beach
	Amarillo Beach
	Ballona Creek Estuary
	Big Rock Beach
	Bluff Cove Beach
	Cabrillo Beach (Outer)
	Calleguas Creek Reach 1, 2, 3, 5, 6, 7, 8, 9A, 9B, 10, 11, 12, 13
	Carbon Beach
	Castlerock Beach
	Colorado Lagoon
	Dominguez Channel Estuary (unlined portion below Vermont Avenue)
	Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2
	Escondido Beach
	Flat Rock Point Beach Area
	Fox Barranca (tributary to Calleguas Creek Reach 6)
	Honda Barranca
	Inspiration Point Beach
	La Costa Beach
	Las Flores Beach
	Las Tunas Beach
	Legg Lake
	Long Point Beach
	Los Angeles Harbor - Cabrillo Marina/Fish Harbor/Inner Cabrillo Beach Area/Consolidated Slip
	Los Angeles/Long Beach Inner and Outer Harbor
	Los Angeles River Estuary (Queensway Bay)
	Machado Lake (Harbor Park Lake)
	Malaga Cove Beach
	Malibu Beach and Lagoon
	Marina del Rey Harbor - Back Basins
	McGrath Lake
	Nicholas Canyon Beach
	Paradise Cove Beach
	Peck Road Park Lake
	Point Dume Beach
	Point Fermin Park Beach
	Port Hueneme Harbor (Back Basins)
	Portuguese Bend Beach
	Puddingstone Reservoir
	Puerco Beach
	Pyramid Lake
	Redondo Beach
	Rio De Santa Clara/Oxnard Drain No. 3
	Robert H. Meyer Memorial Beach
	Royal Palms Beach

TABLE 3.5-3
Impaired Water Bodies in Southern California

Pollutant	Impaired Water Body
	Santa Monica Bay Offshore/Nearshore
	Sea Level Beach
	Topanga Beach
	Trancas Beach (Broad Beach)
	Ventura Marina Jetties
	Wheeler Canyon/Todd Barranca
	Whites Point Beach
	Zuma Beach (Westward) Beach
Diazinon	Calleguas Creek Reach 4, 5, 6, 7, 8, 9A, 9B, 10
Dibenz[a,h]anthracene	Los Angeles Harbor - Fish Harbor
Dieldrin	Calleguas Creek Reach 1, 2, 3, 6, 8, 9B, 10, 11, 12, 13
	Colorado Lagoon
	Echo Park Lake
	Los Angeles Harbor - Consolidated Slip
	Malibu Lake
	Marina del Rey Harbor - Back Basins
	Port Hueneme Harbor (Back Basins)
	Pyramid Lake
	Ventura Harbor: Ventura Keys
Dieldrin (sediment)	McGrath Lake
Dieldrin (tissue)	Calleguas Creek Reach 4, 5, 9A
	Dominguez Channel Estuary (unlined portion below Vermont Avenue)
	Machado Lake (Harbor Park Lake)
Dioxin	San Gabriel River Estuary
Endosulfan (tissue)	Calleguas Creek Reach 1, 2, 4, 5, 9A, 9B, 11, 13
Escherichia coli (E. coli)	Hueneme Drain
	Oxnard Drain
	Sanjon Barranca Creek
Eutrophic	Echo Park Lake
	El Dorado Lakes
	Elizabeth Lake
	Lake Calabasas
	Lake Lindero
	Lake Sherwood
	Lincoln Park Lake
	Machado Lake (Harbor Park Lake)
	Malibou Lake
	Malibu Lagoon
	Munz Lake
	Ventura River Estuary
	Westlake Lake
Eutrophication	Lake Hughes
Exotic Vegetation	Ballona Creek Wetlands
Fecal Coliform	Calleguas Creek Reach 4
Fish Barriers (Fish Passage)	Malibu Creek

TABLE 3.5-3
Impaired Water Bodies in Southern California

Pollutant	Impaired Water Body
Habitat alterations	Ballona Creek Wetlands
Indicator Bacteria	Alamitos Bay
	Aliso Canyon Wash
	Arroyo Seco Reach 1 and 2
	Artesia-Norwalk Drain
	Arundell Barranca (Ventura County)
	Avalon Beach
	Ballona Creek
	Ballona Creek Estuary
	Bell Creek
	Bull Creek
	Burbank Western Channel
	Calleguas Creek Reach 2, 3, 6, 7, 9A, 9B, 10, 11
	Canada Larga (Ventura River Watershed)
	Carbon Beach
	Castlerock Beach
	Channel Islands Harbor Beach
	Colorado Lagoon
	Compton Creek
	Coyote Creek, North Fork
	Dan Blocker Memorial (Coral) Beach
	Dockweiler Beach
	Dominguez Channel and Estuary
	Dry Canyon Creek
	Escondido Beach
	Flat Rock Point Beach Area
	Hobie Beach (Channel Islands Harbor)
	Hueneme Beach Park
	Inspiration Point Beach
	La Costa Beach
	Las Flores Beach
	Las Tunas Beach
	Las Virgenes Creek
	Lindero Creek Reach 1 and 2
	Long Beach City Beach
	Los Angeles Harbor - Inner Cabrillo Beach Area
	Los Angeles River Reach 1, 2, 3, 4, 6
	Los Cerritos Channel
	Lunada Bay Beach
	Malibu Beach
	Malibu Creek
	Malibu Lagoon
	Marina del Rey Harbor
	McCoy Canyon Creek
	McGrath Beach and Lake

TABLE 3.5-3
Impaired Water Bodies in Southern California

Pollutant	Impaired Water Body
	Medea Creek Reach 1 and 2
	Ormond Beach and Wetlands
	Palo Comado Creek
	Paradise Cove Beach
	Peninsula Beach
	Point Mugu Beach
	Point Vicente Beach
	Puente Creek
	Puerco Beach
	Redondo Beach
	Resort Point Beach
	Rincon Beach
	Rincon Parkway Beach
	Rio Hondo Reach 1 and 3
	San Antonio Creek (Tributary to Ventura River Reach 4)
	San Buenaventura Beach
	San Gabriel River and Estuary
	San Jose Creek Reach 1 and 2
	Santa Clara River and Estuary
	Santa Monica Beach
	Santa Monica Canyon
	Sawpit Creek
	Sea Level Beach
	Sepulveda Canyon
	Stokes Creek
	Surfers Point at Seaside
	Topanga Beach
	Torrance Beach
	Torrance Carson Channel
	Trancas Beach (Broad Beach)
	Tujunga Wash (Los Angeles River to Hansen Dam)
	Venice Beach
	Ventura Harbor: Ventura Keys
	Ventura River Estuary
	Ventura River Reach 3 (Weldon Canyon to confluence with Coyote Creek)
	Verdugo Wash Reach 1 (Los Angeles River to Verdugo Road)
	Verdugo Wash Reach 2 (Above Verdugo Road)
	Walnut Creek Wash (Drains from Puddingstone Reservoir)
	Whites Point Beach
	Will Rogers Beach
	Wilmington Drain
	Zuma Beach (Westward) Beach
Invasive Species	Las Virgenes Creek
	Lindero Creek Reach 1
	Malibu Creek

TABLE 3.5-3
Impaired Water Bodies in Southern California

Pollutant	Impaired Water Body
	Medea Creek Reach 2 (Above confluence with Lindero)
Iron	Rio Hondo Reach 3
	Santa Clara River Reach 5
Lead (including sediment)	Ballona Creek and Estuary
	Ballona Creek Estuary
	Burbank Western Channel
	Colorado Lagoon
	Compton Creek
	Dominguez Channel and Estuary
	El Dorado Lakes
	Los Angeles Harbor - Fish Harbor/Consolidated Slip
	Los Angeles River Reach 1, 2, 5
	Los Cerritos Channel
	Marina del Rey Harbor - Back Basins
	Monrovia Canyon Creek
	Rio Hondo Reach 1
	San Gabriel River Reach 2
	Santa Monica Canyon
	Sepulveda Canyon
	Topanga Canyon Creek
	Torrance Carson Channel
	Triunfo Canyon Creek Reach 1 and 2
	Westlake Lake
Lindane/gamma-Hexachlorocyclohexane (gamma-HCH) (tissue)	Calleguas Creek Reach 9A
Malathion	Calleguas Creek Reach 10
	Tapo Canyon
Mercury (including sediment and tissue)	Calleguas Creek Reach 1
	Castaic Lake
	El Dorado Lakes
	Lake Sherwood
	Los Angeles Harbor - Fish Harbor/Consolidated Slip
	Puddingstone Reservoir
	Pyramid Lake
	Santa Monica Bay Offshore/Nearshore
	Triunfo Canyon Creek Reach 1 and 2
Nickel	Calleguas Creek Reach 1
	San Gabriel River Estuary
Nitrate, Nitrate, and Nitrogen	Brown Barranca/Long Canyon
	Calleguas Creek Reach 1, 3, 4, 5, 6, 9A, 10
	Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2
	Fox Barranca (tributary to Calleguas Creek Reach 6)
	McCoy Canyon Creek
	Mint Canyon Creek Reach 1 (Confluence to Rowler Canyon)
	Oxnard Drain

TABLE 3.5-3
Impaired Water Bodies in Southern California

Pollutant	Impaired Water Body
	Rio De Santa Clara/Oxnard Drain No. 3
	San Antonio Creek (Tributary to Ventura River Reach 4)
	Torrey Canyon Creek
	Wheeler Canyon/Todd Barranca
Nutrients (Algae)	Las Virgenes Creek
	Los Angeles River Reaches 1 through 5
	Malibu Creek
Odor	Echo Park Lake
	Lake Calabasas
	Lake Hughes
	Lake Lindero
	Legg Lake
	Lincoln Park Lake
	Machado Lake (Harbor Park Lake)
	Peck Road Park Lake
Oil	Los Angeles River Reach 2 and 5
Organic Enrichment/Low Dissolved Oxygen	Crystal Lake
	Elizabeth Lake
	Lake Calabasas
	Las Virgenes Creek
	Lincoln Park Lake
	Malibou Lake
	Peck Road Park Lake
	Puddingstone Reservoir
	Westlake Lake
Organophosphate Pesticides	Calleguas Creek Reach 7
Oxygen, Dissolved	Alamitos Bay
	Balboa Lake
	Canada Larga (Ventura River Watershed)
	Downtown Shoreline Marina (part of San Pedro Bay Near/Off Shore Zones)
	Marina del Rey Harbor - Back Basins
	Potrero Canyon Creek
	Rio Hondo Reach 3 (above Spreading Grounds)
	San Gabriel River Estuary
	Santa Clara River Reach 1 (Estuary to Highway 101 Bridge)
	Wildlife Lake
PAHs (Polycyclic Aromatic Hydrocarbons)	Ballona Creek Estuary
	Colorado Lagoon
	Los Angeles Harbor - Fish Harbor
	Port Hueneme Harbor (Back Basins)
Pathogens	Palo Verde Shoreline Park Beach
PCBs (Polychlorinated biphenyls) (including tissues and sediment)	Abalone Cove Beach
	Amarillo Beach
	Ballona Creek Estuary
	Big Rock Beach

TABLE 3.5-3
Impaired Water Bodies in Southern California

Pollutant	Impaired Water Body
	Bluff Cove Beach
	Cabrillo Beach (Outer)
	Calleguas Creek Reach 1, 2, 3, 4, 5, 8,9A, 9B, 10, 11, 12, 13
	Carbon Beach
	Castaic Lagoon
	Castaic Lake
	Castlerock Beach
	Colorado Lagoon
	Compton Creek
	Dominguez Channel Estuary (unlined portion below Vermont Avenue)
	Echo Park Lake
	El Dorado Lakes
	Escondido Beach
	Flat Rock Point Beach Area
	Inspiration Point Beach
	La Costa Beach
	Las Flores Beach
	Las Tunas Beach
	Legg Lake
	Lincoln Park Lake
	Long Point Beach
	Los Angeles Harbor - Cabrillo Marina/Fish Harbor/Inner Cabrillo Beach Area/Consolidated Slip
	Los Angeles/Long Beach Inner and Outer Harbor
	Los Angeles River Estuary (Queensway Bay)
	Machado Lake (Harbor Park Lake)
	Malaga Cove Beach
	Malibu Lagoon Beach (Surfrider)
	Marina del Rey Harbor - Back Basins
	McGrath Lake
	Nicholas Canyon Beach
	Palo Verde Shoreline Park Beach
	Paradise Cove Beach
	Point Dume Beach
	Point Fermin Park Beach
	Port Hueneme Harbor and Pier
	Port Hueneme Pier
	Portuguese Bend Beach
	Puddingstone Reservoir
	Puerco Beach
	Pyramid Lake
	Redondo Beach
	Rio De Santa Clara/Oxnard Drain No. 3
	Robert H. Meyer Memorial Beach
	Royal Palms Beach

TABLE 3.5-3
Impaired Water Bodies in Southern California

Pollutant	Impaired Water Body
	San Pedro Bay Near/Off Shore Zones
	Santa Fe Dam Park Lake
	Santa Monica Bay Offshore/Nearshore
	Sea Level Beach
	Topanga Beach
	Trancas Beach (Broad Beach)
	Ventura Harbor: Ventura Keys
	Ventura Marina Jetties
	Whites Point Beach
	Zuma Beach (Westward) Beach
Pesticides	Elizabeth Lake
pH	Dominguez Channel Estuary (unlined portion below Vermont Avenue)
	Lake Calabasas
	Legg Lake
	Los Angeles River Reach 1
	Los Cerritos Channel
	Malibu Lagoon
	Ormond Beach Wetlands
	Oxnard Drain
	Piru Creek (from gaging station below Santa Felicia Dam to headwaters)
	Rio Hondo Reach 1 (confluence with Los Angeles River to Santa Ana Freeway)
	San Antonio Creek
	San Gabriel River Reach 1
	San Jose Creek Reach 1
	Santa Clara River Reach 1 (Estuary to Highway 101 Bridge)
	Santa Fe Dam Park Lake
	Sespe Creek (from 500 feet below confluence with Little Sespe Creek to headwaters)
	South San Jose Creek (Los Angeles County)
	Walnut Creek Wash (Drains from Puddingstone Reservoir)
	Los Angeles Harbor - Consolidated Slip/Fish Harbor
Phenanthrene	Los Angeles Harbor - Consolidated Slip/Fish Harbor
	Ballona Creek Wetlands
Pyrene	Las Virgenes Creek
	Lindero Creek Reach 1 and 2
Reduced Tidal Flushing	Malibu Creek
Scum/Foam-unnatural	Calleguas Creek Reach 1, 2, 3, 4
Sedimentation/Siltation	Calleguas Creek Reach 4, 5, 6, 7, 8, 11, (was Beardsley Channel on 1998 303d list)
	Las Virgenes Creek
	Malibu Creek
	Medea Creek Reach 1 and 2
	Triunfo Canyon Creek Reach 1 and 2
	Aliso Canyon Wash
	Artesia-Norwalk Drain

TABLE 3.5-3
Impaired Water Bodies in Southern California

Pollutant	Impaired Water Body
	Burbank Western Channel
Selenium	Coyote Creek, North Fork
	Lake Lindero
	Las Virgenes Creek
	Lindero Creek Reach 1 and 2
	Lindero Creek Reach 2 (Above Lake)
	Los Angeles River Reach 6 (Above Sepulveda Flood Control Basin)
	Malibu Creek
	Medea Creek Reach 1 (Lake to confluence with Lindero)
	Puente Creek
	Santa Clara River Reach 3 (Freeman Diversion to A Street)
	Sepulveda Canyon
	Dry Canyon Creek
	McCoy Canyon Creek
	Ballona Creek Estuary
	Santa Clara River Reach 11
Selenium, Total	Lake Lindero
	Calleguas Creek Reach 6
Silver	Calleguas Creek Reach 7
Specific Conductance	Calleguas Creek Reach 8
Specific Conductivity	Calleguas Creek Reach 9A
Sulfates	Calleguas Creek Reach 9B, 10, 11, 12, 13
	Fox Barranca (tributary to Calleguas Creek Reach 6)
	Hopper Creek
	Malibu Creek
	Pole Creek (tributary to Santa Clara River Reach 3)
	Santa Clara River Reach 11
	Tapo Canyon
	Wheeler Canyon/Todd Barranca
	Malibu Lagoon
	Bouquet Canyon Creek (below Bouqet Reservoir)
	San Gabriel River Reach 1 and 2
Swimming Restrictions	Santa Clara River Reach 6
Temperature, water	Ventura River Reach 4 (Coyote Creek to Camino Cielo Road)
	Calleguas Creek Reach 3, 4, 6
	San Pedro Bay Near/Off Shore Zones
Total Dissolved Solids	Calleguas Creek Reach 9A, 9B, 10, 11, 12, 13
	Canada Larga (Ventura River Watershed)
	Fox Barranca (tributary to Calleguas Creek Reach 6)
	Hopper Creek
	Pole Creek (tributary to Santa Clara River Reach 3)
	San Antonio Creek (tributary to Ventura River Reach 4)
	San Jose Creek Reach 1 (San Gabriel River Confluence to Temple Street)
	Santa Clara River Reach 3, 11
	Tapo Canyon

TABLE 3.5-3
Impaired Water Bodies in Southern California

Pollutant	Impaired Water Body
	Wheeler Canyon/Todd Barranca
	Calleguas Creek Reach 1, 2, 3, 8
Toxaphene (including sediment and tissues)	Ballona Creek and Estuary
	Balboa Lake
	Boulder Creek (Ventura County)
	Calleguas Creek Reach 4, 5, 9A, 9B, 10, 11, 12, 13
	Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2
	Los Angeles Harbor - Consolidated Slip
	Rio De Santa Clara/Oxnard Drain No. 3
	Santa Clara River Estuary
	Wheeler Canyon/Todd Barranca
Toxicity	Bull Creek (Los Angeles County)
	Calleguas Creek Reach 1, 2, 4, 5, 6, 7, 9A, 9B, 10, 11, 13
	Colorado Lagoon
	Dominguez Channel and Estuary
	Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2
	Los Angeles Harbor - Consolidated Slip/Fish Harbor
	Los Angeles River Estuary (Queensway Bay)
	Los Angeles River Reach 3, 4, 5, 6
	Los Angeles/Long Beach Inner and Outer Harbor
	Malibu Creek
	Marina del Rey Harbor - Back Basins
	McGrath Lake
	Piru Creek (from gaging station below Santa Felicia Dam to headwaters)
	Rio De Santa Clara/Oxnard Drain No. 3
	Rio Hondo Reach 1 (confluence with Los Angeles River to Santa Ana Freeway)
	San Jose Creek Reach 1 (San Gabriel River confluence to Temple Street)
	San Pedro Bay Near/Off Shore Zones
	Santa Clara River Estuary and Reach 1, 3, 6
	South San Jose Creek (Los Angeles County)
	Tapo Canyon
	Ventura River Reach 3 (Weldon Canyon to confluence with Coyote Creek)
	Wheeler Canyon/Todd Barranca
	Arroyo Seco Reach 1 and 2
	Ballona Creek and Wetlands
Trash	Burbank Western Channel
	Calleguas Creek Reach 2, 3, 4, 5, 7, 9A, 9B, 10
	Compton Creek
	Echo Park Lake
	Elizabeth Lake
	Hueneme Drain
	J Street Drain (Ventura County)
	Lake Hughes
	Lake Lindero
	Las Virgenes Creek

TABLE 3.5-3
Impaired Water Bodies in Southern California

Pollutant	Impaired Water Body
	Legg Lake
	Lincoln Park Lake
	Lindero Creek Reach 1 and 2
	Los Angeles River Estuary (Queensway Bay)
	Los Angeles River Reach 1, 2, 3, 4, 5
	Los Cerritos Channel
	Machado Lake (Harbor Park Lake)
	Malibu Creek
	Medea Creek Reach 1 and 2
	Munz Lake
	Ormond Beach Wetlands
	Oxnard Drain
	Peck Road Park Lake
	Rio Hondo Reach 1 (confluence with Los Angeles River to Santa Ana Freeway)
	San Gabriel River, East Fork
	Sanjon Barranca Creek
	Santa Clara River Reach 1, 3,4A, 5, 10
	Santa Monica Bay Offshore/Nearshore
	Santa Paula Creek Reach 1 (confluence with Santa Clara River to Diversion Dam)
	Tujunga Wash (Los Angeles River to Hansen Dam)
	Ventura River Estuary
	Verdugo Wash Reach 1 and 2
	Ballona Creek
	Malibu Lagoon
	Ballona Creek and Estuary
Viruses (enteric)	Calleguas Creek Reach 1
	Colorado Lagoon
Zinc	Compton Creek
	Dominguez Channel (lined portion above Vermont Avenue)
	Los Angeles Harbor - Fish Harbor/Consolidated Slip
	Los Angeles/Long Beach Inner Harbor
	Los Angeles River Reach 1 (Estuary to Carson Street)
	Los Cerritos Channel
	Marina del Rey Harbor - Back Basins
	Rio Hondo Reach 1 (confluence with Los Angeles River to Santa Ana Freeway)
	Sepulveda Canyon
Colorado River Basin	
Ammonia	Coachella Valley Storm Water Channel
	Salton Sea
Arsenic	Salton Sea
Chlordane	Alamo River
Chloride	Alamo River
	Salton Sea
Chlorpyrifos	Alamo River

TABLE 3.5-3
Impaired Water Bodies in Southern California

Pollutant	Impaired Water Body
	Salton Sea
Cyhalothrin, Lambda	Alamo River
Cypermethrin	Alamo River
DDT (Dichlorodiphenyltrichloroethane)	Alamo River
	Coachella Valley Storm Water Channel
	Salton Sea
Diazinon	Alamo River
Dieldrin	Alamo River
	Coachella Valley Storm Water Channel
Disulfoton	Coachella Valley Storm Water Channel
Enterococcus	Alamo River
	Salton Sea
Escherichia coli (E. coli)	Alamo River
Indicator Bacteria	Coachella Valley Storm Water Channel
Iron	Deep Creek
	Hathaway Creek, unnamed tributary
Low Dissolved Oxygen	Salton Sea
Malathion	Alamo River
	Salton Sea
Oxygen, Dissolved	Coachella Valley Storm Water Channel
PCBs (Polychlorinated biphenyls)	Alamo River
	Coachella Valley Storm Water Channel
Salinity	Salton Sea
Sedimentation/Siltation	Alamo River
Selenium	Alamo River
Toxaphene	Alamo River
	Coachella Valley Storm Water Channel
Toxicity	Alamo River
	Coachella Valley Storm Water Channel
	Salton Sea
Turbidity	Deep Creek
	Hathaway Creek
	Potrero Creek
	West Branch Millard Canyon Creek
Santa Ana Region	
Ammonia (Unionized)	Bolsa Chica Channel
	Borrego Creek (from Irvine Boulevard to San Diego Creek Reach 2)
	East Garden Grove Wintersburg Channel
	Serrano Creek
Benthic Community Effects	Bonita Creek
	Peters Canyon Channel
	San Diego Creek Reach 1 and 2
	Serrano Creek
Cadmium	Cucamonga Creek Reach 1 (Valley Reach)
	Rathbone (Rathbun) Creek

TABLE 3.5-3
Impaired Water Bodies in Southern California

Pollutant	Impaired Water Body
	Santa Ana River Reach 6
Chemical oxygen demand (COD)	Chino Creek Reach 1B (Mill Creek confluence to start of concrete lined channel)
Chlordane	Big Bear Lake
	Huntington Harbour
	Upper and Lower Newport Bay
Copper	Bolsa Chica State Beach
	Coyote Creek
	Cucamonga Creek Reach 1 (Valley Reach)
	Huntington Harbour
	Upper and Lower Newport Bay
	Rathbone (Rathbun) Creek
	Rhine Channel
	Santa Ana River Reach 3 and 6
DDT (Dichlorodiphenyltrichloroethane)	Balboa Beach
	Big Bear Lake
	Elsinore, Lake
	Upper and Lower Newport Bay
	Peters Canyon Channel
	San Diego Creek Reach 1
Dieldrin	Balboa Beach
Indicator Bacteria	Bolsa Chica Channel
	Borrego Creek (from Irvine Boulevard to San Diego Creek Reach 2)
	Buck Gully Creek
	Chino Creek Reach 1A, 1B, 2
	Coyote Creek
	Goldenstar Creek
	Huntington Harbour
	Knickerbocker Creek
	Little Corona Del Mar Beach
	Los Trancos Creek (Crystal Cove Creek)
	Mill Creek
	Morning Canyon Creek
	Mountain Home Creek
	Upper and Lower Newport Bay
	Newport Slough
	Peters Canyon Channel
	Prado Park Lake
	San Diego Creek Reach 1 and 2
	San Timoteo Creek Reach 1A and 3
	San Timoteo River Reach 2 (Gage at San Timoteo to confluence with Yucaipa Creek)
	Santa Ana River, Reach 3 and 4
	Seal Beach
	Serrano Creek

TABLE 3.5-3
Impaired Water Bodies in Southern California

Pollutant	Impaired Water Body
	Warm Creek
Iron	Coyote Creek
Lead	Cucamonga Creek Reach 1 (Valley Reach)
	Huntington Harbour
	Rhine Channel
	Santa Ana River Reach 3 and 6
Malathion	Coyote Creek
	Newport Bay, Upper (Ecological Reserve)
	Peters Canyon Channel
	San Diego Creek Reach 1
Mercury	Big Bear Lake
	Rhine Channel
Nickel	Anaheim Bay
	Bolsa Chica State Beach
Noxious aquatic plants	Big Bear Lake
Nutrients	Big Bear Lake
	Canyon Lake (Railroad Canyon Reservoir)
	Chino Creek Reach 1A and 1B
	Elsinore, Lake
	Grout Creek
	Mill Creek (Prado Area)
	Upper and Lower Newport Bay
	Prado Park Lake
	Rathbone (Rathbun) Creek
	San Diego Creek Reach 1 and 2
	Summit Creek
Organic Enrichment/Low Dissolved Oxygen	Lake Elsinore
PCBs (Polychlorinated biphenyls)	Anaheim Bay
	Balboa Beach
	Big Bear Lake
	Lake Elsinore
	Huntington Beach State Park
	Huntington Harbour
	Upper and Lower Newport Bay
	Rhine Channel
	Seal Beach
pH	Bolsa Chica Channel
	Chino Creek Reach 2 (Beginning of concrete channel to confluence with San Antonio Creek)
	Coyote Creek
	Cucamonga Creek Reach 2 (Mountain Reach)
	Peters Canyon Channel
	Prado Basin Management Zone
	Serrano Creek

TABLE 3.5-3
Impaired Water Bodies in Southern California

Pollutant	Impaired Water Body
Salinity/TDS/Chlorides	Santiago Creek, Reach 4
	Silverado Creek
Sedimentation/Siltation	Newport Bay, Upper (Ecological Reserve)
	Rathbone (Rathbun) Creek
	San Diego Creek Reach 1 and 2
Selenium	Peters Canyon Channel
	San Diego Creek Reach 1
Total Suspended Solids (TSS)	Mill Creek (Prado Area)
Toxaphene	Peters Canyon Channel
	San Diego Creek Reach 1
Toxicity	Anaheim Bay
	Bolsa Bay Marsh
	Bolsa Chica Ecological Reserve
	Bonita Creek
	Coyote Creek
	Lake Elsinore
	Huntington Harbour
	Upper and Lower Newport Bay
	Peters Canyon Channel
	Rhine Channel
	San Diego Creek Reach 1 and 2
	Santiago Creek, Reach 4
	Serrano Creek
	Silverado Creek
	Talbert Channel (Orange County)
Zinc	Cucamonga Creek Reach 1 (Valley Reach)
	Rhine Channel
San Diego Region	
Ammonia as Nitrogen	Aliso Creek
	Arroyo Trabuco Creek
Benthic Community Effects	English Canyon
	Laguna Canyon Channel
	Salt Creek (Orange County)
	San Juan Creek
	Segunda Deshecha Creek
	Wood Canyon (Orange County)
Benzo[b]fluoranthene	English Canyon
Cadmium	Cristianitos Creek
	Prima Deshecha Creek
	San Juan Creek (mouth)
	Oso Creek (at Mission Viejo Golf Course)
Chlorpyrifos	Long Canyon Creek (tributary to Murrieta Creek)
	Murrieta Creek
	Santa Gertrudis Creek
	Temecula Creek

TABLE 3.5-3
Impaired Water Bodies in Southern California

Pollutant	Impaired Water Body
	Warm Springs Creek (Riverside County)
Color	Dana Point Harbor
	Murrieta Creek
Copper	San Juan Creek (mouth)
	Santa Gertrudis Creek
	Temecula Creek
Diazinon	Wood Canyon (Orange County)
	English Canyon
Eutrophic	Aliso Creek
Indicator Bacteria	Arroyo Trabuco Creek
	Dana Point Harbor
	Laguna Canyon Channel
	Murrieta Creek
	Pacific Ocean Shoreline, Aliso Creek
	Pacific Ocean Shoreline, Dana Point
	Pacific Ocean Shoreline, Dana Point HSA, at Dana Point Harbor at patrol dock
	Pacific Ocean Shoreline, Laguna Beach
	Pacific Ocean Shoreline, San Juan Creek
	Pacific Ocean Shoreline, San Clemente
	Prima Deshecha Creek
	San Juan Creek
	Santa Gertrudis Creek
	Santa Margarita River (Lower)
	Santa Margarita River (Upper)
	Segunda Deshecha Creek
	Temecula Creek
	Long Canyon Creek (tributary to Murrieta Creek)
	Murrieta Creek
Iron	Santa Gertrudis Creek
	Santa Margarita River (Upper)
Lead	Aliso Creek
Low Dissolved Oxygen	Arroyo Trabuco Creek
Malathion	Prima Deshecha Creek
	Salt Creek (Orange County)
	Segunda Deshecha Creek
Manganese	Murrieta Creek
	Santa Gertrudis Creek
	Santa Margarita River (Upper)
Nickel	Aliso Creek
Nitrate and Nitrite	Arroyo Trabuco Creek
Nitrogen	Long Canyon Creek (tributary to Murrieta Creek)
	Murrieta Creek
	Oso Creek (lower)
	Prima Deshecha Creek
	San Juan Creek

TABLE 3.5-3
Impaired Water Bodies in Southern California

Pollutant	Impaired Water Body
	Santa Gertrudis Creek
	Santa Margarita River
	Segunda Deshecha Creek
	Warm Springs Creek (Riverside County)
	San Juan Creek (mouth)
	Dana Point Harbor
Oxygen, Dissolved	San Juan Creek
Phosphate	Arroyo Trabuco Creek
Phosphorus	English Canyon
	Laguna Canyon Channel
	Long Canyon Creek (tributary to Murrieta Creek)
	Moro Canyon Creek
	Murrieta Creek
	Oso Creek (lower)
	Prima Deshecha Creek
	Santa Gertrudis Creek
	Santa Margarita River (Lower)
	Santa Margarita River (Upper)
	Segunda Deshecha Creek
	Temecula Creek
	Warm Springs Creek (Riverside County)
Sedimentation/Siltation	Aliso Creek
Selenium	English Canyon
	Moro Canyon Creek
	Oso Creek (lower)
	Prima Deshecha Creek
	San Juan Creek
	Segunda Deshecha Creek
	Soledad Canyon
	Wood Canyon (Orange County)
	Green Valley Creek
	Oso Creek (at Mission Viejo Golf Course)
Total Dissolved Solids	Oso Creek (at Mission Viejo Golf Course)
	Temecula Creek
Total Nitrogen as N	English Canyon
	Green Valley Creek
	Laguna Canyon Channel
	Aliso Creek
	Arroyo Trabuco Creek
Toxicity	Aliso Creek
	Arroyo Trabuco Creek
	Dana Point Harbor
	English Canyon
	Laguna Canyon Channel
	Moro Canyon Creek

TABLE 3.5-3
Impaired Water Bodies in Southern California

Pollutant	Impaired Water Body
	Murrieta Creek
	Oso Creek (lower)
	Pacific Ocean Shoreline, Aliso HSA, at Aliso Creek mouth
	Pacific Ocean Shoreline, Dana Point HSA, at Niguel Marine Life Refuge
	Salt Creek (Orange County)
	San Juan Creek
	Santa Margarita River
	Segunda Deshecha Creek
	Temecula Creek
Turbidity	Prima Deshecha Creek
	Segunda Deshecha Creek
Zinc	Dana Point Harbor

Source: 2018 California Integrated Report (Clean Water Act Section 303(d) List and 305(b) Report). Available at: https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2018_integrated_report.html

3.5.7 WASTEWATER

3.5.7.1 Wastewater Treatment Facilities

Wastewater treatment is generally performed in three stages: primary treatment, secondary treatment, and tertiary treatment. During primary treatment, materials sink to the bottom of tanks and then microbes eat the organic material and settle out in the secondary treatment tanks. Tertiary treatment occurs last, in which remaining pollutants are filtered out via sand and coal. Along with the additions of disinfectant chemicals like chlorine and careful testing and monitoring, this process treats water to an acceptable level to be returned into natural water bodies or recycled for irrigation, industrial, and agricultural uses. More recently, advanced treatment techniques have achieved level of cleanliness that allows highly purified recycled water to recharge underground aquifers. A majority of wastewater within the Southern California region is treated by one of the 57 major wastewater treatment facilities in the area. Such facilities are often located in densely populated areas and in close proximity to bodies of water for simple discharge of treated water. Within each county, various smaller municipal wastewater systems and agencies manage wastewater from cities on a smaller scale, and private on-site sewage disposal systems are also available to serve wastewater generators without access to a municipal system. Table 3.5-4 lists the 57 large-scale facilities managing wastewater within the region, which have a combined design flow of approximately 3,000 mgd.

TABLE 3.5-4
Wastewater Treatment Facilities in Southern California

County/Facility	Design Flow (mgd)
Los Angeles County	**1,250.1**
Avalon WWTF	1.2
Civic Center Water Treatment Facility	70
Burbank WWRP	12.5
Donald C. Tillman WWRP	80
Edward Little Water Recycling Plan	5.2
Groundwater Reliability Project	--
Hyperion WWTP	450
Joint Water Pollution Control Plant, Carson	400
Juanita Millender-McDonald Carson Regional Water Recycling Plant	1.21.2
Long Beach WRP	25
Los Angeles-Glendale WWRP	20
Los Coyotes WRP	37.5
Newhall Ranch WRP	2
Pomona Water Reclamation Plant	15
San Jose Creek Water Reclamation Plant	62.5
Saugus Water Reclamation Plant	6.5
Tapia WRF	12
Terminal Island Water Reclamation Plant	30
Valencia WRP	4.5
Whittier Narrows Water Reclamation Plant, El Monte	15
Orange County	**1,131.12**
City of San Clemente WRP	38.78
El Toro Water District WRP	34.37
Irvine Desalter Project Shallow GW Unit	34.37
Irvine Ranch Water District Los Alisos WRP	34.37
Latham WWP	38.78
Los Alisos Water District WWTP	33.5
Michelson WWRF 5	33.5
Orange County Sanitation District Plant 1	332
Orange County Sanitation District Plant 2	332
Santa Margarita Water District Oso Creek WRP	38.78
Santa Margarita Water District - Chiquita WRP	38.78
South Orange County Wastewater Authority Aliso Creek Ocean Outfall	34.37
South Orange County Wastewater Authority Coastal TP 34.37	34.37
South Orange County Wastewater Authority Regional TP 34.37	34.37
South Orange County Wastewater Authority San Juan Creek Ocean Outfall	38.78
Riverside County	**133.4**
Beaumont WWTP	4
Coachella Sanitation District WWTP	2.4
Coachella Valley Water District WWTP	7
Corona WWRF No. 1	11.5
Corona WWRF No. 2	3.0
Corona WWRF No. 3	1
Elsinore Valley Municipal Water District Regional WWRF	8
Riverside City WWRF	46
Temescal Creek Outfall	26
Valley Sanitation District Indio WWTP	8.5
Western Riverside County Regional Wastewater Authority WWRF	14

TABLE 3.5-4 (concluded)
Wastewater Treatment Facilities in Southern California

County/Facility	Design Flow (mgd)
San Bernardino County	**421.65**
Big Bear WWRF	3.2
Colton WRF	0
Colton/San Bernardino STP, RIX	40
Henry N. Wochholz WWRF	8
Inland Empire Utilities Agency Carbon Canyon WWRF	85
Inland Empire Utilities Agency Regional Plant No. 1	85
Inland Empire Utilities Agency Regional Plant No. 4	85
Inland Empire Utilities Agency Regional Plant No. 5	85
Lytle Creek North WWTP	1.75
Margaret H. Chandler WWRF	4.5
Rialto WWRF	11.7
Victor Valley Wastewater Reclamation Authority WTP	12.5

Source: SCAG, 2020

3.5.7.2 Waste Discharge Requirements

If the operation or discharges from a property or business affects California's surface, coastal, or groundwater, a permit to discharge waste is required from the appropriate RWQCB. Discharges of pollutants into surface waters require a federal NPDES permit application with the appropriate RWQCB. For other types of discharges, such as those affecting groundwater or in a diffused manner (e.g., erosion from soil disturbance or waste discharges to land) a report of waste discharge must be filed with the appropriate RWQCB in order to obtain Waste Discharge Requirements (WDRs). For specific situations, the RWQCB may waive the requirement to obtain a WDR for discharges to land or may determine that a proposed discharge can be permitted more effectively through enrollment in a general NPDES permit or general WDR. RWQCBs have identified a typical list of activities that affect water, but the list is by no means inclusive of all situations:

- Discharge of process wastewater not discharging to a sewer (factories, cooling water, etc.)
- Confined animal facilities (dairies, feedlots, etc.)
- Waste containments (landfills, waste ponds, etc.)
- Construction sites
- Boatyards and shipyards
- Discharges of pumped groundwater and cleanups (underground tank cleanups, dewatering, spills)
- Material handling areas draining to storm drains
- Sewage treatment facilities
- Filling of wetlands
- Dredging, filling, and disposal of dredge wastes
- Commercial activities not discharging to a sewer (e.g., factory wastewater, storm drain), and

- Waste discharges to land

SUBCHAPTER 3.6

NOISE

Terminology Used in Noise Analysis

Regulatory Background

Noise Setting

3.6 NOISE

The goal of the 2022 AQMP is to address the federal 2015 eight-hour ozone standard, to satisfy the planning requirements of the federal CAA by identifying ways to reduce emissions from existing emission sources and promoting the use of the cleanest available new emission sources and technologies. Several of the proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies may still need to be invented or made commercially available in order to achieve the necessary reductions to attain the 70 ppb ozone standard.

In particular, the 2022 AQMP is comprised of an assortment of control measures that are designed to accelerate the replacement of high-emitting mobile sources with low NOx and zero emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing and new commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

While the proposed control measures are intended to improve overall air quality in the region, noise impacts associated with their implementation may occur as a result of construction associated with activities including but not limited to, installing new or modifying existing equipment or burners, and building electrical charging infrastructure. This subchapter describes the existing setting as related to noise and noise sources that are associated with construction activities in South Coast AQMD's jurisdiction. .

3.6.1 TERMINOLOGY USED IN NOISE ANALYSIS

Because all humans perceive and interpret sound differently, the types of sound which comprise noise are subjective. The objectionable nature of sound can be caused by its pitch or its loudness. Pitch of a tone or sound depends on the relative rapidity (frequency) of the vibrations by which it is produced. Loudness is the amplitude of sound waves combined with the reception characteristics of the ear. Amplitude may be compared with the height of an ocean wave. Technical acoustical terms commonly used in this section and Subchapter 4.6 in Chapter 4 are defined in Table 3.6-1.

Noise is a by-product of urbanization and there are numerous noise sources and receptors in an urban community. Noise is generally defined as unwanted sound. The range of sound pressure perceived as sound is extremely large. The decibel is the preferred unit for measuring sound since it accounts for these variations using a relative scale adjusted to the human range for hearing (referred to as the A-weighted decibel or dBA). The A-weighted decibel is a method of sound measurement which assigns weighted values to selected frequency bands in an attempt to reflect how the human ear responds to sound. The range of human hearing is from 0 dBA (the threshold of hearing) to about 140 dBA which is the threshold for pain. Examples of noise and their A-weighted decibel levels are shown in Figure 3.6-1.

TABLE 3.6-1
Definition of Acoustical Terms

Term	Definition
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
A-Weighted Sound Level (dBA)	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Community Noise Equivalent Level (CNEL)	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and after addition of 10 decibels to sound levels in the night between 10:00 p.m. and 7:00 a.m.
Day/Night Noise Level (Ldn)	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 p.m. and 7:00 a.m.
Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 micro Pascals.
Equivalent Noise Level (Leq)	The average A-weighted noise level during the measurement period.
Frequency (Hz)	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sounds are below 20 Hz and ultrasonic sounds are above 20,000 Hz.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, time of occurrence, and tonal or informational content as well as the prevailing ambient noise level.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1 percent, 10 percent, 50 percent, and 90 percent of the time during the measurement period.
Lmax, Lmin	The maximum and minimum noise levels during the measurement period.
Loudness	The amplitude of sound waves combined with the reception characteristics of the human ear.
Pitch	The height or depth of a tone or sound, depending on the relative rapidity (frequency) of the vibrations by which it is produced.
SEL	Sound Exposure Level is a measure of cumulative noise exposure of a noise event expressed as the sum of the sound energy over the duration of a noise event, normalized to a one-second duration.
Sound Pressure	Sound pressure or acoustic pressure is the local pressure deviation from the ambient atmospheric pressure caused by a sound wave. Sound pressure can be measured using a microphone. The unit for sound pressure (p) is the Pascal [symbol: Pa or 1 Newton exerted over an area of 1 square meter (N/m^2).
Sound Pressure Level	The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals in air). Sound pressure level is the quantity that is directly measured by a sound level meter.
Vibration	Vibration means mechanical motion of the earth or ground, building, or other type of structure, induced by the operation of any mechanical device or equipment. The magnitude of vibration is stated as the acceleration in "g" units (1 g is equal to 32.2 $feet/second^2$ or 9.3 $meters/second^2$).

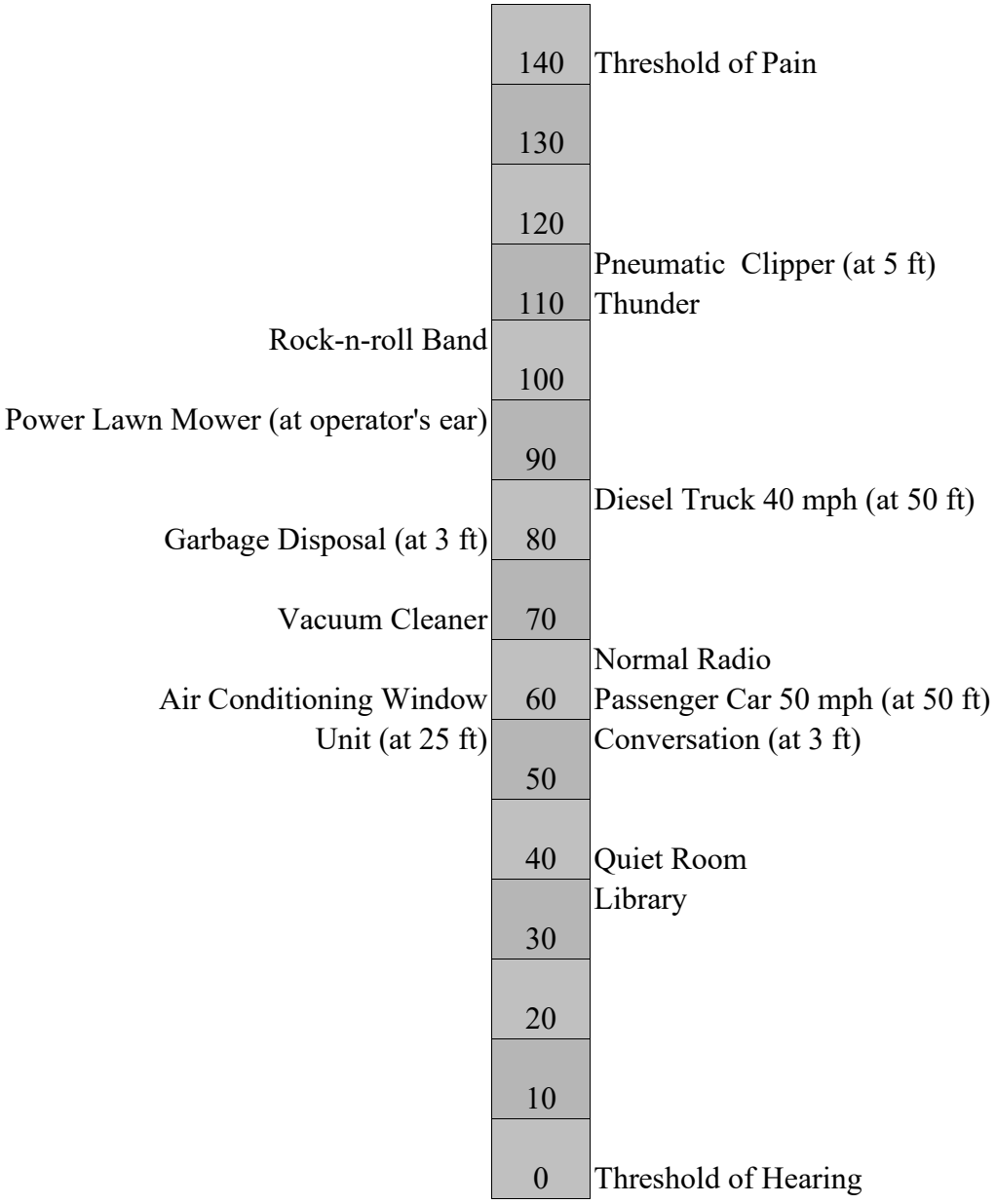


FIGURE 3.6-1
General Noise Sources and Associated Sound Pressure Levels

3.6.2 REGULATORY BACKGROUND

The federal government sets noise standards for transportation-related noise sources that are closely linked to interstate commerce, such as aircraft, locomotives, and trucks, and, for those noise sources, the state government is preempted from establishing more stringent standards. The state government sets noise standards for those transportation noise sources that are not preempted from regulation, such as automobiles, light trucks, and motorcycles. Noise sources associated with industrial, commercial, and construction activities are generally subject to local control through noise ordinances and general plan policies.

3.6.2.1 Federal Agencies and Regulations

3.6.2.1.1 Code of Federal Regulations (CFR)

Federal regulations for railroad noise are contained in 40 CFR Part 201 and 49 CFR Part 210. The regulations set noise limits for locomotives and are implemented through regulatory controls on locomotive manufacturers. Federal regulations also establish noise limits for medium and heavy trucks (more than 4.5 tons, gross vehicle weight rating) under 40 CFR Part 205, Subpart B. The federal truck pass-by noise standard is 80 dB at 15 meters from the vehicle pathway centerline. These controls are implemented through regulatory controls on truck manufacturers. The Federal Highway Administration (FHWA) regulations for noise abatement must be considered for federal or federally-funded projects involving the construction of a new highway or significant modification of an existing freeway when the project would result in a substantial noise increase or when the predicted noise levels approach or exceed the "Noise Abatement Criteria."

Under the regulations, a "substantial increase" is defined as an increase in Equivalent Continuous Level (Leq) of 12 dB during the peak hour of traffic noise. The Leq provides a time-weighted average of the noise measured. For sensitive uses, such as residences, schools, churches, parks, and playgrounds, the Noise Abatement Criteria for interior and exterior spaces is Leq 57 and 66 dB, respectively, during the peak hour of traffic noise.

3.6.2.1.2 Federal Transit Administration (FTA)

The Federal Transit Administration has prepared guidance noise and vibration impacts assessments for proposed mass transit projects: Transit Noise and Vibration Impact Assessment. [U.S. FTA 2018]. The guidance is required to evaluate the noise and vibration impacts in environmental review process for project proponents seeking funding from FTA. All types of bus and rail projects are covered. The guidance contains procedures for assessing impacts at different stages of project development, from early planning before mode and alignment have been selected through preliminary engineering and final design. The focus is on noise and vibration impacts during operations, but construction impacts are also covered. The guidance describes a range of measures for controlling excessive noise and vibration.

3.6.2.1.3 Federal Aviation Administration (FAA)

Aircraft operated in the U.S. are subject to certain federal requirements regarding noise emissions levels. These requirements, as promulgated in Title 14 of the Code of Federal Regulations Part 36 (14 CFR Part 36), define the maximum acceptable noise levels for specific aircraft types, taking into account the model year, aircraft weight, and number of engines. Pursuant to the federal Airport Noise and Capacity Act of 1990, the FAA established a schedule for completely transitioning to 14 CFR Part 36 "Stage 3" standards by year 2000. This transition schedule applied to jet aircraft with a maximum takeoff weight in excess of 75,000 pounds which included passenger and cargo airlines but not operators of business jets or other general aviation aircraft.

3.6.2.1.4 Federal Railroad Administration (FRA)

On March 24, 2009, the Federal Highway Administration (FHA) and the FTA issued a final rule that modified FRA regulations to make certain changes mandated by the Safe, Accountable, Flexible, Efficient, Transportation, Equity Act: A Legacy for Users (SAFETEA-LU). The SAFETEA-LU prescribes requirements for environmental review and project decision-making. This rule became effective April 23, 2009.

The Federal Railroad Administration provides implementation procedures for predicting and assessing noise and vibration impacts of high-speed trains within their *High-Speed Ground Transportation Noise and Vibration Impact Assessment.* [FRA 2012]. The document provides three levels of analysis, including a preliminary impact screening, a general assessment, and a detailed analysis, as well as a range of mitigation measures for dealing with adverse noise and vibration impacts. The report also includes noise criteria for potential impacts.

3.6.2.1.5 Department of Housing and Urban Development (HUD)

The noise regulation, 24 CFR Part 51 Subpart B – Noise Abatement and Control, presents the HUD noise program. Within the HUD Noise Assessment Guidelines, potential noise sources are examined for projects located within 15 miles of a military or civilian airport, 1,000 feet from a road, or 3,000 feet from a railroad. HUD exterior noise regulations state that 65 dB Ldn noise levels or less are acceptable for residential land uses, noise levels above 65 dB but not exceeding 75 dB as "normally unacceptable," and noise levels exceeding 75 dB Ldn as unacceptable. HUD's regulations do not contain standards for interior noise levels. A goal of 45 decibels is set forth for interior noise and the attenuation requirements are based upon this level. HUD's standards assume that internal noise levels would be met if exterior standards are met under standard construction practices.

3.6.2.1.6 Federal Vibration Policies

The FRA and FTA have published guidance relative to vibration impacts. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The

RMS amplitude is defined as the average of the squared amplitude of the signal. The decibel notation, VdB, is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration.

According to the FRA, fragile buildings can be exposed to groundborne vibration levels of 0.5 inches per second PPV without experiencing structural damage. The FTA has identified the human annoyance response to vibration levels as 80 VdB. [U.S. FTA 2018].

3.6.2.2 State Agencies and Regulations

3.6.2.2.1 California's Airport Noise Standards

The State of California's Airport Noise Standards, found in Title 21 of the California Code of Regulations, identify a noise exposure level of Community Noise Equivalent Level (CNEL) 65 dB as the noise impact boundary around airports. Within the noise impact boundary, airport proprietors are required to ensure that all land uses are compatible with the aircraft noise environment or obtain a variance for Caltrans.

3.6.2.2.2 California Department of Transportation (Caltrans)

The State of California establishes noise limits for vehicles licensed to operate on public roads. For heavy trucks, the state pass-by standard is consistent with the federal limit of 80 dB. The state pass-by standard for light trucks and passenger cars (less than 4.5 tons gross vehicle rating) is also 80 dB at 15 meters from the centerline. For new roadway projects, Caltrans employs the Noise Abatement Criteria, discussed above in connection with the FHWA.

3.6.2.2.3 California Noise Insulation Standards

The California Noise Insulation Standards are found in Title 24 of the California Code of Regulations, which has requirements for new multi-family residential units, hotels, and motels that may be subject to relatively high levels of transportation-related noise. For exterior noise, the noise insulation standard is Ldn 45 dB in any habitable room and requires an acoustical analysis demonstrating how dwelling units have been designed to meet this interior standard where such units are proposed in areas subject to noise levels greater than Ldn 60 dB. Ldn is the average noise level over a 24-hour period. The noise between the hours of 10:00 p.m. and 7:00 a.m. is artificially increased by 10 dB. This takes into account the decrease in community background noise during nighttime hours.

3.6.2.2.4 State Vibration Policies

There are no adopted state policies or standards for ground-borne vibration. However, Caltrans recommends that extreme care be taken when sustained pile driving occurs within 7.5 meters (25 feet) of any building, and 15 to 30 meters (50 to 100 feet) of a historic building or a building in poor condition.

3.6.2.3 Local Agencies and Regulations

To identify, appraise, and remedy noise problems in the local community, each county and city within California, including counties and cities within the South Coast AQMD's jurisdiction has adopted a noise element as part of its General Plan. Each noise element is required to analyze and quantify current and projected noise levels associated with local noise sources, including, but not limited to, highways and freeways, primary arterials and major local streets, rail operations, air traffic associated with the airports, local industrial plants, and other ground stationary sources that contribute to the community noise environment. Beyond statutory requirements, local jurisdictions are free to adopt their own goals and policies in their noise elements, although most jurisdictions have chosen to adopt noise/land use compatibility guidelines that are similar to those recommended by the state. The overlapping Ldn ranges indicate that local conditions (existing noise levels and community attitudes toward dominant noise sources) should be considered in evaluating land use compatibility at specific locations.

In addition to regulating noise through noise element policies, local jurisdictions regulate noise through enforcement of local ordinance standards. These standards generally relate to noisy activities (e.g., use of loudspeakers and construction) and stationary noise sources and facilities (e.g., air conditioning units and industrial activities). Two cities within the South Coast AQMD's jurisdiction, Los Angeles and Long Beach, operate port facilities. Noise from the Ports of Los Angeles and Long Beach are regulated by the noise ordinances and noise elements of the Los Angeles and Long Beach General Plans.

In terms of airport noise, some of the actions that airport proprietors have been allowed to take to address local community noise concerns include runway use and flight routing changes, aircraft operational procedure changes, and engine run-up restrictions. These actions generally are subject to approval by the FAA, which has the authority and responsibility to control aircraft noise sources, implement and enforce flight operational procedures, and manage the air traffic control system.

3.6.3 NOISE SETTING

3.6.3.1 Noise Descriptors

Environmental noise levels typically fluctuate across time of day; different types of noise descriptors are used to account for this variability, and different types of descriptors have been developed to differentiate between cumulative noise over a given period and single noise events. Cumulative noise descriptors include the Leq, Ldn, and CNEL. The Leq is the actual time-averaged, equivalent steady-state sound level, which, in a stated period, contains the same acoustic energy as the time-varying sound level during the same period. Ldn and CNEL values result from the averaging of Leq values (based on A-weighted decibels) over a 24-hour period, with weighting factors applied to different periods of the day and night to account for their perceived relative annoyance. For Ldn, noise that occurs during the nighttime period (10:00 p.m. to 7:00 a.m.) is "penalized" by 10 dB. CNEL is similar to Ldn, except that it also includes a "penalty" of approximately five dB for noise that occurs during the evening period (7:00 p.m. to 10:00 p.m.). Cumulative noise descriptors, Ldn and CNEL, are well correlated with public

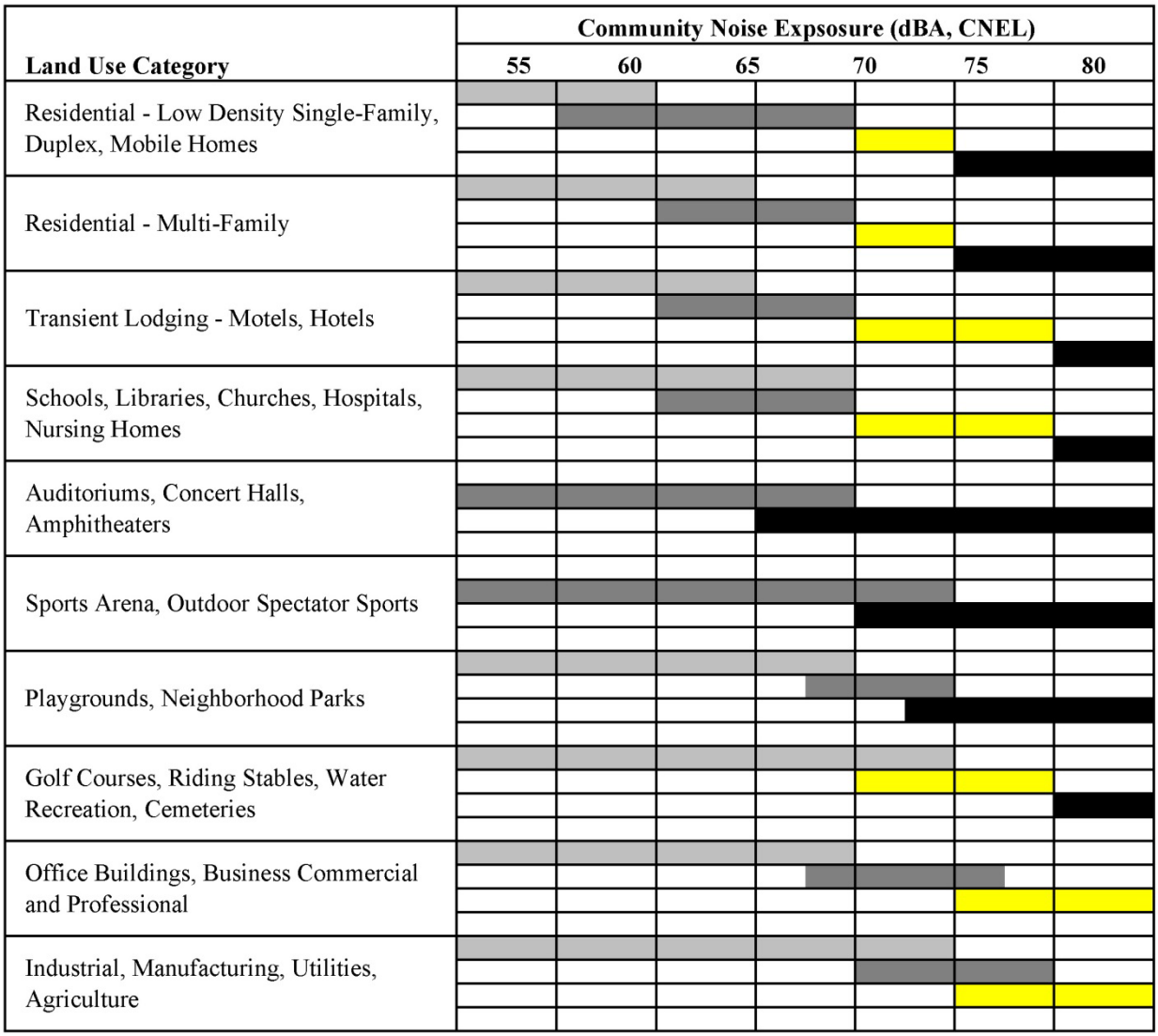
annoyance due to transportation noise sources. Table 3.6-2 shows the compatibility between various land uses and CNEL.

Individual noise events, such as train pass-bys or aircraft overflights, are further described using single-event and cumulative noise descriptors. For single events, the maximum measured noise level (Lmax) is often cited, as is the Sound Exposure Level (SEL). The SEL is the energy-based sum of a noise event of given duration that has been "squeezed" into a reference duration of one second and is typically a value that is five to 10 dB higher than the Lmax.

3.6.3.2 Ambient Noise Levels

There are approximately 11,000-square-miles in South Coast AQMD's jurisdiction which include all or portions of four counties (Los Angeles, Orange, Riverside, and San Bernardino) and 135 cities and cover a diverse array of land uses that range from quiet, undeveloped rural areas to loud, dense, urban areas. Ambient noise levels for areas where sensitive receptors may be located can range from 46 dBA for a small town or quiet suburban area to greater than 87 dBA for an urban area next to a freeway. Given the size of South Coast AQMD's jurisdiction and the wide variation of noise sources, it is not feasible to complete a detailed noise monitoring study for this Program EIR. Rather, this Program EIR presents a discussion of noise levels associated with different noise sources, thereby allowing the reader to infer the noise level at different locations depending on the proximity of a location to a noise source. Ambient noise levels for a variety of land uses and locations as developed by SCAG are used to represent the range of ambient noise conditions by land use types (see Table 3.6-3).

TABLE 3.6-2
Noise Land Use Compatibility Matrix



Normally Acceptable - Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

Conditionally Acceptable - New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply system or air condionally will normally suffice.

Normally Unacceptable - New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and deeded noise insulation features including in the design.

Clearly Unacceptable - New construction or development should generally not be undertaken.

Source: Office of Planning and Research, 2017.

TABLE 3.6-3
Representative Ambient Noise Sampling Data

LOCATION	LAND USE	PEAK HOUR NOISE LEVEL (dBA, Leq)
City of Los Angeles (Mission Hills)	Cemetery	62
City of Los Angeles (Baldwin Hills)	Residential (Multi-Family/Industrial Adjacent)	60
City of Riverside	Institutional (University)	56
City of Pasadena	Mixed Used (Multi-Family Residential and Retail)	63
City of Los Angeles (Del Rey)	Residential (Single Family)	63
City of Moorpark	Residential (City Park)	48
City of Los Angeles (Boyle Heights)	Institutional (High School/Middle School Adjacent)	57

Source: SCAG, 2020

The main sources of noise in Southern California, of which South Coast AQMD's jurisdiction is a subset, are associated with transportation (i.e., freeways, airports, seaports and railroads). The most common noise sources within the Southern California region is traffic on highways and on arterial roadways. Higher levels of noise from traffic are generally due to higher traffic volumes, faster travel speeds, and greater number of trucks. Vehicle noise comes from the engine, exhaust and tires and can be exacerbated by vehicles in a state of disrepair, such as defective mufflers or struts. Southern California has over 73,000 lane miles of freeways, highways, and arterial roadways. Traffic noise can be reduced by distance, terrain, vegetation, and intervening obstructions (e.g., buildings). However, traffic noise can be a major concern where buffers (vegetation, buildings, terrain, etc.) are inadequate or where the distance to sensitive receptors is minimal. With typical daily traffic volumes of 10,000 to 40,000 vehicle trips, noise levels along arterial roadways typically range from 65 to 60 decibels at a distance of 50 feet from the roadways centerlines. [SCAG 2020].

Aircraft noise is also present in many areas of South Coast AQMD's jurisdiction, with higher noise levels generated during takeoff and landing. There are six commercial airports including Bob Hope Airport in Burbank; Ontario International Airport in Ontario; Los Angeles International Airport in Los Angeles; Long Beach Airport in Long Beach; Palm Springs International Airport in Palm Springs; and John Wayne Airport in Santa Ana. In addition, there are a number of smaller airports that support general aviation.

Noise associated with aviation arises primarily from aircraft operations, which can generate substantial levels of noise near the flight path. The level of noise exposure is based on proximity to runways and departure/approach flight paths, duration of exposure, the type of aircraft operated, number of aircraft operations (e.g., take-offs and landings), and altitude of the aircraft and atmospheric conditions. Noise contours associated with airport operations in South Coast AQMD's jurisdiction are available in the airport land use plans prepared for each airport.

Railroad operations generate high, relatively brief, intermittent noise events. These noise events are an environmental concern for sensitive receptors located along rail lines and in the vicinity of switching yards. Railroad operations include freight trains (Union Pacific Railroad and Burlington Northern/Santa Fe Railways), commuter rail (e.g., Amtrak), and urban rail transit (e.g., Los Angeles County Metropolitan Transportation Authority subway and light rail lines). The primary sources of rail noise include locomotive engines; the interaction of steel wheels and rails from rolling noise, impact noise when a wheel encounters a rail joint, turnout, or crossover, and squeal generated by friction on tight curves; and warning devices (air horns and crossing bells).

Noise from train traffic can vary between 72 dBA for Maglev trains to 92 dBA for locomotive diesel engines to 110 dBA for train horns. Industrial and commercial activities also contribute to the noise level, primarily by stationary point sources of noise, but can also include mobile sources (e.g., forklifts), as well as from traffic associated with employees, visitors, and deliveries. Other contributors may also include construction, garbage collecting trucks, helicopters (news, police activity and tourism), and sporting/special events. [SCAG 2020].

The Ports of Long Angeles and Long Beach provide a major link between the United States and the Pacific Rim countries. Noise associated with port operations is typically generated from: 1) ships; 2) equipment associated with cargo handling activities; and 3) truck and rail traffic that moves cargo to/from the ports. These sources affect ambient noise levels within and adjacent to the ports. When combined together, the Ports of Long Angeles and Long Beach rank ninth in the world for container volume and currently handle 32 percent of the cargo volume in the country. [SCAG 2020].

Noise from industrial complexes and manufacturing facilities are characterized as stationary noise sources and are usually regulated by local governments through noise ordinance and general plan policies.

Construction activities can generate high noise levels intermittently on and adjacent to the construction sites. Construction-related noise can vary depending on the construction phase, equipment type, duration of use, distance between noise source and receptor, and line of sight between noise source and receptor. The dominant noise source from construction equipment is the diesel engine, although some activities, such as pile driving or concrete breaking (jackhammering) are usually louder. Noise from construction sites are typically regulated by local governments through noise ordinances.

3.6.3.3 Vibration Measuring and Reporting

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration is typically measured as peak particle velocity in inches per second. In this context, vibration refers to the minimum ground- or structure-borne motion that causes a normal person to be aware of the vibration by means such as, but not limited to, sensation by touch or visual observation of moving objects. The FTA Assessment states that background vibration velocity levels in residential areas is usually 50 VdB or lower, well below the threshold of perception for humans which is around 65

VdB. The upper range for rapid transit vibration is around 80 VdB and the high range for commuter rail vibration is 85 VdB (U.S. FTA, 2018). The noise radiated from the motion of the room surfaces is called ground-borne noise. Table 3.6-4 summarizes typical levels of ground-borne vibration.

TABLE 3.6-4
Typical Levels of Ground-Borne Vibration

Response	Velocity Level	Typical Sources at 50 feet
Minor cosmetic damage of fragile buildings	100	Blasting from construction projects
Difficulty with tasks such as reading a video display terminal screen	90	Bulldozers and other heavy tracked construction equipment
Residential annoyance, infrequent events	80	Rapid transit, upper range
Residential annoyance, frequent events	70	High speed rail, typical
Approximate threshold for human perception	60	Bus or truck, typical
	50	Typical background vibration

Source: FTA, 2018

In contrast to airborne noise, ground-borne vibration is not a common environmental problem. Although the motion of the ground may be noticeable to people outside structures, without the effects associated with the shaking of a structure, the motion does not provoke the same adverse human reaction to people outside. Within structures, the effects of ground-borne vibration include noticeable movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. The maximum vibration amplitudes of the floors and walls of a building often will be at the resonance frequencies of various components of the building. However, noticeable vibration inside a building is typically caused by equipment or activities within the building itself, such as heating and ventilation systems, footsteps, or doors closing. [FTA, 2018].

The FTA Assessment states that it is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. However, some common sources of vibration are trains, buses on rough roads, and construction activities, such as blasting, pile driving, and heavy earth-moving equipment. Vibration can be a serious concern, causing buildings to shake and rumbling sounds to be heard. Several different methods are used to quantify vibration. High levels of vibration may cause physical personal injury or damage to buildings. [FTA 2018].

3.6.3.4 Sensitive Receptors

Some land uses are considered more sensitive to ambient noise levels than others due to the amount of noise exposure (in terms of both exposure time and "insulation" from noise) and the types of activities typically involved. Residences, motels and hotels, schools, libraries, churches, hospitals, nursing homes, auditoriums, natural areas, parks and outdoor recreation areas are generally more sensitive to noise than are commercial and industrial land uses. Consequently, the noise standards for sensitive land uses are more stringent than those for less sensitive uses, such as commercial and industrial.

To protect various human activities and sensitive land uses (e.g., residences, schools, and hospitals), lower noise levels are needed. A noise level of 55 to 60 dB Ldn outdoors is the upper limit for intelligible speech communication inside a typical home. In addition, social surveys and case studies have shown that complaints and community annoyance in residential areas begin to occur at 55 dB Ldn. Sporadic complaints associated with the 55 to 60 dB Ldn range give way to widespread complaints and individual threats of legal action within the 60 to 70 dB Ldn range. Noise levels at 70 dB Ldn and above are unacceptable in residential communities. [SCAG 2020].

Sensitive receptors for vibration are the same as for noise, with one exception. Historic structures are potentially sensitive to excessive vibration because ground vibration will excite building structures, and if the vibration levels are high, there is a potential for structural damage. The Caltrans Transportation and Construction Vibration Manual references the National Cooperative Highway Research Program report for a summary of construction effects on historic buildings. Using the most conservative values in the report, historic buildings may be damaged when a single vibration event exceeds 0.20 ppv or frequent vibration events exceed 0.13 ppv, whereas extremely fragile historic buildings may be damaged when a single vibration event exceeds 0.12 ppv or frequent vibration events exceed 0.08 ppv. [SCAG 2020].

SUBCHAPTER 3.7

SOLID AND HAZARDOUS WASTE

Regulatory Background

Solid Waste Management

Hazardous Waste Management

3.7 SOLID AND HAZARDOUS WASTE

The goal of the 2022 AQMP is to address the federal 2015 eight-hour ozone standard, to satisfy the planning requirements of the federal CAA by identifying ways to reduce emissions from existing emission sources and promoting the use of the cleanest available new emission sources and technologies. Several of the proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies may still need to be invented or made commercially available in order to achieve the necessary reductions to attain the 70 ppb ozone standard.

In particular, the 2022 AQMP is comprised of an assortment of control measures that are designed to accelerate the replacement of high-emitting mobile sources with low NOx and zero emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing and new commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

While the proposed control measures are intended to improve overall air quality in the region, direct or indirect impacts on solid and hazardous waste associated with their implementation may occur from the discarding of old equipment and vehicles. This subchapter describes the existing setting related to solid and hazardous waste within California and the South Coast AQMD's jurisdiction.

3.7.1 REGULATORY BACKGROUND

The regulatory background is divided into two sections: Solid Waste and Hazardous Waste.

3.7.1.1 Solid Waste

3.7.1.1.1 Federal

The U.S. EPA is the primary federal agency charged with protecting human health from pollution and with safeguarding the natural environment: air, water, and land. The U.S. EPA works to develop and enforce regulations that implement environmental laws enacted by Congress. The U.S. EPA is also responsible for researching and setting national standards for a variety of environmental programs, and delegates to states and tribes the responsibility for issuing permits and for monitoring and enforcing compliance. Since 1970, Congress has enacted numerous environmental laws including the Resource Conservation and Recovery Act (RCRA), CERCLA, and TSCA. 40 CFR Part 258, Subpart D of RCRA establishes criteria for the proper design and operation of municipal solid waste landfills and other solid waste disposal facilities. Because California laws and regulations governing the approval of solid waste landfills meet the requirements of Subpart D, the U.S. EPA delegated the enforcement responsibility to the State of California.

3.7.1.1.2 State

California Integrated Waste Management Act (AB 939): With regard to solid non-hazardous wastes, the California Integrated Waste Management Act of 1989 (AB 939), as amended, requires every City and County in the state to prepare a Source Reduction and Recycling Element (SRRE) with its Solid Waste Management Plan that identifies how each jurisdiction will meet the mandatory state waste diversion goals of 25 percent by the year 1995, and 50 percent by the year 2000. Senate Bill 2202 (SB 2202) mandates that jurisdictions continue 50 percent diversion on and after January 1, 2000. The purpose of AB 939 is to facilitate the reduction, recycling, and re-use of solid waste to the greatest extent possible. AB 939 has recognized that landfills and transformation facilities are necessary components of any integrated solid waste management system and an essential component of the waste management hierarchy. AB 939 establishes a hierarchy of waste management practices in the following order and priority: 1) source reduction; 2) recycling and composting; and 3) environmentally safe transformation/land disposal.

CalRecycle (formerly known as the California Integrated Waste Management Board (CIWMB)) has numerous responsibilities in implementing the federal and state regulations summarized above. CalRecycle is the state agency responsible for permitting, enforcing, and monitoring solid waste landfills, transfer stations, material recovery facilities (MRFs), and composting facilities within California. Permitted facilities are issued Solid Waste Facility Permits by CalRecycle. CalRecycle also certifies and appoints Local Enforcement Agencies, county or city agencies, which monitor and enforce compliance with the provisions of Solid Waste Facility Permits. CalRecycle is also responsible for monitoring implementation of AB 939 by the cities and counties. In addition to these responsibilities, CalRecycle also manages the Recycled-Content Materials Marketing Program to encourage the use of specific recycled-content products in road applications, public works projects, and landscaping. These products include recycled aggregate, tire-derived aggregate, rubberized asphalt concrete, and organic materials.

AB 939 requires that each County in the state of California prepare a Countywide Integrated Waste Management Plan (CIWMP). The CIWMP is a countywide planning document that describes the programs to be implemented in unincorporated and incorporated areas of the county that will effectively manage solid waste, and promote and implement the hierarchy of the CIWMB. The CIWMPs consists of a Summary Plan, a SRRE, a Household Hazardous Waste Element, a Non-Disposal Facility Element, and a Countywide Siting Element.

Title 14, California Code of Regulations, Division 7: CalRecycle regulations pertaining to nonhazardous waste management in California include minimum standards for solid waste handling and disposal; regulatory requirements for composting operations; standards for handling and disposal of asbestos containing waste; resource conservation programs; enforcement of solid waste standards and administration of Solid Waste Facility Permits; permitting of waste tire facilities and waste tire hauler registration; special waste standards; used oil recycling; electronic waste recovery and recycling; planning guidelines and procedures for preparing, revising, and amending CIWMP; and solid waste cleanup program.

Title 27, California Code of Regulations, Environmental Protection, Division 2, Solid Waste: CalRecycle and the SWRCB jointly issued regulations pertaining to waste disposal on land, including criteria for all waste management units, facilities, and disposal sites; documentation and reporting; enforcement, financial assurance; and special treatment, storage, and disposal units.

California Solid Waste Reuse and Recycling Act (AB 2176): In 1991, the California Solid Waste Reuse and Recycling Act was enacted to assist local jurisdictions in accomplishing the goals set for in AB 939. AB 2176 requires that any development projects that have submitted an application for a building permit must also include adequate and accessible areas for the collection and loading of recyclable materials.

Solid Waste Diversion Rule (AB 341): In 2011, AB 341, directed CalRecycle to develop and adopt regulations to mandate commercial recycling. In 2012, the final regulation was approved and a policy goal declared that not less than 75 percent of solid waste generated be source reduced, recycled, or composted by the year 2020.

Prohibition on Local Disposal Limits (AB 845): AB 845 was signed by Governor Brown on September 25, 2012, and prohibits an ordinance enacted by a city or county from otherwise restricting or limiting the importation of solid waste into a privately owned solid waste facility in that city or county based on place of origin.

Engineered Municipal Solid Waste (AB 1126): AB 1126 was signed in September 28, 2013, and defines the terms "engineered municipal solid waste (EMSW) conversion" and "EMSW facility." AB1126 stipulates that solid waste processed through an EMSW conversion facility would be considered disposal, and the energy generated by such a facility would not be considered renewable.

Reducing GHG Emissions in California (AB 32): As part of the California Global Warming Solutions Act of 2006, CARB was directed to adopt a Scoping Plan by 2009, which lays out initial measures needed to meet the 2020 target of reducing GHG emissions back to 1990 levels. The First Update to the Scoping Plan was released in 2014 stated that CARB and CalRecycle will work to eliminate landfill disposal of organic materials, a major source of GHG emissions primarily from methane produced from decomposing waste.

Organic State Laws (AB 1594, 1826, and 1045): On September 28, 2014, Governor Brown signed two bills into law that are intended to substantially reduce the amount of organic waste that is disposed in California landfills. AB 1594 states that for the purposes of complying with the waste diversion mandates of AB9 39, beginning January 1, 2020, the use of green waste will be considered disposal and not recycling. A jurisdiction must include information on how it intends to address compliance with the waste diversion mandates of AB 939, beginning August 1, 2018. Jurisdictions which are not able to comply with AB 939 will be required to identify and address barriers to recycling green material, if sufficient capacity at organics waste recycling facilities is not available. AB 1826 requires jurisdictions to implement an organic waste recycling program for businesses that would include outreach, education, and monitoring of affected businesses by January 1, 2016. AB1045 was adopted in 2015 and required CalEPA,

CalRecycle, the State Water Resources Control Board, CARB, and the Department of Food and Agriculture to develop and implement policies to aid in diverting organic waste from landfills with the goal of reducing at least five million MT of GHG emissions per year, primarily from a reduction in methane emissions.

Conversion Technology (SB 498): Governor Brown signed into law SB 498 on September 28, 2014, that requires 50 percent diversion of solid waste, of which 10 percent can come from transformation or biomass conversion. State law formerly limited "biomass conversion" to only the controlled combustion of organic materials, such as wood, lawn, and garden clippings, agricultural waste, leaves, tree pruning, and non-recyclable producing electricity or heat. SB 498 expanded the definition of biomass conversion to include non-combustion thermal conversion technologies. By doing so, SB 498 allows for the cleaner and more efficient non-combustion conversion technologies to be used to convert biomass into fuels and products in addition to heat and/or electricity.

3.7.1.1.3 Local

Each county is required to prepare and administer a CIWMP. The plan is comprised of the County's and cities' solid waste reduction planning documents, an Integrated Waste Management Summary Plan (Summary Plan), and a Countywide Siting Element. The CIWMP consists of the following components: waste characterization, source reduction, recycling, composting, solid waste facility capacity, education and public information, funding, special waste, and integration. The CIWMP also provides an estimate of the total permitted disposal capacity needed for a 15-year period if counties determine that their existing disposal capacity will be exhausted within 15 years or if additional capacity is desired. A Summary Plan is a solid waste planning document required by Public Resources Code Section 41751, in which counties or regional agencies provide an overview of significant waste management problems faced by the jurisdiction, along with specific steps to be taken independently and in concert with cities within their boundaries, to achieve the 50 percent waste diversion mandate.

Each city and county is required to prepare, adopt, and submit to CalRecycle a Household Hazardous Waste Element which identifies a program for the safe collection, recycling, treatment, and disposal of hazardous wastes that are generated by households. The Household Hazardous Waste Element specifies how household hazardous wastes generated within the jurisdiction must be collected, treated, and disposed. An adequate Household Hazardous Waste Element contains the following components: evaluation of alternatives, program selection, funding, implementation schedule, education and public information.

Each city and county is required to prepare, adopt, and submit to the CalRecycle, a Non-Disposal Facility Element which includes a description of new facilities and expansion of existing facilities, and all solid waste facility expansions (except disposal and transformation facilities) that recover for reuse at least five percent of the total volume.

The counties within the South Coast AQMD's jurisdiction have created CIWMP in accordance with AB 939. Below is a brief description of the recent updates to these plans by county.

Los Angeles County

The latest update to the Los Angeles County CIWMP was in 2014. AB 939 requires each county to prepare a county-wide siting element that describes how the county and the cities within the county plan to manage the disposal of their solid waste for a 15-year planning period. Los Angeles County revised its County Siting Element to:

- Remove two potential landfill sites: Elsmere and Blind Canyon Landfills;
- Include the proposed expansion of two in-County Class III landfills: Chiquita Canyon and Scholl Canyon Landfills, in order to increase landfill capacity within Los Angeles County;
- Update the goals and policies to be more aligned with a new solid waste management paradigm, to enhance the comprehensiveness of Los Angeles County's solid waste management system, and to incorporate current and upcoming solid waste management processes and technologies;
- Promote development of alternatives to landfilling, such as conversion technologies, on a county-wide basis; and
- Promote development and use of infrastructure to transport solid waste to out-of-county landfills, such as Mesquite Regional Landfill.

Los Angeles County's 2020 Annual Report provides an update to the countywide Siting Element and the Summary Plan. Information included in the annual report assesses remaining permitted capacity for the mandated 15-year planning horizon, and outlines disposal capacity scenarios, capacity to meet future demand through the use of alternative technologies, and out-of-county disposal facilities. The Annual Report outlines county solid waste management challenges and potential solutions to those challenges.[133]

Orange County

Orange County completed the first review of its CIWMP in April 2003. It found sufficient disposal capacity for the 15-year planning horizon, but identified other challenges, including the lack of an operational materials recovery facility in the southern portion of the county, changes in records management to comply with the Disposal Recovery System, and determination of accurate base year data. The 2007 Strategic Plan Update for this planning project summarized progress to maximize capacity at existing landfills, assess alternative technologies and potential out-of-county disposal sites, and expand the Frank R. Bowerman and Olinda Alpha landfills.

[133] Los Angeles Countywide Integrated Waste Management Plan, 2020 Annual Report. Available at: https://pw.lacounty.gov/epd/swims/ShowDoc.aspx?id=16230&hp=yes&type=PDF

The Orange County Waste and Recycling Department prepared a 2021 Annual Report to evaluate the status of its waste management system. The report indicates that Orange County has three existing landfills: Olinda Alpha, Frank R. Bowerman, and Prima Deshecha. All three of these landfills are permitted and expected to accept waste through the year 2102.[134]

Riverside County

Riverside County's CIWMP was approved in 1996, and a comprehensive revision was completed in 2013 with the incorporation of the cities of Eastvale, Menifee, Jurupa Valley, and Wildomar. The Non-Disposal Facility Element, updated in July 2015, also includes an additional proposed solid waste material recovery facility with capacity for household hazardous waste disposal and one composting facility. A review of Riverside County's CIWMP and its elements, including the Countywide Summary Plan, Countywide Siting Element, Source Reduction and Recycling Element, Household Hazardous Waste Element, and Non-Disposal Facility Element were completed in 2018. The 2018 Five Year Review Report for the CIWMP concluded that the overall framework of the CIWMP is still applicable and the goals, objectives, policies, waste management infrastructure, funding sources, and responsible administrative organization units noted throughout the CIWMP are still accurately described and that a revision of the CIWMP is not warranted because Riverside County has sufficient disposal capacity for 19 years.[135]

San Bernardino County

San Bernardino County updated its CIWMP in 2018, which included revisions to the unincorporated Non-Disposal Facility Element, the Countywide Siting Element and the Summary Plan. The Non-Disposal Facility Element was updated to remove facilities which have been closed and add facilities that have been identified as either planned or active since the previous update. The Countywide Siting Element was updated to reflect the reduction of active landfills from 17 to five, which included Barstow and Victorville Landfills (servicing the North Desert Region), the Mid-Valley and San Timoteo landfills (servicing the Valley Region), the Landers Landfill (servicing the East Desert Region). The remaining region within the county, the Mountain areas, are serviced locally by transfer stations, from which the waste is hauled to the San Timoteo, Mid-Valley or Barstow Landfills. The Colton Landfill remains permitted but it is currently inactive. In addition to the County-owned and operated landfills, the City of Redlands' landfill (California Street Landfill) services that city exclusively. There are also a number of other disposal facilities that serve the needs of a specific industry or waste type, such as construction/demolition material and Engineered Municipal Solid Waste. The 2018 update to the CIWMP did not include revisions to the Source Reduction and Recycling Element or the Household Hazardous Waste Element of any County jurisdiction including the unincorporated area.[136]

[134] OC Waste & Recycling, 2021 Annual Report. Available at: https://oclandfills.com/sites/ocwr/files/2022-04/OCWR_AR_2021_PDF.pdf
[135] Riverside County Department of Waste Resources, County Integrated Waste Management Plan. Available at: https://www.rcwaste.org/business/planning/ciwmp
[136] County of San Bernardino, Countywide Summary Plan, Countywide Integrated Waste Management Plan, April 2018. Available at: https://www.sbcounty.gov/uploads/DPW/docs/Countywide-Summary-Plan.pdf

Regional Water Quality Control Boards (RWQCB)

New or expanded landfills must submit Reports of Waste Discharge to RWQCBs prior to landfill operations. In conjunction with the CIWMB approval of Solid Waste Facility Permits, RWQCBs issue Waste Discharge Orders which regulate the liner, leachate control and removal, and groundwater monitoring systems at Class III landfills.

South Coast Air Quality Management District

The South Coast AQMD regulates emissions from landfills. Landfill owners/operators must obtain permits to construct and operate landfill flares, cogeneration facilities or other facilities used to handle landfill gas. Owner/operators also are subject to the provisions of South Coast AQMD Rule 1150.1 – Control of Gaseous Emissions from Landfills. Rule 1150.1 requires the submittal of a compliance plan for implementation of a landfill gas control system, periodic ambient monitoring of surface emissions, and the installation of probes to detect the lateral migration of landfill gas.

3.7.1.2 Hazardous Waste

3.7.1.2.1 Federal

Hazardous material, as defined in 40 CFR Part 261.20 and 22 CCR Article 9, is required to be disposed of in Class I landfills. California has enacted strict legislation for regulating Class I landfills. The California Health and Safety Code requires Class I landfills to be equipped with liners, a leachate collection and removal system, and a ground water monitoring system.

The Hazardous Materials Transportation Act (HMTA) is the federal legislation regulating the trucks that transport hazardous wastes. The primary regulatory authorities are the U.S. Department of Transportation (DOT), the Federal Highway Administration (FHWA), and the Federal Railroad Administration (FRA). The HMTA requires that carriers report accidental releases of hazardous materials to the Department of Transportation at the earliest practicable moment (49 CFR Part 171, Subpart C).

The Resource Conservation and Recovery Act (RCRA) gives the U.S. EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste by "large-quantity generators" (1,000 kilograms per month or more). Under RCRA regulations, hazardous wastes must be tracked from the time of generation to the point of disposal. At a minimum, each generator of hazardous waste must register and obtain a hazardous waste activity identification number. If hazardous wastes are stored for more than 90 days or treated or disposed at a facility, any treatment, storage, or disposal unit must be permitted under RCRA. Additionally, all hazardous waste transporters are required to be permitted and must have an identification number. RCRA allows individual states to develop their own program for the regulation of hazardous waste as long as it is at least as stringent as RCRA. In California, the U.S. EPA has delegated RCRA enforcement to the State of California.

3.7.1.2.2 State

Authority for the statewide administration and enforcement of RCRA rests with the California Environmental Protection Agency's (Cal/EPA) Department of Toxic Substances Control (DTSC). While the DTSC has primary State responsibility in regulating the generation, transfer, storage and disposal of hazardous materials, DTSC may further delegate enforcement authority to local jurisdictions. In addition, the DTSC is responsible and/or provides oversight for contamination cleanup, and administers state-wide hazardous waste reduction programs. DTSC operates programs to accomplish the following: 1) deal with the aftermath of improper hazardous waste management by overseeing site cleanups; 2) prevent releases of hazardous waste by ensuring that those who generate, handle, transport, store, and dispose of wastes do so properly; and 3) evaluate soil, water, and air samples taken at sites. The DTSC conducts annual inspections of hazardous waste facilities. Other inspections can occur on an as-needed basis.

California Department of Transportation (Caltrans) sets standards for trucks transporting hazardous wastes in California. The regulations are enforced by the California Highway Patrol (CHP). Trucks transporting hazardous wastes are required to maintain a hazardous waste manifest. The manifest is required to describe the contents of the material within the truck so that wastes can readily be identified in the event of a spill.

The storage of hazardous materials in Underground Storage Tanks (USTs) is regulated by Cal/EPA's State Water Resources Control Board (SWRCB), which has delegated authority to the RWQCB and, typically at the local level, to the local fire department.

The Hazardous Waste Control Act (HWCA) created the State hazardous waste management program, which is similar to but more stringent than the federal RCRA program. The act is implemented by regulations contained in Title 26 of the CCR, which describes the following required aspects for the proper management of hazardous waste: identification and classification; generation and transportation; design and permitting of recycling, treatment, storage, and disposal facilities; treatment standards; operation of facilities and staff training; and closure of facilities and liability requirements. These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of such waste. Under the HWCA and Title 26, the generator of hazardous waste must complete a manifest that accompanies the waste from generator to transporter to the ultimate disposal location. Copies of the manifest must be filed with DTSC.

The Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program) required the administrative consolidation of six hazardous materials and waste programs (Program Elements) under one agency: a Certified Unified Program Agency (CUPA). The Program Elements consolidated under the Unified Program are: Hazardous Waste Generator and On-site Hazardous Waste Treatment Programs (also referred to as Tiered Permitting); Aboveground Petroleum Storage Tank Spill Prevention Control and Countermeasure Plan (SPCC); Hazardous Materials Release Response Plans and Inventory Program (also referred to as Hazardous Materials ARP); Underground Storage Tank (UST) Program; and Uniform Fire Code Plans and Inventory Requirements. The Unified Program is intended to provide relief to businesses complying with the overlapping and sometimes

conflicting requirements of formerly independently managed programs. The Unified Program is implemented at the local government level by CUPAs. Most CUPAs have been established as a function of a local environmental health or fire department. Some CUPAs have contractual agreements with another local agency, a participating agency, which implements one or more Program Elements in coordination with the CUPA.

The Hazardous Waste Source Reduction and Management Review Act of 1989 required generators of 12,000 kilograms per year of typical/operational hazardous waste to conduct an evaluation of their waste streams every four years and to select and implement viable source reduction alternatives. This Act does not apply to non-typical hazardous waste (such as asbestos and polychlorinated biphenyls).

3.7.1.2.3 Local

Fire Departments and other agencies in South Coast AQMD's jurisdiction have a variety of local laws that regulate reporting, storage, and handling of hazardous materials and wastes.

3.7.2 SOLID WASTE MANAGEMENT

Permit requirements, capacity, and surrounding land use are three of the dominant factors limiting the operations and life of landfills. Landfills are permitted by the local enforcement agencies with concurrence from CalRecycle. Local agencies establish the maximum amount of solid waste which can be received by a landfill each day and the operational life of a landfill. Landfills are operated by both public and private entities. Landfills in South Coast AQMD's jurisdiction are also subject to requirements of the South Coast AQMD as they pertain to gas collection systems, dust, and nuisance impacts.

Landfills throughout the region typically operate between five and seven days per week. Landfill operators weigh arriving and departing deliveries to determine the quantity of solid waste delivered. At landfills that do not have scales, the landfill operator estimates the quantity of solid waste delivered (e.g., using aerial photography). Landfill disposal fees are determined by local agencies based on the quantity and type of waste delivered.

Table 3.7-1 shows data from CalRecycle regarding the number of tons disposed in 2019 (the most recent year for which information is available), for each county within South Coast AQMD's jurisdiction. It should be noted that data presented in this subchapter on solid waste is for the entire county and not limited to only the portion of the Riverside and San Bernardino Counties within the South Coast AQMD jurisdiction. Due to increased recycling and waste reduction initiatives (e.g., AB939), solid waste disposal within California has declined in recent years. The total amount of solid waste disposed of by all counties located within South Coast AQMD's jurisdiction was 17,940,625 tons in 2019.

TABLE 3.7-1
Solid Waste Disposed in 2019 by County

County	Total Solid Waste Disposed in 2019 (tons)
Los Angeles	6,024,474
Orange	5,086,557
Riverside(1)	4,883,157
San Bernardino(1)	1,946,437
Total	**17,940,625**

Source: CalRecycle Disposal Reporting System, Available at: *https://www.calrecycle.ca.gov/lgcentral/drs.*
(1) Data presented is for the entire county and not limited to the portion of the county within the South Coast AQMD jurisdiction.

Since the enactment of AB 939 in 1989, local governments have implemented recycling programs on a widespread basis, making efforts to meet the 25 percent and 50 percent diversion mandates of AB 939. CalRecycle reports that the per-capita disposal rate per California resident is 6.7 pounds per day with a recycling rate of 37 percent.[137]

A total of 28 Class III active landfills and one waste incinerator (referred to as a transformation facility)[138] are located within the South Coast AQMD's jurisdiction with a total capacity of 100,332 tons per day and 2,240 tons per day, respectively (see Tables 3.7-2 and 3.7-3). For a discussion of the various landfills operating within each county South Coast AQMD's jurisdiction, see the following Subsections 3.7.2.1 through 3.7.2.4. In addition, Tables 3.7-4 through 3.7-9 present the statistical data for these landfills.

TABLE 3.7-2
Number of Class III Landfills Located within the South Coast AQMD's Jurisdiction and Related Landfill Capacity

County	Number of Landfills	Permitted Capacity (tons per day)
Los Angeles	10	38,249
Orange	3	23,500
Riverside(1)	6	22,314
San Bernardino(1)	9	16,269
Total	**28**	**100,332**

Source: CalRecycle Solid Waste Information System *SWIS) Search. Available at: https://www2.calrecycle.ca.gov/SolidWaste/
(1) Data presented is for the entire county and not limited to the portion of the county within the South Coast AQMD jurisdiction.

[137] CalRecycle, California's 2019 per Capita Disposal Rate Estimate. Available at: https://calrecycle.ca.gov/lgcentral/goalmeasure/disposalrate/mostrecent/
[138] Waste transformation means incineration of solid waste with or without producing heat or electricity.

TABLE 3.7-3
Waste Transformation Facilities within the South Coast AQMD's Jurisdiction and Related Permitted Capacity

Facility	County	Permitted Capacity (tons per day)
Commerce Refuse-to-Energy Facility	Los Angeles	Closed
Southeast Resource Recovery Facility	Los Angeles	2,240
Total	**-**	**2,240**

Source: Los Angeles County 2020, *Countywide Integrated Waste Management Plan 2019 Annual Report*

3.7.2.1 Los Angeles County

The Los Angeles Countywide Siting Element addresses landfill disposal. The purpose of the Countywide Siting Element is to provide a planning mechanism to address the solid waste disposal capacity needed by the 88 cities in Los Angeles County and the unincorporated communities for each year of the 15-year planning period through a combination of existing facilities, expansion of existing facilities, planned facilities, and other strategies.

In 2019, residents and businesses in Los Angeles County disposed of approximately 11 million tons of solid waste at Class III landfills and transformation facilities, with an average disposal rate of 35,159 tons per day (see Tables 3.7-4). In addition, the amount of inert waste disposed at the permitted inert waste landfill totaled 266,452 tons. [LACDPW 2020].

TABLE 3.7-4
Waste Disposal for Los Angeles County in 2019

Disposal Facility Type	Volume Disposed in 2019 (tons)[(1)]	Average Daily Volume Disposed in 2019 (tons/day)[(2)]
In-County Class III Landfills	5,349,231	17,145
Transformation Facilities	384,097	1,231
Exports to Out-of-County Landfills	1,969,741	15,929
Subtotal Disposed	**10,703,070**	**34,305**
Permitted Inert Waste Landfills	266,452	854
Grand Total	**10,969,522**	**35,159**

Sources:
[1] Los Angeles County 2020, Countywide Integrated Waste Management Plan 2019 Annual Report
[2] Los Angeles County Department of Public Works 2020, Countywide Integrated Waste Management Plan 2019 Annual Report

Table 3.7-5 summarizes the lifespan and daily disposal of individual Los Angeles County landfills. According to the Los Angeles County Department of Public Works (LACDWP), the total remaining permitted Class III landfill capacity in Los Angeles County is estimated at 148.40 million tons. As of 2019, Azusa Land Reclamation is the only permitted Inert Waste

Landfill in Los Angeles County that has a full solid waste facility permit and its remaining capacity is estimated at 58.84 million tons, or 47.07 million cubic yards. [LADWP 2020].

TABLE 3.7-5
Status of Landfills in Los Angeles County

Solid Waste Facilities	2019 Average Tons per Day	Permitted Tons/Day	Remaining Permitted Capacity (million tons)	Estimated Remaining Life (years)
Class III Landfills:				
Antelope Valley	2,113	3,600	10.97	10
Burbank	123	240	2.66	34
Calabasas	1,946	3,500	4.32	10
Chiquita Canyon	5,525	12,000	56.99	28
Lancaster	363	3,000	9.95	22
Pebbly Beach (Avalon)	12	49	0.051	9
San Clemente Island	4	9.6	0.019	20
Scholl Canyon	1,527	3,400	3.83	11
Sunshine Canyon	6,387	12,100	55.16	18
Whittier (Savage Canyon)	297	350	4.45	36
Subtotal	**18,297**	**38,249**	**148.40**	**N/A**
Transformation Facilities:				
Commerce Refuse-to-Energy Facility	--	--	--	Closed
Southeast Resource Recovery Facility	1,235	2,240	--	N/A
Permitted Inert Landfills				
Azusa	1,038	8,000	58.84	N/A

Source: Los Angeles County, 2020. County Integrated Waste Management Plan 2019 Annual Report. Available at: https://pw.lacounty.gov/epd/swims/ShowDoc.aspx?id=14372&hp=yes&type=PDF

Over the last decade, Los Angeles County has encouraged waste diversion and recycling activities at landfills located in unincorporated areas through the land use permit process. The permit process includes a Waste Plan Conformance Agreement, which requires a landfill operator to implement waste diversion and recycling programs as well as other activities, both on- and off-site to assist individual jurisdictions within Los Angeles County with achieving the diversion mandate of AB 939. In addition, the Waste Plan Conformance Agreement contains provisions to encourage and assist residents with properly disposing their waste. The active Class III landfills have a Waste Plan Conformance Agreement with Los Angeles County include

Chiquita Canyon, Lancaster, and Sunshine Canyon City/County Landfills. Together, these landfills handle over 70 percent of in-County Class III waste. [LACDWP 2020].

There are 42 permitted Large Volume Transfer/Processing and Direct Transfer Facilities, which can receive 100 tons of waste or more per operating day, and numerous facilities of smaller volume operating within Los Angeles County. A transfer station/processing facility refers to a facility which receives, handles, separates, converts, or otherwise processes solid waste. Transfer stations typically transfer solid waste directly from one container to another or from one vehicle to another for transport, or temporarily store solid waste prior to final disposal at CalRecycle-permitted landfills or transformation facilities. MRFs refer to intermediate processing facilities designed to remove recyclables and other valuable materials from the waste stream.

Los Angeles County has 23 operational Composting/Chipping and Grinding Facilities which are permitted to receive six tons of waste or more per operating day, and numerous composting/chipping and grinding facilities of a smaller volume. A composting facility refers to a facility that processes organic materials such as green waste, manure, food waste, and other organics. The organics are transformed through controlled biological decomposition and sold as an end product, usually in the form of home or farm soil amendments. A chipping and grinding facility refers to a facility that separates, grades, and resizes woody green waste or used lumber to be sent to a composting facility, used at a landfill for Alternative Daily Cover (ADC) or to be sent to miscellaneous end markets for reuse such as feedstock at biomass to energy plants.

Currently there are three anaerobic digestion facilities operating within Los Angeles County. An anaerobic digestion facility refers to a facility that biologically decomposes organic matter with little or no oxygen in a fully enclosed structure (in-vessel digestion) to produce biogas, liquid fertilizer, and compost.

The exact date when the capacity of each landfill operating within Los Angeles County will be exceeded is based on a number of issues, including the ability to transport waste to other facilities located outside of the Los Angeles County, the ability to modify existing permits, and the ability to increase ongoing waste diversion and recycling activities, among others. Current projections indicate that the landfill capacity in Los Angeles County is expected to be exceeded by 2032. Reliance on existing permitted in-county landfill capacity alone is insufficient in meeting Los Angeles County's long-term disposal needs. [LACDPW 2020].

LACDPW has reviewed the ability of Los Angeles County to meet daily disposal demands under different scenarios (e.g., landfill expansions, alternative technologies, waste-by-rail systems, and reduction/recycling). Under some of the scenarios, Los Angeles County will have a difficult time meeting future disposal demands. In order to ensure disposal capacity is sufficient to meet the local needs, jurisdictions within Los Angeles County must continue to pursue all of the following strategies: 1) maximize waste reduction and recycling; 2) study, promote and develop alternative technologies; 3) expand transfer and processing infrastructure; 4) expand transfer and processing infrastructure; and 5) consider out-of-county disposal options, including but not limited to, transporting waste-by-rail. [LACDPW 2020].

3.7.2.2 Orange County

Orange County currently has three active Class III landfills, Frank R. Bowerman, Olinda Alpha, and Prima Deshecha, which have accepted more than five million tons of solid waste in 2019 and provided disposal services for 3.1 million residents and thousands of businesses across 34 cities. The Frank R. Bowerman Landfill has a maximum capacity of 11,500 tons per day, and an expected closure date of 2053. The Olinda Alpha Landfill has a permitted capacity of 8,000 tons per day and has a permit expiration date of 2036 The Prima Deshecha Landfill has a permitted capacity of 4,000 tons per day, and an expected closure date of 2102 (see Table 3.7-6).

TABLE 3.7-6
Status of Landfills in Orange County

Landfill	Total Tons Disposed 2019(1)	Permitted Tons/Day(2)	Remaining Permitted Capacity (million cubic yards)(2)	Estimated Year of Closure(2)
Frank R. Bowerman	2,461,429	11,500	205.0	2053
Olinda Alpha	2,077,907	8,000	17.5	2036
Prima Deshecha	547,221	4,000	134.3	2102
Total	**5,086,557**	**23,500**	**356.8**	**N/A**

1. *CalRecycle Disposal Reporting System (DRS) - https://www.calrecycle.ca.gov/lgcentral/drs*
2. *CalRecycle Solid Waste Information System (SWIS) Search - https://www2.calrecycle.ca.gov/SolidWaste/*

Orange County cities and unincorporated areas have completed, adopted, and implemented a Countywide Integrated Waste Management Plan. Orange County cities and unincorporated areas have residential curbside recycling programs in place. The three existing landfills are expected to provide sufficient capacity to serve Orange County for at least 50 additional years. [OC Waste & Recycling 2021].

CalRecycle reports that there are four active, permitted composting facilities in Orange County including: 1) Golden Rain Foundation Composting Operation in Laguna Hills (maximum permit throughput of 10,000 cubic yards per year); 2) Rancho Mission Viejo Compost Facility in San Juan Capistrano (maximum permitted throughput of 35,000 tons per year); 3) Serrano Creek Ranch Composting Operation in Lake Forest (maximum permitted throughput of 2,550 tons per year); and 4) OC Produce – Agricultural Composing Operation in Seal Beach (maximum throughput of 300,000 cubic yards per year). [CalRecycle 2022].[139]

3.7.2.3 Riverside County

Riverside County has six active Class III landfills located within the unincorporated area of the county: Badlands, Blythe, Desert Center, El Sobrante, Lamb Canyon, Mecca II and Oasis, which have a combined total permitted capacity of 27,114 tons per day. Currently, the six Class III landfills have closure dates projected from 2032 (Lamb Canyon) to 2107 (Desert Center). The

[139] CalRecycle Solid Waste Information System (SWIS) Search - https://www2.calrecycle.ca.gov/SolidWaste/

projected date of closure for each landfill is tentative and could be affected by engineering, environmental, and waste flow issues as well as future expansion (see Table 3.7-7). There are no reported composting facilities in Riverside County.

TABLE 3.7-7
Status of Landfills in Riverside County

Landfill	Total Tons Disposed 2019(1)	Permitted Tons/Day(2)	Remaining Permitted Capacity (million cubic yards)(2)	Estimated Year of Closure(2)
Badlands	885,712	4,800	7.8	2026
Blythe	27,750	400	3.83	2047
Desert Center	44	60	0.13	2107
El Sobrante	3,387,897	16,054	143.98	2051
Lamb Canyon	580,671	5,000	19.24	2032
Mecca II	1	400	0.43	2055
Oasis	1,082	400	0.0064	2098
Total	**4,883,157**	**27,114**	**183.37**	**N/A**

1. CalRecycle Disposal Reporting System (DRS) - *https://www.calrecycle.ca.gov/lgcentral/drs*
2. CalRecycle Solid Waste Information System (SWIS) Search - *https://www2.calrecycle.ca.gov/SolidWaste/*

3.7.2.4 San Bernardino County

San Bernardino County has nine active Class III landfills within its boundaries which are operated and managed by its Solid Waste Management Division. The landfills have a combined permitted capacity of 16,269 tons per day with projected closure dates ranging from 2034 (Mitsubishi Cement Plant Cushenbury) to 2071 for Barstow and 2405[140] (Fort Irwin) (see Table 3.7-8).

CalRecycle reports that there are six active, permitted composting facilities in San Bernardino County including: 1) Victor Valley Regional Composting Facility in Victorville (maximum permit throughput of 270,00 cubic yards per year); 2) Fort Irwin Composting Facility in Fort Irwin (maximum permitted throughput of 6,799 tons per year); 3) Inland Empire Regional Compositing Facility in Rancho Cucamonga (maximum permitted throughput of 150,000 tons per year); 4) Nursery Products Hawes Composting in Hinkley (maximum permitted capacity of one million cubic yards); 5) Red Star Plant Foods Composting Site in Chino (maximum permitted capacity of 150,000 cubic yards per year); and 6) Agromin OC Ontario Green Material Composting in Ontario (maximum capacity of 63,000 tons per year). [CalRecycle 2022].[141]

[140] Year 2405 is what is publicly reported. At the time of publication, the facility has not responded to a request to confirm.
[141] CalRecycle Solid Waste Information System (SWIS) Search - https://www2.calrecycle.ca.gov/SolidWaste/

TABLE 3.7-8
Status of Landfills in San Bernardino County

Landfill	Total Tons Disposed 2019[(1)]	Permitted Tons/Day[(2)]	Remaining Permitted Capacity (million cubic yards)[(2)]	Estimated Year of Closure[(2)]
Barstow	74,069	1,500	71.48	2071
California Street	51,740	829	5.17	2042
Fort Irwin	7,930	100	18.94	2405 [(3)]
Landers	57,438	1,200	11.15	2072
Mid-Valley	1,134,110	7,500	61.22	2045
Mitsubishi Cement Plant Cushenbury	327	40	0.22	2034
San Timoteo	275,425	2,000	12.36	2039
USMC – 29 Palms	6,949	100	7.56	2066
Victorville	338,449	3,000	79.40	2047
Total	**1,946,437**	**16,269**	**267.50**	**N/A**

1. CalRecycle Disposal Reporting System (DRS) - *https://www.calrecycle.ca.gov/lgcentral/drs*
2. CalRecycle Solid Waste Information System (SWIS) Search - *https://www2.calrecycle.ca.gov/SolidWaste/*
3. Year 2405 is what is publicly reported. At the time of publication, the facility has not responded to a request to confirm.

3.7.2.5 Transfer Stations

Transfer stations accept various types of waste including general refuse, and wood and green wastes. These facilities collect materials that is usually separated out and transferred to another location to be recycled or landfilled. There are an estimated 282 active transfer facilities in the four counties that comprise the South Coast Air Basin with: 141 in Los Angeles County; 56 in Orange County; 49 in Riverside County; and 36 in San Bernardino County. [SCAG 2020].

3.7.3 HAZARDOUS WASTE MANAGEMENT

Hazardous material, as defined in 40 CFR Part 261.20 and 22 CCR Article 9, is required to be disposed in Class I landfills. California has enacted strict legislation for regulating Class I landfills. The California Health and Safety Code requires Class I landfills to be equipped with liners, a leachate collection and removal system, and a ground water monitoring system.

There are no hazardous waste disposal sites within the jurisdiction of the South Coast AQMD. Hazardous waste generated at area facilities, which is not reused on-site, or recycled off-site, is disposed of at a licensed in-state hazardous waste disposal facility. Two such facilities in California are the Chemical Waste Management, Inc. (CWMI) Kettleman Hills facility in King's County, and the Clean Harbors Buttonwillow LLC facility in Buttonwillow (Kern County).

The CWMI Kettleman Hills facility is currently permitted as three active landfills (MSW Unit B-19 – ID No. 16-AA-0021, Unit B-17 – ID No. 16-AA-0027, and Unit B18 Nonhaz Codisposal – ID No. 16-AA-0023) spanning over 1,600 acres. MSW Unit B-19 is designated as a Class II/III

landfill, which spans 29 acres, has a maximum permit capacity of 4,200,000 cubic yards, and is permitted to receive sludge, industrial, dead animals, mixed municipal and other designated wastes.[142] Unit B-17 is designated as a Class II/III landfill which spans 62 acres, has a maximum permit capacity of 18,400,000 cubic yards, and is permitted to receive tires, mixed municipal, industrial, contaminated soil, construction/demolition, ash, and other designated wastes.[143] Unit B18 Nonhaz Codisposal is designated as Class I landfill spanning 555 acres, has a maximum permit capacity of 10,700,000 cubic yards, and is permitted to receive industrial and contaminated soil wastes.[144] The CWMI Kettleman Hills facility is not permitted to accept biological agents or infectious wastes, Class 1 explosives, compressed gas cylinders, and regulated radioactive wastes (unless authorized for disposal by law).[145]

The Clean Harbors Buttonwillow LLC (ID No. 15-AA-0257) facility is designated as a Class I landfill spanning 320 acres, has a maximum permit capacity of 13,250,000 cubic yards with a maximum throughput of 10,500 tons per day, and is permitted to receive industrial, contaminated soil, other hazardous, and other designated wastes. This landfill is estimated to continue operations until at least 2040.[146]

Hazardous waste also can be transported to permitted disposal facilities located outside of California. The nearest out-of-state landfills are U.S. Ecology Nevada, Inc., located in Beatty, Nevada; Clean Harbors Grassy Mountain located in Knolls, Utah; U.S. Ecology Idaho, in Grandview, Idaho; Chemical Waste Management Inc. in Sulphur, Louisiana, and Waste Control Specialists in Andrews, Texas. U.S. Ecology Nevada, Inc. is currently receiving hazardous and non-hazardous waste, and is in the process of constructing a new landfill trench (Trench 13) to increase its capacity. Trench 13 will be constructed in five phases, covering 47.3 acres with a capacity of 8,600,000 cubic yards. Construction Phase A was completed in 2017 and the landfill is now accepting polychlorinated biphenyls (PCBs), hazardous, and non-hazardous wastes. Construction Phase B started in September 2020 and was anticipated to begin operations in 2021.[147] Waste from California can be incinerated at Laidlaw Environmental Services, Inc., located in Deer Park, Texas.

In 2018, approximately 0.97 million ton of hazardous waste was generated in the four counties within South Coast AQMD's jurisdiction and approximately 1.84 million tons of hazardous waste was generated in California (see Table 3.7-9). The amount of hazardous waste generated within South Coast AQMD's jurisdiction as well as the state has decreased from the hazardous waste totals generated in 2013 by approximately 39 and 46 percent, respectively. The most common types of hazardous waste generated within South Coast AQMD's jurisdiction include inorganic solid waste, waste oil and mixed oil, contaminated soils from site clean-up, organic solids, and unspecified oil-containing wastes. Because of the population and economic base in

[142] CalRecycle, Solid Waste Information System (SWIS). Available at https://www2.calrecycle.ca.gov/SolidWaste/Site/Summary/912
[143] CalRecycle, SWIS. Available at: https://www2.calrecycle.ca.gov/SolidWaste/Site/Summary/4563
[144] CalRecycle, SWIS. Available at: https://www2.calrecycle.ca.gov/SolidWaste/Site/Summary/914
[145] CWM,Inc. Kettleman Hills Brochure. Available at: https://www.wmsolutions.com/pdf/brochures/CWM_Kettleman_Hills_Brochure.pdf
[146] CalRecycle, SWIS. Available at: https://www2.calrecycle.ca.gov/SolidWaste/Site/Summary/733
[147] US Ecology Nevada, Inc. RCRA Permit, February 2021. Available at: https://www.usecology.com/system/files/2021-07/Permit-%20RCRA%20entire%2C%20Rev%20%206%2C%20Feb%202021.pdf

southern California, a large portion of California's hazardous waste is generated within South Coast AQMD's jurisdiction. Not all wastes are disposed of in a hazardous waste facility or incinerator. Many of the wastes generated, including waste oil, are recycled within South Coast AQMD's jurisdiction.

TABLE 3.7-9
Hazardous Waste Generation in the Basin – 2018
(by county) (tons per year)

Los Angeles	Orange	Riverside	San Bernardino	4-County Total	Statewide Total
480,863	395,699	18,273	73,398	968,234	1,835,048

Source: DTSC, 2018 Hazardous Waste Tracking System. Total Yearly Tonnage by Waste Code Report. Data presented is for county totals and is not limited to the portion of the county within South Coast AQMD jurisdiction.

CHAPTER 4

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.1 INTRODUCTION

The CEQA Guidelines require environmental documents to identify significant environmental effects that may result from a proposed project. [CEQA Guidelines Section 15126.2(a)]. Direct and indirect significant effects of a project on the environment should be identified and described, with consideration given to both short- and long-term impacts. The discussion of environmental impacts may include, but is not limited to, the resources involved; physical changes; alterations of ecological systems; health and safety impacts caused by physical changes; and other aspects of the resources involved including water, scenic quality, and public services. If significant adverse environmental impacts are identified, the CEQA Guidelines require a discussion of measures that could either avoid or substantially reduce any adverse environmental impacts to the greatest extent feasible. [CEQA Guidelines Section 15126.4].

The categories of environmental impacts to be studied in a CEQA document are established by CEQA (Public Resources Code Section 21000 et seq.) and the CEQA Guidelines (codified in Title 14 California Code of Regulations Section 15000 et seq). Under the CEQA Guidelines Appendix G: Environmental Checklist Form, there are 20 environmental topic areas categories in which potential adverse impacts from a project are evaluated. The South Coast AQMD, as lead agency, has taken into consideration the environmental checklist questions in Appendix G, but has reorganized the contents to consolidate the environmental topic areas to avoid repetition. For example, South Coast AQMD's customized the environmental checklist by: 1) combining the topics of "air quality" and "greenhouse gas emissions" into one section; 2) combining the topics of "cultural resources" and "tribal cultural resources" into one section; 3) separating the "hazards and hazardous materials" topic into two sections: "hazards and hazardous materials" and "solid and hazardous waste;" and 4) distributing the questions from the topic of "utilities/service systems" into other more specific environmental areas such as "energy," "hydrology and water quality," and "solid and hazardous waste." For each environmental topic area, per CEQA Guidelines Section 15064.7(a), "[a] threshold of significance is an identifiable quantitative, qualitative, or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant." The South Coast AQMD has developed unique thresholds of significance for the determination of significance in accordance with CEQA Guidelines Section 15064.7(b). They are located in the respective significance criteria sections of the subchapters in this Program EIR which are dedicated air quality and greenhouse gas emissions, energy, hazards and hazardous materials, hydrology and water quality, noise, and solid and hazardous waste.

The CEQA Guidelines indicate that the degree of specificity required in a CEQA document depends on the type of project being proposed. [CEQA Guidelines Section 15146]. The detail of the environmental analysis for certain types of projects cannot be as great as for others. For example, an EIR for a project, such as the adoption or amendment of a comprehensive zoning ordinance or a local general plan, should focus on the secondary effects that can be expected to subsequently occur as a result of the adoption or amendment, but the analysis need not be as detailed as the analysis of any specific construction project(s) that may also occur.

The CEQA Guidelines also includes provisions for the preparation of Program EIRs in connection with the issuance of plans, such as the 2022 AQMP, to govern the conduct of a continuing program, including adoptions of broad policy programs as distinguished from those

prepared for specific types of projects such as land use projects, for example. [CEQA Guidelines Section 15168]. A Program EIR also allows for the consideration of broad policy alternatives and program-wide mitigation measures at an early time when an agency has greater flexibility to deal with basic problems or cumulative impacts. [CEQA Guidelines Section 15168 (b)(4)]. Lastly, a Program EIR also plays an important role in establishing a structure within which a CEQA review of future related actions can be effectively conducted. A Program EIR, by design, provides the basis for future environmental analyses and will allow future project-specific CEQA documents, if necessary, to focus solely on the new effects or detailed environmental issues not previously considered. If an agency finds that no new effects could occur, or no new mitigation measures would be required, the agency can approve the activity as being within the scope of the project covered by the Program EIR and no new environmental document would be required. [CEQA Guidelines Section 15168(c)(2)].

The concept of covering broad policies in a Program EIR and incorporating the information contained therein by reference into subsequent CEQA documents for specific projects, such as individual rule development activities to implement individual control measures in the 2022 AQMP, is known as "tiering." [CEQA Guidelines Section 15152]. An additional analysis could include the preparation of a project-level EIR or subsequent EIR which tiers off this Program EIR for the 2022 AQMP. [CEQA Guidelines Section 15161 and 15162]. Streamlined environmental review pursuant to a Program EIR and tiering is consistent with South Coast AQMD's past practice as it is expressly allowed in CEQA. [CEQA Guidelines Sections 15152, 15162, 15165, 15168 and 15385]. Previously, separate rule developments have been conducted to implement individual control measures and the type of CEQA documents prepared have been subsequent CEQA analyses which tier off Program EIRs prepared for previous iterations of the AQMP.

As a result, this Program EIR, in particular Chapter 4, analyzes the potential environmental impacts that may occur from implementing all of the control measures which comprise the 2022 AQMP and its goal to address the 2015 8-hour ozone standard to satisfy the planning requirements of the federal CAA. The focus of review in this Program EIR is conducted on a regional, programmatic level (e.g., within South Coast AQMD's jurisdiction). The analysis in the Program EIR will rely on multiple sources of data, including but not limited to statewide data from CARB and other state agencies, regionwide data from SCAG, county-specific data from the four-counties located within South Coast AQMD's jurisdiction (e.g., Los Angeles, Orange, Riverside and San Bernardino counties), and data from previously certified CEQA documents for individual projects when South Coast AQMD was lead agency.

This chapter is subdivided into the following sections based on the area of potential impacts: air quality and greenhouse gas emissions, energy, hazards and hazardous materials, hydrology and water quality, noise, and solid and hazardous waste because these were the environmental topic areas identified in the NOP/IS as requiring further analysis in the Program EIR due to potentially significant impacts that may occur if the 2022 AQMP is implemented. Included for each impact category is a discussion of project-specific impacts, project-specific mitigation (if potentially significant effects are concluded and when feasible mitigation measures have been identified), remaining impacts, and a summary of impacts for each environmental topic area. Also included within the evaluation of each environmental topic area is a summary of potential impacts that would be expected to occur with implementation of the individual control measures. Full

descriptions of all control measures are provided in the 2022 AQMP (see Chapter 4 Appendices IV-A, IV-B, and IV-C).[148]

In order to address the full range of potential environmental impacts, several assumptions were made for purposes of the evaluation. First, to provide a "worst-case" analysis, the environmental analysis contained herein assumes that the control measures which comprise the 2022 AQMP apply to the entire South Coast AQMD jurisdiction (i.e., the Basin and those portions of the MDAB and SSAB under the South Coast AQMD's jurisdiction). Second, if air pollution control equipment or technology could be used to achieve the desired emission reduction goal for a particular control measure, the analysis assumes that such equipment would be employed even if it may not be the only technology or method of compliance available because the use of air pollution control equipment or technology may create secondary adverse environmental impacts. Thus, the analysis was not limited to considering air pollution control equipment or technology which would result in the least secondary adverse environmental impacts. For example, in the analysis of energy impacts, all vehicles in MOB-01 were assumed to be electrified; however, the energy impacts analysis for MOB-01 also considered the possibility that alternative fuels such as natural gas and hydrogen may be utilized. To take into account the wide variety of implementation possibilities and corresponding potential environmental effects, this approach was applied when analyzing each environmental topic area.

If the 2022 AQMP is adopted, South Coast AQMD staff will begin efforts to develop new or amended rules to specifically implement the control measures. The rule development process explores a variety of approaches to establishing feasible emission standards and identifies cost-effective technological options as a means to comply with the potential future requirements in a proposed new or amended South Coast AQMD rule or rules. The rule development process is technology neutral in that no specific type of air pollution control method or equipment is prescribed but instead proposes to establish a standard with which affected sources shall comply and the method for compliance may vary. Keeping in mind the future rule development process stemming from the proposed control measures contained in the 2022 AQMP, the analysis of the environmental effects in this Program EIR is conservative in that it explores multiple options for achieving emission reductions and thus, has the potential to overestimate impacts when compared to the actual implementation activities that may occur in practice after the control measures are developed into new or amended rules with more specific requirements and emission standards.

Every control measure in the 2022 AQMP was evaluated to determine whether it has the potential to generate adverse environmental impacts. Each environmental topic subchapter in this chapter contains a table which identifies the individual control measures with the potential to generate significant adverse impacts for that environmental topic area. In addition, Table 4.1-1 identifies the various control measures which were previously evaluated in the NOP/IS and concluded to have no impacts on the environment and, therefore, were not evaluated further in this Program EIR.

[148] http://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan

TABLE 4.1-1
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP with No Impacts

Control Measure Number	Control Measure Title	Control Methodology	Reasoning for Conclusion of No Impacts
ECC-02	Co-Benefits from Existing and Future Residential and Commercial Building Energy Efficiency Measures (NOx, VOC)	Quantify the benefits from reducing criteria pollutants and GHG emissions from existing and future energy efficiency programs adopted by other regulatory authorities (e.g., improving weatherization and energy efficiency).	Quantifying emission reduction benefits is an administrative exercise with no impacts.
FUG-02	Emission Reductions from Industrial Cooling Towers (VOC)	Assess the need for additional monitoring and practices to reduce industrial cooling tower VOC emissions by conducting a review of the emission inventory, costs for monitoring equipment, and identifying the control requirements established by other governmental agencies.	Conducting an assessment is an administrative exercise with no impacts.
BIO-01	Assessing Emissions from Urban Vegetation (VOC)	Assess the inventory of trees that are highly reactive and potent ozone precursors to determine whether tree planting programs would be necessary to promote the planting of low VOC-emitting tree species.	Researching the feasibility of replacing high VOC-emitting trees with low VOC-emitting trees is an administrative exercise with no impacts.
FLX-01	Improved Education and Public Outreach	Establish a voluntary program that provides education and outreach to consumers, business owners, and residents regarding the benefits of making clean air choices in purchases, conducting efficiency upgrades, installing clean energy sources, and approaches to conservation.	Conducting public education and outreach is an administrative exercise with no impacts.
EGM-02	Emission Reductions from Projects Subject to General Conformity Requirements (All Pollutants)	Seek emission reductions by eliminating the SIP set-aside account for general conformity purposes and setting up a new mechanism to offset emission increases, possibly via Voluntary Emission Reduction Agreements, or the purchase of ERCs.	Researching a new mechanism that would offset emission increases is an administrative exercise with no impacts.

TABLE 4.1-1 (continued)
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP with No Impacts

Control Measure Number	Control Measure Title	Control Methodology	Reasoning for Conclusion of No Impacts
MOB-03	Emission Reductions at Warehouse Distribution Centers (NOx)	Reducing emissions from and exposure to mobile sources associated with warehouse distribution centers by requiring actions or investments to offset the emissions of the mobile sources (trucks) attracted to the warehouses.	This control measure was originally in the 2016 AQMP and is currently implemented by Rule 2305 which was adopted by the South Coast AQMD Governing Board on May 7, 2021. The environmental effects from implementing Rule 2305 were previously analyzed in the certified Final Environmental Assessment for the rule. Since this control measure does not propose any additional elements for achieving emission reductions at warehouse distribution centers, no new impact areas have been identified.
MOB-11	Emission Reductions from Incentive Programs (NOx, PM)	Allow the South Coast AQMD to take credit for emission reductions (for SIP purposes) that were achieved through past and future projects (e.g., replacing heavy-duty vehicle/equipment, installing retrofit units, and repowering engines for marine vessels, locomotives, trucks, school buses, agricultural equipment, construction equipment, commercial harbor craft, airport support equipment, and oil drilling equipment).	The process of revising the SIP to take credit for emission reductions is an administrative exercise with no impacts.
MOB-12	Pacific Rim Initiative for Maritime Emission Reductions	Allow the South Coast AQMD to take credit for emission reductions (for SIP purposes) from ocean-going vessel emission reductions that are the result of voluntary actions and may be considered surplus to the emission reduction commitments of the State SIP Strategy "Federal Action: Cleaner Fuel and Vessel Requirements for Ocean-Gong-Vessels."	The process of revising the SIP to take credit for emission reductions is an administrative exercise with no impacts.

TABLE 4.1-1 (concluded)
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP with No Impacts

Control Measure Number	Control Measure Title	Control Methodology	Reasoning for Conclusion of No Impacts
MOB-13	Fugitive VOC Emissions from Tanker Vessels (VOC)	Installing electronic monitors for pressure/vacuum valves, and inspecting for leaks using analyzers or imaging camera when entering South Coast AQMD waters will increase ongoing monitoring, inspection, and repair activities.	Monitoring, inspecting, and repair activities are not expected to cause any adverse environmental impacts.
MOB-14	Rule 2202 – On-Road Motor Vehicle Mitigation Options (VOC, NOx, CO)	Amending Rule 2202 to take into account emission reductions due to telecommuting strategies such as allowing employees to work from home is expected to provide a benefit to air quality and GHGs.	The process of amending Rule 2202 to take credit for previously achieved emission reductions is an administrative exercise with no impacts.
MOB-15	Zero Emission Infrastructure for Mobile Sources (All Pollutants)	Developing a work plan to support and accelerate the deployment of zero emission infrastructure needed to implement the other control measures/strategies which promote the widespread adoption of zero emission vehicles and equipment	Developing a workplan to coordinate with stakeholders and identifying informational gaps in the ongoing development of zero emission infrastructure is an administrative exercise with no impacts. No additional impacts to areas that were previously identified for the individual control measures which target zero emission technology are expected.

There are several reasons why the control measures in Table 4.1-1 are not expected to generate significant adverse impacts. First, ECC-02 and MOB-03 are measures that seek to take credit for the criteria pollutant emission reductions which would occur due to existing regulations targeting energy efficiency and GHG reductions. MOB-11 and MOB-12 are measures that seek to take credit for the criteria pollutant emission reductions which have occurred through mobile equipment replacement and voluntary speed reductions. FUG-02 and BIO-01 involve the assessment of future controls or vegetation replacement as potential emission reduction, and thus, are not expected to generate any environmental impacts.

The NOP/IS also originally identified Control Measure FLX-01 – Improved Public Education and Outreach, as potentially having potential adverse impacts to the topics of air quality and greenhouse gases, hazards and hazardous materials, hydrology and water quality, noise, and solid and hazardous waste. However, after the 2022 AQMP was released, Control Measure FLX-01 was clarified to be a voluntary program that provides education and outreach to consumers, business owners, and residents regarding the benefits of making clean air choices in purchases,

conducting efficiency upgrades, installing clean energy sources, and approaches to conservation. Since implementing Control Measure FLX-01 is an administrative exercise that would not result in any adverse impacts for any environmental topic area, Control Measure FLX-01 was added to Table 4.1-1.

MOB-13 is a measure that would install monitoring equipment on marine vessels and would largely control emissions through enhanced inspection, monitoring, and maintenance practices. Inspection and maintenance practices contain procedures to ensure the proper operation of equipment, and thus, are not expected to generate secondary impacts. MOB-14 is an administrative control measure that would allow the South Coast AQMD to take credit for emissions reductions due to telecommuting strategies and would not generate any additional physical environmental impacts. MOB-15 would not result in environmental impacts because it would only require the development of a work plan to support and accelerate the deployment of zero emission infrastructure without causing new impacts beyond those previously identified in the other individual control measures for zero emission technologies.

Finally, EGM-02 is a control measure which seeks emission reductions by eliminating the SIP set-aside account for general conformity purposes and setting up a new mechanism to offset emission increases which depends on future voluntary agreements. Researching a new mechanism that would offset emission increases is an administrative exercise with no impacts.

SUBCHAPTER 4.2

AIR QUALITY AND GREENHOUSE GAS EMISSIONS

2022 AQMP Control Measures with Potential Air Quality and Greenhouse Gas (GHG) Emissions Impacts

Significance Criteria

Future Year Emission Inventories

2022 AQMP Air Quality Modeling Results

Potential Air Quality and GHG Emissions Impacts and Mitigation Measures

Summary of Air Quality and GHG Emissions Impacts

Cumulative Air Quality and GHG Emissions Impacts and Mitigation Measures

4.2 AIR QUALITY AND GREENHOUSE GAS EMISSIONS

The purpose of the 2022 AQMP is to address the federal 2015 8-hour ozone standard in order to satisfy the planning requirements of the federal CAA. Unlike most other air pollutants, ozone is not directly emitted, but instead is formed in the atmosphere. Ozone is formed when NOx and VOCs react in the presence of sunlight. While both NOx and VOCs contribute to ozone, the key to attaining the ozone standard is to reduce NOx. Thus, the proposed control measures in the 2022 AQMP primarily focus on reducing NOx emissions from existing emission sources and promoting the use of the cleanest technologies available. Specifically, the proposed control measures focus on maximizing the implementation of existing zero and low NOx technologies in combination with the potential for the ongoing development of additional zero emission and low NOx technologies. This subchapter examines the potential direct and indirect air quality impacts associated with the implementation of the proposed control measures in the 2022 AQMP.

The analysis of air quality and GHG impacts in the Program EIR identifies the net effect on air quality (e.g., criteria pollutants, GHGs, and TACs) from implementing the 2022 AQMP. The NOP/IS (see Appendix A) concluded that the air quality impacts of the proposed project are potentially significant. In particular, some control measures could result in secondary air quality impacts associated with: 1) generating emissions from construction equipment needed to build infrastructure and/or install new or modify existing equipment; 2) generate additional emissions from power plants that would need to expand to produce additional electricity to operate zero and low NOx technologies; and, 3) generate additional toxic air contaminants (e.g., increased ammonia use and additional TACs associated with the use and manufacture of alternative fuels and the reformulation of products). No comments were received on the analysis presented in the NOP/IS that identified other potential air quality impact areas that would require additional analysis in this Program EIR.

The potentially significant project-specific and cumulative adverse air quality impacts associated with increased emissions of air contaminants (e.g., criteria pollutants, GHGs, and TACs) during the construction and operation phases of the proposed project are evaluated in this Program EIR. Potential adverse health impacts to sensitive receptors are also included.

Potential construction and operational air quality impacts associated with the 2022 AQMP control measure areas are provided in this subchapter. The analysis is divided into the following sections: 2022 AQMP Control Measures with Potential Air Quality and GHG Emissions Impacts, Significance Criteria, Future Air Quality Emission Inventories, 2022 AQMP Air Quality Modeling Results, Potential Air Quality and GHG Emissions Impacts and Mitigation Measures, Summary of Air Quality and GHG Emissions Impacts, and Cumulative Air Quality and GHG Emissions Impacts and Mitigation Measures.

4.2.1 2022 AQMP CONTROL MEASURES WITH POTENTIAL AIR QUALITY AND GHG EMISSIONS IMPACTS

The air quality and greenhouse gas impact analysis in this Program EIR are divided into two parts which examine the net effect on air quality and GHG emissions benefits and the secondary impacts as a result of implementing the 2022 AQMP. All control measures were previously reviewed in the NOP/IS and the control measures that were concluded to have potential air quality impacts are summarized in Table 4.2-1. Later in this subchapter, Table 4.2-12 contains a summary of the control measures that have potential GHG emissions impacts.

TABLE 4.2-1
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP
with Potential Air Quality Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Air Quality Impact
R-CMB-01	Emission Reduction from Replacement with Zero Emission or Low NOx Appliances – Residential Water Heating (NOx)	Installation of zero emission water heaters and low NOx technologies (when zero emission is infeasible) in new and existing residences.	Potential air quality impacts associated with construction; and producing and using more electricity.
R-CMB-02	Emission Reduction from Replacement with Zero Emission or Low NOx Appliances – Residential Space Heating (NOx)	Installation of zero emission space heaters and low NOx technologies (when zero emission is infeasible) in new and existing residences.	Potential air quality impacts associated with construction; and producing and using more electricity.
R-CMB-03	Emission Reductions from Residential Cooking Devices (NOx)	Installation of electric cooking devices, induction cooktops, or low NOx burners in new and existing residences.	Potential air quality impacts associated with construction; and producing and using more electricity.
R-CMB-04	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Residential Other Combustion Sources (NOx)	Installation of zero emission or low NOx technologies in new and existing residences to replace equipment such as pool heaters, dryers, grills, etc.	Potential air quality impacts associated with construction; and producing and using more electricity.
C-CMB-01	Emission Reductions from Replacement with Zero or Near-Zero or Low NOx Appliances – Commercial Water Heating (NOx)	Installation of zero emission water heaters and low NOx technologies (when zero emission is infeasible) in commercial buildings.	Potential air quality impacts associated with construction; and producing and using more electricity.
C-CMB-02	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Commercial Space Heating (NOx)	Installation of zero emission space heaters and low NOx technologies (when zero emission is infeasible) in commercial buildings.	Potential air quality impacts associated with construction; and producing and using more electricity.
C-CMB-03	Emission Reductions from Commercial Cooking Devices (NOx)	Replacing gas burners with zero emission and low NOx technologies (e.g., electric cooking devices, induction cooktops, or low NOx gas burner technologies).	Potential air quality impacts associated with construction; and producing and using more electricity.
C-CMB-04	Emission Reductions from Small Internal Combustion Engines (NOx)	Incentivizing consumers to purchase zero emission ICEs.	Potential air quality impacts associated with construction; and producing and using more electricity and alternative fuels.

TABLE 4.2-1 (continued)
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP
with Potential Air Quality Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Air Quality Impact
C-CMB-05	NOx Reductions from Small Miscellaneous Commercial Combustion Equipment (Non-Permitted) (NOx)	Incentivizing feasible zero emission and low NOx technologies for small combustion equipment.	Potential air quality impacts associated with construction; and producing and using more electricity and alternative fuels.
L-CMB-01	NOx Reductions for RECLAIM Facilities (NOx)	Installation of NOx pollution control equipment including SCRs and low NOx burners.	Potential air quality impacts associated with construction; ammonia use in SCRs; and periodic catalyst replacement.
L-CMB-02	Reductions from Boilers and Process Heaters (Permitted) (NOx)	Installation of zero emission and low NOx technologies for boilers and heaters.	Potential air quality impacts associated with construction; ammonia use in SCRs; periodic catalyst replacement; and producing and using more electricity and alternative fuels.
L-CMB-03	NOx Reductions from Permitted Non-Emergency Internal Combustion Engines (ICEs) (NOx)	Installation of zero emission and low NOx technologies for non-emergency ICEs.	Potential air quality impacts associated with construction; ammonia use in SCRs; periodic catalyst replacement; and producing and using more electricity and alternative fuels.
L-CMB-04	Emission Reductions from Emergency Standby Engines (Permitted) (NOx, VOC)	Installation of zero emission and low NOx technology alternatives to emergency ICEs.	Potential air quality impacts associated with construction; and producing and using more electricity and alternative fuels.
L-CMB-05	NOx Emission Reductions from Large Turbines (NOx)	Installation of zero emission and low NOx emissions technologies for electric generating units such as fuel cells.	Potential air quality impacts associated with construction; and producing and using more electricity and alternative fuels.
L-CMB-06	NOx Emission Reductions from Electricity Generating Facilities (NOx)	Replacement of boilers with lower-emitting turbines, installation of zero emission and low NOx emissions technologies, and the application of stricter emission requirements for diesel internal combustion engines.	Potential air quality impacts associated with construction; ammonia use in SCRs; periodic catalyst replacement; and producing and using more electricity and alternative fuels.

TABLE 4.2-1 (continued)
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP
with Potential Air Quality Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Air Quality Impact
L-CMB-07	Emission Reductions from Petroleum Refineries (NOx)	Installation of NOx pollution control equipment including advanced SCRs and ultra-low NOx burners, and electrification of certain refinery boilers or process heaters or steam-driven equipment such as pumps or blowers.	Potential air quality impacts associated with construction; ammonia use in SCRs; periodic catalyst replacement; and producing and using more electricity.
L-CMB-08	NOx Emission Reductions from Combustion Equipment at Landfills and Publicly Owned Treatment Works (NOx)	Installation of lean pre-mixed combustion turbines, NOx pollution control equipment including SCRs and low NOx burners on biogas fueled combustion equipment and/or routing landfill produced biogas to existing natural gas pipelines.	Potential air quality impacts associated with construction; ammonia use in SCRs; and periodic catalyst replacement.
L-CMB-09	NOx Reductions from Incinerators (NOx)	Installation of low NOx and ultra low NOx burners for incinerators and other associated equipment.	Potential air quality impacts associated with construction.
L-CMB-10	NOx Reductions from Miscellaneous Permitted Equipment (NOx)	Replacement of existing equipment with zero emission technology and installation of NOx pollution control equipment including SCRs and low NOx/ultra-low NOx burners.	Potential air quality impacts associated with construction; from installation of electrical and alternative fuel infrastructure; ammonia use in SCRs; periodic catalyst replacement; and producing and using more electricity and alternative fuels.
ECC-03	Additional Enhancements in Reducing Existing Residential Building Energy Use (NOx)	Incentivizing additional reductions in energy use associated with space heating, water heating, and other large residential energy sources through facilitating weatherization, replacing older appliances with highly efficient technologies and encouraging renewable energy adoption such as solar thermal heating and photovoltaic panels.	Potential air quality impacts associated with construction.

TABLE 4.2-1 (continued)
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP
with Potential Air Quality Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Air Quality Impact
FUG-01	Improved Leak Detection and Repair (VOC)	Implementation of advanced leak detection technologies including optical gas imaging devices (OGI), open path detection devices, and gas sensors for earlier detection of VOC emissions from leaks.	Potential air quality impacts associated with construction.
CTS-01	Further Emission Reduction from Coatings, Solvents, Adhesives, and Lubricants (VOC)	Revising the VOC content for select product categories and incentivizing the use of super-compliant zero emission and low VOC materials and technologies and removing the VOC exemption status for parachlorobenzotriflouride (pCBtF) and tert-butyl acetate (tBAc) to address toxicity concerns.	Potential adverse air quality impacts associated delayed and permanent VOC emission reductions foregone)associated with the removal of the exemption for pCBtF and tBAc, but other VOC emission reductions from the use of super-compliant and low VOC materials with less toxicity overall.
FLX-02	Stationary Source VOC Incentives (VOC)	Installation of newer, lower-emitting equipment to replace older, higher-emitting equipment for area and stationary sources as a result of incentives.	Potential air quality impacts associated with construction activities.
MCS-01	Application of All Feasible Measures (All Pollutants)	Retrofitting existing equipment and installation of newer, lower-emitting equipment to replace older, higher-emitting equipment for sources as a result of new emission limits introduced through federal, state, or local regulations.	Potential air quality impacts associated with construction; ammonia use in SCRs; and periodic catalyst replacement.
MCS-02	Wildfire Prevention (NOx, PM)	Mechanical thinning and chipping and grinding activities during fuel reduction and removal efforts.	Potential air quality impacts associated with decomposition of wood and greenwaste.

TABLE 4.2-1 (continued)
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP
with Potential Air Quality Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Air Quality Impact
EGM-01	Emission Reductions from New Development and Redevelopment (Potential Indirect Source Rule and ports affected) (All Pollutants).	Replacing or upgrading off-road construction equipment as part of development/redevelopment efforts may result in the use of zero emission technologies in construction, the installation of electrical and alternative fuel infrastructure, the use of alternative fuels; and the use construction equipment with low-emitting engines fitted with diesel particulate filters (DPFs).	Potential air quality impacts associated with construction; and the periodic replacement of DPFs; and producing and using more electricity and alternative fuels.
EGM-03	Emission Reductions from Clean Construction Policy (All Pollutants)	Incentivizing the use of zero emission and low NOx equipment by adopting a voluntary measure for municipalities and public agencies to reduce emissions generated by construction activities may include use of zero emission and low NOx construction equipment, dust control, alternative fuels, DPF, low-emitting engines, and low VOC materials.	Potential air quality impacts associated with construction of electrical and alternative fuel infrastructure; and producing and using more electricity and alternative fuels.
MOB-01	Emission Reductions at Commercial Marine Ports (NOx)	Infrastructure development required to achieve emission reductions at commercial marine ports from on-road heavy-duty vehicles, ocean-going vessels, cargo handling equipment, locomotives, and harbor craft.	Potential air quality impacts associated with construction; and the combustion of alternative fuels.

TABLE 4.2-1 (continued)
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP
with Potential Air Quality Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Air Quality Impact
MOB-2A	Emission Reductions at New Rail Yards and Intermodal Facilities (NOx, PM)	Infrastructure development required to achieve emission reductions at new rail yards and intermodal facilities from on-road heavy-duty vehicles, off-road equipment, and locomotives; and deploying the cleanest locomotives, switchers, on-road heavy-duty trucks, cargo-handling equipment, transportation refrigeration units available.	Potential air quality impacts associated with construction; and the combustion of alternative fuels.
MOB-2B	Emission Reductions at Existing Rail Yards and Intermodal Facilities (NOx, PM)	Infrastructure development required to achieve emission reductions at existing rail yards and intermodal facilities from on-road heavy-duty vehicles, off-road equipment, and locomotives; and deploying the cleanest locomotives, switchers, on-road heavy-duty trucks, cargo-handling equipment, transportation refrigeration units available.	Potential air quality impacts associated with construction; and the combustion of alternative fuels.
MOB-04	Emission Reductions at Commercial Airports (All Pollutants)	Deploying additional cleaner technologies, such as increasing efficiencies, implementing air quality improvement options or by deploying zero emission and low NOx technologies, alternative fuels, DPFs, and low-emitting engines for additional equipment beyond the commitments made in the existing Memoranda of Understanding with the commercial airports.	Potential air quality impacts associated with construction; and producing and using more electricity and alternative fuels.

TABLE 4.2-1 (continued)
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP
with Potential Air Quality Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Air Quality Impact
MOB-05	Accelerated Retirement of Older Light-Duty and Medium-duty Vehicles (VOC, NOx, CO)	Accelerating the retirement of up to 2,000 light- and medium-duty vehicles per year through the Replace Your Ride Program and accelerating the penetration of zero and near–zero emission vehicles.	Potential air quality impacts during construction of infrastructure, from scrapping retired vehicles, and from utilities producing and using more electricity and alternative fuels.
MOB-06	Accelerated Retirement of Older On-Road Heavy-duty Vehicles (NOx, PM)	Retiring older, heavy-duty vehicles and replacing them with low NOx vehicles fueled with CNG or other alternative fuels (e.g., battery electric and hydrogen fuel cells).	Potential air quality impacts from construction activities associated with installing electrical and alternative fuel infrastructure, scrapping retired vehicles; and producing and using more alternative fuels.
MOB-07	On-Road Mobile Source Emission Reduction Credit Generating Program (NOx, PM)	Incentivizing the early deployment of zero emission and low NOx emission heavy-duty trucks through the generation of mobile source emission credits.	Potential air quality impacts from construction activities associated with installing electrical and alternative fuel infrastructure; scrapping retired vehicles and producing and using more alternative fuels.
MOB-08	Small Off-Road Engine Equipment Exchange Program (VOC, NOx, CO)	Promoting the accelerated turn-over of in-use small off-road engines and other engines, such as gasoline- and diesel-powered commercial lawn and garden equipment through expanded voluntary exchange programs will contribute to the retirement of older off-road engines.	Potential air quality impacts from scrapping retired equipment.
MOB-09	Further Emission Reductions from Passenger Locomotives (NOx, PM)	Promoting earlier and cleaner replacement or upgrade of existing passenger locomotives capable of achieving Tier 4 emission standards and supporting the development of zero emission or low NOx technologies (e.g., battery electric and hydrogen fuel cells).	Potential air quality impacts from construction activities associated with installing electrical and alternative fuel infrastructure; and producing and using more alternative fuels,

TABLE 4.2-1 (concluded)
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP
with Potential Air Quality Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Air Quality Impact
MOB-10	Off-Road Mobile Source Emission Reduction Credit Generation Program (NOx, PM)	Accelerating the deployment of zero (e.g., battery-electric or fuel cell powered equipment) and low NOx emission off-road mobile equipment (e.g., 90 percent cleaner than Tier 5) that do not receive public funding.	Potential air quality from construction activities associated with installing electrical and alternative fuel infrastructure; and producing and using more alternative fuels.

4.2.2 SIGNIFICANCE CRITERIA

A threshold of significance is an identifiable quantitative, qualitative, or performance level of a particular environmental effect. Proposed projects that do not exceed the significance threshold for the effect under evaluation normally will be determined to be less than significant. Exceeding any significance threshold means the effect will normally be determined to be significant by the lead agency. [CEQA Guidelines Sections 15064(a) and (b)(2)]. To determine whether air quality and GHG emissions impacts from the proposed project are significant, the evaluation in this subchapter will estimate the potential emissions of criteria pollutants, toxic air contaminants and GHGs and compare these estimates to the significance criteria in Table 4.2-2.

South Coast AQMD's adopted air quality significance thresholds for criteria pollutant emissions, the mass daily thresholds, were developed in 1993, and a full discussion of their development can be found in the South Coast AQMD CEQA Handbook. Significance thresholds for toxic air contaminants are based on requirements in South Coast AQMD Rules 1401 and 212, while the significance criteria for odor is based on requirements in South Coast AQMD Rule 402. The significance threshold for greenhouse gas emissions was adopted by the South Coast AQMD Governing Board in December 2008. Information on the history and development of the various air quality significance thresholds is available on the South Coast AQMD website.[149] Significance determinations for construction air quality impacts are based on the maximum or peak daily emissions during the construction period, which provides a "worst-case" analysis of the construction emissions. Similarly, significance determinations for operational air quality impacts are based on the maximum or peak daily emissions during the operation phase. The proposed project will have significant adverse air quality impacts if any one of the thresholds in Table 4.2-2 are equaled or exceeded. All feasible mitigation measures will be identified and implemented accordingly to reduce any identified significant impacts to the maximum extent feasible.

[149] http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook

TABLE 4.2-2
South Coast AQMD Air Quality Significance Thresholds

Mass Daily Thresholds[a]		
Pollutant	**Construction[b]**	**Operation[c]**
NOx	100 lb/day	55 lb/day
VOC	75 lb/day	55 lb/day
PM10	150 lb/day	150 lb/day
PM2.5	55 lb/day	55 lb/day
SOx	150 lb/day	150 lb/day
CO	550 lb/day	550 lb/day
Lead	3 lb/day	3 lb/day
Toxic Air Contaminants, Odor, and GHG Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden ≥ 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic and Acute Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to South Coast AQMD Rule 402	
GHG	10,000MT/yr CO_2eq for industrial facilities	
Ambient Air Quality for Criteria Pollutants[d]		
NO_2 1-hour average annual arithmetic average	South Coast AQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standard: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)	
PM10 24-hour annual average	10.4 µg/m^3 (construction)[e] and 2.5 µg/m^3 (operation) 1.0 µg/m^3	
PM2.5 24-hour average	10.4 µg/m^3 (construction)[e] and 2.5 µg/m^3 (operation)	
SO_2 1-hour average 24-hour average	0.25 ppm (state) and 0.075 ppm (federal – 99th percentile) 0.04 ppm (state)	
Sulfate 24-hour average	25 µg/m^3 (state)	
CO 1-hour average 8-hour average	South Coast AQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)	
Lead 30-day average Rolling 3-month average	1.5 µg/m^3 (state) 0.15µg/m^3 (federal)	

a) Source: South Coast AQMD CEQA Handbook (South Coast AQMD, 1993)
b) Construction thresholds apply to both the SCAB and Coachella Valley (Salton Sea and Mojave Desert Air Basin)
c) For Coachella Valley, the mass daily thresholds for operation are the same as the construction thresholds.
d) Ambient air quality thresholds for criteria pollutants based on South Coast AQMD Rule 1303, Table A-2 unless otherwise stated.
e) Ambient air quality threshold based on South Coast AQMD Rule 403.

KEY: ppm = parts per million µg/m^3 = microgram per cubic meter lb/day = pounds per day ≥ = greater than or equal to
MT/yr CO2eq = metric tons per year of CO_2 equivalents > = greater than

Revision: April 2019

4.2.3 FUTURE YEAR EMISSION INVENTORIES

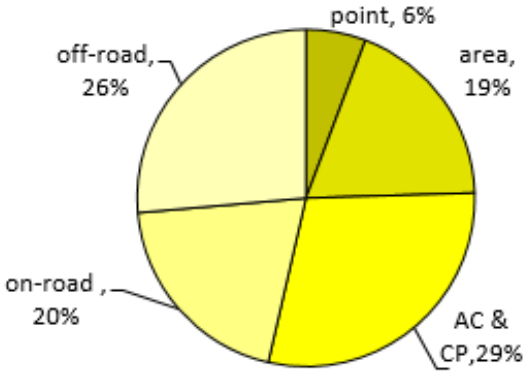
The 2022 AQMP relied on the 2018 emissions inventory to develop inventories for the individual control measures for the purpose of projecting future year emission inventories needed to assess progress and demonstrate attainment with the ozone standard. The 2018 emissions inventory was selected because it was the year of designation of the Basin as an extreme nonattainment area. In addition, the Multiple Air Toxics Exposure Study V (MATES V) was conducted during 2018 and involved a comprehensive campaign of monitoring and modeling that allowed for the development of a robust and extensively validated modeling framework.

The future year emission inventory estimates for the 2022 AQMP projects that 184 tons per day of NOx will be emitted in 2037, and this amount reflects emissions from implementing existing regulations and programs, but does not include any potential NOx reductions that may occur from implementing the currently proposed control measures. In order to meet the ozone standard, the amount of NOx that can be emitted into the atmosphere, referred to as the "carrying capacity," is approximately 60 tons per day. This means that NOx needs to be reduced about 67 percent beyond what would otherwise occur by 2037 and about 83 percent below current levels.

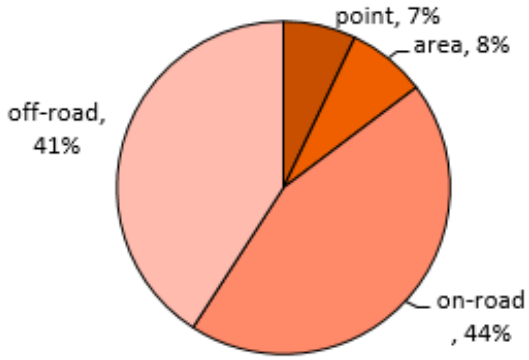
The future year emission inventories also reflect adjustments made according to SCAG's growth projections. The future year emission inventory contains milestones and is being relied upon to evaluate the potential emission reductions and the carrying capacity to determine attainment status.

Figures 4.2-1 and 4.2-2 show the 2018 inventory which reflects current levels and the future year emission inventory which reflects projected emissions for year 2037, respectively, by major source category (i.e., point, area, on-road, and off-road). These figures are included in this Program EIR to illustrate projected air quality trends through 2037 that would be expected if no new control measures are subsequently promulgated as rules. They do, however, take into account emission reductions anticipated to be achieved for existing rules with future compliance dates.

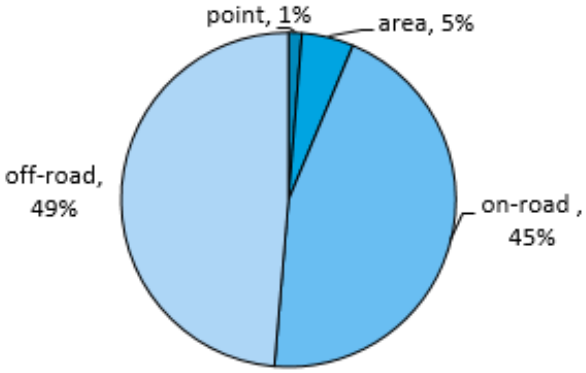
A comparison of Figures 4.2-1 and 4.2-2 indicates the on-road mobile category would continue to be a major contributor to NOx and CO emissions; however, because implementation of most of the mobile source rules and regulations will occur before 2037, the contribution of on-road mobile sources by 2037 accounts for much less of the VOC, NOx, and CO emissions compared to 2018 as follows: about 11 percent of total VOC emissions in 2037 compared to 20 percent in 2018, about 20 percent of total NOx emissions in 2037 compared to 44 percent in 2018, and about 36 percent of total CO emissions in 2037 compared to 45 percent in 2018. For directly emitted PM2.5 emissions in 2037, on-road mobile sources would represent 20 percent of the emissions with another 6 percent attributable to vehicle-related entrained road dust (a total of a 26 percent contribution to the directly emitted PM2.5 emissions), which represents a reduction from the combined total of direct on-road mobile source and vehicle-related entrained road dust contribution of 28 percent (18 percent and 10 percent, respectively) in 2018. Stationary point sources are projected to emit the majority of the SOx emissions in 2037 from the point source category, contributing 47 percent of the SOx emissions in the Basin.



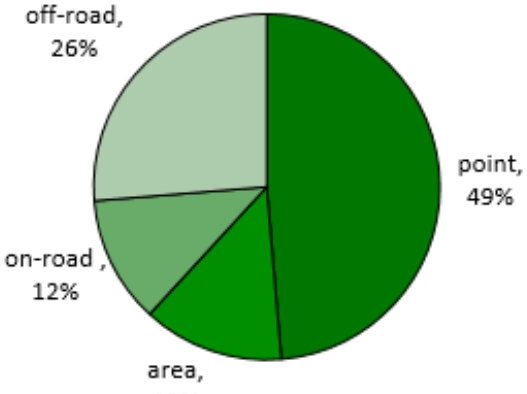
VOC Emissions: 406 tons/day



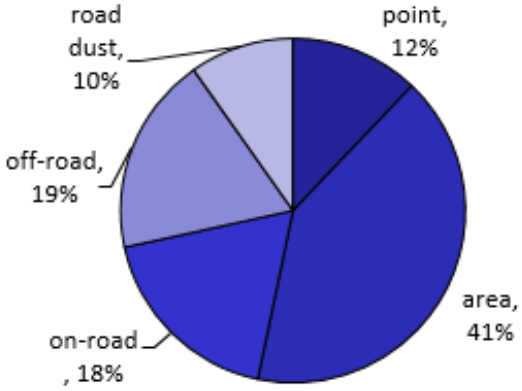
NOx Emissions: 351 tons/day



CO Emissions: 1658 tons/day



SOx Emissions: 15 tons/day



Directly Emitted PM2.5 Emissions: 59 tons/day

FIGURE 4.2-1[150]
Relative Contribution by Source Category to 2018 Emissions Inventory
(*AC = Architectural Coatings and Related Solvent, CP = Consumer Products*)
(*Summer Planning, values are rounded to nearest integer and may not sum due to rounding*)

[150] South Coast AQMD, ~~Revised Draft~~ 2022 AQMP, Figure 3-3, p. 3-23.

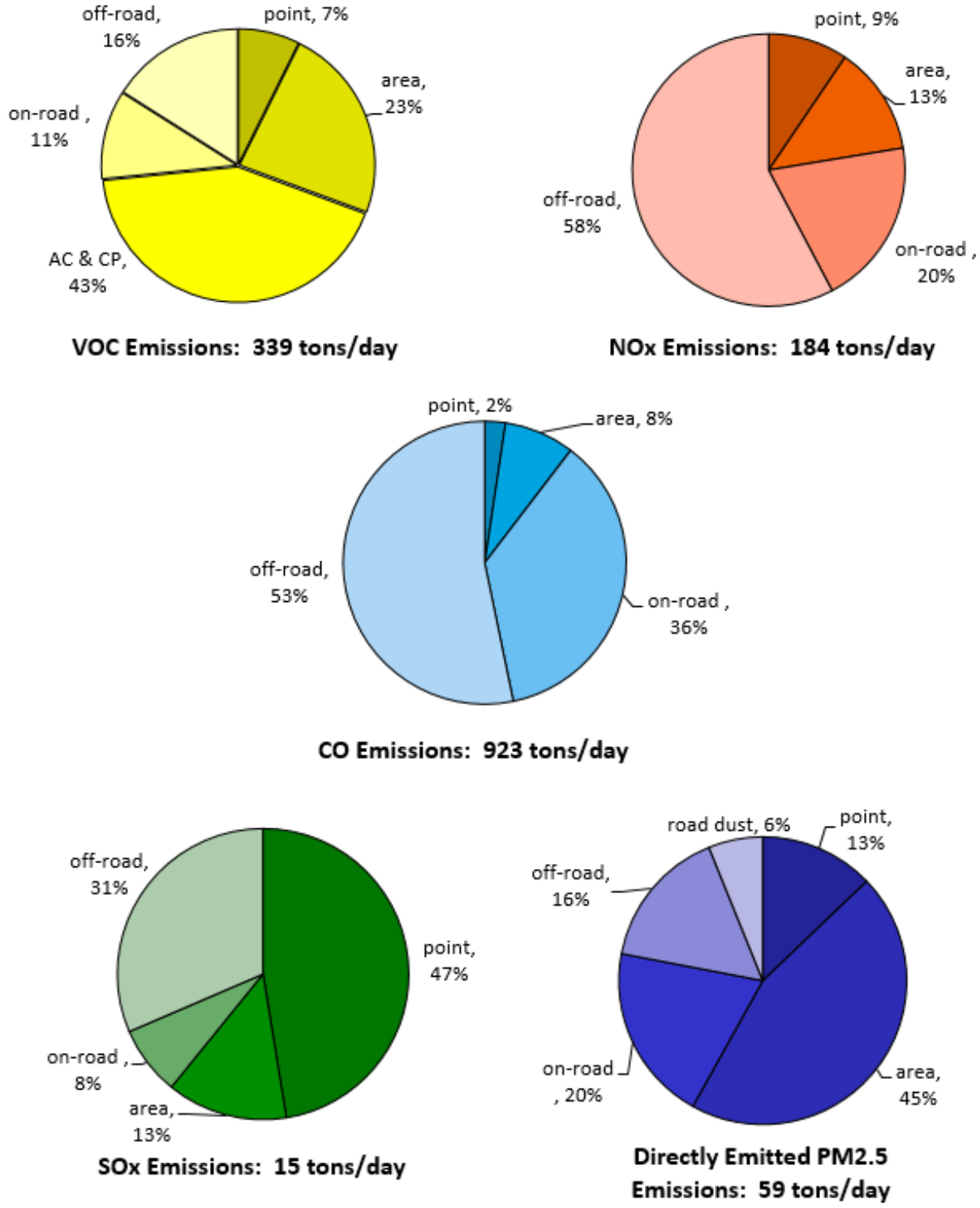


FIGURE 4.2-2[151]
Relative Contribution by Source Category to 2037 Emissions Inventory
(*AC = Architectural Coatings and Related Solvent, CP = Consumer Products*)
(Summer Planning, values are rounded to nearest integer and may not sum due to rounding)

[151] South Coast AQMD, ~~Revised Draft~~ 2022 AQMP, Figure 3-5, p. 3-30.

In 2037, area sources (i.e., the combination of area, architectural coatings, and consumer products) would play an even larger role in VOC emissions, emitting more than point sources and mobile sources combined. Area sources (i.e., architectural coatings, consumer products, and general area sources) would become the major contributor to VOC emissions from 48 percent in 2018 to 66 percent in 2037 and are projected to remain the predominant source of directly emitted PM2.5 emissions (45 percent).

4.2.4 2022 AQMP AIR QUALITY MODELING RESULTS

The 2022 AQMP ozone attainment demonstration framework is an upgrade from the modeling platform used in the 2016 AQMP and more recent SIP revisions. It is built using the U.S. EPA-supported Community Multiscale Air Quality (CMAQ, version 5.2.1) modeling platform with Statewide Air Pollution Research Center (SAPRC) 07 chemistry and the Weather Research and Forecasting Model (WRF) meteorological fields. The modeling platform tracks primary pollutants directly emitted including precursors of ozone and particulate matter (PM2.5), and the formation of secondary pollutants like ozone and particles formed from the chemical reactions that occur in the atmosphere. The ozone attainment demonstration focused on the period from May through September. The simulations were conducted over an area with a western boundary over 100 miles west of the Ports of Los Angeles and Long Beach, an eastern boundary that extends slightly beyond the Colorado River, and northern and southern boundaries extending from the San Joaquin Valley to the northern portions of Mexico, respectively. CMAQ was simulated with a 4-kilometer grid resolution.

For the 2022 AQMP, the WRF was updated to version 4.0.3, the most recent version available at the time of protocol preparation. The WRF simulations were initialized using National Centers for Environmental Prediction (NCEP) re-analysis data and run for three-day increments with four-dimensional data assimilation (FDDA). Prior to completion of the 2022 AQMP, a more recent version of WRF (4.3) was tested and confirmed to produce similar results as the WRF model employed in the AQMP analysis.

Point source emissions were extracted from the South Coast AQMD's Annual Emissions Reporting Program and allocated to a specific day of a year using temporal allocation factors developed by CARB. On-road mobile source emissions were calculated using CARB's EMFAC2017 emissions model, with vehicle travel activity data provided by SCAG. Vehicle emissions accounted for meteorological effects on operational and evaporative emissions (temperature and relative humidity effects) which were derived from daily WRF-derived meteorological variables. In addition, hourly vehicle activity profiles based on the California Department of Transportation (Caltrans) Performance Measurement System (PeMS) were used to refine the temporal variation of vehicle emissions. Spatial and temporal allocation of emissions from area sources and most off-road emissions sources were calculated using the latest update in spatial and temporal surrogates developed by CARB and released in January 2021. In addition, ocean-going vessel emissions were spatially allocated using data from the Automated Identification System (AIS), and aircraft emissions from major airports in the Basin were allocated using data derived from the Aircraft Communication Addressing and Reporting System (ACARS). Gridded hourly biogenic emissions were calculated using the Model of Emissions of Gases and Aerosols from Nature version 3.0 (MEGAN3.0), which required meteorological inputs from WRF.

Detailed information on the modeling approach, data retrieval, model development and enhancement, model application, emissions inventory development, and interpretation of results is presented in Chapter 5 of the 2022 AQMP. The following subsections summarize the results of the 8-hour ozone attainment demonstration modeling efforts and provide an update to the future projected ozone levels given new emissions estimates, the latest air quality measurements, and modeling tools.

4.2.4.1 Ozone Air Quality

Figure 4.2-3 depicts the observed maximum daily average 8-hour ozone levels Basin-wide and at Crestline and Redlands during the 2018 ozone season. Crestline is depicted as it exhibits the highest base design value and Redlands is shown since it was the site with the highest base design value in the 2016 AQMP. During this period, several well-defined multi-day ozone episodes occurred in the Basin, with 122 days having daily maximum concentrations of 70 ppb or higher. Redlands exhibited the highest ozone design value (104.7 ppb) for 2010-2014, the five-year base design value period in the 2016 AQMP; however, Crestline showed the highest base design value (110.3 ppb) for the five-year period in the current analysis. Monitoring stations located in San Bernardino and Riverside counties show similar levels of elevated ozone as Crestline and Redlands, highlighting the influence of similar transport and chemistry patterns.

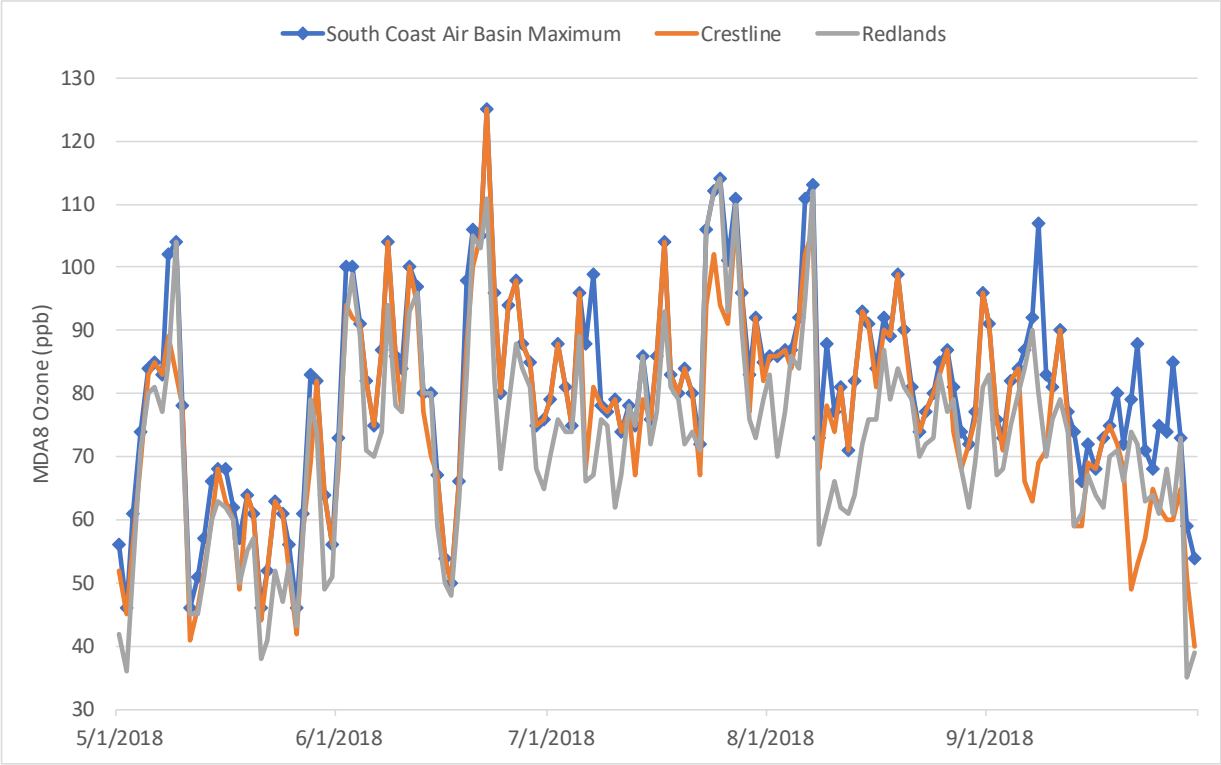


FIGURE 4.2-3
Observed Basin, Redlands, and Crestline Maximum Daily Average 8-Hour Ozone Concentrations: May 1 Through September 30, 2018

4.2.4.2 Future Ozone Air Quality

Future 8-hour ozone design values, adjusted by the U.S. EPA relative response factors, were estimated for the 2037 milestone year and the 2037 control cases. The milestone year emissions represent the level of emissions with no additional reductions beyond adopted measures, while the control case contains additional emission reductions proposed in the 2022 AQMP to reach attainment. Both the Basin-maximum predicted ozone level (future design value) and spatial distribution of the future ozone levels are presented in the 2022 AQMP.

To estimate the amount of reductions required to meet the federal 8-hour ozone standard, a series of ozone simulations with varying VOC and NOx emissions were conducted. Approximately 48 total ozone season simulations, which require extensive computational resources, were modeled and the results were then plotted as isopleths for each monitoring station in the Basin (see Chapter 5 and Appendix V Attachment 4 of the 2022 AQMP). The isopleths approximate the expected ozone design value for a given level of VOC and NOx emissions. Thus, the isopleths can be used to guide the attainment strategy. Attainment occurs for design values less than or equal to 70.9 ppb. With VOC emissions greater than 300 tons per day, the corresponding NOx emissions are approximately 60-70 tons per day at Glendora, which is the future design site for the Basin (see Chapter 5 and Appendix V of the 2022 AQMP for further details). The isopleth demonstrates that VOC reductions alone are insufficient to demonstrate attainment.

While the isopleths serve as a useful guide to visualize the pathway to attainment, they only provide a rough estimate of the required NOx reductions. To provide a more accurate estimate, the emissions used in the attainment demonstration are based on implementation of control strategies proposed by South Coast AQMD and CARB, which are based on need, feasibility, affordability, and other factors associated with each source category. This results in a more accurate estimation of the carrying capacity, the maximum allowable NOx emissions in the Basin that would meet the ozone standard.

The 2037 milestone year scenario was first explored to determine whether attainment would be achieved through the implementation of adopted regulations and programs. The 2037 milestone year (184 tons per day) includes 167 tons per day of NOx reductions beyond the 2018 baseline (351 tons per day). Multiple monitoring sites within the Basin exceed the 2015 8-hour ozone standard. Thus, the baseline scenario fails to demonstrate attainment, indicating that additional emission reductions are necessary to meet the standard.

A series of simulations with category-specific emission reductions were conducted to pinpoint the carrying capacity. Based on these simulations, the carrying capacity (the maximum emissions that could be emitted and still achieve the O_3 standard) is estimated to be 60.2 tons per day NOx in 2037. This is equivalent to an additional 67 percent reduction from the 2037 baseline NOx emissions (emissions before any additional control measures are implemented). The attainment scenario reflects the overall 67 percent reduction and relied on a 60 percent reduction from all stationary source categories, 61 percent from on-road mobile, and 72 percent from other mobile sources. The attainment scenario also includes Further Deployment of Cleaner Technologies NOx reductions of three tons per day for stationary sources and a 0.5 ton per day for SIP reserve for potential technology assessments. Detailed descriptions of control measures and expected reductions for each measure are provided in Chapter 4 and Appendix IV of the 2022 AQMP. These reductions will ensure attainment of the 2015 federal 8-hour standard in 2037 at all stations, with a maximum design value of 70.3 ppb at the Glendora monitoring station.

4.2.5 POTENTIAL AIR QUALITY AND GHG EMISSIONS IMPACTS AND MITIGATION MEASURES

The proposed control measures in the 2022 AQMP will either be reliant on funding incentives which will be implemented through the cooperation of multiple agencies or on promulgating rules, laws, or ordinances by state (California), regional (South Coast AQMD, special districts, and counties), and local (cities) agencies which are typically implemented and enforced by the applicable agencies. In either case, if the 2022 AQMP is adopted, implementation of the proposed control measures may involve secondary environmental impacts.

Thus, the analysis in this Program EIR is based on the maximum potential adverse air quality impacts that may occur as a result of implementing the control measures. For the proposed control measures which involve incentives or voluntary compliance in order to achieve emission reductions, their implementation does not typically involve the adoption of a rule, law, or ordinance by applicable agencies; thus, the magnitude of potential impacts associated with incentive-based control measures is less certain. Nonetheless, for the purpose of the analysis in this Program EIR, incentive-based control measures which rely voluntary implementation will rely on assumptions that would result in the maximum potential impacts.

As explained earlier in this subsection, Table 4.2-1 identifies only those control measures which have the potential to generate adverse air quality impacts. This table also provides details as to the nature of the air quality impacts for each control measure. The following subsections provide a more context and a detailed analysis on the extent of the potential adverse air quality impacts.

4.2.5.1 Criteria Pollutants – Construction Activities

Implementing the 2022 AQMP control measures is expected to decrease operational emissions of criteria pollutants over the long-term, resulting in a benefit to air quality. However, in order to realize this benefit, various types of construction activities will also be necessary to implement several control measures, and these are generally characterized as temporary, short-term activities which will contribute to adverse air quality impacts. For example, the installation or replacement of equipment, is expected to generate emissions from construction worker vehicles, transport trucks, and construction equipment. Implementing some of the control measures may require construction in the following categories of activities involving: 1) the demolition or removal of components from existing buildings, or structures, such as equipment, mechanical systems, cooking devices, clothes dryers, water and/or space heating systems, and pool heaters; 2) the installation of new energy efficient equipment, mechanical systems, cooking devices, clothes dryers, water and/or space heating systems; and pool heaters; 3) the construction of additional infrastructure to support alternative-fueled vehicles (e.g., electric, hydrogen, natural gas) and the electrification of new sources (e.g., additional on-road vehicles and marine vessels, “wayside” electric power such as catenary lines); and 4) the construction of air pollution control equipment at stationary sources (e.g., SCRs), the retrofit of existing equipment with low NOx technology (e.g., low or ultra-low NOx burners) or the use of cleaner stationary sources (e.g., Tier 4 engines and newer boilers). Table 4.2-3 specifies which of the 2022 AQMP control measures require construction, and as such, have the potential to generate construction emissions.

TABLE 4.2-3
2022 AQMD Control Measures Requiring Construction

Control Measures Requiring Construction	Nature of Construction Activities
R-CMB-01 through R-CMB-04, C-CMB-01 through C-CMB-03, L-CMB-01 through L-CMB-10, FLX-02, and MCS-01	1. Demolition or removal of existing building components or structures, mechanical systems, and water and/or space heating systems; and 2. Construction/installation of new or replacement of existing energy efficient structures, mechanical systems, and water and/or space heating systems
L-CMB-05, EGM-01, EGM-03, MOB-01, MOB-02A, MOB-02B, MOB-05, MOB-06, MOB-07, MOB-09, and MOB-10	Construction of infrastructure for fuel/energy producing facilities to be able to supply: 1. electricity, hydrogen, and natural gas for alternative-fueled off- and on-road vehicles and equipment; and 2. electricity for marine vessels via "wayside" electric power such as catenary lines
L-CMB-01, L-CMB-06, L-CMB-07, L-CMB-08, L-CMB-10, EGM-01, EGM-03, and MOB-04	1. Construction of new air pollution control equipment at stationary sources (e.g., SCRs); 2. Retrofit of existing equipment with low NOx technology (e.g., low or ultra-low NOx burners); and 3. Replacement of stationary sources with cleaner equipment (e.g., Tier 4 engines and newer boilers)

In addition to the proposed control measures, Appendix III of the 2022 AQMP has inventories which project the future regional emissions from construction and demolition, which are primarily related to dust-generating activities such as trenching, grading, loading, etc. but also include emissions from off-road equipment. Therefore, the analysis of construction air quality impacts in this chapter assumes that all off-road equipment is comprised of construction equipment and that the control measures identified in in Table 4.2-3 will contribute to the future regional construction and demolition emission inventories contained in Appendix III of the 2022 AQMP. While the exact scope of the construction activities necessary to implement the control measures identified in Table 4.2-3 is not known at this time, the proposed control measures are similar to control measures from previous AQMPs which have been implemented through South Coast AQMD rulemaking and their construction impacts were analyzed in their associated CEQA documents. As such, the proposed control measures in the 2022 AQMP would have similar impacts and as before, South Coast AQMD will analyze construction impacts in more detail as part of specific rulemaking.

The South Coast AQMD, as lead agency for all of its rule development projects, has several certified CEQA documents which contain evaluations of the potential environmental impacts associated with replacing burners with low NOx or ultra-low NOx burners and retrofitting various types of combustion equipment with SCR and similar technologies. For example, the Final Subsequent Environmental Assessment (SEA) for Proposed Rule (PR) 1109.1 – Emission of Oxides of Nitrogen from Petroleum Refineries and Related Operations, PR 429.1 – Startup and Shutdown Provisions at Petroleum Refineries and Related Operations, Proposed Amended Rule (PAR) 1304 – Exemptions, PAR 2005 – New Source Review for RECLAIM, and Proposed

Rescinded Rule 1109 – Emissions of Oxides of Nitrogen from Boilers and Process Heaters in Petroleum Refineries (referred to herein as the November 2021 Final SEA for Rule 1109.1)[152] and the Final Program Environmental Assessment (PEA) for Proposed Amended Regulation XX – Regional Clean Air Incentives Market (RECLAIM) (referred to herein as the December 2015 Final PEA for NOx RECLAIM)[153] are two CEQA documents which contain detailed calculations specific to replacing burners with low NOx or ultra-low NOx burners and retrofitting various types of combustion equipment with SCR and similar technologies.

Thus, the construction analysis in this chapter will apply assumptions which are similar or the same as those applied in the various construction scenarios and associated equipment from previous rulemaking activities and CEQA analyses. The typical construction scenario for installing a new or modifying an existing air pollution control device at an existing facility consists of the following phases and associated on-road and off-road construction equipment:

- Grading/Site Preparation: Rubber Tired Dozers, Tractors/Loaders/Backhoes, Construction Workers' Vehicles, and Medium Duty Trucks
- Paving: Pavers, Cement/Mortar Mixers, Rollers, Construction Workers' Vehicles, and Medium Duty Trucks
- Installing/Constructing Air Pollution Control Device(s): Cranes, Forklifts, Tractors/Loaders/Backhoes, Construction Workers' Vehicles, and Medium Duty Trucks

Emissions for these construction phases for industrial projects, associated with the installation of air pollution control devices, were estimated in both the December 2015 Final PEA for NOx RECLAIM and the November 2021 Final SEA for Rule 1109.1 which tiers off of and relies on the data from the December 2015 Final PEA for NOx RECLAIM. While both of these CEQA documents analyzed multiple scenarios of equipment upgrades and replacements, the calculations in the November 2021 Final SEA for Rule 1109.1 updated and expanded upon the calculations from the December 2015 Final PEA for NOx RECLAIM. As such, the analysis from the November 2021 Final SEA for Rule 1109.1 contains the most recent information available.[154,155] All but one of the construction scenarios analyzed resulted in construction emissions at less than the construction air quality significance thresholds as individual projects; however, the analysis concluded potentially significant construction air quality impacts because

[152] South Coast AQMD, 2021. Final Subsequent Environmental Assessment (SEA) for Proposed Rule (PR) 1109.1 – Emissions of Oxides of Nitrogen from Petroleum Refineries and Related Operations, PR 429.1 – Startup and Shutdown Provisions at Petroleum Refineries and Related Operations, Proposed Amended Rule (PAR) 1304 – Exemptions, PAR 2005 – New Source Review for RECLAIM, and Proposed Rescinded Rule 1109 – Emissions of Oxides of Nitrogen from Boilers and Process Heaters in Petroleum Refineries, certified November 5, 2021, http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2021/pr-1109-1-final-sea-(v10272021).pdf

[153] South Coast AQMD, 2015. South Coast AQMD, Final Program Environmental Assessment for Proposed Amended Regulation XX – Regional Clean Air Incentives Market (RECLAIM), SCH No. 2014121018/SCAQMD No. 12052014BAR, certified December 4, 2015. http://www.aqmd.gov/home/library/documents-support-material/lead-agency-scaqmd-projects/scaqmd-projects---year-2015.

[154] In general, no or limited construction emissions from grading are anticipated because modifications or installation of new equipment would occur at existing industrial/commercial facilities and, therefore, would not be expected to require earthmoving, grading, etc. For new alternative fuels productions facilities and electricity generation facilities, construction activities are expected to occur at existing industrial facilities and no substantial grading would be required.

[155] South Coast AQMD, 2021. Final SEA Rule 1109.1, Subsection 4.2.2.1, pp. 4.2-8 through 4.2-21. http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2021/pr-1109-1-final-sea-(v10272021).pdf

the timelines in Rule 1109.1 meant that multiple construction projects would occur concurrently and the construction emissions would overlap.

Demolition and replacement activities associated with residential control measures are not expected to require construction equipment because the zero emission or low NOx equipment would be replacing existing equipment or included as part of a new construction project. Household appliances, water heaters, and heaters are typically maneuvered using hand trucks, so no construction emissions are expected. For larger residential developments (e.g., apartment complexes with central boilers) and commercial developments, construction equipment is expected to require fewer construction equipment than was analyzed for the industrial projects in the November 2021 Final SEA for Rule 1109.1 because the nature of the modifications would be less extensive than what would be needed to modify large refinery equipment. Expected construction equipment would be limited to one or two pieces of construction equipment such as a crane and a backhoe that is used for less than eight hours in a day.

The control measures in 2022 AQMP are expected to increase the demand for electricity and alternative fuels, which will require construction activities associated with the installation of additional electricity generating equipment and alternative fuels production equipment and system at either existing facilities or new facilities. While the scope of what it would take to build the additional electricity generating equipment and alternative fuels production equipment at either existing or new facilities is unknown, emissions from major construction activities associated with capital improvement projects are typically greater and for a longer period of time than construction emissions resulting from the installation of air pollution control equipment, such as what was analyzed in the November 2021 Final SEA for Rule 1109.1. For example, the AltAir Renewable Fuels Conversion Project, proposed a full facility conversion from refining crude oil to producing renewable fuels production and included a proposal to install a hydrogen production unit. Because the AltAir Renewable Fuels Conversion Project will result in the production of alternative fuels, which may be used to partially satisfy the alternative fuel components of the proposed control measures in the 2022 AQMP, the environmental impacts associated with the AltAir Renewable Fuels Conversion Project may be helpful in illustrating the typical construction impacts that may occur for alternative fuels production as part of implementing the 2022 AQMP. The City of Paramount[156], as lead agency for the AltAir Renewable Fuels Conversion Project, prepared and certified the Final Subsequent Environmental Impact Report (SEIR) which analyzed the environmental impacts at this facility. To illustrate potential overlapping construction activities on a peak day, Table 4.2-4 presents a compilation of the estimated construction emissions typical of equipment replacement in residential and commercial settings, air pollution control equipment installations as previously analyzed in the November 2021 Final SEA for Rule 1109.1 with the construction emission estimates for producing renewable or alternative fuels as previously analyzed in the Final SEIR for the AltAir Renewable Fuels Conversion Project.

[156] City of Paramount, 2022. Final Subsequent Environmental Impact Report for the AltAir Renewables Fuels Conversion Project, City Case CUP 757, State Clearing House No. 2020069013, February 2022, Subsection 4.2.4.1, pp. 4.2-21 through 4.2-24 https://www.paramountcity.com/government/planning-department/planning-division/altair-world-energy-project.

TABLE 4.2-4
Estimated Unmitigated Construction Emissions for Typical Air Pollution Control Equipment Installations and Alternative Fuels Production Facilities

Project Type	Pollutant (lb/day)					
	CO	VOC	NOx	SOx	PM10	PM2.5
Small Construction Project(1)	2.4	0.03	<0.01	0.0	0.00	0.00
2 Burner Replacements(2)	117.66	3.51	18.76	0.22	1.63	0.79
1 New SCR with Ammonia Storage Tank(3)	27.79	2.13	26.54	0.08	7.83	2.26
1 SCR Upgrade(2)	8.28	0.29	2.79	0.02	0.41	0.12
Alternative Fuels Facility Conversion(4)	261.3	53.3	402.0	1.6	138.6	38.1
South Coast AQMD Air Quality Significance Threshold for Construction	**550**	**75**	**100**	**150**	**150**	**55**
Significant?	**NO**	**NO**	**YES**	**NO**	**NO**	**NO**

(1) Calculated using one crane operating four hours and one backhoe operating eight hours per day.
(2) South Coast AQMD November 2021 Final SEA for Rule 1109.1, 2021. Table 4.2-38.
(3) South Coast AQMD November 2021 Final SEA for Rule 1109.1, 2021. Table 4.2-33.
(4) City of Paramount Final Subsequent EIR for the AltAir Renewables Fuels Conversion Project, 2022. Table 4.2.8.

Conclusion for Subsection 4.5.2.1 – Criteria Pollutant Air Quality Impacts from Construction Activities: While individually, most components of the construction activities presented in Table 4.2-4 would not have emissions exceeding the South Coast AQMD's air quality significance thresholds, it is foreseeable and likely that on any given day, construction activities associated with one or more new or existing air pollution control devices overlapping with other types of construction activities associated with producing alternative fuels in order to comply with the 2022 AQMP could occur at more than one facility. **Based on the size of any single project, or if more than one facility were concurrently constructed on any given day, the emissions would exceed the South Coast AQMD's air quality significance thresholds. Therefore, construction emissions are considered potentially significant.**

Greenhouse gas emissions impacts from construction are analyzed in Subsection 4.2.5.4 as construction GHG emissions are amortized over 30 years, and then considered in addition to operational GHG emissions before being compared against the South Coast AQMD significance threshold.

The South Coast AQMD has developed localized significance thresholds for criteria pollutant emissions to determine whether a project may generate significant adverse localized air quality impacts. An analysis of localized air quality impacts for criteria pollutant emissions is not applicable to regional projects such as local general plans, specific plans, or AQMPs (South Coast AQMD, 2008) because the details of the individual projects to implement these types of plans and their locations are not known at this time. Therefore, a localized air quality impact analysis has not been performed for the 2022 AQMP in this Program EIR.

Project-Specific Mitigation: Construction air quality impacts from implementing 2022 AQMP control measures are concluded to be potentially significant. As a result, mitigation measures are required to minimize the significant air quality impacts during construction. Based on the

project-specific construction emissions, mitigation measures have been crafted to target reductions in emissions of particulates, including diesel PM, as well as some NOx and VOC emissions. The following mitigation measures should be implemented for each affected facility, where applicable and if feasible:

AQ-1 Develop a Construction Emission Management Plan to minimize emissions from vehicles including, but not limited to: consolidating truck deliveries so as to minimize the number of trucks on a peak day; scheduling deliveries to avoid peak hour traffic conditions; describing truck routing; describing deliveries including logging delivery times; describing entry/exit points; identifying locations of parking; identifying construction schedule; and prohibiting truck idling in excess of five consecutive minutes or another time-frame as allowed by the California Code of Regulations, Title 13 Section 2485 - CARB's Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling. The Construction Emission Management Plan shall be submitted to South Coast AQMD – PRDI/CEQA for approval prior to the start of construction. At a minimum, the Construction Emission Management Plan would include the following types of mitigation measures and Best Management Practices.

AQ-2 Tune and maintain all construction equipment to be in compliance with the manufacturer's recommended maintenance schedule and specifications that optimize emissions without nullifying engine warranties. All maintenance records for each equipment and their construction contractor(s) ~~should~~ shall be made available for inspection and remain onsite for a period of at least two years from completion of construction.

AQ-3 Survey and document the construction areas and identify all construction areas that are served by electricity. Onsite electricity, rather than temporary power generators, shall be used in all construction areas that are demonstrated to be served by electricity. This documentation shall be provided as part of the Construction Emissions Management Plan.

AQ-4 Require the use of electric or alternative-fueled (i.e., renewable combustion fuels and hydrogen~~non-diesel~~) construction equipment, if available, including but not limited to, concrete/industrial saws, pumps, aerial lifts, material hoist, air compressors, forklifts, excavator, wheel loader, and soil compactors.

AQ-5 Require all off-road diesel-powered construction equipment rated greater than 50 hp to meet Tier-4 off-road emission standards at a minimum. In addition, if not already supplied with a factory-equipped diesel particulate filter, all construction equipment shall be outfitted with Best Available Control Technology (BACT) devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations. Construction equipment shall incorporate, where feasible, emissions-reducing technology such as hybrid drives and specific fuel economy standards. In the event that any equipment required under this mitigation measure is not available, the project proponent shall provide documentation in the Construction

Emissions Management Plan or associated subsequent status reports as information becomes available.

AQ-6 Require the use of zero-emission (ZE) or near-zero emission (NZE) on-road haul trucks such as heavy-duty trucks with natural gas engines that meet CARB'S adopted optional NO_X emissions standard.

AQ-7 Provide electric vehicle (EV) charging stations or at a minimum, provide the electrical infrastructure and electrical panels which shall be appropriately sized. Electrical hookups should be provided for trucks to plug in any onboard auxiliary equipment.

AQ-8 Provide temporary traffic controls such as a flag person, during all phases of significant construction activity to maintain smooth traffic flow, where necessary.

AQ-9 Provide dedicated turn lanes for the movement of construction trucks and equipment on- and off-site, where applicable.

AQ-10 Clearly identify truck routes with trailblazer signs to guide and ensure that the route shall avoid congested streets and sensitive land uses (e.g., residences, schools, day care centers, etc.), where applicable

AQ-11 Improve traffic flow by signal synchronization, where applicable and ensure that check-in point for trucks is inside the project site.

AQ-12 Ensure that vehicle traffic inside the project site is as far away as feasible from sensitive receptors.

AQ- 13 Restrict overnight truck parking in sensitive land uses by providing overnight truck parking inside the project site.

AQ-14 Design the project such that truck entrances and exits are not facing sensitive receptors and trucks will not travel past sensitive land uses to enter or leave the project site.

AQ-15 Reduce traffic speeds on all unpaved roads to 15 miles per hour (mph) or less.

AQ-16 Prohibit truck idling in excess of five minutes, on- and off-site.

AQ-17 Schedule construction activities that affect traffic flow on the arterial system to off-peak hours to the extent practicable.

AQ-18 Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 mph.

AQ-19 Suspend use of all construction activities that generate air pollutant emissions during first stage smog alerts.

AQ-20 Configure construction parking to minimize traffic interference.

AQ-21 Require covering of all trucks hauling dirt, sand, soil, or other loose materials.

AQ-22 Install wheel washers where vehicles enter and exit the construction site onto paved roads or wash off trucks and any equipment leaving the site for each trip.

AQ-23 Apply non-toxic soil stabilizers according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for ten days or more).

AQ-24 Replace ground cover in disturbed areas as quickly as possible to minimize dust.

AQ-25 Pave road and road shoulders, where applicable.

AQ-26 Sweep streets at the end of the day with sweepers compliant with South Coast AQMD Rules 1186 and 1186.1 ~~compliant sweepers~~ if visible soil is carried onto adjacent public paved roads (recommend water sweepers that utilize reclaimed water).

Construction mitigation measures will be updated as technology for air pollution control equipment improves, and as individual projects are proposed as part of implementing specific control measures. Future projects that implement 2022 AQMP control measures shall continue to be subject to these mitigation measures, unless another CEQA analysis is conducted which identifies new or revised applicable mitigation measures.

Remaining Criteria Pollutant Air Quality Impacts from Construction Activities: Implementation of these construction mitigation measures would have to the potential to reduce some pollutants, especially particulates including diesel PM, as well as some NOx and VOC emissions. However, the reason the construction air quality impacts are concluded to be significant is because the NOx emissions substantially exceed the air quality significance threshold for construction. Since the mitigation measures overall primarily target reducing construction PM emissions, even if all the mitigation measures are applied, while some NOx emissions would be reduced to a limited extent, the quantity of potential NOx emissions would not be reduced to less than significant levels. Therefore, the overall construction air quality impacts after mitigation is applied would remain significant.

4.2.5.2 Criteria Pollutants – Operational Activities

Figure 4.2-4 shows the Basin-wide maximum 5-year weighted ozone base design value in parts per million (ppm) along with the projected design value for the attainment deadline of the 2015 8-hour federal standard (2037). As shown in Figure 4.2-5, approximately ~~157~~ 124 tons per day of NOx emission reductions from the 2037 baseline are needed to meet the 8-hour ozone standard in 2037 ~~(220 – 63 = 157)~~. This equates to a reduction of approximately ~~71~~ 67 percent from the 2037 baseline (see Figure 4.2-6).

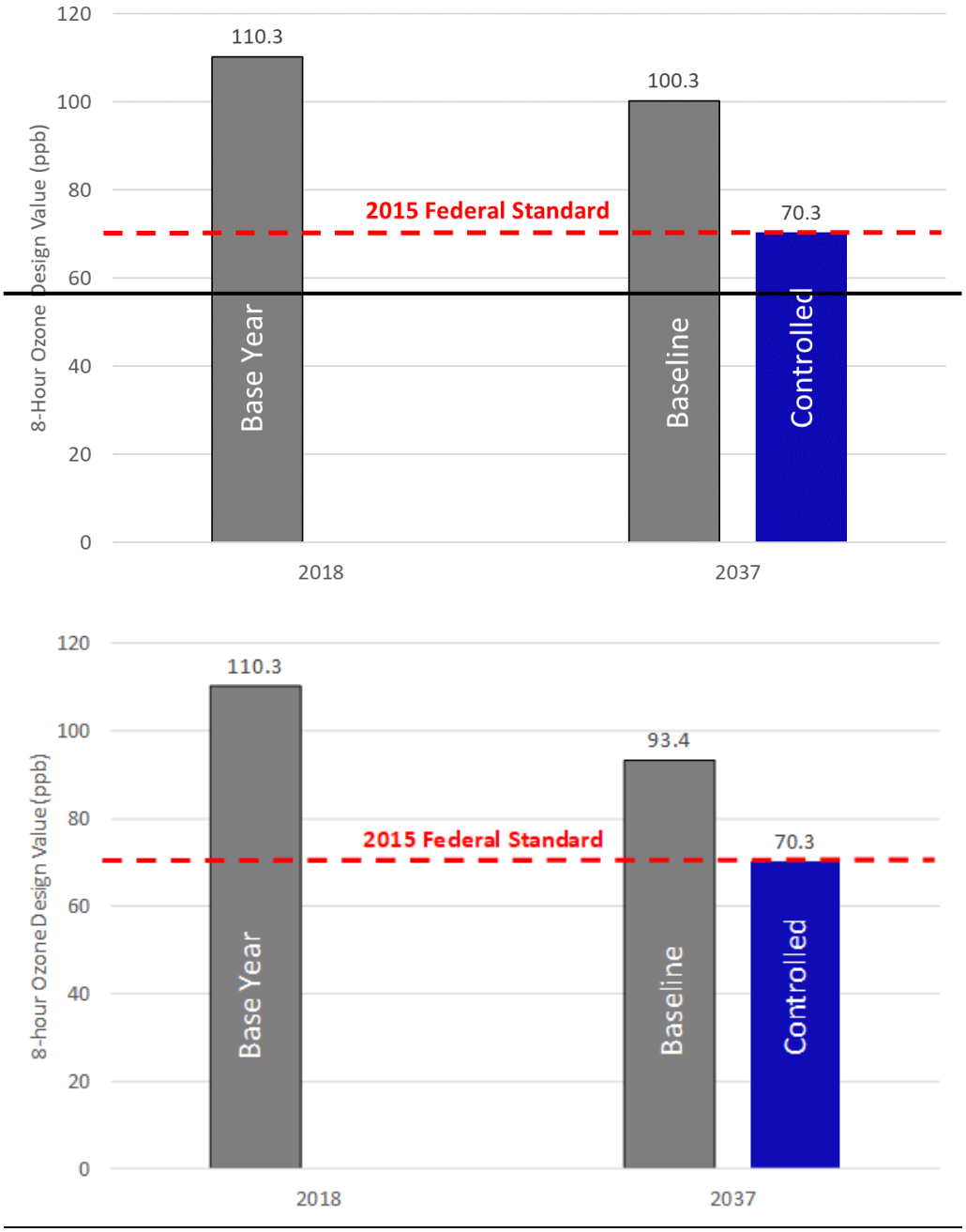


FIGURE 4.2-4
Projection of Future 8-Hour Ozone Air Quality in the Basin in Comparison to Federal Standards

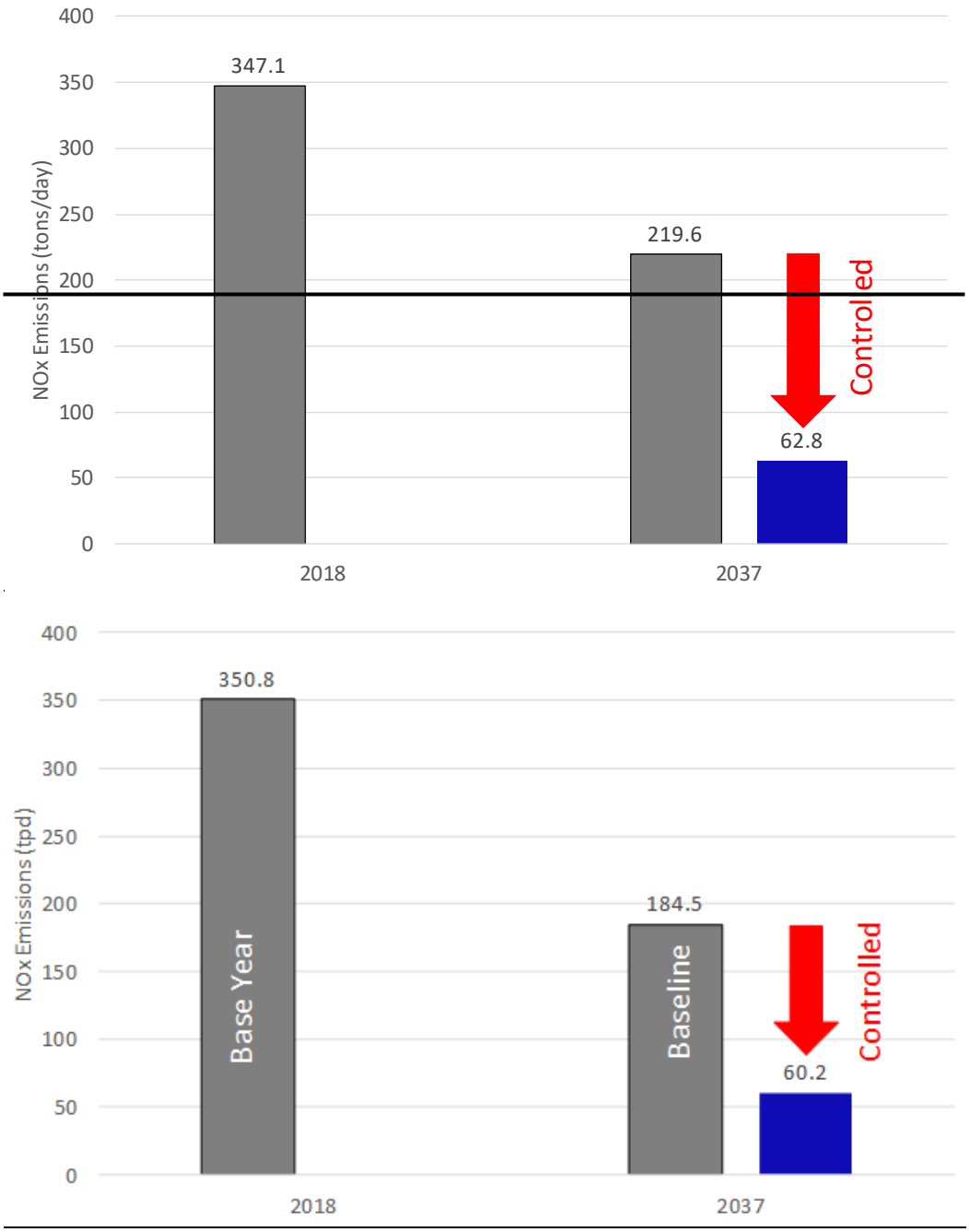


FIGURE 4.2-5
Baseline and Future NOx Emission Inventories in the Basin

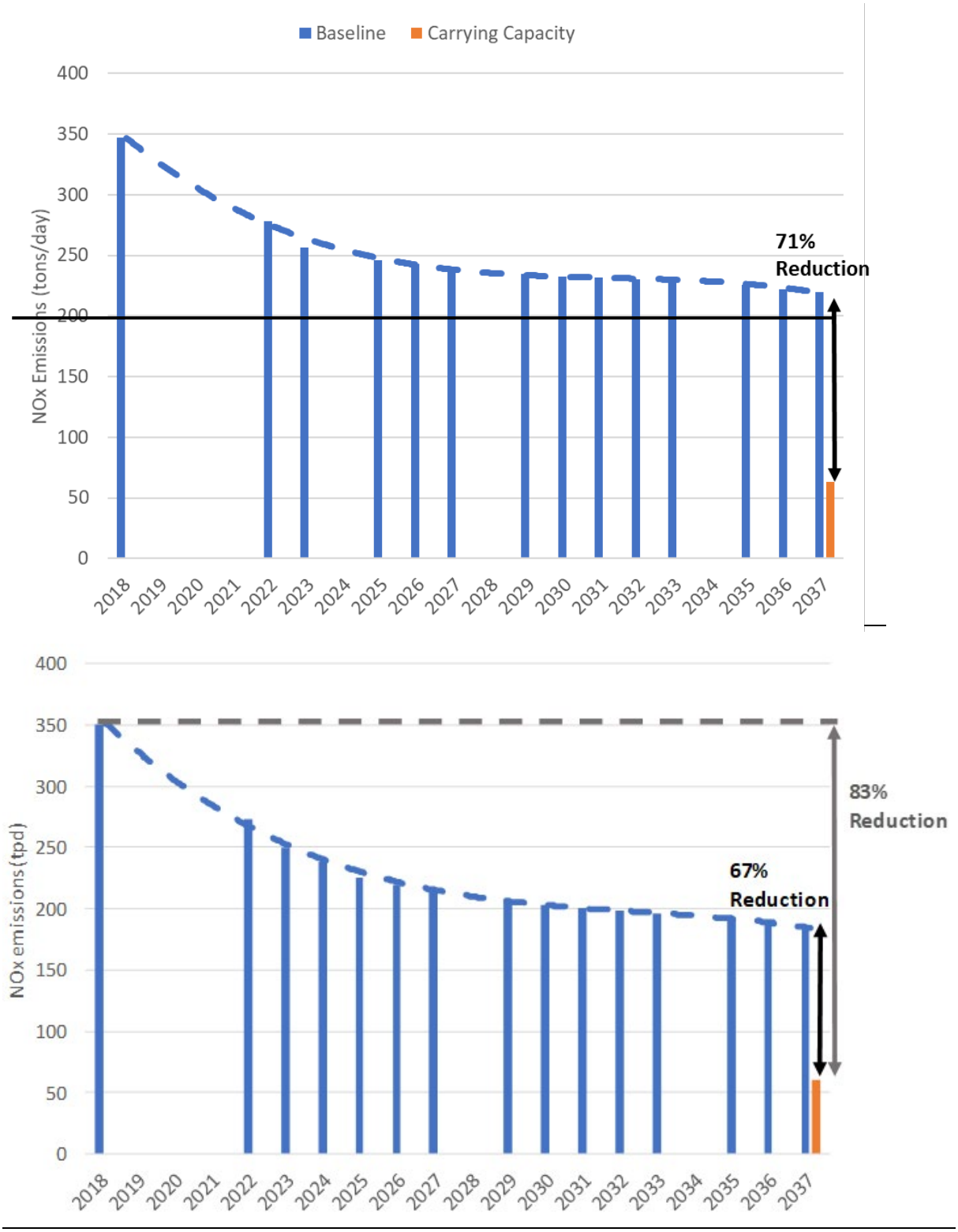


FIGURE 4.2-6
Summer Planning Baseline Emissions and Ozone Carrying Capacity

With the controls proposed in the 2022 AQMP, future ozone concentrations are expected to meet the federal 2015 8-hour ozone standard by 2037. California Ambient Air Quality Standards

(CAAQS) are distinct from NAAQS. The current 8-hour and 1-hour ozone CAAQS are 70 ppb and 90 ppb, respectively. CAAQS are based on designation values, while NAAQS are based on design values. Due to the stringency of the CAAQS designation values, attainment is not anticipated in 2037 for either the 8-hour or 1-hour ozone standard. Further emission reductions and additional time will be required to attain the CAAQS. A detailed analysis is presented in Appendix V of the 2022 AQMP.

4.2.5.2.1 Air Quality Impacts from Increased Electricity Demand

Implementation of the proposed control measures in the 2022 AQMP is expected to increase the future demand for electricity in two ways: 1) over the short-term due to construction activities and 2) over the long-term from the conversion of emission sources from combustion to electric for residential and commercial land uses, and for industrial applications, as well as increased electrification of mobile sources. Control measures in the 2022 AQMP may also rely on additional add-on air pollution control equipment for reducing emissions from stationary sources, which would be expected to increase electricity demand for the air pollution control technologies that utilize electricity to function. Mobile source control measures are expected to increase the commercial availability of zero emission vehicles and alternative fuel vehicles, which is expected to increase electricity demand for both charging of electrical vehicles and production of alternative fuels.

Short-Term Increases in Operational Electricity Demand due to Construction Activities

Implementation of the 2022 AQMP control measures is expected to result in construction activities that may include building infrastructure for new electrical power or modifications to existing facilities to accommodate the overall projected operational increase in electrical demand; new infrastructure for electric recharging, refueling for hydrogen and potentially other alternative fuels; and construction activities at stationary sources to install new or modify existing equipment with low NOx emissions technologies such as SCRs. Currently, there is a limited availability of construction equipment (e.g., welding machines and temporary light stands) which are powered by electricity but most construction equipment relies on diesel or gasoline in order to function. Control Measures EGM-01, MOB-08 and MOB-10 specifically target accelerating the deployment of electrified off-road mobile sources (construction equipment). Table 4.2-5 presents a comparison between emissions from the use of electrified construction equipment and diesel-fueled construction equipment which shows that the transition to electrified construction equipment will result in emission reductions.

TABLE 4.2-5
Comparison of Emissions of Typical Tier 4 Off-Road Diesel-Powered Construction Equipment to Electrified Construction Equipment

Source	Pollutant (g/hp-hr)						
	VOC	CO	NOx	SOx(1)	PM10	PM2.5	CO2eq(2)
U.S. EPA Tier 4 Diesel Standard - 75-175 hp	0.14	3.70	0.30	0.01	0.02	0.02	188.58
U.S. EPA Tier 4 Diesel Standard - 175-750 hp	0.14	2.60	0.30	0.01	0.02	0.02	188.58
In-Use Electrical Motor(3)	0.01	0.06	0.22	0.02	0.01	0.01	256.91
Net Difference - 75-175 hp	-0.13	-3.64	-0.08	0.01	0.00	0.00	68.33
Net Difference - 175-750 hp	-0.13	-2.54	-0.08	0.01	0.00	0.00	68.33

(1) Based on AP-42 Table 3.4-1 and 15 ppm for the use of ultra-low sulfur diesel (ULSD) fuel.
(2) Based on U.S. EPA Emission Factors for GHG Inventories (2014).
(3) While electrical motors in construction equipment do not on their own emit pollutants, the equipment that produces electricity supplied by utilities typically relies on combustion of natural gas. The VOC, CO, and PM emission factors are based on NEI and eGRID 2014 data for California, while the NOx, SOx, and CO2eq emission factors are based on 2020 eGRID data for California. (U.S. EPA)

Thus, as more electric construction equipment are developed and deployed at construction sites, the demand for short-term electricity during construction will increase, while the demand for diesel and gasoline and their corresponding emissions will decrease, resulting in an overall net reduction in combustion emissions during construction activities.

Long-Term Increases in Electricity Demand from Converting Combustion Sources to Electric

Residential and Commercial Sources

Several control measures may result in potential NOx emission reductions but with a corresponding increased demand for electricity if combustion sources in residential and commercial settings are replaced with electrified equipment. The control measures were evaluated for NOx emission reductions at the regional level using statewide data. Due to a variety of factors such as the number of pieces of equipment, the size of the equipment, and the type of the operations, etc., it is difficult to quantify all potential electricity demand impacts. Nonetheless, for the equipment which has electricity use data available, electricity demand impacts were quantified but these estimates only provide a partial quantification of the overall potential electricity demand impacts from electrified equipment used in residential and commercial settings.

Therefore, the following discussion identifies the control measures which target the electrification of residential and commercial sources and provides a combination of quantitative, whenever possible, and qualitative analyses of the potential future electricity demand impacts that may be expected to occur as a result of replacing residential and commercial combustion equipment with electrified equipment.

- R-CMB-01 seeks to encourage the deployment of zero emission water heating units for new and existing residences. The zero emission water heating units could be all-electric heat pump water heaters, either as stand-alone or in combination with heat pumps used

for cooling and heating, thereby increasing electricity demand by an estimated 6,000 gigawatt-hours per year (GWh/yr).

- R-CMB-02 seeks to encourage the deployment of zero emission space heating units for new and existing residences. The zero emission space heating units could be all-electric heat pumps that replace natural-gas fired furnaces, thereby increasing electricity demand by an estimated 1,095 GWh/yr.

- R-CMB-03 seeks to encourage the deployment of zero emission cooking devices for new and existing residences. The zero emission cooking devices could be electric or induction cooktops, thereby increasing electricity demand by an estimated 1,196 GWh/yr.

- R-CMB-04 seeks to deploy zero emission devices for other residential sources of emissions such as laundry dryers, swimming pool heaters, and barbeque grills for new and existing residences. The zero emission devices could be electric or heat pump laundry dryers, heat pump swimming pool heaters, and electric barbeque grills, thereby increasing electricity demand.

- C-CMB-01 seeks to deploy zero emission water heating units for new and existing commercial buildings. The zero emission water heating units appropriate for use in light commercial applications could be integrated heat pump water heaters, which have water tanks packaged with them as single units, or split heat pump water heaters with water tanks located up to 50 feet away. These devices would increase electricity demand.

- C-CMB-02 seeks to deploy zero emission space heating units for new and existing commercial buildings. The zero emission space heating units could be all-electric heat pumps that replace natural-gas fired furnaces, thereby increasing electricity demand by an estimated 730 GWh/yr.

- C-CMB-03 seeks to deploy zero emission commercial cooking devices for new and existing commercial buildings. The zero emission cooking devices could be electric or induction cooktops, thereby increasing electricity demand. Low NOx technology upgrades for oven burners and deep fat fryers could potentially include air injection technology that would require electric blowers, thereby increasing electricity demand.

- C-CMB-04 seeks to encourage the replacement of small internal combustion engines (ICEs) that are not subject to South Coast AQMD permit requirements. The zero emission equipment could be battery technologies, which could require charging, thereby increasing electricity demand by an estimated 989 GWh/yr.

- C-CMB-05 seeks to encourage the replacement of miscellaneous, non-permitted commercial combustion equipment using point-of-sale regulations. The zero emission equipment could be electrified ovens, furnaces, and dryers, thereby increasing electricity demand.

Table 4.2-6 presents a summary of the potential electricity use associated with replacing existing equipment which uses natural gas, such as space heaters, water heaters, cooking equipment and laundry equipment in residential and commercial settings, with electrified equipment.

Thus, as more electric residential and commercial equipment are deployed, the demand for electricity will increase, while the demand for natural gas and its corresponding emissions will decrease, resulting in an overall net reduction in combustion emissions during from residential and commercial equipment.

Large Sources

Several control measures targeting NOx emission reductions from large combustion sources are proposed, and if implemented, could result in an increased demand for electricity if large combustion sources are replaced with electrified equipment. Specifically, Control Measures L-CMB-01 through L-CMB-10, as summarized in Table 4.2-1, seek to deploy both low NOx emission technologies, such as SCRs and SCR upgrades, burner upgrades, as well as promote the use of alternative fuels and the installation of gas scrubbers on nitric acid tanks and zero emission technologies such as the electrification of steam-driven and combustion equipment. All of these emission reduction technologies are all expected to increase electricity demand to some degree. Due to the lack of data regarding the number of pieces of equipment, the size of the equipment, and the type of operations, etc., the potential electricity demand impacts cannot be quantified. Therefore, the following discussion provides a qualitative analysis of the potential future electricity demand impacts that may be expected to occur as a result of replacing or retrofitting large industrial combustion equipment with emission reduction technologies that rely on electricity for their operation.

- The use of zero emission technologies including electrification of combustion sources and batteries are expected to increase electricity demand due to recharging of batteries and operation of electrified equipment.

- New SCRs and existing SCR upgrades use electricity for operating motors, pumps, ammonia injectors, and monitoring equipment, etc. New SCR units and upgrades are therefore expected to increase electricity demand.

TABLE 4.2-6
Potential Increase in Electricity Use for Residential and Commercial Equipment

Control Measure Equipment/Source Category	Number of Affected Facilities	Estimated Electricity Use[1] (kWh)	Estimated Total Electricity Use (GWh/yr)
R-CMB-01 Residential Water Heaters	Of 2 million water heaters installed, 50% of residences will be zero emission and 50% will be low NOx space heaters [2]	380-500 kWh/month	6,000
R-CMB-02 Residential Space Heaters	Of 2 million heaters installed, 50% of residences will be zero emission and 50% will be low NOx space heaters [3]	1.5 kWh/hr	600
R-CMB-03 Residential Cooking Devices	2 million electric cooking appliances (range ovens, cooktops)[4]	2.3 kWh/hr	2,519
R-CMB-04 Residential – Other Combustion Sources (laundry dryer, pool heaters)	1) 420,000 gas clothes dryers; 2) 200,000 pool heaters[5]	1) 2.5 - 4 kWh/load 2) 1.5 kWh/hr	1) 699 2) 60
C-CMB-01 Commercial Water Heaters	96,000[6]: Tier I: 64,000 rated less than 400,000 BTU/hr Tier II: 32,000 rated from 400,000 BTU/hr to 2 MMBTU/hr	Tier I: 1.4 kWh/hr Tier II: 6.8 kWh/hr	Tier I: 98 Tier II: 238
C-CMB-02 Commercial Space Heaters	200,000 commercial buildings will convert to zero emission technology with 50% of applicable sources replaced; mitigation fee for other 50%.[1], [7]	10 kWh/hr	400
C-CMB-03 Commercial Cooking Devices	Estimated 120,000 commercial cooking devices with zero emission technology for 50% of applicable sources; mitigation fee for other 50%[8]	16,558 kWh/yr (average)	993
C-CMB-04 Small Internal Combustion Engines	Estimated to replace 703,000 ICEs.	2 - 37 kWh	1,353
		Total Estimated Electricity Use:	**12,960**

[1] https://www.siliconvalleypower.com/residents/save-energy/appliance-energy-use-chart
[2] For purposes of calculating maximum electricity increases, all new units are assumed to be third-party provided power even though some portion will be solar powered.
[3] Assumes 4 hours of operation on 100 days per year when temperature is below 70° F.
[4] Assumes 1.5 hours per day per residence.
[5] Assumes average household dries 8 load per week; assumes pool heater used 200 hours per year.
[6] Assumes water heater runs 3 hours per day.
[7] Assumes 4 hours of operation on 100 days per year when temperature is below 70° F.
[8] Assumes 60,0000 appliances (50% of 120,000). Electricity usage based on https://esource.bizenergyadvisor.com/article/commercial-kitchen-equipment for average of a combination oven, fryer, and griddle.
[9] Assumes 1 hour of operation per week.

- Burner replacement with advanced lower NOx technologies such as ClearSign™ and SOLEX™ enables better mixing of air and fuel, but may require the use of additional electric air blowers to introduce air flow into the combustion process. Additionally, improved instrumentation and electronic controls will be necessary to monitor and regulate the combustion process. Blowers and instrumentation require electricity thereby increasing electricity demand.

- Electrification of steam-driven equipment would reduce steam demand from boilers, lowering combustion emissions, but would increase electricity demand.

- New gas scrubbers, including their pumps and monitoring equipment, all of which require electricity to operate, may be installed to control NOx emissions from nitric acid tanks.

- Increased demand and use of alternative fuel (e.g., renewable combustion fuels and hydrogen) will require electricity to produce and distribute sufficient supplies. Alternative fuel production facilities have been approved for development at existing petroleum refinery sites located locally in the City of Paramount, and in the Bay Area in the cities of Martinez and Rodeo. These projects involve the conversion of petroleum refineries to renewable fuels production, where production capacity of conventional fuels will be reduced when compared to the future ramping up of production of alternative fuels. For the project located in the City of Paramount, electricity demand is projected to increase by approximately 10,000 megawatt hours per year (MWh/yr).[157] For the Martinez project, electricity demand is expected to decrease by approximately 1,115,000 MWh/yr [158] For the Rodeo project, electricity demand is expected to decrease by 84,800 MHWh/yr.[159] The electricity demands from these refinery conversion projects vary widely due to the differences in the existing facilities and the type of modifications necessary to accomplish the conversions.

  For hydrogen as a fuel, increases in hydrogen demand would most likely be met by construction of additional hydrogen production facilities. New facilities will increase the electricity demand and will vary based on the size and design of the facility.

Thus, as more replacement or retrofitted large industrial combustion equipment is implemented and hydrogen production units become operational, the demand for electricity will increase, resulting in an overall net increase in combustion emissions associated with electricity generation. Therefore, potentially significant air quality impacts from electricity generation may occur.

[157] City of Paramount, 2022. Final Subsequent Environmental Impact Report for the AltAir Renewables Fuels Conversion Project, City Case CUP 757, State Clearing House No. 2020069013, February 2022, Table 2.1, p. 2-2, https://www.paramountcity.com/government/planning-department/planning-division/altair-world-energy-project.

[158] Contra Costa, County 2021. Draft Environmental Impact Report for the Marathon Refinery Renewable Fuels Project, State Clearing House No. 2021020289, October 2021, page 3.6-8, https://www.contracosta.ca.gov/7961/Martinez-Refinery-Renewable-Fuels-Projec.

[159] Contra Costa County, 2021. Draft Environmental Impact Report for the Rodeo Renewed Project, State Clearinghouse No. 2020120330, Table 4.6-5b, pp. 4.6-209-4.6-210, https://www.contracosta.ca.gov/7945/Phillips-66-Rodeo-Renewed-Project.

Mobile Sources

Implementing the mobile source control measures presented in Table 4.2-7 is expected to increase electricity demand by developing infrastructure to provide electricity at commercial marine ports, rail yards, and intermodal facilities for electrified vehicles and equipment; deploying cleaner technologies including the electrification of equipment currently powered by diesel fuel; and incentivizing the retirement and replacement of older vehicles and equipment with electric vehicles and equipment. While Table 4.2-7 has identified the potential electricity usage associated with approximately half the mobile source control measures, specific data pertaining to the number of units that may be deployed is not available. Thus, a net increase in electricity usage as well as the air quality impacts associated with the potential increase in electrified mobile sources cannot be quantified. Nonetheless, gasoline and diesel fuel use and their corresponding combustion emissions are expected to decrease as the demand for electricity increases, displaced by combustion emissions from natural gas, which is the primary fuel used for generating electricity within South Coast AQMD's jurisdiction. As shown in Table 4.2-5, the quantity of emissions from diesel combustion is much larger than emissions from the combustion of natural gas.

SB 100 requires that the electrical infrastructure needed to support the increased deployment of electric vehicles and other electrified equipment would need to have 100 percent renewable electricity generation by 2045. As mobile sources transition from combustion to electrified technology, the amount of emissions from combusting diesel and gasoline is expected to decline over time. However, the combustion emissions from natural gas utilized in electricity-producing equipment will increase over the short-term until the SB 100 goals of producing electricity from 100 percent renewables are achieved.

In conclusion, although the net change in emissions from converting mobile sources from combusting diesel and gasoline to electrification cannot be quantified, converting mobile sources that rely on diesel and gasoline combustion to electricity will cause a short-term increase in emissions from the combustion of natural gas in electricity generating equipment until the goals of producing electricity from 100 percent renewables as set forth in SB 100 are achieved. These short-term increases will be offset by a corresponding decrease in emissions from diesel and gasoline combustion by mobile sources, which is expected to result in a net decrease in emissions over the long-term.

TABLE 4.2-7
Potential Increase in Electricity Use for Mobile Sources

Control Measure	Control Measure Title	Control Methodology	Estimated Electricity Use (GWh/yr)
MOB-01	Emission Reductions at Commercial Marine Ports	Infrastructure development required to achieve emission reductions at commercial marine ports from on-road heavy-duty vehicles, ocean-going vessels, cargo handling equipment, locomotives, and harbor craft.	0.3
MOB-05	Accelerated Retirement of Older Light-Duty and Medium-duty Vehicles	Accelerating the retirement of up to 2,000 light- and medium-duty vehicles per year through the Replace Your Ride Program and accelerating the penetration of zero and near–zero emission vehicles.	23.3
MOB-06	Accelerated Retirement of Older On-Road Heavy-duty Vehicles	Retiring older, heavy-duty vehicles and replacing them with low NOx vehicles fueled with CNG or other alternative fuels (e.g., battery electric and hydrogen fuel cells) including school buses.	415.3
MOB-08	Small Off-Road Engine Equipment Exchange Program	Promoting the accelerated turn-over of in-use small off-road engines and other engines, such as gasoline- and diesel-powered commercial lawn and garden equipment through expanded voluntary exchange programs will contribute to the retirement of older off-road engines.	0.6
MOB-10	Off-Road Mobile Source Emission Reduction Credit Generation Program	Accelerating the deployment of zero (e.g., battery-electric or fuel cell powered equipment) and low NOx emission off-road mobile equipment (e.g., 90 percent cleaner than Tier 5) that do not receive public funding.	29.7
MOB-01 and MOB-06	Emission Reductions at Commercial Marine Ports; and Accelerated Retirement of Older On-Road Heavy-duty Vehicles	Control measures could encourage the construction and use of electric or magnetic power built into roadway infrastructure to boost the pulling capacity or range of the heavy-duty vehicles.	157 - 183

4.2.5.2.2 Air Quality Impacts from Control of Stationary and Area Sources

Air pollution control equipment typically targets reducing emissions of one or more criteria pollutants from both stationary and area sources but can also reduce toxic air contaminants, depending on the type of technology employed. Table 4.2-8 lists the 2022 AQMP control measures that are expected to achieve the desired emission reductions of the targeted pollutant(s) via the installation and operation of air pollution control equipment. For each control measure listed in Table 4.2-8, the most typical type(s) of air pollution control equipment known to be effective for reducing emissions of the target pollutant for each source category have been identified. It is important to note, however, that operation of air pollution control equipment may also have the potential to generate emissions (e.g., ammonia slip from SCRs). Thus, the following discussion identifies the proposed control measures that may result in the installation of air pollution control equipment that will be capable of achieving emission reductions of the target pollutant(s), but will also have the potential to generate emissions of a different pollutant,

resulting in potential secondary air quality impacts. The following discussion also focuses only on those types of air pollution control technologies with the potential to generate air pollutants directly or indirectly. Other types of air quality impacts such as construction emissions to install air pollution control equipment, alternative fuel production facilities, and infrastructure; and emissions from electricity production due to increased electricity demand, etc., are not discussed in this subsection as they are addressed elsewhere in this subchapter.

TABLE 4.2-8
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP that May use Air Pollution Control Equipment

Control Measure Number	Control Measure Title	Control Methodology
L-CMB-01	NOx Reductions for RECLAIM Facilities	Installation of NOx pollution control equipment including SCRs and low NOx burners.
L-CMB-02	Reductions from Boilers and Process Heaters (Permitted)	Installation of zero emission and low NOx technologies for boilers and heaters.
L-CMB-03	NOx Reductions from Permitted Non-Emergency ICEs	Installation of zero emission and low NOx technologies for non-emergency ICEs.
L-CMB-06	NOx Emission Reductions from Electricity Generating Facilities	Replacement of boilers with lower-emitting turbines, installation of zero emission and low NOx emissions technologies, and the application of stricter emission requirements for diesel ICEs.
L-CMB-07	Emission Reductions from Petroleum Refineries	Installation of NOx pollution control equipment including advanced SCRs and ultra-low NOx burners, and electrification of certain refinery boilers or process heaters or steam-driven equipment such as pumps or blowers.
L-CMB-08	NOx Emission Reductions from Combustion Equipment at Landfills and Publicly Owned Treatment Works	Installation of lean pre-mixed combustion turbines, NOx pollution control equipment including SCRs and low NOx burners on biogas fueled combustion equipment and/or routing landfill produced biogas to existing natural gas pipelines.
L-CMB-10	NOx Reductions from Miscellaneous Permitted Equipment	Replacement of existing equipment with zero emission technology and installation of NOx pollution control equipment including SCRs and low NOx/ultra-low NOx burners.
CTS-01	Further Emission Reduction from Coatings, Solvents, Adhesives, and Lubricants	Revising the VOC content for select product categories; incentivizing the use of super-compliant zero emission and low NOx VOC materials and technologies; and prohibiting the use of parachlorobenzotriflouride (pCBtF) and tert-butyl acetate (tBAc) to reduce toxicity in products.
MCS-01	Application of All Feasible Measures	Retrofitting existing equipment and installation of newer, lower-emitting equipment to replace older, higher-emitting equipment for sources as a result of new emission limits introduced through federal, state, or local regulations.

SCR Technology

Control Measures L-CMB-01, L-CMB-07, L-CMB-08, and L-CMB-10 propose a variety of different NOx control technologies depending on the type of NOx source, including traditional and advanced SCR; low NOx, ultra-low NOx burners, and next generation ultra-low NOx burners; scrubbers; and transitioning to zero emission technology. These control techniques were previously analyzed in the 2016 AQMP under Control Measure CMB-05, and of the control technologies, SCRs are expected to cause emissions of other pollutants. SCRs inject ammonia, a toxic air contaminant, into the exhaust stream of the combustion source thereby promoting the chemical conversion of NOx to elemental nitrogen and oxygen in an oxidizing environment through contact with a catalyst. As the exhaust gas passes through the SCR, 75 to 90 percent of NOx that would otherwise be emitted, is reduced. In addition, SCR is effective at reducing 50 to 90 percent of VOC emissions, and 30 to 50 percent of PM10 emissions from the exhaust stream resulting in a co-benefit.[160] However, the use of ammonia in a SCR will result in some excess, unreacted ammonia, known as ammonia slip, exiting the exhaust stream.

Releases of excess ammonia reacts in the atmosphere to cause secondary formation of PM2.5. Over the years, South Coast AQMD has conducted an extensive literature review and contacted a number of SCR manufacturers and vendors, and this data collection effort indicated that the amount of ammonia slip remaining in the exhaust stream depends on a variety of factors including ammonia injection rate, space velocity, ammonia to NOx molar ratio, temperature, and NOx inlet concentration. To minimize the amount of ammonia slip released into the atmosphere, South Coast AQMD typically limits ammonia slip concentration to 5 ppm through permit conditions.

The analysis in the November 2021 Final SEA for Rule 1109.1 concluded that while the use of ammonia in SCR technology could result in an increase of PM2.5 formation from ammonia slip, the amount of secondary PM2.5 generated from ammonia slip was less than the corresponding co-benefit of primary PM2.5 emission reductions that would result from the overall targeted emission reductions of NOx, resulting in a net reduction of PM2.5 emissions overall. Control Measures L-CMB-01, L-CMB-07, L-CMB-08, and L-CMB-10 are projected to reduce NOx emissions by 2.54 tons per day, and some of these will be accomplished using SCR technology. The November 2021 Final SEA for Rule 1109.1 determined that to achieve up to eight tons per day of NOx reductions, a corresponding regionwide net decrease in PM2.5 concentration of 0.11 $\mu g/m^3$ on an annual average would also occur. By applying the same methodology ratio from the November 2021 Final SEA for Rule 1109.1 (0.647 ton per day ammonia slip emitted in order to achieve seven tons per day of NOx emission reductions (assuming all NOx reductions are accomplished using SCR technology) to these control measures, the maximum ammonia slip emissions are estimated to be 0.235 ton per day. The increase in PM2.5 concentration from ammonia slip would be 0.09 $\mu g/m^3$ while the PM2.5 concentration decrease from the NOx reductions is 0.13 $\mu g/m^3$, resulting in a net PM2.5 reduction of 0.04 $\mu g/m^3$. Therefore, if the maximum NOx reductions from Control Measures L-CMB-01, L-CMB-07, L-CMB-08, and L-CMB10 are achieved by utilizing SCR technology and ammonia, a corresponding region-wide net decrease in annual PM2.5 concentration of 0.04 $\mu g/m^3$ is expected.

[160] South Coast AQMD, 2017. 2016 AQMP Final Program EIR, January 2017, pg 4.1-27, http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2016/2016aqmpfpeir.pdf, accessed August 7, 2022.

The use of SCR technology will also generate secondary emissions from the delivery of ammonia and the transport of catalyst to and from a facility when changing the catalyst. Secondary operational emissions were estimated using EMFAC2017 emission factors for heavy-heavy duty diesel-fueled truck for calendar years 2022 and 2037, and are presented in Table 4.2-9. EMFAC2017 emission factors change with time and typically reduce emissions as time goes forward. Based on data presented in the November 2021 Final SEA for Rule 1109.1, a round-trip delivery of ammonia is estimated to be 100 miles, and catalyst delivery or disposal is 130 miles.

TABLE 4.2-9
EMFAC2017 Emission Factors for T7 Diesel-fueled Vehicles
for Calendar Years 2022 and 2037

Year	Miles per Gallon	VOC (lb/mi)	CO (lb/mi)	NOx (lb/mi)	SOx (lb/mi)	PM10 (lb/mi)	PM2.5 (lb/mi)	CO2e (lb/mi)
2022	6.78	1.43E-04	6.64E-04	7.19E-03	2.91E-05	6.54E-05	6.26E-05	3.23E+00
2037	9.32	4.00E-05	4.31E-04	4.79E-03	2.12E-05	4.21E-05	4.03E-05	2.35E+00

lb/mi = pounds per mile

Ammonia deliveries are expected to occur on a frequency of once per month or less often and are usually delivered in a single truck for a particular facility. It is conceivable that multiple facilities could receive deliveries on the same day. Additionally, catalyst change outs, while infrequent since catalyst replacement typically occurs once every three to five years, could also require multiple trucks per day when it is time to replace the catalyst. Table 4.2-10 presents an order of magnitude estimate of the daily emissions for 50 trucks traveling 130 miles round-trip each.

TABLE 4.2-10
Order of Magnitude Transportation Emissions for Ammonia and Catalyst for SCRs

Year	VOC (lb/day)	CO (lb/day)	NOx (lb/day)	SOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2eq (MT/yr)
2022	0.93	4.32	46.74	0.19	0.43	0.41	0.026
2037	0.26	2.80	31.14	0.14	0.27	0.26	0.019
South Coast AQMD Air Quality Significance Threshold for Operation	**55**	**550**	**55**	**150**	**150**	**55**	**10,000**
Significant?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

The use of SCR technology will result in ammonia slip and secondary formation of PM2.5, but the technology has the capability to reduce 75 to 90 percent of the NOx, 50 to 90 percent of VOC, and 30 to 50 percent of PM10 emissions that would otherwise be emitted. The November 2021 Final SEA for Rule 1109.1 concluded that the reduction in PM2.5 associated with the reduction of NOx is also greater than the increase of PM2.5 associated with ammonia slip. Emissions associated with the delivery of ammonia and hauling of new or spent catalyst are expected to be less than significant. The use of SCR technology thus will cause a less than significant impact to criteria pollutant operational emissions.

Alternative Fuels Production

Implementation of the 2022 AQMP control measures is expected to increase the demand for alternative fuels including renewable transportation fuels (e.g., renewable diesel) and hydrogen. In addition to the three aforementioned renewable fuels projects that have been recently approved in California (i.e., AltAir Renewable Fuels Conversion Project in Paramount, Marathon Refinery Renewable Fuels Project in Marathon Martinez, and Phillips 66 Rodeo Renewed Project in Rodeo), the proposed control measures are anticipated to cause an increase in the demand for renewable fuels such that additional renewable fuels projects (e.g., hydrogen production facilities) may be needed. Due to the difficulty and length of time involved with siting and permitting new industrial facilities in general, the development of new facilities dedicated to producing alternative fuels is less likely to occur. Instead, as with the aforementioned recently approved renewable fuels projects, existing industrial facilities are more likely to propose modifications in order to produce renewable fuels. Renewable fuels production requires energy input to reconfigure the molecules of the renewable feedstocks into transportation fuels, and the energy input is currently provided by large combustion sources (i.e., heaters or furnaces). In addition, renewable fuels production requires hydrogen as part of the reaction. Based on the CEQA analyses conducted for the three approved renewable fuels projects, projects which convert petroleum refinery equipment to be able to produce renewable fuels have the potential to decrease emissions facility-wide provided that hydrogen production facilities are already in place. However, when existing hydrogen production facilities are not available or cannot produce sufficient supplies of hydrogen needed to produce renewable fuel, as was the case for the AltAir Renewable Fuels Conversion Project, a new hydrogen plant may be required which may cause significant adverse air quality impacts for NOx. Table 4.2-11 presents a comparison of the net emissions attributed to three approved refinery conversion projects.

As illustrated in Table 4.2-11, conversions of existing facilities to produce renewable fuels could result in emission reductions, but the actual outcome will vary depending on site-specific conditions. Since the current supplies of hydrogen production for the purposes of producing renewable fuels are limited, this analysis assumes that efforts to convert existing facilities to produce renewable fuels in order to implement the 2022 AQMP control measures will result in potentially significant air quality impacts.

TABLE 4.2-11
Comparison of Emissions from Approved Renewable Fuels Production Projects

Units	VOC	CO	NOx	SOx	PM10	PM2.5
AltAir Renewable Fuels Conversion Project						
tons/day[1]	244.3	25.1	89.4	135.4	16.2	13.7
lb/day[2]	32.1	424.0	1,055.4	15.8	47.5	15.8
South Coast AQMD Air Quality Significance Threshold for Operation	**55**	**550**	**55**	**150**	**150**	**55**
Significant?	**NO**	**NO**	**YES**	**NO**	**NO**	**NO**
Marathon Refinery Renewable Fuels Project						
tons/day[3]	-91.9	-598.6	-539.5	-651.9	-246.7	-221.1
lb/day[4]	-7,024.9	-3,392.1	-3,072.0	-3,570.8	-1,371.6	-1,228.7
South Coast AQMD Air Quality Significance Threshold for Operation	**55**	**550**	**55**	**150**	**150**	**55**
Significant?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**
Phillips 66 Rodeo Renewed Project						
tons/day[5]	-0.64	-11	-250	-1,129	-20	-18
lb/day[6]	-4	-60	-1,372	-6,185	-110	-98
South Coast AQMD Air Quality Significance Threshold for Operation	**55**	**550**	**55**	**150**	**150**	**55**
Significant?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

(1) City of Paramount, 2022. Appendix B Table A-2, ppg. App B Part 2–41 and App B Part 2–46.
(2) City of Paramount, 2022. Table 4.2.11.
(3) Contra Costa County, 2022. Table 3.1-14 Revised, pp 3-51 and 3-52.
(4) Contra Costa County, 2022. Table 3.1-14 Revised, pg 3-51.
(5) Contra Costa County, 2022. DEIR Table 4.3-16, pp 4.3-71-4.3-72.
(6) Contra Costa County, 2022. DEIR Table 4.3-15, pg 4.3-71.

Product Reformulations to Reduce VOCs and Toxics

Control Measure CTS-01 proposes to achieve VOC emission reductions through the reformulation of coatings, adhesives, sealants and lubricants, which would be necessary to meet lower future VOC content limits. In addition, Control Measure CTS-01 would prohibit the use of pCBtF and tBAc to reduce toxicity in products because the Office of Environmental Health

Hazard Assessment (OEHHA), a specialized department within the California Environmental Protection Agency (CalEPA) with responsibility for evaluating health risks from environmental chemical contaminants, determined that these compounds are potentially carcinogenic and has developed unit risk factors for the two.

The potential air quality impacts associated with reformulation of coatings have been extensively evaluated in previous AQMPs starting with the 2003 AQMP, as well as in a number of rules that were adopted and/or amended since the late 1990s. Evaluations of the previously adopted and amended rules included possible effects of shifting coating formulations from solvent-based to water-based and/or exempt-solvent formulations, and commenters raised the potential for the following air quality impacts that could result from reformulated products: more thickness of the coating due to multiple applications; illegal thinning to reduce the viscosity of the reformulated coatings; more priming; more topcoats; more touch-ups and repair work; more frequent recoating; product substitution; more reactivity; and the synergistic effects of these issues combined. Even though Control Measure CTS-01 is not expected to substantially change coating components, these or similar issues could continue to be raised. Each issue is summarized in the following bullet points along with the associated conclusions reached in previous AQMPs or rulemakings for each issue. This analysis assumes that the conclusions reached in the previous AQMPs or rulemakings would continue to apply to Control Measure CTS-01.

- **More Thickness** – In the past, it has been asserted that reformulated compliant water- and solvent-borne coatings: 1) can be very viscous because they are formulated using a high-solids content and, therefore, are difficult to handle during application; and 2) tend to produce a thick film when applied directly from the can which indicates that a smaller surface area is covered with a given amount of material, thereby increasing the amount of coatings and VOC emissions per unit of area covered.

  Response – Past research has shown that compliant low-VOC coatings are not necessarily formulated with a higher solids content than conventional coatings. A low-VOC coating is expected to cover the same or larger surface area than a high-VOC coating. Further, there is no evidence that there is an inverse correlation between solids content and coverage area. [South Coast AQMD, 2007a].

- **Illegal Thinning** – In the past, it has been asserted that thinning occurs in the field in excess of what is allowed by the South Coast AQMD rule limits. Further, because reformulated compliant water and solvent-borne coatings are more viscous (e.g., high-solids content), painters need to adjust the properties of the coatings to make them easier to handle and apply. In particular for solvent-borne coatings, this adjustment consists of thinning the coating as supplied by the manufacturer by adding some solvent to reduce its viscosity. The added solvent increases VOC emissions back to or sometimes above the level of older formulations.

  Response – South Coast AQMD staff conducted extensive research prior to 1998 to determine whether the thinning of materials beyond the allowable levels actually occurred in the field. South Coast AQMD staff conducted unannounced site visits to evaluate contractor practices, collected samples as applied and supplied from contractors, and analyzed paint samples from retail outlets. No thinning beyond South Coast AQMD rule limits was identified. In addition, the CARB 2005 Architectural Coating Survey provided results of compliance with the CARB Suggested Control Measure for

Architectural Coatings. In most cases, the percent of complying market share from the 2005 survey improved or was approximately the same as the 2001 CARB survey. Therefore, the 2007 AQMP Final Program EIR concluded that widespread thinning happens rarely; when it does occur, it is unlikely to occur at a level that would lead to a substantial overall emissions increase when compared to emissions from higher VOC coatings. [South Coast AQMD, 2007a].

Currently, a majority of architectural coatings available in the marketplace are waterborne. Thinning is not an issue for waterborne coatings as thinning with water would not increase the VOC content of affected coatings.

- **More Priming** – It has been previously asserted that reformulated compliant low-VOC water and solvent-borne topcoats do not adhere as well as higher-VOC solvent-based topcoats to unprimed substrates. Therefore, the substrates must be primed with typical solvent-based primers to enhance the adherence quality. Industry representatives have testified that the use of water-borne compliant topcoats could require more priming to occur in order to promote adhesion. Additionally, it has been asserted that water-borne sealers do not penetrate and seal porous substrates like wood, as well as traditional solvent-borne sealers. This allegedly results in three or four coats of the sealer per application compared to one coat for a solvent-based sealer, resulting in an overall increase in VOC emissions for the coating system.

  Response – South Coast AQMD staff evaluated surface preparation information in coating product data sheets and studies on the topic and concluded that low-VOC coatings do not require a substantially different surface preparation than conventional coatings. Both low-VOC and conventional coatings for both architectural and industrial maintenance applications were demonstrated to have the ability to adhere to a variety of surfaces. Based on the coating sheets, the material needed and the time necessary to prepare a surface for coating was approximately equivalent for low-VOC and conventional coatings. [South Coast AQMD, 2007a].

  A more recent trend for coating manufacturers is to produce ultra-low VOC coatings that are a primer and topcoat in one, thus, eliminating an entire step in the coating process. Most major coatings manufacturers now offer such products, some of which have a VOC content as low as 5.0 grams per liter. Therefore, any impacts from priming have been substantially reduced as a result of reformulation.

- **More Topcoats** – It has been previously asserted that reformulated compliant water- and low VOC solvent-borne topcoats may not cover, build, or flow-and-level as well as the solvent-borne formulations. Therefore, more coats are necessary to achieve equivalent cover and coating build-up.

  Response – Based on information in the product data sheets, South Coast AQMD staff found that while the average drying time for lower-VOC coatings increased when compared to conventional coatings, the development of non-volatile, reactive diluents combined with hypersurfactants caused the performance of the lower-VOC coatings to equal or outperform the traditional, solvent containing coatings. Resistance to chemicals, corrosion, chalk, impact, and abrasion; adhesion; and the ability to retain gloss and color were found to be similar in lower-VOC and conventional coatings. Coating manufacturer

data also indicated that low-VOC and conventional coatings for both architectural and industrial maintenance applications are durable and long lasting, and that more frequent recoating was not necessary for low-VOC coatings when compared to conventional coatings. [South Coast AQMD, 2007a].

- **More Touch-Ups and Repair Work** – It has been previously asserted that reformulated compliant water- and low-VOC solvent-borne formulations dry slowly, and are susceptible to damage such as sagging, wrinkling, alligatoring, or becoming scraped and scratched. Claims have also been made that the high-solids solvent-borne alkyd enamels tend to yellow in dark areas, and that water-borne coatings tend to blister or peel, and also result in severe blocking problems. All of these problems were reported to require additional coatings for repair and touch-up.

  Response – Based on South Coast AQMD staff's evaluation of the durability characteristics information contained in the coating product data sheets, low-VOC coatings and conventional coatings have comparable durability characteristics. These conclusions are supported by the National Technical Systems and other coating studies. As a result, it is not anticipated that more touch up and repair work would be needed if low-VOC coatings are used.

- **More Frequent Recoating** – It has been previously asserted that the durability of the reformulated compliant water- and low-VOC solvent-based coatings is inferior to the durability of the traditional solvent-borne coatings. Durability problems include cracking, peeling, excessive chalking, and color fading, which all typically require more frequent recoating and result in greater total emissions than would be the case for conventional coatings.

  Response – The latest data obtained by South Coast AQMD staff from coating manufacturers indicates that the new generation of waterborne coatings is performing as well if not better than their solvent-based counterparts. These commercialized products are formulated with better performing raw materials, including superior resin chemistry and higher performing pigments, resulting in better hiding power, coverage, and overall durability. Rather than needing more coatings usage, a reduction is expected.

- **Substitution –** It has been previously asserted that reformulated compliant water- and low-VOC solvent-borne coatings are inferior in durability and are more difficult to apply, so consumers and contractors will substitute better performing high VOC coatings in other categories for use in categories with low compliance limits. An example of this substitution could be the use of a higher VOC product currently sold under the small container exemption, which has a higher VOC content limit requirement, in place of a lower-VOC coating.

  Response – South Coast AQMD staff determined that substitution is not expected to occur because CARB and South Coast AQMD rules prohibit the application of certain coatings on substrates for which they are not intended. In addition, based on product data sheets and studies, there are a substantial number of low-VOC coatings in a wide variety of coating categories that are currently available. Further, as coating rules become more stringent, VOC content limits have and will continue to converge to similarly low levels for many coating categories.

Due to advances in resin chemistry and higher performing pigments, compliant coatings that are as durable as solvent-based coatings are now widely available. In the rare event that substitution does occur, it is expected that future compliant coatings would still achieve overall VOC emission reductions. If substitution occurs, the net effect is that anticipated overall VOC emission reductions would be less than expected, but there would not be an overall increase in emissions as compared to the existing setting. Consequently, it is not expected that Control Measure CTS-01, requiring a lower overall VOC content for affected products, will result in significant adverse air quality impacts from the substitution of low-VOC coatings with higher VOC coatings. [South Coast AQMD, 2007a].

- **Reactivity** – It has been previously asserted that reformulated compliant low-VOC solvent- and water-borne coatings contain components that are more reactive than those used in conventional coating formulations. Water-borne coatings perform best under warm, dry weather conditions, and are typically recommended for use between the months of May and October. Since ozone formation is also dependent on the meteorological conditions, it has been asserted that the use of waterborne coatings during this period increases the formation of ozone. As a result, coating, solvent, adhesive, and sealant rules should be based on reactivity rather than a mass-based approach.

- **Response** – Different types of solvents have different degrees of reactivity (the ability to accelerate the formation of ground-level ozone). As noted in the 2003 AQMP Final Program EIR, the speciated organic gas emissions from use of solvent-borne architectural coatings, for example, are 24 percent more reactive than the official VOC inventory would suggest. This observation suggests that solvent-borne architectural coatings, for example, may actually be more reactive than low-VOC coatings especially water-based coatings. Further, the percent of solvent content found in solvent-borne formulations is much greater than the quantity of solvents found in waterborne coatings, which would make the weighted maximum incremental reactivity (MIR) in solvent-borne coatings greater than the already higher average MIR. [South Coast AQMD, 2003]. The previous assertion is taken into consideration although, based on the preceding information, more reactivity from compliant low-VOC solvent- and water-borne coatings compared to conventional coatings may not be the case. Since the 2007 AQMP, South Coast AQMD staff has continued to monitor all reactivity-related research. Based on the latest research and analysis, as well as the recommendations of the research, staff supports the continuation of a mass-based ozone control strategy, with future consideration for a reactivity-based approach.

- **Synergetic Effects of the Combined Issues** – Individually, each of the issues do not result in a significant adverse air quality impact, but it has been suggested that these, acting together in combination, may have the potential to generate significant adverse air quality impacts. Based on the previous discussions, several potential issues have been shown to be untrue, not occur, or their effects are generally minor. Therefore, it can be concluded that the synergistic effect of all the issues combined would not be expected to generate a significant adverse air quality impact. The Final Program EIR for the 2007 AQMP concluded that even if it is assumed that some of the alleged activities do occur, the net overall effect of reducing the VOC content of coatings and other consumer products is expected to result in a reduction in VOC emissions.

Due to OEHHA's determinations, several South Coast AQMD rules would need to be amended in order to prohibit the use of pCBtF and tBAc in architectural coatings including industrial maintenance and anti-graffiti coatings, automotive coatings, paint thinners, multi-purpose solvents, lubricants, adhesives and sealants in order to reduce the potential exposure to toxic materials.

In 2017, tBAc was identified as a carcinogen after it had been previously granted a partial exemption from the definition of a VOC in certain uses in several source specific rules, e.g., Rule 1113 – Architectural Coatings and Rule 1151 – Automotive Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations. Further, in 2020, pCBtF was identified as a stronger carcinogen than tBAc, after it had been previously exempted from the definition of a VOC in Rule 102 for all uses within the South Coast AQMD, including adhesives and sealants that would otherwise be subject to Rule 1168 – Adhesive and Sealant Applications requirements.

If the future use of coatings, solvents, lubricants, paint thinners, adhesives and sealants that are formulated with pCBtF and tBAc is prohibited, without other products commercially available on the market that are capable of achieving the future VOC limits, then these various rules may need to be amended to allow the increase in the future VOC limits for certain products until such time that lower VOC formulations without pCBtF and tBAC can be developed. If these aforementioned rules are amended to increase the future VOC limits, then previously anticipated VOC emission reductions will either be delayed or permanently foregone, depending on the future availability of lower VOC-containing formulations. For example, rule development efforts to phase-out pCBtF and tBAc have begun in earnest with Proposed Amended Rule 1168 for which a Draft Subsequent Environmental Assessment (SEA) was released for a 45-day public review and comment period on September 6, 2022 which concluded potentially significant adverse air quality impacts from delayed and permanent VOC emission reductions foregone of 0.12 tons per day and 0.28 tons per day, respectively.[161]

The long-term health benefit of prohibiting these toxic compounds with substantial adverse carcinogenic health effects outweighs the delayed and permanent VOC emission reductions foregone. Moreover, the 2016 AQMP established a set-aside account for NOx and VOC emissions, in the event that not all of the control measures proposed at that time would achieve the entire amount of desired emission reductions. At the time, the SIP set-aside account had an initial balance of 2.0 tons per day of NOx and 0.5 ton per day of VOC for each year from 2017 to 2030, and 0.5 ton per day of NOx and 0.2 ton per day of VOC in 2031, to accommodate projects with a positive conformity determination (i.e., emissions that exceed the de minimis threshold). The 2022 AQMP, however, has a revised SIP set-aside reserve of 4.0 tons per day VOC emissions specifically designated for the potential technology assessment and phaseout of toxics for VOC-based rules as targeted by Control Measure CTS-01. Thus, any delayed or permanent VOC emission reductions foregone from amending the various VOC-based rules, including but not limited to Rule 1168, will be offset by the VOC emissions in the SIP set-aside account. In addition, other opportunities for reducing VOC emissions from product formulations are expected to continue to occur over the long-term due to future VOC limits that are currently in Rules 1113, 1151 and 1168 that have not yet gone into effect.

[161] South Coast AQMD, 2022. Draft Subsequent Environmental Assessment for Proposed Amended Rule 1168 – Adhesive and Sealant Applications, http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2022/par-1168-draft-sea-with-noc.pdf.

Since the peak daily VOC operational impacts associated with both the delayed and permanent VOC emission reductions foregone from implementing Proposed Amended Rule 1168 are significant, rule development activities to amend other South Coast AQMD rules to prohibit products containing pCBtF and tBAC as set forth in Control Measure CTS-01 could also result in delayed and permanent VOC emission reductions foregone at levels that could exceed the South Coast AQMD air quality significance threshold of 55 pounds per day for VOCs. Thus, the peak daily VOC operational impacts associated with both the delayed and permanent VOC emission reductions foregone from implementing Control Measure CTS-01 due to product reformulations could potentially generate significant adverse air quality impacts during operation. However, any delayed or permanent VOC emission reductions foregone from amending the various VOC-based rules, including but not limited to Rule 1168, will be offset by the VOC emissions in the SIP set-aside account.

In addition, due to prohibiting tBAc and pCBtF, two toxic air contaminants with high cancer potency factors, the overall amount of toxic air contaminants used in future product reformations will be reduced. Therefore, less than significant impacts from toxic air contaminants during operation are expected.

4.2.5.2.3 Air Quality Impacts from Mobile Sources

Table 4.2-12 presents the 2022 AQMP control measures aimed at reducing mobile source emissions through encouraging the use of lower-emitting alternative fuels and the replacement of high-emitting mobile sources with low NOx and zero emission mobile sources.

Control Measures MOB-01, MOB-02A, MOB-02B, MOB-04, MOB-05, MOB-06, MOB-07, MOB-09, and MOB-10 have the potential to increase the demand for alternative fuels production (e.g., hydrogen or renewable fuels), and the potential air quality impacts from production facilities were previously analyzed in Subsection 4.2.5.2.2.

Control Measures MOB-01 through MOB-10 promote the transition to zero emission technologies, and this transition is expected to require additional electricity. The secondary air quality impacts due to increased electrical demand are discussed in Subsection 4.2.5.2.1.

Control Measures MOB-01 through MOB-10, EGM-01, and EGM-03 have the potential to accelerate the purchase of zero emission or low NOx emitting equipment and vehicles that would replace older equipment and vehicles, thereby increasing the scrapping of equipment and vehicles faster than would normally occur. The scrapping of equipment and vehicles generates PM emissions which are discussed in the following paragraphs.

TABLE 4.2-12
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP that May Reduce Emissions from Mobile Sources

Control Measure Number	Control Measure Title	Control Methodology
MOB-01	Emission Reductions at Commercial Marine Ports	Infrastructure development required to achieve emission reductions at commercial marine ports from on-road heavy-duty vehicles, ocean-going vessels, cargo handling equipment, locomotives, and harbor craft using alternative fuels.
MOB-02A	Emission Reductions at New Rail Yards and Intermodal Facilities	Infrastructure development required to achieve emission reductions at new rail yards and intermodal facilities from on-road heavy-duty vehicles, off-road equipment, and locomotives may cause impacts using alternative fuels.
MOB-02B	Emission Reductions at Existing Rail Yards and Intermodal Facilities	Infrastructure development required to achieve emission reductions at existing rail yards and intermodal facilities from on-road heavy-duty vehicles, off-road equipment, and locomotives may cause impacts using alternative fuels.
MOB-04	Emission Reductions at Commercial Airports	Deploying additional cleaner technologies, such as increasing efficiencies, implementing air quality improvement options or by deploying zero emission and low NOx technologies, alternative fuels, DPFs, and low-emitting engines for additional equipment beyond the commitments made in the existing Memoranda of Understanding with the commercial airports may cause impacts.
MOB-05	Accelerated Retirement of Older Light-Duty and Medium-duty Vehicles	Accelerating the retirement of up to 2,000 light- and medium-duty vehicles per year through the Replace Your Ride Program and accelerating the penetration of zero and near–zero emission vehicles may cause impacts.
MOB-06	Accelerated Retirement of Older On-Road Heavy-duty Vehicles	Retiring older, heavy-duty vehicles and replacing them with low NOx vehicles fueled with CNG or other alternative fuels (e.g., battery electric and hydrogen fuel cells) may cause impacts.
MOB-07	On-Road Mobile Source Emission Reduction Credit Generating Program	Incentivizing the early deployment of zero emission and low NOx emission heavy-duty trucks through the generation of mobile source emission credits may cause impacts.

TABLE 4.2-12 (concluded)
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP that May Reduce Emissions from Mobile Sources

Control Measure Number	Control Measure Title	Control Methodology
MOB-08	Small Off-Road Engine Equipment Exchange Program	Promoting the accelerated turn-over of in-use small off-road engines and other engines, such as gasoline- and diesel-powered commercial lawn and garden equipment through expanded voluntary exchange programs will contribute to the retirement of older off-road engines which may cause impacts.
MOB-09	Further Emission Reductions from Passenger Locomotives	Promoting earlier and cleaner replacement or upgrade of existing passenger locomotives capable of achieving Tier 4 emission standards and supporting the development of zero emission or low NOx technologies (e.g., battery electric and hydrogen fuel cells) may cause impacts.
MOB-10	Off-Road Mobile Source Emission Reduction Credit Generation Program	Accelerating the deployment of zero (e.g., battery-electric or fuel cell powered equipment) and low NOx emission off-road mobile equipment (e.g., 90 percent cleaner than Tier 5) that do not receive public funding may cause impacts.
EGM-01	Emission Reductions from New Development and Redevelopment (NOTE: Potential Indirect Source Rule and ports affected).	Replacing or upgrading off-road construction equipment as part of development/redevelopment efforts may result in the use of zero emission technologies in construction, the installation of charging and alternative fueling infrastructure, the use of alternative fuels; and the use of construction equipment with low-emitting engines fitted with DPFs.
EGM-03	Emission Reductions from Clean Construction Policy	Incentivizing the use of zero emission and low NOx equipment by adopting a voluntary measure for municipalities and public agencies to reduce emissions generated by construction activities may include use of zero emission and low NOx construction equipment, dust control, alternative fuels, DPFs, low-emitting engines, and low VOC materials.

The actual quantity of equipment and vehicles that may be scrapped as a result of implementing these control measures rather than being moved for use elsewhere outside of South Coast AQMD's jurisdiction is not known. In addition, the available capacity of scrapping facilities to be able to handle and process the increased amount of equipment and vehicles to be scrapped is unknown. Nonetheless, the emissions associated with scrapping vehicles can be estimated.

During the development of Rule 1610 – Old-Vehicle Scrapping, emissions associated with vehicle scrapping were estimated to be 0.088 pound of PM10 emissions per vehicle scrapped. [South Coast AQMD, 1992]. According to an internet search conducted on August 15, 2022,

there are eight auto recycling facilities operating within South Coast AQMD's jurisdiction.[162] Assuming that six vehicles can be crushed per hour (Martin, 2013) and each facility operates 10 hours per day, a total 480 vehicles can be crushed per day (8 facilities x 6 cars/hour x 10 hours/day = 480 cars/day). Therefore, vehicle scrapping has the potential to generate 42 pounds of PM10 per day, which is less than the South Coast AQMD's operational significance threshold of 150 pounds per day. Applying the CARB's CEIDARS profile 900 ratio for unspecified sources of 0.6 pound of PM2.5 per pound of PM10[163, 164], a corresponding 25 pounds per day of PM2.5 emissions can be expected, and this is less than the PM2.5 significance threshold of 55 pounds per day.

Control Measures MOB-04, EGM-01, and EGM-03 incorporate the use of add-on air pollution control devices, and this has the potential to increase overall equipment emissions by a small amount. For example, installation of diesel particulate filters onto off-road construction equipment, in some cases, has resulted in increased fuel use, typically estimated at less than one percent, due to a decrease in fuel economy. It is difficult to quantify how many off-road construction equipment will be equipped with add-on air pollution control devices such as diesel particulate filters, but the emission increases associated with the increased fuel use are expected to be less than significant.

Zero emission technologies are the preferred method for most mobile source control measures in the 2022 AQMP. Some mobile source sectors, e.g., trucks, have made substantial progress towards achieving zero emissions, with electric trucks already being used in some test programs; however, achieving zero emission in other sectors, such as airplanes, long-run locomotive engines, and marine vessels is much more difficult. Therefore, the potential use of renewable diesel is expected to be an attractive alternative in the interim because renewable fuel can be used in lieu of diesel fuel into existing fleets and used in sources where zero emission technologies do not currently exist.

The use of alternative fuels will reduce emissions of NOx and other criteria pollutants, and renewable fuels, specifically renewable diesel, have been evaluated and shown to reduce criteria pollutants up to five percent for VOC, ten percent for NOx and CO, 30 percent for PM10 and PM2.5, and 98 percent for SOx.[165]

Control Measures MOB-05, MOB-06, MOB-09, and MOB-10 promote the replacement of older vehicles and equipment with the use of zero emission technologies including hydrogen-powered equipment. There is growing interest and financial support for the use of hydrogen-powered fuel cells to power cars and trucks. As opposed to alternative fuel vehicles which burn fuel in a combustion engine to produce usable energy, a hydrogen FCEV relies on an electrochemical reaction between hydrogen (from the fuel tank) and oxygen to produce useful electrical energy

[162] State of California Auto Dismantlers Association, 2022, Members Direct Search, https://scada1.org/find-member, August 12, 2022.

[163] CARB's California Emissions Inventory Data Analysis and Reporting System (CEIDARS) is a database management system developed to track statewide criteria pollutant and air toxic emissions; https://ww2.arb.ca.gov/criteria-pollutant-emission-inventory-data.

[164] South Coast AQMD, 2006. Final Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, Table A. http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/particulate-matter-(pm)-2.5-significance-thresholds-and-calculation-methodology/final_pm2_5methodology.pdf.

[165] CalEPA, 2015.Multimedia Evaluation of Renewable Diesel, May 2015, https://calepa.ca.gov/wp-content/uploads/sites/6/2016/10/CEPC-2015yr-RenDieselRpt.pdf accessed, August 15, 2022.

along with water and heat as waste products. Control Measure MOB-09 would also promote the development of zero emission technologies including hydrogen-powered locomotives. The use of hydrogen as a fuel will eliminate all criteria pollutant emissions from these mobile sources.

Thus, the 2022 AQMP mobile source control measures are expected to result in less than significant air quality impacts from increased scrapping of equipment and vehicles. Overall, impacts associates with mobile source control measures related to vehicle scrapping, alternative fuel use, zero emission technology, and add-on air pollution control technology is expected to result in emission reductions and air quality impacts would be less than significant.

4.2.5.2.4 Air Quality Impacts from Miscellaneous Sources

Control Measure MCS-02 – Wildfire Prevention may cause air quality impacts from the increased use of chipping and grinding equipment necessary to process wood and greenwaste, as well as from the composting of the collected wood and greenwaste. Chipping and grinding activities and composting are activities currently regulated by South Coast AQMD Rules 1133, 1133.1, and 1133.2. The CEQA analyses for these rules concluded that implementing these rules would not generate significant adverse air quality impacts. [South Coast AQMD, 2002]. The number of sources that were identified at the time Rule 1133.1 was developed exceeds the number of sources that would potentially be subject to Control Measure MCS-02. **Miscellaneous source control measures are therefore not expected to generate significant adverse air quality impacts.**

4.2.5.2.5 Summary of Conclusions for Subsection 4.2.5.2 –Air Quality Impacts for Criteria Pollutants During Operation:

The air quality impacts for criteria pollutants during operation are summarized in Table 4.2-13.

TABLE 4.2-13
Summary of Operational Air Quality Impacts

Category	Emissions Impact	Significance Determination
Air Quality Impacts from Increased Electricity Demand		
Electrification of Residential and Commercial Equipment	Increase in electricity use but a decrease in natural gas use with overall net reduction in combustion emissions	Less than Significant
Large Industrial Combustion Equipment including Hydrogen Production	Increase in electricity use	Potentially Significant
Mobile Source Conversion	Increase in electricity use but a decrease in diesel and gasoline combustion emissions with overall net reduction in combustion emissions	Less than Significant
Air Quality Impacts from Control of Stationary and Area Sources		
SCR Technology	Increase in ammonia slip emissions but with an overall reduction in PM2.5 regionwide concentration	Less than Significant
Alternative Fuels Production	Conversions of existing facilities to produce renewable fuels could result in emission reductions, but the actual outcome will vary depending on site-specific conditions. Since the current supplies of hydrogen production for the purposes of producing renewable fuels are limited, assumed additional hydrogen production facilities would need to be built and operating.	Potentially Significant if new hydrogen production facilities are built and operating
Product Reformulations to Reduce VOCs and Toxics	Prohibiting the use of pCBtF and tBAc could cause peak daily VOC operational impacts associated from both the delayed and permanent foregone VOC emission reductions.	Less than Significant following offsets from SIP set-aside account. ~~Potentially Significant for VOCs~~
Air Quality Impacts from Mobile Sources		
Alternative Fuels Use	Alternative fuel use would reduce emissions (alternative fuels production impacts presented separately above).	Less than Significant
Zero Emission Technology Deployment	Emission reduction (electricity production impacts presented separately above).	Less than Significant
Add-on Controls	Reduced fuel economy results in increase in emissions.	Less than Significant
Vehicle Scrapping	Increase in PM10 and PM2.5 emissions.	Less than Significant
Air Quality Impacts from Miscellaneous Sources		
Chipping and Grinding for Wildfire Control	Increase in combustion emissions from chipping and grinding equipment	Less than Significant

As discussed in Subsection 4.2.5.2, air quality impacts from criteria pollutants are expected from producing electricity needed to meet the increased demand, operating air pollution control equipment installed on various stationary and area sources, proposed emission reduction methods for mobile sources, and proposed control of miscellaneous sources. Use of electric-powered equipment (for short-term construction use or in long-term residential and commercial, large, and mobile sources) would cause associated emissions from increased electricity demand, but these replace combustion emissions that would otherwise occur with use of diesel- or gasoline-powered equipment, ultimately expected to provide an emissions benefit. Proposed air pollution control options for stationary and area sources include SCR technology (which while it would result in ammonia slip and secondary formation of PM2.5, would substantially reduce NOx, VOC, and PM10, and ultimately cause a net decrease in PM2.5 emissions), alternative fuels production (based on the three renewable fuels projects approved in California, has the potential to decrease mobile source emissions and increase facility emissions), and reformulation of coatings to meet lower future VOC content limits. Proposed air pollution control options for mobile sources will have air quality impacts relating to electricity demand, alternative fuels production, vehicle scrapping, and add-on air pollution control equipment; but these air quality impacts would be less than significant. Lastly, proposed control of miscellaneous sources, such as from increased chipping and grinding operations in Control Measure MCS-02, is not expected to generate significant adverse air quality impacts.

The South Coast AQMD air quality significance thresholds for mass daily emissions of criteria pollutants are in units of pounds per day. The 2022 AQMP quantifies NOx reductions in tons per day (2,000 pounds = 1 ton). The 2022 AQMP is designed to attain the 8-hour ozone standard by reducing NOx and to a lesser degree VOC emissions. Other emissions of criteria pollutants (i.e., CO, SOx, PM10, and PM2.5) are also expected to be reduced. While most of the activities associated with the proposed control measures are individually projected to have air quality impacts that are less than significant, activities associated with implementation of some individual control measures (i.e., increased electricity demand for large combustion equipment including hydrogen production, alternative fuels production, and product reformulation) may result in potentially significant impacts. The precise magnitude of those emissions increases is dependent on the type and size of projects designed to comply with the control measures, and the quantification of the emissions impacts is not known at this time. Nonetheless, when the effects of all of the proposed control measures are considered together, a net NOx emission reduction of 124 tons per day is expected, which is an order of magnitude greater than any of the adverse air quality impacts from some of the individual control measures such that the 2022 AQMP is expected to result in an air quality benefit. **Thus, operational activities resulting from implementation of control measures in the 2022 AQMP are expected to be generate less than significant criteria pollutant air quality impacts.**

Project-Specific Mitigation: Since no significant air quality impacts relating to operational activities were identified, no mitigation measures are necessary or required.

Remaining Air Quality Impacts from Criteria Pollutants during Operational Activities: Since no mitigation measures are required, air quality impacts from criteria pollutants during operational activities remain less than significant.

4.2.5.3 Toxic Air Contaminants

As previously discussed in Subsection 4.2.5.2 under the header "Product Reformulations to Reduce VOCs and Toxics," Control Measure CTS-01 specifically aims to reduce emissions of pCBtF and tBAc, which are currently VOC-exempt compounds but are toxic air contaminants with carcinogenic health effects. In addition, there are other control measures that target reductions of criteria pollutants through physical modifications such as retrofitting existing equipment with air pollution control technology which may also concurrently reduce emissions of toxic air contaminants. For example, replacing diesel engines with zero emission or low NOx technology has the potential to reduce criteria pollutant emissions, as well as providing the co-benefit of reducing carcinogenic diesel PM.

Control Measures L-CMB-01, L-CMB-07, L-CMB-08, and L-CMB10 may result in the use of ammonia, a toxic air contaminant, in SCR units which may be effective in reducing NOx emissions but may also contribute to an increase of ammonia slip emissions which may react in the atmosphere to form PM2.5. South Coast AQMD policy generally requires the use of 19 percent aqueous ammonia by volume in air pollution control equipment in order to avoid the greater hazards that are associated with the use of anhydrous ammonia and higher percentage concentrations of aqueous ammonia (see Subchapter 4.4 for a detailed analysis regarding the hazards and hazardous materials impacts associated with the use of ammonia in air pollution control technology). Nonetheless, aqueous ammonia at 19 percent by volume can still create vapors, which are toxic and irritating to the eyes, nose, throat, and skin, and can be flammable under limited conditions. BACT for ammonia slip from SCR units is restricted to five ppm or less, which has been shown through source-specific permit modeling to have no significant toxic impact on surrounding communities. The November 2021 Final SEA for Rule 1109.1 calculated the potential health impact of five ppm unreacted ammonia emissions generated from SCR units on receptors located 25 meters away. Non-carcinogenic chronic and acute hazard indices for ammonia were compared to the respective significance thresholds and were concluded to have less than significant impacts.

Because many toxic air contaminants are also classified as VOCs, to the extent that control measures reduce VOC emissions, it is expected that associated reductions in toxic air contaminants could also occur. For example, Control Measures FUG-01 and FUG-02 are expected to reduce VOC emissions, which may contain toxic compounds such as benzene, toluene, ethylene and xylene, from fugitive emissions sources at oil and gas production facilities, petroleum refineries, chemical products processing facilities, storage and transfer facilities, marine terminals, amongst others by improving leak detection and repair requirements.

Mobile source and construction equipment control measures identified in Table 4.2-6 would reduce emissions of carcinogenic diesel PM from engine exhaust, as well as toxic components of gasoline such as benzene and 1,3-butadiene through the replacement of existing vehicles or equipment with more efficient, zero emission, or alternative fueled vehicles or equipment. Combustion emissions of some alternative fuels have trace amounts of methanol and aldehyde, but, generally, are considered to be cleaner and less toxic than diesel- or gasoline-fueled vehicles.

Emissions from electricity generating equipment may include trace amounts of benzene, aldehydes, metals, and polynuclear aromatic hydrocarbons and as electricity demand increases, so will increases of emissions, including toxic air contaminants such as diesel PM. However, for

any process or equipment (mobile and stationary) that was previously reliant on the combustion of fossil fuels, but is able to be replaced with electrified engines or other technology, an overall decrease in toxic emissions is expected.

Conclusion –Air Quality Impacts from Toxic Air Contaminants During Operation: Based upon the information in the preceding discussion, potential impacts associated with implementing the 2022 AQMP are expected to be result in an overall reduction in emissions of toxic air contaminants.

Project-Specific Mitigation: Since no significant air quality impacts relating to toxic air contaminants were identified, no mitigation measures are necessary or required.

Remaining Air Quality Impacts from Toxic Air Contaminants During Operation: Since no mitigation measures are required, air quality impacts relating to toxic air contaminants remain less than significant.

4.2.5.4 Odors

The CEQA significance threshold for odor is whether the project creates an odor nuisance. Odors from construction activities were concluded to be less than significant in the NOP/IS (see Attachment A). Control Measures L-CMB-01, L-CMB-02, L-CMB-03, L-CMB-06, L-CMB-07, L-CMB-08, L-CMB-10, and MCS-01 have the potential to increase ammonia use associated with SCRs during operations. Ammonia emissions from SCR exhaust stack are required to comply with BACT and are limited by permit condition to 5 ppm. The ammonia emissions are released at an elevated height and elevated temperature, making the ammonia emissions quite buoyant and would rise to higher altitudes without any possibility of lingering at ground level. Organizations differ on what the odor threshold of ammonia is: up to 46.8 ppm according the US Coast Guard, 0.04 to 20 ppm according to the American Association of Railroads, ad 5 to 50 ppm according to OSHA.[166] **Because BACT limits ammonia to five ppm which is on the low end of odor thresholds, the buoyancy of ammonia emissions causes it to rapidly rise, and there is an average prevailing wind velocity of six miles per hour in the Basin, it is unlikely that ammonia slip emissions would cause an odor nuisance during operation, and thus, odor impacts are considered less than significant.**

4.2.5.5 Greenhouse Gas Emissions

In September 2011, the South Coast AQMD Governing Board adopted its Air Quality-Related Energy Policy (AQREP). This policy integrates the topics of energy, air quality, and climate change by explaining how the current dependence upon fossil fuels for energy generation and consumption within South Coast AQMD's jurisdiction results in emissions of criteria pollutants, toxic air contaminants, and greenhouse gases (GHGs). The South Coast AQMD's AQREP articulates policies and actions to ensure clean air and to meet state and global climate goals by promoting the development of reliable, safe, cost effective, and clean energy.

Any newly adopted programs, as well as those under development as included within the 2022 AQMP, may have impacts that are not yet fully accounted for in future California energy use

[166] https://www.osha.gov/sites/default/files/2019-03/fs5-howsmelly.pdf

projections. However, adopting the 2022 AQMP control measures would be expected to not only reduce criteria pollutant emissions, but also provide co-benefits of reducing GHG emissions over the long-term, increasing energy efficiency, while increasing the use of renewable power sources. More specifically, to the extent that the 2022 AQMP control measures reduce or eliminate combustion processes in favor of zero emission or low NOx technologies, GHG emission reduction co-benefits would also be expected to occur. Table 4.2-12 qualitatively shows the GHG emission impacts of implementing 2022 AQMP control measures. The relative effects (e.g., either an increase (+) or decrease (-)) are presented along with the activities associated with the impact (e.g., construction necessary to implement the control measure).

Because of the qualitative nature of Table 4.2-13, it is not possible to show the magnitude of GHG emission effects from implementing 2022 AQMP control measure. For example, a positive effect (i.e., a GHG emission increase) for one control measures may be substantially less than the positive GHG emission effect of a different control measure. Many of the sources affected by the 2022 AQMP may already have permit limits with emission standards specific to criteria pollutants which in turn would indirectly limit the amount of GHGs emitted.

In addition, implementation of the Control Measures R-CMB-01, R-CMB-02, R-CMB-03, R-CMB-04, C-CMB-01, C-CMB-02, C-CMB-03, C-CMB-04, C-CMB-05, L-CMB-01, L-CMB-02, L-CMB-03, L-CMB-04, L-CMB-05, L-CMB-006, L-CMB-07, L-CMB-08, L-CMB-09, L-CMB-10, ECC-03, FUG-01, FLX-02, MCS-01, FLX-01, EGM-01, EGM-03, MOB-01, MOB-02A, MOB-02B, MOB-04, MOB-05, MOB-06, MOB-07, MOB-09, and MOB-10 may involve construction activities which may emit GHGs. South Coast AQMD policy regarding GHG emissions from construction is to amortize construction emissions over a 30-year timeframe and add the result to operational emissions.

The magnitude of construction GHG emissions will vary greatly depending on the project. Installation of electrical infrastructure projects (e.g., charging stations) typically does not require large amounts of construction equipment as they are installed in parking lots of existing facilities. Minimal trenching and foundation work is necessary, and these actions typically require the most construction equipment. On the other hand, alternative fuels production facilities would be much larger projects involving more, and larger capacity construction equipment which may rely on diesel or gasoline to operate.

For example, the amortized GHG emissions during construction for the AltAir Renewable Fuels Conversion Project were estimated to be 941 metric tons per year.[167] The combined GHG construction emissions from all projects requiring construction as a result of implementing the proposed control measures in the 2022 AQMP, would represent a relatively small portion of the total GHG emission impacts, especially considering that the operational GHG emissions, which are explained in the following discussion, will be substantially reduced relative to the existing setting and will likely offset any increases in construction GHGs.

As shown in Table 4.2-14, implementing the 2022 AQMP control measures is expected to result in an overall reduction of GHG emissions which can be partially attributed to replacing older, less efficient equipment with new, more efficient equipment since less electricity or less fuel may be needed for operation.

[167] City of Paramount, 2022. Table 4.3.2.

TABLE 4.2-14
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP
with Potential Greenhouse Gas Emission Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential GHG Impact[(1)]
R-CMB-01	Emission Reduction from Replacement with Zero Emission or Low NOx Appliances – Residential Water Heating	Installation of zero emission water heaters and low NOx technologies (when zero emission is infeasible) in new and existing residences.	+ (construction emissions; increase electricity usage) - (reduce GHG emissions; reduction in conventional fuel combustion emissions; increase energy efficiency)
R-CMB-02	Emission Reduction from Replacement with Zero Emission or Low NOx Appliances – Residential Space Heating	Installation of zero emission space heaters and low NOx technologies (when zero emission is infeasible) in new and existing residences.	+ (construction emissions; increase electricity usage) - (reduce GHG emissions; reduction in conventional fuel combustion emissions; increase energy efficiency)
R-CMB-03	Emission Reductions from Residential Cooking Devices	Installation of electric cooking devices, induction cooktops, or low NOx burners in new and existing residences.	+ (construction emissions; increase electricity usage) - (reduce GHG emissions; reduction in conventional fuel combustion emissions; increase energy efficiency)
R-CMB-04	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Residential Other Combustion Sources	Installation of zero emission or low NOx technologies in new and existing residences to replace equipment such as pool heaters, dryers, grills, etc.	+ (construction emissions; increase electricity usage) - (reduce GHG emissions reduction in conventional fuel combustion emissions; increase energy efficiency)
C-CMB-01	Emission Reductions from Replacement with Zero or Near-Zero or Low NOx Appliances – Commercial Water Heating	Installation of zero emission water heaters and low NOx technologies (when zero emission is infeasible) in commercial buildings.	+ (construction emissions; increase electricity usage) - (reduce GHG emissions; reduction in conventional fuel combustion emissions; increase energy efficiency)
C-CMB-02	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Commercial Space Heating	Installation of zero emission space heaters and low NOx technologies (when zero emission is infeasible) in commercial buildings.	+ (construction emissions; increase electricity usage) - (reduce GHG emissions; reduction in conventional fuel combustion emissions; increase energy efficiency)
C-CMB-03	Emission Reductions from Commercial Cooking Devices	Replacing gas burners with zero emission and low NOx technologies (e.g., electric cooking devices, induction cooktops, or low NOx gas burner technologies).	+ (construction emissions; increase electricity usage) - (reduce GHG emissions; reduction in conventional fuel combustion emissions; increase energy efficiency)

TABLE 4.2-14 (continued)
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP
with Potential Greenhouse Gas Emission Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential GHG Impact[(1)]
C-CMB-04	Emission Reductions from Small Internal Combustion Engines	Incentivizing consumers to purchase zero emission ICEs.	+ (construction emissions; increase electricity usage) - (reduce GHG emissions; conversion to alternative fuels; reduction in conventional fuel combustion emissions)
C-CMB-05	NOx Reductions from Small Miscellaneous Commercial Combustion Equipment (Non-Permitted)	Incentivizing feasible zero emission and low NOx technologies for small combustion equipment.	+ (construction emissions; increase electricity usage) - (reduce GHG emissions; reduction in conventional fuel combustion emissions)
L-CMB-01	NOx Reductions for RECLAIM Facilities	Installation of NOx pollution control equipment including SCRs and low NOx burners.	+ (construction emissions; increase electricity usage)
L-CMB-02	Reductions from Boilers and Process Heaters (Permitted)	Installation of zero emission and low NOx technologies for boilers and heaters.	+ (construction emissions; increase electricity usage) + (increase GHG emissions if boilers and heaters are replaced with new low NOx boilers and heaters) = (equivalent GHG emissions if boilers and heaters are retrofitted with low NOx technologies) - (reduce GHG emissions if boilers and heaters are replaced with zero emission technologies)
L-CMB-03	NOx Reductions from Permitted Non-Emergency Internal Combustion Engines (ICEs)	Installation of zero emission and low NOx technologies for non-emergency ICEs.	+ (construction emissions; increase electricity usage) - (reduce GHG emissions; conversion to alternative fuels; reduction in conventional fuel combustion emissions) + (increase GHG emissions if ICEs are replaced with new low NOx ICEs) = (equivalent GHG emissions if ICEs are retrofitted with low NOx technologies - (reduce GHG emissions if ICEs are replaced with zero emission technologies)

TABLE 4.2-14 (continued)
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP
with Potential Greenhouse Gas Emission Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential GHG Impact[(1)]
L-CMB-04	Emission Reductions from Emergency Standby Engines (Permitted)	Installation of zero emission and low NOx technology alternatives to emergency ICEs.	+ (construction emissions; increase electricity usage) - (reduce GHG emissions; conversion to alternative fuels; reduction in conventional fuel combustion emissions) + (increase GHG emissions if emergency ICEs are replaced with new low NOx emergency ICEs) (equivalent GHG emissions if existing emergency ICEs are retrofitted with low NOx technologies) - (reduce GHG emissions if existing emergency ICEs are replaced with zero emission technologies)
L-CMB-05	NOx Emission Reductions from Large Turbines	Installation of zero emission and low NOx emissions technologies for electric generating units such as fuel cells.	+ (construction emissions; increase electricity usage) - (reduce GHG emissions; conversion to alternative fuels; reduction in conventional fuel combustion emissions) + (increase GHG emissions if large turbines are replaced with new low NOx turbines) = (equivalent GHG emissions if existing turbines are retrofitted with low NOx technologies) - (reduce GHG emissions if existing turbines are replaced with zero emission technologies)

TABLE 4.2-14 (continued)
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP
with Potential Greenhouse Gas Emission Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential GHG Impact[(1)]
L-CMB-06	NOx Emission Reductions from Electricity Generating Facilities	Replacement of boilers with lower-emitting turbines, installation of zero emission and low NOx emissions technologies, and the application of stricter emission requirements for diesel internal combustion engines.	+ (construction emissions; increase electricity usage) - (reduce GHG emissions; conversion to alternative fuels; reduction in conventional fuel combustion emissions) + (increase GHG emissions if existing boilers are replaced with low NOx turbines) = (equivalent GHG emissions if existing boilers are retrofitted with low NOx technologies) - (reduce GHG emissions if existing boilers are replaced with zero emission technologies)
L-CMB-07	Emission Reductions from Petroleum Refineries	Installation of NOx pollution control equipment including advanced SCRs and ultra-low NOx burners, and electrification of certain refinery boilers or process heaters or steam-driven equipment such as pumps or blowers.	+ (construction emissions; increase electricity usage) + (increase GHG emissions if electricity provided to electrified equipment is produced from natural gas)
L-CMB-08	NOx Emission Reductions from Combustion Equipment at Landfills and Publicly Owned Treatment Works	Installation of lean pre-mixed combustion turbines, NOx pollution control equipment including SCRs and low NOx burners on biogas fueled combustion equipment and/or routing landfill produced biogas to existing natural gas pipelines.	+ (construction emissions; increase electricity usage) + (increase GHG emissions if existing turbines are replaced with low NOx turbines) = (equivalent GHG emissions if existing turbines are retrofitted with low NOx technologies)

TABLE 4.2-14 (continued)
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP
with Potential Greenhouse Gas Emission Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential GHG Impact[(1)]
L-CMB-09	NOx Reductions from Incinerators	Installation of low NOx and ultra-low NOx burners for incinerators and other associated equipment.	+ (construction emissions) = (equivalent GHG emissions if existing turbines are retrofitted with low NOx technologies)
L-CMB-10	NOx Reductions from Miscellaneous Permitted Equipment	Replacement of existing equipment with zero emission technology and installation of NOx pollution control equipment including SCRs and low NOx/ultra-low NOx burners.	+ (construction emissions; increase electricity usage) - (reduce GHG emissions; conversion to alternative fuels; reduction in conventional fuel combustion emissions) + (increase GHG emissions if existing equipment is replaced with low NOx equipment) = (equivalent GHG emissions if existing equipment are retrofitted with low NOx technologies) - (reduce GHG emissions if existing equipment are replaced with zero emission technologies)
ECC-03	Additional Enhancements in Reducing Existing Residential Building Energy Use	Incentivizing additional reductions in energy use associated with space heating, water heating, and other large residential energy sources through facilitating weatherization, replacing older appliances with highly efficient technologies and encouraging renewable energy adoption such as solar thermal heating and photovoltaic panels.	+ (construction emissions) - (reduce GHG emissions; reduction in conventional fuel combustion emissions; increase energy efficiency)

TABLE 4.2-14 (continued)
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP
with Potential Greenhouse Gas Emission Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential GHG Impact[(1)]
FLX-02	Stationary Source VOC Incentives	Installation of newer, lower-emitting equipment to replace older, higher-emitting equipment for area and stationary sources as a result of incentives.	+ (construction emissions) + (increase GHG emissions if older, existing equipment is replaced with new low equipment) = (equivalent GHG emissions if older, existing equipment is retrofitted with low NOx technologies) - (reduce GHG emissions if older, existing equipment is replaced with zero emission technologies)
MCS-01	Application of All Feasible Measures	Retrofitting existing equipment and installation of newer, lower-emitting equipment to replace older, higher-emitting equipment for sources as a result of new emission limits introduced through federal, state, or local regulations.	+ (construction emissions) + (increase GHG emissions if existing equipment is replaced with low NOx equipment) = (equivalent GHG emissions if existing equipment are retrofitted with low NOx technologies) - (reduce GHG emissions if existing equipment are replaced with zero emission technologies)
MCS-02	Wildfire Prevention	Mechanical thinning and chipping and grinding activities during fuel reduction and removal efforts.	+ (increase GHG f gasoline- or diesel-fueled chipping and grinding equipment is used and from decomposition of wood and greenwaste) = (no GHG emissions if zero emission chipping and grinding equipment is used) - (reduce GHG emissions from preventing or reducing potential for intense wildfires)

TABLE 4.2-14 (continued)
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP
with Potential Greenhouse Gas Emission Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential GHG Impact[(1)]
EGM-01	Emission Reductions from New Development and Redevelopment (Potential Indirect Source Rule and ports affected).	Replacing or upgrading off-road construction equipment as part of development/redevelopment efforts may result in the use of zero emission technologies in construction, the installation of charging and alternative fueling infrastructure, the use of alternative fuels; and the use construction equipment with low-emitting engines fitted with DPFs.	+ (construction emissions; increase electricity usage) + (increase GHG emissions if existing equipment is replaced with low NOx equipment) = (equivalent GHG emissions if existing equipment are retrofitted with low NOx technologies) - (reduce GHG emissions if existing equipment are replaced with zero emission technologies)
EGM-03	Emission Reductions from Clean Construction Policy	Incentivizing the use of zero emission and low NOx equipment by adopting a voluntary measure for municipalities and public agencies to reduce emissions generated by construction activities may include use of zero emission and low NOx construction equipment, dust control, alternative fuels, DPFs, low-emitting engines, and low VOC materials.	+ (construction emissions; increase electricity usage) - (reduce GHG emissions; conversion to alternative fuels; reduction in conventional fuel combustion emissions)
MOB-01	Emission Reductions at Commercial Marine Ports	Infrastructure development required to achieve emission reductions at commercial marine ports from on-road heavy-duty vehicles, ocean-going vessels, cargo handling equipment, locomotives, and harbor craft.	+ (construction emissions; increase electricity usage) - (reduce GHG emissions; conversion to alternative fuels; reduction in conventional fuel combustion emissions)
MOB-2A	Emission Reductions at New Rail Yards and Intermodal Facilities	Infrastructure development required to achieve emission reductions at new rail yards and intermodal facilities from on-road heavy-duty vehicles, off-road equipment, and locomotives.	+ (construction emissions; increase electricity usage) - (reduce GHG emissions; conversion to alternative fuels; reduction in conventional fuel combustion emissions)

TABLE 4.2-14 (continued)
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP
with Potential Greenhouse Gas Emission Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential GHG Impact[(1)]
MOB-2B	Emission Reductions at Existing Rail Yards and Intermodal Facilities	Infrastructure development required to achieve emission reductions at existing rail yards and intermodal facilities from on-road heavy-duty vehicles, off-road equipment, and locomotives.	+ (construction emissions; increase electricity usage) - (reduce GHG emissions; conversion to alternative fuels; reduction in conventional fuel combustion emissions)
MOB-04	Emission Reductions at Commercial Airports	Deploying additional cleaner technologies, such as increasing efficiencies, implementing air quality improvement options or by deploying zero emission and low NOx technologies, alternative fuels, DPFs, and low-emitting engines for additional equipment beyond the commitments made in the existing Memoranda of Understanding with the commercial airports.	+ (construction emissions; increase electricity usage) - (reduce GHG emissions; conversion to alternative fuels; reduction in conventional fuel combustion emissions)
MOB-05	Accelerated Retirement of Older Light-Duty and Medium-duty Vehicles	Accelerating the retirement of up to 2,000 light- and medium-duty vehicles per year through the Replace Your Ride Program and accelerating the penetration of zero and near–zero emission vehicles.	+ (construction emissions; increase electricity usage) - (reduce GHG emissions; conversion to alternative fuels; reduction in conventional fuel combustion emissions)
MOB-06	Accelerated Retirement of Older On-Road Heavy-duty Vehicles	Retiring older, heavy-duty vehicles and replacing them with low NOx vehicles fueled with CNG or other alternative fuels (e.g., battery electric and hydrogen fuel cells).	+ (construction emissions; increase electricity usage) - (reduce GHG emissions; conversion to alternative fuels; reduction in conventional fuel combustion emissions)
MOB-07	On-Road Mobile Source Emission Reduction Credit Generating Program	Incentivizing the early deployment of zero emission and low NOx emission heavy-duty trucks through the generation of mobile source emission credits.	+ (construction emissions; increase electricity usage) - (reduce GHG emissions; conversion to alternative fuels; reduction in conventional fuel combustion emissions)

TABLE 4.2-14 (concluded)
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP
with Potential Greenhouse Gas Emission Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential GHG Impact[(1)]
MOB-08	Small Off-Road Engine Equipment Exchange Program	Promoting the accelerated turn-over of in-use small off-road engines and other engines, such as gasoline- and diesel-powered commercial lawn and garden equipment through expanded voluntary exchange programs will contribute to the retirement of older off-road engines.	+ (increased electricity usage from scrapping equipment) - (reduce GHG emissions; conversion to alternative fuels; reduction in conventional fuel combustion emissions)
MOB-09	Further Emission Reductions from Passenger Locomotives	Promoting earlier and cleaner replacement or upgrade of existing passenger locomotives capable of achieving Tier 4 emission standards and supporting the development of zero emission or low NOx technologies (e.g., battery electric and hydrogen fuel cells).	+ (construction emissions; increase electricity usage) - (reduce GHG emissions; conversion to alternative fuels; reduction in conventional fuel combustion emissions)
MOB-10	Off-Road Mobile Source Emission Reduction Credit Generation Program	Accelerating the deployment of zero (e.g. battery-electric or fuel cell powered equipment) and low NOx emission off-road mobile equipment (e.g., 90 percent cleaner than Tier 5) that do not receive public funding.	+ (construction emissions; increase electricity usage) - (reduce GHG emissions; conversion to alternative fuels; reduction in conventional fuel combustion emissions)

(1) + Control measure is expected to result in an increase in GHG emissions
- Control measure is expected to result in a decrease in GHG emissions
= Control measure is expected to result in equivalent GHG emissions

Of the total fuel consumed in Los Angeles, Orange, Riverside and San Bernardino counties, transportation sources account for over 50 percent of fuel use and these sources are also the main contributors to NOx emissions. Within the transportation sector, diesel-powered sources emit the majority of NOx. With regards to mobile source control measures, accelerating the replacement of conventional vehicles with electric vehicles or alternative fueled vehicles into fleets regulated by the South Coast AQMD may produce emissions from increased electricity generation meanwhile the zero emission vehicles will not emit anything and the alternative fueled vehicles will emit fewer criteria pollutants, fewer toxics and fewer GHGs. As such, the net effect of replacing gasoline and diesel mobile sources is expected to have greater overall GHG emission reduction benefits because the GHG emissions produced from generating the electricity needed to power one electric vehicle are fewer than the GHG emissions from one gasoline or diesel vehicle.

Implementing the 2022 AQMP control measures is ultimately expected to reduce GHG emissions consistent with the AB32 scoping plan. As explained in Subchapter 4.3 – Energy, compared to the 2018 baseline for electricity demand, implementation of the 2022 AQMP control measures is expected to increase electricity use by 13,429 GWh[168], approximately an 11 percent increase, by 2037 which will produce approximately 2.76 million metric tons (MMT) of GHG emissions[169]. However, a reduction in the use of petroleum-based fuels will reduce criteria pollutants, toxics and GHG emissions which will concurrently offset the projected increases in criteria pollutants, toxics and GHG emissions from the use of more electricity. Control measures for which the reduction in petroleum-based fuels can be quantified are shown in Table 4.2-15.

TABLE 4.2-15
Consumption of Gasoline and Diesel Fuel in South Coast Air Basin

Gasoline and Diesel Fuel			Percentage under Existing Use
Year	Billion Gallons per year	Thousand Gallons per Day	
2018	6.5	17,790	--
2030	5.0	13,683	-23.1
2037	4.7	12,857	-27.7

Source: 2022 AQMP, Appendix III, Attachment D.

As shown in Table 4.2-15, implementing 2022 AQMP mobile source control measures has the potential to reduce total annual petroleum-based fuel use by approximately 1.5 billion gallons in milestone year 2030 and by approximately 1.8 billion gallons in milestone year 2037.

Using a CO2 emission factor of 8.10 kilograms per gallon (kg/gal) for gasoline and a CO2 emission factor of 10.19 kg/gal for diesel, GHG emission reductions can be calculated for both gasoline and diesel in each milestone year. As shown in Table 4.2-16, the net effect of implementing the 2022 AQMP control measures while concurrently reducing petroleum-based fuel use in mobile sources is expected to result in an overall reduction of GHG emissions by 2037.

TABLE 4.2-16
Estimated GHG Emissions Impacts from 2022 AQMP Control Measures

Description	2037 CO2eq Emissions (MMT)
Increased Electricity Use	**2.18**
Change in Gasoline Use	**-2.23**
Change in Diesel Use	**-15.57**
Net Change in Emissions	**-15.62**

Most of the 2022 AQMP control measures presented in Table 4.2-1 have the potential to increase energy demand as they would use electricity to power zero emission technologies or add-on air pollution control devices. Converting gasoline- and diesel-fired sources to electrified equipment reliant on electricity that is primarily generated by natural gas and renewable sources is expected to result in an overall decrease of GHG emissions. Add-on air pollution control devices are

[168] Based on quantifiable increases in electricity from Tables 4.3-2 and 4.3-3. (12,960+469)/118,200 = 11.3% increase.
[169] 2020 eGRID data of 453 lb/MWh for SCE, U.S. EPA, 2022, https://epa.gov/egrid/download-data.

designed and sized for the specific source and emissions type that is being controlled, so the additional increase in electricity demand will be expected to vary from source to source. The electricity that will be needed to power zero emission equipment is expected to be provided by public utility companies. Most existing power generating facilities are subject to AB32 and will be required to reduce their GHG emissions. Moreover, any future power generating stations that may be built in response to meeting the future electricity demand would be subject to stringent emission control requirements, including those for GHG emissions. **Therefore, after taking into consideration the short-term increases in GHG emissions which will be offset by substantial reductions of GHG emissions from the decreased use of gasoline and diesel fuels combined with the overarching goal of transitioning to electricity sourced with 100 percent renewables by 2045 as required by SB 100, the additional electricity that may be needed to implement the 2022 AQMP control measures is expected to generate less than significant GHG emission impacts in the long-term.**

The 2022 AQMP control measures also have the potential to increase the use of alternative fuels. Alternative fuels generally generate fewer or equivalent GHG emissions compared to gasoline and diesel when combusted. When comparing the overall benefit between various types of alternative fuels, the production methods used to generate the fuels must be considered (sometimes referred to as well-to-wheel energy and emission impacts). A comparison of various production methods shows that using hydrogen as a fuel reduces more GHG emissions when compared to reformulated gasoline, except when the hydrogen is produced by electrolysis using grid-supplied electricity, in which case the comparison is dependent on the renewable to non-renewable mix of the electricity generation.[170]

A study released in June 2022 compared cradle-to-grave GHG emissions for mid-size sedan and small SUV vehicles[171] which factored in the emissions associated with vehicle production, the well-to-wheel fuel production, and fuel combustion for current and future fuels available but not widely in use today. The results were presented as averages by fuel type use for biodiesel, electricity, E85 (ethanol), CNG, hydrogen, and battery electric as compared to gasoline. The study concluded that fewer or equivalent GHG emissions would occur with these alternative fuels when compared to gasoline.[172] The use of fossil fuel-based diesel and CNG was shown to have a slightly smaller carbon footprint compared to gasoline (seven percent and five percent, respectively). However, the use of renewable diesel and CNG (generated from renewable natural gas) reduced the carbon footprint by 66 percent and 79 percent, respectively, when compared to diesel. Hydrogen-powered well-to-wheel emissions have, on average, a 41 percent reduction over gasoline powered vehicles when hydrogen is produced using steam methane reforming of natural gas. Future projections for hydrogen-powered FCEV using solar- and wind-generated hydrogen would have, on average, an 85 percent reduction when compared to a gasoline powered vehicle. Battery electric vehicles using electricity generated by natural gas have a 49 percent reduction in GHG emissions compared to gasoline vehicles, and, when electricity is

[170] Alternative Fuels Data Center, 2022. Fuel Cell Electric Vehicle Emissions, https://afdc.energy.gov/vehicles/emissions_hydrogen.html, accessed August 17, 2022.

[171] J. Kelly, et al, 2022. Cradle-to-Grave Lifecycle Analysis of U.S. Light-Duty Vehicle-Fuel Pathways: A Greenhouse Gas Emissions and Economic Assessment of Current (2020) and Future (2030-2035) Technologies, June 1, 2022, https://greet.es.anl.gov/publication-c2g_lca_us_ldv, accessed August 18, 2022.

[172] J. Kelly, et al, 2022. Cradle-to-Grave Lifecycle Analysis of U.S. Light-Duty Vehicle-Fuel Pathways: A Greenhouse Gas Emissions and Economic Assessment of Current (2020) and Future (2030-2035) Technologies, June 1, 2022, Mid-size sedan current technology data from Figure 18 and Table 44; Small SUV current technology data from Figure 19 and Table 45, pp. 90-93, https://greet.es.anl.gov/publication-c2g_lca_us_ldv, accessed August 18, 2022..

produced by solar and wind, an 89 percent reduction in GHG emissions is expected.[14] **Thus, while alternative fuel and hydrogen production facilities may increase GHG emissions, the overall GHG reductions associated with the use of the transportation fuels produced are expected to be greater than the GHG emissions from producing the fuels.**

The 2022 AQMP provides incentives to accelerate the replacement of high-emitting mobile sources with zero emission and low NOx technologies; the priority for incentives will be zero emission vehicles to provide the largest amount of emission reductions for criteria pollutants, toxics and GHGs. Zero emission vehicles are currently available in the form of electric vehicles, and are expected to be the primary choice for compliance as they are already popular, commercially available, and do not require significant progress in the development of new technologies, as would be the case with other alternative fuels (e.g., hydrogen fuel cells).

However, vehicles powered by alternative fuels vehicles, such as LPG, are not as commonly available and in use today. Further, most, if not all, LPG-fueled vehicles are dual-fueled in that they operate on both LPG and gasoline, so the GHG emissions reductions may not be as great as they would be if 100 percent of LPG or another alternative fuel were used instead of gasoline. Therefore, incentives for these types of vehicles are not expected. Cleaner off-road equipment is likely to transition to a higher tier emission standard or a commercially available battery-electric or fuel cell operated one, and the use of fossil fuel, LPG, or CNG is not expected to be incentivized as part of the 2022 AQMP.

Similarly, the availability and popularity of hydrogen vehicles in California is slowly growing but is limited due to short supplies of available hydrogen for fuel and few hydrogen fueling stations. In 2021, approximately 9,647 on-road hydrogen-fueled vehicles are operating in California which reflects an increase from the 331 hydrogen-fueled vehicles previously reported in the 2016 AQMP Final Program EIR.[173] Based upon these factors, the use of hydrogen as an alternative fuel is expected to play a lesser part than battery electric technology in implementation of the 2022 AQMP incentives.

Moreover, because electric vehicles are commercially available and in wide use today, substantial infrastructure, such as charging stations along major highways, has already been developed. Infrastructure for other alternative fuels (e.g., hydrogen, CNG, LPG, etc.) is not as readily available as electricity. As shown in Table 3.3-4, 89 percent of available alternative fuel stations are electric, followed by CNG at four percent, E85 at three percent, LPG at three percent, and hydrogen at 0.6 percent.

Based upon these considerations, electricity is expected to be the predominant energy source for operating most zero emission vehicles. GHG emissions associated with producing electricity (by natural gas turbines or renewable energy sources at utilities) for zero emission vehicles are expected to be lower than GHG emissions from vehicles powered by petroleum-based fuels. Therefore, no increase in GHG emissions is expected from the increased production and use of alternative fuels, and GHG emission impacts are expected to be less than significant.

[173] Baronas, Jean, Belinda Chen, et al. 2021. Joint Agency Staff Report on Assembly Bill 8: 2021 Annual Assessment of Time and Cost Needed to Attain 100 Hydrogen Refueling Stations in California. California Energy Commission and California Air Resources Board. Publication Number: CEC-600-2021-040, https://www.energy.ca.gov/sites/default/files/2021-12/CEC-600-2021-040.pdf, accessed August 17, 2022.

Control Measures L-CMB-02, L-CMB-03, L-CMB-04, L-CMB-05, L-CMB-06, L-CMB-08, L-CMB-10, FLX-02, MCS-01 and EGM01, may involve reducing NOx emissions from various industrial combustion sources and the net change in operation GHG emissions will vary depending on the course of action pursued. For example, if the existing combustion equipment is replaced with new, lower emitting combustion equipment, a net GHG increase may occur even if NOx emissions are reduced due to variabilities in the new equipment, how it functions and the chemistry of the exhaust gases. However, if the existing equipment is retrofitted with low NOx technology (e.g., low NOx or ultra-low NOx burners and/or SCR), the GHG emissions are expected to remain about the same because there will be no change in the overall combustion profile of the existing equipment. Finally, if the existing combustion equipment is replaced with zero emission technology, then GHG emissions would be reduced. **Since the South Coast AQMD air quality significance threshold for GHG emissions is 10,000 MT/year, which could be exceeded by replacing one piece of existing combustion equipment with new lower NOx emitting combustion equipment, the increase in operational GHG emissions from implementing these control measures is potentially significant.**

Control Measure CTS-01 would revise the VOC content for select product categories, incentivize the use of super-compliant VOC materials and remove the VOC exemption status for parachlorobenzotriflouride (PCBTF) and tert-butyl acetate (tBAc) to address toxicity concerns. During the review of proposed amendments to South Coast AQMD Rule 1168, it was noted that Opteon 1100 could be used as an alternative to PCBTF and tBAc. Opteon 1100 was included on U.S. EPA's list of compounds excluded from the regulatory definition of VOC in November 2018 based on its negligible contribution to ground ozone formation.

Opteon 1100 is currently being evaluated for potential health impacts by OEHHA. Opteon 1100 will be considered a VOC exempt compound under South Coast AQMD Rule 1168 only for High-Pressure Two-Component Foam Sealants and Low-Pressure Two-Component Foam Sealants when used in an industrial or professional setting by workers trained with procedures and guidelines to reduce potential risk of exposure, if OEHHA's assessment determines that Opteon 1100 is not a carcinogen and would not have adverse health effects worse than the compound it is replacing.

Opteon 1100, contains a foam blowing agent which is a GHG compound, and could potentially replace currently used HFOs (e.g., HFO-1234ze and HFO-1233zd) in certain low-VOC products. Since Opteon 1100, HFO-1234ze, and HFO-1233zd are products which all have similar, low global warming potentials (GWP), the potential reformulation with a different foam blowing agent, such as what is used in Opteon 1100, would not be expected to substantially change the overall GHG emissions associated with the use of these products. Therefore, no significant GHG impacts are expected.

Conclusion – Greenhouse Gas Impacts: Many control measures are expected to have GHG emissions associated with construction over the short-term; however, construction GHG emissions are amortized over 30 years and are much less than the overall potential operational emissions reductions of GHGs over the long-term. Intermixed with the short-term GHG impacts and long-term GHG emission reductions are the potentially significant GHG increases that may occur if existing combustion equipment is replaced with new lower NOx emitting combustion equipment. Further, GHG emissions from the generation and use of additional electricity and alternative fuels, are not expected to be significant because there will be concurrent decreases in the use of diesel- and gasoline-fueled

equipment over time as more electric and alternative fuel vehicles are deployed. Finally, electricity generation is required to transition to 100 percent renewables by 2045 as required by SB 100. Thus, implementation of the 2022 AQMP is expected to result in potentially significant GHG operational emissions over the short-term and less than significant GHG emission impacts over the long-term.

Project-Specific Mitigation: Since less than significant greenhouse gas impacts overall were identified, no mitigation measures are necessary or required.

Remaining Greenhouse Gas Impacts: Since no mitigation measures are required, greenhouse gas impacts remain less than significant.

4.2.6 SUMMARY OF AIR QUALITY AND GHG EMISSIONS IMPACTS

- Implementation of some of the control measures in the 2022 AQMP may require construction activities involving: 1) the demolition or removal of components from existing buildings, or structures, such as equipment, mechanical systems, cooking devices, clothes dryers, water and/or space heating systems, and pool heaters; 2) the installation of new energy efficient equipment, mechanical systems, cooking devices, clothes dryers, water and/or space heating systems; and pool heaters; 3) the construction of additional infrastructure to produce more alternative fuels to support alternative-fueled vehicles (e.g., electric, hydrogen, natural gas); 4) the construction of additional infrastructure to produce more electricity to support electric vehicles and the electrification of new sources (e.g., additional on-road vehicles and marine vessels, "wayside" electric power such as catenary lines); 5) the construction of air pollution control equipment at stationary sources (e.g., SCRs), the retrofit of existing equipment with low NOx technology (e.g., low or ultra-low NOx burners) or the use of cleaner stationary sources (e.g., Tier 4 engines and newer boilers); and 6) construction for the replacement of higher emitting combustion equipment with low NOx equipment.

- Peak daily construction impacts for sample construction projects were compared to the South Coast AQMD air quality significance thresholds for construction and were concluded to be potentially significant for criteria pollutants. Project-specific mitigation measures were identified and will be required where applicable and if feasible; however, construction air quality impacts will likely remain significant even after mitigation is applied.
- The majority of the activities associated with implementing the 2022 AQMP control measures are projected to have operational air quality impacts that are less than significant and would result in an overall emission reduction of criteria pollutants. Three activities associated with implementing the proposed control measures have potentially significant operational air quality impacts (i.e., additional production and use of electricity generation from natural gas combustion (prior to the full conversion to renewable sources), additional production and use of alternative fuels, and reformulation of coatings, adhesives, sealants and lubricants). The scale of air quality impacts from these three activities is dependent upon the type, size and overall design of any future projects implemented in response to the proposed control measures, the details of which are unknown at this time and cannot be forecasted. For this reason, the quantities of the potential air quality impacts cannot be estimated at this time. Nonetheless, when the effects of all of the proposed control measures are considered together, a net NOx

emission reduction of 124 tons per day is expected, which is an order of magnitude greater than any of the potentially significant air quality impacts from implementing some of the individual control measures. Overall, the 2022 AQMP is expected to result in an air quality benefit. Thus, operational activities resulting from implementation of all of the proposed control measures in the 2022 AQMP are expected to be generate less than significant air quality operational impacts for criteria pollutants.

- Implementation of some control measures will cause an increase in TAC emissions (e.g., ammonia slip from the use of ammonia in SCR technology) while implementation of other control measures, which either specifically aim to reduce TAC emissions (e.g., CTS-01 which prohibits the use of pCBtF and tBAC). In addition, decreases in criteria pollutant emissions will also result in decreases of TAC emissions associated with combustion of transportation fuels and natural gas including diesel particulate, benzene, formaldehyde and other TACs. When considered together, implementation of all control measures which comprise the 2022 AQMP is expected to cause an overall reduction in TAC emissions.

- Implementation of some control measures will cause an increase in ammonia emissions (e.g., for use in SCRs) and have ammonia slip emissions. However, the ammonia slip emissions were concluded to have no significant odor impacts.

- Implementation of control measures in the 2022 AQMP is expected to result in substantial GHG emission reductions from replacing diesel- and gasoline-fueled equipment with electric-powered and alternative fueled equipment which, over the long-term will offset potentially significant short-term increases in GHG emissions from construction projects, additional production and use of electricity generation from natural gas combustion (prior to the full conversion to renewable sources), additional production and use of alternative fuels, and replacements of existing combustion equipment with new lower emitting combustion equipment, resulting in an overall reduction of GHG emissions.

4.2.7 CUMULATIVE AIR QUALITY AND GHG EMISSIONS IMPACTS AND MITIGATION MEASURES

Pursuant to CEQA Guidelines Section 15130(a), the Program EIR shall discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable. Identical standards for project and cumulative impacts analysis is appropriate because the South Coast AQMD air quality significance thresholds for criteria pollutants were set by evaluating the effect an individual project may have on the ability of the South Coast Air Basin to attain the NAAQS established by the U.S. EPA, and are therefore, cumulative in nature. Specifically, the South Coast AQMD Governing Board adopted 1993 CEQA Air Quality Handbook, which identified that the thresholds for criteria pollutants are based on the emissions levels in the Clean Air Act for a major source in an area designated as extreme non-attainment for ozone. [1993 CEQA Handbook, Chapter 6]. So, for example, a major source of NOx, a precursor for ozone, is defined as a source that has a potential to emit at least 10 tons per year of NOx. [Clean Air Act Section 182(e)]. The South Coast AQMD converted the 10 tons per year in terms of pounds per day, which resulted in a significance threshold of 55 pounds per day for operational emissions. The 1993 CEQA Handbook also explains that this approach is appropriate because the regulatory

framework to establish the state and federal ambient air quality standards, and the method to achieve attainment of those standards, are intended to be protective of public health.

The preceding analysis in Subsections 4.2.5.1 and 4.2.5.2 concluded that air quality impacts from construction activities and would be significant from implementing the 2022 AQMP because exceedances of the South Coast AQMD air quality significance threshold for NOx during construction may be exceeded. In addition, while feasible mitigation measures were identified that may reduce the significant adverse construction air quality impacts for NOx emissions, the mitigation measures are not expected to reduce these construction impacts to less than significant levels.

In addition, the analysis concluded that majority of the activities associated with implementing the 2022 AQMP control measures are projected to have operational air quality impacts that are less than significant and would result in an overall emission reduction of criteria pollutants. When the effects of all of the proposed control measures are considered together, a net NOx emission reduction of 124 tons per day is expected, which is an order of magnitude greater than any of the potentially significant air quality impacts from implementing some of the individual control measures which were identified as having potentially significant operational air quality impacts (i.e., additional production and use of electricity generation from natural gas combustion (prior to the full conversion to renewable sources), additional production and use of alternative fuels, and reformulation of coatings, adhesives, sealants and lubricants). Overall, the 2022 AQMP is expected to result in an air quality benefit. Thus, operational activities resulting from implementation of all of the proposed control measures in the 2022 AQMP are expected to be generate less than significant air quality operational impacts for criteria pollutants.

Implementation of control measures in the 2022 AQMP is expected to result in substantial GHG emission reductions from replacing diesel- and gasoline-fueled equipment with electric-powered and alternative fueled equipment which, over the long-term will offset potential short-term increases in GHG emissions from construction projects, additional production and use of electricity generation from natural gas combustion (prior to the full conversion to renewable sources), additional production and use of alternative fuels, and replacements of existing combustion equipment with new lower emitting combustion equipment, resulting in an overall reduction of GHG emissions over the long-term. Thus, GHG emissions from all of the proposed control measures in the 2022 AQMP considered together are expected to be generate less than significant air quality GHG impacts.

Pursuant to CEQA Guidelines Section 15130(a)(2), when the combined cumulative impact associated with the proposed project's incremental effect is not significant, the Program EIR must indicate why the cumulative impact is not significant. In addition to less than significant air quality operational impacts and less than significant GHG impacts, the analysis also indicates that the proposed project will have less than significant impacts related to health risk and odor impacts. Because health risk associated with TAC emissions and odor impacts do not exceed the South Coast AQMD air quality significance thresholds for operation, which also serve as the cumulative significance thresholds, they are not considered to be cumulatively considerable. [CEQA Guidelines Section 15064(h)(1)].

4.2.7.1 Cumulative Air Quality Impacts and Mitigation Measures

As discussed in Chapter 2 - Project Description, in order to attain the 8-hour ozone standard, the majority of NOx emission reductions must come from mobile sources, including ships, aircraft, and locomotive engines, that are primarily regulated under federal and international jurisdiction, with limited authority for CARB and the South Coast AQMD. Attainment is not possible without substantial reductions from these sources. Therefore, CARB has prepared the Proposed 2022 State Strategy for the State Implementation Plan (Proposed 2022 State Strategy) which describes the state's strategy and commitments to reduce emissions from state-regulated sources needed to support attainment of the 70 ppb 8-hour ozone standard. The Proposed 2022 State Strategy measures are described in Chapter 2, Subsection 2.7.3.1.

SCAG, as the Metropolitan Planning Organization (MPO) for the Southern California region, is mandated to comply with federal and state transportation and air quality regulations. In consultation with federal, state, and local transportation and air quality planning agencies, and other stakeholders, SCAG developed the Final 2020–2045 2020 RTP/SCS, also known as the Connect SoCal Plan, and the 2021 Federal Transportation Improvement Program (FTIP), with Transportation Control Measures (TCMs) to address the 2015 8-hour ozone standards in the Basin; these are included in three sections of Appendix IV-C of the 2022 AQMP.

4.2.7.1.1 CARB's Proposed 2022 State Strategy

Implementation of the Proposed 2022 State Strategy could require construction and operation of new or modified facilities or infrastructure as well as increased lithium mining. The reasonably foreseeable compliance responses associated with the Proposed 2022 State Strategy include: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero emission technologies. These activities are expected to result in air quality and GHG impacts during construction. CARB determined that short-term construction-related air quality impacts associated with some of the Proposed 2022 State Strategy measures would be potentially significant. While CARB does not have the authority to require implementation of mitigation related to new or modified facilities that would be approved by local jurisdictions, recognized mitigation practices were described that would avoid and/or minimize impacts to air quality. The impacts due to construction were expected to remain potentially significant after mitigation.

The main purpose of the Proposed 2022 State Strategy is to reduce mobile source emissions of criteria pollutants to improve air quality and attain the NAAQS. Implementation of the Proposed 2022 State Strategy is anticipated to result in statewide emissions reductions of 174 tons per day NOx and 38 tons per day reactive organic gases (ROG) when compared to baseline levels of 2021. Implementation of the Proposed 2022 State Strategy would minimize criteria pollutants to meet the NAAQS and CAAQS both regionally and statewide. As discussed in detail in the staff report associated with approval of the SIP, emission reductions resulting from the implementation of the Proposed 2022 State Strategy are expected to far outweigh any long-term operational-related

emissions increases and would result in high net positive overall health benefits over the life of the Proposed 2022 State Strategy. CARB determined that long-term operational-related air quality and GHG impacts would be beneficial.

4.2.7.1.2 SCAG Connect SoCal Plan

SCAG is responsible for assessing on-road mobile source emissions through 2045. The SCAG Connect SoCal Plan projected that total emissions from transportation in the Southern California region are expected to decline through at least 2031 except for small increases in PM2.5 and SOx. SCAG projects that on-road mobile-source PM2.5 would increase in Imperial, Riverside, and San Bernardino Counties, and mobile-source PM10 would increase in Imperial, Orange, Riverside, and San Bernardino Counties due to increasing traffic as a result of population growth. Because mobile source emissions of PM10 and PM2.5 will increase largely as a result of increased total VMT, and SOx would increase in the region at least through 2031, the SCAG Connect SoCal Plan could contribute to an air quality violation. Further, there is the potential for individual projects to exceed local standards during construction and/or operation for several pollutants. Therefore, the Final EIR for the SCAG Connect SoCal Plan determined that the impact to air quality was significant. SCAG imposed three SCAG-implemented mitigation measures and one project-level mitigation measure with suggestions for lead agencies to incorporate emission reduction mitigation measures into project-specific environmental analyses. The air quality impacts of the Connect SoCal plan were considered to remain significant after mitigation.

4.2.7.2 Cumulative GHG Emissions Impacts and Mitigation Measures

As discussed in Subsection 4.2.5.5, most of the 2022 AQMP control measures presented in Table 4.2-1 have the potential to increase GHG emissions from construction activities. Potential operational GHG emission increases are projected from energy demand increases to support zero emission technologies or add-on air pollution control devices. Converting gasoline- and diesel-fired sources to electrified equipment reliant on electricity that is primarily generated by natural gas and renewable sources is expected to result in an overall decrease in GHG emissions. Add-on air pollution control devices are designed and sized for the specific source and emissions type that is being controlled, so the additional increase in electricity demand will be expected to vary from source to source. The electricity needed to power zero emission equipment is expected to be provided by public utility companies. Most existing power generating facilities are subject to AB32 and will be required to reduce their GHG emissions. Moreover, any future power generating stations that may be built in response to meeting the future electricity demand would be subject to stringent emission control requirements, including those for GHG emissions. Therefore, after taking into consideration the short-term increases in GHG emissions which will be offset by substantial reductions of GHG emissions from the decreased use of gasoline and diesel fuels combined with the overarching goal of transitioning to electricity sourced with 100 percent renewables by 2045 as required by SB 100, the additional electricity that may be needed to implement the 2022 AQMP control measures has been determined to generate less than significant GHG emission impacts.

4.2.7.2.1 CARB's Proposed 2022 State Strategy

The CARB Proposed 2022 State Strategy concluded that the comparatively small level of GHG emissions from construction and operation of facilities associated with the compliance responses

would be offset by the reductions in GHG emissions from implementation of the Proposed 2022 State Strategy. Thus, implementation of the Proposed 2022 State Strategy was concluded to result in an overall reduction of GHG emissions.

4.2.7.2.2 SCAG Connect SoCal Plan

The Final EIR for the SCAG Connect SoCal Plan determined that while GHG emissions are anticipated to decrease compared to existing conditions and compared to No Project conditions, the GHG emission reductions will not meet the state-mandated emission reduction targets. Therefore, the Final EIR for the SCAG Connect SoCal Plan concluded that the potential GHG impacts will be significant and unavoidable. SCAG imposed four SCAG-implemented mitigation measures and one project-level mitigation measure with suggestions for lead agencies to incorporate GHG emission reduction mitigation measures into project-specific environmental analyses. The impacts of the SCAG Connect SoCal plan were considered to remain significant after mitigation.

4.2.7.3 Summary of Cumulative Air Quality and GHG Emissions Impacts

The 2022 AQMP control measures would result in significant adverse air quality impacts during construction and, when combined with past, present, and reasonably foreseeable activities, in particular with transportation projects projected in the Connect SoCal Plan and the Proposed 2022 State SIP Strategy, would contribute to cumulatively considerable impacts to air quality related to criteria pollutant emissions during construction, a significant, unavoidable cumulative impact.

Emission increases would be expected from implementation of the 2022 AQMP as described in Section 4.2.5; however, the overall emission reductions associated with implementation of the 2022 AQMP, as well as the SIP measures developed by CARB and the Regional Transportation Strategy and Transportation Control Measures developed by SCAG, are expected to result in a substantial reduction in criteria pollutant emissions. These measures are expected to result in a reduction of 124 tons per day of NOx, or about a 67 percent reduction over 2018 levels and about an 83 percent decrease below current levels in the South Coast Air Basin (see 2022 AQMP, Chapter 4). Therefore, the overall emission reductions are expected to outweigh any emission increases and provide an overall benefit. Therefore, the cumulative air quality impacts are less than significant.

Implementation of the proposed control measures in the 2022 AQMP is expected to result in substantial GHG emission reductions from replacing diesel- and gasoline-fueled equipment with electric-powered and alternative-fueled equipment which will offset potential increases in GHG emissions from construction projects and additional electricity use and generation, resulting in a net benefit overall anticipated. The Proposed 2022 State Strategy also considered GHG emissions reductions to be beneficial. However, the GHG emissions reductions in the SCAG Connect SoCal Plan were considered significant because they did not reach the mandated target. The 2022 AQMP is not cumulatively considerable to the significant impact and in fact is expected to improve the goal towards the mandated GHG reduction target. Therefore, the cumulative GHG impact is considered beneficial and less than significant.

4.2.7.4 Cumulative Mitigation Measures

Mitigation measures for the construction impacts associated with implementing the 2022 AQMP are presented in Subsection 4.2.5.1. Additionally, mitigation measures were identified in the environmental assessments for the Connect SoCal Plan and the Proposed 2022 State Strategy that are similar to those in Subsection 4.2.5.1. No additional mitigation measures to reduce the significant cumulative impacts to air quality related to construction activities have been identified.

Operational air quality impacts for criteria pollutants, TACs, and GHG emissions were considered beneficial both for the project and cumulatively. Therefore, mitigation measures are not required.

4.2.7.5 Remaining Cumulative Air Quality and GHG Emissions Impacts After Mitigation

Cumulative impacts to air quality for past, present, and reasonably foreseeable future projects would remain significant and unavoidable for construction. Cumulative air quality impacts for past, present, and reasonably foreseeable future projects may show quantitively that the emissions benefit of implementing the 2022 AQMP is greater than the expected emissions increases. Therefore, the cumulative operational air quality and GHG impacts are expected to be less than significant.

SUBCHAPTER 4.3

ENERGY

4.3 ENERGY

This subchapter examines impacts on the supply and demand of energy sources from implementing the proposed control measures in the 2022 AQMP. The NOP/IS for the 2022 AQMP (see Appendix A of this Program EIR) evaluated all of the proposed control measures and determined that a majority would involve the following activities which collectively could cause potentially significant energy impacts. Specifically, the following activities may contribute to potentially significant energy impacts: 1) the use of electricity and fossil fuels associated with construction activities; 2) the demand for electricity due to the use of more zero emission technologies including vehicles, airport ground equipment, and marine vessels; 3) the use of natural gas demand to generate additional electricity and hydrogen; and 4) the use of alternative fuels in lieu of gasoline or diesel. Project-specific and cumulative energy impacts associated with these projected increased uses of energy are evaluated in this subchapter of the Program EIR. No comments were received on the analysis presented in the NOP/IS that identified other potential energy impact areas that would require additional analysis in this Program EIR.

4.3.1 2022 AQMP CONTROL MEASURES WITH POTENTIAL ENERGY IMPACTS

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest technology available. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emission and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve emission leak detection and maintenance procedures; and establish educational and outreach programs.

Table 4.3-1 contains a summary of the 2022 AQMP control measures which could generate potential energy impacts.

TABLE 4.3-1
Proposed Control Measures in ~~Revised Draft~~ 2022 AQMP with Potential Energy Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Energy Impact
R-CMB-01	Emission Reduction from Replacement with Zero Emission or Low NOx Appliances – Residential Water Heating	Installation of zero emission water heaters and low NOx technologies (when zero emission is infeasible) in new and existing residences.	Potential energy impacts due to potential increased demand for electricity which may be produced from natural gas.
R-CMB-02	Emission Reduction from Replacement with Zero Emission or Low NOx Appliances – Residential Space Heating	Installation of zero emission space heaters and low NOx technologies (when zero emission is infeasible) in new and existing residences.	Potential energy impacts due to potential increased demand for electricity which may be produced from natural gas.
R-CMB-03	Emission Reductions from Residential Cooking Devices	Installation of electric cooking devices, induction cooktops, or low-NOx burners in new and existing residences.	Potential energy impacts due to potential increased demand for electricity which may be produced from natural gas.
R-CMB-04	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Residential Other Combustion Sources	Installation of zero emission or low NOx technologies in new and existing residences to replace equipment such as pool heaters, dryers, grills, etc.	Potential energy impacts due to potential increased demand for electricity which may be produced from natural gas.
C-CMB-01	Emission Reductions from Replacement with Zero or Near-Zero or Low NOx Appliances – Commercial Water Heating	Installation of zero emission water heaters and low NOx technologies (when zero emission is infeasible) in commercial buildings.	Potential energy impacts due to potential increased demand for electricity which may be produced from natural gas.
C-CMB-02	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Commercial Space Heating	Installation of zero emission space heaters and low NOx technologies (when zero emission is infeasible) in commercial buildings.	Potential energy impacts due to potential increased demand for electricity which may be produced from natural gas.
C-CMB-03	Emission Reductions from Commercial Cooking Devices	Replacing gas burners with zero emission and low NOx technologies (e.g., electric cooking devices, induction cooktops, or low-NOx gas burner technologies).	Potential energy impacts due to potential increased demand for electricity which may be produced from natural gas.

TABLE 4.3-1 (continued)
Proposed Control Measures in ~~Revised Draft~~ 2022 AQMP with Potential Energy Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Energy Impact
C-CMB-04	Emission Reductions from Small Internal Combustion Engines	Incentivizing consumers to purchase zero emission ICEs.	Potential energy impacts due to potential increased demand for electricity, hydrogen, and natural gas.
C-CMB-05	NOx Reductions from Small Miscellaneous Commercial Combustion Equipment (Non-Permitted)	Incentivizing feasible zero emission and low NOx technologies for small combustion equipment.	Potential energy impacts due to potential increased demand for electricity which may be produced from natural gas.
L-CMB-01	NOx Reductions for RECLAIM Facilities	Installation of NOx pollution control equipment including SCRs and low NOx burners.	Potential energy impacts due to increased demand for electricity to operate new equipment.
L-CMB-02	Reductions from Boilers and Process Heaters (Permitted)	Installation of zero emission and low NOx technologies for boilers and heaters.	Potential energy impacts due to increased demand for electricity which may be produced from natural gas.
L-CMB-03	NOx Reductions from Permitted Non-Emergency Internal Combustion Engines (ICEs)	Installation of zero emission and low NOx technologies for non-emergency ICEs.	Potential energy impacts due to increased demand for electricity to operate new equipment.
L-CMB-04	Emission Reductions from Emergency Standby Engines (Permitted)	Installation of zero emission and low NOx technology alternatives to emergency ICEs.	Potential energy impacts due to increased demand for electricity and hydrogen which may be produced by natural gas; and natural gas to operate new equipment.
L-CMB-05	NOx Emission Reductions from Large Turbines	Installation of zero emission and low NOx emissions technologies for electric generating units such as fuel cells.	Potential energy impacts due to increased demand for electricity and hydrogen.
L-CMB-06	NOx Emission Reductions from Electricity Generating Facilities	Replacement of boilers with lower-emitting turbines, installation of zero emission and low NOx emissions technologies, and the application of stricter emission requirements for diesel internal combustion engines.	Potential energy impacts due to increased demand for electricity and hydrogen which may be produced by natural gas; and natural gas to operate new equipment.

TABLE 4.3-1 (continued)
Proposed Control Measures in ~~Revised Draft~~ 2022 AQMP with Potential Energy Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Energy Impact
L-CMB-07	Emission Reductions from Petroleum Refineries	Installation of NOx pollution control equipment including Advanced SCRs and ultra-low NOx burners, and electrification of certain refinery boilers or process heaters or steam-driven equipment such as pumps or blowers.	Potential energy impacts due to increased demand for electricity to operate new equipment.
L-CMB-08	NOx Emission Reductions from Combustion Equipment at Landfills and Publicly Owned Treatment Works	Installation of lean pre-mixed combustion turbines, NOx pollution control equipment including SCRs and low-NOx burners on biogas fueled combustion equipment and/or routing landfill produced biogas to existing natural gas pipelines.	Potential energy impacts due to increased demand for electricity to operate new equipment.
L-CMB-10	NOx Reductions from Miscellaneous Permitted Equipment	Replacement of existing equipment with zero emission technology and installation of NOx pollution control equipment including SCRs and low NOx/ultra-low NOx burners.	Potential energy impacts due to increased demand for electricity which may be produced from natural gas.
ECC-01	Co-Benefit from Existing and Future Greenhouse Gas Programs, Policies and Incentives	Evaluating renewable energy targets with existing and further GHG emission reduction mechanisms, including market, incentive and rebate programs, and promoting the implementation and development of new technologies, which may involve the use of electricity in order to reduce emissions of criteria air pollutants and GHGs.	Potential energy impacts due to potential increased demand for electricity.

TABLE 4.3-1 (continued)
Proposed Control Measures in ~~Revised Draft~~ 2022 AQMP with Potential Energy Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Energy Impact
FLX-02	Stationary Source VOC Incentives	Installation of newer, lower-emitting equipment to replace older, higher-emitting equipment for area and stationary sources as a result of incentives.	Potential energy impacts due to potential increased demand for electricity.
MCS-01	Application of All Feasible Measures	Retrofitting existing equipment and installation of newer, lower-emitting equipment to replace older, higher-emitting equipment for sources as a result of new emission limits introduced through federal, state, or local regulations.	Potential energy impacts due to increased demand for electricity to operate new equipment.
EGM-01	Emission Reductions from New Development and Redevelopment (Potential Indirect Source Rule and ports affected).	Replacing or upgrading off-road construction equipment as part of development/redevelopment efforts may result in the use of zero emission technologies in construction, the installation of charging and alternative fueling infrastructure, the use of alternative fuels; and the use construction equipment with low-emitting engines fitted with diesel PM filters.	Potential energy impacts due to increased demand for electricity to operate vehicles, rail, or new equipment.
EGM-03	Emission Reductions from Clean Construction Policy	Incentivizing the use of zero emission and low NOx equipment by adopting a voluntary measure for municipalities and public agencies to reduce emissions generated by construction activities may include use of zero emission and low NOx construction equipment, dust control, alternative fuels, diesel PM filtration, low-emitting engines, and low VOC materials.	Potential energy impacts due to increased demand for electricity which may be produced from natural gas.

TABLE 4.3-1 (continued)
Proposed Control Measures in ~~Revised Draft~~ 2022 AQMP with Potential Energy Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Energy Impact
MOB-01	Emission Reductions at Commercial Marine Ports	Infrastructure development required to achieve emission reductions at commercial marine ports from on-road heavy-duty vehicles, ocean-going vessels, cargo handling equipment, locomotives, and harbor craft.	Potential energy impacts due to increased demand for electricity (for vehicles, rail, and equipment) and natural gas.
MOB-02A	Emission Reductions at New Rail Yards and Intermodal Facilities	Infrastructure development required to achieve emission reductions at new rail yards and intermodal facilities from on-road heavy-duty vehicles, off-road equipment, and locomotives; and deploying the cleanest locomotives, switchers, on-road heavy-duty trucks, cargo-handling equipment, transportation refrigeration units available.	Potential energy impacts due to increased demand for electricity (for vehicles, rail, and equipment) and natural gas.
MOB-02B	Emission Reductions at Existing Rail Yards and Intermodal Facilities	Infrastructure development required to achieve emission reductions at existing rail yards and intermodal facilities from on-road heavy-duty vehicles, off-road equipment, and locomotives; and deploying the cleanest locomotives, switchers, on-road heavy-duty trucks, cargo-handling equipment, transportation refrigeration units available.	Potential energy impacts due to increased demand for electricity (for vehicles, rail, and equipment) and natural gas.

TABLE 4.3-1 (continued)
Proposed Control Measures in ~~Revised Draft~~ 2022 AQMP with Potential Energy Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Energy Impact
MOB-04	Emission Reductions at Commercial Airports	Deploying additional cleaner technologies, such as increasing efficiencies, implementing air quality improvement options or by deploying zero emission and low NOx technologies, alternative fuels, diesel PM filters, and low-emitting engines for additional equipment beyond the commitments made in the existing Memoranda of Understanding with the commercial airports.	Potential energy impacts due to increased demand for electricity and hydrogen.
MOB-05	Accelerated Retirement of Older Light-Duty and Medium-duty Vehicles	Accelerating the retirement of up to 2,000 light- and medium-duty vehicles per year through the Replace Your Ride Program and accelerating the penetration of zero and near–zero emission vehicles.	Potential energy impacts due to increased demand for electricity (produced by natural gas) and hydrogen.
MOB-06	Accelerated Retirement of Older On-Road Heavy-duty Vehicles	Retiring older, heavy-duty vehicles and replacing them with low-NOx vehicles fueled with CNG or other alternative fuels (e.g., battery electric and hydrogen fuel cells).	Potential energy impacts due to increased demand for electricity (produced by natural gas) and hydrogen.
MOB-07	On-Road Mobile Source Emission Reduction Credit Generating Program	Incentivizing the early deployment of zero emission and low NOx emission heavy-duty trucks through the generation of mobile source emission credits.	Potential energy impacts due to increased demand for electricity, natural gas, and hydrogen.
MOB-08	Small Off-Road Engine Equipment Exchange Program	Promoting the accelerated turn-over of in-use small off-road engines and other engines, such as gasoline- and diesel-powered commercial lawn and garden equipment through expanded voluntary exchange programs will contribute to the retirement of older off-road engines.	Potential energy impacts due to increased demand for electricity.

TABLE 4.3-1 (concluded)
Proposed Control Measures in ~~Revised Draft~~ 2022 AQMP with Potential Energy Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Energy Impact
MOB-09	Further Emission Reductions from Passenger Locomotives	Promoting earlier and cleaner replacement or upgrade of existing passenger locomotives capable of achieving Tier 4 emission standards and supporting the development of zero emission or low NOx technologies (e.g., battery electric and hydrogen fuel cells).	Potential energy impacts due to increased demand for electricity produced from natural gas, and hydrogen.
MOB-10	Off-Road Mobile Source Emission Reduction Credit Generation Program	Accelerating the deployment of zero (e.g., battery-electric or fuel cell powered equipment) and low NOx emission off-road mobile equipment (e.g., 90 percent cleaner than Tier 5) that do not receive public funding.	Potential energy impacts due to increased demand for electricity produced from natural gas, and hydrogen.

4.3.2 SIGNIFICANCE CRITERIA

Implementation of the 2022 AQMP would be considered to have significant adverse energy impacts if any of the following conditions occur:

- The project conflicts with adopted energy conservation plans or standards.
- The project results in substantial depletion of existing energy resource supplies.
- An increase in demand for utilities impacts the current capacities of the electric and natural gas utilities.
- The project uses non-renewable energy resources in a wasteful and/or inefficient manner.

The evaluation in the NOP/IS concluded the proposed project would have less than significant impacts relative to conflicting with adopted energy conservation plans or standards, and use of non-renewable energy resources in a wasteful and/or inefficient manner. Therefore, the analysis in this Program EIR does not further evaluate the proposed project relative to these two significance criteria.

4.3.3 POTENTIAL ENERGY IMPACTS AND MITIGATION MEASURES

Project-specific energy impacts associated with increased electrical demand, increased natural gas demand, increased use of alternative fuels, and decreased use of petroleum fuels have been evaluated in this section.

4.3.3.1 Short-Term Construction Impacts to Energy Resources

Implementation of the 2022 AQMP control measures is expected to result in construction activities that may include the construction of energy infrastructure or modifications to existing facilities to accommodate the increase in electrical demand, including the potential increase in demand for natural gas; new infrastructure for charging electric vehicles and equipment, and providing hydrogen and other alternative fuels; construction activities at stationary sources to install new equipment (e.g., low NOx emissions technologies such as SCRs); and potential increase in demand for natural gas at electric generating facilities.

Temporary increases in energy demand associated with the construction of new energy infrastructure and modifications to existing facilities are expected to include construction equipment such as backhoes, front-end loaders, graders, cranes, welders, generators, water trucks, light stands, delivery trucks, and dump trucks. Construction equipment is typically powered by diesel or gasoline, although some types of equipment can be electric (e.g., welders). Construction equipment that uses alternative fuels (e.g., natural gas, hydrogen, propane, LPG, etc.) are not currently available on the market and are not expected to be used. Construction activities are temporary, as is the use of fuel to power construction equipment, and would cease following completion of construction.

While construction activities would require the consumption of energy resources, these actions would enable the transition to low NOx and zero-emission technologies and help attain the federal 8-hour ozone standard which would in turn, provide beneficial air quality impacts. The energy required to operate electrified construction equipment would not be anticipated to cause a permanent increase in the demand for electricity in excess of the baseline electricity loads because construction activities are intermittent and short-term and most of the currently available construction equipment relies on petroleum fuels. Construction equipment that uses electricity is largely limited to welding equipment for construction projects located at large or industrial facilities with access to electrical connections. Electricity associated with welding during construction activities would not result in a substantial depletion of existing energy resources or require the construction of new electric or natural gas utilities.

Most construction equipment uses petroleum fuels and sufficient supplies of petroleum fuels currently exist. As discussed in Section 4.3.3.4, approximately 17,790 thousand gallons per day of petroleum fuels were used in the South Coast Air Basin in 2018. Further, the use of petroleum fuels would be expected to decrease over time due to the transition to the use of low NOx and zero emission technologies which will be more energy efficient (see further discussion in Section 4.3.3.2). For example, Control Measure EGM-03 would incentivize the use of zero emission and low NOx construction equipment which could include new technologies, low-emitting engines, PM filtration, and the use of alternative fuels. Control Measure MOB-10 would accelerate the deployment of zero emission and low NOx off-road equipment which could also include construction equipment.

Renewable diesel fuel is currently available and may be used for construction equipment; its use generally results in fewer emissions than petroleum diesel. As discussed in Subsection 4.3.3.4.2,

there are currently a number of renewable fuel projects in development at existing refineries in California that are expected to produce over 130,000 barrels per day (47.5 million barrels per year) of renewable fuels. CEC has reported that other refiners have the capacity to blend biodiesel, with an estimated capacity of 110 million gallons annually. Therefore, sufficient supplies of renewable diesel or petroleum diesel are expected to be available.

Therefore, short-term construction-related energy resources impacts associated with implementation of the 2022 AQMP would not be expected to cause a substantial depletion of existing energy resource supplies or require the construction of new electric or natural gas facilities.

4.3.3.2 Electricity

As summarized in Table 4.3-1, the majority of the proposed control measures predominantly rely on electric-powered technologies for both stationary and mobile sources to be utilized in residential, commercial, and industrial settings. An analysis of the potential impacts associated with the increased demand for electricity needed to provide power to these technologies is provided in the following discussion.

4.3.3.2.1 Residential and Commercial Sources

A portion of the projected increase in electricity demand from implementing the 2022 AQMP can be attributed to the following control measures which promote the use of zero emission technologies and which are expected to be primarily comprised of electric appliances installed in residential and commercial settings:

- R-CMB-01 – Emission Reduction from Replacement with Zero Emission or Low NOx Appliances – Residential Water Heating;
- R-CMB-02 – Emission Reduction from Replacement with Zero Emission or Low NOx Appliances – Residential Space Heating;
- R-CMB-03 – Emission Reductions from Residential Cooking;
- R-CMB-04 – Emission Reduction from Replacement with Zero Emission or Low NOx Appliances – Residential Other Combustion sources;
- C-CMB-01 – Emission Reductions from Replacement with Zero or Near Zero or Low NOx Appliances – Commercial Water Heating;
- C-CMB-02 – Emission Reductions from Replacement with Zero or Near Zero or Low NOx Appliances – Commercial Space Heating;
- C-CMB-03 – Emission Reductions from Commercial Cooking Devices;
- C-CMB-04 – Emission Reductions from Small Internal Combustion Engines; and
- C-CMB-05 – NOx Reductions from Small Miscellaneous Commercial Combustion Equipment (non-permitted).

The potential increase in electricity associated with these control measures is estimated in Table 4.3-2, where sufficient data are available to make reasonable estimates.

TABLE 4.3-2
Potential Increase in Electricity Use for Residential and Commercial Equipment

Equipment/ Source Category	Estimated Number of Affected Units	Estimated Electricity Use Per Unit (1)	Estimated Total Electricity Use (GWh/yr)
Residential Water Heating	Of 2 million water heaters installed, 50% of residences will be zero emission and 50% will be low NOx space heaters (2)	380 - 500 kWh/month	6,000
Residential Space Heater	Of 2 million heaters installed, 50% of residences will be zero emission and 50% will be low NOx space heaters (3)	1.5 kWh/hr	600
Residential Cooking Devices	2 million electric cooking appliances (range ovens, cooktops)(4)	2.3 kWh/hr	2,519
Residential – Other Combustion Sources (laundry, pool heaters)	1) 420,000 gas clothes dryers; 2) 200,000 pool heaters(5)	1) 2.5 - 4 kWh/load; 2) 1.5 kWh/hr	1) 699 2) 60
Commercial Water Heating	96,000(6): 64,000 Tier I (less than 400,000 BTU/hr) 32,000 Tier II (400,000 BTU/hr to 2 MMBTU/hr)	Tier I: 1.4 kWh/hr Tier II: 6.8 kWh/hr	Tier I: 98 Tier II: 238
Commercial Space Heating	200,000 commercial buildings will convert to zero emission technology with 50% of applicable sources replaced; mitigation fee for other 50%.(1)(7)	10 kWh/hr	400
Commercial Cooking Devices	Estimated 120,000 commercial cooking devices with zero emission technology for 50% of applicable sources; mitigation fee for other 50%(8)	16,558 kWh/yr (average)	993
Small Internal Combustion Engines	Estimated to replace 703,000 ICEs	2 - 37 kWh	1,353
		Total Estimated Electricity Use:	12,960

(1) https://www.siliconvalleypower.com/residents/save-energy/appliance-energy-use-chart.
(2) For purposes of calculating maximum electricity increases, all new units are assumed to be third-party provided power even though some portion will be solar powered.
(3) Assumes 4 hours of operation on 100 days per year when temperature is below 70 °F.
(4) Assumes 1.5 hours per day per residence.
(5) Assumes average household dries 8 load per week[174]; assumes pool heater used 200 hours per year.
(6) Assumes water heater runs 3 hours per day.
(7) Assumes 4 hours of operation on 100 days per year when temperature is below 70 °F.
(8) Assumes 60,0000 appliances (50% of 120,000). Electricity usage based on https://esource.bizenergyadvisor.com/article/commercial-kitchen-equipment for average of a combination oven, fryer, and griddle.

[174]helaundryproject.net, 2022. Laundry Facts, httpe://www.thelaudnryproject.et/laundry-facts.html

(9) Assumes 1 hour of operation per week.

A recent study was conducted which evaluated the electrification of residential buildings in California and the peak demand of an average household with increasing levels of electrification.[175] In California, the electrical grid is designed as a summer peaking system because the peak loads are observed during the summer when air conditioners are most frequently in use. Under a scenario where a residential building utilizes all-electric appliances, a slightly lower summer peak load was observed due to greater cooling efficiency associated with an electric heat pump as part of a heating, ventilation, and air conditioning (HVAC) system. Although an increase in winter electricity demand is expected to occur across all climate zones, the total increase in electricity needed during winter is expected to remain less than the summer peak demand levels under typical weather conditions. An all-electric house was estimated to need a maximum of approximately four kWh. [E3, 2019].

4.3.3.2.2 Large Stationary Sources

The following proposed control measures are designed to achieve emission reductions through the use of low NOx technologies or zero emission technologies for certain types of combustion equipment operating at large stationary sources:

- L-CMB-01 – NOx Reductions for RECLAIM Facilities;
- L-CMB-02 – Reductions from Boilers and Process Heaters (Permitted);
- L-CMB-03 – NOx Reductions from Permitted Non-Emergency Internal Combustion Engines;
- L-CMB-04 – Emission Reductions from Emergency Standby Engines (Permitted);
- L-CMB-05 – NOx Emission Reductions from Large Turbines;
- L-CMB-06 – NOx Emission Reductions from Electricity Generating Facilities;
- L-CMB-07 – Emission Reductions from Petroleum Refineries; and
- L-CMB-08 – NOx Emission Reductions from Combustion Equipment at Landfills and Publicly Owned Treatment Works.

For example, implementation of Control Measure L-CMB-01 is expected to require additional SCRs and/or low NOx burners on metal melting heating furnaces subject to Rule 1147.2 – NOx Reductions from Miscellaneous Sources, and commercial food ovens subject to Rule 1153.1 – Emissions of Oxides of Nitrogen from Commercial Food Ovens. Other types of air pollution control equipment are expected to be required for nitric acid tanks that will be subject to Proposed Rule 1159.1 – Control of NOx Emissions from Nitric Acid Tanks, which is currently under development. The focus of L-CMB-06 is to reduce NOx emissions from turbines by

[175]Energy and Environmental Economics (E3), 2019 Residential Building Electrification in California; Consumer Economics, Greenhouse Gases and Grid Impacts, April 2019. Available at: https://www.ethree.com/wp-content/uploads/2019/04/E3_Residential_Building_Electrification_in_California_April_2019.pdf

requiring zero emission technology or low NOx technology (e.g., low or ultra-low NOx burners) with or without add-on air pollution control equipment such as SCRs. Similarly, the Control Measure L-CMB-07 is focuses on the use of next-generation ultra-low NOx burners, advanced SCR, and zero emission technologies, while Control Measure L-CMB-08 could rely on employing low NOx technologies such as SCRs.

The South Coast AQMD, as lead agency for all of its rule development projects, has several certified CEQA documents which contain evaluations of the potential environmental impacts associated with replacing burners with low NOx or ultra-low NOx burners and retrofitting various types of combustion equipment with SCR and similar technologies. For example, the Final Subsequent Environmental Assessment (SEA) for Proposed Rule 1109.1 – Emission of Oxides of Nitrogen from Petroleum Refineries and Related Operations, PR 429.1 – Startup and Shutdown Provisions at Petroleum Refineries and Related Operations, Proposed Amended Rule (PAR) 1304 – Exemptions, PAR 2005 – New Source Review for RECLAIM, and Proposed Rescinded Rule 1109 – Emissions of Oxides of Nitrogen from Boilers and Process Heaters in Petroleum Refineries (referred to herein as the November 2021 Final SEA for Rule 1109.1)[176] and the Final Program Environmental Assessment (PEA) for Proposed Amended Regulation XX – Regional Clean Air Incentives Market (RECLAIM) (referred to herein as the December 2015 Final PEA for NOx RECLAIM)[177] are two CEQA documents which contain detailed calculations specific to replacing burners with low NOx or ultra-low NOx burners and retrofitting various types of combustion equipment with SCR and similar technologies.

Low NOx and ultra-low NOx burners are designed to minimize the amount of NOx emissions generated during combustion. Low NOx and ultra-low NOx burners differ from traditional burners by controlling the fuel-to-air mixing ratio in the combustion chamber at each burner in order to lower the peak flame temperature and reduce the amount of NOx created. As with traditional burners, low NOx and ultra-low NOx burners do not require electricity in order to function. Therefore, the replacement of burners with either low NOx or ultra-low NOx would not result in a change in operational electricity use.

However, for SCRs and other similar types of post-combustion air pollution control technologies, some electricity is needed in order for the SCR to be able to inject ammonia into the exhaust gas stream of the combustion device. For example, in both the December 2015 Final PEA for NOx RECLAIM and the November 2021 Final SEA for Rule 1109.1, one SCR for a large refinery boiler or heater with a maximum firing rate ranging from 57 mmBTU/hr to 931 mmBTU/hr would need approximately 218 kWh per day up to 3,542 kWh per day, which converts to 0.009 to 0.148 MW of electricity, respectively. Similarly, for gas turbines rated between 23 kW and 83 kW, the analysis in the December 2015 Final PEA for NOx RECLAIM

[176] Final Subsequent Environmental Assessment (SEA) for Proposed Rule (PR) 1109.1 – Emissions of Oxides of Nitrogen from Petroleum Refineries and Related Operations, PR 429.1 – Startup and Shutdown Provisions at Petroleum Refineries and Related Operations, Proposed Amended Rule (PAR) 1304 – Exemptions, PAR 2005 – New Source Review for RECLAIM, and Proposed Rescinded Rule 1109 – Emissions of Oxides of Nitrogen from Boilers and Process Heaters in Petroleum Refineries (Certified November 5, 2021).

[177] South Coast AQMD, Final Program Environmental Assessment for Proposed Amended Regulation XX – Regional Clean Air Incentives Market (RECLAIM), SCH No. 2014121018/SCAQMD No. 12052014BAR, certified December 4, 2015. http://www.aqmd.gov/home/library/documents-support-material/lead-agency-scaqmd-projects/scaqmd-projects---year-2015.

and the November 2021 Final SEA for Rule 1109.1 estimated one SCR would need approximately from 391 kWh per day to 1,448 kWh per day, which converts to 0.016 to 0.06 MW of electricity, respectively. Thus, an increase in electricity demand is expected if certain types of air pollution control technologies requiring electricity for their operation (e.g., SCRs) are installed in order to achieve NOx emission reductions as part of implementing control measures targeting large stationary sources.

In addition, the specific technologies, methods of compliance, and number of combustion equipment that would be impacted due to implementation of the proposed control measures for large stationary sources are currently unknown at the time of publication. Further, the control measures for large stationary sources also focus on zero emission technologies which could include electrification in lieu of utilizing post-combustion air pollution control technology, but the availability of electrified equipment to replace the existing combustion-based equipment is also unknown at this time. Another potential option for compliance would be to replace the combustion equipment with equipment that has higher tier engines (e.g., I.C. engines), which would be expected to be more energy efficient than older, retired equipment, but continue to use the same fuel type as the previous equipment (e.g., diesel, gasoline, or natural gas) so no increase in electricity demand would be expected.

Control Measures L-CMB-01 through L-CMB-08 could require additional electricity for installing post-combustion air pollution control equipment, which would be expected to occur on a similar scale as what was previously analyzed in the December 2015 Final PEA for NOx RECLAIM and the November 2021 Final SEA for Rule 1109.1 (e.g., 0.025 to 0.75 MW of electricity for one SCR device). In addition, Control Measures L-CMB-01 through L-CMB-08 could result in the replacement of existing combustion equipment with fully electrified equipment. A rough estimate of how much electricity could be needed to operate fully electrified equipment can be determined by converting the size or equipment rating of the combustion equipment (e.g., mmBTU/hr) to an electricity equivalent in terms of megawatt-hours (MWh). For example, the electric equivalent of a small industrial boiler or heater rated at 60 mmBTU/hr would be a boiler rated at 23,581 hp which would use approximately 17.6 MWh at maximum capacity which would convert to an instantaneous electrical demand of 0.7 MW if the unit is operated 24 hours per day.[178] Similarly, the electric equivalent of a large industrial boiler or heater rated at 950 mmBTU/hr would be a boiler rated at 278.4 MWh which would convert to an instantaneous electrical demand of 11.6 MW if the unit is operated 24 hours per day. While the potential electricity demand for operating air pollution control equipment such as SCRs is relatively small, the amount of electricity needed to provide the same amount of capacity as one boiler that relies on combustion for its operation is substantial. As such for multiple conversions of combustion equipment to electrified versions would require a potentially significant amount of electricity for their operation.

If the 2022 AQMP is adopted by the Governing Board, South Coast AQMD staff will begin the rule development process for these large stationary source control measures and the initial analysis will entail establishing an inventory of the combustion equipment that may be subject to further NOx emission reductions and to determine the cost-effectiveness of installing post-

[178] 1 mmBTU/hr =0.293 MWh

combustion air pollution control equipment and replacing the existing combustion equipment with fully electrified technology.

In conclusion, while the quantity of eligible equipment for either installing air pollution control technology, replacing existing equipment with a higher tier equipment, or replacing equipment with zero emission technology for large stationary sources is unknown at this time, estimates for electricity demand needed for operating air pollution control equipment and converted combustion equipment to fully electric would result in potentially significant increases in the amount of electricity needed to the implement the 2022 AQMP.

4.3.3.2.3 Mobile Sources

Of the 19 proposed mobile source control measures, the following 14 control have been identified in Table 4.3-1 has having potential energy impacts.

Emission Growth Management Measures

- EGM-01 – Emission Reductions from New Development and Redevelopment
- EGM-02 – Emission Reductions from Projects Subject to General Conformity Requirements
- EGM-03 – Emission Reductions from Clean Construction Policy

Facility-Based Mobile Source Measures

- MOB-01 – Emission Reductions at Commercial Marine Ports
- MOB-02A – Emission Reductions at New Rail Yards and Intermodal Facilities
- MOB-02B – Emission Reductions at Existing Rail Yards and Intermodal Facilities
- MOB-03 – Emission Reductions at Warehouse Distribution Centers
- MOB-04 – Emission Reductions at Commercial Airports

On-Road and Off-Road Mobile Source Measures

- MOB-05 – Accelerated Retirement of Older Light-Duty and Medium-Duty Vehicles
- MOB-06 – Accelerated Retirement of Older On-Road Heavy-Duty Vehicles
- MOB-07 – On-Road Mobile Source Emission Reduction Credit Generating Program
- MOB-08 – Small Off-Road Engine Equipment Exchange Program
- MOB-09 – Further Emission Reductions from Passenger Locomotives
- MOB-10 – Off-Road Mobile Source Emission Reduction Credit Generation Program

Control Measures EGM-01 and EGM-03 are aimed at reducing emissions by encouraging zero emission technology which could involve electrification. In particular, Control Measure EGM-01 may result in the development of a potential Indirect Source Rule targeting emission reductions

at the commercial marine ports while Control Measure EGM-03 focuses on promoting the use of zero emission construction equipment in lieu of equipment fueled by diesel, gasoline or natural gas. However, the estimated electricity increase associated with Control Measures EGM-01 and EGM-03 is currently unknown because no estimate of the number, size, or type of equipment is available at the time of publication.

Control Measures MOB-01 through MOB-04 seek to identify actions that will result in additional emission reductions at commercial marine ports, rail yards and intermodal facilities, warehouse distribution centers, and commercial airports. Control Measures MOB-05 through MOB-10 focus on on-road light-, medium- and heavy-duty vehicles, international shipping vessels, passenger locomotives, and small off-road engines.

The various mobile source control measures rely on accelerating the replacement of high-emitting mobile sources using financial incentives or credit generation for those entities not receiving financial incentives as ways to encourage targeted industries to adopt new technologies capable of achieving the desired emission reductions. The mobile source sectors that will be expected to rely on financial incentives or credit generation to achieve NOx emission reductions and that may result in potential increases in electricity use are presented in Table 4.3-3.

TABLE 4.3-3
Potential Electricity Use for Mobile Sources Relying on Incentive Programs*

Mobile Source Sector	Project Type	Affected Population	Electricity Rate	Potential Electricity Use (GWh/year)
Light- and Medium-Duty Vehicles	Replacement	5,440	0.34 kWh/mile at 12,600 miles/year	23.3
Heavy-Duty Vehicles	Replacement	8,214	1 kWh/mile at 16,600 miles/year	136.4
School Buses	Replacement	8,032	1 kWh/mile at 16,600 miles/year	133.3
Off-Road Agriculture	Replacement	125	1 kWh/mile at 16,600 miles/year	2.1
Off-Road Construction	Repower	656	1 kWh/mile at 16,600 miles/year	10.9
Off-Road Construction	Replacement	365	1 kWh/mile at 16,600 miles/year	6.1
Other Off-Road and CHE	Replacement	428	1 kWh/mile at 16,600 miles/year	7.1
			Total	**319.1**

* Source: 2022 AQMP, Chapter 4, Table 4-23, p. 4-106. Based on active projects with emission reductions in 2037 using the maximum project life allowed per 2017 Carl Moyer Guidelines.

While the 2022 AQMP encourages the use of zero emission technologies for mobile sources, a number of other public agencies have approved/implemented other regulations that also aim to

achieve the same goal. For example, CARB adopted two major regulations in 2020 to further these goals such as the Advanced Clean Trucks regulation which requires manufacturers to produce Class 8 zero emission trucks at increasing percentages beginning in 2024 through 2035. CARB also amended its control measure for ocean-going vessels at berth (At-Berth Regulation), which requires at-berth emission reductions through shore power or capture-and-control systems, and introduces an innovative concept opportunity for fleets to use other technology options.

The California Energy Commission (CEC) projects that the state will attain the 1.5 million electric vehicles by 2025, which is the goal set forth in 2012 per Governor Brown's Executive Order B-16-12 to encourage zero emission vehicles.[179] The estimated electricity use for these vehicles is approximately 5,000 GWh. Executive Order B-48-18[180] has a goal of five million zero emission vehicles on the road in 2030, which would require an estimated 15,000 to 30,000 GWh of electricity. [CEC, 2021]. On September 10, 2018, Governor Brown signed SB 100. Under SB 100, the Renewable Portfolio Standard (RPS) for public-owned facilities and retail sellers consist of 44 percent renewable energy by 2024, 52 percent by 2027, and 60 percent by 2030. Additionally, SB 100 also established a new RPS requirement of 50 percent by 2026. Furthermore, the bill establishes an overall state policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045. The 2022 AQMP, as well as CARB's SIP Strategy are expected to encourage the use of additional electric vehicles.

Some of the proposed control measures could encourage the construction and use of electric or magnetic power built into roadway infrastructure to boost the pulling capacity or range of the heavy-duty vehicles. The electric or magnetic power for appropriately equipped heavy-duty trucks would also require additional electricity. The Draft EIR for the I-710 Corridor Project included an alternative that evaluated impacts from installing electric roadway infrastructure and the analysis estimated the potential electricity demand to range between 157 and 183 GWh per year. [181] Thus, if electric or magnetic power is built into roadways as a result of implementing the 2022 AQMP, the potential amount of electricity use associated with this type of project could be similar in scope to the I-710 Corridor Project but would need to be updated pending project details.

Control Measure MOB-01 – Emission Reductions at Commercial Marine Ports, is aimed at achieving NOx emission reductions from heavy duty trucks, ocean-going vessels, cargo handling equipment, locomotives, and harbor craft, which could be achieved via electrification of some of these sources, e.g., the use of electrical power for hoteling operations for ships at berth using shore power. Shore power can be locally generated at port or obtained from the grid. Shore power can be locally generated using clean technologies such as fuel cells, gas turbines, microturbines, combined cycle units, and solar.

[179] State of California, Office of Governor Edmund G. Brown, Jr., 2012. https://www.ca.gov/archive/gov39/2012/03/23/news17472/index.html.
[180] State of California, Office of Governor Edmund G. Brown, Jr., 2018, https://www.ca.gov/archive/gov39/2018/01/26/governor-brown-takes-action-to-increase-zero-emission-vehicles-fund-new-climate-investments/index.html.
[181] Caltrans, 2012 – Draft EIR for I-710 Project. https://www.dropbox.com/sh/qwjnsyur2i0o4q9/AAD_r11UQEn1AefQEZRH5H_6a?dl=0https

The Port of Long Beach developed the Energy Initiative Roadmap to handle the potential increase in electricity demand, a comprehensive strategy for transitioning the Port of Long Beach to increased zero emission operations and use of renewable power sources and self-generation systems. One of the goals of the Energy Initiative Roadmap is for the Port of Long Beach to operate independently from the electricity grid in time of emergency or other need. The major driver of the Energy Initiative Roadmap is the growing demand for electricity, which is projected to quadruple by 2030.[182] [PLB, 2017].

The Port of Long Beach conducted a study to determine its electricity use during a one-year period (2014-2015). The Port of Long Beach determined that port operations require between 10-14 MW for base load and approximately 40 MW peak demand. These estimates do not account for the Port Middle Harbor operations, which were under construction during the study period. The study estimated that a fully-electrified marine container terminal would use about four times more power than a traditional container terminal.[183] Note that the EIR prepared for the Middle Harbor development in the Port of Long Beach estimated that the electricity consumption would be about 986 megawatt-hours (0.2 MW, assuming 365 days of operation for 24 hours per day) for the Middle Harbor container terminal operations that would include shore-to-ship power ("cold-ironing") and connections to buildings and other wharf structures (e.g., lighting). [Port of Long Beach, 2009]. These estimates also do not include CARB's recently approved At-Berth regulations. Therefore, peak electricity demand at the Port of Long Beach due to electricity would likely require over 160 MW.

Similar to the Port of Long Beach, the Port of Los Angeles has prepared the Energy Management Action Plan which outlines actions that the Port of Los Angeles needs to take to meet electricity demands in the future. Power demands are projected to double or potentially triple at the Port over the next decade due to anticipated increases in throughput and expanded use of alternative maritime power (AMP), electric equipment (including electric cargo handling equipment), and terminal automation. The Port of Los Angeles estimates that the annual average hourly demand for electricity in 2012 was 27 MW per hour (peak of 55 MWh). With the combined increased use of AMP and automation of container terminals, container terminals are projected to increase peak electricity demands from 55 MW to 96 - 161 MW, which would equate to a near doubling or potential tripling in electricity demand. [Port of Los Angeles, 2014]. Electricity demand from the Ports of Long Beach and Los Angeles combined would be expected to exceed 300 MW in the future.

4.3.3.2.4 Other Sources

Control Measure ECC-01 – Co-Benefit from Existing and Future Greenhouse Gas Programs, Policies and Incentives, seeks to quantify and take credit for the criteria pollutant co-benefits associated with other programs to reduce GHG emissions since the processes that emit criteria pollutants, and their precursors also typically emit GHGs. Control Measure ECC-01 will evaluate

[182] Port of Long Beach Energy Initiative Roadmap, June 2017. Available at: https://polb.com/download/16/energy-initiatives/6735/energy-initiative-roadmap-final-june-2017.pdf
[183] Id.

renewable energy targets with existing and further GHG emission reduction mechanisms, including market, incentive, and rebate programs, and promote the implementation and development of new technologies, which may involve the use of electricity in order to reduce emissions of criteria air pollutants and GHGs. Because Control Measure ECC-01 does not specifically target an industry or type of emission sources, any potential increases in electricity demand associated with implementing and developing new technologies cannot be quantified at this time.

Control Measure FLX-02 – Stationary Source VOC Incentives, while focused on reducing VOC emissions from stationary sources, could cause a potential increased demand for electricity if the newer, lower-emitting equipment that replaces older, higher-emitting equipment for area and stationary sources as a result of incentives, utilizes electricity. Because Control Measure FLX-02 does not specifically target an industry or type of emission sources, any potential changes in electricity demand associated with implementing and developing new technologies cannot be quantified at this time.

Control Measure MCS-01 – Application of All Feasible Measures, is focused on addressing the state's requirement to take all feasible measures to reduce ozone. While existing rules and regulations for pollutants including VOC and NOx reflect current BARCT, as new technology becomes available that is feasible and cost-effective, BARCT will continually evolve which will require review of new emission limits or controls introduced through federal, state or local regulations to determine if South Coast AQMD regulations remain equivalent or more stringent than rules in other regions. If not, a rulemaking process will be initiated to perform a BARCT analysis and potential rule amendments if deemed feasible. In addition, the South Coast AQMD will consider adopting and implementing new retrofit technology control standards, based on research and development and other information, that are feasible and cost-effective. Any new retrofit technology that gets adopted may cause increased use in electricity. Because Control Measure MCS-01 does not specifically target an industry or type of emission sources, any potential increases in electricity demand associated with implementing and developing new technologies cannot be quantified at this time.

Conclusion – Electricity: Statewide electricity consumption was more than 279,000 GWh in 2020, with approximately 118,200 GWh (42 percent) in the South Coast Air Basin. [CEC, 2021]. See also Section 3.3.2.1 of this Program EIR, Table 3.3-1. CEC estimates an increase in electricity demand of about 1.6 percent annually through 2035. [CEC, 2021]. By applying that growth rate, the total electricity use in California would be approximately 354,000 GWh by 2035. Approximately 150,000 GWh (42 percent) of that would be within South Coast Air Basin (assuming the percentage attributed to the South Coast Air Basin remains the same). The proposed 2022 AQMP control measures could increase the electricity demand by an additional estimated 13,429, GWh (approximately 11 percent over 2020 consumption and nine percent over the CEC projected growth, see Tables 4.3-2 and 4.3-3) and this amount does not take into account the electricity that may be needed to operate additional air pollution control equipment or to convert combustion equipment to fully electric. Thus, the overall potential increase in electricity demand could be higher.

The potential electricity demand impacts for those control measures with available detailed data were estimated earlier in this subsection and were based on conservative assumptions. The future demands for electricity associated with the potential increased electrification of mobile sources could be partially satisfied by charging equipment (e.g., electric vehicles) at night when the electricity demand is low, thus minimizing impacts on peak electricity demands. In order for utilities to be able to provide sufficient electricity to meet future demands, the use of additional energy storage systems (e.g., battery arrays) is also a key component for being able to store electricity at the time when resources are available (e.g., when the sun shines and the wind blows), and to use that stored electricity at a later time. Further, the analysis in this Program EIR conservatively assumes that all sources affected by a control measure with the potential to increase demand for electricity, would use electricity rather than other forms of energy. In addition, any increase in electricity demand would likely result in a concurrent reduction in demand for other types of fuels, particularly petroleum fuels. Because the control measures in the 2022 AQMP have been developed with the goal of attaining the federal ozone standard, the successful implementation of some of the control measures relies on the use of electricity in order to reduce NOx emissions, an overall air quality benefit for the region. Therefore, the 2022 AQMP is expected to result in a substantial depletion of existing energy (specifically electricity) resource supplies.

The 2022 AQMP includes incentives to shift from diesel and gasoline fuels as well as natural gas use, to the potential for increased electrification of stationary and mobile sources. Depending on the location and the amount of energy use (e.g., port projects), electricity portions of energy conservation plans may need to be updated. Therefore, the proposed project may conflict with existing adopted energy conservation plans or standards. The 2022 AQMP could result in a substantial increase in electricity (approximately 11 percent, greater than one percent of the existing electricity use in the South Coast Air Basin), and the increased electricity demand is potentially significant.

Implementation of the 2022 AQMP may have some beneficial impacts on energy because the control measures are expected to result in a shift away from using petroleum fuels (gasoline and diesel) towards the use of electricity, hydrogen, and natural gas for vehicles (including trucks) and other equipment. As discussed later in this chapter in Section 4.3.3.4, implementation of some of the control measures could also increase the demand and supply of low-emission diesel fuels. While some types of vehicles and equipment that may be used to meet some of the goals of the incentives in the various control measures is currently unknown, partial-zero emission vehicles (such as hybrids), zero emission vehicles, including electric vehicles and hydrogen fuel cell vehicles will be utilized. On September 23, 2020, Governor Newsom signed Executive Order N-79-20 which set a 100 percent zero emission vehicle sales goal for new passenger vehicles by 2035, a 100 percent ZEV operations goal for drayage and off-road vehicles by 2035, and a 100 percent ZEV operations goal for medium- and heavy-duty vehicles in the state by 2045, where feasible. The electrical grid supporting these electric vehicles would need to represent 100 percent renewable energy generation (zero carbon resources per SB100) by 2045. However, implementation of the 2022 AQMP is not expected to result in an increase in the number of vehicles or impact the total miles that these vehicles could travel.

According to Appendix F of the CEQA Guidelines, Energy Conservation, the wise and efficient use of energy includes: 1) decreasing overall per capita energy consumption; 2) decreasing reliance on fossil fuel such as coal, natural gas, and oil; and 3) increasing reliance on renewable energy sources and the proposed control measures in the 2022 AQMP align with all of these energy conservation criteria. For example, vehicles would be transitioned to using electricity and alternative fuels in lieu of relying on petroleum fuels. Further, the promotion of low NOx and zero emission technologies which are more efficient and would also reduce the reliance on fossil fuels. Thus, the 2022 AQMP would support the efficient use of energy by decreasing the use of fossil fuels and increasing the reliance on renewable energy sources, providing a beneficial long-term operational impact on energy conservation. Further, the 2022 AQMP includes strategies that promote energy conservation (Control Measures ECC-02 and ECC-03) without identifying specific targets; therefore, the benefits of these control measures have not been quantified in this analysis. Nonetheless, the 2022 AQMP impacts on electricity resources are potentially significant.

Even with energy conservation programs in effect in California, additional electricity will be needed, and power plants will be required to supply the projected increase in electricity demand and general population growth. While increased demand for electricity would occur due to general population growth, additional increases in electricity demand beyond general population growth will be expected if the control measures in the 2022 AQMP are implemented. Relative to the existing electricity use, the projected future peak electricity demand of quantifiable electricity impacts from the proposed control measures is approximately 11 percent greater than electricity consumption in 2020. As discussed in this section, quantification of electricity demand could not be accomplished for all of the proposed control measures (e.g., large combustion sources discussed in Subsection 4.3.3.2.2), but electricity demand increases are expected. The implementation of all the control measures is expected to result in an overall increase of greater than the approximately 11 percent of the existing electricity use discussed for residential, commercial, and mobile sources (see Tables 4.3-2 and 4.3-3). This increase, along with the increases in electricity associated with other state programs and mandates, is expected to exceed the electrical generating capacity of the system. **Thus, the energy impacts from the implementation of the 2022 AQMP are expected to be significant for electricity demand.**

Project-Specific Mitigation: If significant adverse environmental impacts are identified in a CEQA document, the CEQA document shall describe feasible measures that could minimize the significant adverse impacts. [CEQA Guidelines Section 15126.4]. Therefore, feasible mitigation measures for reducing impacts related to potential electricity demand are required. As individual control measures are promulgated as new or amended rules, additional mitigation measures may also be necessary to minimize electricity impacts. The following mitigation measures have been identified for reducing potential electricity demand impacts:

E-1 Project sponsors should pursue incentives to encourage the use of energy efficient equipment and vehicles and promote energy conservation <u>during electricity generation</u>.

E-2 Utilities should increase capacity of existing transmission lines to meet forecast demand that supports sustainable growth where feasible and appropriate in coordination with local planning agencies.

E-3 Project sponsors should submit projected electricity calculations to the local electricity provider for any project anticipated to require substantial electricity consumption. Any infrastructure improvements necessary should be completed according to the specifications of the electricity provider.

E-4 Project sponsors should include energy analyses in environmental documentation with the goal of conserving energy through the wise and efficient use of energy.

E-5 Project sponsors should evaluate the potential for reducing peak energy demand by encouraging charging of electrical vehicles and other mobile sources during off-peak hours.

E-6 Project sponsors should evaluate the potential for reducing peak energy demand by encouraging the use of catenary or way-side electrical systems developed for transportation systems to operate during off-peak hours.

E-7 Project sponsors should evaluate the potential for reducing peak energy demand by encouraging the use of electrified stationary sources during off-peak hours.

Remaining Electricity Impacts: The preceding analysis concluded that significant adverse electricity demand impacts could be created by the proposed project because the potential increase in electricity usage would exceed baseline electricity consumption by up to 11 percent. **Even after the mitigation measures are applied, electricity demand impacts would remain significant.**

4.3.3.3 Natural Gas

Project-Specific Impacts: Control measures in the 2022 AQMP may result in: 1) an increase in demand for natural gas primarily associated with the production of electricity in the short term, the production of hydrogen in the short-term, and fueling vehicles; and 2) a decreased demand for natural gas appliances in commercial and residential setting. As detailed in Section 4.3.3.2, a number of control measures, as well as a number of existing state programs and mandates, are expected to require additional electricity. While the electrical grid needs to generate electricity that is comprised of 100 percent renewable energy by 2045, additional sources of electricity will be required in order to meet the 2035 goals. The RPS also requires 60 percent renewable energy by 2030, but the magnitude of the impacts from the increased electricity demand when compared to the emission benefits of the implementation of the RPS standard is not known at this time.

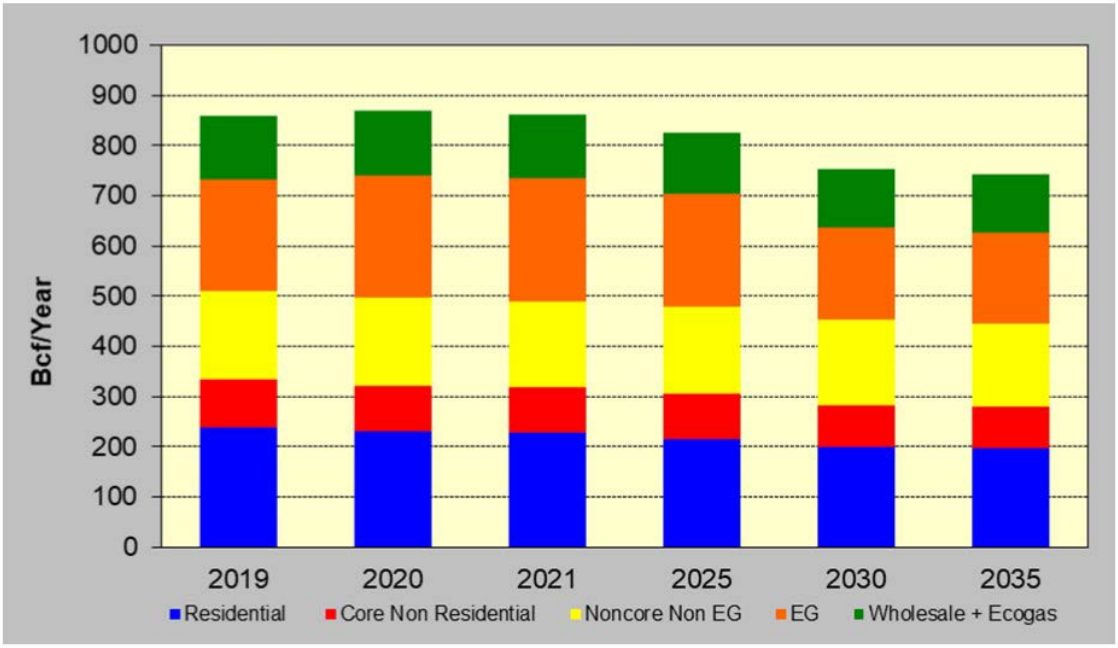
The potential for growth in electrification poses considerable uncertainty on when, where, and how large the impact on natural gas demand in California will be. For the residential and commercial building sectors, electrification of various appliances such as space heating, water heating, cooking devices, and others would have the potential to decrease the use of natural gas. For example, some local jurisdictions have recently prohibited the installation of natural gas appliances and fireplaces when constructing new buildings. While there will be a shift from utilizing natural gas in these types of appliances for residential and commercial land uses to

electricity, the potential for increased electrification of vehicles and buildings would also contribute to an overall increase in electricity demand which could require natural gas-fired turbines and engines to ramp up operations to meet the increased load. This load increase could cause additional use of natural gas in electricity generation equipment. [California Gas and Electric Utilities, 2020].

SoCal Gas projects total gas demand to decline at an annual rate of one percent between 2020 and 2035. The decline in natural gas demand is due to modest economic growth and CPUC-mandated energy efficiency standards and programs. Other factors that contribute to the downward trend are more stringent standards established in the revised Title 24 Building Codes, renewable electricity goals, a decline in core commercial and industrial demand, and conservation savings. [California Gas and Electric Utilities, 2020].

From 2020-2035, residential demand in in the SoCal Gas region is expected to decline from 230 to 198 billion cubic feet (see Figure 4.3-1). The decline is approximately one percent per year on average. The declining use per meter, primarily driven by aggressive energy efficiency goals and associated programs, offsets new meter growth. The core, non-residential markets (commercial, industrial, and natural gas vehicles) are expected to decline at an average annual rate of 1.0 percent, or from 112 billion cubic feet in 2020 to 96 billion cubic feet by 2035. However, the natural gas vehicle market is expected to grow 1.45 percent over the forecast horizon. The natural gas vehicle market is expected to grow due to government (federal, state, and local) incentives and regulations encouraging the purchase and operation of alternative fuel vehicles as well as the increased use of renewable natural gas that provides significant GHG emission reduction benefits. The non-core, non-electric generation markets are expected to decline by 0.3 percent, from 174 billion cubic feet in 2020 to 165 billion cubic feet by 2035 (see Figure 4.3-1). That decline is being driven by aggressive energy efficiency goals and associated programs. [California Gas and Electric Utilities, 2020].

There are critical interdependencies between electricity and the natural gas system reliability in California. Natural gas-fired electricity generation has been an integral part of the electricity system, providing baseload power. It has also served as the backstop during drought conditions that reduce the availability of hydroelectric power generation. The role of natural gas-fired electricity generation in the electricity system is shifting with the addition of large amounts of renewable generation, primarily solar and wind. The large influx of renewable energy on the grid has reduced natural gas produced electricity from 53 percent of total electric generation in 2010 to 48 percent in 2020. Renewables have displaced a portion of daytime generation previously provided by natural gas, but the intermittency of solar and wind resources necessitates flexible resources that can quickly come on-line when the sun sets, or winds stop blowing. (CEC, 2021].



Notes:
(1) Source: California Gas and Electric Utilities, 2020. Core non-residential includes core commercial, core industrial, gas air-conditioning, gas engine, and natural gas vehicles.

FIGURE 4.3-1
Composition of SoCal Gas Requirements Average Temperature and Normal Hydro Year (2019-2035)

Total electric generation load (including large cogeneration and non-cogeneration electric generation for a normal hydro year) is expected to decline from 245 billion cubic feet in 2020 to 182 billion cubic feet in 2035, a decrease of 2.0 percent per year. The main factors for the decline are an increasing renewable energy target level, retirement of older natural gas-fired plants, and the addition of more efficient natural gas-fired plants. [California Gas and Electric Utilities, 2020].

Mobile Sources: The natural gas vehicle market is expected to continue to grow due to government (federal, state, and local) incentives and regulations related to the purchase and operation of alternative fuel vehicles, as well as the increased use of renewable natural gas that provides significant GHG emission reduction benefits.

However, growth may be offset by competing technologies and fuels as well as the potentially lower cost differential between petroleum fuel (gasoline and diesel) and natural gas. By the end of 2019, there were 335 CNG fueling stations delivering 15.1 billion cubic feet of natural gas for that year. The natural gas vehicle market is expected to grow 1.44 percent per year, on average. By the end of 2035, 418 CNG fueling stations delivering 19 billion cubic feet per year of natural gas are projected. The increased use of natural gas (CNG) as a transportation fuel would decrease the use of other petroleum fuels. [California Gas and Electric Utilities, 2020].

Some of the control measures in the 2022 AQMP may result in an increase in the use of natural gas in medium- and heavy-duty on road vehicles. Expanded use of alternative fuels in medium-duty and heavy-duty trucks using more efficient, advanced natural gas engine technologies would be expected to reduce the use of diesel fuel. Natural gas-fired medium- and heavy-duty vehicles are an attractive option to diesel-fueled vehicles because they emit fewer criteria pollutants and toxic components without emitting diesel PM. However, hybrid vehicles and zero emission electric vehicles are further along in the development phase and expected to be preferred over natural gas vehicles.

For ocean-going vessels, natural gas, in the form of liquefied natural gas (LNG), is not commonly used, but could be an option as an alternative fuel. In August 2022, the Port of Long Beach's tenant Pasha christened the first LNG-powered regular service container vessel. Pasha expects to have a second LNG-powered vessel completed in 2022. More LNG-powered vessels will potentially be put into service. However, at this time it is not known the impact of fueling LNG-powered vessels will have on natural gas demand locally.

Stationary Sources: For stationary sources, natural gas qualifies as BACT, so new installations of combustion equipment are currently required to use natural gas. The 2022 AQMP control measures focus on low NOx and zero emission technologies, which include electrification, and which are neither expected to include additional use of natural gas nor use natural gas for their operation. Some control measures contemplate replacing or retrofitting equipment which is expected to result in improved energy efficiency since new equipment and retrofitted equipment (e.g., low NOx burners) are generally more energy efficient.

More than 95 percent of U.S. produced hydrogen is made from by a steam methane reforming process using natural gas, refinery fuel gas, coal (if hydrogen is manufactured outside of California), and water electrolysis. The existing hydrogen production infrastructure can be leveraged to support the initial commercialization of fuel cell electric vehicles (FCEVs), though there is little excess hydrogen production capacity. As the commercialization of FCEVs progresses, new hydrogen capacity will need to be built. [CEC, 2021].

In the early stages of commercialization, expanded hydrogen production will likely rely on natural gas feedstock converted to hydrogen with the steam methane reforming process, as this approach offers a low-cost pathway to producing hydrogen. Over time, the hydrogen fuel feedstock mix could evolve from this natural gas dominance to a more diversified production mix, such as a lower-carbon production mix that includes natural gas reformation with carbon capture and storage, coal with carbon capture and storage, biofuels, waste resources, nuclear, and water electrolysis using renewable electric power (coal and nuclear production are not expected for hydrogen production occurring in California). This shift is anticipated because it is expected that there will be a substantial push to de-carbonize transportation fuels. Hydrogen may also be produced from renewable energy resources and waste streams using low-carbon-emitting processes, e.g., biomass gasification, water electrolysis using renewable electricity, and reformation of renewable natural gas. [CEC, 2021]. Therefore, any increase in the use of natural gas for hydrogen production is expected to be short-term.

Conclusion – Natural Gas: As natural gas is generally widely available through an existing infrastructure of pipelines which currently transport and deliver natural gas to end users, natural gas supplies are not expected to be limited if the proposed project is implemented. **The combined increase in natural gas demand needed for producing electricity and hydrogen and for fueling vehicles may be somewhat offset over the long-term by a decrease in demand for natural gas appliances in commercial and residential setting. However, over the short-term, the natural gas demand is expected to increase**. **Based upon these considerations, significant adverse energy impacts relating to natural gas demand are expected from implementing the proposed project.**

Project-Specific Mitigation: If significant adverse environmental impacts are identified in a CEQA document, the CEQA document shall describe feasible measures that could minimize the significant adverse impacts. [CEQA Guidelines Section 15126.4]. Therefore, feasible mitigation measures for reducing impacts related to potential natural gas demand are required. As individual control measures are promulgated as new or amended rules, additional mitigation measures may also be necessary to minimize electricity impacts. The following mitigation measures have been identified for reducing potential natural gas demand impacts, in additional to mitigation measures E-1 through E-7 above:

E-8 Projects that require a substantial increase in natural gas demand should consider the use of renewable gas, where available and feasible, including biofuel landfill gas and gas produced from renewable fuels projects.

E-9 Project sponsors should submit projected natural gas demand use to the local natural gas provider for any project anticipated to require substantial natural gas consumption. Any infrastructure improvements necessary should be completed according to the specifications of the natural gas provider.

Remaining Natural Gas Impacts: The preceding analysis concluded that significant adverse natural gas impacts could be created by the proposed project because of the potential increase in natural gas for electricity and hydrogen production. **Even after the mitigation measures are applied, natural gas demand impacts would remain potentially significant.**

4.3.3.4 Petroleum Fuels

Implementation of the 2022 AQMP is expected to result in a decrease in the demand for petroleum fuels (e.g., diesel, and gasoline) due to mobile source control measures, as well as a potential increase in engine efficiency associated with the retrofit of new engines. A decrease in the demand for petroleum fuels includes control measures that would result in the installation of new engines in mobile sources, which tend to be more fuel efficient, resulting in the use of alternative fuels, or in an increase in electrified mobile sources, which would eliminate the use of petroleum fuels from mobile sources.

As shown in Table 4.3-3, mobile source control measures (e.g., Control Measures MOB-01 through MOB-10) are expected to encourage the introduction and use of low NOx and zero emission technologies in light-, medium-, and heavy-duty vehicles, school buses, off-road

agriculture sources, off-road construction equipment, equipment at port facilities (including harbor craft), locomotive engines, and lawn and garden equipment. Other control measures that are expected to result in a decrease in the use of petroleum fuels include Control Measures C-CMB-04, C-CMB-05, L-CMB-03, L-CMB-04, ECC-01, MCS-01, EGM-01, and EGM-03. None of these control measures, however, identify a specific reduction in the amount of future use of petroleum fuels.

Table 4.3-4 shows consumption of gasoline and diesel in the South Coast Air Basin, which is a subset of South Coast AQMD's jurisdiction, was approximately 17,790 thousand gallons per day in 2018. It is expected that there will be a 27.7 percent reduction in the use of these petroleum fuels to 12,857 gallons per day consumed in 2037.

TABLE 4.3-4
Estimated Consumption of Gasoline and Diesel Fuel in South Coast Air Basin

Gasoline and Diesel Fuel Consumed			Percentage under Existing Use
Year	Billion Gallons per year	Thousand Gallons per Day	
2018	6.5	17,790	--
2030	5.0	13,683	-23.1
2037	4.7	12,857	-27.7

Source: 2022 AQMP, Appendix III, Attachment D.

Conclusion – Petroleum Fuels: Emissions from mobile sources are the largest contributors to NOx emissions in South Coast AQMD's jurisdiction. Overall, implementation of the 2022 AQMP is relying on a large reduction in NOx emissions from mobile sources which in turn would require a substantial reduction in the use of petroleum fuels, in particular gasoline and diesel. Because of requirements resulting in higher energy efficiencies, displacement by alternative clean fuels, and the increased inventories of electric vehicles, implementation of the 2022 AQMP is expected to result in a reduction in the use of gasoline and diesel fuels, with the largest reductions coming from the on-road mobile source sector switching to electricity or alternative clean fuels. Therefore, implementation of the 2022 AQMP is expected to result in a decreased use of petroleum fuels. Thus, the decreased use of petroleum fuels would not result in substantial depletion of existing energy resource supplies.

Based upon these considerations, significant adverse energy impacts relating to the use of petroleum fuels are not expected from implementing the proposed project.

Project-Specific Mitigation: Since no significant energy impacts relating to petroleum fuel use were identified, no mitigation measures are necessary or required.

Remaining Petroleum Fuels Impacts: Since the demand for petroleum fuels is expected to be less than significant such that no mitigation measures are required, **energy impacts relating to petroleum fuels demand remain less than significant**.

4.3.3.5 Alternative Fuels

4.3.3.5.1 Electricity and Natural Gas

The use of electricity and natural gas as alternative fuels for mobile sources were discussed in the previous Sections 4.3.3.2 – Electricity and 4.3.3.3 – Natural Gas.

4.3.3.5.2 Biodiesel and Renewable Diesel

Biodiesel and renewable diesel are both replacements for diesel fuel. Biodiesel is produced by transesterification of vegetable oils and animal fats. Renewable diesel production uses a hydrogenation process rather than the esterification process used to produce biodiesel. Renewable diesel and other (non-fuel ethanol) biofuels and biointermediates can be produced through a variety of processes such as hydrotreating, gasification, pyrolysis, and other biochemical and thermochemical technologies. Renewable diesel is a biomass-based diesel fuel similar to biodiesel, but with important differences. Biodiesel is approved for blending with petroleum-based diesel. Unlike biodiesel, renewable diesel is a hydrocarbon that is chemically equivalent to petroleum diesel and can be used as a *drop-in* biofuel that does not require blending with petroleum diesel for use. This also means that it could be used in diesel engines without any modifications to the engines and could be transported via existing pipelines.

The advantages of biodiesel and renewable diesel include decreased net CO_2 (GHG), VOC, CO, and PM emissions, and fuel properties similar to petroleum-based diesel for ease of use in engines designed to use diesel fuel. Biodiesel disadvantages include poorer cold flow characteristics and lower heating values. With the advent of the policies that provide incentives or require alternative diesel fuels, such as the federal Renewable Fuel Standard and the California Low Carbon Fuel Standard, there has been more interest in the production of biodiesel and renewable diesel. The production and use of biodiesel and renewable diesel have been gradually increasing over the past few years in California, but there is a potential constraint in securing enough low-carbon intensity feedstock to produce these fuels.

Diesel consumption as a transportation fuel in California has been about 2.6 billion gallons annually, so the potential shift to using biodiesel and renewable diesel, in lieu of petroleum-based diesel, could be substantial and presents a market opportunity for producers of both biodiesel and renewable diesel. Currently, there are approximately 53 public and 31 privately-owned fueling stations that offer biodiesel blends (primarily B20). The privately-owned biodiesel fueling stations are primarily dedicated for providing fuel for government fleets. The locations of most of the public and privately-owned stations are concentrated in urban areas and along major highways. Since renewable diesel is chemically equivalent to petroleum-based diesel, existing pipelines and fueling stations can continue to be utilized for transitioning to biodiesel and renewable diesel as a transportation fuel. [CEC, 2021c].

Zero emission technologies are the preferred technologies for most of the mobile source control measures in the 2022 AQMP and substantial progress has been made with developing zero emission vehicles, including electric trucks which are currently being used in some test programs. However, achieving zero emission technologies in other sectors, such as airplanes,

long-run locomotive engines, and marine vessels has been much more difficult, which has necessitated exploring the potential substitution of petroleum-based jet fuel and diesel with renewable jet fuel and diesel. Renewable jet fuel is currently being produced as a blend which also contains petroleum-based jet fuel and is being used in airplanes. However, none of the proposed control measures address jet engines, so renewable jet fuel is not discussed further in this Program EIR. However, Control Measure MOB-04 will replace diesel-powered airport ground support equipment with low NOx and zero emission technologies. Fueling existing fleets and other sources for which zero emission technologies do not currently exist with renewable diesel will help achieve some reductions of criteria air pollutants and GHGs over the short-term interim as zero emission technologies are being developed over the long-term.

There are currently a number of renewable fuel projects under development at existing refineries in California, including but not limited to AltAir Renewable Fuels Conversion Project in Paramount, Martinez Refinery Renewable Fuels Project, and Phillips 66 Rodeo Renewed Project. Collectively, these three projects would produce over 130,000 barrels per day (47.5 million barrels per year) of renewable fuels. In addition, Kinder Morgan has made investments to expand biodiesel storage and delivery capacity at its Fresno and Colton terminals with a reported throughput of 19 to 20 million gallons per year at each facility, respectively. In addition, Chevron has announced the exclusive delivery of biofuel blend (five percent biofuel diesel blended with 95 percent petroleum-based diesel, B5) at its facility in Montebello. CEC has reported that other refiners have the capacity to blend biodiesel, with an estimated capacity of 110 million gallons annually. [CEC, 2021c].

Conclusion – Biodiesel and Renewable Diesel: The 2022 AQMP seeks to convert mobile sources from using traditional petroleum fuels, to alternatives which are zero emission, such as electricity. Both biodiesel and renewable diesel are expected to be attractive for achieving some reductions of criteria air pollutants and GHGs over the short-term; however, as development of zero emission technologies progresses, it is likely that biodiesel and renewable demand would decline in the future, similar to any declines in demand for petroleum-based diesel fuel. Due to the current and anticipated production levels of biodiesel and renewable diesel, sufficient supply of biodiesel and renewable diesel should be available regardless of whether the 2022 AQMP is implemented. Therefore, no significant impacts on the production or demand of biodiesel and renewable diesel are expected to occur as a result of implementation of the 2022 AQMP. **Based upon these considerations, significant adverse energy impacts relating to the use of biodiesel and renewable diesel are not expected from implementing the proposed project.**

Project-Specific Mitigation: Since no significant energy impacts relating to biodiesel and renewable diesel production and use were identified, no mitigation measures are necessary or required.

Remaining Biodiesel and Renewable Diesel Impacts: Since the demand for biodiesel and renewable diesel is expected to be less than significant such that no mitigation measures are required, **energy impacts relating to Biodiesel and Renewable Diesel demand remain less than significant**.

4.3.3.5.3 Ethanol and Ethanol Blends

There are a number of 2022 AQMP control measures that identify alternative fuels as a potential compliance option. Since many of the control measures ultimately call for low NOx and zero emission technologies, the use of ethanol or ethanol blends such as E85 (i.e., 85 percent ethanol blended with 15 percent petroleum-based gasoline), in lieu of gasoline, could be relied upon more as an interim measure towards achieving a portion of the overall desired emission reductions necessary to reach attainment with the federal ozone standard. E85 has a lower fuel economy rating than gasoline because it contains about 27 percent less energy content per gallon compared to gasoline. [CEC, 2021]. E85 cost less than petroleum-based gasoline and its use will help reduce some emissions of toxic air contaminants (e.g., benzene, toluene, and xylenes) when compared to petroleum-based gasoline but will increase other toxic air contaminant emissions (e.g., acetaldehyde). [Alternative Fuels Data Center (AFDC), 2022].

California has several distributors of ethanol blended fuels and E85 and approximately 10 to 15 million gallons per year of E85 is consumed for transportation purposes. There are 14 stations in Los Angeles County and four stations in Orange County that offer E85 fuel. [CEC, 2021]. Further, since 2012, approximately 752,000 flexible fuel vehicles (i.e., vehicles that equipped with an in-line sensor to detect the fuel composition and a control module to adjust the flow rate of fuel to the engine, so the engine performs properly when fueled by either E85 or petroleum-based gasoline) have been registered in California. Thus, it is possible that there could be increased demand for ethanol and ethanol blends as combustion fuels in the short-term. Further, if all flexible fuel vehicles solely rely on E85, the potential sales volume could grow to approximately 240 million gallons per year.

Ethanol production in the United States 2021 is reported at 13.94 billion gallons from facilities with the capacity to produce up to 17.5 billion gallons. [EIA, 2022]. It is expected that there is sufficient ethanol production capacity to meet any increased demand should compliance with the 2022 AQMP control measures lead to additional use of ethanol blends. The 2022 AQMP seeks to convert mobile emission sources to alternative fuels which are zero emission, such as electricity, so the use of ethanol fuel blends is not expected to increase substantially. No significant impacts on ethanol or E85 production is expected.

Conclusion – Ethanol and Ethanol Blends: Based upon these considerations, significant adverse energy impacts relating to the production and use of ethanol and ethanol blends are not expected from implementing the proposed project.

Project-Specific Mitigation: Since no significant energy impacts relating to the production and use of ethanol and ethanol blends were identified, no mitigation measures are necessary or required.

Remaining Ethanol and Ethanol Blends Impacts: Since the demand for ethanol or E85 is expected to be less than significant such that no mitigation measures are required, **energy impacts relating to the production and use of ethanol and ethanol blends remain less than significant**.

4.3.3.5.4 Hydrogen

There is growing interest and financial support for the use of hydrogen-powered fuel cells to power cars, trucks, homes, and businesses. As opposed to alternative fuel vehicles which burn fuel in a combustion engine to produce usable energy, a hydrogen FCEV relies on an electrochemical reaction between hydrogen (from the fuel tank) and oxygen to produce useful electrical energy along with water and heat as waste products. Current hydrogen vehicles in California consist of demonstration fuel cell passenger cars, internal combustion engine passenger cars, fuel cell buses, and hybrid fuel cell buses. The California Fuel Cell Partnership, a public-private partnership between interested industry and state and local government agencies, has been leading the coordination of fuel cell vehicle demonstrations in California, while the U.S. Department of Energy's FCEV Learning Demonstration project has worked on hydrogen FCEV technologies at the federal level. Despite continuing improvements in performance and fuel cell system durability, challenges remain for broad commercialization of FCEV technology. These include system integration and optimization, and access to hydrogen fuel (a big hurdle to the use of fuel cell vehicle adoption). [CEC, 2021]. Hydrogen fueling stations and deployment of vehicles are rapidly accelerating and as such, data reported in this Program EIR is from published reports and updated as available.

The deployment of both FCEVs and the associated hydrogen fueling infrastructure is mainly for commercial applications in California, with a growing commercial deployment. As such, hydrogen fueling for transportation vehicles is not widely offered for retail sale. Executive Order B-48-18 requires that 200 hydrogen stations be developed in California by 2025. From the most recently published CEC report, there are currently 55 public and private hydrogen fueling stations operating in the United States, 23 of which are in California, and of those, only 10 of all hydrogen fueling stations in the United States offer public fueling, and nine of them are in California. CEC-funded projects are expected to increase the total number of hydrogen stations in California to 54 stations which will allow FCEVs to be deployed in urban retail markets. CEC expects that hydrogen infrastructure will first be deployed in a few select urban markets, and then phased into a wider set of strategic urban areas before it is expanded into a nationwide network. [CEC, 2021c]. The California Fuel Cell Partnership provides an on-line hydrogen fuel station map (https://cafcp.org/stationmap) which shows the status of fueling locations as open, off-line, under construction, in-process for permitting, or planned. The data shows that 20 are open in the South Coast Air Basin but no data is shown as to the amount of hydrogen available at each location. The data from this website shows the majority of hydrogen fuel stations, which are either open or in development in the South Coast Air Basin, are located in Los Angeles and Orange Counties with one in Riverside County and none in San Bernardino County. Hydrogen suppliers are expected to include major oil companies that currently provide gasoline fuel to retail stations, many of which also operate hydrogen plants to produce hydrogen as a transportation fuel. However, existing hydrogen plants currently operate at full capacity, largely to produce petroleum fuels. Therefore, additional hydrogen would need to be produced to support the use of hydrogen as an alternative fuel.

Hydrogen fuel cells are proven technology, but more work is needed to make them cost-effective for use in cars, trucks, homes, or businesses. The U.S. DOE FCEV Learning Demonstration deployed more than 180 FCEVs as part of its technology validation efforts, and more than 400

FCEVs have been deployed in addition to the U.S. DOE validation vehicles. [CEC, 2021c]. As of July 2022, 14,198 FCEVs have been sold in the United States. [CAFCP, 2022]. In addition, more than 40 fuel cell transit buses have been deployed in the United States, including 16 in California at the time the report was published.

CEC staff estimates that approximately 10,000 FCEVs are registered and operating in California. The current number of open retail hydrogen refueling station in the state is 52 and another 31 are planned and under contract through the Clean Transportation Program. The expected total capacity of these hydrogen fueling stations is 69,000 kilograms per day, enough to support 98,000 FCEVs, assuming enough hydrogen is available to supply these stations. This rate of deployment shows that station development is staying ahead of FCEV deployment. Funding of hydrogen stations funded by the Clean Transportation Program is expected to be sufficient to support the fueling needs of nearly 230,000 FCEVs. [CEC, 2021].

One of the goals of the 2022 AQMP is to shift from conventional petroleum fuels to low NOx or zero emission technologies, including hydrogen. The 2022 AQMP does not mandate hydrogen fuel use by fleet operators, and hydrogen fuels need further technology demonstration and deployment for vehicles larger than passenger cars (i.e., medium- and heavy-duty vehicles). The hybrid and electric vehicle technologies and deployment are much further developed than the hydrogen fuel cell vehicles for industrial and commercial uses (i.e., heavy-duty truck uses). Therefore, early advancement of light-duty FCEVs along with the further development of heavy-duty FCEVs is expected to increase hydrogen demand for mobile sources. As discussed in this subsection, little excess hydrogen capacity is available to meet the increase in hydrogen demand and additional hydrogen production facilities will be necessary. Thus, the increased demand impacts for hydrogen fuel are expected to be significant.

Conclusion – Hydrogen: Based upon these considerations, significant adverse energy impacts relating to the production and use of hydrogen are expected from implementing the proposed project.

Project-Specific Mitigation: If significant adverse environmental impacts are identified in a CEQA document, the CEQA document shall describe feasible measures that could minimize the significant adverse impacts. [CEQA Guidelines Section 15126.4]. Therefore, feasible mitigation measures for reducing impacts related to potential hydrogen demand are required. As individual control measures are promulgated as new or amended rules or proposed hydrogen production facilities are constructed, additional mitigation measures may also be necessary to minimize environmental impacts. While new hydrogen facilities are not expected to be constructed as separate facilities, some new hydrogen production facility projects may be subject to South Coast AQMD permitting requirements or, if no South Coast AQMD permits are necessary, require land use approvals from the local government (e.g., city or county). Projects requiring permits or land use approvals are expected to undergo CEQA review by either the South Coast AQMD or the local governmental agency and must show consistency with this Program EIR. The following mitigation measures have been identified for reducing energy impacts from expanding hydrogen production:

E-10 Project sponsors should pursue incentives to encourage the use of energy efficient equipment and vehicles, and promote energy conservation associated with hydrogen production.

E-11 Project sponsors should site new facilities in areas where infrastructure exists to reduce the amount of energy necessary to build new hydrogen production facilities.

E-12 Project sponsors should pursue hydrogen production and delivery through the most energy efficient, least environmentally impactful methods, where feasible.

Remaining Hydrogen Impacts: The preceding analysis concluded that significant adverse energy demand impacts could be created by the proposed project because the potential increase in hydrogen usage would exceed baseline hydrogen production. **Even after the mitigation measures are applied, hydrogen demand impacts would remain significant.**

4.3.3.5.5 Propane (LPG)

There several AQMP control measures that, while being technology neutral, could involve the use of low NOx and zero emission technologies including alternative fuels such as propane (LPG), Propane is an unregulated fuel in California (except for storage and safety issues); no data are collected by the state on propane sales or usage. The Alternative Fuels Data Center reports that there are only 1,500 registered propane vehicles out of just under 35 million registered vehicles.[184]

Propane-fueled vehicles are used primarily by fleet vehicles (e.g., state-owned vehicles). However, the release of U.S. EPA's addendum to Memorandum 1A, had the effect of stifling the number of vehicles being converted to using propane fuel. Memorandum 1A provided, in part, that the use of an aftermarket part, alteration or add-on part will not constitute tampering if the dealer has a "reasonable basis" to believe that such acts will not adversely affect emissions performance. These alterations included converting vehicles from petroleum fuels to CNG or propane. Prior to release of the Memo, state agencies could represent that based on testing completed in accordance with their procedures, there was evidence that the vehicle would be in compliance with emission standards for their useful life. This included vehicles primarily certified in California and Colorado. The U.S. EPA became aware of federal emission test data conducted by the National Renewable Energy Laboratory (NREL) which indicated that a significant number of vehicles modified to run on alternative fuels were exceeding one or more applicable federal emission standards. Therefore, the U.S. EPA changed the emission testing requirements to make them more stringent.[185]

The hybrid and electric vehicle technologies and deployment are much further along than the propane-fueled vehicles. Further, propane-fueled vehicles are not considered zero emission or low NOx technology. Therefore, the use of propane attributable to the 2022 AQMP control measures is not expected to be significant. Propane is a by-product of natural gas processing and

[184] AFDC, 2022a. California Alternative Fueled Registered Vehicles in 2021, https://afdc.energy.gov/states/ca.
[185] U.S. EPA, Addendum to Mobile Source Enforcement Memorandum 1A, September 1997,

crude oil refining. Most of the propane consumed in the United States is produced in North America. Renewable propane can also be produced from biofeed stocks such as cooking oil, and animal fats.[186] Further, the supply of propane used in the transportation sector is expected to be sufficient in the near future, both worldwide and in the United States, should propane-fueled vehicles meet the applicable requirements/standards of the control measures.

Conclusion – Propane (LPG): Based upon these considerations, significant adverse energy impacts relating to the production and use of propane (LPG) are not expected from implementing the proposed project.

Project-Specific Mitigation: Since no significant energy impacts relating to propane (LPG) production and use were identified, no mitigation measures are necessary or required.

Remaining Propane (LPG) Impacts: Since the demand for propane (LPG) is expected to be less than significant such that no mitigation measures are required, **energy impacts relating to propane (LPG) demand remain less than significant**.

4.3.3.5.6 Methanol

There several proposed control measures that, while being technology neutral, could involve the use low NOx and zero emission technologies including alternative fuels. In the 1980s and 1990s, methanol was studied as an alternative transportation fuel using 500 vehicles, which are no longer in service. Methanol is an extremely toxic alcohol, a VOC with a high vapor pressure, and is typically produced by reacting natural gas and steam. Fuel specifications for 100 percent and 85 percent methanol became effective in 1993. The AFDC reports that while used in the 1990s, methanol is no longer used or developed as a commercial transportation fuel.[187]

In the early 1990s, the South Coast AQMD participated in a pilot program to test some methanol vehicles for its fleet and as part of this pilot program, the South Coast AQMD operated a methanol dispenser at its facility. Due to the corrosivity and toxicity of methanol combined with the need for frequent and costly maintenance and the lack of reliability of the methanol-fueled vehicles, the South Coast AQMD pivoted from using methanol vehicles to natural gas vehicles and subsequently removed the methanol dispenser. The AFDC shows no registered methanol vehicles in 2021 in California.[188] No sales or usage data are collected by the state on methanol as a transportation fuel. As such, methanol being used as an alternative fuel has fallen out of favor and is not considered a feasible alternative fuel for on-road vehicles. Thus, there is little to no potential future growth of methanol as an alternative fuel for on-road vehicles.

Due to the International Maritime Organization (IMO) adopting a rule limiting the sulfur content in fuel oil used on ships operating outside designated emission control areas to 0.50 percent mass

[186] AFDC, Propane Production and Distribution; https://afdc.energy.gov/fuels/propane_production.html
[187] AFDC, 2022b. Alternative Fuels Data Center, Fuels & Vehicles Emerging Fuels, Methanol, https://afdc.energy.gov/fuels/emerging_methanol.html.
[188] Ibid.

by mass which went into effect on January 1, 2020 (referred to as IMO 2020)[189] and CARB's ocean-going vessel fuel regulations, the shipping industry has been exploring alternative fuels for ocean-going vessels for short-sea ships and deep-sea ships. Short-sea ships are designed to be powered by a single fuel, while deep-sea ships are designed to be able to switch between using two different fuels (e.g., dual-fuel). For the ocean-going vessel sector, methanol or methanol made from renewable sources has been getting a lot of attention, especially because of its low sulfur content and lower cost of production and infrastructure. For example, one dual-fueled ocean-going vessel is in the process of being constructed to be able to run on either methanol or marine diesel) and is expected to be delivered in the Netherlands in 2023. In addition, Denmark's AP Moller Maersk shipping company has ordered eight methanol-powered container vessels for delivery in 2024; however, it cannot be confirmed at the time of publication if these eight will have dual-fuel capability.[190] While there is only one dual-fuel methanol ocean-going vessel in operation and a few more are being built, but the current methanol supplies do not support a large deployment.

The shipping industry is also researching the potential use other alternative fuels for ocean-going vessels such as LNG, LPG, biofuel, and synthetic fuels, but due to climate change, the research is prioritizing zero-carbon fuels such as ammonia and hydrogen, etc., especially. Since methanol is a carbon-based fuel, it is not projected to be the predominate alternative fuel in the future for ocean going vessels. Therefore, no significant energy demand impacts pertaining to using methanol as an alternative fuel for transportation purposes are expected.

Conclusion – Methanol: Based upon these considerations, significant adverse energy impacts relating to the production and use of methanol have not been identified from implementing the proposed project.

Project-Specific Mitigation: Since no significant energy impacts relating to methanol production and use were identified, no mitigation measures are necessary or required.

Remaining Methanol Impacts: Since the demand for methanol is expected to be less than significant such that no mitigation measures are required, **energy impacts relating to the production and use of methanol remain less than significant**.

4.3.3.5.7 Renewable Energy

A number of 2022 AQMP mobile source control measures would encourage the use of zero emission control technologies, which could potentially include electrification, as well as the use of clean fuels and alternative fuels.

Biomethane or renewable natural gas is predominantly recovered from organic waste streams, including landfills, agricultural operations, and wastewater treatment facilities, making it

[189] International Maritime Organization, 2020. IMO 2020. https://www.imo.org/en/MediaCentre/HotTopics/Pages/Sulphur-2020.aspx
[190] Reuters, 2022. Wartsila steps us green fuel push with methanol-powered ship, July 14, 2022, https://www.reuters.com/business/energy/wartsila-steps-up-green-fuel-push-with-methanol-powered-ship-2022-07-14.

attractive as a low carbon fuel. Renewable natural gas is also expected to be generated from renewable fuels projects that are currently being implemented at refineries that use or would use vegetable oil feedstocks, including the AltAir Renewable Fuels Conversion Project in Paramount, Martinez Refinery Renewable Fuels Project, and Phillips 66 Rodeo Renewed Project. In March 2019, SoCalGas announced a plan to replace 20 percent of its traditional natural gas supply with renewable gas by 2030. SoCalGas has a goal of replacing five percent of its natural gas supply with renewable natural gas by 2022. In addition, SoCalGas is currently procuring renewable natural gas for use in its fleet and utility-owned public access natural gas fueling stations. [California Gas and Utilities, 2020].

There are number of different types of renewable energy sources such as biomass, geothermal, hydroelectric, solar, and wind. With regard to potential electricity impacts that could potentially occur from implementing the 2022 AQMP, refer to Section 4.3.3.2. The 2022 AQMP control measures are aimed at incentivizing the use of low NOx and zero emission equipment including vehicles, trucks, buses, and possibly other sources such as locomotive engines and marine ship engines at berth. The potential use of electricity for certain zero emission equipment is expected to result in potentially significant electricity impacts as more electrical capacity will be needed.

SB100 requires all California sales of retail electricity and state agency-produced electricity to be renewable and zero-carbon resources by 2045. In the last decade, commercial solar photovoltaic in California has grown from 200 MW in 2011 to almost 13,000 MW in 2020, and wind capacity has grown from 4,000 MW in 2011 to 6,000 MW in 2020. At the same time, customer-sited solar (i.e., solar power produced at customer locations such as businesses and homes) has grown from 126 MW in 2005 to more than 11,000 MW in 2020.

While the growth in solar and wind has been substantial, record-setting additions of new zero-carbon resources are necessary to meet the state's climate goals. The state needs to build six GW of new renewable and storage resources annually to meet the SB100 target of a carbon free electricity system by 2045. By comparison, over the last decade, the state has built on average one GW of utility solar, 300 MW (0.3 GW) of wind, and 250 MW (0.25 GW) of battery storage per year, with most of the battery storage capacity having been added in 2021. [CEC, 2021].

Deployment of battery energy storage systems (BESS) on the California electrical grid has increased in recent years. BESS capacity on the electricity system was approximately 550 MW at the end of 2020, 1,500 MW as of September 2021, and is expected to grow to 3,000 MW by the end of 2021. BESS offers the opportunity to take advantage of clean energy during the day by storing it for use during resources-limited conditions. The California Public Utilities Commission is expected to add 10,000 MW of new BESS by the end of 2026. [CEC, 2021a].

A reduction in rainfall means less water and reduced availability of hydroelectric power resources. Between April 2021 and September 2021, California generated less hydroelectric power than in any of the six previous years. When water is scarce, hydroelectric power is reserved for use during the summer.

The rollout of renewable energy has allowed hydroelectric power to act as a peaking resource under drought conditions. Hydroelectric power is used most during the morning and evening

peaks in net demand. On the high-demand days of summer 2015, hydroelectric power increased throughout the day and peaked in the evening at 4.1 GW. By 2021, the presence of renewables, particularly solar, allowed hydroelectric power to reduce midday generation and generate more power around the net demand peak. Hydroelectric power generation on the highest demand days of 2021 surpassed 4.3 GW – an increase from 2015, despite a 20 percent reduction in overall hydroelectric power production. The depth of the current drought presents additional problems. Lake Oroville, which feeds California's fourth-largest hydroelectric power plant, has dropped so low that it has forced the plant off-line. Across the state, dropping reservoirs and requirements to maintain downstream temperatures for vulnerable fish populations and flows for recreation (among others) have reduced California's late summer hydroelectric power capacity by about 22 percent or 1,500 MW. [CEC, 2021].

Control Measure L-CMB-08 could encourage routing landfill produced biogas to be used in place of natural gas as a renewable gas for use in other processes, e.g., electricity production. Therefore, this control measure could result in an increase in biogas generation providing beneficial impacts to renewable energy sources.

The other 2022 AQMP control measures are not expected to have a significant adverse impact on any renewable fuel sources. Indirect impacts would include the increased use of electricity, potentially increasing the need to generate additional renewable energy sources to meet California's energy goals. California has an aggressive Renewables Portfolio Standard (RPS) with a requirement for 20 percent use of renewable energy by 2010, 33 percent by 2020, and 60 percent by 2030. California met the 2010 and 2020 standards and is on of schedule for meeting the 60 percent renewable RPS by 2030. Because California is on track to meet its RPS, the impacts of the 2022 AQMP on renewable energy sources are expected to be less than significant.

Conclusion – Renewable Energy: Based upon these considerations, significant adverse energy impacts relating to the production and use of biomethane, and renewable natural gas are not expected from implementing the proposed project.

Project-Specific Mitigation: Since no significant energy impacts relating to the production and use of biomethane and renewable natural gas were identified, no mitigation measures are necessary or required.

Remaining Renewable Energy Impacts: Since the demand for biomethane and renewable natural gas is expected to be less than significant such that no mitigation measures are required, **energy impacts relating to the production and use of biomethane, and renewable natural gas remain less than significant**.

Conclusion – Alternative Fuels: Based on the above information, potential alternative fuels demand impacts are expected to be less than significant for all alternative fuels (i.e., biodiesel, renewable diesel, ethanol and ethanol blends, propane, and biomethane and renewable natural gas), except hydrogen.

Project-Specific Mitigation: Mitigation measures are only required for hydrogen. The Program EIR identified mitigation measures: E-10 to E-12 for hydrogen. **Even after the mitigation measures are applied, hydrogen demand impacts would remain significant.**

Remaining Alternative Fuels Impacts: Since potential alternative energy demand impacts are expected to be significant for hydrogen demand **after the mitigation measures are applied, hydrogen demand impacts would remain significant. All other alternative fuels (i.e., biodiesel, renewable diesel, ethanol and ethanol blends, propane, and biomethane and renewable natural gas) impacts are less than significant, no mitigation measures are required, and impacts remain less than significant.**

4.3.4 SUMMARY OF ENERGY IMPACTS

- The 2022 AQMP could result in up to a 11 percent increase in electricity and increased electricity demand remains potentially significant after mitigation.

- The 2022 AQMP would also have some beneficial impacts on energy as a result of a shift away from petroleum fuels. The electrical grid and hydrogen supply supporting these electric vehicles would need to represent 50 percent renewable energy generation by 2030, as required by the Clean Energy and Pollution Reduction Act of 2015. A large portion of the fuels for combustion engine vehicles would also need to be sourced from renewable feedstock.

- As natural gas is generally widely available, natural gas supplies are not expected to be limited if the proposed project is implemented. The combined increase in natural gas demand needed for producing electricity and hydrogen and for fueling vehicles may be somewhat offset over the long-term by a decrease in demand for natural gas appliances in commercial and residential setting. However, over the short-term, the natural gas demand is expected to increase, and the proposed project may result in significant adverse energy impacts relating to natural gas demand. Natural gas impacts would remain significant after mitigation.

- Implementation of the 2022 AQMP is expected to shift the use of petroleum fuels (gasoline and diesel) to battery-electric, hydrogen, and potentially other alternative fuels, increasing the use of renewable energy supplies. The 2022 AQMP would result in a reduction in the use of petroleum fuels, providing a beneficial long-term operational impact on energy conservation. No increase in the use of petroleum fuels would be expected.

- The 2022 AQMP is not expected to result in significant impacts on alternative fuels, including biodiesel, renewable diesel, ethanol and ethanol blends, ~~and~~ propane, and methanol so that no mitigation measures are required.

- Implementation of the 2022 AQMP could result in an increase in hydrogen use that cannot be currently met by existing producers. The expansion of hydrogen production,

especially in the short-term through steam methane reforming of natural gas, is expected to be significant.

- Potential renewable energy impacts are expected to be less than significant, so that no mitigation measures are required.

4.3.5 CUMULATIVE ENERGY IMPACTS AND MITIGATION MEASURES

As discussed in Chapter 2, Project Description, in order to attain the 8-hour ozone standard, the majority of NOx emission reductions must come from mobile sources, including ships, aircraft, and locomotive engines, that are primarily regulated under federal and international jurisdiction, with limited authority for CARB and the South Coast AQMD. Attainment is not possible without significant reductions from these sources. Therefore, CARB has prepared the Proposed 2022 State Strategy for the State Implementation Plan (Proposed 2022 State SIP Strategy) which describes the State's strategy and commitments to reduce emissions from State-regulated sources needed to support attainment of the 70 ppb 8-hour ozone standard. The Proposed 2022 State SIP measures are described in Chapter 2, Section 2.7.3.1.

SCAG as the Metropolitan Planning Organization MPO for the Southern California region, is mandated to comply with federal and state transportation and air quality regulations. In consultation with federal, state, and local transportation and air quality planning agencies and other stakeholders, SCAG developed the Final 2020–2045 2020 RTP/SCS, also known as Connect SoCal, and the 2021 Federal Transportation Improvement Program (FTIP), with TCMs to address the 2015 8-hour ozone standards in the Basin and these are included in three sections of Appendix IV-C of the 2022 AQMP.

In addition to the CARB and SCAG programs, Table 4.3-5 summarizes the major clean transportation and GHG reduction policies that are being implemented at the state levels. The CARB SIP, SCAG's Connect SoCal, the policies in Table 4.3-5, and the 2022 AQMP all have policies that are aimed at air quality improvement, as well as GHG reductions.

4.3.5.1 CARB's Proposed 2022 State Strategy

Implementation of CARB's Proposed 2022 State Strategy could require construction and operation of new or modified facilities or infrastructure as well as increased lithium mining. While these compliance responses would require the consumption of energy resources, these actions would enable the transition to zero emission technologies to comply with provisions of the Proposed 2022 State Strategy and would not involve the wasteful or inefficient use of energy.

The state's energy capacity is expected to increase as a result of implementing GHG reducing regulations and policies. Statewide regulations such as the ZEV Mandate, Advanced Clean Fleet Regulation, Advanced Clean Transit Regulation, and the Innovative Clean Transit (ICT) Regulation aim to achieve GHG reductions from the mobile source sector through the deployment of electric, zero, and near zero emission vehicles, which would replace vehicles powered by internal combustion engines. Utilities are working in coordination with the CPUC to fund infrastructure expansion projects to meet this future demand. CPUC is also responsible for

regulating Electric Power Procurement and Generation and evaluates the necessity for additional power generation by California utilities in both the short and long term. [CARB, 2022].

TABLE 4.3-5
Major Clean Transportation Policies that Impact Energy Resources in California

Policy Action	Leading Objectives
Senate Bill 32 (Pavley, Chapter 249, 2016 Statutes)	40 percent reduction in state GHG emissions relative to 1990 levels by 2030.
Senate Bill 100 (De Leon, Chapter 312, 2018 Statutes)	60 percent renewable electricity by 2030. 100 percent renewable or zero-carbon electricity by 2045.
Executive Order B-55-18	Carbon neutrality by 2045.
Clean Air Act; California State Implementation Plans	80 percent reduction in NOx emissions by 2031.
Executive Order B-16-12	1.5 million ZEVs by 2025
Executive Order B-48-18	5 million ZEVs on the road by 2030. 250,000 electric charging stations, including 10,000 direct current (DC) fast chargers, as well as 200 hydrogen stations by 2025.
Executive Order N-79-20	100 percent of new light-duty vehicle sales ZEVs by 2035. 100 percent of operating drayage trucks, off-road vehicles, and off-road equipment are ZEVs by 2035, where feasible. 100 percent of operating trucks and buses are ZEVs by 2045, where feasible.
CARB Advanced Clean Trucks	Manufacturers required to sell zero emission trucks at increasing percentages from 2024 through 2035 (e.g., 55% of Class 2b-8 truck/chassis sales would be zero emission trucks by 2035)
CARB At-Berth Regulation	Tanker and roll on-roll off vessels required to reduce emissions through shore power, capture and control systems or some alternative compliance solution

Source: CEC, 2021

Use of zero and near-zero emission technologies would divert energy from fossil fuel-powered systems and engines to electrical systems, which, as mandated by the renewable portfolio standard, will become increasingly more renewable in the coming years. Through the use of alternative fuels and an increasingly more renewable energy grid, implementation of the Proposed 2022 State Strategy would improve the efficiency of energy usage across the state. Additional energy capacity in the state would be achieved through improved energy efficiency (e.g., homes), energy storage, demand response, and generation of renewable resources. [CARB, 2022].

As mandated by SB 100, the state's electrical utilities are legislatively required to procure 60 percent and 100 percent of their total energy supply from eligible renewable energy sources (i.e., solar, wind, geothermal, small-scale hydroelectric, and biomass) by 2030 and 2045, respectively. The above-mentioned factors combine to expand the state's energy capacity as compared to previous years. For example, in-state energy capacity rose from 55,530 megawatts (MW) in 2001 to 82,323 MW in 2020, an increase of 48 percent. Additionally, as mentioned above, the California Energy Code is expected to increase the energy efficiency of buildings within the state, which would reduce energy demand generated by the building sector. [CARB, 2022]. CEC estimates that the state needs to build six GW of renewable and storage resources to meet the SB100 target by 2045 (CEC, 2021)

Implementation of the Proposed 2022 State Strategy could result in the increased use of alternative fuels such as LNG, which would displace diesel fuel currently used to power generators, engines, and other equipment. Appendix F of the CEQA Guidelines identifies the use of alternative fuels as a measure to reduce energy demand. Moreover, Appendix F also lists increased use of renewable energy as an appropriate strategy to mitigate energy impacts. Use of zero and near-zero emission technologies, as discussed above, would divert energy from fossil fuel-powered systems and engines to electrical systems, which, as mandated by the RPS, will become increasingly more renewable in the coming years. Through the use of alternative fuels and an increasingly more renewable energy grid, implementation of the Proposed 2022 State Strategy would improve the efficiency of energy usage across the state. [CARB, 2022]. CARB determined that implementation of the Proposed 2022 State Strategy would not result in the wasteful, unnecessary, or inefficient use of energy. Thus, long-term operation-related energy impacts would be less than significant.

The CEC projects that the state will attain the 1.5 million electric vehicles by 2025, which is the goal set forth in Executive Order B-16-12 to encourage zero emission vehicles. The estimated electricity use for these vehicles is approximately 5,000 GWh. Executive Order B-48-18 has a goal of five million zero emission vehicles on the road in 2030, which would require an estimated 15,000 to 30,000 GWh of electricity. [CEC, 2021].

4.3.5.2 SCAG Connect SoCal Plan

SCAG determined that the increase in energy demand that is anticipated to occur as population increases (reaching over 47 million in California by 2030) in the SCAG region would contribute cumulatively to state increases in energy consumption. Inland areas within the state will grow at higher rates, as the Inland Empire, San Joaquin Valley, and the Sacramento region experience faster growth. The population growth reflects California's increasing energy demand, with the lowest 2030 estimates indicating an annual consumption demand of 326,026 GWh. [SCAG, 2020].

Transportation energy demand will see significant changes in response to the potential for increasing vehicle electrification, higher vehicle fuel economy, and hydrogen fuel demand. Although California's population and economy are expected to grow, gasoline consumption is projected to decline by 2030. Diesel demand and demand for hydrogen fuel will continue to rise during the same period. The various counties and cities within the SCAG region, in accordance

with state law, will require the implementation of a variety of energy efficiency measures to decrease energy consumption as a means to reduce GHG emissions. The Connect SoCal Plan aims to reduce energy consumption and GHG emissions, and would comply with the state's goals, as adjacent counties' regional plans would also comply with state goals. The EIR for the Connect SoCal Plan determined that energy impacts would be less than significant and would not contribute to wasteful, inefficient, or unnecessary consumption of energy resources. [SCAG, 2020].

4.3.5.3 Summary of Cumulative Energy Impacts

The 2022 AQMP could result in significant adverse electricity consumption impacts because the potential electricity usage increase would exceed baseline electricity consumption by an estimated 11 percent. Significant impacts were also concluded for natural gas and hydrogen demand. No significant impacts were expected for petroleum fuels or other alternative fuels associated with the 2022 AQMP because of the anticipated reduction in future demand or wide availability of the resources. The 2022 AQMP is focused on the use of low NOx or zero emission technologies which are largely expected to include conversion to electricity or hydrogen. Alternative fuels such as propane, ethanol, methanol, and biodiesel/renewable diesel are not low NOx technologies and are not expected to be encouraged for use in the 2022 AQMP or other air quality plans.

Implementation of the 2022 AQMP control measures, the TCMs in the Connect SoCal Plan, the SIP strategies, the state policies identified in Table 4.3-4, when combined with other past, present, and reasonably foreseeable activities, would result in a significant increase in electricity, natural gas and hydrogen demand which may not currently be available and would contribute to cumulatively considerable impacts. As electricity, natural gas and hydrogen are expected to be used instead of petroleum fuels and other alternative fuels, the use of these alternative fuels is expected to decrease and impacts on these energy resources would be less than significant.

4.3.5.4 Cumulative Mitigation Measures

No additional mitigation measures to reduce the significant cumulative impacts to energy have been identified. It should be noted that after rotating electricity outages in August 2020, Governor Gavin Newsom directed the CEC, CPUC and the California Independent System Operator (California ISO) to develop a root cause analysis. These three energy institutions developed the Final Root Cause Analysis Mid-August 2020 Extreme Heat Wave which identified the three main causes of the outages (CEC, 2022a):

- The climate change-induced extreme heat wave across the western United States results in demand for electricity exceeding existing electricity supply and planning targets.
- In transitioning to a reliable, clean, and affordable resource mix, planning targets have not kept pace to ensure sufficient resources to meet demand in the early evening hours. This situation made balancing demand and supply more challenging during the extreme heat wave.
- Some practices in the day-ahead energy market exacerbated the supply challenges under highly stressed conditions.

The efforts taken in 2021 are ongoing between CEC, CPUC and California ISO, with planning through 2026, to create a more reliable electricity system for California, particularly to prepare for future extreme events as well as meeting the target of zero-carbon resources under SB 100. [CEC, 2022a].

4.3.5.5 Remaining Cumulative Energy Impacts After Mitigation

Cumulative impacts to energy demand for past, present, and reasonably foreseeable future projects would remain significant and unavoidable for electricity, natural gas, and hydrogen demand. The cumulative impacts on other energy resources are expected to be less than significant. In addition, use of energy to comply with ambient air quality standards, as well as climate change goals, would not result in the wasteful, unnecessary, or inefficient use of energy and these impacts are less than significant.

SUBCHAPTER 4.4

HAZARDS AND HAZARDOUS MATERIALS

4.4 HAZARDS AND HAZARDOUS MATERIALS

This subchapter analyzes the potential hazards and hazardous materials impacts from implementing the proposed control measures in the 2022 AQMP. Hazards and hazardous materials impacts are related to the risks of fire, explosions, and the release of hazardous substances in the event of an accident or upset conditions. The NOP/IS for the 2022 AQMP (see Appendix A of this Program EIR) evaluated all of the proposed control measures and determined that several would involve the following activities which could cause potentially significant hazards and hazardous materials impacts: 1) the routine transport, storage, and use of ammonia in air pollution control equipment (e.g., SCRs); 2) the production, storage, and use of alternative fuels including but not limited to natural gas and hydrogen to produce electricity and to fuel on- and off-road mobile sources; 3) disposal of batteries, fluids, and spent catalyst; 4) increased use of lower-VOC containing products reformulated with flammable materials; and 5) conducting chipping and grinding of wood and greenwaste in fire hazard areas. Project-specific and cumulative hazards and hazardous materials impacts associated with implementing the 2022 AQMP are evaluated in this subchapter of the Program EIR. No comments were received on the analysis presented in the NOP/IS that identified other potential hazards and hazardous materials impact areas that would require additional analysis in this Program EIR.

4.4.1 2022 AQMP CONTROL MEASURES WITH POTENTIAL HAZARDS AND HAZARDOUS MATERIAL IMPACTS

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest technology available. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emission and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve emission leak detection and maintenance procedures; and establish educational and outreach programs.

Table 4.4-1 contains a summary of the 2022 AQMP control measures which generate potential hazards and hazardous material impacts.

TABLE 4.4-1
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP
with Potential Hazards and Hazardous Materials Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Hazards and Hazardous Materials Impact
C-CMB-04	Emission Reductions from Small Internal Combustion Engines	Incentivizing consumers to purchase zero emission ICEs.	Potential hazard impacts associated with the increased production and use of hydrogen.
L-CMB-01	NOx Reductions for RECLAIM Facilities	Installation of NOx pollution control equipment including SCRs and low NOx burners.	Potential hazard impacts associated with ammonia use in SCRs, if installed.
L-CMB-02	Reductions from Boilers and Process Heaters (Permitted)	Installation of zero emission and low NOx technologies for boilers and heaters.	Potential hazard impacts associated with ammonia use in SCRs, if installed.
L-CMB-03	NOx Reductions from Permitted Non-Emergency Internal Combustion Engines (ICEs)	Installation of zero emission and low NOx technologies for non-emergency ICEs.	Potential hazard impacts associated with ammonia use in SCRs, if installed.
L-CMB-04	Emission Reductions from Emergency Standby Engines (Permitted)	Installation of zero emission and low NOx technology alternatives to emergency ICEs.	Potential hazard impacts associated with the increased production and use of hydrogen.
L-CMB-05	NOx Emission Reductions from Large Turbines	Installation of zero emission and low NOx emissions technologies for electric generating units such as fuel cells.	Potential hazard impacts associated with the increased production and use of hydrogen.
L-CMB-06	NOx Emission Reductions from Electricity Generating Facilities	Replacement of boilers with lower-emitting turbines, installation of zero emission and low NOx emissions technologies, and the application of stricter emission requirements for diesel internal combustion engines.	Potential hazard impacts associated with ammonia use in SCRs, if installed, and the increased production and use of hydrogen.
L-CMB-07	Emission Reductions from Petroleum Refineries	Installation of NOx pollution control equipment including Advanced SCRs and ultra-low NOx burners, and electrification of certain refinery boilers or process heaters or steam-driven equipment such as pumps or blowers.	Potential hazard impacts associated with ammonia use in SCRs, if installed.

TABLE 4.4-1 (continued)
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP
with Potential Hazards and Hazardous Materials Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Hazards and Hazardous Materials Impact
L-CMB-08	NOx Emission Reductions from Combustion Equipment at Landfills and Publicly Owned Treatment Works	Installation of lean pre-mixed combustion turbines, NOx pollution control equipment including SCRs and low-NOx burners on biogas fueled combustion equipment and/or routing landfill produced biogas to existing natural gas pipelines.	Potential hazard impacts associated with ammonia use in SCRs, if installed.
L-CMB-10	NOx Reductions from Miscellaneous Permitted Equipment	Replacement of existing equipment with zero emission technology and installation of NOx pollution control equipment including SCRs and low NOx/ultra-low NOx burners.	Potential hazard impacts associated with ammonia use in SCRs, if installed.
CTS-01	Further Emission Reduction from Coatings, Solvents, Adhesives, and Lubricants	Revising the VOC content for select product categories and incentivizing the use of super-compliant zero emission and low NOx VOC materials and technologies and removing the VOC exemption status for parachlorobenzotriflouride (PCBTF) and tert-butyl acetate (tBAc) to address toxicity concerns.	Potential hazard impacts due to the potential use of more flammable materials with the removal of the exemption for PCBTF and tBAc.
MCS-01	Application of All Feasible Measures	Retrofitting existing equipment and installation of newer, lower-emitting equipment to replace older, higher-emitting equipment for sources as a result of new emission limits introduced through federal, state, or local regulations.	Potential hazard impacts associated with ammonia use in SCRs, if installed.
MCS-02	Wildfire Prevention	Mechanical thinning and chipping activities during fuel reduction and removal efforts.	Potential fire hazards associated with chipping and grinding activities.

TABLE 4.4-1 (continued)
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP
with Potential Hazards and Hazardous Materials Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Hazards and Hazardous Materials Impact
EGM-01	Emission Reductions from New Development and Redevelopment (Potential Indirect Source Rule and ports affected).	Replacing or upgrading off-road construction equipment as part of development/redevelopment efforts may result in the use of zero-emission technologies in construction, the installation of electrical and alternative fuel infrastructure, the use of alternative fuels; and the use construction equipment with low-emitting engines fitted with DPFs.	Potential hazard impacts associated with the increased alternative fuels production and use (e.g., hydrogen).
EGM-03	Emission Reductions from Clean Construction Policy	Incentivizing the use of zero emission and low NOx equipment by adopting a voluntary measure for municipalities and public agencies to reduce emissions generated by construction activities may include use of zero emission and low NOx construction equipment, dust control, alternative fuels, DPFs, low-emitting engines, and low VOC materials.	Potential hazard impacts associated with the increased alternative fuels production and use (e.g., hydrogen).*
MOB-01	Emission Reductions at Commercial Marine Ports	Infrastructure development required to achieve emission reductions at commercial marine ports from on-road heavy-duty vehicles, ocean-going vessels, cargo handling equipment, locomotives, and harbor craft.	Potential hazard impacts associated with engine replacements.

*For EGM-03, Appendix A of the NOP/IS checked the box indicating potential hazards and hazardous impacts may result but a description of the nature of the potential impacts was inadvertently omitted.

TABLE 4.4-1 (continued)
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP
with Potential Hazards and Hazardous Materials Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Hazards and Hazardous Materials Impact
MOB-02A	Emission Reductions at New Rail Yards and Intermodal Facilities	Infrastructure development required to achieve emission reductions at new rail yards and intermodal facilities from on-road heavy-duty vehicles, off-road equipment, and locomotives; and deploying the cleanest locomotives, switchers, on-road heavy-duty trucks, cargo-handling equipment, transportation refrigeration units available.	Potential hazard impacts associated with engine replacements and with the increased production and use of alternative fuels (e.g., hydrogen).
MOB-02B	Emission Reductions at Existing Rail Yards and Intermodal Facilities	Infrastructure development required to achieve emission reductions at existing rail yards and intermodal facilities from on-road heavy-duty vehicles, off-road equipment, and locomotives; and deploying the cleanest on-road heavy-duty vehicles, off-road equipment including cargo handling equipment and transportation refrigeration units, and both line-haul and switcher locomotives.	Potential hazard impacts associated with engine replacements and with the increased production and use of alternative fuels (e.g., hydrogen).
MOB-04	Emission Reductions at Commercial Airports	Deploying additional cleaner technologies, such as increasing efficiencies, implementing air quality improvement options or by deploying zero emission and low NOx technologies, alternative fuels, DPFs, and low-emitting engines for additional equipment beyond the commitments made in the existing Memoranda of Understanding with the commercial airports.	Potential hazard impacts associated with engine replacements and with the increased production and use of alternative fuels (e.g., hydrogen).

TABLE 4.4-1 (continued)
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP
with Potential Hazards and Hazardous Materials Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Hazards and Hazardous Materials Impact
MOB-05	Accelerated Retirement of Older Light-Duty and Medium-duty Vehicles	Accelerating the retirement of up to 2,000 light- and medium-duty vehicles per year through the Replace Your Ride Program and accelerating the penetration of zero and near–zero emission vehicles.	Potential hazard impacts associated with the production and use of alternative fuels and fuel additives, and scrapping retired vehicles.
MOB-06	Accelerated Retirement of Older On-Road Heavy-duty Vehicles	Retiring older, heavy-duty vehicles and replacing them with low-NOx vehicles fueled with CNG or other alternative fuels (e.g., battery electric and hydrogen fuel cells).	Potential hazard impacts associated with scrapping retired vehicles and disposal of batteries and fluids, and increased production and use of alternative fuels.
MOB-07	On-Road Mobile Source Emission Reduction Credit Generating Program	Incentivizing the early deployment of zero emission and low NOx emission heavy-duty trucks through the generation of mobile source emission credits.	Potential hazard impacts associated with scrapping retired vehicles and disposal of batteries and fluids, and increased production and use of alternative fuels (e.g., hydrogen).
MOB-08	Small Off-Road Engine Equipment Exchange Program	Promoting the accelerated turn-over of in-use small off-road engines and other engines, such as gasoline- and diesel-powered commercial lawn and garden equipment through expanded voluntary exchange programs will contribute to the retirement of older off-road engines.	Potential hazard impacts associated with scrapping retired vehicles and disposal of batteries and fluids.
MOB-09	Further Emission Reductions from Passenger Locomotives	Promoting earlier and cleaner replacement or upgrade of existing passenger locomotives capable of achieving Tier 4 emission standards and supporting the development of zero emission or low NOx technologies (e.g., battery electric and hydrogen fuel cells).	Potential hazard impacts associated with scrapping retired locomotives and increased production and use of alternative fuels.

TABLE 4.4-1 (concluded)
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP
with Potential Hazards and Hazardous Materials Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Hazards and Hazardous Materials Impact
MOB-10	Off-Road Mobile Source Emission Reduction Credit Generation Program	Accelerating the deployment of zero (e.g. battery-electric or fuel cell powered equipment) and low NOx emission off-road mobile equipment (e.g., 90 percent cleaner than Tier 5) that do not receive public funding.	Potential hazard impacts associated with the increased production and use of alternative fuels and fuel additives (e.g., natural gas and hydrogen)

4.4.2 SIGNIFICANCE CRITERIA

Implementation of the 2022 AQMP would be considered to have significant hazards or hazardous materials impacts if any of the following conditions occur:

- Non-compliance with any applicable design code or regulation.
- Non-conformance to National Fire Protection Association standards.
- Non-conformance to regulations or generally accepted industry practices related to operating policy and procedures concerning the design, construction, security, leak detection, spill containment, or fire protection.
- Exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Response Planning Guideline (ERPG) 2 levels.

4.4.3 POTENTIAL HAZARDOUS AND HAZARDOUS MATERIALS IMPACTS AND MITIGATION MEASURES

Project-specific hazards impacts associated with use of ammonia, increased electricity demand, increased natural gas demand, increased production, storage and use of alternative fuels including hydrogen, scrapping retired vehicles and disposal of batteries and fluids, and reformulation of coatings, solvents adhesives, and lubricants have been evaluated in this section.

4.4.3.1 Hazards Associated With The Use Of Ammonia

Implementing Control Measures L-CMB-03, L-CMB-06, L-CMB-07, L-CMB-08, L-CMB-10, and MCS-01 could result in the use of SCR to reduce NOx emissions from commercial and industrial combustion sources. SCR is post-combustion NOx control equipment for combustion sources such as boilers, steam generators, and process heaters, and is capable of reducing NOx emissions by as much as 90 percent or higher. A typical SCR system design consists of an ammonia storage tank, ammonia vaporization and injection equipment, an SCR reactor with catalyst, and ancillary electronic instrumentation and operations control equipment. In some

situations, a SCR system may also utilize a booster fan for the flue gas exhaust and an exhaust stack.

A 1.0-to-1.05 molar ratio of ammonia to NOx is introduced into the SCR system for optimum control efficiency, though the ratio may vary based on equipment-specific NOx reduction requirements; the ammonia injection rate is also regulated by the fuel flow rate to the unit. A matrix of nozzles injects a mixture of ammonia and air directly into the flue gas exhaust stream from the combustion equipment. As this mixture flows into the SCR reactor that is replete with catalyst, ammonia, and oxygen (from the air), the flue gas exhaust reacts primarily (i.e., selectively) with NO and NO2 to form nitrogen and water in the presence of a catalyst.

Ammonia, though not a carcinogen, can have chronic and acute health impacts. For 19 percent by weight aqueous ammonia, the hazards ratings are as follows: health is rated 3 (highly hazardous), flammability is rated 1 (slight), and reactivity is rated 0 (none). Therefore, a potential increase in the use of ammonia may increase the current existing risk setting associated with deliveries (i.e., truck and road accidents) and onsite or offsite spills for each of the facilities that currently uses or will begin to use ammonia. More specifically, the potential hazard associated with this type of control equipment is exposure to a toxic gas cloud. A toxic gas cloud is the release of a volatile chemical such as anhydrous ammonia that could form a cloud that migrates off-site, thus exposing individuals. Anhydrous ammonia is heavier than air such that when released into the atmosphere, would form a cloud at ground level rather than be dispersed. "Worst-case" conditions tend to arise when very low wind speeds coincide with the accidental release, which can cause the chemicals to accumulate rather than disperse.

Current South Coast AQMD policy does not allow the use of anhydrous ammonia or aqueous ammonia at concentrations greater than 19 percent by weight for new construction of a storage tank associated with new construction of air pollution control equipment that utilizes ammonia, such as SCR technology, if the quantity capable of being stored is greater than 500 pounds or if the quantity is less than 500 pounds, but there is a risk for an offsite consequence in the event of a tank failure. Existing storage tanks containing ammonia at concentrations greater than 19 percent may continue to be used to service new installations of air pollution control equipment. However, any existing SCR which may undergo an upgrade would be expected to continue to utilize the same type of ammonia (e.g., anhydrous, 19 percent by weight aqueous ammonia, or some other concentration defined in permit) and about the same quantity as it is currently using. An SCR upgrade consists of catalyst replacement and modification of the ammonia injection grid; the existing ammonia storage tank is not expected to require any physical modifications. The analysis also assumes that the existing ammonia storage tank will continue to provide the ammonia needed to continue operating the existing SCRs without requiring any physical modifications. Any increases of ammonia throughput for an existing tank would not be expected to change the existing risk associated with an offsite consequence in the event of a tank rupture. As a result, this analysis focuses on the use of 19 percent by weight aqueous ammonia; no new hazards from toxic clouds are expected to be associated with the proposed project, and aqueous ammonia is recommended for use in these technologies.

A hazards analysis is dependent on knowing the exact location of a potential spill (e.g., meteorological conditions, location of the receptor, et cetera). A site-specific hazards analysis is

difficult to conduct without this information; however, in absence of this detailed information, an offsite consequence analysis using the U.S. EPA's RMP*Comp model can be performed to estimate a toxic endpoint distance from the accidental release of aqueous ammonia due to a tank rupture. Although it is South Coast AQMD policy to reduce potential hazards associated with ammonia by requiring a permit condition that limits the aqueous ammonia concentration to 19 percent, the U.S. EPA's RMP*Comp model only has the capability of evaluating the hazard potential for 20 percent aqueous ammonia. Therefore, potential adverse impacts from aqueous ammonia when using U.S. EPA's RMP*Comp model would need to be evaluated based on 20 percent aqueous ammonia.

The routine transport, transfer, storage, and use of ammonia inherently poses a certain risk of a release to the environment, and may increase as a result of implementing control measures in the 2022 AQMP. Further, implementation of the control measures may alter transportation modes for ammonia to and from affected facilities. To evaluate the potential for significant adverse environmental impacts due to an accidental release of ammonia, various scenarios were evaluated that could occur during the onsite storage, transportation, and transfer of ammonia. These scenarios and their consequences are discussed in detail below. Since ammonia is not typically considered to be a flammable compound, hazard impacts such as fires and explosions are not expected to occur and, therefore, will not be evaluated as part of this hazards analysis.

4.4.3.1.1 Hazards Associated with Routine Transportation of Ammonia Release Scenario

The impacts associated with an accident involving aqueous ammonia were evaluated extensively in the December 2015 Final PEA for NOx RECLAIM (South Coast AQMD, 2015), the March 2017 Final Program EIR for the 2016 AQMP (South Coast AQMD, 2017), and the November 2021 Final SEA for Rule 1109.1. [South Coast AQMD, 2021]. The ammonia transportation release scenarios used in this Program EIR are summarized from those documents, but primarily from the December 2015 Final PEA for NOx RECLAIM, which are referenced in both the March 2017 Final Program EIR for the 2016 AQMP and the November 2021 Final SEA for Rule 1109.1.

Installation of new SCRs would require additional deliveries of ammonia to the affected facilities via tanker trucks traveling on public roads. Tanker trucks capable of delivering aqueous ammonia have a capacity of 7,000 gallons and are designed to withstand accidents during transportation; however, accidental releases may still occur. One accidental release scenario was identified in the December 2015 Final PEA for NOx RECLAIM as having the potential to generate significant adverse hazard impacts from the accidental release of delivered aqueous ammonia due to a tank rupture during transportation (see the December 2015 Final PEA for NOx RECLAIM, Subchapter 4.4 - Hazards and Hazardous Materials, pp. 4.4-11 through 4.4-12). Based on the worst-case defaults of a delivery truck spill of 7,000 gallons of ammonia using U.S. EPA's RMP*Comp model, the toxic endpoint distance from the delivery truck would be 0.4 miles. Because sensitive receptors may be within this toxic endpoint distance (toxic endpoint concentration of 0.14 milligrams per liter (mg/L) based on ERPG-2), depending on the location of the spill, the accidental release of ammonia during transport could cause significant adverse hazards impacts. The ammonia transportation analysis in the December 2015 Final PEA for NOx RECLAIM is directly applicable to the currently proposed project since there is a potential for an increase in the transport of ammonia which may substantially alter existing transportation

hazards associated with ammonia. **Consequently, increased usage of ammonia due to implementation of control measures in the 2022 AQMP could generate significant adverse hazard impacts during routine transport as a result of an accidental release of delivered aqueous ammonia.**

The accidental release of ammonia from a delivery and use is a localized event (i.e., the release of ammonia would only affect the receptors that are within the zone of the toxic endpoint). The accidental release from a delivery would also be temporally limited because deliveries are not likely to be made at the same time in the same area. Based on these limitations, it is assumed that an accidental release would be limited to a single delivery or single facility at a time. In addition, it is unlikely that an accidental release from both a delivery truck and the stationary storage tank would result in more than the amount evaluated in the catastrophic release of the storage tank because the level of ammonia in the storage tanks would be low or else the delivery trip would not be necessary.

4.4.3.1.2 Hazards Associated with an Ammonia Tank Rupture Scenario

Installation of new SCRs is expected to increase the amount of ammonia stored and used at the affected facilities. Facilities that choose to install NOx control devices that use ammonia, such as SCR systems, would need ammonia tanks that range in size from 600 to 11,000 gallons in capacity, with daily usage varying by facility need. Construction of ammonia tanks is required to comply with all applicable building codes and U.S. EPA's spill prevention control and countermeasure regulations; however, catastrophic failure of a tank may still occur. Two accidental release scenarios were identified in the December 2015 Final PEA for NOx RECLAIM, and both scenarios concluded the hazards and hazardous materials impacts due to tank rupture as less than significant (see the December 2015 Final PEA for NOx RECLAIM, Subchapter 4.4 - Hazards and Hazardous Materials, pp. 4.4-12 through 4.4-13).

Ammonia Tank Rupture Scenario 1 (Non-Refinery Sector): It was estimated that the largest aqueous ammonia tank that would be installed at a non-refinery facility would be 5,000 gallons. All ammonia tanks are required to be installed within berms that hold 110 percent of the contents of the tank. The toxic endpoint for aqueous ammonia from a worst-case failure of a storage tank that would significantly adversely affect the sensitive receptors surrounding the existing equipment was analyzed to be 0.1 miles or 528 feet. SCR and systems are expected to be used at major industrial facilities and locations; these facilities are often large enough and have sufficient space to site new storage tanks more than 528 feet away from sensitive receptors, minimizing the potential impacts associated with new tanks. However, information on specific projects potentially affected by these control measures is unknown at this time. As such, to dismiss any impacts at this time without knowing the specific design features would be speculative; there are a number of locations throughout South Coast AQMD's jurisdiction where sensitive receptors may be located within 528 feet of industrial facilities. **Thus, the potential hazards and hazardous materials impacts due to tank rupture for non-refinery facilities are considered significant.**

Ammonia Tank Rupture Scenario 2 (Refinery Sector): The ammonia tank rupture scenario as previously analyzed in the December 2015 Final PEA for NOx RECLAIM utilized U.S. EPA's RMP*Comp model and estimated a toxic endpoint distance of 0.1 mile from a ruptured tank

(toxic endpoint concentration of 0.14 mg/L based on ERPG-2) spilling up to 12,100 gallons (110 percent of the maximum sized tank of 11,000 gallons) of aqueous ammonia at a 20% concentration. Should a rupture occur, the spilled contents collected in the berm would be drained gravimetrically to an enclosed collection system. While spills at the affected facilities would generally be captured within containment areas, large spills occurring outside of containment areas at the affected facilities are expected to be captured by the process water system where the spilled material would be collected and treated. Because of the containment system design, spills are not expected to migrate offsite. Industrial facilities are often large enough and have sufficient space to site new storage tanks more than 0.1 mile away from the property line so that should a spill occur, the release would not expose off-site sensitive receptors, thus minimizing the potential impacts associated with new ammonia tanks. For similar reasons as in the case for non-refinery sector analysis, however, it would be speculative to predict or forecast the precise location of new ammonia tanks on a facility-by-facility basis since a hazard analysis is dependent on knowing the exact location of a hazard within a site (e.g., the location of the ammonia storage tank(s)), meteorological conditions, location of the receptor, etc.). Predicting where facilities would locate ammonia tanks without firm evidence based on facts to support the analysis would require an engagement in speculation or conjecture that is inappropriate for this Program EIR. **Thus, the potential hazards and hazardous materials impacts due to tank rupture for refinery facilities are also considered significant.**

4.4.3.1.3 Hazards Associated with the Routine Transport, Use, or Disposal of Fresh and Spent Catalyst

Any new SCR installation will also require an initial installation of fresh catalyst followed by periodic replacement of spent catalyst with fresh catalyst approximately once every five years per SCR. Commercial catalysts used in SCR systems are comprised of a ceramic structure with a base material of titanium dioxide (TiO2) that is coated with tungsten trioxide (WO3), molybdic anhydride (MoO3), vanadium pentoxide (V2O5), or iron oxide (Fe2O3). Catalysts for SCRs are manufactured in pre-formed stable, solid block structures, so there is no potential for a spill or release when delivered as fresh catalyst or hauled away as spent catalyst.

Spent catalysts are generally not hazardous and can be disposed of in a non-hazardous landfill. The composition and type of the catalyst will determine the type of landfill that would be eligible to handle the disposal. For example, catalysts with a metal structure would be considered a metal waste and not a hazardous waste. Therefore, metal structure catalysts would not be disposed in a Class I landfill unless they are friable or brittle. Ceramic-based catalysts contain fiber-binding material; they are not considered friable or brittle and, thus, would not be a regulated waste requiring disposal in a Class I landfill. Typical catalyst materials are not considered to be water soluble, which also means they would not require disposal in a Class I landfill. In both cases, spent catalyst would not require disposal in a Class I landfill.

Due to the heavy metal content and relatively high cost of catalysts, recycling can be more lucrative than disposal. Historically, local refineries have been arranging for their spent catalyst to be hauled to a cement manufacturing plant located outside of the South Coast AQMD jurisdiction. Thus, facilities that have existing SCR units and choose to employ additional SCR equipment as part of implementing the proposed project, in most cases, already recycle their

spent catalyst and are expected to continue to do so with any additional catalyst that may be needed.

Several physical or chemical properties may cause a substance to be hazardous, including toxicity (health), flammability, reactivity, corrosivity, or radioactivity. Hazard ratings range from 0 to 4, with 0 = no hazard and 4 = extreme hazard, and are listed on Safety Data Sheets (SDSs). Vanadium pentoxide/tungsten oxide ceramic catalyst is rated 1 (slightly hazardous) for health, 1 (slightly flammable) for flammability, and 0 (none) for reactivity. The composition of the catalyst used in SCR units, combined with the metals content of the flue gas, will determine the resulting hazard rating and whether the spent catalyst is considered a hazardous material or hazardous waste. This distinction is important because spent catalyst that qualifies as a hazardous material could still be recycled (e.g., to be reused by another industry such as manufacturing Portland cement), but spent catalyst considered hazardous waste, if not recycled, must be disposed of in a landfill that can accept hazardous waste.

Based on the aforementioned information, it is likely that spent catalyst would be considered "designated waste," which is characterized as non-hazardous waste consisting of, or containing pollutants that, under ambient environmental conditions, could be released at concentrations in excess of applicable water objectives, or which could cause degradation of the waters of the state. [California Code of Regulations, Title 23, Chapter 3 Subparagraph 2522(a)(1)]. Depending on its actual waste designation, spent catalysts would likely be disposed of in a Class II landfill or a Class III landfill that is fitted with liners. **For the above reasons, the handling of fresh and spent catalysts are not expected to cause significant adverse hazards and hazardous materials impacts**.

Conclusion – Accidental Release of Ammonia: Operation of SCR requires transport and use of ammonia and SCR catalyst. Three accidental release scenarios for ammonia were evaluated for: 1) routine transport; 2) use at non-RECLAIM facilities; and 3) use at RECLAIM facilities. Each scenario was concluded to generate significant adverse hazards impacts. However, the routine transport, use, or disposal of fresh and spent catalyst was determined to generate less than significant hazards impacts.

Project-Specific Mitigation: The hazards associated with ammonia transportation and a catastrophic rupture of an ammonia tank are potentially significant. Since hazards and hazardous materials impacts are potentially significant, mitigation measures are required. The following mitigation measures are required for any facility that would require a new aqueous ammonia storage tank and the offsite consequence analysis indicates that sensitive receptors will be located within the toxic endpoint distance:

HZ-1 Use of aqueous ammonia at concentrations less than 19 percent by weight.

HZ-2 Install safety devices, including but not limited to: continuous tank level monitors (e.g., high and low level), temperature and pressure monitors, leak monitoring and detection system, alarms, check valves, and emergency block valves.

HZ-3 Install secondary containment such as dikes and/or berms to capture 110 percent of the storage tank volume in the event of a spill.

HZ-4 Install a grating-covered trench around the perimeter of the delivery bay to passively contain potential spills from the tanker truck during the transfer of aqueous ammonia from the delivery truck to the storage tank.

HZ-5 Equip the truck loading/unloading area with an underground gravity drain that flows to a large on-site retention basin to provide sufficient ammonia dilution to minimize the offsite hazards impacts to the maximum extent feasible in the event of an accidental release during transfer of aqueous ammonia.

HZ-6 Install tertiary containment that is capable of evacuating 110 percent of the storage tank volume from the secondary containment area.

Remaining Impacts from Accidental Release of Ammonia: The mitigation measures for the storage of aqueous ammonia are expected to reduce potential impacts; however, they are not expected to reduce impacts to less than significant levels. Substantial rules and regulations apply to the transport of hazardous materials, including ammonia. Additional mitigation measures to reduce potential hazard impacts due to ammonia transportation have not been identified. Therefore, the remaining hazards and hazardous materials impacts from exposure to aqueous ammonia due to transportation and tank rupture are considered to be significant after mitigation.

4.4.3.2 Hazards Associated With Alternative Fuels

Implementing Control Measures EGM-01, EGM-03, MOB-04, MOB-05, MOB-06, MOB-07, MOB-09, and MOB-10 may require or promote zero emission and low NOx technologies and alternative fuels. This subsection analyses the various hazards associated with the transportation, storage and use of alternative fuels.

4.4.3.2.1 Electric and Hybrid Vehicles

The proposed control measures focus on maximizing the implementation of zero emission and low NOx technologies which are expected to include electrification of mobile sources (light-duty vehicles, medium-duty vehicles, and heavy-duty vehicles). Electric and hybrid vehicles (hybrids) both use electricity as part of their fuel system. Electric vehicles rely purely on electric power stored in batteries. Hybrids also use batteries as part of their fuel supply; however, hybrids supplement their electric demand by using gasoline engines to generate either mechanical or electric power on demand. Since gasoline is a conventional fuel, any difference in hazards associated with hybrid and electric vehicles would be from the batteries.

Battery technologies in electric vehicles have primarily included nickel-metal hydride (NiMH) and lithium ion (Li-ion). Electric vehicles require high-energy batteries (i.e., batteries that store significant quantities of energy, retain it efficiently, and discharge it at a high rate). Today, Li-ion batteries are the most commonly used batteries in electric vehicles because of their high energy density which allows them to store large amounts of energy, low self-discharge rate

which allows them to retain a charge, and excellent electrochemical potential which allows high-power discharge). [NTSB, 2020]. Li-ion batteries are also lighter in weight than other battery types used in electric vehicles.

NiMH batteries can generate hydrogen gas if overcharged, which can lead to explosions without proper venting. In 1996, the International Center for Technology Assessment (ICTA) conducted a comprehensive review of the safety concerns associated with the use of electric vehicles. The ICTA found that risk of hydrogen emissions during stressful conditions has been virtually eliminated by the use of seals and proper valve regulation. By following the National Electric Codes (NECs) and the Society of Automotive Engineers (SAE) recommended safety practices and guidelines for the operation and maintenance of electric vehicles and hybrids, any hydrogen gas risk during battery recharging would be eliminated. [ICTA, 1996].

Fires in electric vehicles powered by high-voltage Li-ion pose a risk of electric shock in the event of a damaged Li-ion battery. A further risk is that damaged cells in the battery can experience uncontrolled increases in temperature and pressure (thermal runaway), which can lead to hazards such as battery reignition and fire. The risks of electric shock and battery reignition/fire arise from the stranded energy that remains in a damaged battery and the fires can generate large amounts of acrid smoke. [NTSB, 2020].

In response to fires in electric vehicles, the National Transportation Safety Board (NTSB) performed an investigation on the fire hazards associated with Li-ion batteries in electric vehicles and concluded the following:

1. Manufacturers' emergency response guides provide sufficient vehicle-specific information for disconnecting an electric vehicle's high-voltage system when the high-voltage disconnects are accessible and undamaged by crash forces.
2. Crash damage and resulting fires may prevent first responders from accessing the high-voltage disconnects in electric vehicles.
3. The instructions in most manufacturers' emergency response guides for fighting high-voltage Li-ion battery fires lack vehicle-specific details on suppressing the fires.
4. Thermal runaway and multiple battery reignitions after initial fire suppression are safety risks in high-voltage Li-ion battery fires.
5. The energy remaining in a damaged high-voltage Li-ion battery (stranded energy) poses a risk of electric shock and creates the potential for thermal runaway that can result in battery reignition and fire.
6. High-voltage Li-ion batteries in electric vehicles, when damaged by crash forces or internal battery failure, present special challenges to first and second responders because of insufficient information from manufacturers on procedures for mitigating the risks of stranded energy.
7. Storing an electric vehicle with a damaged high-voltage Li-ion battery inside the recommended 50-foot radius clear area may be infeasible at tow or storage yards.
8. Electric vehicle manufacturers should use the International Organization for Standardization standard 17840 template to present emergency response information.

9. Action by the NHTSA to incorporate scoring relative to the availability of a manufacturer's emergency response guide and its adherence to the International Organization for Standardization standard 17840 and SAE International recommended practice J2990 into the U.S. New Car Assessment Program, would be an incentive for manufacturers of vehicles sold in the United States with high-voltage Li-ion battery systems to comply with those standards.
10. Although exiting standards address damage sustained by high-voltage Li-ion battery systems in survivable crashes, they do not address high-speed, high-severity crashes resulting in damage to high-voltage Li-ion batteries and the associated stranded energy.

Based on their findings, the NTSB has made the following recommendations:

1. The NHTSA when determining a vehicle's U.S. New Car Assessment Program score, should factor in the availability of a manufacturer's emergency response guide and its adherence to the International Organization for Standardization standard 17840 and SAE International recommended practice J2990.
2. The NHTSA should convene a coalition of stakeholders to continue research on ways to mitigate or deenergize the stranded energy in high-voltage Li-ion batteries and to reduce the hazards associated with thermal runaway resulting from high-speed, high severity crashes.
3. Electric vehicle manufacturers should model the emergency response guides on International Organization for Standardization standard 17840 (as included in SAE International recommended practice J2990) and incorporate vehicle-specific information on: 1) fighting high-voltage Li-ion battery fires; 2) mitigating thermal runaway and the risk of high-voltage Li-ion battery reignition; 3) mitigating the risks associated with stranded energy in high-voltage Li-ion batteries, both during the initial emergency response and before moving a damaged electric vehicle from the scene; and 4) safely storing an electric vehicle that has a damaged high-voltage Li-ion battery.
4. The National Fire Protection Association (NFPA), the International Association of Fire Chiefs, the International Association of Fire Fighters, the National Alternative Fuels Training Consortium, the National Volunteer Fire Council, and the Towing and Recovery Association of America should inform members about the circumstances of the fire risks described in this report and provide guidance to emergency personnel who respond to high-voltage Li-ion battery fires in electric vehicles.

While electric cars may have fire risks, a recent study shows that they are less likely to cause a vehicle fire than either gas-powered or hybrid vehicles. Data from the NTSB was used to track the number of car fires, and it was compared to sales data from the Bureau of Transportation Statistics. The data showed that for every 100,000 vehicles sold, hybrid-powered vehicles (which use gasoline) were involved in about 3,475 fires and conventional gasoline-powered vehicles were involved in approximately 1,530 fires while electric vehicles were involved in approximately 25 fires. Gasoline-powered vehicles and hybrid vehicles rely on combustion, in whole or in part, respectively, to function, while the electric cars rely on 100 percent electricity. [AutoinsuranceEZ, 2022]. Based on the results from the study, electric vehicles were concluded to not be inherently more dangerous than conventional gasoline-fueled or hybrid vehicles, but

electric vehicle fires tend to be more difficult than gasoline fires to extinguish. [AutoinsuranceEZ, 2022].

The likelihood to overheat or ignite is increased if the batteries are poorly packaged, damaged, or exposed to a fire or a heat source. However, when packaged and handled properly, Li-ion batteries pose a minimal threat to the environment.[191] [DOT, 2014]. **As noted in the aforementioned study, internal combustion engines also can result in fires and other hazards; therefore, switching to battery power would not likely result in an increased fire risk. However, if there is an increase in the use of hybrid vehicles, there will be the potential for a corresponding increase in fire risk. In consideration of CARB's recent approval of the Advanced Clean Cars II Regulation which bans the sale of new gasoline vehicles, including hybrid vehicles that use gasoline, by 2035, over the long-term fewer hybrid vehicles will be on the road and eventually will be phased out entirely at the end of their useful life.**

4.4.3.2.2 Hydrogen

Risk of Hydrogen in Mobile Sources

Hydrogen is the simplest, lightest, and most plentiful element in the universe. In its normal gaseous state, hydrogen is colorless, odorless, tasteless, non-toxic, and burns invisibly. Most hydrogen is made from natural gas through a process known as steam reforming which separates hydrogen from hydrocarbons by adding heat. Hydrogen can also be produced from a variety of sources including water and biomass. Hydrogen can be used as a combustion fuel or in fuel cell vehicles to produce electricity to power electric motors.

The generation and distribution of hydrogen as a consumer product is also still in developmental stages. Currently, there are 19 hydrogen refueling stations (see Table 3.3-4). Most of the refueling stations depend on bulk liquid hydrogen delivery; however, a few hydrogen gas pipeline stations and on-site steam reformer stations exist. The physical hazards associated with bulk liquid transport and storage are similar to LNG, as they are both cryogenic liquids. The physical hazards associated with distributing hydrogen via pipeline and steam reformer hydrogen stations are similar to CNG as they are both compressed gases. In general, the fire hazards associated with hydrogen spills or leaks are higher than conventional fuels due to the wide flammability range and low ignition energy of hydrogen. However, hydrogen tanks are fabricated according to more rigorous standards than conventional fuel tanks, which helps reduce the likelihood of spills or leaks.

The main additional hazard associated with the use of hydrogen versus conventional fuels is the difficulty in being able to recognize a hydrogen fire when it is happening. Hydrogen burns with a pale blue flame that is almost invisible during daylight hours making hydrogen fires are almost impossible to see with the naked eye. Hydrogen fires have low radiant heat, so it may be difficult to sense the presence of a flame until you are very close to it. Thus, the potential of a large fire

[191] Department of Transportation, Pipeline and Hazardous Materials Safety Administration, 2014. 49 CFR Parts 171, 172, 173, et al., Hazardous Materials: Transportation of Lithium Batteries, Federal Register Volume 79, Issue 151 (79 FR pp. 46011-46032).

stemming from a release of hydrogen in the case of an accident (e.g., a tanker truck accident) could pose challenges for fire-fighting personnel. Although hydrogen fires do not produce smoke themselves, burning of nearby combustible materials can result in smoke which help visual clues to a fire. Normally hydrogen fires are not extinguished until the supply of hydrogen has been shut off or exhausted since there is a danger of re-ignition and explosion. Firefighting personnel are trained in the characteristics of hydrogen fires and proper procedures for dealing with them. For the same fire hazard reasons, another potentially significant hazard is the release of hydrogen in an enclosed space (e.g., garage or vehicle maintenance facility).

Compared with diesel fuel and gasoline, the following can be stated about hydrogen:

- Diesel fuel and gasoline are toxic to the skin and lungs while hydrogen is non-toxic and non-reactive, so if released, it does not present a health hazard to humans.
- Diesel fuel and gasoline vapors are heavier than air (for specific gravity of air = 1, diesel fuel is >4.0, gasoline is 3.4) while hydrogen is 14 times lighter than air. If released, hydrogen will quickly rise dissipate into the atmosphere greatly reducing the risk of ignition at ground level.
- Hydrogen has an extremely low ignition energy requirement; about 20 microjoules can ignite hydrogen/air, which is about 10 times less than what is required to ignite a gasoline/air mixture. Gasoline can be explosive at oxygen concentrations between one and three percent while hydrogen can be explosive with oxygen concentrations between 18 and 59 percent. This means that gasoline has greater risk for explosion than hydrogen for any given environment with oxygen. [PNL, 2004].
- Hydrogen has a lower radiant heat when compared to gasoline, meaning the air around the hydrogen flame is not as hot as around a gasoline flame. Therefore, the risk of hydrogen secondary fires is lower.
- Hydrogen is clear, odorless, and tasteless. It burns with an extremely hot, but nonluminous flame which is difficult to see during the day. The flame of burning hydrogen has few warning properties.
- Hydrogen has an unusually large flammability range and can form ignitable mixtures between four and 75 percent by volume in air. Given confinement and good mixing, hydrogen can be detonated over the range of 18 to 59 percent by volume in air.

Based upon the preceding information, hazards associated with hydrogen are approximately equivalent or less when compared to conventional fuels. In addition, fire hazards associated with hydrogen when compared to fires involving conventional fuels are equivalent but will require different firefighting protocols due to the nature of hydrogen. **Therefore, no significant increase in hazards would be expected from using hydrogen in mobile sources when compared to conventional fuels.**

Risk Associated with Hydrogen Production

More than 95 percent of U.S.-produced hydrogen is made in central plants via a steam methane reforming process using natural gas, refinery fuel gas, coal, and water electrolysis. However, due to strict environmental regulations, coal is not utilized as a fuel in California. The existing hydrogen production infrastructure can be leveraged to support the initial commercialization of

fuel cell electric vehicles (FCEVs) though currently, there is little excess hydrogen production capacity. As the commercialization of FCEVs progresses, new hydrogen capacity will need to be built. [CEC, 2021].

In the early stages of commercialization, expanded hydrogen production will likely rely on natural gas feedstock converted to hydrogen via the steam methane reforming process, as this approach offers a low-cost pathway to producing hydrogen. Over time, hydrogen fuel production could evolve from this natural gas dominance to a more diversified production mix, such as a lower-carbon production mix that includes natural gas reformation with carbon capture and storage, coal with carbon capture and storage (for hydrogen production outside of California), biofuels, waste resources, nuclear (for hydrogen production outside of California), and water electrolysis using renewable electric power. This shift is anticipated because it is expected that there will be a significant push to de-carbonize transportation fuels. Hydrogen may also be produced from renewable energy resources and waste streams using low-carbon-emitting processes (e.g., biomass gasification, water electrolysis using renewable electricity, and reformation of renewable natural gas). [CEC, 2021].

A recent hazard analysis was completed for a proposed new hydrogen plant at a renewable fuels facility in Southern California. The results of the analysis indicated that the worst-case hazard zones associated with an upset of the hydrogen plant and related pipelines were related to a torch fire and would create hazards to surrounding areas within approximately 90 feet of the fire. The hazards associated with the rupture of the related natural gas pipeline that would feed the hydrogen plant was also identified as a potential torch fire risk which could create hazards to surrounding areas within approximately 183 feet of a release.[192] The construction of any new hydrogen plants would be expected to be constructed within existing industrial facilities that would likely have at least 90 feet to the closest off-site receptor and, therefore, is less than significant. Existing natural gas pipelines provide service to most existing facilities, but the construction of new natural gas pipelines could be significant if located offsite of a facility where a new hydrogen production facility may be located, as the precise location of new natural gas pipelines cannot be forecasted. Natural gas pipelines are located throughout urban areas, including within residential areas and adjacent to sensitive receptors.

New natural gas pipelines are subject to a number of regulatory requirements, including the following:

- Hydrostatic testing to 125 percent of the operating pressure is required by the state Fire Marshal prior to operation of a pipeline. Additional periodic testing is required for pipelines, with the frequency of testing based on pipeline age, use of cathodic protection, and release history;
- New pipelines are required to accommodate instrumented internal inspection devices (commonly referred to as "smart pigs"). "Smart pigs" detect where corrosion or other damage has affected the wall thickness or shape. Additionally, to ensure the pipeline is

[192] City of Paramount, 2022. Final Subsequent Environmental Impact Report, AltAir Renewable Fuels Conversion Project, February 2022. Available at: https://www.paramountcity.com/government/planning-department/planning-division/altair-world-energy-project

operating properly and the total volume of material shipped is received, monitoring of operations during transfer of material is required and may include pressure indicators along the pipeline route, as well as flow meters at both the shipping and receiving ends of the pipeline;

- Cathodic protection is required for new pipelines. Cathodic protection is a technique used to control the corrosion of a metal surface by making it the cathode of an electrochemical cell. Avoiding corrosion protects the integrity of the pipeline and minimizes that potential for releases; therefore, installation of cathodic protection helps to prevent pipeline releases;
- Federal regulations require the installation and maintenance of line marker posts so that the pipeline is easily identifiable. In addition, annual inspections are required to look for corrosion and other issues;
- Pipelines are registered with the USA North 811 underground service alert system. Contractors contact this organization prior to beginning excavation activities. The organization notifies the owners of underground facilities in the area of the proposed construction activities. The owners and contractors can then discuss the proposed construction activities. Owners typically mark the exact location of the pipelines and communicate the locations to the contractors. Participation in the USA system minimizes the potential for damage and meets the requirements of the operator's damage prevention program pursuant to 49 CFR Part 192 requirements;
- 49 CFR Part 192, Subpart N, requires minimum training requirements for operators of pipeline facilities. These requirements assure that individuals working on the pipeline would have appropriate training and experience;
- The operation of pipelines is required to have an Emergency Response Plan that identifies specific measures that would be implemented in the event of upset conditions. The Emergency Response Plan identifies responsible parties for the incident command and supporting agencies and organizations; and
- New natural gas pipeline may require the installation of safety blowdown equipment at one location along the designated route. The blowdown equipment will allow for the controlled release and dispersion of gas in the pipeline in the event of an upset condition. Blowdown equipment is part of the PHMSA requirements.

These extensive state and federal requirements on new (and existing) natural gas pipelines, are expected to be implemented and enforced. Implementation of these extensive requirements is expected to minimize the severity of potential hazard impacts of natural gas pipeline releases should they occur. The operational impacts associated with the new natural gas pipeline would remain significant as a release could potentially impact receptors, including residences, and would be a new or intensified hazard. **Therefore, the hazards associated with the potential increase in transmission of natural gas via pipeline to service hydrogen plants would be considered potentially significant.**

4.4.3.2.3 Ethanol and Ethanol Blends

Ethanol is a clear colorless organic liquid with physical and chemical properties which do not change from source to source like conventional fuels. In the U.S., ethanol is typically produced from corn or other grain products, while some imported ethanol is produced from sugar cane. For commercial or industrial use, pure ethanol (E100) is usually denatured with a small amount of gasoline or similar substance to avoid federal alcoholic beverage tax and intentional ingestion. Heavy duty vehicles use E95 (a blend of 95 percent ethanol and five percent gasoline) or E93 (a blend of 93 percent ethanol, five percent methanol, and two percent kerosene). Light and medium duty vehicles use E85 (a blend of 85 percent ethanol and 15 percent gasoline). Vapors from ethanol blended fuels will exhibit similar flammability characteristics as gasoline. There are 141 stations in the South Coast AQMD's jurisdiction that sell E85 (see Table 3.3-4).

Ethanol is shipped to distribution terminals by rail. In May 2015, the U.S. DOT issued revised rules to improve the safe transportation of large quantities of flammable materials by rail, including ethanol. The bulk transfer of ethanol from terminals is usually done in standard petroleum tanker trucks. Since the NFPA classification of ethanol is the same as gasoline or diesel (Class IB flammable liquid), there is no reason to expect that ethanol transport will be more dangerous than gasoline or diesel transport. There are, however, certain physical properties of ethanol that must be addressed during transport and storage when compared to gasoline or diesel. First, ethanol is incompatible with some types of materials used in petroleum storage and transfer systems; therefore, it is necessary to take some precaution to assure ethanol compatible materials are used. Second, E100 vapor/air mixtures at ambient temperatures and pressures can create a flammable mixture in the ullage (i.e., unused) space of a storage tank. Therefore, it is important to ensure that there are strong safeguards against any ignition sources inside tanks and that vent lines or other openings have flame arrestors. Furthermore, any fill lines must extend below the liquid ethanol level to provide a seal between an external ignition source and the vapor/air mixture in the tank. Ethanol blended fuel vapors are primarily composed of gasoline, and should not change the fire hazard associated with the transfer and storage relative to gasoline. [U.S. DOT, 1999].

Compared with diesel fuel and gasoline the following can be stated with respect to ethanol:

- Diesel fuel and gasoline contain components that are considerably more hazardous than ethanol. For example, diesel fuel contains highly toxic polynuclear aromatic hydrocarbons (PAHs) and gasoline contains an array of toxic compounds, including benzene, a known carcinogen.
- Diesel fuel and gasoline vapors are heavier than air (for a specific gravity of air =1, diesel fuel is >4.0 and gasoline is 3.4). Ethanol is heavier than air but lighter (specific gravity is 1.6) than gasoline, and diesel fuel and disperses more readily in air than gasoline or diesel fuel.
- Ethanol has a higher auto ignition temperature (684 degrees Fahrenheit [^{o}F]) than diesel fuel (500 ^{o}F) or gasoline (500 ^{o}F).
- Ethanol is more difficult to ignite since it has a "lower flammability limit" that is higher (3.3 percent) than gasoline (one percent) or diesel fuel (0.5 percent).

- Unlike gasoline, ethanol can ignite in enclosed spaces such as fuel tanks since its upper flammability limit is 15 percent and it is heavier than air. For gasoline in a confined space, the vapor concentration exceeds the higher flammability limit (7.6 percent) and is therefore too high to ignite in the tank. Modifications such as materials inside the fuel tank that can arrest and quench flame propagation and modifications to isolate the tank from sparks and ignition sources are required to avoid ignition in the fuel tanks.
- In case of fire, ethanol can be extinguished with water while water on gasoline or diesel fuel spreads the fire.

Based upon the preceding information, hazards associated with ethanol are approximately equivalent or less than hazards associated with conventional fuels. Therefore, the potential increased usage of ethanol with a concurrent decline in usage of conventional fuels will not significantly alter existing hazards associated with mobile source fuels. Consequently, increased usage of ethanol is not expected to generate significant adverse hazard impacts.

4.4.3.2.4 Compressed Natural Gas (CNG)

Natural gas is a mixture of hydrocarbons, mainly methane, that are in gaseous form at ambient temperature and pressure. It is odorless and tasteless; therefore, an odorant is added so personnel in the vicinity of a leak can detect the presence of natural gas before it has reached the flammability limit in the area. Unlike other alternative fuels, natural gas already has an extensive distribution system and supply network. The issues associated with the bulk transfer and storage of natural gas are very different from other fuels, which are usually transported via tanker truck. CNG is generally produced onsite using compressors fed from a nearby natural gas pipeline. The typical range of methane contained in pipeline-quality natural gas is approximately 80 to 95 percent. However, CARB has specified that vehicular-grade CNG must have a methane content greater than 88 percent. There are an estimated 161 stations in South Coast AQMD's jurisdiction that sell CNG (see Table 3.3-4).

The South Coast AQMD has had a history of promoting the use of CNG in the past and few issues have arisen from the transport of CNG as most supplies are distributed via the existing natural gas pipeline infrastructure. Furthermore, CNG compositions and storage cylinders in vehicles follow NFPA 52 (CNG Vehicular Fuel Systems) and Society of Automotive Engineers (SAE) J1616 (Recommended Practice for CNG Fuel) specifications. These specifications limit the potential hazards of CNG leaks related to fuel storage and use in vehicles. Furthermore, natural gas has a higher flammability limit (five percent) than gasoline (one percent) or diesel (0.5 percent). Natural gas also has a higher ignition temperature (1,200 ^{o}F) than gasoline or diesel (500 ^{o}F). Other hazards associated with compressed fuels such as CNG are projectiles from openings and freeze burns from rapid vaporization.

The main additional hazard associated with the use of CNG versus conventional fuels is the exposure to high pressures employed during storage, dispensing, and operations. Due to these high pressures, a large amount of gas could escape in a short amount of time and, if present under flammable conditions, could explode in the presence of an ignition source. Another potentially significant hazard is a release of natural gas during vehicle maintenance. [U.S. DOT, 1999].

Compared with diesel fuel and gasoline, the following can be stated with respect to CNG:

- Diesel fuel and gasoline are toxic to the skin and lungs while CNG is not.
- Diesel fuel and gasoline vapors are heavier than air (for specific gravity of air =1, diesel fuel is >4.0 and gasoline is 3.4). CNG is lighter than air (specific gravity is 0.55) and disperses more readily in air.
- CNG has a higher auto ignition temperature (1,200 ºF) than diesel fuel (500 ºF) or gasoline (500 ºF).
- CNG is more difficult to ignite since it has a "lower flammability limit" that is higher (5.3 percent) than gasoline (one percent) or diesel fuel (0.5 percent).
- Natural gas can be directly shipped via pipelines to the compressor station, rather than by on-road delivery trucks, and has less delivery accident risk than vehicle shipments.

Based upon the preceding information, hazards associated with CNG are approximately equivalent or less compared to conventional fuels. Therefore, increased usage of CNG with a concurrent decline in usage of conventional fuels will not significantly alter existing hazards associated with mobile source fuels. Consequently, increased usage of CNG is not expected to generate significant adverse hazard impacts.

4.4.3.2.5 Liquefied Natural Gas (LNG)

Natural gas can be liquefied by refrigerating it below -160 degrees Celsius or -260 degrees Fahrenheit at relatively low pressure (20 to 150 psig). Like CNG, there are NFPA standards (NFPA 59A – Standards for Production, Storage, and Handling of LNG and NFPA 57 – Standard for LNG Vehicular Fuel Systems) for the handling, storage, production, and use of LNG, especially in vehicles. However, unlike CNG, most LNG is not generated on-site. Instead, LNG is typically delivered via insulated, double-walled tanker trucks to distribution facilities. Due to the need to keep the contents under pressure, the double-walled construction of the LNG tanker trucks is more robust than standard petroleum tanker trucks; therefore, the LNG is transported in tanker trucks that, by design, are structurally safer from spills and tank ruptures during accidents than conventional fuel tanker trucks.[193]

The safety issues associated with LNG are similar to CNG, with the added hazards of handling a cryogenic liquid and the vaporization of the liquid. Cryogenic liquids have the potential to burn workers who come into contact with the liquid or uninsulated surfaces. This hazard can be avoided through proper personal protective equipment and training. The vaporization of LNG in storage tanks can potentially cause a boiling liquid expanding vapor explosion (BLEVE). For a BLEVE to occur, there would need to be a catastrophic failure of all safety measures, including safety relief valves and burst discs, built into the vessel's design code. Another potentially significant hazard is a release of natural gas during vehicle maintenance. [U.S. DOT, 1999].

[193] U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, LNG Safety, https://www.phmsa.dot.gov/pipeline/liquified-natural-gas/lng-safety.

Lastly, when LNG is in a confined space with vapor concentrations between five and 15 percent, under certain conditions, it may explode or catch on fire[194].

LNG is comprised mostly of methane, but may contain ethane, propane, and other heavier gaseous hydrocarbons. The main acute health effect associated with methane is asphyxia, the condition of severely depleting the oxygen supply to the body. Methane causes asphyxia by displacing oxygen in air, and asphyxiation can occur when oxygen concentrations drop below 18 percent. The potential adverse health effects of oxygen deficiency are summarized in Table 4.4-2.

TABLE 4.4-2
Effects of Oxygen Deficiency

Oxygen Concentration	Effects of Oxygen Deficiency
19%	Some adverse physiological effects occur, but they may not be noticeable.
15-19%	Impaired thinking and attention. Increased pulse and breathing rate. Reduced coordination. Decreased ability to work strenuously. Reduced physical and intellectual performance without awareness.
12-15%	Poor judgment. Faulty coordination. Abnormal fatigue upon exertion. Emotional upset.
10-12%	Very poor judgment and coordination. Impaired respiration that may cause permanent heart damage. Possibility of fainting within a few minutes without warning. Nausea and vomiting.
<10%	Inability to move. Fainting almost immediate. Loss of consciousness. Convulsions. Death

Source: Air Products and Chemicals, Inc., 2014.

It is unlikely that off-site receptors would be exposed to LNG concentrations that would generate an explosion hazard, because the Lower Explosive Limit (LEL), the concentration at which there is enough of the given gas to ignite or explode, for methane is five percent (50,000 ppm) compared to the LEL for gasoline (one percent) or diesel (0.5 percent). The Risk Management Program (RMP) off-site consequence analysis procedures set forth in 40 CFR Part 68 are used for estimating the potential risk from a vapor explosion. In this analysis, a gaseous release is assumed to produce a vapor explosion that results in a blast impact; the significance level is a pressure wave (blast) of one pound per square inch (psi), and the metric examined is the modeled distance to the significant overpressure level.

The hazards posed by the use of LNG versus gasoline and diesel fuel are:

- Diesel fuel and gasoline are toxic to the skin and lungs while LNG is not.
- Diesel fuel and gasoline vapors are heavier than air (for specific gravity of air = 1, diesel fuel is >4.0, gasoline is 3.4). LNG is lighter than air (specific gravity is 0.55) and disperses more readily in air.
- LNG has a higher auto ignition temperature (1,200 ºF) than diesel (500 ºF) or gasoline (500 ºF).

[194] Consumer Energy Center, http://www.consumerenergycenter.org/transportation/afvs/lng.html

- LNG is more difficult to ignite since it has a "lower flammability limit" that is higher (5.3 percent) than gasoline (one percent) or diesel fuel (0.5 percent).
- Cryogenic liquids such as LNG have the potential risk to workers of burns (frost-bite) that can be suffered if workers come in contact with the liquid or with surfaces that are not insulated. Proper safety equipment and training can minimize these hazards.
- Since LNG is a cryogenic liquid, in the event of a release from an aboveground storage tank or tanker truck, a fraction of the liquid immediately flashes off to gas while the remainder will pool and boil violently emitting dense vapor. The liquid transitions to dense vapor and the dense vapor transitions to gas as the liquid and vapor draw heat from the surroundings. If a source of ignition is present, the boiling liquid, vapor cloud, and gas could explode and burn, threatening surrounding facilities and other storage vessels.

The safety of LNG facilities is addressed through the inherent characteristics of LNG and through the design and operation of LNG facilities and transportation modes. In land-based LNG facilities, impoundment structures around LNG tanks and pipelines are designed to control the spread of LNG if a release occurs. Fire and vapor suppression systems are installed to mitigate the consequences of a release. Gas detectors, fire detectors, and temperature sensors automatically activate firefighting and vapor suppression systems. In the event of a fire, water spray may be used for heat affected exposures, or high expansion foam may be used to reduce radiant heat impact on exposures. At some facilities, vapor fences are installed to prevent vapors from extending onto adjacent properties. Vacuum jacketed pipe also provides an additional layer of protection in the event of a release of the inner pipe. Emergency shutdown devices activate when operational parameters extend beyond the normal range. The LNG facility operator must develop and follow detailed maintenance procedures to ensure the integrity of various safety systems.

Prior to commencing operations, the LNG facility operator must establish detailed procedures that specify the normal operating parameters for all equipment. When a piece of equipment is modified or replaced, all procedures must be reviewed and modified if necessary to assure the integrity of the system. All personnel must complete training in operations and maintenance, security, and firefighting. The operator must coordinate with local officials and apprise them of the types of fire control equipment available within the facility. Additionally, federal regulations require tight security for the facility, including controlled access, communications systems, enclosure monitoring, and patrols. As such there are many layers of protective requirements in place for LNG.

Based upon the preceding information, hazards associated with LNG are approximately equivalent or less compared to conventional fuels. Therefore, increased usage of LNG with a concurrent decline in usage of conventional fuels will not significantly alter existing hazards associated with mobile source fuels. Consequently, increased usage of LNG is not expected to generate significant adverse hazard impacts.

LNG Transportation Release: LNG is non-toxic, disperses more readily in air than conventional fuels, and has more rigorous standards for transportation. California gets about 10 percent of its LNG from in-state production and 90 percent from five interstate natural gas pipelines. California does not have a LNG terminal or any proposed LNG terminals along the

coast.[195] Itis expected that affected facilities will receive LNG from a local supplier located within South Coast AQMD's jurisdiction by natural gas pipeline or by tanker truck via public roads. The on-road transport of LNG is regulated by the U.S. DOT. LNG trucks are double-walled aluminum and are designed to withstand accidents during transport. LNG is loaded into delivery tanks at atmospheric pressure, which would be at its boiling point of -260ºF (-162ºC). The LNG is maintained at this temperature by evaporation of the boiling LNG and venting of the evaporated LNG. Because the vent is closed during shipment, the pressure in the tank builds as the temperature of the LNG increases. The Federal Motor Carrier Safety Administration (FMCSA) analyzed releases from delivery tanks with an average pressure of 30 psig, which would be -230ºF (-146ºC). At 30 psig, approximately 30 percent of the LNG will flash into vapor when released.

LNG transport release scenarios were previously analyzed in the Final EA for Proposed Amended Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Internal Combustion Engines (ICEs) that was certified by the South Coast AQMD Governing Board on February 1, 2008 .[196] The following description of LNG transportation and consequences is taken from the FMCSA[197].

Four scenarios were identified as having major consequences:

1. Release of LNG into a pool that evaporates and disperses without ignition. Approximately 40 percent of the liquefied LNG immediately flashes into vapor. The temperature of the liquid pool would be -44 ºF (-42ºC) and would therefore damage exposed vegetation and people.
2. A flammable cloud is formed that contacts an ignition source. The flame front can flash back and set the liquid pool on fire. Quantities of LNG shipped by truck would not typically cause vapor cloud explosions.
3. A BLEVE occurs. BLEVEs would occur when an LNG tank is exposed to fire and the increase in pressure within the tank exceeds the capacity of the relief valve.
4. The tank ruptures, rockets away, and ignites.

U.S. EPA's RMP*Comp model was used for the consequence analysis for these four scenarios. The adverse impacts from the four scenarios were determined to be:

1. The area of the pool was estimated by assuming a depth of one centimeter as described in Example 29 in the U.S. EPA's Risk Management Program Guidance for Offsite Consequence Analysis.[198] A 6,000 gallon LNG pool would be 24,448 square feet. This

[195] CEC. Liquified Natural Gas webpage. https://www.energy.ca.gov/data-reports/california-power-generation-and-power-sources/liquefied-natural-gas. Accessed September 14, 2022.
[196] South Coast AQMD, 2008. Final EA for Proposed Amended Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Internal Combustion Engines (ICEs), South Coast AQMD No. 280307JK. http://www.aqmd.gov/home/research/documents-reports/lead-agency-scaqmd-projects/aqmd-projects---year-2008/fea-for-par-1110-2.
[197] Federal Motor Carrier Safety Administration, Comparative Risks of Hazardous Materials and Non-Hazardous Materials Truck Shipment Accidents/Incidents, Final Report, March 2001, www.fmcsa.dot.gov/documents/hazmatriskfinalreport.pdf.
[198] U.S. EPA, Risk Management Program Guidance for Offsite Consequence Analysis, EPA 550-B-99-009, April 1989.

distance would be a "worst-case" since as the LNG pool expands from the tank, it will warm and evaporate.

2. A pool fire of 6,000 gallons that is released in one minute would result in a heat radiation endpoint (five kilowatts/square meter) of 0.2 mile. If a vapor cloud fire occurs, the estimated distance to the lower flammability limit would be 0.3 mile.
3. Based on 10,000 gallons, the BLEVE would result in a fireball that may cause second-degree burns out to 0.3 mile.
4. The "worst-case" release estimate for 10,000 gallons in U.S. EPA's RMP*Comp model is 0.3 mile from the vapor cloud explosion. Since it is unclear as to how far away the tank would travel, it was assumed that the adverse impact would be 0.3 mile from where the tank lands. Damage to property and persons may occur from physical impact of the rocketing tank.

During transportation of LNG, it was estimated that adverse impacts from various scenarios of LNG releases would extend up to 0.3 mile. Because sensitive receptors may be located within the 0.3 mile endpoint distance, the accidental release of LNG during transport could cause significant adverse hazards impacts. Based upon the preceding information, increased transport of LNG may substantially alter existing transportation hazards associated with mobile source fuels. Consequently, increased usage of LNG is expected to generate significant adverse hazard impacts during transport.

4.4.3.2.6 Liquefied Petroleum Gas (LPG)

LPG, also called propane, is a mixture of primarily propane with some propylene, butane, and butene, which are liquefied at ambient temperatures by compressing the mixture of gases to pressures above 120 psig. In the U.S., almost all of the propane supply comes from stripping wellhead natural gas, or as a by-product of petroleum refining. LPG for vehicle use is at least 95 percent propane and no more than 2.5 percent butane and heavier hydrocarbons. LPG has been used in fleet vehicles since the 1940s, so there is a well-established history and wealth of experience with LPG as an automotive fuel.

For a variety of reasons, natural gas has replaced LPG as a more viable alternative fuel. There has been little development in dedicated LPG engine technology while technologies capable of using other alternative fuels and their emissions have improved tremendously over the last decade. As a result of that development, some of the previous emission reduction advantages of LPG fuel, especially the low CO emissions, are now less pronounced.[199] Consequently, it is not likely that LPG would be used to any great extent in providing the fuel for near-zero or zero emission technologies.

Since LPG is a compressed fuel, it has the physical hazards of projectiles: freeze burns, BLEVE, etc. However, since LPG is stored pressurized and at ambient temperatures, the physical hazards are not as great for storage and transport compared to compressed or liquefied natural gas (CNG

[199] Net Technologies, Inc. How Clean Are LPG Engines. http://www.nett.ca/faq/lpg-3.html.

or LNG). The flammability limit range for LPG is similar to gasoline, but the ignition temperature (920 ^{o}F) is higher than gasoline or diesel (500 ^{o}F). Therefore, the hazard from transport and storage of LPG should not be significantly different from the transport and storage of gasoline or diesel. [U.S. DOT, 1999].

The main additional hazard associated with the use of LPG versus conventional fuels is the potential of a large fire stemming from a release in the case of an accident (e.g., a tanker truck accident).

Compared with diesel fuel and gasoline, the following can be stated about LPG:

- Diesel fuel and gasoline are toxic to the skin and lungs while LPG is not.
- Diesel fuel and gasoline vapors are heavier than air (for specific gravity of air =1, diesel fuel is >4.0, gasoline is 3.4). LPG is lighter than gasoline and diesel fuel, but heavier than air (specific gravity is 1.52). It disperses more readily in air than gasoline or diesel fuel.
- LPG has a higher auto ignition temperature (920 ^{o}F) than diesel fuel (500 ^{o}F) or gasoline (500 ^{o}F).
- LPG is more difficult to ignite since it has a "lower flammability limit" that is higher (2.0 percent) than gasoline (one percent) or diesel fuel (0.5 percent).

Based upon the preceding analysis, hazards associated with LPG are approximately equivalent or less as compared to conventional fuels. Therefore, increased usage of LPG with a concurrent decline in usage of conventional fuels will not significantly alter existing hazards associated with mobile source fuels. Consequently, increased usage of LPG is not expected to generate significant adverse hazard impacts.

4.4.3.2.7 Biodiesel and Renewable Diesel

Biodiesel is a fuel derived from biological sources such as vegetable oils or animal fats. The process for creating biodiesel involves mixing the oil with alcohol (e.g., methanol or ethanol) in the presence of a chemical such as sodium hydroxide. This process produces a methyl ester if methanol is used, or an ethyl ester if ethanol is used. Methyl ester from soybeans is more economical to produce, and therefore, is more common in the U.S. Biodiesel can be used pure (B100) or blended with conventional diesel. The most common blended biodiesel is B20, which is 20 percent biodiesel and 80 percent conventional diesel.

Renewable diesel is produced from non-petroleum renewable resources but is not a mono-alkyl ester. There are several different chemical approaches to producing renewable diesel. One is based on hydrotreating vegetable oils or animal fats, which is the primarily method that has been used recently for the production of renewable fuels in California. Hydrotreating frequently takes place in conventional refineries to reduce sulfur or aromatic hydrocarbon content in CARB diesel. A second method involves synthesis of hydrocarbons through enzymatic reactions. A third method involves partially combusting a biomass source to produce carbon monoxide and hydrogen (syngas), and utilizing the Fischer-Tropsch reaction to produce complex hydrocarbons. Compared to biodiesel, renewable diesel uses similar feedstocks but has different processing

methods and can include chemically different components. Renewable diesel can be used pure (R100) or blended with conventional diesel.

The feedstocks that are used for biodiesel and renewable fuels/diesel are typically vegetable oils or animal fats which are long-chain hydrocarbons. Neat biodiesel and renewable diesel contain no hazardous materials and is generally regarded as safe.[200] This can be compared to conventional fuels that use crude oil as a feedstock. Crude oil has numerous types of hydrocarbons, including short and long chain hydrocarbons and cyclical hydrocarbons (e.g., polyaromatic hydrocarbons or PAHs, toluene, benzene, and ethylbenzene), as well as heavy metals. The cyclical hydrocarbons and heavy metal components in crude oil are the compounds that tend to be toxic/hazardous, resulting in the presence of toxic /hazardous contaminants in conventional fuels. The renewables that are being produced today are using the hydrotreating process which does not use methanol or ethanol for production.

Biodiesel and renewable diesel are considered safer than conventional diesels with essentially no toxics; therefore, increased usage of biodiesel and renewable diesel with a concurrent decline in usage of conventional diesel will not significantly alter existing hazards associated with mobile source fuels. Consequently, increased usage of biodiesel and renewable diesel are not expected to generate significant adverse hazard impacts.

4.4.3.2.8 Summary of Hazards from Alternative Fuels

As shown in Table 4.4-3, the energy content of alternative fuels is lower than conventional fuels which means that more fuel is needed in an alternative fuel-powered vehicle to achieve the same range as a conventional fuel-powered vehicle. Thus, more tanker deliveries to supply refueling stations would be required to provide the same available energy as conventional fuels. Since the probability of accidents is related to the amount of miles traveled, proportionally more delivery accidents can be expected with alternative fuels than conventional fuels (assuming that they are delivered from similar source locations in similar sized tankers).

TABLE 4.4-3
Equivalent Fleet Miles Associated with Alternative Clean-Fuels

Fuel Type	By Mass	By Volume
Diesel	1.00	1.0
CNG/LNG	1.15	1.9
LPG	1.15	2.1
Ethanol	1.90	2.3

Source: Clean Air Program: Summary of Assessment of the Safety, Health, Environmental and System Risks of Alternative Fuels. (U.S. DOT, 1999)

However, the truck accident rate is small, on the order of 1.4 accidents per 10 million miles traveled and the accident rate with chemical releases is even less. [U.S. DOT, 2021].

[200] U.S. Department of Energy, 2016. Biodiesel Handling and Use Guide (fifth edition). https://afdc.energy.gov/files/u/publication/biodiesel_handling_use_guide.pdf

Furthermore, any increase in alternative fuels use would decrease the use of conventional fuels and replace those miles traveled, so hazards associated with the shift from the transportation and storage of conventional fuels to alternative fuels would not cause a substantial change in risk.

There are various existing regulations and recommended safety procedures that, when employed, will reduce hazards impacts associated with use of alternative clean fuels to the same or lower level as for conventional fuels. Table 4.4-4 summarizes some of the regulations and safety procedures associated with use of alternative fuels.

When affected vehicle owners and maintenance personnel comply with existing regulations and recommended safety procedures, hazards impacts associated with the use of alternative fuels will be the same or less than those of conventional fuels. **Accordingly, significant hazards impacts are not expected from the implementation of the 2022 AQMP control measures that encourage the use of alternative fuels.**

Conclusion – Hazards Associated with Alternative Fuels: Use of alternative fuels requires additional knowledge and training of owners/operators of fueling stations regarding maintaining and operating alternative fuel refueling stations and emergency responders. Further, as use of alternative fuels increases within the South Coast AQMD's jurisdiction, use of conventional fuels such as gasoline and diesel will decline. As a result, explosion and flammability hazards associated with conventional fuels will also decline. In addition, hazards and hazardous clean-up associated with accidental releases of conventional fuels, especially diesel, will be reduced as the use of alternative fuels increases.

For the storage and dispensing of alternative fuels, compliance with existing regulations and recommended safety procedures will ensure that any potential hazards impacts associated with alternative clean-fuels are expected to be the same or less than those of conventional fuels. Accordingly, hazards impacts from the increased use of alternative fuels are expected to be similar to or less than hazards associated with conventional fuels. **Therefore, significant hazard impacts are not expected from the increased storage and use of alternative fuels and no mitigation measures are required.**

The transportation analysis demonstrated that, of the alternative fuels analyzed, none were expected to have significant adverse hazards impacts during various transportation release scenarios except for hydrogen due to the potential for new construction of a natural gas pipeline to supply fuel to hydrogen production equipment and LNG during transportation. Because of extensive state and federal requirements applicable to new and existing natural gas pipelines, no other mitigation measures have been identified for this hazard. Similarly, because of the extensive state and federal requirements applicable to tanker trucks hauling LNG, no other mitigation measures have been identified for this hazard. Since no significant impacts were identified for the use of the other alternative fuels, mitigation measures are not required to be identified for those other alternative fuels.

TABLE 4.4-4
Summary of Hazards and Existing Safety Regulations and Procedures Associated with Alternative Clean-Fuels

Fuel Type	Hazard	Existing Safety Regulations and Procedures
Ethanol	Pure ethanol can ignite in enclosed spaces such as fuel tanks since its upper flammability limit is 19 percent and it is slightly heavier than air.	The addition of materials inside the fuel tank can arrest and quench flame propagation. Isolation from sparks and ignition sources is required to avoid ignition inside the fuel tank.
CNG	1. CNG bottles are typically stored outside and are required to be above ground (NFPA 52) as opposed to below ground for gasoline or diesel tanks. There is a risk of vehicles colliding with the bottles causing a gas release. 2. Releasing gas in a maintenance shop can potentially create explosive hazards.	1. The effects of collisions can be reduced by installing curbing and bollards to protect the tanks from vehicle operations. [LAFC 57.42.16]. 2. Installing methane detection systems where CNG is stored can provide early detection of leaks and alert the maintenance personnel. (If integrated with vent systems, vents are not required to operate continuously - CFC 2903.2.5). Ignition sources can be reduced/eliminated by ensuring that all electrical systems where the CNG is stored are explosion proof (smoking and open flames are prohibited under CFC 2901.7). Providing adequate ventilation can prevent the occurrence of explosive conditions (required under CFC 2903.1). Procedures can be established to ensure that all vehicles requiring maintenance are defueled and depressurized before admission to the maintenance depot.
LPG	1. LPG is typically stored outside and is required to be above ground (NFPA 58) as opposed to below ground for gasoline or diesel tanks. There is a risk of vehicles colliding with the bottles causing a gas release. 2. Releasing LPG in an enclosed area where there are potential ignition sources such as a maintenance shop may pose an explosive hazard. (A flammable concentration within an enclosed space in the presence of an ignition source can explode).	1. The effects of collisions can be reduced by installing curbing and bollards to protect the tanks from vehicle operations. [LAFC 57.42.16]. 2. Installing flammable gas detection systems where LPG is stored can provide early detection of leaks and alert the maintenance personnel (which is required for LPG under CFC 2902.5). Ignition sources can be reduced/eliminated by ensuring that all electrical systems where LPG is stored are explosion proof (smoking and open flames are prohibited under CFC 2901.7). Vehicle fuel shut-off valves shall be closed prior to repairing any portion of the vehicle fuel system. [CFC 2902.6].

TABLE 4.4-4 (continued)
Summary of Hazards and Existing Safety Regulations and Procedures
Associated with Alternative Clean-Fuels

Fuel Type	Hazard	Existing Safety Regulations and Procedures
LNG	1. LNG is a cryogenic liquid and has the potential risk to workers of burns (frostbite) that can be suffered if workers come in contact with the liquid or with surfaces that are not insulated. 2. Releasing LNG in an enclosed area where there are potential ignition sources such as a maintenance shop may pose an explosive hazard. (A flammable concentration within an enclosed space in the presence of an ignition source can explode). 3. LNG is generally stored above ground. Since it is a cryogenic liquid, in the event of a release, a fraction of the liquid immediately flashes off to gas while the majority of the remainder will pool and boil violently emitting dense vapor. If a source of ignition is present, the boiling liquid, dense vapor, and gas could explode and burn threatening surrounding facilities and other storage vessels.	1. Proper safety equipment and training can reduce these hazards. 2. Installing flammable gas detection systems where LNG is stored can provide early detection of leaks and alert the maintenance personnel (which is required for LNG under CFC 2903.3). Ignition sources can be reduced/eliminated by ensuring that all electrical systems where LNG is stored are explosion proof (smoking and open flames are prohibited under CFC 2901.7). Providing adequate ventilation can prevent the occurrence of explosive conditions (required by CFC 2903.1). Vehicle fuel shut-off valves shall be closed prior to repairing any portion of the vehicle fuel system (CFC 2903.4.1). Vehicles fueled by LNG, which may have sustained damage to the fuel system, shall be inspected for integrity with a gas detector before being brought into an enclosed area for maintenance. [CFC 2903.4.2]. 3. Tanks can be protected by containment dikes (required if neighboring tanks can be affected LAFC 57.42.11) and physically separated LAFC 57.42.10) so that they do not interact in case of a fire or explosion. Deluge systems can be installed to cool neighboring tanks in case of a fire.
Biodiesel	Certain materials used in conventional petroleum storage are not compatible with pure biodiesel.	Use biodiesel compatible plastic and rubber for fittings.
Hydrogen	Releasing gas in enclosed spaces with its related explosive hazards may pose an explosive hazard. (A flammable concentration within an enclosed space in the presence of an ignition source can explode).	Installing combustible gas detection systems where hydrogen is stored can provide early detection of leaks. Ignition sources can be reduced/eliminated by ensuring that all electrical systems where hydrogen is stored are explosion proof. Providing adequate ventilation can prevent the occurrence of explosive conditions. Procedures can be established to ensure that all vehicles are defueled prior to maintenance.

TABLE 4.4-4 (concluded)
Summary of Hazards and Existing Safety Regulations and Procedures Associated with Alternative Clean-Fuels

Fuel Type	Hazard	Existing Safety Regulations and Procedures
Electricity (for Electric Vehicles and Hybrid Vehicles)	1. Releasing gas in enclosed spaces with its related explosive hazards may pose an explosive hazard. (A flammable concentration within an enclosed space in the presence of an ignition source can explode). 2. Certain types of batteries that are used in commercially available electric vehicles emit hydrogen during the charging process. Emission of hydrogen gas in an enclosed setting such as a garage presents the potential for the accumulation of flammable concentrations. 3. Li-ion batteries that are used in some commercially available electric vehicles can combust spontaneously.	1. Installing combustible gas detection systems can provide early detection of leaks. Ignition sources can be reduced/eliminated by ensuring that all electrical systems in the shop are explosion proof. Providing adequate ventilation can prevent the occurrence of explosive conditions. Procedures can be established to ensure that all vehicles are defueled prior to maintenance. 2. Forced ventilation can prevent build-up but if ventilation fails, a hazardous condition can occur. NEC and SAE recommended practices provide strict guidance for eliminating hydrogen gas risk. 3. Reinforced casing and battery cooling systems can prevent the combustion of Li-ion batteries. FMVSS 305 and SAE recommendations provide guidance for eliminating combustion risk.

FMVSS = Federal Motor Vehicle Safety Standard
NEC = National Electric Code
SAE = Society of Automotive Engineers

Lastly, the hazard impacts associated with using batteries in electric and hybrid vehicles were concluded to be less than significant. Because no significant hazard impacts were identified that pertain to using batteries in electric and hybrid vehicles when compared to conventional fueled vehicles, no mitigation measures are required.

Project-Specific Mitigation: For the potentially significant adverse hazards impacts associated with the potential for new construction of a natural gas pipeline to supply fuel to hydrogen production equipment and LNG during transportation, no other mitigation measures have been identified beyond the extensive state and federal requirements applicable to new and existing natural gas pipelines and LNG transport. Since no significant impacts were identified for the other alternative fuels, no mitigation measures are required for the other alternative fuels.

Because of the extensive state and federal requirements on new (and existing) natural gas pipelines, no other feasible mitigation measures have been identified. All regulations are expected to be implemented and enforced. Implementation of these extensive requirements is expected to minimize the severity of potential hazard impacts of natural gas pipeline releases should they occur. The operational impacts associated with the new natural gas pipeline would remain significant as a release could potentially impact receptors, including residences, and would be a new or intensified hazard.

Remaining Impacts from Use of Alternative Fuels: No mitigation measures were identified that would reduce the hazard and hazardous material impacts to less than significant level for the impacts associated with the potential for new construction of a natural gas pipeline to supply fuel to hydrogen production equipment and from a transportation release of LNG. Therefore, the operational impacts associated with the new natural gas pipeline would remain significant as a release could potentially impact receptors, including residences, and would be a new or intensified hazard. In addition, the hazards and hazardous material impacts from exposure to the LNG from the cataclysmic destruction of the LNG storage tank would also remain significant.

4.4.3.3 Reformulated Coatings, Solvents, Adhesives, and Lubricants

Control Measure CTS-01 could require reformulation of certain coatings, adhesives, and lubricants to meet lower future VOC content limits. In addition, Control Measure CTS-01 would remove the VOC exemption status for parachlorobenzotriflouride (PCBTF) and tert-butyl acetate (tBAc) to address toxicity concerns. The California Office of Environmental Health and Hazard Assessment (OEHHA) has determined that these compounds are potentially carcinogenic and have consequently developed unit risk factors for these compounds. Due to OEHHA's determinations, the phase-out of the exemption status of PCBTF and tBAc in architectural coatings including industrial maintenance and anti-graffiti coatings, automotive coatings, paint thinners, multi-purpose solvents, and adhesives is needed to reduce exposure to toxic materials. Removal of the VOC exemption status for PCBTF and tBAc may result in some increases to VOC emissions from coating, solvent, and adhesive product categories that rely on formulations with these compounds to achieve low VOC content.

While the goal of the reformulated products would be to have lower VOC content, the reformulations could have widely varying flammability and health effects depending on the chemical characteristics of the replacement solvents chosen. While most reformulations are expected to be made with water, which is not flammable and does not have adverse health impacts, other reformulations could be made with an exempt, but extremely flammable solvent, such as acetone. Acetone is an exempt compound from air quality rules and regulations because of its low reactivity. In addition, coatings, solvents, adhesives, and lubricants can also be reformulated with other solvents that are not exempted from the definition of a VOC in South Coast AQMD's Rule 102, but that also have flammability and health effects issues.

Table 4.4-5 identifies a list of typical conventional solvents and possible replacement solvents that may be used in the manufacture of coatings, adhesives, and lubricants along with their chemical characteristics pertaining to whether each substance is fire hazard. As illustrated in Table 4.4-5, the flammability classifications by the National Fire Protection Association (NFPA) are the same for acetone as well as for other conventional solvents that are currently used in existing formulations such as tBAc, toluene, xylene, methyl ethyl ketone (MEK), isopropanol, butyl acetate, and isobutyl alcohol. Because acetone has the lowest flash point of all the chemicals listed, from a flammability perspective, reformulations made with acetone would represent the worst-case. However, it is important to note that acetone also has one of the highest LEL, 2.6 percent by volume, which means that acetone vapors will not cause an explosion unless the vapor concentration exceeds 26,000 ppm.

In contrast, a conventional solvent such as toluene can cause an explosion at 1.3 percent by volume or 13,000 ppm, which poses a much greater risk of explosion when compared to acetone. Similarly, the concentration of xylene, another conventional solvent, can cause an explosion at even lower concentrations than toluene at 1.0 percent by volume or 10,000 ppm. However, facility operators are required to follow operating guidelines when working with flammable chemicals. These guidelines specify well-ventilated areas, as prescribed by the fire department codes, so that LEL concentrations would be avoided when working with flammable chemicals.

While a "worst-case" flammability scenario could be that all of the affected 2022 AQMP coatings, solvents, adhesives and lubricants would be reformulated with acetone to meet the VOC content limits, due to lower costs, most future reformulated products will likely be reformulated using primarily water. Water-based coatings are generally not flammable and typically have a lower NFPA classification, and a lower Consumer Product Safety Commission classification when compared to coatings formulated with conventional solvents.

Chemistry classes at all levels from grade school to universities, as well as industrial laboratories, use acetone for wiping down counter tops and cleaning glassware. Additional uses for acetone include solvent for paint, varnish, lacquers, inks, adhesives, floor coatings, and cosmetic products including nail polish and nail polish remover. Further, it is currently used widely in coating and solvent formulations.

Labels and SDSs accompanying acetone-based products caution the user regarding acetone's flammability and advise the user to "*keep the container away from heat, sparks, flame, and all other sources of ignition. The vapors may cause flash fire or ignite explosively. Use only with ventilation*." All of the large coating manufacturers currently offer pure acetone for sale with similar warnings. The Uniform Fire Code (UFC) treats solvents such as acetone, butyl acetate, and MEK as Class I Flammable Liquids. Further, the UFC considers all of these solvents to present the same relative degree of fire hazard. [South Coast AQMD, 2003].

A list of conventional and potential replacement solvents properties and their related health hazards information are shown in Tables 4.4-5 and 4.4-6, respectively. As illustrated in Tables 4.4-5 and 4.4-6, some of the potential replacement solvents have lower or less severe threshold limit values (TLVs), permissible exposure levels (PELs), or immediately dangerous to life or health concentrations (IDLHs) than some of the conventional solvents. For example, acetone would be considered to have less health hazards than all of the conventional solvents listed. However, there are some replacement solvents that could have higher, more severe, or unknown toxicological effects. For example, the diisocyanate group of solvents appear to have more severe toxicological effects than the listed traditional solvents.

TABLE 4.4-5
Chemical Characteristics for Conventional and Potential Replacement Coating Solvents

CAS No.	Chemical Compound	Auto-ignition Temperature (°F)	Boiling Point (@760 mmHg, °F)	Evaporation Rate @ 25 °C (Butyl Acetate = 1)	Flash Point (°F)	LEL/ UEL [a] (% by Vol.)	Vapor Pressure (mmHg @ 20 °C)	NFPA Flammability Rating [b]	Flammability[c]
Conventional Solvents									
67-64-1	Acetone	538	56	6.1	-4	2.6/12.8	180	3	Extremely Flammable
80-05-7	Bisphenol A	N/A	428	N/A	N/A	N/A	N/A	0	N/A
123-86-4	n-Butyl acetate	N/A	257	1	73	1.7/7.6	15	3	Extremely Flammable
111-79-2	2-Butoxyethanol	471.2	340.7	N/A	141.8	1.1/12.7	0.8	2	Combustible
78-92-2	sec-Butyl alcohol	N/A	208	N/A	81	1.7/9.8	11.5	3	Flammable
108-94-1	Cylohexane	788	312.1	N/A	111	1.1/9.4	0.53	2	Combustible
25265-71-8	Diethylene glycol	444	471	N/A	255	1.6/10.8	1	1	Combustible
34590-94-8	Dipropylene glycol methyl ether	278.6	408	N/A	180	1.1/3	0.5	3	Combustible
29911-28-2	Dipropylene glycol monobutyl ether	N/A	441	N/A	205	N/A	0.06	1	Combustible
100-41-4	Ethylbenzene	809.6	276.8	0.84	70	0.8/7	6.75	3	Flammable
103-09-3	2-Ethylhexyl acetate	N/A	390	N/A	185	N/A	N/A	2	Combustible
107-21-1	Ethylene glycol	748	388	0.01	232	3.2/15.3	0.06	1	Combustible
109-59-1	Ethylene glycol isopropyl ether	N/A	109.5	N/A	109	1.6/13	2.6	2	Combustible
50-00-0	Formaldehyde	806	- 2	N/A	147	N/A	N/A	4	Combustible
78-83-1	Isobutyl alcohol	780	226	0.82	82	1.2/10.9	9	3	Flammable
108-21-4	Isopropyl acetate	N/A	109.5	N/A	39	1.8/8	47	3	Flammable
67-63-0	Isopropyl alcohol	399	180	2.3	53	2/12.7	33	3	Extremely Flammable
64742-95-6	Light aromatic hydrocarbons	880	335	0.3	180	0.6/7	11	2	Combustible
110-43-0	Methyl amyl ketone	N/A	301	N/A	106	1.1/7.9	2.14	2	Combustible
78-93-3	Methyl ethyl ketone	474	80	4	16	1.8/11.5	8.7	3	Extremely Flammable
108-10-1	Methyl isobutyl ketone	860	291	0.46	97	1/8.2	5	3	Flammable
107-87-9	Methyl n-propyl ketone	N/A	271.5	N/A	45	1.5/8.2	27	3	Flammable

TABLE 4.4-5 (continued)
Chemical Characteristics for Conventional and Potential Replacement Coating Solvents

CAS No.	Chemical Compound	Auto-ignition Temperature (°F)	Boiling Point (@760 mmHg, °F)	Evaporation Rate @ 25 °C (Butyl Acetate = 1)	Flash Point (°F)	LEL/ UEL [a] (% by Vol.)	Vapor Pressure (mmHg @ 20 °C)	NFPA Flammability Rating [b]	Flammability[c]
Conventional Solvents									
64741-41-9	Mineral spirits (Stoddard)	232	154-188	0.1	109-113	1.0 / 7	1.1	2	Combustible[d]
64742-94-5	Heavy aromatic naphtha	830	719.6	>0.1	145	1.8/11.7	1	2	Combustible
91-20-3	Naphthalene	978.8	424	N/A	176	0.9/5.9	0.03	2	Combustible
8002-05-9	Petroleum distillate (Naphtha)	N/A	86-460	N/A	20 - 100	1.1/5.9	40	3	Extremely Flammable
108-88-3	Toluene	538	111	2	41	1.3/7	22	3	Flammable[d]
108-67-8	1,3,5-Trimethylbenzene	550	329	0.01	122	2.6/12.5	2	2	Combustible
95-63-6	1,2,4-Trimethylbenzene	932	337	0.01	112	0.9/6.4	1	2	Combustible
64742-89-8	V.M.&P Naphtha	288	266.9	1.2	53.1	1.2/6	20	3	Flammable
1330-20-7	Xylene	499	139	0.8	81	1.0/6.6	6	3	Flammable[d]
Potential Replacement Solvents									
67-64-1	Acetone	538	56	6.1	-4	2.6/12.8	180	3	Extremely Flammable
100-51-6	Benzyl alcohol	817	401	0.006	199	1.3/13	0.15	2	Combustible
71-36-3	n-Butanol	N/A	242.5	N/A	95	1.4/11.2	4	3	Flammable
123-86-4	n-Butyl acetate	N/A	257	1	73	1.7/7.6	15	3	Extremely Flammable
85-68-7	Butyl benzyl phthalate	797	698	N/A	390	N/A	8.6E-6	1	Combustible
616-38-6	Dimethyl carbonate	869	194	3.2	64	4.2/12.9	42	3	Flammable
108-01-0	2-Dimethylaminoethanol	455	282	N/A	104	1.6/11.9	3.18	2	Combustible
117-81-7	Dioctyl phthalate	735	446	N/A	405	0.3/	< 0.01	1	Combustible
25265-71-8	Dipropylene glycol	590	449	N/A	250	2.9/12.6	0.03	1	Combustible
763-69-9	Ethyl 3-Ethoxypropionate	N/A	338	N/A	138	N/A	< 1	2	Combustible
141-78-6	Ethyl acetate	800	171	N/A	25	2.2/9	73	3	Extremely Flammable
64-17-5	Ethyl alcohol	685	173	1.4	55	3.3/19	44	3	Extremely Flammable
111-76-2	Ethylene glycol monobutyl ether	460	340	0.07	144	1.1/12.7	0.8	2	Combustible
111-80-5	Ethylene glycol monoethyl ether	455	275	0.41	120	1.7/15.6	4	2	Combustible
109-86-4	Ethylene glycol monomethyl ether	545	256	0.53	100	1.8/19.8	6	2	Combustible

TABLE 4.4-5 (concluded)
Chemical Characteristics for Conventional and Potential Replacement Coating Solvents

CAS No.	Chemical Compound	Auto-ignition Temperature (°F)	Boiling Point (@760 mmHg, °F)	Evaporation Rate @ 25 °C (Butyl Acetate = 1)	Flash Point (°F)	LEL/ UEL [a] (% by Vol.)	Vapor Pressure (mmHg @ 20 °C)	NFPA Flammability Rating [b]	Flammability[c]
Potential Replacement Solvents (continued)									
2807-30-9	Ethylene glycol monopropyl ether	455	300	0.22	124	1.3/15.8	1.3	2	Combustible
149-57-5	2-Ethylhexanoic acid	699	442	N/A	244	1/8.6	< 0.01	1	Combustible
822-06-0	Hexamethylene diisocyanate	N/A	415	N/A	284	1/	0.5	1	Combustible
64742-53-6	Hydrotreated light naphthenic distillate	>600	500	N/A	295	N/A	0.04	1	Combustible
79-20-9	Methyl acetate	501	135	5.3	14	3.1/16	173	3	Extremely Flammable
96-29-7	Methyl ethyl ketoxime	N/A	306	N/A	1380	N/A	0.9	2	Combustible
101-68-8	Methylene bisphenyl diisocyanate	464	597	N/A	390	N/A	5E-6	1	Combustible
98-56-6	Parachlorobenzotrifluoride	>500	282	0.9	109	0.9/10.5	5.3	1	Combustible
57-55-6	Propylene glycol	700	370	0.01	210	2.6/12.5	0.08	1	Combustible
108-65-6	Propylene glycol monomethyl ether acetate	N/A	294	N/A	109	1.1/13.1	2.53	2	Combustible
770-35-4	Propylene glycol phenyl ether	923	469	0.002	239	0.8/6.0	0.01	3	Flammable
1569-01-3	Propylene glycol propyl ether	N/A	302	N/A	118	N/A	N/A	2	Combustible
100-42-5	Styrene	914	293	0.5	88	1.1/6.1	4.5	3	Flammable
540-88-5	Tertiary butyl acetate	N/A	208	2.8	62	1.5 /N/A	N/A	3	Flammable
25265-77-4	Texanol	730	471	< 0.01	248	0.6/4.2	0.01	1	Combustible
26471-62-5	Toluene diisocyanate	1148	478	N/A	250	0.9/9.5	0.025	1	Combustible
121-44-8	Triethylamine	480	194	5.6	16	1.2/8.0	57.1	3	Extremely Flammable
144-19-4	Trimethyl 1,3-pentanediol	572	450	N/A	235	N/A	N/A	1	Combustible

[a] Lower Explosive Limit / Upper Explosive Limit

[b] NFPA Flammability Rating: 0 = Not Combustible; 1 = Combustible if heated; 2 = Caution: Combustible liquid flash point of 100° to 200°F; 3 = Warning: Flammable liquid flash point below 100°F; 4 = Danger: Flammable gas or extremely flammable liquid

[c] The Consumer Products Safety Commission (CPSC) has Labeling and Banning Requirements for Chemicals and Other Hazardous Substances which are located in 15 U.S.C.§1261 and 16 CFR Part 1500. Specifically, the flammability of a product is defined in 16 CFR Part 1500.3 (c)(6) and is based on flash point. For example, a flammable liquid needs to be labeled as: 1) "Extremely Flammable" if the flash point is below 20 °F; 2) "Flammable" if the flash point is above 20 °F but less than 100°F; or, 3) "Combustible" if the flash point is above 100 °F up to and including 150 °F.

[d] Requires Special Hazards Labeling per 16 CFR Part 1500.14 (a)(3) & (b)(3)

TABLE 4.4-6
Health Hazards of Conventional and Potential Replacement Solvents

CAS No.	Chemical Compound	NFPA Health Rating [a]	TLV (ACGIH)[b] (ppm)	PEL (OSHA) [c] (ppm)	IDLH (NIOSH)[d] (ppm)	Health Effects
Conventional Solvents						
67-64-1	Acetone	1	500	1,000	2,500	Mild irritation - eye, nose, throat, skin; narcosis
80-05-7	Bisphenol A	2	N/A	N/A	N/A	Mild irritation - eyes and skin
123-86-4	n-Butyl acetate	2	150	150	1,700	Moderate irritation – eye, nose, throat; narcosis
111-79-2	2-Butoxyethanol	1	20	50	5	Mild irritation - eyes, skin and respiratory
78-92-2	sec-Butyl alcohol	2	100	150	2,000	Mild irritation - eye, nose, throat, skin; narcosis
108-94-1	Cyclohexane	2	20	50	700	Moderate irritation- eye, skin, nose and throat
25265-71-8	Diethylene glycol	1	N/A	N/A	N/A	Mild irritation - eyes and skin
34590-94-8	Dipropylene glycol methyl ether	0	100	100	100	Mild irritation – eye, skin, respiratory, digestion
29911-28-2	Dipropylene glycol monobutyl ether	1	N/A	N/A	N/A	Potential severe irritation to eyes, nose and throat; moderate skin and digestion irritation
100-41-4	Ethylbenzene	2	100	100	800	Moderate irritation – eye, skin, nose, throat
103-09-3	2-Ethylhexyl acetate	2	N/A	N/A	N/A	Mild irritation – eye, skin, respiratory, digestion
107-21-1	Ethylene glycol	2	100	50	N/A	Mild irritation – respiratory, skin, kidney, reproductive
109-59-1	Ethylene glycol isopropyl ether	2	25	25	N/A	Mild irritation – eye, skin, respiratory, digestion
50-00-0	Formaldehyde	3	0.30	1	0.016	Irritation - skin, eyes, nose, and throat. High levels of exposure may cause some types of cancers.
78-83-1	Isobutyl alcohol	1	50	100	8,000	Mild irritation – eye, nose, throat; suspect carcinogen
108-21-4	Isopropyl acetate	1	100	250	1,800	Mild irritation – eye, skin, nose, throat
67-63-0	Isopropyl alcohol	1	200	400	2,000	Mild irritation – eyes, nose, throat; narcosis
64742-95-6	Light aromatic hydrocarbons	2	10-100	10-100	25-100	Mild irritation – eye, skin, respiratory, digestion
110-43-0	Methyl amyl ketone	1	50	100	100	Mild irritation - eyes and skin
78-93-3	Methyl ethyl ketone	1	200	200	3,000	Mild irritation – eye, nose, throat; narcosis; skin
108-10-1	Methyl isobutyl ketone	2	50	50	50	Potential serious eye irritation; mild skin and respiratory irritation
107-87-9	Methyl n-propyl ketone	2	150	200	150	Moderate irritation – eye, skin, respiratory

TABLE 4.4-6 (continued)
Health Hazards of Conventional and Potential Replacement Solvents

CAS No.	Chemical Compound	NFPA Health Rating [a]	TLV (ACGIH)[b] (ppm)	PEL (OSHA) [c] (ppm)	IDLH (NIOSH)[d] (ppm)	Health Effects
Conventional Solvents						
64741-41-9	Mineral spirits (Stoddard)	1	100	500	5,000	Narcosis; mild irritant
64742-94-5	Heavy aromatic naphtha	2	N/A	N/A	N/A	Mild irritation – eye, skin, respiratory, digestion
91-20-3	Naphthalene	4	10	10	10	Moderate irritation - eye, skin; fatal if inhaled
8002-05-9	Petroleum distillate (Naphtha)	1	400	500	1,100	Mild irritation; narcosis
108-88-3	Toluene	2	50	200	500	Moderate irritation – eye, nose, throat; narcosis; skin; suspect teratogen; mutagen, nervous system
108-67-8	1,3,5-Trimethylbenzene	2	25	25	25	Mild irritation - skin, eye; harmful if inhaled
95-63-6	1,2,4-Trimethylbenzene	2	25	25	25	Mild irritation - skin; serious irritation- eye; harmful if inhaled
64742-89-8	V.M.&P Naphtha	1	300	500	N/A	Mild irritation - skin, eye
1330-20-7	Xylene	2	100	100	1,000	Mild irritation – eye, nose, throat; narcosis; skin
Potential Replacement Solvents						
67-64-1	Acetone	1	500	1,000	2,500	Mild irritation - eye, nose, throat, skin; narcosis
100-51-6	Benzyl alcohol	2	N/A	N/A	N/A	Mild irritation - skin, respiratory; severe eye and ingestion irritation
71-36-3	n-Butanol	2	20	100	1,400	Potential severe irritation to eyes, nose and throat; moderate skin, digestion and respiratory irritation
123-86-4	n-Butyl acetate	2	150	150	150	Mild irritation - skin, eye, respiratory, digestion
85-68-7	Butyl benzyl phthalate	1	N/A	N/A	N/A	Mild irritation - eye, nose, throat, skin
108-01-0	2-Dimethylaminoethanol	3	N/A	N/A	N/A	Potential severe irritation to eyes, skin, throat and digestion; high risk to unborn child
616-38-6	Dimethyl carbonate	0	N/A	N/A	N/A	Mild irritation - respiratory, skin, eye, digestive
117-81-7	Dioctyl phthalate	0	N/A	N/A	N/A	Mild irritation - respiratory, skin, eye, digestive
25265-71-8	Dipropylene glycol	1	N/A	N/A	N/A	Mild irritation - respiratory, skin, eye, digestive, nausea, dizziness; may cause liver and kidney damage
763-69-9	Ethyl 3-Ethoxypropionate	1	0.3	N/A	0.01	Mild irritation - respiratory, skin, eye, digestive

TABLE 4.4-6 (continued)
Health Hazards of Conventional and Potential Replacement Solvents

CAS No.	Chemical Compound	NFPA Health Rating [a]	TLV (ACGIH)[b] (ppm)	PEL (OSHA) [c] (ppm)	IDLH (NIOSH)[d] (ppm)	Health Effects
Potential Replacement Solvents						
141-78-6	Ethyl acetate	1	400	400	400	Mild irritation - respiratory, skin, eye, digestive; may cause acute inhalation
64-17-5	Ethyl alcohol	2	1,000	1,000	1,000	Mild irritation - respiratory, skin, eye, digestive
111-76-2	Ethylene glycol monobutyl ether	2	20	50	700	Mild irritation – eye, nose, throat; anemia; skin
111-80-5	Ethylene glycol monoethyl ether	2	5	200	500	Cumulative blood damage; moderate irritation of eyes, throat, skin
109-86-4	Ethylene glycol monomethyl ether	2	5	25	N/A	Cumulative CNS; skin; suspect reproductive effects; blood disorders
2807-30-9	Ethylene glycol monopropyl ether	2	N/A	N/A	N/A	Mild irritation - eye, nose, skin, respiratory, digestive
149-57-5	2-Ethylhexanoic acid	2	N/A	N/A	N/A	Mild irritation - eye, nose, skin, respiratory, digestive
822-06-0	Hexamethylene diisocyanate	4	0.005	N/A	0.005	Potential fatality if inhaled; moderate skin, eye irritation; toxic if swallowed
64742-53-6	Hydrotreated light naphthenic distillate	1	N/A	N/A	N/A	Mild irritation - eye, skin, respiratory, digestive
79-20-9	Methyl acetate	2	200	200	200	Mild irritation - eye, nose, skin, respiratory, digestive
96-29-7	Methyl ethyl ketoxime	2	N/A	N/A	N/A	Mild irritation - eye, nose, skin, respiratory, digestive
101-68-8	Methylene bisphenyl diisocyanate	3	0.01	0.02	40	Mild irritation – respiratory
98-56-6	Parachlorobenzotrifluoride	2	N/A	N/A	N/A	Mild irritation - eye, nose, respiratory, digestive
57-55-6	Propylene glycol	0	100	100	N/A	Mild irritation – slight eye, anesthesia
108-65-6	Propylene glycol monomethyl ether acetate	1	N/A	N/A	N/A	Mild irritation - eye, nose, skin, respiratory, digestive
770-35-4	Propylene glycol phenyl ether	2	N/A	N/A	N/A	Mild irritation - eye, nose, skin, respiratory, digestive
1569-01-3	Propylene glycol propyl ether	2	N/A	N/A	N/A	Mild irritation - eye, nose, skin, respiratory, digestive
100-42-5	Styrene	2	20	100	5,000	Mild irritation – eye, respiratory, neurotoxicity

TABLE 4.4-6 (concluded)
Health Hazards of Conventional and Potential Replacement Solvents

CAS No.	Chemical Compound	NFPA Health Rating [a]	TLV (ACGIH)[b] (ppm)	PEL (OSHA) [c] (ppm)	IDLH (NIOSH)[d] (ppm)	Health Effects
Potential Replacement Solvents						
540-88-5	Tertiary butyl acetate	2	200	200	200	Mild irritation - eye, nose, skin, respiratory, digestive; prolonged exposure may cause dermatitis, blood effects, central nervous system and kidney problems
25265-77-4	Texanol	1	N/A	N/A	N/A	Mild irritation - eye, nose, skin, respiratory, digestive
26471-62-5	Toluene diisocyanate	3	0.005	0.02	10	Mild irritation – respiratory
121-44-8	Triethylamine	3	1	25	200	Mild irritation - eye; Cumulative eye, respiratory, and hematological effects.
144-19-4	Trimethyl 1,3-pentanediol	0	N/A	N/A	N/A	Mild irritation - eye, nose, skin, respiratory, digestive

[a] NFPA Health Rating: 0 = No unusual hazard; 1 = Caution: May be irritating; 2 = Warning: May be harmful if inhaled or absorbed; 3 = Warning: Corrosive or toxic. Avoid skin contact or inhalation; 4 = Danger: May be fatal on short exposure. Specialized protective equipment required.
[b] TLV = Threshold Limit Value, a recommended guideline established by the American Conference of Governmental Industrial Hygiene (ACGIH)
[c] PEL = Permissible Exposure Limit, established by OSHA
[d] IDLH = Immediately Dangerous to Life and Health, established by NIOSHA

In addition to the health hazard values summarized in Table 4.4-5, there are several chemicals listed that are identified as toxic air contaminants, including but not limited to the following: ethylbenzene, formaldehyde, methyl ethyl ketone (MEK), methyl isobutyl ketone (MIBK), toluene, triethylamine, and xylene. The use of materials that contain toxic compounds is of particular concern, in both existing formulations as well as reformulated products, to the South Coast AQMD and other agencies such as U.S. EPA, CARB, OSHA, and OEHHA (which is part of the California Environmental Protection Agency (Cal/EPA), because some of the TACs used in some coatings are considered carcinogens (cancer-causing), while others may have other non-cancer health effects.[201]

For these reasons, there are two local rules that regulate TAC emissions at facilities, including those using coatings: South Coast AQMD Rule 1401 – New Source Review of Toxic Air Contaminants, and South Coast AQMD Rule 1402 – Control of Toxic Air Contaminants From Existing Sources. Rule 1401 applies to new and modified facilities, including coating facilities, and Rule 1402 applies to facility-wide risk at existing facilities. Since the majority of coating facilities located within South Coast AQMD's jurisdiction are existing sources, the requirements in Rule 1402 are the main drivers for reducing overall risk and, therefore, TAC emissions from this industry.

Thus, when coatings and other products are reformulated as part of implementing the various control measures proposed in the 2022 AQMP, manufacturers could potentially use replacement chemicals that could pose new or different health risks, but South Coast AQMD Rules 1401 and 1402 would limit potential exposures to nearby receptors for manufacturers within the Basin. Further, future South Coast AQMD rulemaking to lower VOC limits would require individual evaluation of reformulations, the replacement chemicals, and the corresponding potential health risks. Exposure typically occurs when applying the coatings, solvents, and adhesives.

Some of the replacement solvents (e.g., triethylamine) in Table 4.4-6 are likely to be present in trace amounts during accidental releases which, considered a one-time event, would be neutralized and cleaned up before all the solvent has evaporated, so no new chronic health risk is expected. No acute risk would be generated because they would only be present in trace amounts for a brief duration until the spill is cleaned up. As shown in Table 4.4-6, the toxicity of replacement materials is generally less or no worse than conventional solvents overall but if a facility changes from using water-based products to using products that are reformulated with chemicals that may have new or different health hazards, significant adverse health hazard impacts could occur from using some low VOC reformulated products. However, as with the use of all chemicals, existing health protective regulations would continue to apply when handling and storing both flammable and toxic materials. In addition, any increase in the future use of low VOC compliant coating materials that are reformulated with water would be expected to result in a concurrent reduction in the number of accidental releases of high VOC coating materials. As a

[201] Formaldehyde, toluene, triethylamine, and xylene are classified as having both chronic and acute health effects; ethylbenzene as having chronic health effects and zinc oxide proposed as having chronic health effects; MEK as having acute health effects with future proposed risk value for chronic; and, cobalt compounds as having future proposed risk values. In addition, MIBK is classified by U.S. EPA as a HAP, but the toxicology assessment is not finalized.

result, the net number of accidental releases would be expected to remain constant or potentially be reduced.

Regarding fire hazards, if manufacturers use solvents such as Texanol, propylene glycol, etc., in future compliant water-borne coatings, significant adverse hazard impacts would not be expected to occur because, in general, these solvents are either equivalent or less flammable than conventional solvents based on NFPA ratings. However, if manufacturers reformulate with acetone, then more acetone-based (and extremely flammable) products would be on the market. Similarly, if manufacturers reformulate with products that have increased flammability than products manufactured with conventional solvents, consumers who may be used to a higher VOC product with lower flammability, may be unaware that the reformulated products may have chemicals with increased flammability and an increased risk when used.

Lastly, in general, water-based coatings and products tend to contain less flammable and less toxic materials than solvent-based coatings and products. While the continued and potentially increased use of water-based coatings and products would generally be expected to reduce the overall hazard impacts associated with solvent-based products, a switch from currently using water-based products to reformulated solvent-based products could offset any reduction realized.

Conclusion – Reformulated Coatings, Solvents, Adhesives, and Lubricants: Without knowing how many facilities currently using water-based products would switch to using reformulated solvent-based products as a result of implementing the 2022 AQMP control measures, significant impacts on fire hazards associated with reformulated coatings, solvents, and consumer products could occur. Therefore, hazards and hazardous materials impacts associated with increased flammability of potential replacement solvents are concluded to be significant. (The impact analysis relating to the toxicity of reformulated coatings, solvents, adhesives, and lubricants can be found in Subchapter 4.2, Subsection 4.2.5.2.2 - Air Quality Impacts from Control of Stationary and Area Sources.)

Project-Specific Mitigation: Since hazards and hazardous materials impacts associated with increased flammability of potential reformulated coatings, solvents, adhesives, and lubricants were found to be significant, the following mitigation measures are necessary and required as part of future rule development pertaining to reformulated products:

HZ-7: Add consumer warning requirements for all flammable and extremely flammable products.

HZ-8: Add requirements to conduct a public education and outreach program in joint cooperation with local fire departments regarding flammable and extremely flammable products that may be included in consumer paint thinners and multi-purpose solvents.

Mitigation Measure HZ-7 will be implemented by any manufacturer that supplies reformulated coatings, solvents, adhesives, and lubricants with intent to sell these products within South Coast AQMD's jurisdiction will implement. Mitigation Measure HZ-8 will be jointly implemented by the South Coast AQMD working with the local fire departments.

Remaining Impacts from Reformulated Coatings, Solvents, Adhesives, and Lubricants: The potential fire hazard impacts associated with more flammable solvents are expected to be significant prior to mitigation. While the South Coast AQMD cannot predict which coatings, solvents, adhesives, and lubricants each affected facility might choose to use in the future as reformulations become available or estimate the amount of coatings to be used, the mitigation measures are expected to be effective at informing consumers about the potential fire hazards associated with reformulated products. Thus, after mitigation, no remaining significant impacts on fire hazards are expected.

4.4.3.4 Hazards Associated With Wildfire Prevention

Control Measure MCS-02 would result in thinning and chipping to reduce excess fuel at properties located in the residential urban wild-interface areas of the San Bernardino National Forest. After further review, these thinning activities would reduce flammable materials from the urban wild-interface by removing dead, dying, and decaying material. Further the practice of thinning and use of chips as ground cover can facilitate defensible space modification by removing excess surface and ladder fuels and enhance the resiliency of underlying soil through increased water retention, complementing home hardening efforts. Therefore, Control Measure MCS-02 is expected to provide a beneficial impact by reducing the potential spread and impacts from wildfires.

4.4.4 SUMMARY OF HAZARDS AND HAZARDOUS MATERIALS IMPACTS

- Increased usage of ammonia due to implementation of control measures in the 2022 AQMP could generate significant adverse hazard impacts during routine transport as a result of an accidental release of delivered aqueous ammonia.
- The hazards impact from a catastrophic rupture of an ammonia tank is considered a potentially significant adverse hazards impact, since off-site receptors could be exposed to concentrations that would exceed the ERPG-2 toxic endpoint concentration for ammonia.
- Spent catalysts would likely be disposed of in a Class II landfill or a Class III landfill that is fitted with liners. The handling of fresh and spent catalysts is not expected to cause significant adverse hazards and hazardous materials impacts.
- The hazard impacts associated with using batteries in electric vehicles are expected to be less than the hazards associated with gasoline-powered vehicles. Thus, no remaining hazard impacts associated with using batteries for these types of vehicles are expected.
- The hazards associated with the use of hydrogen as a fuel are expected to be approximately equivalent to or less than conventional fuels, so impacts associated with hydrogen use are expected to be less than significant.
- The construction of any new hydrogen plants would be expected to be constructed within existing industrial facilities that would likely have at least 90 feet to the closest off-site receptor and, therefore, poses a less than significant hazard. Hazards impacts from the construction of new natural gas pipeline to service those hydrogen plants would be considered potentially significant.

- The hazards associated with the use of ethanol as a fuel are approximately equivalent or less compared to use of conventional fuels. Therefore, increased use of ethanol with a concurrent decline in use of conventional fuels will not significantly alter existing hazards associated with mobile source fuels. Consequently, increased use of ethanol is not expected to generate significant adverse hazard impacts.
- The hazards associated with the use of CNG as a fuel are approximately equivalent or less compared to use of conventional fuels. Therefore, increased use of CNG with a concurrent decline in use of conventional fuels will not significantly alter existing hazards associated with mobile source fuels. Consequently, increased use of CNG is not expected to generate significant adverse hazard impacts.
- The hazards associated with the use of LNG as a fuel are approximately equivalent or less compared to use of conventional fuels. Therefore, increased use of LNG with a concurrent decline in use of conventional fuels will not significantly alter existing hazards associated with mobile source fuels. Consequently, increased use of LNG is not expected to generate significant adverse hazard impacts.
- The increased transport of LNG may increase transportation hazards associated with mobile source fuels. Consequently, increased use of LNG is expected to generate significant adverse hazard impacts during transport.
- The hazards associated with use of LPG as a fuel are approximately equivalent or less compared to use of conventional fuels. Therefore, increased use of LPG with a concurrent decline in use of conventional fuels will not significantly alter existing hazards associated with mobile source fuels. Consequently, increased use of LPG is not expected to generate significant adverse hazard impacts.
- The use of biodiesel and renewable diesel is considered safer than conventional diesel fuels; therefore, increase use of biodiesel and renewable diesel with a concurrent decline in use of conventional diesel is not expected to generate significant adverse hazard impacts.
- While the continued and potential increased use of water-based coatings and products would generally be expected to reduce the overall hazard impacts associated with solvent-based products, the potential reformulation of coatings and products to products that are more flammable (e.g., acetone) could result in a significant impact on fire hazards. Mitigation measures are expected to reduce these hazard impacts to less than significant.
- Chipping and grinding of wood and greenwaste under Control Measure MCS-02 is expected to provide a beneficial impact by reducing the potential spread and impacts from wildfires.

4.4.5 CUMULATIVE HAZARDS AND HAZARDOUS MATERIALS IMPACTS AND MITIGATION MEASURES

As discussed in Chapter 2 - Project Description, in order to attain the 8-hour ozone standard, the majority of NOx emission reductions must come from mobile sources, including ships, aircraft,

and locomotive engines, that are primarily regulated under federal and international jurisdiction, with limited authority for CARB and the South Coast AQMD. Attainment is not possible without significant reductions from these sources. Therefore, CARB has prepared the Proposed 2022 State Strategy for the State Implementation Plan (Proposed 2022 State Strategy) which describes the State's strategy and commitments to reduce emissions from state-regulated sources needed to support attainment of the 70 ppb 8-hour ozone standard. The Proposed 2022 State SIP measures are described in Chapter 2, Section 2.7.3.[202]

SCAG as the Metropolitan Planning Organization (MPO) for the Southern California region, is mandated to comply with federal and state transportation and air quality regulations. In consultation with federal, state, and local transportation and air quality planning agencies and other stakeholders, SCAG developed the Final 2020–2045 2020 RTP/SCS, also known as Connect SoCal, and the 2021 Federal Transportation Improvement Program (FTIP), with TCMs to address the 2015 8-hour ozone standards in the Basin and these are included in three sections of Appendix IV-C of the 2022 AQMP.

In addition to the CARB and SCAG programs, Table 4.3-4 (see Energy Subchapter 4.3) summarizes the major clean transportation and GHG reduction policies that are being implemented at the state levels. The CARB SIP, SCAG's Connect SoCal, the policies in Table 4.3-4, and the 2022 AQMP all have policies that are aimed at air quality improvement, as well as GHG reductions, but may have hazards impacts.

4.4.5.1 CARB'S Proposed 2022 State Strategy

The Proposed 2022 State Strategy's impacts related to hazards and hazardous materials were determined to be significant and unavoidable because of effects of disposal of hazardous materials and hazardous wastes, the potential for hazardous materials spills, and exposure and environmental effects from lithium. Project-specific mitigation was identified that could include:

- Proponents of new or modified facilities constructed as a compliance response to the Proposed 2022 State Strategy would coordinate with local land use agencies to seek entitlements for development, including the completion of all necessary environmental review requirements (e.g., CEQA). The local land use agency or governing body would certify that the environmental document was prepared in compliance with applicable regulations and would approve the project for development.
- Based on the results of the environmental review, proponents would implement all mitigation identified in the environmental document to reduce or substantially lessen the environmental impacts of the project. Any mitigation required for a new or modified facility would be determined by a local lead agency but could include handling of hazardous materials by licensed professionals/personnel with appropriate health and safety training; require secondary containment; and keeping hazardous materials away from sensitive receptors;

[202] CARB, 2022 Proposed 2022 State Strategy for the State Implementation Plan, August 12, 2022, https://ww2.arb.ca.gov/sites/default/files/2022-08/2022_State_SIP_Strategy.pdf.

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Consequently, the potential short-term construction-related impacts and long-term operation related impacts regarding hazards and hazardous materials associated with the Proposed 2022 State Strategy would remain potentially significant and unavoidable.

4.4.5.2 SCAG SoCal Connect Plan

SCAG determined that the Connect SoCal Plan includes transportation projects and land use strategies that may create a significant hazard to the public or the environment through the transportation (via truck, rail and marine vessel), use, and/or disposal of hazardous materials/wastes, constituting a significant impact. Transportation projects and development projects anticipated under the Plan could potentially involve the use of hazardous materials such as fuels, solvents, paints, and other architectural coatings. [SCAG, 2020].

To accommodate the region's growth (3.2 million more people by 2045), the Connect SoCal Plan's land use strategies encourage growth adjacent to transit and transportation facilities in order to reduce trips and trip lengths. However, with increasing growth adjacent to such transportation facilities, there would be greater potential risk for exposure of people and property to hazardous materials from the routine transport, use, and disposal of hazardous materials/wastes. [SCAG, 2020].

In addition, implementation of the transportation projects in the Plan and growth from the Plan could result in significant impacts with regard to emitting hazardous emissions or handling of hazardous or acutely hazardous materials, substance, or waste within one-quarter mile of an existing or proposed school. The projects could also be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (the Cortese List), creating a potential significant hazard to the public or environment. [SCAG, 2020].

Significant hazard impacts were identified for safety hazards and excessive noise for people residing or working within two miles of airports. In addition, the Plan may result in significant impacts in regards to impairing implementation of or physically interfering with an adopted emergency response plan or emergency evaluation plan. [SCAG, 2020].

The Connect SoCal Plan identified a number of mitigation measures for the potentially significant hazard impacts. Regulations and policies would reduce impacts but given the regional scale of the Plan, it is not possible to determine if all impacts would be fully mitigated by existing regulations and policies. Therefore, the SCAG EIR identified project-level mitigation measures consistent with applicable regulations and policies designed to reduce impacts. Lead agencies may choose to include project-level mitigation measures in environmental documents as they determine to be appropriate and feasible. However, because of the Plan's potential to result in potentially significant hazard impacts, and SCAG's lack of authority to impose project-level mitigation measures, the SCAG EIR finds impacts related to hazards to be significant and unavoidable. [SCAG, 2020].

4.4.5.3 Summary of Cumulative Hazards and Hazardous Materials Impacts

As summarized in Section 4.4.4, the 2022 AQMP could result in the following significant adverse hazards and hazardous materials impacts:

- Increased usage of ammonia due to implementation of control measures in the 2022 AQMP could generate significant adverse hazard impacts during routine transport as a result of an accidental release of delivered aqueous ammonia.
- The hazards impact from a catastrophic rupture of an ammonia tank is considered a potentially significant adverse hazards impact since off-site receptors could be exposed to concentrations that would exceed the ERPG-2 toxic endpoint concentration for ammonia
- Hazards impacts from the construction of new natural gas pipeline to service new hydrogen plants would be considered potentially significant.
- The increased transport of LNG may increase transportation hazards associated with mobile source fuels. Consequently, increased use of LNG is expected to generate significant adverse hazard impacts during transport.
- While the continued and potential increased use of water-based coatings and products would generally be expected to reduce the overall hazard impacts associated with solvent-based products, the potential reformulation of coatings and products to products that are more flammable (e.g., acetone) could result in a significant impact on fire hazards.

Mitigation Measures HZ-1 through HZ-6 pertaining to the storage of aqueous ammonia were identified as having the potential to reduce impacts; however, these mitigation measure are not expected to reduce impacts to less than significant levels. Therefore, the remaining hazardous and hazardous materials impacts from exposure to aqueous ammonia due to tank rupture are considered to be significant after mitigation.

Regarding the potentially significant hazards impacts associated with the construction of a new natural gas pipeline to service new hydrogen plants, no mitigation measures have been identified beyond the extensive state and federal requirements applicable to new and existing natural gas pipelines.

Similarly, regarding the potentially significant adverse hazards impacts associated with LNG during transportation, no mitigation measures have been identified beyond the extensive state and federal requirements applicable to new and existing natural gas pipelines and LNG transport.

Regarding the potentially significant fire hazard impacts associated with more flammable solvents in potential reformulations of coatings, solvents, adhesives, and lubricants and products, Mitigation Measures HZ-7 and HZ-8 were identified as effective at informing consumers about the potential fire hazards associated with reformulated products. Thus, after mitigation, no remaining significant impacts on fire hazards are expected.

Implementation of the 2022 AQMP control measures, the TCMs in the Connect SoCal Plan, the SIP strategies, the state policies identified in Table 4.3-4 (see Energy Impacts, Subchapter 4.3),

when combined with other past, present, and reasonably foreseeable activities, would result in a significant increase in the use of hazards and hazardous materials, and would contribute to cumulatively considerable hazards and hazardous materials impacts.

4.4.5.4 Cumulative Mitigation Measures

Feasible Mitigation Measures HZ-1 through HZ-8 have been developed to reduce the aforementioned potentially significant hazards and hazardous materials impacts. No additional feasible mitigation measures have been identified to further reduce cumulative hazards and hazardous materials impacts.

4.4.5.5 Remaining Cumulative Hazards and Hazardous Materials Impacts After Mitigation

Cumulative impacts to hazards and hazardous materials for past, present and reasonably foreseeable future projects would remain significant and unavoidable.

SUBCHAPTER 4.5

HYDROLOGY AND WATER QUALITY

2022 AQMP Control Measures with Potential Hydrology and Water Quality Impacts

Significance Criteria

Potential Hydrology and Water Quality Impacts and Mitigation Measures

Summary of Hydrology and Water Quality Impacts

Cumulative Hydrology and Water Quality Impacts and Mitigation Measures

4.5 HYDROLOGY AND WATER QUALITY

This subchapter analyzes the potential hydrology and water quality impacts from implementing the proposed control measures in the 2022 AQMP. The NOP/IS for the 2022 AQMP (see Appendix A of this Program EIR) evaluated all of the proposed control measures and determined that some of the control measures would involve the following activities and equipment which collectively could cause potentially significant hydrology and water quality impacts: 1) potential increase in water demand; 2) potential increase in wastewater discharge and related water quality impacts; 3) water quality impacts associated with increased use of and accidental releases of alternative fuels; 4) water quality impacts associated with accidental releases of ammonia from operation of SCR technology; 5) water quality impacts associated with accidental releases from battery disposal and processing including acid spills; and, 6) water quality impacts associated the use and clean-up of reformulated products. Project-specific and cumulative hydrology and water quality impacts associated with these activities are evaluated in this subchapter of the Program EIR. No comments were received on the analysis presented in the NOP/IS that identified other potential hydrology and water quality impact areas that would require additional analysis in this Program EIR.

4.5.1 2022 AQMP CONTROL MEASURES WITH POTENTIAL HYDROLOGY AND WATER QUALITY IMPACTS

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest technology available. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emission and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and at existing and new residential developments; develop incentives to remove and replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; and improve emission leak detection and maintenance procedures.

Table 4.5-1 contains a summary of the 2022 AQMP control measures which were identified in the NOP/IS as having the potential to generate potential hydrology and water quality impacts.

TABLE 4.5-1
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP with Potential Hydrology and Water Quality Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Hydrology and Water Quality Impacts
L-CMB-01*	NOx Reductions for RECLAIM Facilities (NOx)	Installation of NOx pollution control equipment including SCRs, low NOx burners, and gas scrubbers.	Potential water demand and water quality impacts associated with use of gas scrubbers.
L-CMB-05	NOx Emission Reductions from Large Turbines	Installation of zero emission and low NOx emissions technologies for electric generating units such as fuel cells.	Potential hydrology and water quality impacts if existing steam turbines are modified or replaced.
L-CMB-06	NOx Emission Reductions from Electricity Generating Facilities	Replacement of boilers with lower-emitting turbines, installation of zero emission and low NOx emissions technologies, and the application of stricter emission requirements for diesel internal combustion engines.	Potential hydrology and water quality impacts if new steam turbines are installed.
CTS-01	Further Emission Reduction from Coatings, Solvents, Adhesives, and Lubricants	Revising the VOC content for select product categories and incentivizing the use of super-compliant zero emission and low NOx VOC materials and technologies and removing the VOC exemption status for parachlorobenzotriflouride (PCBTF) and tert-butyl acetate (tBAc) to address toxicity concerns.	Potential hydrology and water quality impacts due to increase use of water-based formulations.
MCS-02	Wildfire Prevention	Mechanical thinning and chipping activities during fuel reduction and removal efforts.	Potential hydrology impacts (increased water use) associated with composting activities.
MOB-05	Accelerated Retirement of Older Light-Duty and Medium-duty Vehicles	Accelerating the retirement of up to 2,000 light- and medium-duty vehicles per year through the Replace Your Ride Program and accelerating the penetration of zero and near–zero emission vehicles.	Potential hydrology and water quality impacts (surface and ground water) from disposal of batteries and fluids, and accidental spills.

TABLE 4.5-1 (concluded)
Proposed Control Measures in the ~~Revised Draft~~ 2022 AQMP
with Potential Hydrology and Water Quality Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Hydrology and Water Quality Impacts
MOB-06	Accelerated Retirement of Older On-Road Heavy-duty Vehicles	Retiring older, heavy-duty vehicles and replacing them with low-NOx vehicles fueled with CNG or other alternative fuels (e.g., battery electric and hydrogen fuel cells).	Potential hydrology and water quality impacts (surface and ground water) from disposal of batteries and fluids, and accidental spills.
MOB-07	On-Road Mobile Source Emission Reduction Credit Generating Program	Incentivizing the early deployment of zero emission and low NOx emission heavy-duty trucks through the generation of mobile source emission credits.	Potential hydrology and water quality impacts (surface and ground water) from disposal of batteries and fluids, and accidental spills.
MOB-08	Small Off-Road Engine Equipment Exchange Program	Promoting the accelerated turn-over of in-use small off-road engines and other engines, such as gasoline- and diesel-powered commercial lawn and garden equipment through expanded voluntary exchange programs will contribute to the retirement of older off-road engines.	Potential hydrology and water quality impacts (surface and ground water) from disposal of batteries and fluids, and accidental spills.

* Control Measure L-CMB-01 was not identified in the NOP/IS as having potential hydrology and water quality impacts because the types of air pollution control technologies that would be employed were SCRs and low NOx burners, neither or which use water, or discharge water. However, in the Revised Draft 2022 AQMP, Control Measure L-CMB-01 was expanded to include gas scrubber technology, which uses water and discharges wastewater, for reducing NOx emissions from nitric acid tanks. Thus, Control Measure L-CMB-01 has been included in this table.

4.5.2 SIGNIFICANCE CRITERIA

Implementation of the 2022 AQMP would be considered to have significant adverse hydrology or water quality impacts if any of the following conditions occur:

Water Demand

- The existing water supply does not have the capacity to meet the increased demands of the project, or the project would use more than 262,820 gallons per day of potable water.
- The project increases demand for total water by more than five million gallons per day.

Water Quality

- The project will cause degradation or depletion of ground water resources substantially affecting current or future uses.
- The project will cause the degradation of surface water substantially affecting current or future uses.
- The project will result in a violation of National Pollutant Discharge Elimination System (NPDES) permit requirements.
- The capacities of existing or proposed wastewater treatment facilities and the sanitary sewer system are not sufficient to meet the needs of the project.
- The project results in substantial increases in the area of impervious surfaces, such that interference with groundwater recharge efforts occurs.
- The project results in alterations to the course or flow of floodwaters.

4.5.3 POTENTIAL HYDROLOGY AND WATER QUALITY IMPACTS AND MITIGATION MEASURES

Project-specific hydrology and water quality impacts associated with construction activities and operations have been evaluated in this section of the Program EIR.

4.5.3.1 Water Demand and Supply Impacts

4.5.3.1.1 Water Demand for Construction Activities

Implementation of the 2022 AQMP control measures is expected to result in construction activities related to the: 1) installation of air pollution control equipment (e.g., low NOx burners, SCR systems, and gas scrubbers); 2) replacement of existing equipment with low NOx and zero emission equipment such as fuel cells and electrified equipment; 3) installation of roadway infrastructure (wayside power and catenary lines or other similar technologies); 4) installation of battery charging infrastructure; 5) installation of alternative fuel infrastructure; and 6) installation of solar panels and similar equipment. For the purpose of evaluating potential hydrology and water quality impacts, it has been assumed that no new industrial facilities or corridors will be constructed, but rather some of the existing facilities and corridors will be modified to include installation of new equipment and roadway infrastructure.

Modifications to existing industrial and commercial facilities associated with the installation of air pollution control equipment, electrification of equipment, replacement of existing equipment, installation of solar panels on existing buildings, etc. are expected to require minimal site preparation/excavation and grading activities as the facilities are currently developed, graded and paved for safety reasons. Construction activities at existing residences (e.g., replacing water heaters, space heater, cooking devices, clothes dryers, pool heaters, etc.) are not expected to require any site preparation/excavation grading activities because swapping out equipment would require minimal, if any changes to the existing site in order to accommodate the new equipment.

While water can be applied to soil as a dust suppressant during site preparation/excavation and grading, since none to minimal grading is expected, minimal water, if any, would be needed for

dust suppression activities during construction. Further, there are other types of dust suppressants, such as soil stabilizers, that may be used in lieu of water as set forth in South Coast AQMD Rule 403 – Fugitive Dust. Nonetheless, out of an abundance of caution, an estimate of water demand that would be used for dust suppression purposes has been included in this section and the estimate relies on the construction water analysis previously conducted in the December 2015 Final PEA for NOx RECLAIM and the November 2021 Final SEA for Rule 1109.1 for the construction of 25 new ammonia tanks and SCRs at heavy industrial facilities.

In general, the estimated affected plot space for a construction project correlates to how much soil may be disturbed and how much water may be needed for dust suppression during excavation and grading activities. The December 2015 Final PEA for NOx RECLAIM and the November 2021 Final SEA for Rule 1109.1 estimated that approximately 539 square feet of plot space would be needed for one new ammonia tank and SCR installation; thus, the construction of 25 new ammonia tanks and SCRs was estimated to disturb 17,474 square feet of plot space. To comply with the dust suppression requirements in South Coast AQMD Rule 403 by using water, watering is required twice daily at a minimum; however, on windy days, it may be necessary to apply water for third time. At a peak watering rate of three applications per day at 1/16″ depth (equivalent to 0.005 ft) for 17,474 square feet of plot space disturbed, the peak amount of water that could be used for dust suppression activities associated with site preparation/excavation as part of constructing foundations is 1,961 gallons per day (17,474 ft^2 x 0.005 ft x 7.48 gal/ft^3 x 3 watering events), which is less than South Coast AQMD significance threshold for potable water of 262,820 gallons per day. It is important to note dust suppression activities are relatively short-term. Further, relying on water for dust suppression purposes does not necessarily require potable water for this purpose; recycled water can also be used.

The construction associated with the installation of infrastructure along roadways such as wayside power and catenary lines or other similar technologies or alternative fuel infrastructure (e.g., battery charging or alternative fuels infrastructure) is currently unknown. Nonetheless, if catenary lines are installed, the construction activities would occur along existing transportation corridors, which have already been paved, thereby minimizing the need for excavation and grading activities and the associated water for dust suppression purposes. Similarly, alternative fuel infrastructure would likely be installed along existing roadways and at existing fueling stations (e.g., electric charging stations, renewable fuel infrastructure, etc.), or within industrial areas (hydrogen plants, renewable fuel processing equipment, etc.) which have already been paved, thus minimizing the need for substantial grading activities and associated water for dust suppression purposes.

Conclusion – Water Demand Associated with Construction Activities: When considering the water demand impacts during short-term construction activities associated with the 2022 AQMP, the potential increase in water use for the facilities that may need to conduct watering for dust suppression activities is expected to be less than the South Coast AQMD's significance threshold of 262,820 gallons per day of potable water and five million gallons per day of total water (e.g., potable, recycled, and groundwater).

Project-Specific Mitigation: Since no significant water demand impacts relating to construction activities were identified, no mitigation measures are necessary or required.

Remaining Water Demand Impacts Associated with Construction Activities: Since no mitigation measures are required, **water demand impacts relating to construction activities remain less than significant**.

4.5.3.1.2 Water Demand for Operational Activities

Implementation of the 2022 AQMP is expected to cause the following changes to operational water demand from: 1) installation and operation of additional scrubbers per Control Measures L-CMB-01 and L-CMB-05; 2) installation and operation of new steam turbines per Control Measure L-CMB-06; 3) the reformulation of coatings, solvents, adhesives, and lubricants into water-based products to reduce the VOC content per Control Measure CTS-01; 4) increased composting activities per Control Measure MCS-02; and 5) production of alternative fuels to satisfy increased demand per Control Measure MOB-06.

Implementation of Control Measure L-CMB-01 may result in the installation of gas scrubbers to reduce NOx emissions from nitric acid tanks and these scrubbers may require water for their operation; however, the type, size, potential water use, and requirements for these scrubbers is currently unknown. Scrubber sizes vary depending on the facility and the nature of their operations. Based on information obtained to date, the general formula for water use associated with a gas scrubber system is 34 gallons of water per hour for 8 hours a day to reduce 6.3 pounds of NOx, which equals approximately 272 gallons of water per day per unit. There are 11 RECLAIM facilities and 249 non-RECLAIM facilities with at least one nitric acid unit each that may be subject to Proposed Rule 1159.1 – Control of NOx Emissions from Nitric Acid Tanks, which is currently being developed. The analysis in this Program EIR assumes that an estimated 1610 sources would potentially be subject to the rule; however, not all of these nitric acid tanks may need a scrubber if the gallons of nitric acid used per unit or facility-wide are less than the low-use threshold. Because the requirements in Proposed Rule 1159.1 are still being developed and the universe of equipment that may need scrubber has not been confirmed at the time of publication of the Final Program EIR, the analysis for the potential water demand impacts associated with Control Measure L-CMB-01 is based on the worst-case that 260 facilities would each need one scrubber to control emissions from nitric acid tanks which translates to an increased water use of approximately 70,720 gallons of water per day.[203] One scrubber is capable of controlling NOx from multiple nitric acid tanks.

Control Measure L-CMB-05 encourages the replacement of older higher emitting turbines that reach the end of their equipment life with fuel cells, or for facilities to electrify their operations. Control Measure L-CMB-06 seeks further NOx emission reductions from electric generating units using near-zero and zero emission technologies through a regulatory approach under South Coast AQMD Rule 1135 - Emissions of Oxides of Nitrogen from Electricity Generating Facilities. Gas-fired boilers operating at electricity generating facilities can be repowered with lower NOx-emitting turbines. Similarly, gas-fired turbines or diesel engines operating at electricity generating facilities can be transitioned to electrified units, units fueled by non-fossil

[203] South Coast AQMD, 2022. Initial Draft of Proposed Rule 1159.1, released August 26, 2022. http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1159.1/pr1159-1_irl_082622.pdf.

energy sources (e.g., hydrogen-fueled turbines), fuel cells for power generation, or gas-fired units that meet CARB's Distributed Generation Certification Regulation standards. While none of these technologies would require the use of steam or additional water resources, fuel cells generate wastewater at a rate of 1.1 gallon of wastewater for every pound of hydrogen fuel used.

Historically, the reformulation of conventional coatings into low VOC coatings which rely on water in the product chemistry and water for clean-up has not resulted in significant adverse impacts on water demand. In addition, the potential increase in water use associated with Control Measure CTS-01 was evaluated previously in the 2016 AQMP for both manufacturers of waterborne coatings and water used by consumers to clean equipment used in the application of the coatings. The analysis was conservative and assumed that one gallon of water would be used to manufacture one gallon of coating applied, and one gallon of water would be used to clean-up equipment for every gallon of coating applied. The analysis determined that the water demand associated with the manufacture of waterborne formulations combined with their associated clean-up activities was estimated to be 62,547 gallons per day. This estimate is especially conservative because the majority of manufacturers of coatings are neither located within South Coast AQMD's jurisdiction nor California. Thus, as a practical matter, only the water used for reformulations manufactured within South Coast AQMD's jurisdiction plus the portion of the water needed for clean-up purposes would be representative of the potential water demand impact that would occur as a result of the continued implementation of Control Measure CTS-01.

Control Measure MCS-02 seeks to reduce PM emissions and enhance fuel reduction efforts via hand-thinning, mechanical thinning, and the use of chipping and grinding equipment to remove wood and green waste on land located in the residential urban-wild-interface areas of the San Bernardino National Forest. Implementation of Control Measure MCS-02 has the potential to reduce approximately 1.54 million cubic feet or 20,000 tons of wood and green waste due to wildfire prevention activities. The goal in Control Measure MCS-02 to reduce available fuel for wildfires will in turn, result in PM emission reductions. Fuel reduction efforts will be achieved via hand-thinning, mechanical thinning, and the use of chipping and grinding equipment at properties located in the residential urban-wild-interface areas of the San Bernardino National Forest.

Wood and green waste that is collected, chipped, and ground is a class of organic mulch that may be spread at or near the site where the wood and green waste is collected, spread on private or governmental properties, or delivered to processing facilities for composting. Mulch is natural wildfire preventative because it helps retain moisture whereby reducing water consumption for adjacent plants, enhances soil temperature insulation, reduces invasive week propagation, improves erosion and dust control, and mitigates soil compaction. The most cost-effective approach to implementing Control Measure MC-02 is if the mulch generated from chipping and grinding wood and green waste is spread at or near the location where the wood and green waste was originally collected. If the mulch generated from chipping and grinding the wood and green waste is used on-site, no water would be required. However, if the mulch is collected and hauled to offsite compost facilities for further processing, water would be expected to be used to ensure the material is properly decomposed and to cool the temperature of compost piles to prevent a fire. Composting facilities are regulated by South Coast AQMD Rule 1133.1– Chipping and Grinding Activities and Rule 1133.3 – Emission Reductions from Green waste Composting Operations, which require covering and water irrigation of compost piles. Watering is required to

assure the top three inches of the compost pile have a moisture content of at least 75. Based on the air emission and water use calculations in the Final Environmental Assessment for Rules 1133.1 and 1133.3[204], 20,000 tons of wood and green waste material would require an estimated 4,870 gallons of water or approximately 4,870 gallons per day to conduct composting. [South Coast AQMD, 2011]. This is expected to be a conservative estimate as some of the mulch is expected to be used on-site and would not be hauled away to offsite composting facilities.

Implementation of the 2022 AQMP control measures is expected to increase the demand for alternative fuels including renewable transportation fuels (e.g., renewable diesel) and hydrogen. In addition to the three aforementioned renewable fuels projects that have been recently approved in California (i.e., AltAir Renewable Fuels Conversion Project in Paramount, Martinez Refinery Renewable Fuels Project, and Phillips 66 Rodeo Renewed Project), the proposed control measures are anticipated to cause an increase in the demand for renewable fuels such that additional renewable fuels projects (e.g., hydrogen production facilities) may be needed. Due to the difficulty involved with siting and permitting new industrial facilities in general and the extended length of time needed for the various discretionary approvals that may be required from multiple agencies, the development of new facilities dedicated to producing alternative fuels is less likely to occur. Instead, as with the aforementioned recently approved renewable fuels projects, existing industrial facilities are more likely to propose modifications to convert some or all equipment to being able to produce renewable fuels.

Conversion projects have the potential to decrease water demand, but may have significant impacts associated with the overall change in operation of the facilities. Table 4.5-2 presents the net change in water demand attributed to the three aforementioned conversion projects. It is expected that most conversions would also result in a reduction in water demand as they are expected to be existing industrial facilities, but will vary depending on the site-specific conditions. For example, the potentially significant water demand impacts associated with the AltAir Renewable Fuels Conversion Project in Paramount were mitigated to less than significant through the use of reclaimed water. [City of Paramount, 2022].

[204] South Coast AQMD, 2011. Final Environmental Assessment for Proposed Amended Rule 1133.1 – Chipping and Grinding Activities and Proposed Rule 1133.3 – Emission Reductions from Green waste Composting Operations, certified July 8, 2011. http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2011/final-environmental-assessment-for-proposed-amended-rule-1133-1-and-proposed-rule-1133-3.pdf.

TABLE 4.5-2
Water Demand Associated with Renewable Fuels Projects

Project Name	Pre-Project Water Use		Post-Project Water Use		Net Change	
	Million Gallons per year	Million Gallons per day	Million Gallons per year	Million Gallons per day	Million Gallons per year	Million Gallons per day
AltAir Renewable Fuels Conversion Project in Paramount[1]	133	0.4	817	2.2	684	1.8
Martinez Refinery Renewable Fuels Project[2]	3,000 – 3,100	8.2 to 8.5	1,300	3.6	(1,700 to 1,800)	(4.6 to 4.9)
Phillips 66 Rodeo Renewed Project[3]	1,600	4.4	Decrease	Decrease	Decrease	Decrease

(1) City of Paramount, 2022. Note: 712 million gallons per year is expected to be sourced from reclaimed (recycled) water.
(2) Contra Costa County, 2022a.
(3) Contra Costa County, 2022b (Note: Water demand decrease was not provided in the Final EIR).

The operation of additional hydrogen plants may be required to supply hydrogen for use as an alternative fuel. The conventional process for producing hydrogen uses steam methane reforming which requires the use of natural gas and steam. Although water demand estimates will vary depending on the specific details for a given project, hydrogen plants in the jurisdiction of the South Coast AQMD have reportedly used an estimated 200,000 to 300,000 gallons per day of water. Other forms of hydrogen production, such as electrolysis, requires electricity to split water into hydrogen and oxygen, and would also be likely to use water. Therefore, to generate additional hydrogen for use as an alternative fuel, substantial quantities of water will be needed.

As explained in Subchapter 3.5 – Hydrology and Water Quality, Section 3.5.3, Governor Newsom has issued multiple proclamations declaring a State of Emergency for California due to unprecedented extreme drought conditions. While there are laws in place that regulate water supplies and groundwater by restricting pumping in some areas to prevent aquifers from dwindling and wells from running dry, local water districts, in response to the drought, have also taken actions throughout the state such as: 1) asking for voluntary reductions; 2) imposing mandatory restrictions or declaring a local emergency; 3) imposing agricultural rationing; 4) imposing drought rates, surcharges and fines; 5) limiting new development and requiring water efficient landscaping; 6) implementing a conservation campaign; 7) stopping water pumping from various streams; and, 8) adjusting water contract allocations. In addition, water shortages have prompted cities to begin infrastructure improvements to secure future water supplies. Because of the drought and the uncertainty of future water supplies, it was not clear at the time of the release of this Final Program EIR whether water suppliers would be able to accommodate the additional operational water demand if the proposed project goes forward, during normal, dry

or multiple dry years, especially if potable water or groundwater would be relied upon to supply the water demand.

In the water supply analyses previously conducted in the December 2015 Final PEA for NOx RECLAIM and the November 2021 Final SEA for Rule 1109.1, the projected water demand was able to be supplied by a combination of potable water and recycled water for those facilities that were shown to have to access recycled water from the Harbor Refineries Recycled Water Pipeline (HRRWP) which is maintained by the Los Angeles Department of Water and Power (LADWP), in conjunction with the West Basin Municipal Water District (WBMWD). The LADWP/WBMWD currently provides 35 million gallons per day (mgd) of recycled water to its customers, which includes some of the refineries that were identified in the December 2015 Final PEA for NOx RECLAIM and the November 2021 Final SEA for Rule 1109.1. The WBMWD is also in the process of expanding its Hyperion Pump Station to accommodate a throughput of 70 mgd of source water which would result in about 55 to 60 mgd of saleable recycled water if, and when needed to accommodate any increased need by their customers.

In addition, California Water Code Section 10608.20 requires the adoption of an Urban Water Management Plan (UWMP) for each urban water supplier to demonstrate the availability of current and projected water supplies and each UWMP dedicates a portion of water supplies to be utilized for industrial sources. As individual projects are proposed in response the various control measures in the 2022 AQMP and if any of the proposals require the use of water, such as those facilities that may need to utilize water to operate gas scrubbers to reduce NOx emissions from nitric acid tanks, each facility will need to confer with their local water supplier to ascertain whether there is sufficient water supplies available to accommodate their proposed increased water demand. Further, for any facility that is located near a recycled water pipeline such as the HRRWP or others, recycled water in lieu of potable water may be an option or a requirement, depending on local laws in place, in order for that facility to increase its water intake for industrial uses.

Conclusion – Water Demand and Supply Impacts: For control measures where water demand can be estimated, the increase in daily water demand is 338,137 to 438,137 gallons (70,720 gallons from wet gas scrubbers on nitric acid tanks, 62,547 gallons from waterborne coating formulations, 4,870 gallons from composting activities, and 200,000 to 300,000 gallons for the production of alternative fuels). This increased water demand does not exceed the South Coast AQMD's significance threshold of 5,000,000 gallons per day of total water (comprised of potable, recycled and groundwater) demand, but it exceeds the 262,820 gallons per day significance threshold for potable water. Additional water use is required for construction activities and also may be required for the manufacture of alternative fuels. Due to the extreme drought conditions and uncertainty about future water supplies, even though each county has various projects for providing recycled water, most of the recycled water projects, except for those in Los Angeles and Orange Counties, are to provide recycled water for landscape purposes. Therefore, implementation of the control measures in the 2022 AQMP as a whole may have a significant impact on both water demand and water supplies.

Project-Specific Mitigation: The mitigation measures that would be implemented for water demand impacts depends on the characteristics of individual projects, the volume of water expected to be used, and could vary amongst jurisdictions. Typical mitigation measures are expected to include the following types of measures:

HWQ-1: Local water agencies should continue to evaluate future water demand and establish the necessary supply and infrastructure to meet that demand, as documented in their Urban Water Management Plans.

HWQ-2: Project sponsors should coordinate with the local water provider to ensure that existing or planned water supply and water conveyance facilities are capable of meeting water demand/pressure requirements. In accordance with ~~state~~ California law, a Water Supply Assessment should be required for projects that meet the size requirements specified in the regulations. In coordination with the local water provider, each project sponsor will identify specific on- and off-site improvements needed to ensure that impacts related to water supply and conveyance demand/pressure requirements are addressed prior to issuance of a certificate of occupancy. Water supply and conveyance demand/pressure clearance from the local water provider will be required at the time that a water connection permit application is submitted.

HWQ-3: Project sponsors should implement water conservation measures and use recycled or reclaimed water for appropriate end uses.

HWQ-4: Project sponsors should consult with the local water provider to identify feasible and reasonable measures to reduce water consumption.

Remaining Impacts for Water Demand Impacts: The impacts of the proposed project on water demand and water supply are expected to be significant prior to mitigation. While generally the mitigation measures could help minimize some of the water demand and water supply impacts on an individual facility-basis, the availability of water supplies varies throughout the region. Thus, not all mitigation measures will be applied in all situations. For this reason, the mitigation measures are not expected to fully eliminate the significant water demand and water supply impacts. Therefore, water demand and water supply impacts that may result from the proposed project are expected to remain significant.

4.5.3.2 Water Quality Impacts

Implementation of the 2022 AQMP control measures may result operational water quality impacts due to potentially increased volumes of wastewater generated: 1) at individual facilities that install air pollution control equipment which require water for operation and discharge wastewater per Control Measures L-CMB-01 and L-CMB-05 (e.g., gas scrubbers on nitric acid tanks); 2) installation and operation of new fuel cells which discharge waste water per Control Measures L-CMB-05 and L-CMB-06; 3) installation and operation of new steam turbines per Control Measure L-CMB-06 which require water for operation and discharge wastewater); 4) the reformulation of coatings, solvents, adhesives, and lubricants into water-based products to reduce

the VOC content per Control Measure CTS-01; 5) increased production of alternative fuels to satisfy increased demand per Control Measures MOB-05, MOB-06, MOB-07, and MOB-08 and the potential for accidental spills; 6) increased scrapping of vehicles per Control Measures MOB-05, MOB-06, MOB-07, and MOB-08 and the potential for accidental spills associated with handling and recycling vehicle batteries; and 7) the increased use of electric vehicles per Control Measures MOB-05, MOB-06, MOB-07, and MOB-08 and the potential for accidental spills associated with handling and recycling EV batteries.

The discussion in this subsection addresses whether implementation of these aforementioned control measures would have water quality impacts that would:

- Require a modification to a facility's wastewater discharge permit;
- Require or result in the relocation or construction of new or expanded wastewater treatment or storm water drainage facilities and whether these activities would cause significant environmental effects;
- Violate any water quality standards;
- Violate waste discharge requirements;
- Otherwise substantially degrade surface or ground water quality;
- Cause the degradation of surface water substantially affecting current or future uses; or
- Violate National Pollutant Discharge Elimination System (NPDES) permit requirements.

In general, for industrial operations, a 25 percent increase in wastewater discharged above an individual facility's industrial discharge permit limit would trigger a permit revision, and this would be considered a significant adverse wastewater impact. Any large industrial facility that currently operates a wastewater treatment system will have an existing industrial waste discharge permit that limits the wastewater discharge rates and concentration values according to standards set by U.S. EPA and local sanitation districts. However, because this Program EIR is examining the effects of the various control measures on a programmatic level, and the potential individual facilities that may undergo modifications in response to one or more of the proposed control measures in the 2022 AQMP are unknown, a definitive determination as to whether one or more industrial discharge permit limits would require a revision to one or more industrial discharge permits cannot be made at this time. Future actions taken by individual facilities to implement any of the proposed control measures will be required to evaluate any potential increase in wastewater at the project-level and make such a determination at that time. The same is true for determining whether an increased amount of wastewater to be discharged would require or result in the relocation or construction of new or expanded wastewater treatment.

Relative to storm water and storm water drainage facilities, the Clean Water Act Section 402 established the National Pollutant Discharge Elimination System (NPDES) to regulate discharges into "navigable waters" of the United States. The U.S. EPA authorized the State Water Resources Control Board (SWRCB) to issue NPDES permits which establishes discharge pollutant thresholds and operational conditions for industrial facilities and wastewater treatment plants. For point source discharges (e.g., wastewater treatment facilities), the Regional Water Quality Control Board (RWQCB) prepares specific effluent limitations for constituents of

concern such as toxic substances, total suspended solids (TSS), bio-chemical oxygen demand (BOD), and organic compounds. The limitations are based on the Basin Plan objectives and are tailored to the specific receiving waters, allowing some discharges, for instance deep water outfalls in the Pacific Ocean, more flexibility with certain constituents due to the ability of the receiving waters to accommodate the effluent without significant impact. As such, a NPDES Permit requires monitoring of wastewater quality on a frequent basis. For example, NPDES permit requirements of a local refinery requires monthly sampling for arsenic, cadmium, chromium, copper, cyanides, lead, mercury, nickel, zinc, silver, total phenol, pH, dissolved sulfides, chlorides, suspended solids, chemical oxygen demand, biochemical oxygen demand, and ignitability. Daily sampling is required for ammonia, oil and grease, selenium, and thiosulfate. Wastewater that does not meet permit limits must be re-treated and monitored again prior to discharge.

Any potential changes in wastewater volume or concentration values that would require a revision to industrial wastewater permit and a NPDES permit would require an evaluation to add new or revise existing limits so that water quality standards, waste discharge requirements and NPDES permit requirements would not be violated. Also, as part of the evaluation of the potential water quality and wastewater impacts that may occur at an individual facility, permit conditions may also be added to avoid or prevent the degradation of surface water and/or ground water quality so that current and future uses would not be adversely affected.

In addition, the following discussion provides additional information specific to the various potential modifications that may be incurred and may contribute to adverse water quality impacts as a result implementing the various control measures.

Gas Scrubbers
Control Measures L-CMB-01 and L-CMB-05 could increase the amount of wastewater discharged at facilities that employ gas scrubber technology to reduce NOx emissions from nitric acid tanks. Industrial facilities with nitric acid tanks are expected to be covered by industrial waste discharge permits. Wastewater discharged would be required to comply with the applicable numerous regulatory permits (e.g., NPDES Permits) which requires treatment and monitoring of storm water and wastewater quality on a frequent basis. Stormwater and wastewater that does not meet permit limits must be re-treated and monitored again prior to discharge. Thus, stormwater and wastewater discharge permits, by nature, are effective at ensuring less than significant water quality impacts.

Fuel Cells
Control Measures L-CMB-05 and L-CMB-06 could result in the installation of fuel cells which do not require water for their operation, but produce 1.1 gallon of wastewater for every pound of hydrogen fuel used as a result of the chemical reaction between the hydrogen fuel and oxygen from the atmosphere. For this reason, any facility that may employ fuel cells in lieu of combustion-based equipment, may have increased amount of water to be discharged.

Steam Turbines
Control Measure L-CMB-06 could result in the installation and operation of new steam turbines which require water to produce steam but may also discharge some wastewater. U.S. EPA has

promulgated the Steam Electric Power Generating Effluent Guidelines and Standards in 40 CFR Part 423.[205] This regulation covers wastewater discharges from power plants operating as utilities and the requirements are incorporated into NPDES permits. Steam turbines operating at power plants generate wastewater in the form of chemical pollutants and thermal pollution (heated water) from their water treatment, power cycle, ash handling and air pollution control systems, as well as from yard and floor drainage, and other miscellaneous wastes. Wastewater discharged would be required to comply with the applicable numerous regulatory permits (e.g., NPDES Permits) which requires treatment and monitoring of storm water and wastewater quality on a frequent basis. Stormwater and wastewater that does not meet permit limits must be re-treated and monitored again prior to discharge. Thus, stormwater and wastewater discharge permits, by nature, are effective at ensuring less than significant water quality impacts

Coatings

Under Control Measure CTS-01, certain products are expected to be reformulated to meet low VOC content limits with future effective dates and the reformulated products could have widely varying compositions depending on the chemical characteristics of the replacement solvents chosen. Currently, there are some products in use that are formulated with exempt or non-exempt solvents, and clean-up may require something other than water, such as acetone or other solvents, which could cause adverse water quality impacts if the clean-up materials are disposed of improperly. However, under Control Measure CTS-01, most products are expected to be made with water, but other reformulations could continue to be made with an exempt solvent such as acetone or other solvents that are exempted from the definition of a VOC in South Coast AQMD's Rule 102. For those products made with water, water would also be used for clean-up and the resultant wastewater could be disposed of into the public sewer system. Thus, the use of water to manufacture coatings, solvents, and other products would generally lead to formulations that would be less toxic than the currently available products that contain either exempt or non-exempt chemicals (that are typically petroleum-based) and as such, generate fewer adverse impacts to water quality.

Control Measure CTS-01 could also result in the use of ultraviolet (UV)-cured resins and coatings which would not be expected to use water or generate wastewater. Lastly, Control Measure CTS-01 would remove the VOC exemption status for PCBTF and tBAc because OEHHA has determined that these compounds are potentially carcinogenic; this prohibition is expected to reduce the use of these two compounds. The phase-out of the VOC exemption status of PCBTF and tBAc in architectural coatings, automotive coatings, paint thinners, multi-purpose solvents, and adhesives is needed to reduce exposure to toxic materials and will also reduce the potential for adverse water quality impacts. The application methods for reformulated products are expected to require the same types of equipment (e.g., spray guns, rollers, and brushes) currently used in coating operations such that the corresponding clean-up practices employed to clean the coating equipment would also not be expected to change.

Historically, the reformulation of conventional coatings into low VOC coatings which rely on water in the product chemistry and water for clean-up has not resulted in significant adverse

[205] U.S. EPA, Steam Electric Power Generating Effluent Guidelines. https://www.epa.gov/eg/steam-electric-power-generating-effluent-guidelines.

impacts on water quality. As previously discussed in Subsection 4.5.3.1.2, the potential wastewater impacts associated with Control Measure CTS-01 was previously evaluated in the 2016 AQMP Final Program EIR for both wastewater from manufacturing waterborne coatings and wastewater generated by consumers when cleaning equipment used in the application of the coatings. [South Coast AQMD, 2017]. The analysis was conservative and assumed that one gallon of water would be used clean-up equipment for every gallon of coating applied resulting in approximately 21,000 gallons per day of wastewater generated, which is relatively small when compared to the estimated wastewater treatment capacity of about 2,900 mgd within South Coast AQMD's jurisdiction (see Table 3.5-4).

Based on discussions with coating formulators, the trend in coating technologies is to replace toxic/hazardous solvents with equal or less toxic/hazardous solvents. Thus, lowering the VOC content limit of coatings will have reduce any existing impacts on water quality because reformulation is not expected to change the current practices of applying coatings and other materials, or alter the product chemistry, or disposal methods to be more detrimental to water quality. In the past, the South Coast AQMD has received comments that, with the increased use of waterborne technologies to meet the lower VOC content limits, there will be a greater trend of improperly disposing of coating applicators into groundwater, storm drains, or sewer systems; however, there is no data to support this contention. In any event, there are several reasons why there should be no significant increase over current practices for improper disposal due to greater use of water-borne coatings. Results from a survey of contractors determined that a majority either dispose of the waste material properly as required by the coating manufacturer's Safety Data Sheets, or recycle the waste material regardless of type of coating. Based upon these considerations, there is no reason to expect that paint contractors will change their disposal practices, especially those that dispose of wastes properly, with the implementation of Control Measure CTS-01. Therefore, wastewater which may be generated from the application reformulated coatings is expected to contain less hazardous materials than the wastewater generated for solvent-based coating operations, thereby reducing toxic influent to the wastewater treatment plants.

Alternative Fuels

While Control Measures MOB-05, MOB-06, MOB-07, and MOB-08 are expected to generally result in the increased use of electric vehicle vehicles, they may also result in the increased use of alternative fuels (e.g., biodiesel fuels, renewable fuels, compressed natural gas, liquefied natural gas, and hydrogen).

Accidental spills of alternative fuels could result in water quality impacts to surface or ground water resources. A spill of fuels or chemicals used and stored at any of the affected facilities could occur under upset conditions such as an earthquake, tank rupture, or tank overflow; from corrosion of containers, piping and process equipment; or from leaks from seals or gaskets at pumps and flanges. Construction of vessels and foundations in accordance with the California Building Code requirements helps structures to resist major earthquakes without collapse, minimizing loss to some structural and non-structural damage. As required by U.S. EPA's spill prevention control and countermeasure regulations, affected facilities are required to have emergency spill containment equipment and would implement spill control measures in the event of a release. Storage tanks typically have secondary containment such as a berm, which would be capable of containing 110 percent of the contents of the storage tanks onsite. Therefore, should a

rupture occur, the contents of the tank would be collected within the containment system and pumped into an appropriate storage tank.

Spills at affected industrial or commercial facilities would be collected within containment structures. Large spills outside of containment areas that could occur when transferring material from a transport truck to a storage tank are expected to be captured by the process water system wherever they could be collected and controlled. Spilled material would be collected and then pumped to an appropriate tank or sent off-site if the materials cannot be used on-site. The existing rules and requirements which limit the extent of or prevent spills are expected to minimize impacts on water quality.

In general, alternative fuels are expected to be less toxic than conventional fuels. Biodiesel and renewable fuels are derived from biological sources such as vegetable oils or animal fats, and can be used pure or blended with conventional diesel. They are more biodegradable than conventional fuels, so the water quality impacts from a spill would be less than a spill of pure conventional diesel. Therefore, the potential water quality impacts from the transport and storage of renewable fuels, biodiesel, and biodiesel blends, are not expected to be substantially different than the transport and storage of conventional diesel.

The other types of alternative fuels that may be used as part of implementing some control measures in the 2022 AQMP include compressed natural gas, liquefied natural gas, and hydrogen. Because all of these fuels exist as a gas at standard temperatures and pressures, a leak of any of these fuels would result in an airborne release, not a release that could adversely affect water quality.

There are a number of rules and regulations currently in place that are designed to minimize the potential impacts from leaking underground storage tanks and fueling spills: requirements for the construction of the storage tanks, requirements for double containment, and installation of leak detection systems. These regulations would also apply to any leaks of alternative fuels from storage tanks. Thus, the use of alternative fuels is not expected to result in any greater adverse water quality impacts than the current use of conventional fuels like diesel or gasoline.

Implementation of the 2022 AQMP control measures is expected to increase the demand for alternative fuels including renewable transportation fuels (e.g., renewable diesel). In addition to three aforementioned renewable fuels projects that have been approved in California (i.e., AltAir Renewable Fuels Conversion Project in Paramount, Martinez Refinery Renewable Fuels Project, and Phillips 66 Rodeo Renewed Project), the increase in demand for renewable fuels could generate other renewable fuels projects.

Based on the three approved renewable fuels projects, alternative fuels projects could result in an increase or decrease in wastewater generated, depending on the site. The Final EIRs for the Martinez Refinery Renewable Fuels Project and Phillips 66 Rodeo Renewed Project concluded that there would be an overall decrease in wastewater generated by these two facilities, because the total number of operating units and throughput of these refineries would decrease. [Contra Costa County, 2022a and 2022b]. On the contrary, the Final EIR for the AltAir Renewable Fuels Conversion Project concluded that the facility would result in an increase of wastewater generated by the facility because of the proposed modifications needed for their operating units.

However, the wastewater treatment system at the AltAir facility would be modified to treat the increased wastewater generated by the project modifications and the wastewater discharge permit for the facility would also be modified. These facility improvements and permit modification would have the effect of minimizing water quality impacts to less than significant levels. Similarly, other renewable fuels projects would also be required to comply with the wastewater discharge requirements and permits, so that water quality impacts could be less than significant**.** However, because these three renewable fuels projects all involved potentially significant impacts for several environmental topic areas for which EIRs were required and while the overall conclusion of less than significant water quality impacts was reached, it was not without some substantial project-specific analyses modifications to the existing wastewater treatment systems. Thus, renewable fuels projects have the potential to create significant water quality impacts that may require additional CEQA analyses beyond what is provided in this Program EIR.

Electric Vehicles, Vehicle Scrapping and Battery Recycling
Implementation of Control Measures MOB-05, MOB-06, MOB-07, and MOB-08 could contribute to an increased deployment of electric vehicles and other zero-emission mobile sources which would in turn result in increased amounts of vehicle scrapping and battery recycling. Since batteries contain toxic materials, impacts to water quality are possible if they are disposed of in an unsafe manner, such as by illegal dumping or by disposal in a landfill.

As interest in the use of electric vehicles has increased over the years, battery technologies have been developing and improving. Most battery technologies employ materials that are recyclable since regulatory requirements and market forces encourage recycling. California laws create incentives and requirements for recycling or disposal of batteries respectively; see Section 4.7.3.2.1 for a list of these requirements.

Existing battery recovery and recycling programs have limited the disposal of batteries in landfills; the recycling of lead-acid and nickel-cadmium batteries is already a well-established activity. One secondary lead smelter (facilities that recycle lead-bearing materials) is currently located and operating within South Coast AQMD's jurisdiction. The secondary lead smelter receives spent lead-acid batteries and other lead bearing material and processes them to recover lead and polypropylene (from the battery casings). As part of the battery dismantling process, acid is collected and recycled as a neutralizing agent in the wastewater treatment system. Other facilities available for battery recycling are located outside of South Coast AQMD's jurisdiction and outside of California. While the increased deployment of zero emission mobile sources in the South Coast AQMD's jurisdiction is expected to result in a reduction in the use of lead-acid batteries from the transportation sector that will need to be dismantled and recycled after the vehicle/equipment is scrapped or no longer operating within South Coast AQMD's jurisdiction.

Implementation of the 2022 AQMP would be expected to result in an increased use of electric vehicles fitted with lithium ion (Li-ion) batteries instead of lead-acid batteries. The ability of Li-ion batteries to store electricity is based on a different chemistry when compared to lead-acid batteries. For example, Li-ion batteries function through the use a lithium salt electrolyte, while lead-acid batteries use an electrolyte that is a blend of sulfuric acid and water. Like lead-acid batteries, eventually Li-ion batteries will not be able to store enough electricity to operate a vehicle. However, the lifespan of a Li-ion batteries is much longer than a lead-acid battery.

Electric vehicles use electricity as part of their fuel system and rely purely on electric power stored in batteries. Any difference in water quality impacts between conventional gasoline or diesel-fueled vehicles versus electric vehicles would be primarily from recycling the batteries, though there are other types of fluids from scrapping conventional vehicles that may contribute to adverse water quality impacts (e.g., motor oil, refrigerant, lubricant, brake fluid, etc.) Batteries in electric vehicles are much larger and longer-lasting than lead-acid batteries in conventional vehicles. The weight of batteries in electric cars can range from 400 to 1,200 pounds. Lead-acid batteries are 99 percent recyclable while Li-ion batteries are between 70 and 100 percent recyclable, depending on the particular chemistry of the batteries. [Edmunds, 2014].

Because Li-ion batteries have a potential for post-automotive use, destructive recycling (dismantling) of Li-ion batteries can be postponed for years after an electric vehicle or hybrid battery can no longer hold and discharge sufficient electricity to power a car's motor. The battery pack can still carry a tremendous amount of energy that may be useful in non-automotive applications. Battery manufacturers project that the Li-ion battery packs will still be able to operate at about 80 percent of capacity by the time they must be retired from automotive use. [Edmunds, 2014]. For example, several major power utilities are working with auto manufacturing companies (General Motors, Ford, Toyota, and Nissan) to explore the use of batteries for stationary storage of the power produced in off-peak periods by wind turbines and solar generation stations. Li-ion battery packs are also being tested as backup power storage systems for retail centers, restaurants, and hospitals, as well as residential solar systems. [Edmunds, 2014].

Electric vehicles do not require the various oil and gasoline filters, or same type or amount of engine fluids (oil, antifreeze, etc.) that are required by vehicles using internal combustion engines. Since electric motors do not require motor oil as a lubricant, replacing internal combustion engines with electric engines will eliminate the impacts of motor oil use and disposal. For example, a 50 percent penetration of light-duty electric vehicles into market will result in a corresponding 50 percent reduction in the release of these contaminants into the environment due to illegal disposal and a 50 percent reduction in the generation of waste oil. Release of contaminants due to engine oil that burns up in, or leaks from engines or due to burning of recovered engine oil for energy generation will also be correspondingly reduced. Additional use of electric vehicles is expected to have a beneficial environmental impact by reducing the amount of motor oil used, recycled, potentially illegally disposed, or washed into storm drains and ending up in the ocean

Thus, the increased use of electric vehicles will cause an increase the number of scrapped conventional vehicles, batteries and associated fluids required for disposal over the short-term. As the fleets transition from conventional vehicles to fully electrified vehicles, eventually the amount of fluids collected and disposed of along with the amount of lead-acid batteries recycled from vehicles will decrease.

While Li-ion and lead-acid batteries both have the potential to create adverse water quality impacts from improper disposal, the recycling of batteries is required under law. Further some manufacturers pay for used electric vehicle batteries. The value, size, and length of life of Li-ion batteries are such that reuse is expected to occur before they will be dismantled and recycled.

Therefore, the use of electric vehicles are not expected to result in an increase in the illegal or improper disposal of electric batteries that would adversely affect water quality.

Conclusion – Water Quality Impacts:
In the absence of facility-specific information regarding the potential increased amounts of wastewater that could be generated in order to determine whether a revision to an Industrial Waste Discharge Permit and/or a NPDES permit would be needed and whether a relocation or construction of new or expanded wastewater or storm water treatment facility would be needed, out of an abundance of caution, the analysis in this Program EIR concludes that implementation of the 2022 AQMP has the potential for one or more facilities to increase the amount of wastewater to be discharged by 25 percent above the current discharge permit limit such that permit revision would be necessary. For the same reasons, the analysis in this Program EIR also concludes that implementation of the 2022 AQMP has the potential to require or result in the relocation or construction of new or expanded wastewater treatment or storm water drainage facilities. Thus, the proposed project would result in significant adverse wastewater impacts associated with the quantity of effluent to be treated and discharged and the potential lack of existing capacity in the existing wastewater and stormwater treatment systems to handle the potential increases.

Project-Specific Mitigation: Any mitigation measure that could be implemented to minimize the potential water quality impacts depends on the characteristics of individual projects, the volume of wastewater expected and the contaminants in the wastewater. The following mitigation measure has been identified as a means to minimize the amount of wastewater discharged through diversion:

HWQ-5: For any project that would increase the generation of wastewater, the facility must review diversion options for reusing the treated wastewater on-site, in lieu of discharge, where applicable and feasible.

Remaining Water Quality Impacts from Wastewater Treatment Capacity: The impacts of the proposed project on water quality are expected to be significant prior to mitigation. Generally, mitigation measures are meant to help minimize some of the water quality impacts on an individual facility-basis, but not all mitigation measures may be applicable in all situations. In addition, the issuance of facility-specific industrial wastewater permits or NPDES permits, by their regulatory nature, would likely minimize the water quality impacts to fullest extent possible. For this reason, the mitigation measure identified above is not expected to fully eliminate the significant water quality impacts. Therefore, water quality impacts that may result from the proposed project are expected to remain significant.

4.5.4 SUMMARY OF HYDROLOGY AND WATER QUALITY IMPACTS

- Overall, implementation of Control Measures L-CMB-01, L-CMB-05, L-CMB-06, CTS-01, MCS-02, MOB-05, MOB-06, MOB-07, and M0B-08 combined has the potential to cause potentially significant water demand and water supply impacts after combining the amount of water that may be needed during both construction and operation. While increased water demand may not be necessary be exceeded for an individual project at a

facility, the collective water use has the potential to exceed the 262,820 gallons per day of potable water demand significance threshold. Mitigation measures are proposed, but the specific ones that would be implemented depend on the specific characteristics of individual projects, the volume and type of water expected to be used and whether there is sufficient supply of water given the ongoing extreme drought conditions. Water demand and water supply impacts are therefore expected to remain significant after mitigation measures are applied.

- In addition, implementation of Control Measures L-CMB-01, L-CMB-05, L-CMB-06, CTS-01, MCS-02, MOB-05, MOB-06, MOB-07, and M0B-08 combined has the potential to cause potentially significant water quality impacts such that mitigation measures are required. While potential changes in water quality volume and concentration levels may not require all affected facilities to modify their industrial waste discharge permit or NPDES permit, it is possible that some facilities may need to do so. Mitigation measures are proposed, but the specific ones that would be implemented depend on the specific characteristics of individual projects, the wastewater volume and concentration levels expected to be discharged and whether there is sufficient capacity in the existing wastewater treatment and storm water collection systems to handle the increased volume. If sufficient capacity does not exist, then a facility will be faced with physically modifying their wastewater treatment and/or storm water collection systems which would require discretionary approvals and potentially, further CEQA review. Therefore, water quality ~~water demand and water supply~~ impacts are expected to remain significant after mitigation measures are applied.

4.5.5 CUMULATIVE HYDROLOGY AND WATER QUALITY IMPACTS AND MITIGATION MEASURES

As discussed in Chapter 2 - Project Description, in order to attain the 8-hour ozone standard, the majority of NOx emission reductions must come from mobile sources, including ships, aircraft, and locomotive engines, and these mobile sources are primarily regulated under federal and international jurisdiction, with limited authority for CARB and the South Coast AQMD. Attainment is not achievable without substantial emission reductions from these categories of mobile sources. Therefore, CARB has prepared the Proposed 2022 State Strategy for the State Implementation Plan (Proposed 2022 State SIP Strategy) which describes the State's strategy and commitments to reduce emissions from State-regulated sources needed to support attainment of the 70 ppb 8-hour ozone standard. The Proposed 2022 State SIP measures are described in Chapter 2, Section 2.7.3.1.

SCAG, as the Metropolitan Planning Organization (MPO) for the Southern California region, is mandated to comply with federal and state transportation and air quality regulations. In consultation with federal, state, and local transportation and air quality planning agencies, and other stakeholders, SCAG developed the Final 2020–2045 2020 RTP/SCS, also known as Connect SoCal, and the 2021 Federal Transportation Improvement Program (FTIP), with transportation control measures (TCMs) to address the 2015 8-hour ozone standards in the Basin and these are included in three sections of Appendix IV-C of the 2022 AQMP.

In addition to the CARB and SCAG programs, Table 4.3-5 summarizes the major clean transportation and GHG reduction policies that are being implemented at the state levels. The CARB SIP, SCAG's Connect SoCal, the policies in Table 4.3-5, and the 2022 AQMP all have policies that are aimed at air quality improvement, as well as GHG reductions.

4.5.5.1 CARB's Proposed 2022 State Strategy

Implementation of the Proposed 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities or infrastructure and increased mining activities. Construction could require disturbance of undeveloped areas, such as clearing of vegetation, earth movement and grading, trenching for utility lines, construction of new buildings, and paving of parking lots, delivery areas, and roadways, which could result in short-term adverse impacts on water quality from potential erosion or waste discharge.

Increased lithium mining could result in impacts on water quality from ground disturbance or groundwater over-drafting. These activities would be subject to state and federal regulations; however, lithium is obtained from areas outside of the United States, where these regulations are not enforced. Therefore, the impacts on hydrology and water quality are potentially significant because of the water quality impacts from construction activities and mining, following mitigation.

The Proposed 2022 State SIP Strategy could result in new water demand affecting available water supply, as well as wastewater infrastructure for new or modified facilities. Since the specific location and type of construction needed for these facilities is not known, the impacts on water demand and water supply cannot be identified with any certainty. However, compliance with the SIP could result in significant impacts on water demand, water supply and wastewater infrastructure and thus, is considered to be potentially significant, following mitigation.

4.5.5.2 SCAG Connect SoCal Plan

SCAG determined that the Connect SoCal Plan (SCAG, 2020) would result in significant impacts related to hydrology and water quality. Grading, excavation, and other construction activities associated with implementation of transportation projects and development projects could impact water quality due to erosion resulting from exposed soils, trash, construction materials, and equipment fluids. In addition, there are pollutants associated with transportation that could impact water quality during stormwater runoff including oil, grease, sediment, auto emissions (e.g., particulate matter), urban runoff debris, pesticides (from landscaping), nutrients, heavy metals, and toxic substances.

Construction of transportation projects and development projects anticipated to occur under the Connect SoCal Plan would increase impervious surfaces throughout the SCAG region. The population growth is expected to increase the amount of urbanized land and densify existing urbanized areas. The increase in impervious surfaces could add to storm water runoff volumes and peak flow rates which could result in increased pollutant load. The Connect SoCal Plan is anticipated to add an additional 6,346 lane miles to the region and develop 41,546 acres of greenfield land. Therefore, there is the potential for exceedance of water quality standards and

waste discharge requirements due to an expected increase in impervious surfaces, which would remain significant after mitigation.

Given that most of the groundwater basins in the southern California area are already in a state of overdraft, future development may result in a net deficit in aquifer volume or a lowering of the local groundwater table. Population growth of 3.2 million people by 2045 would increase regional water demand and could substantially deplete groundwater supplies. Urbanization to accommodate future growth would potentially interfere with groundwater recharge due to the increased impervious surfaces, resulting in potentially significant impacts which would remain significant and unavoidable following mitigation.

There is anticipated to be an increase in water demand in southern California due to the expected increase of 3.2 million people by 2045, which may result in significant impacts to the existing water infrastructure in the region. Southern California residents used an estimated average 85 gallons of water per day in 2016. Assuming per capita water consumption remains consistent, the SCAG region could require approximately 312.4 million more gallons of water per day to meet the increase in population. In recent years, as a result of increased water conservation, urban water demand has remained relatively constant despite growing population. However, there may be a limit to how much water can be saved through conservation and, even with increases in water efficiency, increasing population could increase water demand. As a result, new water facilities will likely need to be constructed or expanded in order to meet this demand.

There is anticipated to be an increase in water supply from recycling and desalination; however, a number of these projects have failed to obtain full permits (e.g., the Huntington Beach Desalination Plant). Water demand impacts were determined to be significant and unavoidable after mitigation.

Implementation of transportation projects as well as anticipated development under the Connect SoCal Plan would occur within watersheds that have impaired water bodies. Many of the impaired water bodies are located near freeway, transit, or rail projects included in the Connect SoCal Plan. In addition, urbanization may also occur in areas that have the potential to result in changes to the drainage patterns. Therefore, impacts related to altering the existing drainage patterns of a site or area are considered significant and unavoidable after mitigation.

Paved surfaces and drainage conduits can accelerate the velocity of runoff, concentrating peak flows in downstream areas faster than under natural conditions. Significant increases in runoff and peak flow can overwhelm drainage systems and alter flood elevations in downstream locations. In addition, this increase in velocity has the potential to create or contribute runoff flows that would exceed the capacity of existing or planned storm water drainage systems. As a result, there is a significant impact to substantially create and contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems. While mitigation measures would reduce impacts, given the regional scale of the Connect SoCal Plan, the impacts to drainage and stormwater facility capacity and potential for polluted runoff would be significant and unavoidable after mitigation.

With regard to flooding, implementation of transportation projects and development projects anticipated to occur under the Connect SoCal Plan built in low-lying areas or in proximity to waterways and/or dam inundation zones may be subject to flood hazards. These areas may be subject to failure as a result of seismic ground-shaking or other natural or anthropogenic actions that compromise the stability of such structures. Transportation projects near the coast could be impacted by tsunamis, which could also release pollutants. Therefore, the Connect SoCal Plan would result in significant and unavoidable impacts with respect to risk of inundation by flooding, tsunami, or seiche, following mitigation.

Implementation of the Connect SoCal Plan would increase impervious surfaces due to additional lane miles and conversion of undeveloped land to developed land. An increase in impervious surfaces would increase water runoff and potentially affect groundwater recharge rates and water quality in the water basins. Therefore, the Connect SoCal Plan may conflict with or obstruct the implementation of a water quality control plan or sustainable groundwater management plan, resulting in significant, unavoidable impacts following mitigation.

4.5.5.3 Summary of Cumulative Hydrology and Water Quality Impacts

Implementation of Control Measures L-CMB-01, L-CMB-05, L-CMB-06, CTS-01, MCS-02, MOB-05, MOB-06, MOB-07, and M0B-08 combined is expected to result in significant water demand, water supply, and water quality impacts associated with implementation. While industrial facilities that may be impacted by the 2022 AQMP have industrial waste discharge permits and NPDES that may require modification, these permits include requirements for treatment, monitoring, and sampling, prior to discharge, to prevent significant water quality impacts. However, if any facility's existing wastewater treatment capacity is not sufficient such that physical modifications would need to be made, then based on the significance criteria, potentially significant water quality impacts would be expected. Therefore, while actions required to implement the 2022 AQMP are expected to result in additional pollutant loading over what is currently discharged because of permit limits, physical modifications to wastewater treatment and stormwater collection systems may be needed and therefore, would be expected to contribute to cumulative water quality impacts.

Based on the information available regarding the implementation of the 2022 AQMP, water demand and limited water supplies due to ongoing extreme drought conditions would exceed the significance criteria. California has been hit with extreme drought conditions, with reservoirs and lakes at historic low conditions (e.g., Lake Mead). A Tier 2 water shortage has been declared for the Colorado River and surrounding states. This combination of the existing water demand and population has led to the extreme drought conditions that California, and southern California specifically, is currently experiencing. Therefore, the measures that are currently being taken by agencies involved with developing measures to comply with the 70 ppb 8-hour ozone standard, along with the population growth identified in the Connect SoCal Plan, is expected to result in cumulatively considerable water demand and water supply impacts.

4.5.5.4 Cumulative Mitigation Measures

No additional mitigation measures to reduce the significant cumulative impacts to water demand, water supply, and water quality have been identified.

4.5.5.5 Remaining Cumulative Hydrology and Water Quality Impacts After Mitigation

Cumulative impacts to past, present, and reasonably foreseeable future projects would remain significant and unavoidable for water demand, water supply, and water quality.

SUBCHAPTER 4.6

NOISE

4.6 NOISE

This subchapter examines potential noise impacts from implementing the proposed control measures in the 2022 AQMP. The NOP/IS for the 2022 AQMP (see Appendix A of this Program EIR) evaluated all of the proposed control measures and determined that a majority would involve physical modifications requiring construction activities to occur and that the use of construction equipment could generate potentially significant noise impacts. Project-specific and cumulative noise impacts associated with the various types of construction activities and associated equipment that may be required to implement the proposed control measures in the 2022 AQMP are evaluated in this subchapter of the Program EIR. No comments were received on the analysis presented in the NOP/IS that identified other potential impact areas that would require additional analysis.

4.6.1 2022 AQMP CONTROL MEASURES WITH POTENTIAL NOISE IMPACTS

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest technology available. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emission and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve emission leak detection and maintenance procedures; and establish educational and outreach programs.

Tables 4.6-1 and 4.6-2 contain a summary of the 2022 AQMP control measures which could generate potential noise impacts during construction and operation activities, respectively.

TABLE 4.6-1
Proposed Control Measures in ~~Revised Draft~~ 2022 AQMP with Potential Noise Impacts During Construction

Control Measure Number	Control Measure Title	Construction Activities Potentially Causing Noise Impacts
R-CMB-01	Emission Reduction from Replacement with Zero Emission or Low NOx Appliances – Residential Water Heating	Removing older water heaters and installing zero emission water heaters and low NOx technologies (when zero emission is infeasible) in new and existing residences.
R-CMB-02	Emission Reduction from Replacement with Zero Emission or Low NOx Appliances – Residential Space Heating	Removing older residential space heaters and installing zero emission space heaters and low NOx technologies (when zero emission is infeasible) in new and existing residences.
R-CMB-03	Emission Reductions from Residential Cooking Devices	Removing older residential cooking devices and installing electric cooking devices, or induction cooktops, in new and existing residences.
R-CMB-04	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Residential Other Combustion Sources	Removing older pool heaters, dryers, grills etc. and installing zero emission or low NOx technologies in new and existing residences
C-CMB-01	Emission Reductions from Replacement with Zero or Near-Zero or Low NOx Appliances – Commercial Water Heating	Removing older water heaters and installing zero emission water heaters and low NOx technologies (when zero emission is infeasible) in commercial buildings.
C-CMB-02	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Commercial Space Heating	Removing older space heaters and installing zero emission space heaters and low NOx technologies (when zero emission is infeasible) in commercial buildings.
C-CMB-03	Emission Reductions from Commercial Cooking Devices	Removing gas burners and installing zero emission and low NOx technologies (e.g., electric cooking devices, induction cooktops, or low NOx gas burner technologies) in commercial buildings.
C-CMB-04	Emission Reductions from Small Internal Combustion Engines (ICEs)	Removing older, more polluting small ICEs and installing zero emission ICEs.

TABLE 4.6-1 (continued)
Proposed Control Measures in ~~Revised Draft~~ 2022 AQMP with Potential Noise Impacts During Construction

Control Measure Number	Control Measure Title	Construction Activities Potentially Causing Noise Impacts
C-CMB-05	NOx Reductions from Small Miscellaneous Commercial Combustion Equipment (Non-Permitted)	Removing older small combustion equipment with zero emission equipment in commercial buildings.
L-CMB-01	NOx Reductions for RECLAIM Facilities	Installing NOx pollution control equipment including SCRs and removing older burners and installing low NOx burners at industrial facilities.
L-CMB-02	Reductions from Boilers and Process Heaters (Permitted)	Removing older boilers and process heaters and installing zero emission and low NOx technologies at industrial facilities.
L-CMB-03	NOx Reductions from Permitted Non-Emergency Internal Combustion Engines (ICEs)	Removing older, non-emergency ICEs and installing zero emission and low NOx technologies for non-emergency ICEs.
L-CMB-04	Emission Reductions from Emergency Standby Engines (Permitted)	Removing older, emergency standby engines and installing zero emission and low NOx technology alternatives to emergency standby engines.
L-CMB-05	NOx Emission Reductions from Large Turbines	Installing zero emission and low NOx emissions technologies for electric generating units such as fuel cells.
L-CMB-06	NOx Emission Reductions from Electricity Generating Facilities	Removing or decommissioning older boilers and installing lower-emitting turbines, or zero emission and low NOx emissions technologies
L-CMB-07	Emission Reductions from Petroleum Refineries	Installing NOx pollution control equipment including advanced SCRs and ultra-low NOx burners, and converting certain refinery boilers or process heaters or steam-driven equipment such as pumps or blowers to run on electricity.
L-CMB-08	NOx Emission Reductions from Combustion Equipment at Landfills and Publicly Owned Treatment Works	Removing or decommissions older combustion turbines and installing lean pre-mixed combustion turbines, NOx pollution control equipment including SCRs; removing old burners and installing low-NOx burners on biogas fueled combustion equipment; and/or modifying the piping to route landfill-produced biogas to existing natural gas pipelines.
L-CMB-09	NOx Reductions from Incinerators	Installing low NOx and ultra-low NOx burners for incinerators and other associated equipment.

TABLE 4.6-1 (continued)
Proposed Control Measures in ~~Revised Draft~~ 2022 AQMP with Potential Noise Impacts During Construction

Control Measure Number	Control Measure Title	Construction Activities Potentially Causing Noise Impacts
L-CMB-10	NOx Reductions from Miscellaneous Permitted Equipment	Removing existing combustion equipment and installing zero emission technology and NOx pollution control equipment including SCRs; and removing old burners and installing low NOx and/or ultra-low NOx burners.
ECC-03	Additional Enhancements in Reducing Existing Residential Building Energy Use	Removing older appliances and installing highly efficient technologies such as solar thermal heating and photovoltaic panels.
FLX-02	Stationary Source VOC Incentives	Removing older, higher-emitting equipment and installing newer, lower-emitting equipment for area and stationary sources.
MCS-01	Application of All Feasible Measures	Retrofitting existing equipment and removing older, higher-emitting equipment and installing newer, lower-emitting equipment to for sources.
EGM-01	Emission Reductions from New Development and Redevelopment (Potential Indirect Source Rule and ports affected).	Installing charging and alternative fueling infrastructure for the storage and dispensing of alternative fuels for use in replaced or upgraded off-road construction equipment.
EGM-03	Emission Reductions from Clean Construction Policy	Installing charging and alternative fueling infrastructure for the storage and dispensing of alternative fuels for use in replaced or upgraded off-road construction equipment.
MOB-01	Emission Reductions at Commercial Marine Ports	Installing charging and alternative fueling infrastructure for the storage and dispensing of alternative fuels for use in on-road heavy-duty vehicles, ocean-going vessels, cargo handling equipment, locomotives, and harbor craft operating at commercial marine ports.

TABLE 4.6-1 (continued)
Proposed Control Measures in ~~Revised Draft~~ 2022 AQMP with Potential Noise Impacts During Construction

Control Measure Number	Control Measure Title	Construction Activities Potentially Causing Noise Impacts
MOB-02A	Emission Reductions at New Rail Yards and Intermodal Facilities	Installing charging and alternative fueling infrastructure for the storage and dispensing of alternative fuels for use in on-road heavy-duty vehicles, off-road equipment, and locomotives. operating at new rail yards and intermodal facilities; and deploying the cleanest locomotives, switchers, on-road heavy-duty trucks, cargo-handling equipment, transportation refrigeration units available.
MOB-02B	Emission Reductions at Existing Rail Yards and Intermodal Facilities	Installing charging and alternative fueling infrastructure for the storage and dispensing of alternative fuels for use in on-road heavy-duty vehicles, off-road equipment, and locomotives operating at existing rail yards and intermodal facilities; and deploying the cleanest locomotives, switchers, on-road heavy-duty trucks, cargo-handling equipment, transportation refrigeration units available.
MOB-04	Emission Reductions at Commercial Airports	Installing charging and alternative fueling infrastructure for the storage and dispensing of alternative fuels for use in on-road heavy-duty vehicles, off-road equipment at commercial airports.
MOB-05	Accelerated Retirement of Older Light-Duty and Medium-duty Vehicles	Retiring and scrapping up to 2,000 light- and medium-duty vehicles per year; and installing charging and alternative fueling infrastructure for the storage and dispensing of alternative fuels for use in zero and near–zero emission vehicles.
MOB-06	Accelerated Retirement of Older On-Road Heavy-duty Vehicles	Retiring and scrapping older, heavy-duty vehicles and installing charging and alternative fueling infrastructure for the storage and dispensing of alternative fuels for use in low NOx vehicles fueled with CNG or other alternative fuels (e.g., battery electric and hydrogen fuel cells).
MOB-07	On-Road Mobile Source Emission Reduction Credit Generating Program	Retiring and scrapping older heavy-duty trucks and installing charging and alternative fueling infrastructure for the storage and dispensing of alternative fuels for use in zero emission and low NOx emission heavy-duty trucks.

TABLE 4.6-1 (concluded)
Proposed Control Measures in ~~Revised Draft~~ 2022 AQMP with Potential Noise Impacts During Construction

Control Measure Number	Control Measure Title	Construction Activities Potentially Causing Noise Impacts
MOB-09	Further Emission Reductions from Passenger Locomotives	Retiring and scrapping or retrofitting existing passenger locomotives so that they are capable of achieving Tier 4 emission standards; and installing charging and alternative fueling infrastructure for the storage and dispensing of alternative fuels for use zero emission or low NOx technologies (e.g., battery electric and hydrogen fuel cells).
MOB-10	Off-Road Mobile Source Emission Reduction Credit Generation Program	Retiring and scrapping off-road mobile equipment and installing charging and alternative fueling infrastructure for the storage and dispensing of alternative fuels for use in zero (e.g. battery-electric or fuel cell powered equipment) and low NOx emission off-road mobile equipment (e.g., 90 percent cleaner than Tier 5).

TABLE 4.6-2
Proposed Control Measures in ~~Revised Draft~~ 2022 AQMP with Potential Noise Impacts During Operation

Control Measure Number	Control Measure Title	Operation Activities Potentially Causing Noise Impacts
MCS-02	Wildfire Prevention	Conducting mechanical thinning and chipping and grinding activities during fuel reduction and removal efforts.

4.6.2 SIGNIFICANCE CRITERIA

Implementation of the 2022 AQMP would be considered to have significant adverse noise impacts if any of the following conditions occur:

- Construction noise levels exceed the local noise ordinances or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three decibels (dBA) at the site boundary. Construction noise levels will be considered significant if they exceed federal Occupational Safety and Health Administration (OSHA) noise standards for workers.
- The proposed project operational noise levels exceed any of the local noise ordinances at the site boundary or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three dBA at the site boundary.

4.6.3 POTENTIAL NOISE IMPACTS AND MITIGATION MEASURES

4.6.3.1 Noise Associated with Construction Activities

Implementation of the 2022 AQMP control measures is expected to result in construction activities related to the: 1) installation of air pollution control equipment (e.g., low NOx burners, SCR systems, and electrification of sources); 2) replacement of existing equipment; 3) installation of roadway infrastructure (wayside power and catenary lines or other similar technologies); 4) installation of battery charging infrastructure; 5) installation of alternative fuel infrastructure; and 6) installation of solar panels and similar equipment. For the purpose of evaluating potential noise impacts, the analysis does not assume that new industrial facilities or corridors will be constructed as a result of implementing the 2022 AQMP. Instead, the analysis assumes that construction activities will include: 1) installation of new equipment or devices; 2) removal of older equipment or devices; 3) modification or retrofit of existing equipment and facilities; and 4) modification of existing roadways to install new equipment and roadway infrastructure.

Control measures that may result in noise impacts during construction are listed in Table 4.6-1. The control measures in the 2022 AQMP that may generate construction activities include: R-CMB-01, R-CMB-02, R-CMB-03, R-CMB-04, C-CMB-01, C-CMB-02, C-CMB-03, C-CMB-04, C-CMB-05, L-CMB-01, L-CMB-02, L-CMB-03, L-CMB-04, L-CMB-05, L-CMB-06, L-CMB-07, L-CMB-08, L-CMB-09, L-CMB-10, ECC-03, FLX-02, MCS-01, EGM-01, EGM-03, MOB-01, MOB-02A, MOB-02B, MOB-04, MOB-05, MOB-06, MOB-07, MOB-09, and MOB-10.

The only control measure that is not expected to generate construction activities is Control Measure MCS-02. While Control Measure MCS-02 is expected to use chipping and grinding equipment, which are ordinarily considered construction equipment, activities conducted as part of wildfire fuel reduction and removal efforts, are treated as operation activities. Thus, the noise from the use of equipment to chip and grind vegetation could generate operational noise impacts. Operational noise impacts that may result from implementing Control Measure MCS-02 are analyzed in Section 4.6.3.2.

Control Measures MOB-01, MOB-02A, and MOB-02B could require the installation roadway infrastructure within or adjacent to existing roadways, streets, freeways, and/or transportation corridors. For the purpose of evaluating potential noise impacts for these three control measures, the analysis assumes that no new rail or truck traffic routes would be constructed, but that some of the existing routes/corridors will be modified to include roadway infrastructure. The existing rail and truck routes/corridors likely to be modified are located primarily in commercial and industrial zones within the Southern California area. Examples of these areas include, but are not limited to, the Port of Los Angeles, Port of Long Beach, and industrial areas in and around container transfer facilities (rail and truck) near the Terminal Island Freeway, along the Alameda Corridor, as well inland railyards near downtown Los Angeles.

Construction activities may require the use of heavy construction equipment. As specific construction projects are not currently proposed, the types and quantities of construction

equipment necessary to implement the proposed control measures are not currently known. The noise levels from typical construction equipment are presented in Table 4.6-3.

The construction equipment noise sources identified in Table 4.6-3 range from 76 decibels (dBA) to over 100 dBA for activities such as pile driving. The construction equipment, hours of operations, number of pieces of equipment operating at the same time, and construction phases, would vary depending on the specific project; therefore, the construction noise levels are also expected to vary. Each construction phase would use a combination of equipment and personnel that would vary throughout that phase. In addition, construction phases could overlap at the site. This would lead to a variety of possible construction activities and equipment that may occur at any given time throughout the construction process. Construction activities would generate noise from heavy construction equipment and construction-related traffic. A typical construction site would be expected to generate noise levels of about 85 dBA at 50 feet from the center of construction activity. Most of the construction noise sources would be located at or near ground level, which would help attenuate noise levels. The estimated noise from a representative construction site at increasing distances from the site is provided in Table 4.6-4.

Table 4.6-4 assumes construction activities of about 85 dBA at 50 feet from the center of construction activity and uses an estimated six dBA reduction for every doubling of distance (divergence). The noise levels are expected to decrease to about 61 dBA at about 800 feet from construction activities. The potential noise impact of construction activities would vary depending on the existing noise levels in the environment and the location of sensitive receptors (e.g., residences, hotels, hospitals, etc.) with respect to construction activities. Because no specific projects are currently proposed, the extent of the potential noise impacts are speculative. Nonetheless, construction activities associated with control measures in the 2022 AQMP could occur throughout South Coast AQMD's jurisdiction. The 2022 AQMP may require existing commercial or industrial owners/operators of affected facilities to install air pollution control equipment or modify their existing operations to reduce stationary source emissions. Potential modifications would primarily occur at facilities typically located in appropriately zoned industrial and commercial areas. Installing air pollution control equipment could generate noise impacts, but virtually all of the control equipment would be installed within industrial and commercial facilities. Further, all construction projects would need to comply with local general plan noise element or noise ordinances, so that construction noise impacts at stationary sources on sensitive receptors are expected to be less than significant.

TABLE 4.6-3
Example of Noise Levels from Construction Noise Sources

Equipment	Typical Noise Level in Decibels (dBA)[(a)]
Air Compressor	80
Backhoe	80
Ballast Equalizer	82
Ballast Tamper	83
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Derrick	88
Crane, Mobile	83
Dozer	85
Generator	82
Grader	85
Impact Wrench	85
Jack Hammer	88
Loader	80
Paver	85
Pile-driver (Impact)	101
Pile-driver (Sonic)	95
Pneumatic Tool	85
Pump	77
Rail Saw	90
Rock Drill	95
Roller	85
Saw	76
Scarifier	83
Scraper	85
Shovel	82
Spike Driver	77
Tie Cutter	84
Tie Handler	80
Tie Inserter	85
Truck	84

(a) FTA, 2018. Levels are in dBA at 50 feet from the source.

TABLE 4.6-4
Noise Level Attenuation at a Representative Construction Site

Distance from Construction Noise Source (feet)	Estimated Noise Level (dBA)
50	85
100	79
200	73
400	67
800	61
1,600	55
3,200	49
6,400	43

In addition, some of the control measures could result in minor construction activities that could create some minimal noise associated with replacing appliances such as water heaters, space heaters, cooking equipment, and pool heaters located in residential settings. Sources of noise for appliance replacement activities would be relatively brief and comprised of trucks delivering new appliances and hauling away old appliances, electronic hand trucks to maneuver the appliances to/from the truck to the residential location, and hand-tools to disconnect the old appliance and connect new appliance to the necessary electronic and plumbing components, as applicable. For these reasons, construction noise impacts at residences are also expected to be less than significant.

The 2022 AQMP may also require construction of roadway infrastructure along existing roadways and transportation corridors. Existing noise levels from the roadways and transportation corridors that could be impacted by these control measures (e.g., MOB-01, MOB-02A, and MOB-02B) are expected to be high as they are currently heavily traveled (e.g., Terminal Island Freeway and Alameda Corridor). The construction of roadway infrastructure would result in additional construction noise sources (e.g., heavy construction equipment) near these transportation corridors. It is not uncommon for residences and other sensitive receptors to be located within several hundred feet of the existing roadways so noise levels associated with construction activities could be in the range of 65-75 dBA, which could result in noise increases of three dBA or greater and generate potentially significant noise impacts, although temporary.

Vibration associated with ground-borne sources is generally not a common environmental problem; however, activities such as blasting, pile driving, and heavy earthmoving are potential sources of vibration during construction. As described for construction noise impacts, residences and other sensitive receptors could be located within several hundred feet of the existing roadways, and construction activities could result in noticeable vibration impacts. Project construction would involve equipment and activities that may have the potential to generate groundborne vibration. In general, demolition of structures during construction generates the highest levels of vibration. The Federal Transit Administration (FTA) has published standard velocity levels (Lv) and peak particle velocities (PPV) for construction equipment operations (FTA, 2018). The approximate velocity level and peak particle velocities for large construction equipment are listed in Table 4.6-5. Ground-borne vibration is quantified in terms of decibels since that scale compresses the range of numbers required to describe the oscillations. The FTA uses vibration decibels (abbreviated as VdB) to measure and assess vibration amplitude. In the

United States, vibration is referenced to one micro-inch/sec (25.4 micro-mm/sec) and presented in units of VdB.

TABLE 4.6-5
Representative Construction Equipment Vibration Impacts

Equipment	Peak Particle Velocity (PPV) at 25 ft (inches/sec)[1]	Velocity Level (Lv) at 25 ft (VdB) [1]	PPV at 200 ft (inches/sec)[2]	Lv at 200 ft (VdB) [3]
Impact Pile Driver (typical)	0.644	104	0.0285	77
Vibratory Roller	0.210	94	0.0093	67
Large Bulldozers	0.089	87	0.0039	60
Loaded Trucks	0.076	86	0.0034	59
Jackhammer	0.035	79	0.0015	52
Small Bulldozer	0.003	58	0.0001	31

(1) Source: FTA, 2018. Data reflects typical vibration levels
(2) Source: FTA, 2018. Eq. 7-2.
(3) Source: FTA, 2018. Eq. 7-3.

Using the FTA quantitative construction vibration analysis methodology (FTA, 2018), the PPV would range from 0.0001 to 0.0285 inches per second, which is below the construction vibration damage criteria for even an extremely susceptible building (0.12 inches per second). The Lv would range from 31 to 77 VdB within 200 feet from construction activities, which is also below the construction vibration damage criteria for even an extremely susceptible building (90 VdB). The predicted vibration during construction activities can be compared to the significance threshold of 72 VdB. Vibration from construction activities could exceed the 72 VdB threshold for structures and sensitive receptors within 200 feet of construction activities if certain types of construction equipment are used. The specific location of construction activities needed to implement the 2022 AQMP control measures cannot be predicted at this time. However, construction activities within 200 feet of susceptible buildings could exceed the significance threshold and is considered potentially significant.

Conclusion – Noise Associated with Construction Activities: Implementing the 2022 AQMP is expected to require construction activities that include: 1) installation of new equipment or devices; 2) removal of older equipment or devices; 3) modification or retrofit of existing equipment and facilities; and 4) modification of existing roadways to install new equipment and roadway infrastructure. The potential noise impact of construction activities would vary depending on the existing noise levels in the environment and the location of sensitive receptors (e.g., residences, hotels, hospitals, etc.) with respect to construction activities. Because no specific projects are currently proposed, the noise impacts are speculative. Potential modifications would occur at facilities typically located in appropriately zoned industrial or commercial areas, so construction noise impacts at stationary sources on sensitive receptors are expected to be less than significant. In addition, some of the control measures could result in minor construction activities that could create some minimal noise associated with replacing appliances such as water heaters, space heaters, cooking equipment, and pool heaters located in residential settings. Sources of noise for appliance replacement activities would be relatively brief and comprised of trucks delivering new appliances and hauling away old appliances,

electronic hand trucks to maneuver the appliances to/from the truck to the residential location, and hand-tools to disconnect the old appliance and connect new appliance to the necessary electronic and plumbing components, as applicable. For these reasons, construction noise impacts at residences are also expected to be less than significant.

The construction of roadway infrastructure would result in additional construction noise sources near transportation corridors, and it is not uncommon for residences and other sensitive receptors to be located within several hundred feet of the existing roadways, so noise levels associated with construction activities could increase three dBA or greater and generate potentially significant noise impacts, although temporary. Vibration from construction activities could exceed the 72 VdB threshold for structures and sensitive receptors within 200 feet of construction activities if certain types of construction equipment are used and so is considered potentially significant. **Therefore, the noise and vibration impacts during construction activities are considered significant.**

Project-Specific Mitigation: The overall impact of the proposed project on local noise levels during construction, although temporary in nature, is considered significant; however, project-specific information (e.g., project location, distance of roadway to be altered, etc.) would be necessary in order to develop appropriate mitigation measures.

Mitigation measures for construction activities would need to be identified on a project-by-project basis and would be the responsibility of the lead agencies based on their underlying legal authority to mitigate project impacts. When potentially significant impacts are identified, CEQA Guidelines Section 15091 requires feasible mitigation measures capable of avoiding or reducing the significant effects to be identified. In particular to the potential for significant noise impacts, the Lead Agency should develop mitigation measures to ensure consistency with the Federal Noise Control Act, California Government Code Section 65302, the Governor's Office of Planning and Research Noise Element Guidelines, local noise ordinances and general plan noise elements for the counties or cities where projects are undertaken, Federal Highway Administration and Caltrans guidance documents, and other health and safety standards set forth by federal, state, and local authorities that regulate noise levels, as applicable and feasible. The following noise mitigation measures have been identified and take into consideration these aforementioned noise-specific requirements which are implemented by the applicable, local agency(ies):

NS-1 Install temporary noise barriers to protect sensitive receptors from excessive noise levels during construction.

NS-2 Schedule construction activities consistent within the allowable hours pursuant to the applicable general plan noise element or noise ordinance. For construction activities located near sensitive receptors, ensure noise-generating construction activities (including truck deliveries, pile driving, and blasting) are limited to the least noise-sensitive times of day (e.g., weekdays during the daytime hours). Where construction activities are authorized to occur outside of the limits established by the noise element of the general plan or noise ordinance, notify affected sensitive receptors and all parties who will experience noise levels in

excess of the allowable limits for the specified land use, of the anticipated level of exceedance and duration of exceedance; and provide a list of protective measures that can be undertaken by the individual, including temporary relocation or use of hearing protective devices.

NS-3 Prohibit idling of construction equipment for extended periods of time in the vicinity of sensitive receptors.

NS-4 Post procedures and phone numbers at the construction site for notifying the Lead Agency staff, local Police Department, and construction contractor (during regular construction hours and off-hours), along with permitted construction days and hours, complaint procedures, and who to notify in the event of a problem.

NS-5 Notify neighbors and occupants within 300 feet of the project construction area at least 30 days in advance of anticipated times when noise levels are expected to exceed limits established in the noise element of the general plan or noise ordinance.

NS-6 Hold a preconstruction meeting with job inspectors and the general contractor/onsite project manager to confirm that noise measures and practices (including construction hours, neighborhood notification, posted signs, etc.) are completed.

NS-7 Designate an on-site construction complaint and enforcement manager for the project.

NS-8 Ensure that construction equipment is properly maintained per manufacturers' specifications and fitted with the best available noise suppression devices (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds silencers, wraps). All intake and exhaust ports on power equipment shall be muffled or shielded.

NS-9 Use hydraulically or electrically powered tools (e.g., jack hammers, pavement breakers, and rock drills) for project construction to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust should be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves should be used, if such jackets are commercially available, and this could achieve a further reduction of 5 dBA. Quieter procedures should be used, such as drills rather than impact equipment, whenever such procedures are available and consistent with construction procedures.

NS-10 Locate fixed/stationary equipment (such as generators, compressors, rock crushers, and cement mixers) as far as possible from noise-sensitive receptors.

NS-11 Consider using flashing lights instead of audible back-up alarms on mobile equipment.

NS-12 For construction activities that require pile driving or other techniques that result in excessive noise or vibration, such as blasting, develop site-specific noise/vibration attenuation measures under the supervision of a qualified acoustical consultant.

NS-13 For construction activities at locations that require pile driving due to geological conditions, utilize quiet pile driving techniques such as predrilling the piles to the maximum feasible depth, where feasible. Predrilling pile holes will reduce the number of blows required to completely seat the pile and will concentrate the pile driving activity closer to the ground where pile driving noise can be shielded more effectively by a noise barrier/curtain.

NS-14 Monitor the effectiveness of noise reduction measures by taking noise measurements and installing adaptive mitigation measures to achieve the standards for ambient noise levels established by the noise element of the general plan or noise ordinance.

Remaining Noise Impacts Associated with Construction Activities: While mitigation measures NS-1 to NS-14 would minimize some of the noise and vibration impacts from construction, the South Coast AQMD cannot predict how a local public agency might choose to mitigate a significant construction noise and vibration impacts for construction activities within their jurisdiction. **Therefore, noise and vibration impacts from construction of implementing the 2016 AQMP are expected to remain significant after mitigation measures are applied.**

4.6.3.2 Noise Associated with Operational Activities

As discussed in the NOP/IS (see Appendix A), the majority of the proposed control measures in the 2022 AQMP may require existing commercial or industrial owners/operators of affected facilities to install air pollution control equipment or modify their existing operations to reduce stationary source emissions. Potential modifications would likely occur at facilities typically located in appropriately zoned industrial or commercial areas and once the modifications are completed, the operation of the new or modified equipment and/or air pollution control equipment on stationary sources could generate similar noise and vibration impacts relative to baseline conditions, since the physical modifications would occur within industrial and commercial facilities. The 2022 AQMP may also require residential units to replace or install equipment that is zero emission or low NOx. This equipment is not expected to generate more or different noise than their more polluting counterparts. Further, since noise requirements and noise ordinances would continue to apply to stationary sources, noise impacts on sensitive receptors are expected to be less than significant.

If roadway infrastructure is installed as a result of implementing Control Measures MOB-01, MOB-02A, and MOB-02B., the operation of the roadway infrastructure would be along existing transportation corridors and railways, which are their own sources of existing noise.

Additionally, control measures that result in the electrification or accelerated retirement of equipment (MOB-04, MOB-05, MOB-06, MOB-07, MOB-09, and MOB-10) are not expected to be noisier than the original equipment being replaced because electric motors are typically quieter than diesel-fueled engines due to having fewer moving parts. Further, wayside power would likely be installed on major transportation corridors where noise levels are already high and often are the major noise sources in many areas, especially industrial areas and near the ports. Wayside power would be used to displace existing truck or rail traffic and would not be expected to generate additional traffic, so that noise impacts on sensitive receptors are expected to be less than significant.

Conclusion – Noise Associated with Operational Activities: As noted in Section 4.6.3, nearly all noise impacts associated with the proposed control measures in the 2022 AQMP are associated with construction activities except for Control Measure MCS-02 – Wildfire Prevention, which instead uses construction equipment operationally. This equipment could result in periodic operational noise impacts from chipping and grinding vegetation during wildfire fuel reduction and removal efforts. Control Measure MCS-02 is designed as a preventative measure to thin out forestland by chipping and grinding greenwaste and wood waste to reduce the amount of fuel available for wildfires. Once the chipping and grinding work is completed for the season, no new sources of permanent operational noise are expected. Thinning and chipping activities typically require the use of chainsaws, dozers, and chippers/grinders. The noise levels for this type of equipment ranging from 85 to 110 dBA (forestryequipmentguide.com, 2019). The thinning and chipping activities should not require blasting, pile driving, and heavy earthmoving, therefore should not generate significant vibrations. Further, the areas that are most likely to require additional thinning and chipping are in San Bernardino Urban Wildland Interface where there are few sensitive receptors. For areas in forestlands where sensitive receptors are present, the areas surrounding existing structures are already required to be periodically cleared of woodwaste and greenwaste in order to maintain a defensible space around any structures. Therefore, Control Measure MCS-02 is not expected to result in significant operational noise impacts. **Based upon these considerations, significant adverse noise impacts relating to noise associated with operational activities are not expected from implementing the proposed project.**

Project-Specific Mitigation: Since no significant noise impacts relating to operational activities were identified, no mitigation measures are necessary or required.

Remaining Noise Impacts Associated with Operational Activities: Since no mitigation measures are required, **noise impacts relating to operational activities remain less than significant**.

4.6.4 SUMMARY OF NOISE IMPACTS

- The 2022 AQMP could result in noise and vibration impacts from construction activities that involve modifications at existing equipment and facilities~~, and modifications to existing roadways and roadway infrastructure; and operational activities from the use of newly installed equipment, and chipping and grinding vegetation wildfire fuel reduction and removal efforts from Control Measure MCS-02.~~

- Construction noise impacts from modifications at existing facilities and residences are expected to be less than significant so that no mitigation measures are required.

- Construction noise and vibration impacts from modifications to existing roadways and roadway infrastructure is expected to be significant, so mitigation measures are proposed. Because project-specific information is required to determine existing noise level, which mitigation measures can be applied, and whether noise level can be reduced to less than significant; for conservatism, construction noise and vibration impacts are expected to remain significant after mitigation measures are applied.

- Operational noise impacts are expected to be less than significant so that no mitigation measures are required.

4.6.5 CUMULATIVE NOISE IMPACTS AND MITIGATION MEASURES

As discussed in Chapter 2, Project Description, in order to attain the 8-hour ozone standard, the majority of NOx emission reductions must come from mobile sources, including ships, aircraft, and locomotive engines, and these mobile sources are primarily regulated under federal and international jurisdiction, with limited authority for CARB and the South Coast AQMD. Attainment is not achievable without substantial emission reductions from these categories of mobile sources. Therefore, CARB has prepared the Proposed 2022 State Strategy for the State Implementation Plan (Proposed 2022 State SIP Strategy) which describes the State's strategy and commitments to reduce emissions from State-regulated sources needed to support attainment of the 70 ppb 8-hour ozone standard. The Proposed 2022 State SIP measures are described in Chapter 2, Section 2.7.3.1.

SCAG, as the Metropolitan Planning Organization (MPO) for the Southern California region, is mandated to comply with federal and state transportation and air quality regulations. In consultation with federal, state, and local transportation and air quality planning agencies, and other stakeholders, SCAG developed the Final 2020–2045 2020 RTP/SCS, also known as Connect SoCal, and the 2021 Federal Transportation Improvement Program (FTIP), with transportation control measures (TCMs) to address the 2015 8-hour ozone standards in the Basin and these are included in three sections of Appendix IV-C of the 2022 AQMP.

In addition to the CARB and SCAG programs, Table 4.3-5 summarizes the major clean transportation and GHG reduction policies that are being implemented at the state levels. The CARB SIP, SCAG's Connect SoCal, the policies in Table 4.3-5, and the 2022 AQMP all have policies that are aimed at air quality improvement, as well as GHG reductions.

4.6.5.1 CARB's Proposed 2022 State Strategy

Implementation of CARB's 2022 State SIP Strategy could require construction and operational activities associated with new or modified facilities, or infrastructure and increased mining activities. Noise and vibration associated with construction and operation of these facilities and mining operations are generally site-specific and are potentially significant. Operational-related

activities associated with mining activities or manufacturing plants could produce new or ongoing sources of noise that could exceed applicable noise standards and result in a substantial increase in ambient noise levels. Therefore, implementation of the State SIP Strategy could result in a significant noise and vibration impacts.

Further, CARB cannot assure that implementing mitigation measures would reduce the noise and vibration impacts in the 2022 State SIP Strategy to a less-than-significant level because the authority to determine project-level impacts and require project-level mitigation is dependent on the land use and/or permitting agencies for individual projects. The mitigation measure in the 2022 State SIP Strategy, MM 13-1, is similar to South Coast AQMD's proposed mitigation measures NS-1 through NS-14, including limiting the scheduled time of construction activities, properly maintaining equipment, providing noise shielding, and utilizing low noise equipment when available.

The 2022 State SIP Strategy concluded significant and unavoidable noise impacts. When combining the impacts from the 2022 State SIP Strategy, which includes significant noise and vibration impacts from across the state, CARB's 2022 State SIP Strategy impacts on noise would be cumulatively considerable. Therefore, the 2022 State SIP Strategy could contribute to a significant cumulative noise and vibration impacts.

4.6.5.2 SCAG Connect SoCal Plan

SCAG determined that the Connect SoCal Plan (SCAG, 2020) would result in significant impacts related to increases in noise. The extension of transportation and related infrastructure would result in new noise sources as well as increased noise from some existing sources. The Connect SoCal Plan developed mitigation measures similar to those identified in NS-1 through NS-14. SCAG determined that the implementation of mitigation measures would reduce noise and vibration impacts, however noise impacts would remain significant. Further, construction noise and vibration impacts are generally site-specific, but to the Connect SoCal Plan, might result in potentially significant construction noise. As the population in the region continues to increase, the Connect SoCal Plan could also contribute to a cumulatively considerable temporary or permanent increase in noise and vibration outside the region as a result of increased travel. This activity would include railroads, as well as freeway, arterial, and transit noise. As a result, SCAG'S Connect SoCal Plan could contribute to a significant cumulative noise impact.

4.6.5.3 Summary of Cumulative Noise Impacts

Implementing control measures from the 2022 AQMP could result in significant adverse noise and vibration impacts due to associated construction activity. Implementation of the 2022 AQMP control measures, the TCMs in the Connect SoCal Plan, and the 2022 State SIP Strategy, when combined with other past, present, and reasonably foreseeable activities, would result in a potentially significant increase in noise and vibration associated with construction and would contribute to cumulatively considerable impacts to noise and vibration.

4.6.5.4 Cumulative Mitigation Measures

No additional mitigation measures to reduce the significant cumulative impacts to construction noise and vibration have been identified.

4.6.5.5 Remaining Cumulative Noise Impacts After Mitigation

Cumulative impacts due to past, present, and reasonably foreseeable future projects would remain significant and unavoidable for construction noise and vibration.

SUBCHAPTER 4.7

SOLID AND HAZARDOUS WASTE

4.7 SOLID AND HAZARDOUS WASTE

This subchapter examines potential solid and hazardous waste impacts from implementing the proposed control measures in the 2022 AQMP. The NOP/IS for the 2022 AQMP (see Appendix A of this Program EIR) evaluated all of the proposed control measures and determined that a majority would involve the following activities which collectively could cause potentially significant solid and hazardous waste impacts: 1) increase in construction waste; 2) increase in waste associated with the disposal of old equipment; 3) increase in waste from catalysts; 4) increase in waste from filters; 5) increase in greenwaste associated with chipping activities; and 6) increase in waste due to vehicle/equipment scrapping and disposal of car batteries. Project-specific and cumulative solid and hazardous waste impacts associated with the various types of control measures in the 2022 AQMP are evaluated in this subchapter of the Program EIR. No comments were received on the analysis presented in the NOP/IS that identified other solid and hazardous waste impact areas that would require additional analysis in this Program EIR.

4.7.1 2022 AQMP CONTROL MEASURES WITH POTENTIAL SOLID AND HAZARDOUS WASTE IMPACTS

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest technology available. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emission and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve emission leak detection and maintenance procedures; and establish educational and outreach programs.

Table 4.7-1 contains a summary of the 2022 AQMP control measures which could generate solid and hazardous waste impacts.

TABLE 4.7-1
Proposed Control Measures in ~~Revised Draft~~ 2022 AQMP with Potential Solid and Hazardous Waste Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Solid and Hazardous Waste Impact
R-CMB-01	Emission Reduction from Replacement with Zero Emission or Low NOx Appliances – Residential Water Heating	Installation of zero emission water heaters and low NOx technologies (when zero emission is infeasible) in new and existing residences.	Generation of waste from construction activities and disposal of old equipment.
R-CMB-02	Emission Reduction from Replacement with Zero Emission or Low NOx Appliances – Residential Space Heating	Installation of zero emission space heaters and low NOx technologies (when zero emission is infeasible) in new and existing residences.	Generation of waste from construction activities and disposal of old equipment.
R-CMB-03	Emission Reductions from Residential Cooking Devices	Installation of electric cooking devices, induction cooktops, or low-NOx burners in new and existing residences.	Generation of waste from construction activities and disposal of old equipment.
R-CMB-04	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Residential Other Combustion Sources	Installation of zero emission or low NOx technologies in new and existing residences to replace equipment such as pool heaters, dryers, grills, etc.	Generation of waste from construction activities and disposal of old equipment.
C-CMB-01	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Commercial Water Heating	Installation of zero emission water heaters and low NOx technologies (when zero emission is infeasible) in commercial buildings.	Generation of waste from construction activities and disposal of old equipment.
C-CMB-02	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Commercial Space Heating	Installation of zero emission space heaters and low NOx technologies (when zero emission is infeasible) in commercial buildings may cause impacts.	Generation of waste from construction activities and disposal of old equipment.
C-CMB-03	Emission Reductions from Commercial Cooking Devices	Replacing gas burners with zero emission and low NOx technologies (e.g., electric cooking devices, induction cooktops, or low-NOx gas burner technologies).	Generation of waste from construction activities and disposal of old equipment.
C-CMB-04	Emission Reductions from Small Internal Combustion Engines	Incentivizing consumers to purchase zero emission ICEs.	Generation of waste from construction activities and disposal of old equipment.

TABLE 4.7-1 (continued)
Proposed Control Measures in ~~Revised Draft~~ 2022 AQMP with Potential Solid and Hazardous Waste Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Solid and Hazardous Waste Impact
C-CMB-05	NOx Reductions from Small Miscellaneous Commercial Combustion Equipment (Non-Permitted)	Incentivizing feasible zero emission and low NOx technologies for small combustion equipment.	Generation of waste from construction activities and disposal of old equipment.
L-CMB-01	NOx Reductions for RECLAIM Facilities	Installation of NOx pollution control equipment including SCRs and low NOx burners.	Generation of waste from construction activities, installation and operation of new catalyst technologies, and disposal of any replaced machinery.
L-CMB-02	Reductions from Boilers and Process Heaters (Permitted)	Installation of zero emission and low NOx technologies for boilers and heaters.	Generation of waste from construction activities, installation and operation of new catalyst technologies, and disposal of any replaced machinery.
L-CMB-03	NOx Reductions from Permitted Non-Emergency Internal Combustion Engines (ICEs)	Installation of zero emission and low NOx technologies for non-emergency ICEs.	Generation of waste from construction activities, installation and operation of new catalyst technologies, and disposal of any replaced machinery.
L-CMB-04	Emission Reductions from Emergency Standby Engines (Permitted)	Installation of zero emission and low NOx technology alternatives to emergency ICEs.	Generation of waste from construction activities and disposal of old equipment.
L-CMB-05	NOx Emission Reductions from Large Turbines	Installation of zero emission and low NOx emissions technologies for electric generating units such as fuel cells.	Generation of waste from construction activities and disposal of old equipment.

TABLE 4.7-1 (continued)
Proposed Control Measures in ~~Revised Draft~~ 2022 AQMP with Potential Solid and Hazardous Waste Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Solid and Hazardous Waste Impact
L-CMB-06	NOx Emission Reductions from Electricity Generating Facilities	Replacement of boilers with lower-emitting turbines, installation of zero emission and low NOx emissions technologies, and the application of stricter emission requirements for diesel internal combustion engines may result in the installation and operation of additional NOx pollution control equipment, including SCRs.	Generation of waste from construction activities, installation and operation of new catalyst technologies, and disposal of any replaced machinery.
L-CMB-07	Emission Reductions from Petroleum Refineries	Installation of NOx pollution control equipment including Advanced SCRs and ultra-low NOx burners, and electrification of certain refinery boilers or process heaters or steam-driven equipment such as pumps or blowers.	Generation of waste from construction activities, installation and operation of new catalyst technologies, and disposal of any replaced machinery.
L-CMB-08	NOx Emission Reductions from Combustion Equipment at Landfills and Publicly Owned Treatment Works	Installation of lean pre-mixed combustion turbines, NOx pollution control equipment including SCRs and low-NOx burners on biogas fueled combustion equipment and/or routing landfill produced biogas to existing natural gas pipelines.	Generation of waste from construction activities, installation and operation of new catalyst technologies, and disposal of any replaced machinery.
L-CMB-09	NOx Reductions from Incinerators	Installation of low NOx and ultra-low NOx burners for incinerators and other associated equipment.	Generation of waste from construction activities and disposal of old equipment.
L-CMB-10	NOx Reductions from Miscellaneous Permitted Equipment	Replacement of existing equipment with zero emission technology and installation of NOx pollution control equipment including SCRs and low NOx/ultra-low NOx burners.	Generation of waste from construction activities, installation and operation of new catalyst technologies, and disposal of any replaced machinery.

TABLE 4.7-1 (continued)
Proposed Control Measures in ~~Revised Draft~~ 2022 AQMP with Potential Solid and Hazardous Waste Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Solid and Hazardous Waste Impact
ECC-03	Additional Enhancements in Reducing Existing Residential Building Energy Use	Incentivizing additional reductions in energy use associated with space heating, water heating, and other large residential energy sources through facilitating weatherization, replacing older appliances with highly efficient technologies and encouraging renewable energy adoption such as solar thermal heating and photovoltaic panels.	Generation of waste from construction activities and disposal of old equipment.
FLX-02	Stationary Source VOC Incentives	Installation of newer, lower-emitting equipment to replace older, higher-emitting equipment for area and stationary sources as a result of incentives.	Generation of waste from construction activities and disposal of old equipment.
MCS-01	Application of All Feasible Measures	Retrofitting existing equipment and installation of newer, lower-emitting equipment to replace older, higher-emitting equipment for sources as a result of new emission limits introduced through federal, state, or local regulations.	Generation of waste from construction activities, installation and operation of new catalyst technologies, and disposal of any replaced machinery.
MCS-02	Wildfire Prevention	Mechanical thinning and chipping and grinding activities during fuel reduction and removal efforts.	Generation of additional mulch from chipping and grinding wood and greenwaste due to wildfire prevention.

TABLE 4.7-1 (continued)
Proposed Control Measures in ~~Revised Draft~~ 2022 AQMP with Potential Solid and Hazardous Waste Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Solid and Hazardous Waste Impact
EGM-01	Emission Reductions from New Development and Redevelopment	Replacing or upgrading off-road construction equipment as part of development/redevelopment efforts may result in the use of zero emission technologies in construction, the installation of charging and alternative fueling infrastructure, the use of alternative fuels; and the use construction equipment with low-emitting engines fitted with diesel particulate filters (DPFs).	Generation of solid waste from disposal of old equipment and DPFs.
EGM-03	Emission Reductions from Clean Construction Policy	Incentivizing the use of zero emission and low NOx equipment by adopting a voluntary measure for municipalities and public agencies to reduce emissions generated by construction activities may include use of zero emission and low NOx construction equipment, dust control, alternative fuels, DPFs, low-emitting engines, and low VOC materials.	Generation of solid waste from disposal of old equipment and DPFs.
MOB-01	Emission Reductions at Commercial Marine Ports	Infrastructure development required to achieve emission reductions at commercial marine ports from on-road heavy-duty vehicles, ocean-going vessels, cargo handling equipment, locomotives, and harbor craft.	Generation of waste from construction activities and disposal of old equipment and DPFs.

TABLE 4.7-1 (continued)
Proposed Control Measures in ~~Revised Draft~~ 2022 AQMP with Potential Solid and Hazardous Waste Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Solid and Hazardous Waste Impact
MOB-02A	Emission Reductions at New Rail Yards and Intermodal Facilities	Infrastructure development required to achieve emission reductions at new rail yards and intermodal facilities from on-road heavy-duty vehicles, off-road equipment, and locomotives; and deploying the cleanest locomotives, switchers, on-road heavy-duty trucks, cargo-handling equipment, transportation refrigeration units available.	Generation of waste from construction activities and disposal of old equipment and DPFs.
MOB-02B	Emission Reductions at Existing Rail Yards and Intermodal Facilities	Infrastructure development required to achieve emission reductions at existing rail yards and intermodal facilities from on-road heavy-duty vehicles, off-road equipment, and locomotives; and deploying the cleanest locomotives, switchers, on-road heavy-duty trucks, cargo-handling equipment, transportation refrigeration units available.	Generation of waste from construction activities and disposal of old equipment and DPFs.
MOB-04	Emission Reductions at Commercial Airports	Deploying additional cleaner technologies, such as increasing efficiencies, implementing air quality improvement options or by deploying zero emission and low NOx technologies, alternative fuels, DPFs, and low-emitting engines for additional equipment beyond the commitments made in the existing Memoranda of Understanding with the commercial airports.	Generation of waste from construction activities and disposal of old equipment and DPFs.

TABLE 4.7-1 (continued)
Proposed Control Measures in ~~Revised Draft~~ 2022 AQMP with Potential Solid and Hazardous Waste Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Solid and Hazardous Waste Impact
MOB-05	Accelerated Retirement of Older Light-Duty and Medium-duty Vehicles	Accelerating the retirement of up to 2,000 light- and medium-duty vehicles per year through the Replace Your Ride Program and accelerating the penetration of zero and near–zero emission vehicles.	Generation of waste disposal of batteries and vehicle scrapping.
MOB-06	Accelerated Retirement of Older On-Road Heavy-duty Vehicles	Retiring older, heavy-duty vehicles and replacing them with low-NOx vehicles fueled with CNG or other alternative fuels (e.g., battery electric and hydrogen fuel cells).	Generation of waste disposal of batteries and vehicle scrapping.
MOB-07	On-Road Mobile Source Emission Reduction Credit Generating Program	Incentivizing the early deployment of zero emission and low NOx emission heavy-duty trucks through the generation of mobile source emission credits.	Generation of waste disposal of batteries and vehicle scrapping.
MOB-08	Small Off-Road Engine Equipment Exchange Program	Promoting the accelerated turn-over of in-use small off-road engines and other engines, such as gasoline- and diesel-powered commercial lawn and garden equipment through expanded voluntary exchange programs will contribute to the retirement of older off-road engines.	Generation of waste disposal of batteries and vehicle scrapping.
MOB-09	Further Emission Reductions from Passenger Locomotives	Promoting earlier and cleaner replacement or upgrade of existing passenger locomotives capable of achieving Tier 4 emission standards and supporting the development of zero emission or low NOx technologies (e.g., battery electric and hydrogen fuel cells).	Generation of waste disposal of batteries and vehicle scrapping.

TABLE 4.7-1 (concluded)
Proposed Control Measures in ~~Revised Draft~~ 2022 AQMP with Potential Solid and Hazardous Waste Impacts

Control Measure Number	Control Measure Title	Control Methodology	Potential Solid and Hazardous Waste Impact
MOB-10	Off-Road Mobile Source Emission Reduction Credit Generation Program	Accelerating the deployment of zero (e.g., battery-electric or fuel cell powered equipment) and low NOx emission off-road mobile equipment (e.g., 90 percent cleaner than Tier 5) that do not receive public funding.	Generation of waste disposal of batteries and vehicle scrapping.

No comments were received on the analysis presented in the NOP/IS that identified other potential solid and hazardous waste impact areas that would require additional analysis in this Program EIR.

4.7.2 SIGNIFICANCE CRITERIA

Implementation of the 2022 AQMP would be considered to have significant solid and hazardous waste impacts if the generation and disposal of hazardous and non-hazardous waste exceeds the capacity of designated landfills.

4.7.3 POTENTIAL SOLID AND HAZARDOUS WASTE IMPACTS AND MITIGATION MEASURES

Project-specific solid and hazardous waste impacts associated with construction and operational activities have been evaluated in this section.

4.7.3.1 Solid and Hazardous Waste Associated with Construction Activities

Implementation of the 2022 AQMP control measures is expected to result in construction activities that may include: 1) installation of air pollution control equipment (e.g., low NOx burners, SCR systems, electrification of sources); 2) replacement of existing equipment; 3) installation of roadway infrastructure (wayside power and catenary lines or other similar technologies); 4) installation of battery charging infrastructure; and 5) installation of alternative fuel infrastructure. For purposes of evaluating potential solid and hazardous waste impacts, it has been assumed herein that no new industrial facilities or corridors will be constructed, but rather some existing facilities and corridors will be modified to include installation of new equipment and roadway infrastructure.

Control measures that may result in solid and hazardous waste impacts are listed in Table 4.7-1. The control measures in the 2022 AQMP that may require construction activities include: R-CMB-01, R-CMB-02, R-CMB-03, R-CMB-04, C-CMB-01, C-CMB-02, C-CMB-03, C-CMB-04,C-CMB-05, L-CMB-01, L-CMB-02, L-CMB-03, L-CMB-04, L-CMB-05, L-CMB-06, L-

CMB-07, L-CMB-08, L-CMB-09, L-CMB-10, ECC-03, FLX-02, MCS-01, MOB-01, MOB-02A, MOB-02B, and MOB-04. The following subsections analyze the various types of construction activities that may occur and the type of solid and hazardous waste that may be generated.

4.7.3.1.1 Solid and Hazardous Waste Impacts During Construction Due to Installation of Air Pollution Control Equipment

The following control measures are expected to involve the installation of air pollution control equipment (e.g., low NOx/ultra-low NOx burners and SCR systems), the electrification of existing sources and the replacement of existing equipment: L-CMB-01, L-CMB-02, L-CMB-03, L-CMB-04, L-CMB-05, L-CMB-06, L-CMB-07, L-CMB-08, L-CMB-09, L-CMB-10, ECC-03, FLX-02, MCS-01, MOB-01, MOB-02A, MOB-02B, and MOB-04. In general, construction activities associated with installing air pollution control equipment and new industrial equipment (especially large equipment) could generate solid waste due to demolition and site preparation, grading, and excavating. Specifically, demolition activities could generate demolition waste while site preparation, grading, and excavating could uncover contaminated soils since the facilities affected by the proposed project that would require additional air pollution control equipment are located in existing industrial or commercial areas. Excavated soil, if found to be contaminated, would need to be characterized, treated, and disposed of offsite in accordance with applicable regulations. Where appropriate, the soil can be recycled for reuse if it is considered or classified as non-hazardous waste, or it can be disposed of at a landfill that accepts non-hazardous waste. Otherwise, the material will need to be disposed of at a hazardous waste facility.

To get a sense of the magnitude of the solid and hazardous wastes that may be generated from construction-related activities associated with the installation of air pollution control equipment (e.g., low NOx/ultra-low NOx burners and SCR systems), and the replacement of existing equipment, there are two previously certified CEQA documents for rule development projects which may provide helpful information. In particular, solid and hazardous waste impacts associated with the installation of air pollution control equipment and the replacement of existing equipment, were estimated in both the December 2015 Final PEA for NOx RECLAIM[206] and the November 2021 Final SEA for Rule 1109.1[207], the latter of which tiers off of and relies on the data from the December 2015 Final PEA for NOx RECLAIM. Both of these CEQA documents analyzed multiple, complex scenarios of equipment upgrades and replacements, which included installing new SCRs with associated ammonia storage tanks, upgrading existing SCRs, installing scrubbers, replacing existing burners with ultra-low NOx burners at 20 heavy industrial facilities.

[206] South Coast AQMD, 2015. South Coast AQMD, Final Program Environmental Assessment for Proposed Amended Regulation XX – Regional Clean Air Incentives Market (RECLAIM), SCH No. 2014121018/SCAQMD No. 12052014BAR, certified December 4, 2015. http://www.aqmd.gov/home/library/documents-support-material/lead-agency-scaqmd-projects/scaqmd-projects---year-2015.

[207] South Coast AQMD, 2021. Final Subsequent Environmental Assessment (SEA) for Proposed Rule (PR) 1109.1 – Emissions of Oxides of Nitrogen from Petroleum Refineries and Related Operations, PR 429.1 – Startup and Shutdown Provisions at Petroleum Refineries and Related Operations, Proposed Amended Rule (PAR) 1304 – Exemptions, PAR 2005 – New Source Review for RECLAIM, and Proposed Rescinded Rule 1109 – Emissions of Oxides of Nitrogen from Boilers and Process Heaters in Petroleum Refineries, Certified November 5, 2021, Section 4.2.2.1, pp. 4.2-8 through 4.2-21, http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2021/pr-1109-1-final-sea-(v10272021).pdf

Since existing SCRs have existing ammonia tanks, and since ultra-low NOx burners are internal components of existing combustion equipment, demolition and site preparation activities were assumed to only be needed for the installation of new SCRs with associated ammonia storage tanks.

The analyses in both CEQA documents concluded less than significant solid and hazardous waste impacts for construction activities which included demolition, site preparation, grading and excavating soils with a total amount of disturbed area of approximately 2.44 acres across all 20 facilities. Construction-related waste was expected to be disposed of either at a Class II (industrial) or Class III (municipal) landfill, while demolished equipment could be dismantled and with the metals sold off as scrap. Any excavated soil would need to be characterized, treated, and disposed of offsite or reused in accordance with applicable regulations. The analysis acknowledged that there was no direct correlation to the quantity of construction debris that may be generated based on the plot size of the area to be disturbed during construction. The analysis concluded that the potential amount of construction debris generated would not be expected to exceed the designated capacity of the landfills that serve the area within South Coast AQMD's jurisdiction, even though the actual amount of construction debris could not be calculated. Overall, the analysis in both CEQA documents concluded less than significant impacts relative to the amount of construction debris/waste expected to be generated during construction.

In addition, both CEQA documents previously analyzed the solid and hazardous waste impacts associated with initially disposing of spent catalyst during construction associated with upgrading existing SCRs and periodically replacing spent catalyst as an operational impact (see Section 4.7.3.2.3 which concluded that the none of spent catalyst would be disposed of as solid waste either during construction or operation because all of affected facilities currently handling spent catalyst indicated that they would continue to haul it to a local cement manufacturing facility for recycling in lieu of disposal. SCR catalyst is made of precious metals which have monetary value so facilities have a financial incentive to recycle rather than dispose of spent catalyst.

Because the nature of the physical modifications that may occur and the associated construction impacts of the proposed control measures are very similar and have a direct correlation to what was previously analyzed in the December 2015 Final PEA for NOx RECLAIM and the November 2021 Final SEA for Rule 1109.1, (e.g., installation of new and modification of existing SCRs and installation of low NOx/ultra-low NOx burners), similar solid and hazardous waste impacts generated during construction as part of implementing the proposed control measures are also expected. The key difference between the proposed control measures and the project analyzed in the December 2015 Final PEA for NOx RECLAIM and the November 2021 Final SEA for Rule 1109.1 is that the proposed control measures are more conceptual and lack a degree of specificity regarding the number of facilities and equipment that may be affected and the timeframe by which the modifications would need to occur. Another key difference between the proposed control measures and the previously analyzed project is that a larger variety of heavy industrial equipment (e.g., non-refinery boilers and heaters, turbines, incinerators, emergency and non-emergency I.C. engines, and other associated equipment), may undergo physical modifications to reduce NOx emissions or may be completely replaced with lower NOx-emitting (e.g., lean pre-mixed combustion turbines, biogas-fueled combustion equipment) or zero emission technology such as fuel cells, electrified refinery boilers, process heaters,

pumps and blowers. The proposed control measures may also result in modifications of biogas-fueled combustion equipment and/or routing landfill produced biogas to existing natural gas pipelines.

Even with an expanded variety of potentially affected equipment, the type of solid and hazardous waste that may be generated from construction-related activities would consist primarily of materials from the demolition and construction associated with installing new or modified equipment to replace older equipment or installing new air pollution control equipment or modifying existing air pollution control equipment. As with the previous CEQA analyses, construction-related waste would be disposed of at a Class II (industrial) or Class III (municipal) landfill. However, it is important to note that AB 939 requires a minimum diversion rate of 65 percent of construction and demolition waste, which means a substantial portion of these types of wastes would not be disposed of in landfills. [CalRecycle, 2020]. Although construction and demolition diversion rates limit the amount of waste entering landfills, it is difficult to quantify the construction and demolition waste that will be generated by the control measures. Relative to the project previously analyzed in the two CEQA documents, the proposed control measures involve a much larger scope of activities such that a larger volume of the same or similar solid and hazardous waste is expected to be generated overall.

4.7.3.1.2 Solid Waste Impacts During Construction Due to Early Retirement of Equipment

For all of the residential and commercial control measures identified has requiring some construction activities (e.g., R-CMB-01, R-CMB-02, R-CMB-03, R-CMB-04, C-CMB-01, C-CMB-02, C-CMB-03, C-CMB-04, and C-CMB-05), the solid waste from construction activities and the disposal of old equipment are anticipated. Specifically, the nature of the construction activities needed as part of implementing these control measures will entail a combination of: 1) swapping out old appliances or equipment that rely on natural gas (e.g., water heaters, space heaters, cooking devices, clothes dryers, pool heaters, small I.C. engines and other small combustion devices) and replacing them with new, electrified or low NOx appliances or equipment at existing residential and commercial land uses; and 2) installing new, electrified or low NOx appliances as part of new residential and commercial developments.

In general, the motivation for replacing existing appliances and equipment with new zero emission or low NOx technology which will be more energy efficient is due to the existing equipment having reached the end of its useful life and/or the cost of repairs exceeding the cost for a replacement. The motivation is stimulated further if financial incentives are offered, such as those offered by local utilities to install more energy efficient appliances, an existing appliance may be replaced sooner than the end of its useful life. For any appliance or equipment that is removed and replaced with new zero emission or low NOx technology, the removed appliance or equipment will either be dismantled with the metals sold as scrap, or if the removed appliance or equipment still works, it may be sold for re-use outside of the South Coast AQMD jurisdiction. Section 4.7.3.2.4 provides a detailed analysis of operational solid waste impacts associated with dismantling the removed appliances or equipment.

For either circumstance, little to no construction waste would be expected because any new zero emission or low NOx appliance or equipment would be likely selected based on the size of its

ability to fit within the existing footprint of the unit being replaced. Some minimal waste would be expected from the shipping container (which is typically cardboard and recyclable), as well as plastic bags, straps and padding which are typical components in the packaging materials for each appliance or equipment. In the event that modifications need to be made to accommodate new zero emission or low NOx appliance or equipment such as installing new or upgrading electrical plugs, only minor construction would be needed and the amount of waste would likely be minimal.

For the construction of new residential and commercial developments, the decision to install zero emission or low NOx appliance or equipment from the outset will be part of the construction design plans. While new construction of residential and commercial buildings will inevitably involve construction waste, the installation of the new zero emission or low NOx appliances or equipment will only involve the aforementioned minimal waste associated with the shipping container of each new zero emission or low NOx appliance or equipment. Based upon these considerations, the aforementioned the residential and commercial control measures are expected to generate minimal quantities of construction waste that would need to be sent to a landfill.

Due to the uncertainty of the future capacity of the landfills within South Coast AQMD's jurisdiction and the broad scope of equipment that could undergo modifications or replacement, the solid and hazardous waste impacts from construction are concluded to be potentially significant and mitigation measures are required. Since the project-specific mitigation for solid and hazardous waste impacts are the same for waste generated during construction and operation, the mitigation measures follow the discussion of operational impacts.

4.7.3.2 Solid and Hazardous Waste Associated with Operational Activities

4.7.3.2.1 Spent Batteries from Electric Vehicles

Implementation of control measures such as MOB-05, MOB-06, MOB-07, MOB-08, MOB-09, and MOB-10 that encourage the early retirement of older vehicles and other mobile sources, and the replacement with newer equipment or newer vehicles (including electric or alternative fuel vehicles) could result in an increase in waste generated from spent batteries. The most common battery currently used in gasoline- and diesel-powered vehicles is the lead-acid battery found in conventional automobiles and trucks. These batteries are disposed of through the established lead recycling industry. However, zero emission vehicles operate with battery types that are different than the lead-acid battery; the most common type of battery used in electric vehicles is comprised of lithium ion technology (Li-ion).

The 2022 AQMP mobile source pollution control measures would incentivize penetration of fuel cell and electric vehicles into the market. The potential quantities of retired vehicles are summarized by category in Table 4.7-2. The batteries that power these vehicles have useful lives similar to or less than the life of a vehicle. Since some batteries contain toxic and hazardous materials, the increased reliance of electric vehicles may increase the amount of spent batteries which will need to be handled as solid and/or hazardous waste. In addition, other solid and

hazardous waste impacts could occur if batteries are disposed of in an unsafe manner, such as by illegal dumping or by disposal in an unlined landfill.

TABLE 4.7-2
Potential Vehicle Retirements By Mobile Source Sector

Mobile Source Sector	Number of Potential Vehicle Retirements
Light- and Medium-Duty Vehicles	5,440
Heavy-Duty Vehicles	8,214
School Buses	8,032
Off-Road Agriculture	125
Off-Road Construction	1,021
Other Off-Road and CHE	428
TRU	224
Locomotives	125
Total:	23,609

* Source: 2022 AQMP Table 4-23. Based on active projects with emission reductions in 2037 using the maximum project life allowed per 2017 Carl Moyer Guidelines.

An increased use of fuel cell and electric hybrid vehicles is correspondingly expected to reduce the use of conventional vehicles within California and the South Coast AQMD jurisdiction. Conventional vehicles use lead-acid batteries; therefore, a reduction in the use of conventional vehicles would lead to a reduction in use of lead-acid batteries. Lead-acid batteries have a three-to-five year life, which is much less than the life of a vehicle, so batteries need to be replaced periodically. Electric vehicles batteries last a much longer time than lead-acid batteries and since California requires batteries in electric vehicles to have warranties for 10 years or 150,000 miles, the replacement rate is not a frequent as for lead-acid batteries. [Autoblog, 2022]. Toyota has reported that its battery packs have lasted for more than 180,000 miles in testing. A large number of Ford Escape Hybrid and Toyota Prius taxicabs in New York and San Francisco have logged over 200,000 miles on their original battery packs. [Edmunds, 2014]. Since electric batteries last much longer than lead-acid batteries, an increase in the use of electric vehicles would result in a corresponding decrease in the generation of spent lead-acid batteries that require recycling.

In September 2018, Governor Brown signed AB2832, Recycling: Li-ion Vehicle Batteries: Advisory Group. The advisory group was tasked to submit policy recommendations by April 2, 2022 to the Legislature aimed at ensuring that as close to 100 percent as possible of Li-ion batteries in the state are reused or recycled at end-of-life (EOL). Currently, the advisory group is finalizing the policy recommendations for the Legislature. [CalEPA, 2022]. Of the recommended policies, two received a majority of support: core exchange with a vehicle backstop, and producer take-back. These policies complement, and do not replace, current warranty regulations and programs that require the vehicle manufacturer to properly reuse, repurpose, or recycle a removed EOL battery that is still under warranty.

The first of the two policies recommended by the advisory group is the core exchange and vehicle backstop policy. This policy builds upon existing industry standards and policies for other vehicle components, specifically a core exchange and product take-back. This policy defines responsibility for out-of-warranty batteries under three possible circumstances:

1. For electric vehicles still in service: if a battery pack, module, or cell is replaced before the vehicle reaches EOL, a core exchange program detailed by the electric vehicle battery supplier shall be used for the replacement battery (or any module or cell). The entity removing the battery shall be responsible for ensuring the used battery (or module or cell) is properly reused, repurposed, or recycled. The entity selling an electric vehicle battery shall use a core exchange program to track that the used battery has been properly managed.
2. For electric vehicles reaching EOL: a dismantler who takes ownership of an EOL vehicle is responsible for ensuring the battery is properly reused, repurposed, refurbished, or recycled. If an electric vehicle battery is directly reused in another vehicle with no alterations, the process for electric vehicles still in service shall apply. If the battery is refurbished or repurposed, the responsibility transfers to the refurbisher or repurposer.
3. For electric vehicles reaching EOL where an EOL electric vehicle with an OEM-certified battery is not acquired and removed by a licensed dismantler: the vehicle manufacturer shall be responsible for ensuring that the vehicle is properly dismantled and the battery is properly reused, refurbished, or recycled.

The second policy recommended by the advisory group is the producer take-back policy. The producer take-back policy would give the auto manufacturer the responsibility of ensuring proper repurposing, reuse, or recycling of its electric vehicle traction batteries by a licensed facility at no cost to the consumer, if and when they are no longer wanted by the owner. The auto manufacturer is also responsible for ensuring proper repurposing, reuse, or recycling of its electric vehicle traction batteries by a licensed facility in the event no other entity has taken possession of the battery.

Recycling in isolation is not profitable as Li-ion batteries are composed of relatively inexpensive materials; however, recycling is attractive for several reasons, including supporting a closed-loop supply chain and supporting the principles of environmentalism and sustainability. A closed-loop supply chain would protect manufacturers from volatility since recycled materials could supply more than half of the cobalt, lithium, and nickel in new batteries by 2040. [Wired, 2021].

The existing Li-ion recycling industry has developed around consumer electronics, with the majority taking place in China; pilot and commercial facilities are operational to a smaller extent in North America (see Table 4.7-3). Most North American recycling companies use a hydrometallurgical process. As electric vehicles have not yet retired at a large scale, the feedstock for these facilities is primarily production scrap from manufacturing and consumer electronics. Toyota recently announced a partnership with Redwood Materials, a battery recycling company, to collect and recycle vehicle batteries. They plan to take old batteries and either refurbish them or break them down so their materials can be recycled to create new

batteries.[208] In addition, they are planning to develop a megasite for electric vehicle battery production in Greensboro, North Carolina, expected to begin operation in 2022.

Most battery and fuel cell technologies currently employ materials that have high economic value and, therefore, are recyclable. Additionally, both regulatory requirements and market forces require or encourage recycling. The following is a brief listing of some of the more important Federal and California regulations that have created requirements or incentives for the proper disposal and recycling of electric vehicle battery packs:

- The federal Battery Act enacted in 1996 requires that each regulated battery be labeled with a recycling symbol. Nickel-cadmium (NiCad) batteries must be labeled with the words "NiCad" and the phrase "Battery must be recycled or disposed of properly." Lead-acid batteries must be labeled with the words "Lead," "Return," and "Recycle."
- Current California and federal regulations require electric vehicle manufacturers to take into account the complete life-cycle of car batteries and to plan for safe disposal and/or recycling of battery materials.
- The Health and Safety Code does not allow the disposal of lead-acid batteries at a solid waste facility, or on or in any land, surface waters, water courses, or marine waters. Legal disposal methods for used lead-acid batteries are to recycle/reuse the battery or to dispose of it at a hazardous waste disposal facility. A lead-acid battery dealer is required to accept spent batteries when a new one is purchased.
- California Public Resources Code requires state agencies to purchase car batteries made from recycled material.
- The Universal Waste Rule requires that spent batteries exhibiting hazardous waste characteristics and are not recycled need to be managed as hazardous waste. This includes lead-acid and NiCad batteries.
- Car manufacturers offer incentives to recycle batteries (e.g., Toyota offers $200 for spent battery packs to help promote battery recycling).

Recycling of lead-acid and NiCad batteries is a well-established activity. Eighty percent of lead consumed in the United States is used to produce lead-acid batteries, and the lead recovery rate from batteries is approximately 80 to 90 percent; the remainder is plastic and fluids (e.g., sulfuric acid). According to the Lead-Acid Battery Consortium, 95 to 98 percent of all battery lead is recycled.

[208] The Verge, June 21, 2022: Toyota will recycle Electric Vehicle Batteries with Tesla Co-Founder's Project. https://www.theverge.com/2022/6/21/23177039/toyota-redwood-materials-ev-battery-recycling-partnership-prius

TABLE 4.7-3
Li-ion Recycling Facilities in North America

Company	Current Capacity (MT/yr)	Planned Capacity (MT/yr)
American Battery Technologies (USA)	-	20,000
American Manganese (Canada)	-	182.5
Ascend Elements (USA)	Unknown	30,000
Interco (USA)	Unknown	Unknown
Li-cycle Corporation (USA)	10,000	85,000
Lithion (Canada)	200	7,500
Princeton NuEnergy (USA)	-	Unknown
Recycling Coordinators (USA)	Unknown	Unknown
Redwood Materials (USA)	18,100	Unknown
Retriev Technologies (USA/Canada)	4,500	4,500
Umicor Canada, Inc. (Canada)	Unknown	Unknown

Source: CalEPA, 2022 Table 2

Since Li-ion batteries have a potential for after-automotive use, destructive recycling can be postponed for years even after an electric vehicle or hybrid battery can no longer hold and discharge sufficient electricity to power a car's motor. The battery pack can still carry a tremendous amount of energy. Battery manufacturers project that the battery packs will still be able to operate at about 80 percent of capacity by the time they must be retired from automotive use. [Edmunds, 2014]. For example, several major power utilities are working with auto manufacturing companies (General Motors, Ford, Toyota, and Nissan) to explore the use of batteries for stationary storage of the power produced in off-peak periods by wind turbines and solar generation stations. Li-ion battery packs are also being tested as backup power storage systems for retail centers, restaurants, and hospitals, as well as residential solar systems. [Edmunds, 2014].

Because most electric vehicle batteries are still in service, reused, or recycled, it is unlikely that the increase in battery use would significantly adversely affect landfill capacity in California. It should be noted that the increased operation of electric vehicles associated with the implementation of the 2022 AQMP may actually result in a reduction of the amount of solid and hazardous waste generated in the South Coast AQMD's jurisdiction, as Li-ion batteries have a much longer life span than conventional lead-acid batteries. Further, their bulky size and weight (over 400 pounds) makes them more difficult to handle and transport for unauthorized disposal. Additionally, the advanced-technology automotive battery recycling industry is setting up operations in states and countries where processing will have no impact on landfills either locally or within the state.

Electric vehicles do not require the various oil and gasoline filters, or same type or amount of engine fluids (oil, antifreeze, etc.) that are required by vehicles using internal combustion engines. Because of the widespread use and volume of waste oil, a portion of waste oil is illegally disposed of via sewers, waterways, on land, and in landfills. Waste oil that is illegally

disposed can contaminate the environment (via water, land, or air). In addition, a substantial amount of motor oil leaks onto the highways from vehicles each year; this motor oil is washed into storm drains and eventually ends up in the ocean.

Since electric motors do not require motor oil as a lubricant, replacing internal combustion engines with electric engines will eliminate the impacts of motor oil use and disposal. For example, a 50 percent penetration of light-duty electric vehicles into market will result in a corresponding 50 percent reduction in the release of these contaminants into the environment due to illegal disposal and a 50 percent reduction in the generation of waste oil. Release of contaminants due to engine oil that burns up in, or leaks from engines or due to burning of recovered engine oil for energy generation will also be correspondingly reduced. Additional use of electric vehicles is expected to have a beneficial environmental impact by reducing the amount of motor oil used, recycled, potentially illegally disposed, or washed into storm drains and ending up in the ocean.

Illegal or improper disposal of electric batteries could result in significant solid waste impacts by allowing hazardous wastes to be disposed in municipal landfill. However, the recycling of batteries is required under law. Further some manufacturers pay for used electric vehicle batteries. The value, size, and length of life of Li-ion batteries are such that recycling is expected to be more predominate than with lead acid batteries. Therefore, the use of electric vehicles are not expected to result in an increase in the illegal or improper disposal of electric batteries. Further, batteries associated with electric cars are required to be diverted from landfills. **Therefore, no significant increase in the disposal of hazardous or solid waste is expected due to increased use of electric vehicles.**

4.7.3.2.2 Diesel Particulate Filters

Implementation of control measures such as EGM-01, EGM-03, MOB-01, MOB-02A, MOB-02B, and MOB-04 could result in the use diesel particulate filters (DPFs) to reduce diesel particulate matter (DPM), a toxic, from on-road heavy-duty vehicles, off-road construction equipment and low-emitting engines on ocean-going vessels, harbor craft, cargo handling equipment, and locomotives. A DPF is an exhaust aftertreatment device that traps DPM as ash which are by-products of combustion engines that use diesel fuel. A DPF typically uses a substrate made of a ceramic material that is formed into a honeycomb structure. In order to reduce emissions from diesel engines, a DPF captures and stores exhaust soot, which must be periodically burned off to regenerate the filter media. The regeneration process burns off excess soot deposited in the filter, which reduces emissions of DPM. DPFs can be regenerated through both passive and active means. Passive regeneration occurs automatically as the vehicle or engine is operated while active regeneration requires the engine to take action.

Through passive regeneration, the exhaust gas first passes over the diesel oxidation catalyst (DOC) inside the DPF, then passes through the filter media, which traps soot particles. Passive regeneration happens when the engine temperature rises to a level triggering a chemical reaction whereby soot, or carbon, is combined with oxygen to create carbon dioxide. Since carbon dioxide is a gas, it can pass through the filter media. Soot and ash, however, is already a byproduct of combustion, so no amount of heat from the engine can convert it to a gas. Over

time, the ash will build up to the point where the filter media has to be physically removed and cleaned. Once cleaned, the DPF can then be reinstalled and reused. Passive regeneration may not always keep the DPF clean during engine operation if the temperature is lower than what is needed to trigger the chemical reaction. Thus, the DPF may also have to undergo active regeneration.

Active regeneration will occur when the ash buildup on the DPF reaches a certain thickness and the engine will inject fuel into the exhaust stream, which flows over the DOC and oxidizes the fuel to create more heat to trigger the chemical reaction of converting soot to carbon dioxide. In addition to regeneration, the DPF must be periodically cleaned every six to 12 months to remove noncombustible materials and ash.

The lifespan of a DPF varies based on the application and type of engine but can last from five to ten years or 10,000 or more hours of operation.[209] During the regenerative process, no solid waste is generated. However, during the periodic cleaning of the DPF, the process involves manually removing the filter element from the housing and placing it in a cleaning station designed for this purpose. The ash is collected in the cleaning station and sent for disposal as solid waste. DPF ash is not specifically listed in the Federal Code of Regulations as a hazardous materials, but there may be metallic oxides in the ash are hazardous to the environment and public health. Waste generators that operate DPF cleaning stations can either dispose of the DPF ash as hazardous waste or can have the waste tested using the Toxicity Characteristic Leaching Procedure (TCLP) which is a process that replicates the leaching process that would naturally occur when waste is buried in a municipal landfill. If the leachate contains any of the regulated contaminants at concentrations that are equal to or greater than the regulatory levels, then the DPF ash is considered hazardous waste.

Diesel repair shops currently operate cleaning stations so any additional soot and ash removed from additional DPFs deployed as a result of implementing the proposed control measures will be collected and disposed of in accordance with existing practices and applicable regulations for hazardous waste disposal.

At the end of its useful life, a DPF has monetary value and is typically sent for recycling to recover the catalyst and the metal housing is sent to a scrap metal recycler, so solid waste is not expected from the disposal of DPFs.

While the quantity of equipment that would utilize DPFs as result of implementing the proposed control measures is unknown, the quantity of collected particulate matter typically recovered from one DPF during its cleaning is expected to be small such that the amount of additional DPF ash that would need to be disposed of in either local landfills or hazardous waste landfills, depending on the chemical characteristics of the DPF ash, would also be relatively small.

Nonetheless, an increase in the use of DPFs may result in an incremental increase in solid waste requiring disposal in landfills over what would be produced if the 2022 AQMP were not adopted.

[209] U.S. EPA, Technical Bulletin, Diesel Particulate Filter General Information, accessed on September 9, 2022 at https://www.epa.gov/sites/default/files/2016-03/documents/420f10029.pdf

If based on the outcome of the TCLP process that the DPF ash collected during the filter cleaning process is not hazardous, then it could be disposed of as solid waste at a number of landfills located within South Coast AQMD's jurisdiction. The current permitted capacity of the landfills in Los Angeles, Orange, Riverside, and San Bernardino counties is about 100,332 tons per day (see Table 3.7-2) and has sufficient capacity to handle the small increase in soot and ash collected during the DPF cleaning process.

There are no hazardous waste landfills within the South Coast AQMD's jurisdiction. If the DPF ash is determined to be hazardous, the waste can be transported to permitted facilities located within and outside of California. There are two hazardous waste landfills in California: are Clean Harbors landfill located in Buttonwillow and CWMI Kettleman Hills landfill in Kings County. The permitted capacity of Clean Harbors is in excess of 13 million cubic yards of waste material and the permitted capacity of CWMI Kettleman Hills is over 33 million cubic yards (see Subchapter 3.7.3). Therefore, these two hazardous materials landfills would have sufficient capacity to handle the small amounts of waste that could be generated by ash collected from DPFs employed on equipment as part of implementing the proposed control measures. In addition, hazardous waste can be transported to other permitted facilities outside of California. The nearest out-of-state landfills are U.S. Ecology Nevada, Inc., located in Beatty, Nevada; Clean Harbors Grassy Mountain located in Knolls, Utah; U.S. Ecology Idaho, in Grandview, Idaho; Chemical Waste Management Inc. in Sulphur, Louisiana;, and Waste Control Specialists in Andrews, Texas. **Therefore, the use of DPFs will generate less than significant levels of solid and hazardous waste in the form DPF ash which will need to be disposed of in either a municipal or hazardous waste landfill.**

4.7.3.2.3 Selective Catalytic Reduction

Implementation of control measures in the 2022 AQMP such as L-CMB-01, L-CMB-02, L-CMB-03, L-CMB-06, L-CMB-07, L-CMB-08, L-CMB-10, and MCS-01 could result in the increased use of SCR technology to reduce NOx emissions from certain combustion sources. SCR beds use various ceramic materials or precious metals-based catalysts to carry oxide which aid in the capture and conversion NOx into N2 and water. SCRs require periodic regeneration or replacement of the catalyst bed. Reuse and regeneration of catalyst is preferred due to the presence of precious metals in a variety of SCR catalysts and the cost of new catalyst; however, if the catalyst cannot be regenerated, the facilities are likely to haul the spent catalyst to a local cement manufacturing facility for recycling in lieu of disposal. The use of SCRs is expected to be limited to heavy industrial processes and not wide-spread. **Therefore, due to the regeneration and recycling of catalysts used in SCRs and the fact that this technology is not expected to be widely used, less than significant impacts on solid and hazardous waste are expected.**

4.7.3.2.4 Solid Waste Impacts Due to Early Retirement of Vehicles

Implementation of control measures such as R-CMB-01, R-CMB-02, R-CMB-03, R-CMB-04, C-CMB-01, C-CMB-02, C-CMB-03, C-CMB-04, C-CMB-05, L-CMB-01, L-CMB-02, L-CMB-03, L-CMB-04, L-CMB-05, L-CMB-06, L-CMB-07, L-CMB-08, L-CMB-09, L-CMB-10, ECC-03, FLX-02, MCS-01, EGM-01, EGM-03, MOB-01, MOB-02A, MOB-02B, MOB-04, MOB-05, MOB-06, MOB-07, MOB-08, MOB-09, and MOB-10 could result in the early retirement of

equipment (e.g., appliances, burners, on-road trucks and vehicles, off-road vehicles, gasoline-fueled engines, diesel-fueled engines, and locomotive and aircraft engines). Older vehicles and equipment would be taken out of service and scrapped, or, if in good working condition, relocated for use in other states, Mexico, or other countries.

Approximately 80 percent of a retired vehicle can be recycled and reused in another capacity: batteries, catalytic converters, tires, and other recoverable materials (e.g., metal components) are removed while remaining metal components are shredded. The shredded material is then sent for recovery of metal content. It is expected that gasoline and diesel engines could also be recycled for metal content, or rebuilt and sold to other areas. The amount of solid waste landfilled as a result of the proposed control measures would be relatively small since most parts of the retired vehicle have commercial value and can be sold as scrap. Currently, there is a low number of vehicles and parts that can be scrapped per year because of the limited number of scrapping and recycling facilities within South Coast AQMD's jurisdiction.

Regardless of the 2022 AQMP control measures, there is an ongoing turnover of retiring vehicles when they reach the end of their useful life, such that they would be replaced with new vehicles while the retired vehicles would be scrapped. The primary solid waste impact from retiring more vehicles as part of implementing the proposed control measures is the accelerated replacement and disposal of equipment and parts earlier than the end of their useful life. It is important to note that proposed control measures do not mandate that older vehicle, engines, or other equipment be scrapped. The control measures allow for a number of different control methods to achieve the desired emission reductions, and the most cost-effective methods would be expected to be implemented. Control measures that would foster a transition to putting new equipment into service will also generally result in the concurrent retirement of the older equipment. Alternatively, some measures may encourage the advanced deployment of cleaner technologies without waiting for an equipment's end of useful life which will result in an air quality benefit. Based on the above discussion, scrap metal from vehicle replacements is expected to be recycled; however, some amount of waste scrapped vehicles and parts may be sent to landfills for disposal.

The California Integrated Waste Management Act of 1989 (AB 939) requires cities and counties in California to reduce the amount of solid waste disposed in landfills and transformed by 25 percent by 1995, and by 50 percent by 2000, through source reduction, recycling, and composting activities. Later legislation mandated a 50 percent diversion requirement to be achieved every year. SB 1016 (Wiggins) – Diversion: Alternative Compliance System (effective January 1, 2009) moved CalRecycle from the previously existing solid waste diversion accounting system to a per capita disposal-based system. SB 1016 did not change the 50 percent requirement in AB 939, but rather changed how that 50 percent is measured; however, compliance is the same under the new system. CalRecycle looks at a jurisdiction's per capita disposal rate as an indicator of how well its programs are doing to keep disposal at or below a jurisdiction's unique 50 percent equivalent per capita disposal target, the amount of disposal a jurisdiction would have had during the base period had it been at exactly a 50 percent diversion rate. Compliance is based on CalRecycle evaluating that a jurisdiction is continuing to implement the programs it chooses and is making progress in meeting its target (CalRecycle, 2022). In 2019, California's statewide disposal was 48.6 million tons and population was 39.7

million residents. This resulted in a per resident disposal rate of 6.7 pounds/resident/day. The diversion rate equivalent was 37 percent (CalRecycle, 2021).

Many cities and counties have met the 20 and 50 percent waste reduction goals of AB 939 prior to the adoption of the 50 percent equivalent per capita disposal target associated with SB 1016. If a jurisdiction is predominated by commercial or industrial activities and by solid waste generation from those sources, the per capita disposal may be calculated based on employment instead of residential metrics. Table 4.7-4 shows that the counties within the South Coast AQMD's jurisdiction, as well as statewide, are still short of meeting diversion targets.

TABLE 4.7-4
Summary of Per Capita Target Compliance (2020)

Location	Number of Jurisdictions withing Location	Number of Jurisdictions Meeting Population Target	Percent of Jurisdictions Meeting Population Target	Number of Jurisdictions Meeting Employee Target	Percent of Jurisdictions Meeting Employee Target
State of California	414	332	80%	358	86%
Los Angeles County	71	59	83%	67	94%
Orange County	32	29	91%	31	97%
Riverside County	29	25	86%	24	83%
San Bernardino County	24	23	96%	23	96%

Source: CalRecycle, 2021a

The generation of additional waste associated with control measures in the 2022 AQMP could impact the abilities of cities and counties to further reduce wastes. Although the recycling and diversion activities will reduce the amount of waste entering landfills, it is difficult to quantify the waste that will be generated from the early retirement of equipment or the salvageable amount that would be recycled. **Therefore, the early retirement of equipment is to have significant solid and hazardous waste impacts since available landfill space is limited to approximately 100,000 tons per day (see Table 3.7-2) and only four of the solid waste landfills within the South Coast AQMD's jurisdiction have capacity past 2039.**

4.7.3.2.5 Wood and Greenwaste

Implementation of Control Measure MCS-02 has the potential to reduce approximately 1.54 million cubic feet or 20,000 tons of wood and greenwaste due to wildfire prevention activities. The goal in Control Measure MCS-02 to reduce available fuel for wildfires will in turn, result in

PM emission reductions. Fuel reduction efforts will be achieved via hand-thinning, mechanical thinning, and the use of chipping and grinding equipment at properties located in the residential urban-wild-interface areas of the San Bernardino National Forest.

Wood and greenwaste that is collected, chipped, and ground is a class of organic mulch that may be spread at or near the site where the wood and greenwaste is collected, spread on private or governmental properties, or delivered to processing facilities for composting. Mulch is natural wildfire preventative because it helps retain moisture whereby reducing water consumption for adjacent plants, enhances soil temperature insulation, reduces invasive week propagation, improves erosion and dust control, and mitigates soil compaction. The most cost-effective approach to implementing Control Measure MC-02 is if the mulch generated from chipping and grinding greenwaste and woodwaste is spread at or near the location where the greenwaste and woodwaste was originally collected. Under this scenario, the chipped and ground greenwaste and woodwaste would not need to be transported via heavy-duty trucks to offsite compost facilities for processing. Of course, in the unlikely event that the site location or other unique circumstances makes the spreading of the mulch at its source infeasible, the chipped and ground greenwaste and woodwaste would need to be transported to a compost facility for processing. Within the South Coast AQMD jurisdiction, approximately 70 composting facilities are currently operating.

Based upon these considerations, the volume of chipped and ground greenwaste and woodwaste that would need to be taken to an offsite compost facility is likely to be minimal and less than significant.

Conclusion – Solid and Hazardous Waste Impacts Associated with Construction and Operational Activities: Based on the preceding analysis, potential solid and hazardous waste impacts associated with implementing the various control measures during both construction and operation activities have been identified, with some having minimal impacts while others may have potentially significant impacts. Since the significance threshold for solid and hazardous waste impacts does not make a distinction between waste generated during construction versus operation, the overall conclusion of the potential impacts is based on all the potential total combined waste and whether that total would have the potential to exceed the available landfill capacity. Table 4.7-5 summarizes the nature of the potential solid and hazardous waste impacts and the individual conclusion. **However, since construction waste from the installation of air pollution control equipment and operational waste from the early retirement of equipment ~~processing/recycling spent batteries from electric vehicles~~ were identified as having potentially significant impacts, the overall conclusion is that implementation of the 2022 AQMP will have potentially significant adverse solid and hazardous waste impacts.**

TABLE 4.7-5
Summary of Potential Solid and Hazardous Waste Impacts

Activity with the Potential to Generate Solid and Hazardous Waste	Conclusion for Individual Activity
Construction Waste from Installation of Air Pollution Control Equipment	**Potentially Significant**
Construction Waste Due to Early Retirement of Equipment	Less than significant
Operational waste from Processing/Recycling Spent Batteries from Electric Vehicles	**Potentially Significant**
Operational waste from cleaning DPFs	Less than significant
Operational waste from SCR equipment due to catalyst replacement	Less than significant
Chipping and Grinding Greenwaste and Woodwaste	Less than significant

Project-Specific Mitigation: Proposed mitigation measures are similar to the ones developed in the Connect SoCal Plan EIR:

SHW-1 During the planning, design, and project-level CEQA review process for individual development projects, lead agencies shall coordinate with waste management agencies and the appropriate local and regional jurisdictions to facilitate the development of measures and to encourage diversion of solid waste such as recycling and composting programs, as needed. This includes discouraging siting of new landfills unless all other waste reduction and prevention actions have been fully explored to minimize impacts to neighborhoods.

SHW-2 The lead agency should coordinate with waste management agencies, and the appropriate local and regional jurisdictions, to develop measures to facilitate and encourage diversion of solid waste such as recycling and composting programs.

SHW-3 In accordance with CEQA Guidelines Sections 15091(a)(2) and 15126.4(a)(1)(B), a Lead Agency for a project should consider mitigation measures to reduce the generation of solid waste, as applicable and feasible. These may include the integration of green building measures consistent with CALGreen (California Building Code Title 24) into project design including, but not limited to the following:

1) Reuse and minimization of construction and demolition (C&D) debris and diversion of C&D waste from landfills to recycling facilities.

2) Include a waste management plan that promotes maximum C&D diversion.

3) Pursue source reduction through: a) the use of materials that are more durable and easier to repair and maintain; b) design to generate less scrap material through dimensional planning; c) increased recycled content; d) the use of reclaimed materials; and e) the use of structural materials in a dual role as finish material (e.g., stained concrete flooring, unfinished ceilings, etc.).

4) Reuse existing structure and shell in renovation projects.

5) Develop indoor recycling program and space.

6) Discourage the siting of new landfills unless all other waste reduction and prevention actions have been fully explored. If landfill siting or expansion is necessary, site landfills with an adequate landfill-owned, undeveloped land buffer to minimize the potential adverse impacts of the landfill in neighboring communities.

7) Discourage exporting locally generated waste outside of the southern California region during the construction and implementation of a project. Encourage disposal within the county where the waste originates as much as possible. Promote green technologies for long-distance transport of waste (e.g., clean engines and clean locomotives or electric rail for waste-by-rail disposal systems) and consistency with South Coast AQMD and Connect SoCal policies can and should be required.

8) Encourage waste reduction goals and practices and look for opportunities for voluntary actions to exceed the 80 percent waste diversion target.

9) Encourage the development of local markets for waste prevention, reduction, and recycling practices by supporting recycled content and green procurement policies, as well as other waste prevention, reduction and recycling practices.

10) Develop ordinances that promote waste prevention and recycling activities such as requiring waste prevention and recycling efforts at all large events and venues, implementing recycled content procurement programs, and developing opportunities to divert food waste away from landfills and toward food banks and composting facilities;

11) Develop and site composting, recycling, and conversion technology facilities that have minimum environmental and health impacts

12) Integrate reuse and recycling into residential industrial, institutional and commercial projects.

13) Provide education and publicity about reducing waste and available recycling services.

14) Implement or expand city or county-wide recycling and composting programs for residents and businesses. This could include extending the types of recycling services offered (e.g., to include food and green waste recycling) and providing public education and publicity about recycling services.

Remaining Solid and Hazardous Waste Impacts Associated with Construction and Operational Activities: As discussed above, regulations and polices could potentially reduce solid and hazardous waste impacts, but given the regional scale of the analysis in this Program EIR, and the fact that the South Coast AQMD does not have jurisdiction over a number of the potential projects and control measures, it is not possible to determine if all impacts would be fully mitigated by existing regulations and policies. Therefore, this Program EIR identifies project-level mitigation measures consistent with applicable regulations and polices designed to reduce impacts. However, because of the regional nature of the analysis and the lack of project specific-detail, including project components and locations, combined with the South Coast AQMD's lack of authority to impose project-level mitigation measures, this Program EIR finds impacts related to solid waste and hazardous waste as potentially exceeding the capacity of local landfills which may result in significant and unavoidable even with implementation of mitigation.

4.7.4 SUMMARY OF SOLID AND HAZARDOUS WASTE IMPACTS

- Installation of air pollution control equipment (e.g., low NOx burners, SCR systems, electrification of sources); replacement of existing equipment; installation of roadway infrastructure (wayside power and catenary lines or other similar technologies); installation of battery charging infrastructure; and installation of alternative fuel infrastructure are expected to generate solid and hazardous waste associated with construction activities. It is assumed that no new industrial facilities or corridors will be constructed, but rather some of the existing facilities and corridors will be modified to include installation of new equipment and roadway infrastructure. Because it is difficult to quantify the construction and demolition waste generated by implementing control measures from the 2022 AQMP, solid and hazardous waste impacts from construction are concluded to be significant even after mitigation is applied.
- Encouragement of early retirement of older vehicles and other mobile sources, and replacement with newer equipment or newer vehicles (including electric or hybrid vehicles) will have the benefit of reduced waste from maintenance of internal combustion engines. It is expected that electric vehicle batteries will primarily be recycled or reused in purposes other than in cars, so there will not be a significant increase in disposal or significant adverse impact in the topic of solid or hazardous waste from increased generation of spent batteries.
- Increased use of particulate filters (DPFs) and air pollution control equipment is expected to be accommodated by the existing non-hazardous and hazardous waste landfills and have a less than significant impact on solid and hazardous waste generation.
- Increased use of SCR will increase disposal of catalyst that cannot be reused or regenerated; however, because most catalyst will be recycled and the use of SCR will not be widespread, there will be less than significant impact.
- The extent of solid and hazardous waste impacts from early retirement of equipment is difficult to quantify, but concluded to generate significant adverse impact because available landfill space is limited to approximately 100,000 tons per day with only four solid waste landfills in Southern California having capacity past 2039. Impacts are expected to be significant even after mitigation is applied.

- Processes from Control Measure MCS-02 including hand-thinning, mechanical thinning, and the use of chipping equipment to mitigate excess fuels at properties located in the residential urban-wild-interface areas of the San Bernardino National Forest are expected to generate additional greenwaste, but because the volume is likely to be minimal and there are approximately 70 composting facilities located in the District, impacts are expected to be less than significant.

4.7.5 CUMULATIVE SOLID AND HAZARDOUS WASTE IMPACTS AND MITIGATION MEASURES

As discussed in Chapter 2 - Project Description, in order to attain the 8-hour ozone standard, the majority of NOx emission reductions must come from mobile sources, including ships, aircraft, and locomotive engines, that are primarily regulated under federal and international jurisdiction, with limited authority for CARB and the South Coast AQMD. Attainment is not possible without significant reductions from these sources. Therefore, CARB has prepared the Proposed 2022 State Strategy for the State Implementation Plan (Proposed 2022 State SIP Strategy) which describes the state's strategy and commitments to reduce emissions from state-regulated sources needed to support attainment of the 70 ppb 8-hour ozone standard. The Proposed 2022 State SIP measures are described in Chapter 2, Section 2.7.3.1.

SCAG, as the Metropolitan Planning Organization MPO for the Southern California region, is mandated to comply with federal and state transportation and air quality regulations. In consultation with federal, state, and local transportation and air quality planning agencies and other stakeholders, SCAG developed the Final 2020–2045 2020 RTP/SCS, also known as Connect SoCal, and the 2021 Federal Transportation Improvement Program (FTIP), with TCMs to address the 2015 8-hour ozone standards in the Basin; these are included in three sections of Appendix IV-C of the 2022 AQMP.

In addition to the CARB and SCAG programs, Table 4.3-4 summarizes the major clean transportation and GHG reduction policies that are being implemented at the state levels. The CARB SIP, SCAG's Connect SoCal, the policies in Table 4.3-4, and the 2022 AQMP all have policies that are aimed at air quality improvement as well as GHG reductions, but may have solid and hazardous waste impacts.

4.7.5.1 CARB's Proposed 2022 State Strategy

Implementation of the 2022 State SIP Strategy includes: increased infrastructure for hydrogen refueling and electric recharging stations; increased demand for battery manufacturing and associated increases in mining and exports; increased recycling or refurbishment of batteries; reduced extraction, refinement, and distribution of oil and gas products; increased solid waste to be diverted to landfills from the scrapping of old equipment; the construction and operation of new manufacturing facilities to support zero emission technologies; and the construction and operation of new power plants, solar fields, wind turbines, and other electricity generation facilities to accommodate increased electrical demand associated with the deployment of zero emission technologies.

Reasonably foreseeable compliance responses to the 2022 State SIP Strategy could result in increased demand for lead acid and Li-ion batteries for zero and near-zero emission technologies. This may result in reuse and/or disposal of vehicles outside of California. Li-ion batteries may be recycled, and due to increasing demand for zero and near-zero emission vehicles and technologies, rates of Li-ion battery recycling have increased. In the U.S. overall, there are limited regulations for the disposal of Li-ion batteries, and due to the value of recovered metals (e.g., cobalt, nickel, lithium), there is incentive to collect and recycle batteries. According to current practice, typical recycling procedures (i.e., hydrometallurgical recovery, high-temperature or pyrometallurgical, and direct recycling) recover an average of approximately 97 percent of the materials, redirecting about 3 percent of waste to landfills.

Currently, lead acid batteries are used in approximately 20 million of the registered vehicles in use within the state. While deployment of the 2022 State SIP Strategy may result in increased zero and near-zero emission lead acid battery production, use, and disposal, such levels would not generate notable strain on existing manufacturing, disposal, and recycling facilities such that additional adverse effects to utilities would occur.

Reasonably foreseeable compliance responses associated with the 2022 State SIP Strategy could result in new demand for landfill and other utilities and service systems facilities. The implementation of the State SIP Strategy has determined to result in potentially significant solid waste impacts as new facilities may be required.

4.7.5.2 SCAG Connect SoCal Plan

SCAG determined that the SoCal Connect Plan (SCAG, 2020) would result in significant impacts related to solid waste generation in the region. Implementation of Mitigation Measures SMM USW-1 through SMM USW-2 and PMM USW-1 would reduce impacts, but they would remain significant. As the population increases across California, it is expected that additional demands will be placed on landfills with remaining capacity, both from inside the SCAG region and from nearby areas such as adjacent counties. The increased demand on landfill capacity could result in the need to truck waste long distances, including to sites outside the region which could result in localized impacts outside the region (e.g., noise, air quality, traffic). Landfill capacity is finite and by reducing landfill capacity outside the region, there would be less capacity available for areas outside the region. As a result, there would be significant impacts to landfills that accept solid waste.

4.7.5.3 Summary of Cumulative Solid and Hazardous Waste Impacts

The 2022 AQMP could result in significant adverse solid and hazardous waste impacts because of potential increases in waste produced during construction and operation activities. Implementation of the 2022 AQMP control measures, the TCMs in the Connect SoCal Plan, the SIP strategies, when combined with other past, present, and reasonably foreseeable activities, would result in a significant increase in solid and hazardous waste, and would contribute to cumulatively considerable impacts to solid and hazardous waste.

4.7.5.4 Cumulative Mitigation Measures

No additional mitigation measures to reduce the significant cumulative impacts to solid and hazardous waste have been identified.

4.7.5.5 Remaining Cumulative Solid and Hazardous Waste Impacts After Mitigation

Cumulative impacts to solid and hazardous waste for past, present, and reasonably foreseeable future projects would remain significant and unavoidable for solid and hazardous waste.

SUBCHAPTER 4.8

POTENTIAL ENVIRONMENTAL IMPACTS FOUND NOT TO BE SIGNIFICANT

Aesthetics

Agriculture and Forestry Resources

Biological Resources

Cultural and Tribal Cultural Resources

Geology and Soils

Land Use and Planning

Mineral Resources

Population and Housing

Public Services

Recreation

Transportation

Wildfire

4.8 POTENTIAL ENVIRONMENTAL IMPACTS FOUND NOT TO BE SIGNIFICANT

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest technology available. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emission and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve emission leak detection and maintenance procedures; and establish educational and outreach programs.

The environmental effects of the proposed project that may have potentially significant adverse effects on the environment are identified, evaluated, and discussed in detail in the preceding portions of Chapter 4 of this Program EIR and in the NOP/IS (see Appendix A) in accordance with CEQA Guidelines Sections 15126(a) and 15126.2. The following environmental topic areas were concluded in the NOP/IS to have potentially significant adverse impacts: air quality and greenhouse gas emissions, energy, hazards and hazardous materials, hydrology and water quality, noise, and solid and hazardous waste.

The analysis provided in the NOP/IS also concluded that the following environmental topic areas would either have no impacts or less than significant impacts: aesthetics, agriculture and forestry resources, biological resources, cultural and tribal cultural resources, geology and soils, land use and planning, mineral resources, population and housing, public services, recreation, transportation, and wildfire. The reasons for concluding either no impacts or less than significant impacts for each of these environmental topic areas are explained in the following sections. No comments were received on the NOP/IS that disputed the conclusions of either no impacts or less than significant impacts for these environmental topic areas.

4.8.1 AESTHETICS

The majority of control measures implemented within South Coast AQMD's jurisdiction would typically affect industrial, institutional, or commercial facilities located in appropriately zoned areas (e.g., industrial and commercial areas) that are not usually associated with scenic resources. Further, modifications would typically occur inside buildings, within the confines of the affected facilities, or because of the nature of the business (e.g., commercial or industrial), can easily blend in with the facilities with little or no noticeable effect on adjacent areas. In addition, the 2022 AQMP contains some proposed control measures which focus on certain residential sources of air pollution (e.g., water heaters, space heaters, cooking devices and other combustion sources), and any modifications needed would occur inside buildings or in the case of energy efficiency improvements such as installing solar, on the roofs of residential buildings. Also,

improved air quality would provide benefits to scenic vistas and resources throughout South Coast AQMD's jurisdiction.

Mobile control measures would accelerate the replacement of high emitting on-road and off-road mobile sources with lower-emitting mobile sources. Accelerating the penetration of lower-emitting mobile sources into market would not be expected to adversely affect scenic resources because these strategies do not require construction or disturbance to such resources.

Control Measures EGM-01, MOB-02A, MOB-02B, MOB-06, and MOB-07 could potentially encourage the use of overhead power lines (catenary lines) to provide electricity. The areas affected by the proposed zero emission and low NOx control measures that could result in the installation of catenary lines are expected to be located in commercial, industrial areas, and along existing truck and rail transportation corridors. The truck and rail corridors likely to be involved are primarily associated with rail yards and intermodal facilities in industrial zones within Southern California (e.g., the Port of Los Angeles, the Port of Long Beach), and container transfer facilities near the Terminal Island Freeway, along the Alameda Corridor, as well as inland rail yards near downtown Los Angeles. The roadway eligible for state scenic highway designation, nearest to either of the ports, the cargo transfer facilities serving the ports, along the Alameda Corridor, or the downtown rail yards, would be Route 1 (Pacific Coast Highway at State Route 19 – Lakewood Boulevard, in Long Beach) in the southernmost portion of Los Angeles County. There are approximately five miles between the cargo transfer facilities serving the ports, to the intersection of State Route 19 and Route 1 (the point at which the roadway becomes eligible for designation as a state scenic highway). The potential locations for catenary overhead power lines (near the ports' facilities, transportation corridors and rail yards) would not be visible to Route 1 at State Route 19 due to the numerous existing structures and topography between the two locations or any other scenic highways.

There are no officially designated scenic highways or highways eligible for state scenic highway designation in areas affected by construction of zero emission or low NOx equipment associated with the 2022 AQMP; therefore, construction impacts on aesthetics are considered to be less than significant.

Implementation of the proposed control measures is not expected to create additional demand for new lighting or exposed combustion sources (e.g., flares) that could create glare, adversely affecting day or nighttime views in any areas. Facilities affected by the proposed control measures typically make modifications to light sources within property borders, so any new light sources would typically be inside a building or not noticeable because of the presence of existing outdoor light sources. Based on these considerations, no significant aesthetic impacts are expected due to the implementation of the 2022 AQMP.

4.8.2 AGRICULTURE AND FORESTRY RESOURCES

Implementation of proposed 2022 AQMP control measures is not expected to generate any new construction of buildings or other structures that would require conversion of farmland to non-agricultural use, conflict with zoning for agricultural uses, or a Williamson Act contract. Further, proposed control measures would typically affect existing facilities that are located in

appropriately zoned areas. Any new facilities that may be affected by AQMP control measures would be constructed and operated for reasons other than complying with the control measures. Improvements would continue to be subject to project-level review, including review of agricultural impacts under CEQA. Therefore, implementation of the proposed project would not affect Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, or conflict with a Williamson Act contract, if implemented.

Physical changes associated with the 2022 AQMP are expected to occur at previously developed sites and would not warrant construction in undeveloped areas where agricultural and forest resources are more likely to exist. The proposed control measures, including control measures related to mobile sources, would have no direct or indirect effects on agricultural or forest land resources because their focus is on achieving emission reductions by increasing the penetration of zero and low NOx technologies into market. The 2022 AQMP could provide benefits to agricultural and forest land resources by improving air quality in the region, thus reducing the adverse oxidation impacts of ozone on plants and animals.

4.8.3 BIOLOGICAL RESOURCES

Implementation of the proposed 2022 AQMP control measures is not expected to result in habitat modification, adversely affect any riparian habitat, or interfere with the movement of any native resident or migratory fish or wildlife species. Facilities affected by the proposed control measures have already been disturbed and typically do not contain open space, water features, or natural vegetation. Sites might contain landscaping that consists of ornamental trees, vegetation, and turf. The sites of the affected facilities that would be subject to the control measures are not expected to support riparian habitat, federally protected wetlands, or migratory corridors because they are existing, developed, and established industrial and commercial facilities. Additionally, special status plants, animals, or natural communities identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service are not expected to be found on or in close proximity to the affected facilities. Construction projects that impact affected species are not reasonably foreseeable as part of implementation of the 2022 AQMP. Any new development potentially affecting biological resources would not be as a result of the 2022 AQMP control measures and approval of those projects, including evaluation of their environmental impacts, would occur regardless of the 2022 AQMP and would be subject to project-level CEQA review. Based upon these considerations, significant adverse biological resources are not expected from implementing the proposed project.

4.8.4 CULTURAL AND TRIBAL CULTURAL RESOURCES

Commercial and industrial areas are generally not located in historic districts, and implementation of the proposed control measures is not expected to cause a substantial adverse change in the significance of a historical resource. The South Coast AQMD also provided a formal notice of the proposed project to all California Native American Tribes (Tribes) that requested to be on the Native American Heritage Commission's (NAHC) notification list per Public Resources Code Section 21080.3.1(b)(1). The NAHC notification list provides a 30-day

period during which a Tribe may respond to the formal notice, in writing, requesting consultation on the proposed project. No Tribes requested consultation during the 30-day comment period.

The provisions of CEQA, Public Resources Code Section 21080.3.1 et seq. (also known as AB 52), require meaningful consultation with California Native American Tribes on potential impacts to tribal cultural resources, as defined in Public Resources Code Section 21074. Tribal cultural resources are sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either eligible or listed in the California Register of Historical Resources or local register of historical resources. As part of the AB 52 process, Native American tribes must submit a written request to the relevant lead agency if it wishes to be notified of projects that require CEQA public noticing and are within its traditionally and culturally affiliated geographical area.

Construction resulting from implementation of the proposed control measures would need to obtain city or county planning department approvals prior to commencement of any construction activities, and would be subject to project-level review, including separate tribal consultation pursuant to AB 52, as applicable, to address site-specific requests identified by the tribes. Therefore, impacts to tribal cultural resources are considered to be less than significant, and the 2022 AQMP is not expected to cause any impacts to significant historic cultural resources.

4.8.5 GEOLOGY AND SOILS

The proposed control measures would not directly or indirectly expose people or structures to earthquake faults, seismic shaking, seismic-related ground failure including liquefaction, lateral spreading, landslides, mudslides, or substantial soil erosion. The proposed control measures specific to mobile sources, such as those that would accelerate the penetration of zero emission or low NOx vehicles into fleets in the South Coast AQMD's jurisdiction, would not affect geology or soils because on-road vehicles would continue to operate on existing roadways. Although some of the proposed control measures would accelerate the penetration of zero emission or low NOx off-road equipment into market, replacing one type of off-road engine with a lower-emitting off-road engine would not be expected to require construction.

Proposed control measures that promote implementation of rules or regulations for stationary sources would neither directly nor indirectly promote new land use projects that could be located on earthquake faults, seismic zones, etc. Seismic-related activities, in areas where facilities affected by the proposed control measures are located, would be part of the existing setting. Some minor structural modifications, however, at existing affected facilities may occur as a result of installing control equipment or making process modifications. Affected facilities or modifications to affected facilities, including the construction of new electricity or hydrogen infrastructure, would be required to comply with relevant California Building Code requirements in effect at the time of initial construction or modification of a structure.

Southern California is an area of known seismic activity. The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. The main purpose of the Alquist-Priolo Earthquake Fault Zoning Act is to prevent construction of buildings used for human occupancy on the surface of active faults, in order to

minimize the hazard of surface rupture of a fault to people and habitable buildings. Before cities and counties can permit development within Alquist-Priolo Earthquake Fault Zones, geologic investigations are required to show that a proposed development site is not threatened by surface rupture from future earthquakes. Therefore, any future project development would not subject people or structures to hazards arising from surface rupture of a known active fault.

The most significant geologic hazard is the potential for moderate to strong ground shaking resulting from earthquakes generated on the faults in seismically active southern California. It is anticipated that future projects would likely be subject to strong ground shaking due to earthquakes on nearby faults. The intensity of ground shaking would depend on the magnitude of the earthquake, distance to the epicenter, and the geology of the area between the epicenter and the project sites.

The California Building Code (CBC) as promulgated in the CCR, Title 24, Part 2, contains provisions to safeguard against major structural failures or loss of life caused by earthquakes or other geologic hazards. The CBC contains provisions for earthquake safety based on factors including the types of soil and rock onsite, and the strength of ground motion with specified probability of occurring at the site. The CBC requirements operate on the principle that providing appropriate foundations, among other aspects, helps to protect buildings from failure during earthquakes. Additionally, CBC Section 1803.2 requires a geotechnical investigation that must evaluate soil classification, slope stability, soil strength, position and adequacy of load-bearing soils, the effect of moisture variation on soil-bearing capacity, compressibility, liquefaction, and expansiveness, as necessary. The geotechnical investigation must be prepared by registered professionals (i.e., California Registered Civil Engineer or Certified Engineering Geologist). Compliance with the requirements of the CBC for structural safety during a seismic event would reduce hazards from strong seismic ground shaking, as well as liquefaction, to less than significant.

The issuance of building permits from the local cities or counties will assure compliance with the California Building Code requirements. Finally, no control measures would require the location of new facilities, or relocation of existing ones, in areas prone to liquefaction or other earthquake hazards. Land use decisions are under the authority of the local jurisdictions, typically cities or counties. The South Coast AQMD has no authority over land use decisions except to impose specific air pollution control requirements, which do not drive the land use approval process, and CEQA does not grant an agency new powers independent of the powers granted to the agency by other laws.

Projects that occur as a result of the 2022 AQMP are largely expected to occur at commercial and industrial areas, and have a small construction footprint. Construction activities would be subject to local, regional, and state codes and requirements for erosion control and grading during construction. Projects would be subject to the National Pollution Discharge Elimination System (NPDES) permitting regulations, including the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP) as applicable. Construction contractors would be required to prepare and implement a SWPPP and associated Best Management Practices (BMPs) in compliance with the Construction General Permit (CGP) during grading and construction of any site that disturbs more than one acre of land. Adherence to the BMPs in the

SWPPP and adherence with local, regional, and state codes and requirements for erosion control and grading during construction would reduce, prevent, or minimize soil erosion from grading and construction activities. Therefore, soil erosion impacts would be less than significant.

Paleontological resources, commonly known as fossils, are the recognizable physical remains or evidence of past life forms found on earth in past geological periods — and can include bones, shells, leaves, tracks, burrows, and impressions. Ground-disturbing activities such as grading or excavation have the potential to unearth paleontological resources. Most facilities affected by 2022 AQMP control measures would be located on previously disturbed industrial and commercial sites where there is little likelihood of identifiable artifacts. It is possible, however, that cultural or archaeological resources or human remains may nevertheless be discovered. New installations of air pollution control equipment or infrastructure for zero emission and low NOx equipment are unlikely to require substantial soil excavation and would be located on already disturbed and developed industrial land uses. Therefore, no significant impact would occur. Further, projects implemented as a result of the 2022 AQMP would be subject to project-level review, including review of both geological and paleontological impacts under CEQA, as applicable. Therefore, implementation of the 2022 AQMP is not expected to directly or indirectly destroy a unique paleontological resource or site or unique geological feature or result in other significant adverse geology or soils impacts.

4.8.6 LAND USE AND PLANNING

Implementation of proposed control measures that promote the installation of stationary source control equipment, at existing commercial or industrial facilities would not create land use impacts because construction of major new developments (e.g., new neighborhoods) affecting land use planning would occur for reasons other than implementation of the proposed control measures and could occur regardless of the 2022 AQMP. Facilities required to support the 2022 AQMP control measures are expected to be located in industrial and commercial areas that would be compatible with such development. Control Measure EGM-01 would affect new or redevelopment projects, but would not affect the land use or zoning aspects of projects. In addition, Control Measure EGM-01 would minimize air quality impacts but would not impact planning decisions made by local jurisdictions, so no impacts on land use would be expected. Since the 2022 AQMP does not require construction of major new land use developments in any areas within South Coast AQMD's jurisdiction, none of the proposed control measures are expected to physically divide any established communities within South Coast AQMD's jurisdiction.

Potential land use impacts associated with the 2022 AQMP could come from the construction of support systems (e.g., catenary overhead electrical lines or magnetic infrastructure related to operation of zero and low NOx transport systems). For purposes of evaluating potential land use impacts, the analysis assumed that no new rail or truck traffic routes would be constructed, but rather that existing truck and rail routes and corridors would be modified. The truck and rail corridors likely to be involved are primarily associated with rail yards and intermodal facilities in industrial zones within the Southern California area. Since only existing transportation routes would likely be modified (e.g., electric lines installed) and no new transportation routes are

anticipated, no land use conflicts, or inconsistencies with any general plan, specific plan, local coastal program, or zoning ordinance are expected.

Activities that result from implementing the various proposed control measures would be subject to project-level review that would assess consistency with adopted land use regulations, including review of impacts to land use and planning under CEQA, as applicable. Any proposed modification to an existing rail or truck traffic route/corridor will require a separate CEQA evaluation. No significant land use impacts were identified because any activities undertaken to implement the proposed control measures would be expected to comply with, and not interfere with, applicable land use plans, policies, or regulations of an agency with jurisdiction over the project, including, but not limited to the general plans, specific plans, local coastal programs or zoning ordinances.

4.8.7 MINERAL RESOURCES

There are no provisions in the 2022 AQMP that would result in the loss of availability of a known mineral resource of value to the region and the residents of the state, or of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. The 2022 AQMP provides incentives for the penetration of low NOx and zero emission technologies into market which are not expected to result in an increase in the use of mineral resources. The proposed project is not expected to require substantial construction activities and would not have any significant effects on the use of important minerals. Therefore, no new demand for mineral resources is expected to occur and no significant adverse mineral resources impacts from implementing the proposed project are anticipated.

4.8.8 POPULATION AND HOUSING

The proposed project is not anticipated to generate any significant effects, either direct or indirect, on the population or population distribution of people living in the South Coast AQMD's jurisdiction as no additional workers are anticipated to be required in order to implement any of the proposed control measures. Consistent with past experience, it is expected that the existing labor pool within the southern California area would accommodate the labor requirements for any modifications requiring construction at affected facilities. Additionally, the proposed control measures contain no provisions that would cause displacement of substantial numbers of people or housing necessitating construction of replacement housing elsewhere. Accordingly, population and housing impacts are not expected from the implementation of the 2022 AQMP.

4.8.9 PUBLIC SERVICES

Fire protection and emergency medical services would be provided to affected facilities and residential developments by local county and city fire departments. Although the implementation of the proposed control measures would use alternative fuels (e.g., hydrogen), alternative fuels would displace gasoline and diesel fuels. As first responders to emergency situations, fire departments are trained to respond to a variety of situations related to hazardous materials. Large industrial facilities (e.g., electric generating plants and refineries) have on-site fire response

personnel and the local fire departments provide assistance to the on-site personnel. Therefore, no increase in calls for fire protection, and emergency medical service would be expected from implementation of the proposed control measures. New residential developments would be required to comply with Control Measures R-CMB-01, R-CMB-02, R-CMP-03, and R-CMB-04 and development proposals would be subject to project-level review by the local land use agency, including review of fire protection impacts under CEQA, as applicable.

Furthermore, all activities undertaken as a result of implementing the proposed control measures would be required to comply with fire-related safety features in accordance with the applicable provisions of the adopted California Fire Code, any county or city ordinances, and standards regarding fire prevention and suppression measures related to water improvement plans, fire hydrants, fire access, and water availability. Based on the preceding discussion, implementation of the proposed control measures would not adversely affect the ability of local fire protection to provide adequate service and impacts would be less than significant.

Implementation of the proposed control measures would not result in an increase in calls for police protection. Implementation of the proposed control measures occur at existing facilities or promote transition to cleaner emitting equipment at new developments, but would not facilitate the construction of new development. At existing industrial facilities, on-site security is typical and would be expected to continue to with the same demand for police department support as is currently needed. In addition, new residential developments would be required to comply with the Control Measures R-CMB-01, R-CMB-02, R-CMP-03, and R-CMB-04 and the development proposals would be subject to project-level review by the local land use agency, including review of police protection impacts under CEQA, as applicable.

The need for new facilities, or the expansion of existing schools, parks, or library services and facilities is tied to population growth. As indicated in Section XIII - Population and Housing of the NOP/IS, implementation of the proposed control measures would not induce population growth either directly or indirectly. Therefore, with no increase in local population, there would be no additional demand for new or expanded schools, parks, and libraries and no other adverse population or housing impacts are expected.

4.8.10 RECREATION

Demand for parks and recreational facilities in an area is usually determined by the area's population. As discussed in Section 4.8.9 - Population and Housing, the implementation of the proposed control measures does not include the development of new homes, which would lead to an increase in population and thereby, the need for additional park and recreation facilities. Therefore, the implementation of the proposed control measures would not increase the use of existing neighborhood and regional parks or other recreational facilities, nor would it require construction of new or expanded parks or recreational facilities. No impacts to park and recreational facilities would occur and no mitigation measures are necessary.

4.8.11 TRANSPORTATION

The 2022 AQMP would affect existing commercial/industrial facilities and residential developments; accelerate the replacement of high-emitting mobile sources with low NOx and zero emission mobile sources; establish greater control of industrial stationary sources; control indirect sources of emissions; develop incentives to remove/replace higher emitting equipment; establish specifications for fuels and mobile source exhaust emissions; improve detection and procedures; and establish educational and outreach programs. Implementation of the proposed control measures is not expected to substantially alter vehicle mileage or transportation routes. The 2022 AQMP builds upon transportation and related TCMs developed by SCAG and included in the SCAG RTP/SCS. Therefore, the proposed control measures would not conflict with a program plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

The 2022 AQMP would revise the previous motor vehicle emissions budgets with new emission calculations using the latest motor vehicle emission factors and planning assumptions. The U.S. EPA's Transportation Conformity Rule requires that transportation plans and projects must not exceed SIP motor vehicle emission budgets for attaining and maintaining health-based air quality standards or a conformity lapse would occur (preventing further funding of transportation projects). By avoiding a conformity lapse, the region would continue to receive federal funding for future transportation projects, which would generally improve traffic flow.

Implementation of the proposed control measures has the potential to result in an increase in transportation related to construction of new or modified air pollution control equipment. Construction trips and vehicle miles traveled (VMT) are associated with contractors and vendors delivering and installing equipment at affected facilities. Construction activity impacts are temporary in nature and will vary depending on the number and location of facilities, and the size of the construction workforce needed.

The CARB Technical Advisory on Evaluating Transportation Impacts in CEQA to comply with CEQA Guidelines Section 15064.3 focuses on permanent, new employee VMT. [California Office of Planning and Research, 2018]. Because of the temporary nature of construction activities, any increase in VMT related to construction activities would occur on a short-term basis at each location. In general, temporary construction-related increases in VMT are not considered to be a transportation impact or inconsistent with the requirements in CEQA Guidelines Section 15064.3, as they do not have a permanent impact on regional VMT. Additionally, discretionary projects at affected facilities could be subject to project-level review under CEQA. Therefore, temporary effects of construction-related vehicles would not conflict with the state's GHG reduction and associated VMT goals for the transportation sector.

Control Measures L-CMB-01, L-CMB-03, L-CMB-07, CMB-10, ECC-02, and MOB-07 have the potential to affect operational transportation by potentially increasing the amount of ammonia and or catalyst needed to operate SCR units. These deliveries are expected to be accomplished using heavy-duty trucks and occur periodically (i.e., conservatively estimated to be no more than

one truck per week per affected facility but could be less frequent). CEQA Guidelines Section 15064.3(a) pertains to automobile travel attributable to a project.[210] It does not require any analysis of increased VMT from heavy-duty truck trips. In fact, in CARB's 2017 Scoping Plan, the state's strategy for the goods-movement sector does not focus on reducing VMT but rather, on advances in technology zero-emissions and near-zero-emissions control strategies (CARB, 2017).[211] Therefore, less than significant transportations impacts from the implementation of the proposed control measures is expected to occur.

One of the primary goals of the 2022 AQMP is the replacement of high-emitting mobile sources with low NOx and zero emission mobile sources. Control measures aimed at mobile sources are not expected to result in an increase in mobile sources (e.g., an increase in automobiles or trucks) but would instead replace higher emission vehicles with lower emitting mobile sources. Therefore, these types of control measures would not result in an increase in VMT, but would instead encourage the use of lower-emitting mobile sources.

CEQA Guidelines Section 15064.3(a) clarifies that the primary consideration in evaluating a project's transportation impacts for CEQA purposes is the amount and distance that a project might cause people to drive. This captures two measures of transportation impacts: number of automobile trips generated and VMT. Additional permanent employees are not expected to be required to operate equipment that may require additional air pollution control equipment, due to implementation of the 2022 AQMP. As discussed in Section 4.8.9 - Population and Housing, implementation of the 2022 AQMP is not expected to generate additional employee or population increases. Therefore, no increase in vehicle trips or VMT is expected. Therefore, less than significant impacts from the implementation of the proposed control measures are expected to occur.

Implementation of the proposed control measures does not involve or require the construction of new roadways, alter existing roadways, or introduce incompatible uses to existing roadways. However, some of the proposed control measures could result in the construction of catenary overhead electrical lines or magnetic infrastructure to operate zero and low NOx transport systems (e.g., EGM-01, MOB-02A, MOB-02B, MOB-06, and MOB-07). No new rail or truck traffic routes are expected to be constructed, but rather existing truck and rail routes/corridors would be modified. Since only existing transportation routes would likely be modified (e.g., electric lines installed) and no new transportation routes are anticipated, no increase in traffic hazards are expected.

[210] South Coast AQMD staff conducted extensive research on the state's guidance for how to analyze truck VMT under SB 743 in CEQA documents. Searches included reviews of OPR's December 2018 Technical Advisory, CARB's 2017 Scoping Plan Update, the California Natural Resources Agency's rulemaking documents for the Updates to the 2019 CEQA Guidelines, which includes the incorporation of SB 743 requirements, and consultation with SCAG staff.

[211] California Air Resources Board, 2017, California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target, https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf, accessed on March 18, 2019.

4.8.12 WILDFIRE

Activities that result from implementation of the proposed control measures would not block or otherwise interfere with the use of evacuation routes; nor would they interfere with operations of emergency response agencies or with coordination and cooperation between such agencies. Therefore, there would be no impacts on emergency activities.

Implementation of the proposed control measures would affect existing commercial/industrial facilities and residential developments; accelerate the replacement of high-emitting mobile sources with low NOx and zero emission mobile sources; establish greater control of industrial stationary sources; control indirect sources of emissions; develop incentives to remove/replace higher emitting equipment; establish specifications for fuels and mobile source exhaust emissions; improve detection and procedures; and establish educational and outreach programs in appropriately zoned areas. Since commercial and industrial areas are not typically located near wildland or forested areas, implementation of the proposed control measures is not expected to increase the risk of wildland fires. Further, site preparation of industrial facilities often includes the removal of vegetation for fire safety. Therefore, affected industrial facilities are expected to be devoid of plant life (except landscape vegetation), especially native vegetation.

Similarly, for the proposed control measures that will affect residential land uses, any modifications needed would occur inside the buildings or in the case of energy efficiency improvements such as installing solar, on the roofs of residential buildings, and would not be expected to create any greater risk of wildland fires than the existing residential developments themselves. Moreover, the proposed residential control measures may involve replacing gas-fired water heaters, space heaters, cooling devices, and other combustion sources with electric devices, reducing the use of fuel and the potential to cause wildland fires.

Any structures subject to the implementation of proposed control measures that would be located in fire hazard severity zones are required to be designed, built, and operated in accordance with state regulations specifying building materials and structural designs for structures in such zones, including CBC Chapter 7A and California Fire Code Chapter 49; regulatory requirements for defensible space including Public Resources Code Section 4291 et seq.; and subject to project-level CEQA review, including review of wildfire impacts, as applicable. Electric utilities are required to abide by the requirements of the California Public Utilities Commission (CPUC) Fire Safety Regulations as they relate to utility poles and wires, and vegetation management.

Additional measures are in place to minimize the impacts of pollutant concentrations from wildfire ash. Recognition of the growing threat that wildfire smoke poses to public health and safety has resulted in a response led by the U.S. Forest Service and enhanced partnership with many other agencies, such as the National Park Service. The Wildland Fire Air Quality Response Program (WFAQRP) was created to directly assess, communicate, and address risks posed by wildfire smoke to the public as well as fire personnel. South Coast AQMD also issues air quality alerts, advisories, and forecasts by email through AirAlerts.org. South Coast AQMD also maintains an interactive online map to view current air quality conditions in the region. Therefore, the proposed control measures in the 2022 AQMP are not expected to result in

structures being built within or adjacent to wildfire areas, or result in an increased risk of wildfire.

Catastrophic wildfire can create favorable conditions for other hazards, such as flooding and landslides during the rainy season. However, since commercial and industrial areas are not typically located near wildland or forested areas, implementing the 2022 AQMP control measures would not expose people or structures to post-fire hazards such as flooding, landslides, slope instability, or drainage changes. Any new structures subject to the implementation of proposed control measures (e.g., new residential developments) that would be located in fire hazard severity zones would be subject to project-level CEQA review, including review of wildfire impacts, as applicable. Control measures applicable to reducing emissions from residential developments (e.g., R-CMB-01 through R-CMB-04) do not affect the siting of residential developments. Therefore, there would be no impacts or increased fire risks to people or structures associated with implementation of the 2022 AQMP.

SUBCHAPTER 4.9

OTHER CEQA TOPICS

Growth-Inducing Impacts

Significant Environmental Effects Which Cannot be Avoided

Relationship Between Short-Term Uses and Long-Term Productivity

4.9 OTHER CEQA TOPICS

4.9.1 GROWTH-INDUCING IMPACTS

CEQA defines growth-inducing impacts as those impacts of a proposed project that "could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth" [CEQA Guidelines Section 15126.2(e)].

To address this issue, potential growth-inducing effects are examined through the following considerations:

- Facilitation of economic effects that could result in other activities that could significantly affect the environment;
- Expansion requirements for one or more public services to maintain desired levels of service as a result of the proposed project;
- Removal of obstacles to growth through the construction or extension of major infrastructure facilities that do not presently exist in the project area or through changes in existing regulations pertaining to land development;
- Adding development or encroachment into open space; and/or
- Setting a precedent that could encourage and facilitate other activities that could significantly affect the environment.

4.9.1.1 Economic and Population Growth and Related Public Services

The proposed project would not directly foster economic or population growth or the construction of new housing in the southern California area. The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest technology available. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emission and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. However, the 2022 AQMP would not be the cause of residential, commercial, or industrial development.

The 2022 AQMP would not remove barriers to population growth, as it involves no changes to a General Plan, zoning ordinance, or a related land use policy. Alternatively, the 2022 AQMP would not create barriers to projected population growth because it would result in improving air quality and attaining the 70 ppb ozone standard, thus protecting public health.

The 2022 AQMP does not include policies that would encourage the development of new housing, population-generating uses, or infrastructure that would directly encourage such uses. The 2022 AQMP does not change jurisdictional authority or responsibility concerning land use

or property issues. Land use authority falls solely under the purview of the local governments. The South Coast AQMD is specifically excluded from infringing on existing city or county land use authority. [Health and Safety Code Section 40414]. Therefore, the 2022 AQMP would not directly trigger new residential development in the area or alter land use policies.

The 2022 AQMP may result in construction activities associated with implementation of certain control measures (e.g., control equipment at existing stationary sources or electrification along existing roadways). However, the 2022 AQMP would not directly or indirectly stimulate population growth, remove obstacles to population growth, or necessitate the construction of new community facilities that would lead to additional growth in the Basin. It is expected that construction workers will be largely drawn from the existing workforce pool in southern California. Considering the existing labor force is about 8.8 million in the region and current unemployment rate of four to five percent,[212] it is expected that a sufficient number of workers are available locally and that few or no workers would need to relocate for construction jobs potentially created by the proposed project as construction activities would be spread over a period of 2023 to 2036. Further, the 2022 AQMP would not be expected to result in an increase in local population, housing, or associated public services (e.g., fire, police, schools, recreation, and library facilities) since no increase in population or the permanent number of workers is expected. Likewise, the proposed project would not create new demand for secondary services, including regional or specialty retail, restaurant or food delivery, recreation, or entertainment uses. As such, the 2022 AQMP would not foster economic or population growth in the surrounding area in a manner that would be growth-inducing.

Thus, implementing the 2022 AQMP will not have any direct or indirect growth-inducing impacts on businesses in the South Coast AQMD's jurisdiction because it is not expected to foster economic or population growth or the construction of additional housing.

4.9.1.2 Removal of Obstacles to Growth

The 2022 AQMP will be implemented within South Coast AQMD's jurisdiction which is located within an existing urbanized area where adequate infrastructure is already in place to serve the existing surrounding population. The proposed project would not employ activities or uses that would result in growth inducement, such as the development of new infrastructure (e.g., new roadway access) that would directly or indirectly cause the growth of new populations, communities, or currently undeveloped areas. The 2022 AQMP is not expected to result in the use of energy resources in a wasteful manner. However, the 2022 AQMP includes incentives to shift from diesel and gasoline fuel use to increased electrification of stationary and mobile sources.

The 2022 AQMP could result in a substantial increase in electricity demand (11 percent of the existing electricity use in the Basin), as well as natural gas and hydrogen use, the impacts of which are potentially significant. The demands for electricity associated with increased electrification of mobile sources could be partially offset by charging equipment (e.g., electric

[212] EDD, Labor Market Information Division, Labor Market Information by County, July 2022. https://www.labormarketinfo.edd.ca.gov/geography/lmi-by-county.html

vehicles) at night when the electricity demand is low, thus minimizing impacts on peak electricity demands. In addition, any increase in electricity demand would, over time, result in a concurrent reduction in demand for other types of fuels, particularly petroleum-based fuels.

In the CEQA Guidelines, Appendix F: Energy Conservation, the wise and efficient use of energy includes: 1) decreasing overall per capita energy consumption; 2) decreasing reliance on fossil fuel such as coal, natural gas, and oil; and 3) increasing reliance on renewable energy sources. Implementation of the 2022 AQMP would increase demand for renewable energy because the transition to electric vehicles and the increased use of low NOx and zero emission technologies would increase the use of electricity and decrease the use of petroleum-based fuels in conventional vehicles and other higher-emitting technologies. Thus the 2022 AQMP would support the efficient use of energy by decreasing the use of fossil fuels and increasing the reliance on renewable energy sources, providing a beneficial long-term operational impact on energy conservation. Further, the 2022 AQMP includes strategies that promote energy conservation (Control Measure FLX-01) without identifying specific targets; therefore, its benefits have not been quantified in this analysis.

While construction and operation activities that may occur as a result of the proposed project will require trips associated with construction workers and delivery of supplies, the trips are expected to occur via existing roadways and transportation corridors. Thus, the proposed project is not expected to require the development of new roads or freeways. Likewise, the 2022 AQMP would not result in the expansion of public service facilities (e.g., police, fire, libraries, and schools). However, growth induced by the 2022 AQMP would be limited to the increase in electricity, natural gas, and hydrogen to support the increased penetration of low NOx and zero emission technologies.

4.9.1.3 Development or Encroachments into Open Space

Development can be considered growth-inducing when it is not contiguous to existing urban development and introduces development into open space areas. The proposed project will be implemented within South Coast AQMD's jurisdiction which is located within an existing urbanized area. The areas where construction activities may occur would be at existing stationary sources and along transportation corridors. Stationary sources are generally located within commercial and industrial (urbanized) areas. Any related construction activities would be expected to be within the confines of the existing facilities and would not encroach into open space. The 2022 AQMP may also result in the construction of overhead catenary lines to electrify roadways and transportation corridors. These transportation measures are expected to use existing roadways and are not expected to require the development of new roads or freeways. Therefore, the 2022 AQMP would not result in development within or encroachment into an open space area.

4.9.1.4 Precedent Setting Action

The 2022 AQMP demonstrates attainment of the 8-hour federal 70 ppb ozone standard by 2037 as required by the CAA. The federal CAA requires ozone nonattainment areas to prepare a State Implementation Plan which must be submitted to the U.S. EPA. Therefore, the 2022 AQMP is

being prepared to comply with federal air quality planning regulations and requirements. These required approvals are routine compliance actions and would not result in precedent-setting actions that might cause other significant environmental impacts (other than those evaluated in other sections of this Program EIR).

4.9.1.5 Conclusion

The 2022 AQMP was developed to comply with federal air quality planning requirements for ozone. The 2022 AQMP is not expected to foster economic or population growth, or result in the construction of additional housing or other infrastructure, either directly or indirectly, that would further encourage growth. The 2022 AQMP could result in construction projects at existing stationary sources and along existing transportation corridors. However, the proposed project would not be considered growth-inducing, because it would not result in an increase in production of resources or cause a progression of growth that could significantly affect the environment either individually or cumulatively, other than as evaluated in Chapter 4 of this Program EIR.

4.9.2 SIGNIFCANT ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

CEQA Guidelines Section 15126(c) requires an environmental analysis to consider "any significant irreversible environmental changes which would be involved if the proposed action should be implemented." Irreversible changes include a large commitment of nonrenewable resources, committing future generations to specific uses of the environment (e.g., converting undeveloped land to urban uses), or enduring environmental damage due to an accident.

The following is a summary of impacts associated with the 2022 AQMP that this Program EIR concluded are significant.

- Air quality impacts for criteria pollutants associated with the following construction activities due to the implementation of the control measures in the 2022 AQMP were concluded to be potentially significant: 1) the demolition or removal of components from existing buildings, or structures, such as equipment, mechanical systems, cooking devices, clothes dryers, water and/or space heating systems, and pool heaters; 2) the installation of new energy efficient equipment, mechanical systems, cooking devices, clothes dryers, water and/or space heating systems; and pool heaters; 3) the construction of additional infrastructure to produce more alternative fuels to support alternative-fueled vehicles (e.g., electric, hydrogen, natural gas); 4) the construction of additional infrastructure to produce more electricity to support electric vehicles and the electrification of new sources (e.g., additional on-road vehicles and marine vessels, "wayside" electric power such as catenary lines); 5) the construction of air pollution control equipment at stationary sources (e.g., SCRs), the retrofit of existing equipment with low NOx technology (e.g., low or ultra-low NOx burners) or the use of cleaner stationary sources (e.g., Tier 4 engines and newer boilers); and 6) construction for the replacement of higher emitting combustion equipment with low NOx equipment.

- Implementation of control measures in the 2022 AQMP is expected to result in potentially significant short-term increases in GHG emissions from construction projects, additional production and use of electricity generation from natural gas combustion (prior to the full conversion to renewable sources), additional production and use of alternative fuels, and replacement of existing combustion equipment with new lower emitting combustion equipment; however, these will be offset by substantial GHG emission reductions occurring over the long-term from replacing diesel- and gasoline-fueled equipment with electric-powered and alternative fueled equipment.

- The 2022 AQMP could result in a substantial increase in the demand for electricity (greater than 11 percent of the existing electricity use in the Basin), natural gas, and hydrogen. The potential energy impacts for these resources are considered potentially significant.

- As natural gas is widely available, natural gas supplies are not expected to be limited if the proposed project is implemented. The combined increase in natural gas demand needed for producing electricity and hydrogen and for fueling vehicles may be somewhat offset over the long-term by a decrease in demand for natural gas appliances in commercial and residential setting. However, over the short-term, the natural gas demand is expected to increase and the proposed project may result in significant adverse energy impacts relating to natural gas demand. The energy impacts relating to natural gas supply and demand would remain significant after mitigation.

- Implementation of the 2022 AQMP could result in an increase in hydrogen use that cannot be currently met by existing producers. The expansion of hydrogen production, especially in the short-term through steam methane reforming of natural gas, is expected to have significant energy impacts.
- Increased usage of ammonia due to implementation of control measures in the 2022 AQMP could generate significant adverse hazard impacts during routine transport as a result of an accidental release of delivered aqueous ammonia.
- The hazards impact from a catastrophic rupture of an ammonia tank is considered a potentially significant, since off-site receptors could be exposed to concentrations that would exceed the ERPG-2 toxic endpoint concentration for ammonia.
- The construction of any new hydrogen plants would be expected to be constructed within existing industrial facilities that would likely have at least 90 feet to the closest off-site receptor and, therefore, poses a less than significant hazard impact. Hazards impacts from the construction of new natural gas pipeline to service those hydrogen plants would be considered potentially significant.
- The increased transport of LNG may increase transportation hazards associated with mobile source fuels. Consequently, increased use of LNG is expected to generate significant adverse hazard impacts during transport.
- While the continued and potential increased use of water-based coatings and products would generally be expected to reduce the overall hazard impacts associated with solvent-based products, the potential reformulation of coatings and products to products

that are more flammable (e.g., acetone) could result in a significant impact on fire hazards.

- Overall, implementation of Control Measures L-CMB-01, L-CMB-05, L-CMB-06, CTS-01, MCS-02, MOB-05, MOB-06, MOB-07, and M0B-08 combined has the potential to cause significant water demand and water supply impacts after combining the amount of water that may be needed during both construction and operation. While increased water demand may not necessarily be exceeded for an individual project at a facility, the collective water use has the potential to exceed the potable water demand significance threshold of 262,820 gallons per day. Mitigation measures are proposed, but the specific ones that would be implemented depend on the specific characteristics of individual projects, the volume and type of water expected to be used and whether there is sufficient supply of water given the ongoing extreme drought conditions. Water demand and water supply impacts are therefore expected to remain significant after mitigation measures are applied.
- In addition, implementation of Control Measures L-CMB-01, L-CMB-05, L-CMB-06, CTS-01, MCS-02, MOB-05, MOB-06, MOB-07, and M0B-08 combined has the potential to cause potentially significant water quality impacts such that mitigation measures are required. While potential changes in water quality volume and concentration levels may not require all affected facilities to modify their industrial waste discharge permit or NPDES permit, it is possible that some facilities may need to do so. Mitigation measures are proposed, but the specific ones that would be implemented depend on the specific characteristics of individual projects, the wastewater volume and concentration levels expected to be discharged and whether there is sufficient capacity in the existing wastewater treatment and storm water collection systems to handle the increased volume. If sufficient capacity does not exist, then a facility will be faced with physically modifying their wastewater treatment and/or storm water collection systems which would require discretionary approvals and potentially, further CEQA review. Therefore, water quality ~~water demand and water supply~~ impacts are expected to remain significant after mitigation measures are applied.
- Construction noise and vibration impacts from modifications to existing equipment and facilities, as well as existing roadways and roadway infrastructure is expected to be significant, so mitigation measures are proposed. Because project-specific information is required to determine existing noise level, which mitigation measures can be applied, and whether noise level can be reduced to less than significant; for conservatism, construction noise and vibration impacts are expected to remain significant after mitigation measures are applied.
- Installation of air pollution control equipment (e.g., low NOx burners, SCR systems, electrification of sources); 2) replacement of existing equipment; 3) installation of roadway infrastructure (wayside power and catenary lines or other similar technologies); 4) installation of battery charging infrastructure; and 5) installation of alternative fuel infrastructure are expected to generate solid and hazardous waste associated with construction activities. Because the amount of potential construction and demolition waste generated by implementing control measures from the 2022 AQMP cannot be

quantified, solid and hazardous waste impacts from construction are concluded to be significant even after mitigation is applied.

- The extent of solid and hazardous waste impacts from early retirement of equipment is difficult to quantify, but concluded to generate significant adverse impact because available landfill space is limited to approximately 100,000 tons per day with only four solid waste landfills in Southern California having capacity past 2039. Impacts are expected to be significant even after mitigation is applied.

While feasible mitigation measures have been developed for the identified significant adverse impacts, the mitigation measures may not reduce the impacts to less than significant levels. The 2022 AQMP would place an incremental demand on nonrenewable and limited resources, such as energy and water supplies relative to the rate of use of these resources due to population growth and increased consumer demand. The largely irretrievable conversion of undeveloped, agricultural land to urban uses is a function of the growing population and local land use authority, not the 2022 AQMP. The 2022 AQMP is expected to result in long-term benefits associated with achieving ambient air quality standards and a reduction in the use of petroleum-based fuels with a corresponding increase in the use of alternative fuels.

Conversely, positive environmental changes, especially to air quality, are expected to result from implementation of the 2022 AQMP. The proposed project will result in significantly reduced emissions of air pollutants, thereby improving air quality and related public health. Emission reductions will also directly improve the vitality of crops and other plants. The health of livestock, domestic animals, and other wildlife will be indirectly enhanced by the positive effects on plant life, as well as by any direct benefits attributable to less air pollution. The damage to buildings and other structures attributable to air pollution also will be diminished, as well as an improvement in aesthetics and visibility.

4.9.3 RELATIONSHIP BETWEEN SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

An important consideration when analyzing the effects of a proposed project is whether it will result in short-term environmental benefits to the detriment of achieving long-term goals or maximizing productivity of these resources. Implementing the 2022 AQMP is not expected to achieve short-term goals at the expense of long-term environmental productivity or goal achievement. The purpose of the 2022 AQMP is to set forth a comprehensive control program that will lead the Basin into compliance with the federal ozone air quality standards. By attaining federal air quality standards, the 2022 AQMP is expected to enhance short and long-term environmental productivity in the region.

Implementing the 2022 AQMP does not narrow the range of beneficial uses of the environment. Although significant impacts have been identified, implementation of the recommended mitigation measures will ensure such impacts are mitigated to the greatest degree feasible.

Because no short-term environmental benefits are expected at the expense of long-term environmental goals being achieved, there is no justification for delaying the proposed action. This proposed project must be implemented now as the South Coast AQMD is required by the

federal Clean Air Act to formally review the 2022 AQMP and adopt relevant plan revisions which will achieve the federal ambient ozone standard by the established deadlines. The South Coast AQMD is proceeding with the development of the 2022 AQMP pursuant in accordance with this mandate.

CHAPTER 5

ALTERNATIVES

5.1 INTRODUCTION

This Program EIR provides a discussion of alternatives to the proposed project as required by CEQA. The alternatives discussion includes measures for attaining the objectives of the proposed project and provides a means for evaluating the comparative merits of each alternative. A 'no project' alternative must also be evaluated. The range of alternatives must be sufficient to permit a reasoned choice, but need not include every conceivable project alternative. CEQA Guidelines Section 15126.6(c) specifically notes that the range of alternatives required in a CEQA document is governed by a 'rule of reason' and only necessitates that the CEQA document set forth those alternatives necessary to permit a reasoned choice. The key issue is whether the selection and discussion of alternatives fosters informed decision making and public participation. A CEQA document need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative. [CEQA Guidelines Section 15126.6(f)(3)].

5.2 METHODOLOGY FOR DEVELOPING PROJECT ALTERNATIVES

The alternatives typically included in CEQA documents for proposed South Coast AQMD rules, regulations, or plans are developed by breaking down the project into distinct components (e.g., emission limits, compliance dates, applicability, exemptions, pollutant control strategies, etc.) and varying the specifics of one or more of the components. Different compliance approaches that generally achieve the objectives of the project may also be considered as project alternatives.

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the lowest achievable emission rates from new emissions sources. The proposed 2022 AQMP control measures focus on maximizing the implementation of existing zero and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies still need to be invented to achieve the necessary reductions required to attain the 70 ppb ozone standard and comply with the ambient air quality standards for ozone. The proposed 2022 AQMP would accelerate the replacement of high-emitting mobile sources with zero or near zero-emitting mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

The proposed attainment strategy focuses on reduction of ozone precursors (NOx and VOC). NOx emissions lead to the formation of ozone. The most significant air quality challenge faced by the South Coast AQMD is to reduce NOx emissions sufficiently to meet the upcoming ozone federal standard deadlines. The 2022 AQMP analyses indicate that an additional 67 percent NOx emission reduction is needed by 2037 to attain the 8-hour ozone standard. The majority of NOx emission reductions are expected to come from mobile sources.

The possible alternatives to the proposed 2022 AQMP are limited by the nature of the project. For example, the South Coast AQMD is required to prepare an ozone AQMP that demonstrates attainment of the federal ambient air quality standards by applicable dates. The magnitude of emission reductions needed for the attainment of these NAAQS requires an aggressive mobile source control strategy supplemented with focused, strategic stationary source control measures and close collaboration with federal, state, and regional governments, local agencies, businesses, and the public.

Further, 2022 AQMP control measures are developed to achieve the maximum emission reduction potential that is technically feasible and cost-effective. Because the 2022 AQMP includes all feasible control measures identified as part of the AQMP development process and control measures reflect the maximum emission reduction potential, it is difficult to develop alternatives that would still achieve the project objectives, including attaining the federal 8-hour ozone standard, but are substantially different than the 2022 AQMP.

In spite of the limitations identified above with regard to developing project alternatives, similar to previous AQMP Program EIRs, alternatives to the 2022 AQMP focus on emphasizing different feasible pollutant control strategies. For example, alternatives could rely only on regulation versus greater reliance on incentive funding and mobile source control measures. Ultimately, all project alternatives must demonstrate attainment of the federal 8-hour ozone standards.

Development of the ozone attainment control strategy relies on baseline emissions specified by the emissions inventory of all emissions sources in the Basin. The federal CAA Section 172(c)(3) requires all plan [AQMP] submittals to include a comprehensive, accurate, and current inventory of actual emissions from all sources of the relevant pollutant(s). To fulfill the intent of this requirement, the year 2018 was selected as the baseline year for analyzing the effectiveness of 2022 AQMP control measures in attaining the 8-hour federal ozone standard. Typically, the existing setting is established at the time the NOP/IS is circulated for public review, which was May 2022.

5.3 ALTERNATIVES REJECTED AS INFEASIBLE

In accordance with CEQA Guidelines Section 15126.6(c), a CEQA document should identify any alternatives that were considered by the lead agency, but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination. Section 15126.6(c) also states that among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: 1) failure to meet most of the basic project objectives; 2) infeasibility; or 3) inability to avoid significant environmental impacts.

As noted in Section 5.2, the range of feasible alternatives to the 2016 AQMP is limited by the nature of the proposed project and associated legal requirements. Similarly, the range of alternatives considered, but rejected as infeasible is also relatively limited. The following subchapters identify five potential alternatives to the 2022 AQMP that were rejected for the reasons explained in each subchapter, but primarily because they would not attain the 8-hour federal ozone standard of 70 ppb.

5.3.1 NO PROJECT ALTERNATIVE – NO FURTHER ACTION

CEQA documents typically assume that the adoption of a no project alternative would result in no further action on the part of the project proponent or Lead Agency. For example, in the case of a proposed land use project such as a housing development, adopting the No Project Alternative terminates further consideration of that housing development or any housing development alternative identified in the associated CEQA document. In that case, the existing setting would typically remain unchanged.

The concept of taking no further action (and thereby leaving the existing setting intact) by adopting a No Project Alternative does not readily apply to an update of an already adopted and

legally mandated plan such as the AQMP. Adopting a no project alternative for an update to the AQMP does not imply that no further action will be taken (i.e., halting implementation of the existing 2016 AQMP). The federal and state Clean Air Acts require the South Coast AQMD to revise the AQMP and implement the 2022 AQMP in order to attain the applicable ozone national ambient air quality standards. A no further action No Project Alternative in the case of the 2022 AQMP is not a legally viable alternative. Consequently, the No Project Alternative presented in this Program EIR is the continued implementation of the 2016 AQMP. Continued implementation of the 2016 AQMP without additional reduction measures would not be a feasible alternative because the South Coast AQMD is required to submit to USEPA an AQMP that demonstrates attainment of the 8-hour ozone NAAQS by the applicable dates, as explained above. However, continued implementation of the 2016 AQMP as the No Project Alternative (see Section 5.4.1) is consistent with CEQA Guidelines Section 15126.6(e)(2) (italics added):

> "The 'no project' analysis shall discuss the existing conditions at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, *as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services*…"

It should be noted that, except for air quality, there would be no further incremental impacts on the existing environment if no further action is taken. Although there are existing rules that may have future compliance dates, potential adverse impacts from these rules have already been evaluated in the March 2017 Final Program EIR for the 2016 AQMP and the corresponding rule-specific CEQA documents. Air quality would continue to improve to a certain extent, but it is unlikely that all state or federal ozone standards would be achieved as required by the federal and California CAAs.

5.3.2 ALTERNATIVE LOCATION

CEQA requires consideration of an alternative location alternative if significant effects of the project would be avoided or substantially lessened by putting the project in another location. Pursuant to CEQA Guidelines Section 15126.6(f)(2)(B), if the Lead Agency concludes that no feasible alternative locations exist, it must disclose the reasons for this conclusion, and should include the reasons in the Program EIR. For example, in some cases there may be no feasible alternative locations for a geothermal plant or mining project which must be in close proximity to natural resources at a given location. The 2022 AQMP applies to the entire area of the South Coast AQMD's jurisdiction. The South Coast AQMD has no authority to adopt and enforce 2022 AQMP control measures in areas outside its jurisdiction. CEQA does not grant an agency new powers independent of the powers granted to the agency by other laws. [CEQA Guidelines Section 15040 (b)]. Relocating control measures for implementation in another location would not help the South Coast Air Basin attain the 70 ppb ozone standard by 2037. Since relocating the proposed project would be infeasible, this Program EIR does not evaluate implementing the 2022 AQMP at another location.

5.3.3 FULL SOLAR CONVERSION ONLY

Under this alternative, all electricity would be generated by solar power through the construction and operation of additional solar generating systems. While solar can be installed on existing and new structures in commercial and residential settings, the amount of electricity that would need

to be generated would require much larger scale solar installations, which have generally been placed in the rural, desert areas of California, due to the need for large parcels of land for siting the solar arrays. In 2020, solar thermal facilities generated a total of 29,450 gigawatt-hours or about 15.4 percent of the state's total electricity production (as compared to 7.6 percent of the state's production in 2015). Therefore, the state would need to substantially ramp up the construction and operation of additional solar generating systems.

While the solar technology has made great advances in recent years, there are still a number of existing challenges regarding the reliability and transmission of solar power. The largest solar installations are located in the desert portions of the state which require transmission lines that connect the solar installations to the more populated portions of the state. For new solar installations, new transmission lines would be needed. Further, electricity would only be generated when the sun is shining. While this is common in California, especially in the hotter, and drier desert regions, there are times when it is cloudy, rainy, or nighttime when electricity would not be produced, so some type of electricity storage system may be required. The technology for large-scale battery back-up systems has not yet been developed which would mean that natural gas-generated electricity would continue to be needed when solar-generated electricity is not being generated.

A full solar alternative would result in a number of additional potentially significant environmental impacts than the current proposed 2022 AQMP strategy. This alternative would require the conversion of a large portion of presumably desert habitat to industrial facilities, resulting in potentially significant impacts to aesthetics (impacts to scenic resources and light/glare), biological resources (including rare and endangered species such as the desert tortoise), cultural and tribal cultural resources (the latter of which is common in desert lands), hydrology impacts from periodic cleaning of the solar panels, land use (conversion of native habitat to industrial land uses), additional air, noise, traffic associated with construction activities, additional waste from obsolete solar panels, and other environmental topic areas.

Finally, converting to full solar is an ambitious goal that would not result in sufficient emission reductions to assure compliance with the federal or state 8-hour ambient ozone standard. As discussed in Chapter 4, Subchapter 4.2, Section 4.2.3, the carrying capacity (the maximum allowable NOx emissions to meet ozone standards) is estimated to be 60 tons per day NOx in 2037, which will require an approximately 67 percent reduction in NOx emissions. In 2018, the NOx emissions from electric natural gas fired electricity power plants were an average of 0.64 tons per day.[213] The elimination of natural gas-fired electricity power plants alone would not result in sufficient emission reductions to comply with federal 8-hour AAQS for ozone. Therefore, a full solar alternative would not achieve the primary objective of the proposed project to demonstrate attainment of the federal or state ambient air quality standards for ozone. For this reason, an alternative of full solar conversion is considered to be infeasible at this time and is not analyzed further in this Program EIR.

5.3.4 VOC REDUCTION STRATEGY

An alternative focused on a VOC Reductions Strategy would aim to implement more VOC emission reductions to achieve ozone attainment, as opposed to the current 2022 AQMP strategy

[213] 2022 AQMP, Appendix III, Base and future Year Emission Inventory, Attachment A.

which focuses on NOx emission reductions. NOx levels would be held at or nearly constant and attainment would be dependent upon the reduction of VOC emissions, primarily in the areas of cleaner mobile sources, consumer products, and lower VOC solvents. Air quality modeling completed as part of the 2022 AQMP shows that NOx emission reductions are required to demonstrate attainment with the federal 8-hour ozone standard.[214] Further, sufficient VOC emission reductions are not available to demonstrate compliance with the ambient air quality standards, so a VOC-only reduction strategy is infeasible. For this reason, an on alternative focusing a VOC-only reduction strategy is not analyzed further in this Program EIR.

5.3.5 STATIONARY SOURCE CONTROL MEASURES ONLY

This alternative considers only stationary source measures that could be implemented by the South Coast AQMD through its rules and regulations. The estimated NOx emission reduction from stationary sources in the 2022 AQMP is 22.4 tons per day[215]. In order to meet the 8-hour ozone standard, NOx emission reductions of approximately 124.3 tons per day are required. Therefore, an alternative that only considers stationary sources would not achieve sufficient NOx emission reductions required to demonstrate attainment of the 8-hour ozone standard in the 2022 AQMP. For this reason, an alternative focusing on only implementing stationary source control measures is infeasible and is not analyzed further in this Program EIR.

5.4 ALTERNATIVES TO THE 2022 AQMP

Because of the substantial emission reductions necessary to bring the region into attainment with 8-hour federal ozone standard by 2037, the South Coast AQMD is relatively limited with regard to the number of potential alternatives to the 2022 AQMP that may be considered as feasible. As a result, with the exception of the No Project Alternative, all project alternatives include the same mobile source control measures because of the magnitude of the emissions generated by mobile sources and the substantial emission reductions required to attain the ozone standard by the applicable dates. Alternatives evaluated in this section include a Mobile Source Reduction Only that would not result in additional control of stationary sources; an Early Implementation Alternative that would implement all control measures three years earlier than the proposed project; and a Regulation Only alternative that considers only those control measures where the South Coast AQMD or CARB have the authority to regulate. The following sections provide a brief description of the alternatives.

5.4.1 ALTERNATVE 1: NO PROJECT ALTERNATIVE

CEQA requires the evaluation of the No Project Alternative, which consists of what would occur if the proposed project was not approved; in this case, not adopting the 2022 AQMP. The net effect of not adopting the 2022 AQMP would be a continuation of the 2016 AQMP. This approach is consistent with CEQA Guidelines Section 15126.6 (e)(3)(A), which states:

> "When the project is the revision of an existing land use or regulatory plan, policy or ongoing operation, the 'no project' alternative will be the continuation of the existing plan, policy, or operation into the future. Typically, this is a situation where other projects initiated under the existing plan will continue while the new plan is developed. Thus, the

[214] See 2022 AQMP, Chapter 1, page ES-4
[215] See 2022 AQMP Chapter 5, Table 5-3.

projected impacts of the proposed plan or alternative plans would be compared to the impacts that would occur under the existing plan."

South Coast AQMD continues to implement the 2016 AQMP, which was adopted by the South Coast AQMD Governing in March 2017 and submitted to USEPA in April 2017. The ozone portion and the 24-hour PM2.5 standard elements of the 2016 AQMP have been approved by the USEPA into the SIP. Table 5.4-1 shows the control measures that have been implemented since 2018 and the ones for which further evaluation is underway. The No Project Alternative assumes that these control measures would still be implemented. Alternative 1 would not meet any of the project objectives identified in Subchapter 2.6, including the primary objective of complying with the 2015 federal 8-hour ozone standard (70 ppb). All remaining necessary emission reductions to demonstrate attainment would be obtained through implementing CAA Section 182(e)(5), the methods of which are currently unknown.

TABLE 5.4-1
2016 AQMP Emission Reductions by Control Measure (tons per day)

Control Measure	Control Measure Title	Adoption Date	Commitment		Adopted or Achieved	
			2023	2031	2023	2031
NOx Emission Reductions						
CMB-01	Transition to Zero and Near-Zero Emission Technologies for Stationary Sources	--	2,5	6.0	--	--
CMB-02	Emission Reductions from Replacement with Zero or Near-Zero NOx Appliances in Commercial and Residential Applications [Rule 1111]	2018	1.1	2.8	0.01	--
CMB-03	Emission Reductions from Non-Refinery Flares [Rule 1118.1]	2018	1.4	1.5	0.2	--
CMB-04	Emission Reductions from Restaurant Burners and Residential Cooking	--	0.8	1.6	--	--
CMB-05	Further NOx Reductions from RECLAIM Assessment	2018-2021	0.0	5.0	9.4	11.7
ECC-02	Co-Benefits from Existing Residential and Commercial Building Energy Efficiency Measures	2018	0.3	1.1	0.3	--
ECC-03	Additional Enhancements in Reducing Existing Residential Building Energy Use	--	1.2	2.1	--	--
MOB-03	Emission Reductions at Warehouse Distribution Centers	2021	TBD	TBD	0.7 to 1.5	1.5 to 3.0
MOB-04	Emission Reductions at Commercial Airports	2019	TBD	TBD	0.5	0.37
MOB-10	Extension of the SOON Provision for Construction/ Industrial Equipment	Ongoing	1.9	1.9	--	TBD
MOB-11	Extended Exchange Program	Ongoing	2.9	1.0	<0.1	TBD
MOB-14	Emission Reductions from Incentive Programs	Ongoing	11	7.8	11.2	TBD
Total NOx Emission Reductions			**23.1**	**31.0**	**22.3 to 23.1**	**13.6 to 15.1**

TABLE 5.4-1 (concluded)
2016 AQMP Emission Reductions by Control Measure (tons per day)

Control Measure	Control Measure Title	Adoption Date	Commitment		Adopted or Achieved	
			2023	2031	2023	2031
VOC Emission Reductions						
CTS-01	Further Emission Reductions from Coatings, Solvents, Adhesives, and Sealants [R1168]	2017	1.0	2.0	1.4	--
FUG-01	Improved Leak Detection and Repair	--	2.0	2.0	--	--
CMB-01	Transition to Zero and Near-Zero Emission Technologies for Stationary Sources	--	1.2	2.8	--	--
CMB-03	Emission Reductions from Non-Refinery Flares [Rule 1118.1]	2018	0.4	0.4	0.014	--
ECC-02	Co-Benefits from Existing Residential and Commercial Building Energy Efficiency Measures	2018	0.07	0.3	0.07	--
ECC-03	Additional Enhancements in Reducing Existing Residential Building Energy Use	--	0.2	0.3	--	--
BCM-10	Emission Reductions from Greenwaste Composting	--	1.5	1.8	--	--
MSC-02	Application of All Feasible Measures	TBD	TBD	TBS	0.88	--
	Total VOC Emission Reductions		6.4	9.6	2.4	--
PM2.5 Emission Reductions						
BCM-01	Further Emission Reductions from Commercial Cooking	--	0.0	3.3	--	--
BCM-04	Emission Reductions from Manure Management Strategies [NH3]	--	0.26	0.2	--	--
	Emission Reductions from Greenwaste Composting [NH3]	--	0.1	0.1	--	--
	Total PM2.5 Emission Reductions		TBD	3.3		

5.4.2 ALTERNATIVE 2: MOBILE SOURCE REDUCTIONS ONLY

Under Alternative 2, no stationary source control measures would be implemented. Only the mobile source control measures proposed by both CARB and the South Coast AQMD would be implemented. Table 5.4-2 summarizes the proposed South Coast AQMD control measures under this alternative. Details of the measures presented in Table 5.4-2 are in Appendix IV-A[216] of the 2022 AQMP. Table 5.4-3 summarizes the proposed CARB control measures under this alternative. Alternative 2 would meet some of the project objectives with the exception that it would not demonstrate attainment of the 2015 federal 8-hour ozone standard; and would not achieve widespread adoption of zero emission and low NOx technologies across all stationary sources. All remaining necessary emission reductions to demonstrate attainment would be obtained through implementing CAA Section 182(e)(5), the methods of which are currently unknown.

[216] AQMP Appendix IV-A: South Coast AQMD's Stationary and Mobile Source Control Measures. http://www.aqmd.gov/2022aqmp.

TABLE 5.4-2
South Coast AQMD Proposed Mobile Source 8-Hour Ozone Control Measures

Control Measure Number	Control Measure Title	Proposed Adoption Date	Proposed Implementation Timeframe	Emission Reductions (tpd) (2032/2037)
EGM-01	Emission Reductions from New Development and Redevelopment [All Pollutants]	2025	2026-2037	TBD / TBD
EGM-02	Emission Reductions from Projects Subject to General Conformity Requirements [All Pollutants]	2026	2026-2037	TBD / TBD
EGM-03	Emission Reductions from Clean Construction Policy [All Pollutants]	2025	2025-2037	TBD / TBD
MOB-01	Emission Reductions at Commercial Marine Ports [NOx]	2023	2023-2037	
MOB-02A	Emission Reductions at New Rail Yards and Intermodal Facilities [NOx, PM]	2022-2024	2023-2037	TBD / TBD
MOB-02B	Emission Reductions at Existing Rail Yards and Intermodal Facilities [NOx, PM]	2022-2024	2023-2037	TBD / TBD
MOB-03	Emission Reductions at Warehouse Distribution Centers [NOx]	Adopted 2021 (Reassess every 3 years)	2022-2037	TBD / TBD
MOB-04	Emission Reductions at Commercial Airports [All Pollutants]	Approved 2019 (Reassess in 2027)	2020-2037	TBD / TBD
MOB-05	Accelerated Retirement of Older Light-Duty and Medium-Duty Vehicles [NOx, PM]	N/A	Ongoing	0.20 / 0.11 [NOx]
MOB-06	Accelerated Retirement of Older On-Road Heavy-Duty Vehicles [NOx, PM]	N/A	Ongoing	TBD / TBD
MOB-07	On-Road Mobile Source Emission Reduction Credit Generating Program [NOx, PM]	TBD	TBD	TBD / TBD
MOB-08	Small Off-Road Engine Equipment Exchange Program [VOC, NOx, PM]	N/A	Ongoing	TBD / TBD
MOB-09	Further Emission Reductions from Passenger Locomotives [NOx, PM]	N/A	Ongoing	TBD / TBD
MOB-10	Off-Road Mobile Source Emission Reduction Credit Generation Program [NOx, PM]	TBD	TBD	TBD / TBD
MOB-11	Emission Reductions from Incentive Programs [NOx, PM]	N/A	Ongoing	7.11 / 6.69 [NOx]
MOB-12	Pacific Rim Initiative for Maritime Emission Reductions	N/A	Ongoing	TBD / TBD

TABLE 5.4-2 (concluded)
South Coast AQMD Proposed Mobile Source 8-Hour Ozone Control Measures

Control Measure Number	Control Measure Title	Proposed Adoption Date	Proposed Implementation Timeframe	Emission Reductions (tpd) (2032/2037)
MOB-13	Fugitive VOC Emissions from Tanker Vessels [VOC]	2024	2024-2037	TBD / TBD
MOB-14	Rule 2202 – On-Road Motor Vehicle Mitigation Options [VOC, NOx, CO]	2023	2023-2037	TBD / TBD
MOB-15	Zero-Emission Infrastructure for Mobile Sources [All Pollutants]	N/A	Ongoing	TBD / TBD

Key: tpd = tons per day; TBD = to be determined

TABLE 5.4-3
CARB Proposed 2022 State Strategy Measures and Estimated Emission Reductions

CARB Proposed Measures	2037 Estimated Emission Reductions (tpd)	
	NOx	VOC
On-Road Heavy-Duty		
Advanced Clean Fleets Regulation	19.3	1.7
Zero Emissions Trucks Measure	14.3	1.3
On-Road Light-Duty		
On-Road Motorcycle New Emissions Standards	2.3	5.8
Clean Miles Standard	<0.1	0.2
Off-Road Equipment		
Tier 5 Off-road Vehicles and Equipment	10.4	NYQ
Amendments to the In-Use Off-road Diesel-Fueled Fleets Regulation	4.0	0.3
Transport Refrigeration Unit Regulation Part 2	15.2	2.0
Commercial Harbor Craft Amendments	8.7	0.5
Cargo Handling Equipment Amendments	0.7	0.5
Off-Road Zero Emission Targeted Manufacturer Rule	NYQ	NYQ
Clean off-Road Fleet Recognition Program	NYQ	NYQ
Spark-Ignition Marine Engine Standards	2.1	4.2
Other Categories		
Consumer Products Standards	-	20.0
Zero Emission Standard for Space and Water Heaters	13.5	1.5
Enhanced Regional Emission Analysis in SIP	NYQ	NYQ
Pesticides: 1,3-Dichloropropene Health Risk Mitigation	-	NYQ
Primarily-Federally and Internationally Regulated Sources – CARB Measures		
In-Use Locomotive Regulation	63.2	2.5
Future Measures for Aviation Emission Reductions	NYQ	NYQ
Future Measures for OGV Emission Reductions	NYQ	NYQ
Primarily-Federally and Internationally Regulated Sources – Federal Action Needed		
On-Road Heavy-Duty Vehicle Low NOx Engine Standards	3.8	<0.1
On-Road Heavy-Duty Vehicle Zero-Emission Requirements	NYQ	NYQ
Off-Road Equipment Tier 5 Standard for Preempted Engines	1.5	NYQ
Off-Road Equipment Zero Emission Standards Where Feasible	2.2	NYQ
More Stringent Aviation Engine Standards	NYQ	NYQ
Cleaner Fuel and Visit Requirements for Aviation	10.2	NYQ
Zero Emission On-Ground Operation Requirements at Airports	NYQ	NYQ
Airport Aviation Emissions Cap	9.1	NYQ
More Stringent National Locomotive Emission Standards	NYQ	NYQ
Zero Emission Standards for Locomotives	NYQ	NYQ
Address Unlimited Locomotives Remanufacturing	NYQ	NYQ
More Stringent NOx and PM Standards for OGVs	0.8	NYQ
Cleaner Fuel and Vessel Requirements for OGVs	23.6	NYQ
Aggregate Emission Reductions:	**205.6**	**40.9**

Key: tpd = tons per day; NYQ = not yet quantified

5.4.3 ALTERNATIVE 3: EARLY IMPLEMENTATION OF CONTROL MEASURES

Under Alternative 3, the proposed control measures identified in the project description (see Chapter 2) would be unchanged but the timeframe for implementing the proposed control measures would occur three years earlier so that all measures would be fully implemented by 2034. This shift in implementation schedule would provide for the projected emission reductions to be achieved sooner than what is contemplated by the proposed project. Early implementation of Alternative 3 means that construction activities, including the removal and replacement of equipment (e.g., installation of new appliances and fleet turnovers) would also occur over a shorter period of time. Alternative 3 would achieve all of the project objectives, including attainment of the 2015 federal 8-hour ozone standard (70 ppb) and would reduce ozone and its precursors on the faster implementation schedule.

5.4.4 ALTERNATIVE 4: ALL REGULATORY/NON-INCENTIVE ALTERNATIVE

The focus of Alternative 4 would be limited to control measures that could be directly implemented by the South Coast AQMD or CARB and for which the South Coast AQMD has the authority to regulate or for which CARB has the authority to regulate. Therefore, the control measures under this alternative would be primarily limited to stationary source control measures, plus mobile source control measures for which the South Coast AQMD and CARB have the authority to implement. In other words, under this alternative, the incentive measures would be eliminated. Alternative 4 is in response to the 2016 AQMP that relied heavily on incentives to achieve reductions, which in turn relied heavily on getting those funds to provide the incentives. Due to the past difficulties with obtaining the necessary funding to implement the incentives in the 2016 AQMP, emission reductions did not occur. Therefore, Alternative 4 does not rely on incentives in order to achieve the needed emission reductions but instead focuses only on regulatory actions that are under the implementation authority of the South Coast AQMD and CARB.

Table 5.4-5 summarizes the categories of mobile sources which would rely on incentive funding in order to reduce NOx emissions and thus, are not considered under Alternative 4.

Omitting these incentive measures from Alternative 4 would mean that 6.8 tons per day of additional emission reductions would need to be achieved through other control measures in order to attain the 70 ppb 8-hour ozone standard. The additional emission reductions needed to compensate for the omitted incentive measures could come from any of the stationary source measures through implementing CAA Section 182(e)(5) measures, which are currently unknown. The emission reduction goals from any or all of the stationary source measures would need to be increased in order to compensate for the loss of the emission reductions from the incentive measures. Because Alternative 4 would not include incentive funding, the alternative would achieve most of the other project objectives with the exception of: “seeking substantial funding for incentives to implement early deployment and commercialization of low NOx and zero emission and technologies,” and “prioritizing distribution of incentive funding to environmental justice areas.”

TABLE 5.4-4
2037 NOx Reductions From 2022 AQMP Incentive Programs
Not Considered under Alternative 4[(1)]

Mobile Source Sector	Project Type	NOx Emission Reduction[(2)] (tons/day)	Affected Population	Average Funding per Unit	Total Incentive Funding
Light- and Medium-Duty Vehicles	Replacement	0.11	5,440	$5,000	$27,200,000
Heavy-Duty Vehicles	Replacement	1.34	8,214	$17,677	$145,200,000
School Buses	Replacement	0.30	8,032	$23,705	$190,400,000
Off-Road Agriculture	Replacement	0.08	125	$135,626	$16,886,589
Off-Road Construction	Repower	1.18	656	$307,545	$201,665,966
Off-Road Construction	Replacement	0.62	365	$286,351	$104,399,982
Other Off-Road and CHE	Replacement	0.37	428	$235,335	$100,623,218
Marine Harbor Craft	Repower	1.82	683	$322,000	$220,005,964
TRU	Replacement	0.01	224	$45,533	$10,194,772
Locomotives	Replacement	0.98	125	$1,854,353	$232,347,363
Total		**6.8**			**$1,248,923,855**

(1) Source: 2022 AQMP, Table 4-23.
(2) Summer Planning-based NOx reductions.

5.5 ALTERNATIVES ANALYSIS

The following subsections include the same environmental topic areas evaluated for the proposed 2022 AQMP Program EIR. Under each environmental topic area, impacts and significance conclusions are summarized for the proposed alternatives. In addition, potential impacts generated by each alternative to that environmental topic are described, a significance determination is made for the alternative, and environmental impacts from each alternative are compared to the environmental impacts identified for the proposed project.

5.5.1 AIR QUALITY AND GHG EMISSIONS

5.5.1.1 Proposed Project Impacts

The air quality impacts analysis concluded that the federal 8-hour ozone standard is predicted to be achieved by the 2037 compliance date through the implementation of the proposed control measures in the 2022 AQMP. The air quality analysis for implementation of the 2022 AQMP concluded the following:

- Air quality impacts for criteria pollutants associated with construction activities as part of implementing some of the control measures in the 2022 AQMP were confirmed to have potentially significant impacts.

- The majority of the activities associated with implementing the 2022 AQMP control measures are projected to have operational air quality impacts that are less than significant and would result in an overall emission reduction of criteria pollutants. Three activities associated with implementing the proposed control measures have potentially significant operational air quality impacts (i.e., additional production and use of electricity generation from natural gas combustion (prior to the full conversion to renewable sources), additional production and use of alternative fuels, and, and reformulation of coatings, adhesives, sealants and lubricants). The scale of air quality impacts from these three activities is dependent upon the type, size and overall design of any future projects implemented in response to the proposed control measures, the details of which are unknown at this time and cannot be forecasted. For this reason, the quantities of the potential air quality impacts cannot be estimated at this time. Nonetheless, when the effects of all of the proposed control measures are considered together, a net NOx emission reduction of 124 tons per day is expected, which is an order of magnitude greater than any of the potentially significant air quality impacts from implementing some of the individual control measures. Overall, the 2022 AQMP is expected to result in an air quality benefit. Thus, operational activities resulting from implementation of all of the proposed control measures in the 2022 AQMP are expected to be generate less than significant air quality operational impacts for criteria pollutants.

- Implementation of some control measures will cause an increase in TAC emissions (e.g., ammonia slip from the use of ammonia in SCR technology) while implementation of other control measures, which either specifically aim to reduce TAC emissions (e.g., CTS-01 which prohibits the use of pCBtF and tBAC). In addition, decreases criteria pollutant emissions will also result in decreases of TAC emissions associated with combustion of transportation fuels and natural gas including diesel particulate, benzene, formaldehyde and other TACs. When considered together, implementation of all control measures which comprise the 2022 AQMP is expected to cause an overall reduction in TAC emissions.

- Implementation of some control measures will cause an increase in ammonia emissions (e.g., for use in SCRs) and have ammonia slip emissions. However, the ammonia slip emissions were concluded to have no significant odor impacts.

- Implementation of control measures in the 2022 AQMP is expected to result in substantial GHG emission reductions from replacing diesel- and gasoline-fueled equipment with electric-powered and alternative fueled equipment which, over the long-term will offset potentially significant short-term increases in GHG emissions from construction projects, additional production and use of electricity generation from natural gas combustion (prior to the full conversion to renewable sources), additional production and use of alternative fuels, and replacements of existing combustion equipment with new lower emitting combustion equipment, resulting in an overall reduction of GHG emissions.

For the complete analysis of air quality and GHG impacts from the 2022 AQMP, refer to Subchapter 4.2 – Air Quality and GHG Impacts.

5.5.1.2 Alternative 1 - No Project Alternative

Under Alternative 1, the 2016 AQMP, which was adopted by the South Coast AQMD Governing in March 2017 and submitted to USEPA in April 2017, would continue to be implemented (see Table 5.4-1). The analysis of the construction impacts in the March 2017 Final Program EIR for the 2016 AQMP concluded that the control measures in the 2016 AQMP measures would generate significant air quality impacts, but not as many relative to the potentially significant air quality construction impacts that would occur from implementing the 2022 AQMP, primarily because the 2016 AQMP has fewer control measures to implement. Under Alternative 1, the No Project Alternative, would revert to implementing the control measures that have already been adopted and analyzed after the 2016 AQMP was adopted in March 2017. However, most of the potentially significant construction air quality impacts identified in the Final Program EIR for the 2016 AQMP have already occurred. Thus, by not taking new action or proposing new control measures to implement the 2022 AQMP under Alternative 1 will not change the existing construction air quality baseline and the construction air quality impacts that have already occurred. Thus, Alternative 1 is expected to result in less than significant air quality impacts during construction.

With respect to operational emissions, it is expected that air quality will continue to improve under Alternative 1 according to the ongoing implementation of the adopted 2016 AQMP control measures. However, the improvements in air quality from implementing the 2016 AQMP, would not be enough to attain the 8-hour federal ozone standard (70 ppb). As shown in Table 5.4-1, the NOx emission reductions from the 2016 AQMP would fall far short of the estimated 54 tons per day of NOx reductions required to achieve the 8- hour ozone standard (estimated to be 127 tons of NOx reductions) and thus, emphasizes the need for additional control measures that comprise the 2022 AQMP.

While additional control measures would be needed to attain the federal 8-hour ozone standard, the No Project Alternative is not proposing implement any additional control measures above and beyond what was adopted in the 2016 AQMP. Thus, while Alternative 1 reduces some criteria pollutant emissions, the air quality benefit will be much less than the proposed project (2022 AQMP). Moreover, Alternative 1 would not achieve the primary objective of the 2022 AQMP, to achieve the 8-hour ozone ambient air quality standard.

Overall, implementing the proposed control measures in the 2022 AQMP is projected to have air quality impacts that are less than significant and reduce criteria emissions. However, some of the proposed control measures individually may result in significant increases in criteria pollutants on a project-specific basis (i.e., increased generation and use of additional electricity produced by large combustion equipment relying on natural gas, increased production and use of alternative fuels, including hydrogen, and the reformulation of coatings, adhesives, sealants and lubricants). Nonetheless, the proposed control measures, when considered together, would result in a net NOx emission reduction of 124 tons per day. Thus, operational activities resulting from implementing the 2022 AQMP are expected to be generate less than significant criteria pollutant air quality impacts.

Under Alternative 1, there would be fewer emission reductions and fewer emission increases overall when compared to the proposed project because the additional NOx emission reductions from implementing the 2022 AQMP would not be achieved . Further reductions in TAC emissions would also not occur under Alternative 1, as there would be fewer mobile sources converted to zero emission technologies. Thus, the use and combustion of conventional petroleum fuels and the related TAC emissions, including diesel PM, benzene, and other TAC emissions would not be reduced under Alternative 1.

Under Alternative 1, the increases in GHG emissions during construction and operation combined with the overall GHG emission reductions would be fewer than for the proposed project since additional electricity produced by increased combustion of natural gas would not be required. However, the long-term beneficial impacts associated with increased electrification of sources would also not be achieved under Alternative 1.

5.5.1.3 Alternative 2 – Mobile Source Reductions Only

Under Alternative 2, no stationary source control measures would be implemented. Only the mobile source control measures proposed by both CARB and the South Coast AQMD would be implemented (see Tables 5.4-3 and Table 5.4-4) under this alternative.

Construction impacts under Alternative 2 would be fewer than the proposed project as construction activities at stationary sources would not occur. Nonetheless, construction activities associated with the installation of electrical and alternative fuel infrastructure, which would be necessary to achieve emission reductions from mobile sources, would still occur and would be expected to remain significant.

With respect to operational emissions, it is expected that air quality will continue to improve under Alternative 2. As shown in Tables 5.4-3 and 5.4-4, over 90 tons per day of NOx emission reductions would be expected. Nonetheless, these projected NOx emission reductions would not be sufficient to attain the 8-hour federal ozone standard (70 ppb). since approximately 127 tons of NOx emissions reductions would be needed.

Thus, Alternative 2 would not be expected to achieve the primary objective of the project, to achieve the federal 8-hour ozone standard.

By narrowing the focus of Alternative 2 to mobile sources, none of the additional operational air quality impacts and corresponding benefit would be realized from reducing emissions from stationary sources. While Alternative 2 would have substantial emission reductions of TACs and GHGs over the long-term, the potential emission reductions would not be as great as under the proposed project. In addition, similar to the proposed project, the short-term increases in GHG emissions under Alternative 2 from construction projects associated with the additional production and use of electricity generation from natural gas combustion (prior to the full conversion to renewable sources), and additional production and use of alternative fuels may be significant but would be full offset by the emission reductions of GHGs over the long-term.

5.5.1.4 Alternative 3 – Early Implementation of Control Measures

The control measures identified in the project description (see Chapter 2) would be unchanged under Alternative 3. Under Alternative 3, the timeframe for implementing the South Coast

AQMD control measures would occur three years earlier so that all measures would be fully implemented by 2034. This shift in implementation schedule would provide for the projected emission reductions to be achieved sooner than what is contemplated by the proposed project. Early implementation of Alternative 3 means that construction activities, including the removal and replacement of equipment (e.g., installation of new appliances and fleet turnovers) would also occur over a shorter period of time.

Air quality impacts for criteria pollutants from construction activities were concluded to be potentially significant for the proposed project. However, under Alternative 3, the construction emissions would be expected to occur over a shorter period of time such that this compressed schedule would be expected to result in more construction emissions of both criteria pollutants and GHGs on a peak day when compared to the proposed project. Thus, the construction air quality impacts under Alternative 3 would remain significant. In addition, under Alternative 3, the potentially significant short-term increases of GHG emissions during operation may be higher than the proposed project, because of the same need to produce additional electricity via the increased combustion of natural gas (prior to the full conversion to renewable sources) will be expected to occur. Alternative 3 would result in substantial GHG emission reductions three years earlier from replacing diesel- and gasoline-fueled equipment with electric-powered and alternative fueled equipment which, over the long-term will offset potentially significant short-term increases in GHG emissions from construction projects, additional production and use of electricity generation from natural gas combustion (prior to the full conversion to renewable sources), additional production and use of alternative fuels, and replacements of existing combustion equipment with new lower emitting combustion equipment, resulting in an overall reduction of GHG emissions.

Therefore, the construction and operational air quality impacts and benefits would remain the same as the proposed project, but would occur three years earlier.

It should be noted that Alternative 3 would be expected to achieve the primary objective of the proposed project, to attain the federal 8-hour ozone ambient air quality standard (70 ppb) but three years earlier than the proposed project, generating beneficial air quality impacts, as well as the related health benefits associated with complying with the ozone standard.

5.5.1.5 Alternative 4 – All Regulatory/Non-Incentive Alternative

The focus of Alternative 4 would be limited to control measures that could be directly implemented by the South Coast AQMD or CARB and for which the South Coast AQMD has the authority to regulate or for which CARB has the authority to regulate. Therefore, the control measures under this alternative would be primarily limited to stationary source control measures, plus mobile source control measures for which the South Coast AQMD and CARB have the authority to implement. In other words, under this alternative, the incentive measures would be eliminated. Alternative 4 is in response to the 2016 AQMP that relied heavily on incentives to achieve reductions, which in turn relied heavily on getting those funds to provide the incentives. Due to the past difficulties with obtaining the necessary funding to implement the incentives in the 2016 AQMP, emission reductions did not occur. Therefore, Alternative 4 does not rely on incentives in order to achieve the needed emission reductions but instead focuses only on regulatory actions that are under the implementation authority of the South Coast AQMD and CARB. Table 5.4-5 summarizes the categories of mobile sources which would rely on incentive funding in order to reduce NOx emissions and thus, are not considered under Alternative 4.

Construction impacts under Alternative 4 would be fewer than the proposed project since fewer control measures would be implemented and as a result, fewer construction activities would be needed. Nonetheless, construction activities at stationary sources (e.g., additional production and use of electricity generation from natural gas combustion (prior to the full conversion to renewable sources), additional production and use of alternative fuels, and replacement of existing combustion equipment with new lower emitting combustion equipment) would still occur and would be expected to remain significant.

Regarding operational emissions, air quality will continue to improve under Alternative 4 but not to the same extent as the proposed project. As shown in Table 5.4-5, the elimination of the incentive measures would result in 6.8 tons per day of fewer emissions reductions. The improvement in air quality would not attain the 8-hour federal ozone standard (70 ppb) and additional control measures would be needed. The estimated 120 tons per day of NOx emission reductions is short of the NOx reductions required to achieve the 8- hour ozone standard (estimated to be 127 tons of NOx reductions).

The air quality impacts under Alternative 4 are expected to be similar to the proposed project, with the exception of the incentive measures. Criteria pollutant decreases associated with implementation of the control measures under Alternative 4 would be expected to be far greater than any emission increases associated with increased additional production and use of electricity generation from natural gas combustion (prior to the full conversion to renewable sources), additional production and use of alternative fuels, and replacement of existing combustion equipment with new lower emitting combustion equipment, production and use of electricity and alternative fuels, and reformulation of coatings, adhesives, sealants and lubricants.

Under Alternative 4, TAC emissions are expected to be reduced by Control Measure CTS-01 which will prohibit the use of pCBtF and tBAC. Other reductions in TAC emissions associated with reduced combustion of transportation fuels and natural gas including diesel particulate, benzene, formaldehyde and other TACs. Implementation of some control measures will cause a less than significant increase in ammonia emissions (e.g., for use in SCRs) from ammonia slip emissions. The ammonia slip emissions are not expected to generate significant odor impacts, however.

Under Alternative 4 substantial GHG emission reductions from replacing diesel- and gasoline-fueled equipment with electric-powered and alternative fueled equipment which, over the long-term will offset potentially significant short-term increases in GHG emissions from construction projects, additional production and use of electricity generation from natural gas combustion (prior to the full conversion to renewable sources), additional production and use of alternative fuels, and replacement of existing combustion equipment with new lower emitting combustion equipment, resulting in an overall reduction of GHG emissions. However, under Alternative 4, the GHG overall emission reductions would be less than the proposed project due to the excluding the potential GHG emission reductions from the mobile sources categories which would rely on incentive funding in order to reduce NOx emissions.

5.5.2 ENERGY

The potential direct and indirect energy impacts from implementing the proposed project and project alternatives were evaluated. The following subsections provide a summary of

potential energy impacts from the proposed project and evaluate potential energy impacts from each alternative to the proposed project.

5.5.2.1 Proposed Project Impacts

The environmental analysis for the proposed project concluded the following:

- The 2022 AQMP could result in up to an 11 percent increase in electricity and increased electricity demand remains potentially significant after mitigation.

- The 2022 AQMP would also have some beneficial impacts on energy as a result of a shift away from petroleum fuels. The electrical grid and hydrogen supply supporting these electric vehicles would need to represent 50 percent renewable energy generation by 2030, as required by the Clean Energy and Pollution Reduction Act of 2015. A large portion of the fuels for combustion engine vehicles would also need to be sourced from renewable feedstock.

- As natural gas is generally widely available, natural gas supplies are not expected to be limited if the proposed project is implemented. The combined increase in natural gas demand needed for producing electricity and hydrogen and for fueling vehicles may be somewhat offset over the long-term by a decrease in demand for natural gas appliances in commercial and residential setting. However, over the short-term, the natural gas demand is expected to increase and the proposed project may result in significant adverse energy impacts relating to natural gas demand. Natural gas impacts would remain significant after mitigation.

- Implementation of the 2022 AQMP is expected to shift the use of petroleum fuels (gasoline and diesel) to battery-electric, hydrogen, and potentially other alternative fuels, increasing the use of renewable energy supplies. The 2022 AQMP would result in a reduction in the use of petroleum fuels, providing a beneficial long-term operational impact on energy conservation. No increase in the use of petroleum fuels would be expected.

- The 2022 AQMP is not expected to result in significant impacts on alternative fuels, including biodiesel, renewable diesel, ethanol, and propane, so that no mitigation measures are required.

- Implementation of the 2022 AQMP could result in an increase in hydrogen use that cannot be currently met by existing producers. The expansion of hydrogen production, especially in the short-term through steam methane reforming of natural gas, is expected to be significant.

- Potential renewable energy impacts are expected to be less than significant, so that no mitigation measures are required.

For the complete analysis of energy impacts from implementing the 2022 AQMP, refer to Subchapter 4.3 – Energy Impacts.

5.5.2.2 Alternative 1 - No Project Alternative

Under Alternative 1, the 2016 AQMP, which was adopted by the South Coast AQMD Governing in March 2017 and submitted to USEPA in April 2017, would continue to be implemented (see Table 5.4-1). The continued implementation of the 2016 AQMP measures would require energy, but not as many adverse impacts as from the 2022 AQMP as less control measures would be implemented under Alternative 1. The energy demand impacts under the 2016 AQMP were determined to be significant for electricity demand but not for natural gas, petroleum fuels, or alternative energy demands. The No Project Alternative would not require energy or electricity use beyond what has already been analyzed in the 2016 AQMP Program EIR. Thus, the energy impacts from not taking new action or proposing new control measures in Alternative 1 are less than significant.

Alternative 1 would eliminate the potentially significant impacts to electricity, natural gas supplies and hydrogen supply associated with implementation of the 2022 AQMP. However, Alternative 1 would not be expected to reduce the use of petroleum fuels to the extent as the proposed project. It should be noted that Alternative 1 would not achieve the primary objective of the proposed project, to attain the federal 8-hour ambient air quality standard for ozone. Additional control measures would be required to meet this goal.

5.5.2.3 Alternative 2 – Mobile Source Reductions Only

Under Alternative 2, no stationary source control measures would be implemented. Only the mobile source control measures proposed by both CARB and the South Coast AQMD would be implemented (see Tables 5.4-3 and Table 5.4-4) under this alternative.

The energy used under Alternative 2 would be slightly less since no stationary source control measures would be implemented. However, energy impacts under Alternative 2 would be expected to remain significant as most of the electricity demand associated with the proposed project is associated with zero and low NOx technologies for mobile sources. The proposed project increases in electricity, natural gas, and hydrogen were largely associated with the conversion of mobile sources to zero emission technologies and would still be expected to occur under Alternative 2. Alternative 2 would also be expected to substantially reduce the use of petroleum fuels, as would the proposed project.

Alternative 2 would be expected to generate slightly less impacts on other energy sources since no stationary sources would be impacted. No significant impacts would be expected for petroleum fuels or alternative energy demands under Alternative 2.

5.5.2.4 Alternative 3 – Early Implementation of Control Measures

Under Alternative 3, the proposed control measures identified in the project description (see Chapter 2) would be unchanged but the timeframe for implementing the proposed control measures would occur three years earlier so that all measures would be fully implemented by 2034. This shift in implementation schedule would provide for the projected emission reductions to be achieved sooner than what is contemplated by the proposed project. The energy impacts associated with Alternative 3 would be the same as the proposed project. Potentially significant energy impacts would include: 11 percent increase in electricity; increase in the (short-term) natural gas demand; and the potential increase in hydrogen demand. Under Alternative 3, these

energy resources would need to be procured three years earlier than the proposed project. Alternative 3 is not expected to result in significant impacts on alternative fuels, including biodiesel, renewable diesel, ethanol, and propane.

Alternative 3 would have beneficial impacts on energy as a result of a shift away and reduction in use of petroleum fuels and these impacts would occur three years sooner than the proposed project, providing a beneficial long-term operational impact on energy conservation. The electrical grid and hydrogen supply supporting these electric vehicles would need to represent 50 percent renewable energy generation by 2030, as required by the Clean Energy and Pollution Reduction Act of 2015. A large portion of the fuels for combustion engine vehicles would also need to be sourced from renewable feedstock.

5.5.2.5 Alternative 4 – All Regulatory/Non-Incentive Alternative

Control measures under Alternative 4 would be limited to measures that could be directly implemented by the South Coast AQMD or CARB and for which the South Coast AQMD has the authority to regulate or for which CARB has the authority to regulate. Therefore, the control measures under this alternative would be primarily limited to stationary source control measures, plus mobile source measures for which the South Coast AQMD and CARB have the authority to implement. The incentive measures identified in Table 5.4-5 would be eliminated.

The energy impacts associated with Alternative 4 would be essentially the same as the proposed project. Potentially significant energy impacts would include: an increase in electricity (that would be less than the proposed project as fewer sources would be electrified); increase in the (short-term) natural gas demand associated with increased demand for electricity; and the potential increase in hydrogen demand. Under Alternative 4, these energy resources would still need to be procured even though the incentive measures would be eliminated. Alternative 4 is not expected to result in significant adverse impacts on alternative fuels, including biodiesel, renewable diesel, ethanol, and propane.

Alternative 4 would have beneficial impacts on energy as a result of a shift away and reduction in use of petroleum fuels, providing a beneficial long-term operational impact on energy conservation, however these benefits would be less than the proposed project as the incentive measures would be removed.

5.5.3 HAZARDS AND HAZARDOUS MATERIALS

The potential hazards and hazardous materials impacts from implementing the proposed project and project alternatives were evaluated. The following subsections provide a summary of potential hazards and hazardous materials impacts from the proposed project and evaluate potential hazard and hazardous materials impacts from each alternative to the proposed project.

5.5.3.1 Proposed Project Impacts

The environmental analysis for the proposed project concluded the following:

- Increased usage of ammonia due to implementation of control measures in the 2022 AQMP could generate significant adverse hazard impacts during routine transport as a result of an accidental release of delivered aqueous ammonia.

- The hazards impact from a catastrophic rupture of an ammonia tank is considered a potentially significant adverse hazards impact, since off-site receptors could be exposed to concentrations that would exceed the ERPG-2 toxic endpoint concentration for ammonia.
- Spent catalysts would likely be disposed of in a Class II landfill or a Class III landfill that is fitted with liners. The handling of fresh and spent catalysts is not expected to cause significant adverse hazards and hazardous materials impacts.
- Internal combustion engines also can result in fires and other hazards; therefore, switching to battery power would not likely result in an increased fire risk.
- The hazards associated with the use of hydrogen as a fuel are expected to be approximately equivalent to or less than conventional fuels, so impacts associated with hydrogen use are expected to be less than significant
- The construction of any new hydrogen plants would be expected to be constructed within existing industrial facilities that would likely have at least 90 feet to the closest off-site receptor and, therefore, poses a less than significant hazard. Hazards impacts from the construction of new natural gas pipeline to service those hydrogen plants would be considered potentially significant.
- The hazards associated with the use of ethanol as a fuel are approximately equivalent or less compared to use of conventional fuels. Therefore, increased use of ethanol with a concurrent decline in use of conventional fuels will not significantly alter existing hazards associated with mobile source fuels. Consequently, increased use of ethanol is not expected to generate significant adverse hazard impacts.
- The hazards associated with the use of CNG as a fuel are approximately equivalent or less compared to use of conventional fuels. Therefore, increased use of CNG with a concurrent decline in use of conventional fuels will not significantly alter existing hazards associated with mobile source fuels. Consequently, increased use of CNG is not expected to generate significant adverse hazard impacts.
- The hazards associated with the use of LNG as a fuel are approximately equivalent or less compared to use of conventional fuels. Therefore, increased use of LNG with a concurrent decline in use of conventional fuels will not significantly alter existing hazards associated with mobile source fuels. Consequently, increased use of LNG is not expected to generate significant adverse hazard impacts.
- The increased transport of LNG may increase transportation hazards associated with mobile source fuels. Consequently, increased use of LNG is expected to generate significant adverse hazard impacts during transport.
- The hazards associated with use of LPG as a fuel are approximately equivalent or less compared to use of conventional fuels. Therefore, increased use of LPG with a concurrent decline in use of conventional fuels will not significantly alter existing hazards associated with mobile source fuels. Consequently, increased use of LPG is not expected to generate significant adverse hazard impacts.
- The use of biodiesel and renewable diesel is considered safer than conventional diesels; therefore, increase use of biodiesel and renewable diesel with a concurrent decline in use of conventional diesel is not expected to generate significant adverse hazard impacts.

- While the continued and potential increased use of water-based coatings and products would generally be expected to reduce the overall hazard impacts associated with solvent-based products, the potential reformulation of coatings, adhesives, sealants and lubricants to products that are more flammable (e.g., acetone) could result in a significant impact on fire hazards.

For the complete analysis of hazards and hazardous materials impacts from the 2022 AQMP, refer to Subchapter 4.4 – Hazards and Hazardous Materials Impacts.

5.5.3.2 Alternative 1 – No Project Alternative

Under Alternative 1, the 2016 AQMP, which was adopted by the South Coast AQMD Governing in March 2017 and submitted to USEPA in April 2017, , would continue to be implemented (see Table 5.4-1). The continued implementation of the 2016 AQMP measures would generate hazards impacts, but not as many adverse impacts from the 2022 AQMP as there are less control measures to implement. The hazards and hazardous materials impacts under the 2016 AQMP were determined to be significant for the use of LNG and ammonia use and storage. The hazard impacts on ammonia use in air pollution control equipment, catalysts, caustic materials, and the use of acidifiers were expected to be less than significant. The No Project Alternative would not result in hazards or hazardous materials impacts beyond what has already been analyzed in the 2016 AQMP Program EIR. Thus, the hazard and hazardous materials impacts from not taking new action or proposing new control measures in Alternative 1 are less than significant.

Alternative 1 would eliminate the potentially significant hazard and hazardous materials impacts to hydrogen use and transport, and the potential reformulation of coatings, adhesives, sealants and lubricants with products that are more flammable (e.g., acetone). However, Alternative 1 would not be expected to reduce the use of petroleum fuels to the extent as the proposed project. It should be noted that Alternative 1 would not achieve the primary objective of the proposed project to attain the federal 8-hour ambient air quality standard for ozone without implementation of additional control measures.

5.5.3.3 Alternative 2 – Mobile Source Reductions Only

Under Alternative 2, no stationary source control measures would be implemented. Only the mobile source control measures proposed by both CARB and the South Coast AQMD would be implemented (see Tables 5.4-3 and Table 5.4-4) under this alternative.

The fire hazard impacts associated with reformulated coatings, solvents, and products in the proposed project are expected to be significant; however, these hazards would be eliminated under Alternative 2 as no reformulated coatings or product control measures would be implemented. The potential increase in the use of ammonia and catalyst would also be reduced under Alternative 2 as most of the ammonia and catalyst use would be associated with SCRs at stationary sources, which would be eliminated under Alternative 2.

However, hazard impacts under Alternative 2 would be expected to remain significant for natural gas pipelines and LNG transport which would be used for alternative fuels. The hazard impacts associated with additional electric vehicles, using ethanol and ethanol blends, CNG, LPG, biodiesel/renewable fuels, are expected to be less than significant under the proposed project and

they would be the same under Alternative 2. Alternative 2 would also be expected to substantially reduce the use of petroleum fuels, as would the proposed project, reducing hazards associated with the use of petroleum fuels.

5.5.3.4 Alternative 3 – Early Implementation of Control Measures

Under Alternative 3, the proposed control measures identified in the project description (see Chapter 2) would be unchanged but the timeframe for implementing the proposed control measures would occur three years earlier so that all measures would be fully implemented by 2034. This shift in implementation schedule would provide for the projected emission reductions to be achieved sooner than what is contemplated by the proposed project. The hazards and hazardous materials impacts associated with Alternative 3 would be the same as the proposed project. Potentially significant hazards and hazardous materials impacts would include: hazard associated with the storage and transport of ammonia; hazards associated with natural gas pipelines; hazards associated with the increased transport of LNG; and the potential reformulation of coatings, adhesives, sealants and lubricants with products that are more flammable(e.g., acetone).

Alternative 3 is not expected to result in significant impacts on the increased generation of spent catalysts; increased use of electric vehicles; and the use of alternative fuels, including hydrogen, ethanol, CNG, LPG, biodiesel diesel and renewable diesel, renewable diesel, ethanol, and propane.

5.5.3.5 Alternative 4 – All Regulatory/Non-Incentive Alternative

Control measures under Alternative 4 would be limited to measures that could be directly implemented by the South Coast AQMD or CARB and for which the South Coast AQMD has the authority to regulate or for which CARB has the authority to regulate. Therefore, the control measures under this alternative would be primarily limited to stationary source control measures, plus mobile source measures for which the South Coast AQMD and CARB have the authority to implement. The incentive measures identified in Table 5.4-5 would be eliminated.

The hazards and hazardous materials impacts associated with Alternative 4 would be similar to the proposed project. Potentially significant hazards and hazardous materials impacts would include: hazard associated with the storage and transport of ammonia; hazards associated with natural gas pipelines; hazards associated with the increased transport of LNG; and the potential reformulation of coatings, adhesives, sealants and lubricants with products that are more flammable (e.g., acetone).

Similar to the proposed project, Alternative 4 is not expected to result in significant adverse hazard impacts on the increased generation of spent catalysts; increase use of electric vehicles; or the use of alternative fuels, including hydrogen ethanol, CNG, LPG, biodiesel diesel and renewable diesel, renewable diesel, ethanol, and propane.

5.5.4 HYDROLOGY AND WATER QUALITY

The potential hydrology and water quality impacts from implementing the proposed project and project alternatives were evaluated. The following subsections provide a summary of potential hydrology and water quality impacts from the proposed project and

evaluate potential hydrology and water quality impacts from each alternative to the proposed project.

5.5.4.1 Proposed Project Impacts

The environmental analysis for the proposed project concluded the following:

- Control measures have the potential to cause potentially significant water demand and supply impacts, as water demand may exceed the 262,820 gallons per day significance threshold for potable water. Additional water use is required for construction activities and also may be required for the manufacture of alternative fuels. Due to the extreme drought conditions and uncertainty about future water supplies, even though each county has various projects for providing recycled water, most of the recycled water projects, except for those in Los Angeles and Orange Counties, are to provide recycled water for landscape purposes. Therefore, implementation of the control measures in the 2022 AQMP as a whole may have a significant impact on both water demand and water supplies.
- The impacts of the proposed project on water quality are expected to be significant prior to mitigation. Generally, mitigation measures are meant to help minimize some of the water quality impacts on an individual facility-basis, but not all mitigation measures may be applicable in all situations. For this reason, the water quality mitigation measure may not fully eliminate the significant water quality impacts. Therefore, water quality impacts that may result from the proposed project are expected to remain significant.

For the complete analysis of hydrology and water quality impacts from the 2022 AQMP, refer to Subchapter 4.5 – Hydrology and Water Quality Impacts.

5.5.4.2 Alternative 1 – No Project Alternative

Under Alternative 1, the 2016 AQMP, which was adopted by the South Coast AQMD Governing in March 2017 and submitted to USEPA in April 2017, , would continue to be implemented (see Table 5.4-1). The continued implementation of the 2016 AQMP measures would generate hydrology and water quality impacts, but not as many adverse impacts from the 2022 AQMP as there are less control measures to implement. The hydrology and water quality impacts under the 2016 AQMP were determined to be significant for potential impacts on water demand associated with the manufacture and use of waterborne coatings, solvents and other consumer products and ad-on air pollution control technologies. Other impacts on hydrology and water quality were determined to be less than significant including wastewater treatment facilities, alternative fuel use and potential spills. The No Project Alternative would not result in hydrology and water quality impacts beyond what has already been analyzed in the 2016 AQMP Program EIR. Thus, the hydrology and water quality impacts from not taking new action or proposing new control measures in Alternative 1 are less than significant.

Alternative 1 would eliminate the potentially significant hydrology and water quality impacts to water demand and supplies, and water quality associated with implementation of the 2022 AQMP. It should be noted that Alternative 1 would not achieve the primary objective of the proposed project, to attain the federal 8-hour ambient air quality standard for ozone without implementation of additional control measures.

5.5.4.3 Alternative 2 – Mobile Source Reductions Only

Under Alternative 2, no stationary source control measures would be implemented. Only the mobile source control measures proposed by both CARB and the South Coast AQMD would be implemented (see Tables 5.4-3 and Table 5.4-4) under this alternative.

The hydrology and water quality impacts were considered significant for water demand and water quality associated with implementing the 2022 AQMP. Under Alternative 2 the stationary source control measures would be eliminated, thus eliminating some of the control measures associated with the increased water demand (including wet gas scrubbers, composting activities and reformulation of coatings, adhesives, sealants and lubricants) and wastewater discharge. The water demand would be reduced under Alternative 2 but not fully eliminated since the construction of alternative fuel facilities would still be expected to be implemented resulting in an estimated 200,000 to 300,000 gallons per day increase which is potentially significant. The same would be expected for wastewater generation which would be reduced under Alternative 2. However, the potential increased production of alternative fuels (including hydrogen) could still result in significant water quality impacts.

5.5.4.4 Alternative 3 – Early Implementation of Control Measures

Under Alternative 3, the proposed control measures identified in the project description (see Chapter 2) would be unchanged but the timeframe for implementing the proposed control measures would occur three years earlier so that all measures would be fully implemented by 2034. This shift in implementation schedule would provide for the projected emission reductions to be achieved sooner than what is contemplated by the proposed project. .

The hydrology and water quality impacts were considered significant for water demand and water quality for the proposed project. Under Alternative 3, all of the control measures in the 2022 AQMP would be implemented so that water demand may exceed significant thresholds and would be considered significant. The same would be expected for wastewater generation impacts which would be the same as the proposed project and the potential increased production of alternative fuels (including hydrogen) could result in significant water quality impacts.

5.5.4.5 Alternative 4 – All Regulatory/Non-Incentive Alternative

Control measures under Alternative 4 would be limited to measures that could be directly implemented by the South Coast AQMD or CARB and for which the South Coast AQMD has the authority to regulate or for which CARB has the authority to regulate. Therefore, the control measures under this alternative would be primarily limited to stationary source control measures, plus mobile source measures for which the South Coast AQMD and CARB have the authority to implement. The incentive measures identified in Table 5.4-5 would be eliminated.

The hydrology and water quality impacts were considered significant for water demand and water quality for the proposed project. Under Alternative 4, the control measures in the 2022 AQMP would be implemented, with the exception of the incentive measures, so that water demand may exceed significant thresholds and would be considered significant. The same would be expected for wastewater generation which would be the similar to the proposed project and

the potential increased production of alternative fuels (including hydrogen) could result in significant water quality impacts.

5.5.5 NOISE

The potential noise impacts from implementing the proposed project and project alternatives were evaluated. The following subsections provide a summary of potential noise impacts from the proposed project and evaluate potential noise impacts from each alternative to the proposed project.

5.5.5.1 Proposed Project Impacts

The environmental analysis for the proposed project concluded the following:

- Construction noise impacts from modifications at existing facilities and residences are expected to be less than significant so that no mitigation measures are required.

- Construction noise impacts from modifications to existing roadways and roadway infrastructure is expected to be significant, so mitigation measures are proposed. Because project-specific information is required to determine existing noise level, which mitigation measures can be applied, and whether noise level can be reduced to less than significant; for conservatism, construction noise impacts are expected to remain significant after mitigation measures are applied.

- Operational noise impacts are expected to be less than significant so that no mitigation measures are required.

For the complete analysis of noise impacts from the 2022 AQMP, refer to Subchapter 4.6 – Noise Impacts.

5.5.5.2 Alternative 1 – No Project Alternative

Under Alternative 1, the 2016 AQMP, which was adopted by the South Coast AQMD Governing in March 2017 and submitted to USEPA in April 2017, would continue to be implemented (see Table 5.4-1). The continued implementation of the 2016 AQMP measures would generate construction noise impacts, but not as many adverse noise impacts from the 2022 AQMP as there are less control measures to implement and fewer construction activities. The noise impacts under the 2016 AQMP were determined to be significant for construction activities. Operational activities were not expected to result in significant noise impacts. The No Project Alternative would not result in noise impacts beyond what has already been analyzed in the 2016 AQMP Program EIR. Thus, the noise impacts from not taking new action or proposing new control measures in Alternative 1 are less than significant.

Alternative 1 would eliminate the potentially significant construction noise impacts associated with implementation of the 2022 AQMP. It should be noted that Alternative 1 would not achieve the primary objective of the proposed project, to attain the federal 8-hour ambient air quality standard for ozone without implementation of additional control measures which may generate additional noise impacts.

5.5.5.3 Alternative 2 – Mobile Source Reductions Only

Under Alternative 2, no stationary source control measures would be implemented. Only the mobile source control measures proposed by both CARB and the South Coast AQMD would be implemented (see Tables 5.4-3 and Table 5.4-4) under this alternative. Under Alternative 2, noise and vibration from construction activities would be reduced as no construction activities at stationary sources would occur. However, implementation of the Alternative 2 would still include control measures associated with construction of overhead catenary lines that could result in significant noise and vibration impacts due to the geographic proximity of sensitive receptors.

Under Alternative 2, noise and vibration from operational activities would be reduced as no new noise sources (e.g., air pollution control technologies) would be constructed at stationary sources. However, the potential increased production of alternative fuels (including hydrogen) could still be expected to occur in appropriately zoned industrial areas where significant noise impacts would not be expected. In addition, overhead catenary lines could be installed to comply with certain mobile source control measures under Alternative 2, these lines would be installed along existing roadways and transportation corridors and as such would not result in the construction of new roadways or corridors or generate additional noise sources. In addition, Alternative 2 would increase the operation of electric vehicles that are traditionally quieter than combustion vehicles so operational noise will be reduced to less than significant.

5.5.5.4 Alternative 3 – Early Implementation of Control Measures

Under Alternative 3, the proposed control measures identified in the project description (see Chapter 2) would be unchanged but the timeframe for implementing the proposed control measures would occur three years earlier so that all measures would be fully implemented by 2034. This shift in implementation schedule would provide for the projected emission reductions to be achieved sooner than what is contemplated by the proposed project. Noise impacts associated with construction activities due to the implementation of the control measures in the 2022 AQMP were considered to be potentially significant. Under Alternative 3, the construction activities would be expected to occur over a shorter period of time and the noise impacts could be higher as more construction activities would occur during a shorter timeframe. Noise and vibration associated with construction activities would remain significant.

Under Alternative 3, the potential increased production of alternative fuels (including hydrogen) could still result be expected to occur in appropriately zoned industrial areas where significant noise impacts would not be expected. In addition, overhead catenary lines could be installed along existing roadways and transportation corridors and as such would not result in the construction of new roadways or corridors or generate additional noise sources. In addition, Alternative 3 would increase the operation of electric vehicles that are traditionally quieter than combustion vehicles so operational noise will be reduced to less than significant.

5.5.5.5 Alternative 4 – All Regulatory/Non-Incentive Alternative

Control measures under Alternative 4 would be limited to measures that could be directly implemented by the South Coast AQMD or CARB and for which the South Coast AQMD has the authority to regulate or for which CARB has the authority to regulate. Therefore, the control measures under this alternative would be primarily limited to stationary source control measures,

plus mobile source measures for which the South Coast AQMD and CARB have the authority to implement. The incentive measures identified in Table 5.4-5 would be eliminated.

Noise impacts associated with construction activities due to the implementation of the control measures in the 2022 AQMP were considered to be potentially significant. Under Alternative 4, similar construction activities could occur as similar equipment would be required. Therefore, Noise and vibration associated with construction activities would remain significant.

Under Alternative 4, the potential increased production of alternative fuels (including hydrogen) could still be expected to occur in appropriately zoned industrial areas where significant noise impacts would not be expected. In addition, overhead catenary lines could be installed along existing roadways and transportation corridors and as such would not result in the construction of new roadways or corridors or generate additional noise sources. In addition, Alternative 4 would increase the operation of electric vehicles that are traditionally quieter than combustion vehicles so operational noise will be reduced to less than significant.

5.5.6 SOLID AND HAZARDOUS WASTE

The potential solid and hazardous waste impacts from implementing the proposed project and project alternatives were evaluated. The following subsections provide a summary of potential impacts from the proposed project and evaluate potential solid and hazardous waste impacts from each alternative to the proposed project.

5.5.6.1 Proposed Project Impacts

The environmental analysis for the proposed project concluded the following:

- Installation of air pollution control equipment (e.g., low NOx burners, SCR systems, electrification of sources); replacement of existing equipment; installation of roadway infrastructure (wayside power and catenary lines or other similar technologies); installation of battery charging infrastructure; and installation of alternative fuel infrastructure are expected to generate solid and hazardous waste associated with construction activities. It is assumed that no new industrial facilities or corridors will be constructed, but rather some of the existing facilities and corridors will be modified to include installation of new equipment and roadway infrastructure. Because it is difficult to quantify the construction and demolition waste generated by implementing control measures from the 2022 AQMP, solid and hazardous waste impacts from construction are concluded to be significant even after mitigation is applied.

- Encouragement of early retirement of older vehicles and other mobile sources, and replacement with newer equipment or newer vehicles (including electric or hybrid vehicles) will have the benefit of reduced waste from maintenance of internal combustion engines. It is expected that electric vehicle batteries will primarily be recycled or reused in purposes other than in cars, so there will not be a significant increase in disposal or significant adverse impact in the topic of solid or hazardous waste from increased generation of spent batteries.

- Increased use of particulate filters (DPFs) and air pollution control equipment is expected to be accommodated by the existing non-hazardous and hazardous waste landfills and have a less than significant impact on solid and hazardous waste generation.

- Increased use of SCRs will increase disposal of catalyst that cannot be reused or regenerated; however, because most catalyst will be recycled and the use of SCR will not be widespread, there will be less than significant impact.

- The extent of solid and hazardous waste impacts from early retirement of equipment is difficult to quantify, but concluded to generate significant adverse impact because available landfill space is limited to approximately 100,000 tons per day with only four solid waste landfills in Southern California having capacity past 2039. Impacts are expected to be significant even after mitigation is applied.

- Processes from Control Measure MCS-02 including hand-thinning, mechanical thinning, and the use of chipping equipment to mitigate excess fuels at properties located in the residential urban-wild-interface areas of the San Bernardino National Forest are expected to generate additional greenwaste, but because the volume is likely to be minimal and there are approximately 70 composting facilities located in the District, impacts are expected to be less than significant.

For the complete analysis of solid and hazardous waste impacts from the 2022 AQMP, refer to Subchapter 4.7 – Solid and Hazardous Waste Impacts.

5.5.6.2 Alternative 1 – No Project Alternative

Under Alternative 1, the 2016 AQMP, which was adopted by the South Coast AQMD Governing in March 2017 and submitted to USEPA in April 2017, would continue to be implemented (see Table 5.4-1).

The continued implementation of the 2016 AQMP measures would generate solid and hazardous waste impacts, but not as many adverse impacts from the 2022 AQMP as less control measures would be implemented under Alternative 1. The solid and hazardous waste impacts under the 2016 AQMP were determined to be significant.

The No Project Alternative would not result in solid or hazardous waste impacts beyond what has already been analyzed in the 2016 AQMP Program EIR. Further, no additional greenwaste would be generated under Alternative 1. Thus, the solid and hazardous waste impacts from not taking new action or proposing new control measures in Alternative 1 are less than significant.

Alternative 1 would eliminate the potentially significant solid and hazardous waste impacts associated with implementation of the 2022 AQMP. It should be noted that Alternative 1 would not achieve the primary objective of the proposed project, to attain the federal 8-hour ambient air quality standard for ozone without implementation of additional control measures which may generate additional impacts.

5.5.6.3 Alternative 2 – Mobile Source Reductions Only

Under Alternative 2, no stationary source control measures would be implemented. Only the mobile source control measures proposed by both CARB and the South Coast AQMD would be implemented (see Tables 5.4-3 and Table 5.4-4) under this alternative. The solid/hazardous waste generated under Alternative 2 is expected to be significant but less than the proposed project as the early retirement of stationary source equipment would not occur.

Under Alternative 2, air pollution control equipment (e.g., low NOx burners, SCR systems, and particulate filters) would not be installed at stationary sources. However, the electrification of mobile sources; installation of roadway infrastructure (wayside power and catenary lines or other similar technologies); installation of battery charging infrastructure; and installation of alternative fuel infrastructure are expected to occur under Alternative 2 and could generate solid and hazardous waste associated with construction activities. Because it is difficult to quantify the construction and demolition waste generated by implementing control measures, solid and hazardous waste impacts from construction are concluded to be significant under the proposed project (after mitigation) and would be less but remain significant under Alternative 2.

Because spent batteries are required to be and are largely recycled, the increased use of EVs and hybrid vehicles would not result in a significant increase in the illegal disposal of batteries and the same would be true under Alternative 2.

Encouragement of early retirement of older vehicles and other mobile sources, and replacement with newer vehicles (including electric or hybrid vehicles) will have the benefit of reduced waste from maintenance of internal combustion engines. It is expected that electric vehicle batteries will primarily be recycled or reused in purposes other than in cars, so there will not be a significant increase in disposal or significant adverse impact in the topic of solid or hazardous waste from increased generation of spent batteries. Further, no additional greenwaste would be generated under Alternative 2.

Under Alternative 2, the replacement and scrapping of stationary sources would be reduced. The extent of solid and hazardous waste impacts from early retirement of equipment is difficult to quantify, but some scrap metal from vehicles and parts may be sent to landfills. Therefore, it was concluded that the proposed project would generate significant adverse impacts because available landfill space is limited to approximately 100,000 tons per day with only four solid waste landfills in Southern California having capacity past 2039. Impacts are expected to be significant even after mitigation is applied. The same would be true under Alternative 2.

5.5.6.4 Alternative 3 – Early Implementation of Control Measures

Under Alternative 3, the proposed control measures identified in the project description (see Chapter 2) would be unchanged but the timeframe for implementing the proposed control measures would occur three years earlier so that all measures would be fully implemented by 2034. This shift in implementation schedule would provide for the projected emission reductions to be achieved sooner than what is contemplated by the proposed project. Solid and Hazards Waste Impacts under Alternative 3 would be expected to be the same as the proposed project as all control measures in the 2022 AMP would be installed, but in a shorter timeframe. Solid and Hazardous Waste Impacts associated with implementation of the control measures in the 2022 AQMP were considered to be potentially significant for construction and demolition wastes and

the early retirement of equipment as they could have significant impacts on dwindling landfill capacity. These impacts would remain significant under Alternative 3.

Under Alternative 3, solid and hazardous waste impacts would be less than significant for generation of spent batteries, increased waste from air pollution control equipment (including catalysts), and increased composting of greenwaste.

5.5.4.5 Alternative 4 – All Regulatory/Non-Incentive Alternative

Control measures under Alternative 4 would be limited to measures that could be directly implemented by the South Coast AQMD or CARB and for which the South Coast AQMD has the authority to regulate or for which CARB has the authority to regulate. Therefore, the control measures under this alternative would be primarily limited to stationary source control measures, plus mobile source measures for which the South Coast AQMD and CARB have the authority to implement. The incentive measures identified in Table 5.4-5 would be eliminated.

Solid and Hazards Waste Impacts under Alternative 4 would be expected to be similar to the proposed project except that the incentive measures would not be implemented. Therefore, there would be fewer vehicles, buses, agriculture and construction equipment that would be potentially scrapped and fewer engines that could potentially be replaced. Solid and hazardous waste impacts associated with implementation of the control measures in the 2022 AQMP were considered to be potentially significant for construction and demolition wastes and the early retirement of equipment as they could have significant impacts on dwindling landfill capacity. These impacts would remain significant under Alternative 4, although the solid and hazardous waste impacts would be less than the proposed project.

Under Alternative 4, solid and hazardous waste impacts would be less than significant for generation of spent batteries, increased waste from air pollution control equipment (including catalysts), and increased composting of greenwaste.

5.6 COMPARISON OF ALTERNATIVES TO THE 2022 AQMP

Pursuant to CEQA Guidelines Section 15126.6 (d), "The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed." The discussions in the previous sections of this chapter provide a comprehensive analysis of potential impacts generated by each alternative and compares impacts to those generated by the 2022 AQMP (the proposed project). Table 5.6-1 provides a matrix displaying the major characteristics and significant environmental effects of each alternative compared to the 2022 AQMP.

TABLE 5.6-1
Comparison of the Alternatives to the Proposed Project (2022 AQMP)

Environmental Topic	Proposed Project	Alternative 1 No Project	Alternative 2 Mobile Source Reductions Only	Alternative 3 Early Implementation of Control Measures	Alternative 4 All Regulatory/ Non-Incentive
Air Quality and GHG Emissions					
Construction	S	NS-	S-	S+	S-
Operation-Criteria Pollutant Reductions	B	B-	B-	B+	B-
Operation – Criteria Pollutant Increases	NS	NS-	NS-	NS=	NS-
Toxics	NS	NS	NS	NS=	NS-
GHG (short-term)	S	NS	S-	S+	S-
GHG (long-term)	NS	NS	NS	NS	NS
Energy					
Electricity Demand	S	NS	S	S=	S-
Natural Gas Demand	S	NS	S	S=	S-
Petroleum Fuel and TAC Emissions	B	NS	B	B=	B-
Alternative Fuels	NS	NS-	NS=	NS=	NS-
Hydrogen Fuels	S	NS	NS=	S=	S-
Renewable Energy	NS	NS	NS=	NS=	NS-
Hazards and Hazardous Materials					
Ammonia Storage and Transport	S	NS	NS	S=	S=
Spend Catalysts	NS	NS-	NS-	NS=	NS=
Electric/Hybrid Vehicles	NS	NS-	NS	NS=	NS
Natural Gas Pipelines	S	NS	S	S=	S
Alternative Fuels (hydrogen, ethanol, CNG, LPG, bio/renewable diesel	NS	NS-	NS=	NS=	NS
LNG Transport	S	NS-	S=	S=	S
Reformulated Coatings/Products	S	NS	NS	S=	S=
Hazards - Petroleum Fuel Reductions	B	NS	B	B=	B-

TABLE 5.6-1 (concluded)
Comparison of the Alternatives to the Proposed Project (2022 AQMP)

Environmental Topic	Proposed Project	Alternative 1 No Project	Alternative 2 Mobile Source Reductions Only	Alternative 3 Early Implementation of Control Measures	Alternative 4 All Regulatory/ Non-Incentive
Hydrology and Water Quality					
Water Demand	S	NS	S-	S=	S-
Wastewater Demand/Water Qual.	S	NS	S-	S=	S-
Noise					
Construction Noise	S	NS	S-	S+	S-
Operational Noise	NS	NS-	NS-	NS=	NS-
Solid and Hazardous Waste					
Construction Activities/Debris	S	NS	S	S+	S-
Spent Vehicle Batteries	NS	NS-	NS=	NS=	NS-
Waste from APC equipment	NS	NS-	NS-	NS=	NS=
Spent Catalyst	NS	NS-	NS-	NS=	NS=
Early Retirement of Equipment	S	NS	S-	NS+	S-
Additional Greenwaste	NS	NS-	NS-	NS=	NS=

NOTES:
S= Significant Impact
NS= Not Significant Impact
B = Beneficial Impact
+ more impacts than the proposed project
= equal impacts to the proposed project
- less impact than the proposed project

5.7 ENVIRONMENTALLY SUPERIOR AND LOWEST TOXIC ALTERNATIVES

5.7.1 ENVIRONMENTAL SUPERIOR ALTERNATIVE

Pursuant to CEQA Guidelines Section15126.6(e)(2), if the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives. When compared to the proposed project, Alternative 1 (No Project Alternative), continued implementation of the 2016 AQMP, might appear to be the environmentally superior alternative because it is not expected to generate any additional significant adverse impacts to any environmental topic areas beyond those identified for the 2016 AQMP. However, Alternative 1 would not provide any of the air quality benefits. Further, Alternative 1 would not meet the primary goal of the 2022 AQMP, attainment the federal 8-hour

ozone standard (70 ppb) or any other of the project objectives (see Chapter 2, Subchapter 2.6). Thus, Alternative 1 does not qualify as the environmentally superior alternative.

Of the remaining alternatives, the analysis of potential impacts indicates that Alternative 2 (Mobile Source Reductions Only) is the environmentally superior alternative. This conclusion is based on the fact that removing the stationary source control measure would reduce the potentially significant hazard impacts associated with the storage and transportation of ammonia and eliminate further hazards from the reformulation of coatings, adhesives, sealants and lubricants. Other impacts would be less than the proposed project, although still significant, including construction emissions, short-term GHG emissions, construction noise, and solid and hazardous waste impacts associated with construction debris and the early retirement of equipment. Alternative 2 would meet some of the project objectives with the exception that it would not demonstrate attainment of the 2015 federal 8-hour ozone standard unless other control measures are implemented; and would not achieve widespread adoption of zero emission and low NOx technologies across all stationary sources. Alternative 2 would require additional emissions reductions to be obtained through implementing CAA Section 182(e)(5), the methods of which are currently unknown.

The impacts under Alternative 3 (Early Implementation of Control Measures) would be identical to the proposed project, except that construction activities could be more concentrated as the implementation dates would be reduced by three years. Therefore, short-term construction impacts associated with air quality, noise, and solid and hazardous waste would be greater under Alternative 3 than the proposed project. Only the proposed project and Alternative 3 would achieve the primary objective of the proposed project, to attain the 2015 federal 8-hour ozone standard (70 ppb). Alternative 4 would be about 6.8 tons per day short of the needed NOx emission reductions in order to attain the 2015 federal 8-hour ozone standard. Alternative 4 would achieve most of the project objectives with the exception of: attainment of the 2015 federal 8-hour ozone standard (70 ppb); seeking substantial funding for incentives to implement early deployment and commercialization of zero and low NOx emission technologies: and prioritizing distribution of incentive funding in environmental justice communities, as Alternative 4 would not include incentive funding.

Therefore, the environmentally superior alternative would be Alternative 2 due to: 1) avoiding the potentially significant hazard impacts associated with the storage and transportation of ammonia; 2) eliminating other hazards from the reformulation of coatings, adhesives, sealants and lubricants; and 3) all other impacts areas would be less than the proposed project, although still significant, including construction emissions, short-term GHG emissions, construction noise, and solid and hazardous waste impacts associated with construction debris and the early retirement of equipment.

5.7.2 LOWEST TOXIC ALTERNATIVE

In accordance with South Coast AQMD's policy document: Environmental Justice Program Enhancements for FY 2002-03, Enhancement II-1 recommends for all South Coast AQMD CEQA documents which are required to include an alternatives analysis, the alternative analysis shall also include and identify a feasible project alternative with the lowest air toxics emissions. In other words, for any major equipment or process type under the scope of the proposed project that creates a significant environmental impact, at least one alternative, where feasible, shall be considered from a "least harmful" perspective with regard to hazardous or toxic air pollutants.

It is expected that potential energy, hazards and hazardous materials, hydrology and water quality, and solid waste impacts associated with taking no further action, would be less under Alternative 1 (No Project Alternative) because it would avoid significant adverse impacts to all environmental topic areas evaluated compared to the remaining alternatives. Thus, from an air toxics perspective, when compared to the proposed project and the other alternatives under consideration, if implemented, Alternative 1 is considered the lowest toxic alternative.

However, the emission benefits, including the long-term emission benefits and TAC emission reductions associated with mobile source emission reductions, including emission reductions associated with diesel particulate and TACs from combustion and use of petroleum fuels would be best achieved under the proposed project. Alternatively, Alternative 3 would also achieve all of the reductions from mobile sources, including toxic emissions, as would the proposed project. Therefore, the least toxic alternative would be the proposed project or Alternative 3 because of the large emission reductions from mobile sources which would include diesel particulate, and benzene, as well as other toxics (pCBtF and tBAC).

5.8 CONCLUSION

Of the project Alternatives, Alternative 1 would generate the least severe and fewest number of environmental impacts compared to the 2022 AQMP. However, compared to the other project alternatives, Alternative 1 would achieve none of the project objectives (see Chapter 2 for the comprehensive list of objectives) and would not accomplish critical objective of attaining the federal 8-hour ozone standard (70 ppb).

Alternative 3 would be expected to generate equivalent impacts to the proposed project in all environmental topic areas because it would implement the same control measures in a faster manner. Air quality, noise, and solid waste impacts could be greater under Alternative 3 as they would be more concentrated in time. Alternative 3 would provide greater air quality and health benefits by complying with the federal 8-hour ozone standard three years sooner than the proposed project or other alternatives and would achieve all of the project objectives.

The analysis of potential impacts from each of the project alternatives concludes that Alternative 2 (Mobile Source Reductions Only) is the environmentally superior alternative. When not considering the environmental benefits, this conclusion is based on the fact that removing the stationary source control measures would reduce the potentially significant hazard impacts associated with the storage and transportation of ammonia and eliminate further hazards from reformulated coatings and products. Other impacts would be less than the proposed project, although still significant, including construction emissions, short-term GHG emissions, construction noise, and solid and hazardous waste impacts associated with construction debris and the early retirement of equipment. Alternative 2 would achieve over 90 tons per day of NOx emission reductions, but additional emission reductions through implementing CAA Section 182(e)(5) measures (an estimated 37 pounds to achieve the carrying capacity of the Basin) would be needed to comply with the federal 8-hour ozone standard (70 ppb). Alternative 2 would meet some of the project objectives with the exception that it would not attain the 2015 federal 8-hour ozone standard unless other control measures are implemented; and would not achieve widespread adoption of zero emission and low NOx technologies across all stationary sources.

Alternative 4 would have similar impacts to the proposed project with slightly fewer impacts in construction emissions, electricity demand, natural gas demand, alternative fuels, water demand, water quality impacts, construction waste generation, spent vehicle batteries, and early retirement of equipment as the incentive measures would not be implemented. In addition, Alternative 4 would result in 6.8 tons per day fewer NOx reduction emissions and would be the closest Alternative to meeting the federal 8-hour ozone standard, other than Alternative 3. Therefore, an additional 6.8 tons per day of NOx emission reductions through implementing CAA Section 182(e)(5) measures would be required. Alternative 4 would achieve most of the project objectives with the exception of: attaining the 2015 federal 8-hour ozone standard (70 ppb); seeking substantial funding for incentives to implement early deployment and commercialization of zero and low NOx emission technologies: and prioritizing distribution of incentive funding to environmental justice areas, as the Alternative 4 would not include incentive funding.

Based on the above information and discussion, the proposed project achieves the all the project objectives relative to environmental impacts generated. While adverse secondary impacts will be difficult to avoid, mitigation measures are proposed and an overall air quality benefit will result along with reductions in toxics and GHGs. The proposed project will satisfy the CAA and not put the region in legal vulnerability that could harm the environment, communities and businesses.

CHAPTER 6

REFERENCES

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List of Program EIR Preparers

6.1 REFERENCES

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CHAPTER 7

ACRONYMS

7.1 ACRONYMS

ABBREVIATION	DESCRIPTION
AAs	Administering Agencies
AAM	Annual Arithmetic Mean
AB	Assembly Bill
AB 32	California's Global Warming Solutions Act of 2006
AB 939	California Integrated Waste Management Act of 1989
ACARS	Aircraft Communication Addressing and Reporting System
ACGIH	American Conference of Governmental Industrial Hygienists
ADC	Alternative Daily Cover
AEL	Authorized Equipment List
AER	Annual Emissions Reporting
AFDC	Alternative Fuels Data Center
AFY	acre-feet per year
AIR	Association of Irritated Residents
AIS	Automated Identification System
AMP	Alternative Marine Power
APS	Alternative Planning Strategy
AQMP	Air Quality Management Plan
AQREP	Air Quality-Related Energy Policy
ASTM	American Society for Testing and Materials
ASME	American Society of Mechanical Engineers
ATB	Articulated Tug Barge
ATCM	Airborne Toxic Control Measure
ATV	All-Terrain Vehicle
BACT	Best Available Control Technology
BAU	Business-as-Usual
BARCT	Best Available Retrofit Control Technology
Basin	South Coast Air Basin
BESS	Battery Energy Storage System
bhp	brake horsepower
BIO	Biogenic Sources
BLEVE	boiling liquid expanding vapor explosion
BMPs	Best Management Practices
BNSF	Burlington Northern Santa Fe Railway
BOD	Bio-chemical Oxygen Demand
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
BTU	British Thermal Units
BTU/hr	British Thermal Units per hour
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
CalARP	California Accidental Release Prevention Program
CalEMA	California Emergency Management Agency
CalEPA	California Environmental Protection Agency
CalISO	California Independent System Operator

CalRecycle	(formerly known as the California Integrated Waste Management Board)
Caltrans	California Department of Transportation
CalOES	California Office of Emergency Services
CalOSHA	California Occupational Safety and Health Administration
CARB	California Air Resources Board
CAS	Chemicals Abstracts Service
CASAC	Clean Air Scientific Advisory Committee
CBC	California Building Code
CBRN CMAD	Chemical, Biological, Radiological, and Nuclear Consequence Management Advisory Division
CCAA	California Clean Air Act
C-CMB	Commercial Combustion Sources
CCP	Clean Communities Pla``n
CCR	California Code of Regulations
CEC	California Energy Commission
CEIDARS	California Emissions Inventory Development and Reporting System
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQA	California Environmental Quality Act
CFCs	Chloroflorocarbons
CFR	Code of Federal Regulations
CGP	Construction General Permit
CH_4	Methane
CHC	Commercial Harbor Craft
CHE	Cargo Handling Equipment
CHMIRS	California Hazardous Materials Incident Reporting System
CHP	California Highway Patrol
CIWMB	California Integrated Waste Management Board
CIWMP	Countywide Integrated Waste Management Plan
CMB	Combustion Sources
CMAQ	Community Multiscale Air Quality
CNEL	Community Noise Equivalent Level
CNG	Compressed Natural Gas
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_{2eq}	Carbon Dioxide Equivalent
COHb	Carboxyhemoglobin
COVID-19	Coronavirus Disease 2019
CPUC	California Public Utilities Commission
CPSC	Consumer Products Safety Commission
CRA	Colorado River Aqueduct
CTP	Clean Trucks Program
CTS	Coatings and Solvents
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
CWMI	Chemical Waste Management, Inc.
dB	decibels
dBA	decibels (A-weighted)

DC	Direct Current
Delta	Sacramento-San Joaquin Delta
DHS	Department of Health Services
District	South Coast Air Quality Management District
DWR	Department of Water Resources
DMV	Department of Motor Vehicle
DOC	Diesel Oxidation Catalyst
DPF	Diesel Particulate Filters
DPM	Diesel Particulate Matter
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EAP	Emergency Action Plan
ECC	Energy and Climate Change Programs
EGM	Emission Growth Management
EHS	Extremely Hazardous Substances
EIA	Energy Information Administration
EIR	Environmental Impact Report
EISA	Energy Independence and Security Act of 2007
EMFAC	Emission Factors Model
EMFAC 2014	2014 Emissions Factors Model
EMFAC 2017	2017 Emissions Factors Model
EMSW	Engineered Municipal Solid Waste
EMWD	Eastern Municipal Water District
EO	Executive Order
EOC	Emergency Operations Center
EOL	End-of-Life
EOR	Enhanced Oil Recovery
EPA	Environmental Protection Agency
EPAct	Energy Policy Act
EPACT92	Energy Policy Act of 1992
EPCA	Energy Policy and Conservation Act of 1975
EPCRA	Emergency Planning and Community Right-to-Know Act
ERCs	Emission Reduction Credits
ERPG	Emergency Response Planning Guideline
ERPG-2	Emergency Response Planning Guideline Level 2
ERT	Environmental Response Team
EV	Electric Vehicle
^{o}F	Degrees Fahrenheit
FAA	Federal Aviation Administration
FBMSM	Facility-Based Mobile Source Measure
FCEVs	fuel cell electric vehicle
FDDA	four dimensional data assimilation
FEMA	Federal Emergency Management Agency
Fe_2O_3	iron oxide
FHWA	Federal Highway Administration
FLX	Compliance Flexibility Programs
FMCSA	Federal Motor Carrier Safety Administration
FMVSS	Federal Motor Vehicle Safety Standard

FRA	Federal Railroad Administration
ft	Feet
ft^2	Square Feet
ft^3	Cubic Feet
FTA	Federal Transit Administration
FTIP	Federal Transportation Improvement Program
FUG	Fugitive Emissions
FY	Fiscal Year
GAP	Green Acres Project
GHG	Greenhouse Gas
g/hp-hr	grams per horsepower hour
GIS	Geographic Information System
GVWR	gross vehicle weight rating
GW	gigawatts
GWh	gigawatt hours
GWh/yr	gigawatt hours per year
GWP	Global Warming Potential
GWRS	Groundwater Replenishment System
H_2S	Hydrogen Sulfide
H_2SO_4	Sulfuric Acid
HCFCs	Hydrochlorofluorcarbons
HCS	Hazard Communication Standard
HFCs	hydrofluorocarbons
HI	Hazard Index
HMD/BEP	????? 3.4-20
HMP	Hazardous Mitigation Plan
HMTA	Hazardous Materials Transportation Act
HOV	High Occupancy Vehicle
HRRWP	Harbor Refineries Recycled Water Pipeline
HSC	Health and Safety Code
HVAC	Heating, Ventilation, Air Conditioning
HWCA	Hazardous Waste Control Act
hp	horsepower
Hybrids	hybrid vehicles
Hz	Frequency
IAB	Interagency Board
IARC	International Agency for Research on Cancer
ICEs	Internal Combustion Engines
ICS	Incident Command System
ICT	Innovative Clean Transit
ICTA	International Center for Technology Assessment
IDLH	Immediately Dangerous to Life and Health
IOUs	Investor-Owned Utilities
IMO	International Maritime Organization
IRWMPs	Integrated Regional Water Management Plans
ISO	Independent System Operator
ISR	Indirect Source Rules
kg/gal	Kilograms per gallon

km	Kilometer
kWh	Kilowatt Hour
kWh/hr	Kilowatt Hour per hour
kWh/load	Kilowatt Hour per load
kWh/mile	Kilowatt Hour per mile
kWh/month	Kilowatt Hour per month
kWh/yr	Kilowatt Hour per year
LAA	Los Angeles Aqueduct
LACDPW	Los Angeles County Department of Public Works
LADWP	Los Angeles Department of Water and Power
lbs	pounds
lbs/day	pounds per day
lbs/mi	pounds per mile
LCFS	Low-Carbon Fuel Standard
L-CMB	Large Combustion Sources
LDAR	Leak Detection and Repair
Ldn	Day/Night Noise Level
LEED	Leadership in Energy and Environmental Design
LEL	Lower Explosive Limit
LEPC	Local Emergency Planning Committee
Leq	Equivalent Continuous Level
LEV	Low Emission Vehicle
Leq	Equivalent Noise Level
Li-ion	lithium ion
Lmax	maximum measured noise level
Lmin	minimum measured noise level
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
LSI	Large Spark Ignition
MAP-21	Moving Ahead for Progress in the 21st Century
MATES	Multiple Air Toxic Exposure Study
MATES V	Multiple Air Toxic Exposure Study V
MCS	Multiple Component Sources
MDAB	Mojave Desert Air Basin
MEGAN3.0	Model of Emissions of Gases and Aerosols from Nature version 3.0
MEK	methyl ethyl ketone
mgd	million gallons per day
mg/L	milligrams per liter
mg/m³	milligrams per cubic meter
MIBK	methyl isobutyl ketone
MIR	Maximum Incremental Reactivity
MMBTU/hr	million British Thermal Units per hour
MMcf/day	Million Cubic Feet per Day
mmHg	millimeters of mercury
MMT	million metric tons
$MMTCO_{2eq}$	million metric tons of carbon dioxide equivalent
MoO_3	molybdic anhydride
MOU	Memorandum of Understanding

mph	miles per hour
MPO	Metropolitan Planning Organization
MSERC	Mobile Source Emission Reduction Credits
MRFs	Material Recovery Facilities
$MTCO_{2eq}$	metric tons of carbon dioxide equivalent
MT/yr	Metric Tons per Year
MT/yr CO_{2eq}	Metric Tons per Year of Carbon Dioxide Equivalent
MW	megawatts
MWD	Metropolitan Water District
MWh	megawatt hours
MWh/yr	megawatt hours per year
N_2	Nitrogen
N_2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCEP	National Centers for Environmental Prediction
NCERT	National Criminal Enforcement Response Team
NCP	National Contingency Plan
NEC	National Electric Code
NFC	National Fire Codes
NFPA	National Fire Protection Association
NHTSA	National Highway Traffic Safety Administration
NH_3	Ammonia
NiCad	nickel-cadmium
NiMH	nickel-metal hydride
NIMS	National Incident Management System
NIOSH	National Institute of Occupational Safety and Health
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
NOP	Notice of Preparation
NOP/IS	Notice of Preparation/Initial Study
NOx	Nitrogen Oxide
NPDES	National Pollutant Discharge Elimination System
NREL	National Renewable Energy Laboratory
NSR	New Source Review
NTSB	National Transportation Safety Board
NYQ	Not Yet Qualified
NZE	Near-Zero Emission
O_3	Ozone
OCSD	Orange County Sanitation District
OCWD	Orange County Water District
ODS	Ozone Depleting Substance
OEHHA	Office of Environmental Health Hazards Assessment
OEM	Office of Emergency Management
OEM	Original Engine Manufacturer
OGI	Optical Gas Imaging Device
OGV	Ocean-Going Vessel
OHMC	Off-Highway Motorcycle

OHMS	Office of Hazardous Materials Safety
OPR	Office of Planning and Research
ORD	Off-road Diesel
OSC	On-Scene Coordinator
OSHA	Occupational Safety and Health Administration
OVA	Organic Vapor Analyzer
PAs	Participating Agencies
PAHs	Polynuclear Aromatic Hydrocarbons
PAR	Proposed Amendment Rule
Pb	lead
PCB	Polychlorinated biphenyls
pCBtF	parachlorobenzotriflouride
PEA	Programmatic Environmental Assessment
PEIR	Program Environmental Impact Report
PEL	Permissible Exposure Limit
PeMS	Performance Measurement System
PERP	Portable Equipment Registration Program
PFCs	Perfluorocarbons
PHMSA	Pipeline and Hazardous Materials Safety Administration
PM	Particulate Matter
PM2.5	particulate matter less than 2.5 microns equivalent aerodynamic diameter
PM10	particulate matter less than 10 microns equivalent aerodynamic diameter
POUs	publicly owned utilities
ppb	parts per billion
PPE	Personal Protective Equipment
ppm	parts per million
PPV	Peak Particle Velocity
PR	Proposed Rule
Program EIR	Program Environmental Impact Report
psi	pounds per square inch
psig	pounds per square inch gauge
PSD	Prevention of Significant Deterioration
PSM	Process Safety Management
PUC	Public Utilities Commission
PV	Photovoltaic
P/V	Pressure Vacuum
PVC	Polyvinyl Chloride
RACM	Reasonably Available Control Measures
RACT	Reasonably Available Control Technology
R-CMB	Residential Combustion Sources
RCRA	Resource Conservation and Recovery Act
RECLAIM	Regional Clean Air Incentives Market
REL	Reference Exposure Level
RERT	Radiological Emergency Response Team
RFP	Reasonable Further Progress
RFS	Renewable Fuel Standard
RIX	Rapid Infiltration and Extraction
RMP	Risk Management Program

RMS	Root Mean Squared
RMV	Recreational Marine Vehicle
ROG	Reactive Organic Gases
RPS	Renewable Portfolio Standard
RQs	Reportable Quantities
RSPA	Research and Special Programs Administration
RTAC	Regional Targets Advisory Committee
RTP	Regional Transportation Plan
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
RWQCB	Regional Water Quality Control Board
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SAPRC	Statewide Air Pollution Research Center
SARA	Superfund Amendments and Reauthorization Act
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SCR	Selective Catalytic Reduction
SCS	Sustainable Communities Strategy
SCPPA	Southern California Public Power Authority
SDG&E	San Diego Gas & Electric
SDCWA	San Diego County Water Authority
SDS	Safety Data Sheet
SEA	Subsequent Environmental Assessment
SEIR	Subsequent Environmental Impact Report
SEL	Sound Exposure Level
SERRF	Southeast Resource Recovery Facility
SF_6	Sulfur Hexafluoride
SGMA	Sustainable Groundwater Management Act
SIP	State Implementation Plan
SNCR	selective non-catalytic reduction
SO_2	sulfur dioxide
SO_3	Sulfur Trioxide
SoCal Gas	Southern California Gas Company
SOx	sulfur oxide
SORE	Small Off-Road Engine
SPCC	Spill Prevention, Control and Countermeasure
SRRE	Source Reduction and Recycling Element
SSAB	Salton Sea Air Basin
STEL	short-term exposure limits
SUV	Sport Utility Vehicle
SWP	State Water Project
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Toxic Air Contaminant
tBAc	tert-butyl acetate

TCA	1,1,1-trichloroethane
TCC	Tagliabue Closed Cup
TCLP	Toxicity Characteristic Leaching Procedure
TCM	Transportation Control Measure
TDM	Transportation Demand Management
tpd	tons per day
TiO_2	titanium dioxide
TLV	Threshold Limit Value
TOC	Total Organic Carbon
TOG	Total Organic Gases
tpd	tons per day
tpy	tons per year
TRI	Toxic Release Inventory
TRUs	Transport Refrigeration Units
TSCA	Toxic Substances Control Act
TSM	Transportation System Management
TSP	Total Suspended Particulate
TSS	Total Suspended Solids
TWA	time-weighted average
UEL	upper explosive limit
UFC	Uniform Fire Code
USBR	United States Bureau of Reclamation
U.S. DOE	United States Department of Energy
U.S. DOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USCG	United States Coast Guard
USDA	U.S. Department of Agriculture
USGS	United States Geological Survey
UST	Underground Storage Tank
UV	Ultraviolet
UWMP	Urban Water Management Plan
V_2O_5	vanadium pentoxide
VdB	vibration decibels
VMT	Vehicle Miles Traveled
VOC	volatile organic compounds
WAIRE	Warehouse Actions and Investments to Reduce Emissions
WBMWD	West Basin Municipal Water District
WFAQRP	Wildland Fire Air Quality Response Program
WMWD	Western Municipal Water District
WO_3	tungsten trioxide
WRD	Water Replenishment District
WRF	Weather Research and Forecasting Model
ZE	Zero Emission
ZEV	Zero Emission Vehicle
ug/m^3	micrograms per cubic meter

APPENDIX A

NOTICE OF PREPARATION AND INITIAL STUDY

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South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

SUBJECT: **NOTICE OF PREPARATION OF A DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT, INITIAL STUDY, AND OPPORTUNITY FOR PUBLIC COMMENT**

PROJECT TITLE: **2022 AIR QUALITY MANAGEMENT PLAN (AQMP)**

In accordance with the California Environmental Quality Act (CEQA), the South Coast Air Quality Management District (South Coast AQMD), as Lead Agency, has prepared a Notice of Preparation (NOP) and Initial Study (IS) for the proposed project identified above. The NOP/IS serves the following purposes: 1) to notify the public that the South Coast AQMD is preparing a Program Environmental Impact Report (Program EIR) which will assess the potential adverse environmental impacts that may result from implementing the proposed project; and 2) to provide information on the proposed project and allow public agencies and the public (collectively referred to as the public) the opportunity to review and comment on the scope of the environmental analysis.

This letter and the NOP/IS are not South Coast AQMD applications or forms requiring a response from you. Their purpose is simply to provide information to you on the proposed project. **No action on your part is necessary if the proposed project has no bearing on you or your organization.** Three Regional Public Workshops/CEQA Scoping Meetings will be held for the proposed project. The attached NOP provides information on how to obtain the IS and other relevant documents as well as details on how the public may attend and participate at these meetings. Attendees will have the opportunity to provide public comments.

The NOP has been filed for posting with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino Counties. The NOP/IS has also been electronically filed with the State Clearinghouse of the Governor's Office of Planning and Research to be posted on their CEQAnet Web Portal which, upon posting, may be accessed via the following weblink: https://ceqanet.opr.ca.gov/search/recent. In addition, the NOP/IS and other relevant documents have been electronically posted on the South Coast AQMD's webpage which can be accessed via the following weblink: http://www.aqmd.gov/home/research/documents-reports/lead-agency-scaqmd-projects.

Comments focusing on your area of expertise, your agency's area of jurisdiction, or other issues relative to the environmental analysis for the proposed project will be accepted during a 32-day public review and comment period beginning May 13, 2022, and ending June 14, 2022 at 5:00 p.m. **Please send any comments relative to the CEQA analysis in the NOP/IS to Kevin Ni via email to kni@aqmd.gov, via facsimile to (909) 396-3982, or by mail (c/o PRDI/CEQA) to the address shown above.** Please include the name, phone number, and email address of the contact person, and the organization name, if applicable. Questions on the 2022 AQMP should be directed to Sang-Mi Lee via email to AQMPteam@aqmd.gov or by calling (909) 396-3169.

The proposed project will be considered at the Governing Board Meeting (Public Hearing) on October 7, 2022 at 9:00 a.m. (subject to change). The Governing Board Meeting agenda with details on how the public can participate will be posted at least 72 hours prior to the meeting on South Coast AQMD's website at: http://www.aqmd.gov/home/news-events/meeting-agendas-minutes.

Reference: California Code of Regulations, Title 14, Sections 15082(a) and 15375

NOTICE OF PREPARATION (NOP) OF A DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT (EIR), INITIAL STUDY (IS), AND OPPORTUNITY FOR PUBLIC COMMENT

To:	County Clerks for the Counties of Los Angeles, Orange, Riverside and San Bernardino; and Governor's Office of Planning and Research - State Clearinghouse	**From:**	South Coast Air Quality Management District 21865 Copley Drive Diamond Bar, CA 91765

Project Title: 2022 Air Quality Management Plan (AQMP)

Project Location: The proposed project is located in the South Coast Air Quality Management District's (South Coast AQMD) jurisdiction, which includes the four-county South Coast Air Basin (all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties), and the Riverside County portion of the Salton Sea Air Basin and the non-Palo Verde, Riverside County portion of the Mojave Desert Air Basin.

Description of Nature, Purpose, and Beneficiaries of Project: In accordance with the United States Environmental Protection Agency strengthening the National Ambient Air Quality Standard (NAAQS) for ground-level 8-hour ozone in 2015, by lowering the primary and secondary 8-hour ozone standard to 70 parts per billion (ppb), the 2022 AQMP identifies control measures and strategies which have been developed to bring the region into attainment with this standard by 2037 for the South Coast Air Basin and the Coachella Valley. The 2022 AQMP control measures and strategies were developed to achieve this NAAQS by focusing on reducing emissions of nitrogen oxides (NOx), which are precursors to form ozone, and other air pollutants. The 2022 AQMP is comprised of the following control measures which address stationary point and area and mobile sources: 1) the South Coast AQMD's Stationary and Mobile Source Control Measures; 2) control measures identified in the 2022 State Strategy for the State Implementation Plan by the California Air Resources Board; and 3) approved Regional Transportation Plan/Sustainable Communities Strategy and Transportation Control Measures provided by the Southern California Association of Governments. The 2022 AQMP also includes emission inventories, the most current air quality setting, updated growth projections, new up-to-date modeling techniques, demonstrations of compliance with state and federal Clean Air Act requirements, and an adoption and implementation schedule for the proposed control strategies. The 2022 AQMP is designed to protect and improve public health for those living, working and visiting the region within South Coast AQMD's jurisdiction. However, the NOP/IS identified potentially significant adverse impacts to the following environmental topic areas: air quality and greenhouse gas emissions, energy, hazards and hazardous materials, hydrology and water quality, noise, and solid and hazardous waste, which will be analyzed in the Draft Program EIR. Some facilities affected by the 2022 AQMP may be identified on lists compiled by the California Department of Toxic Substances Control per Government Code Section 65962.5. However, the implementation of the 2022 AQMP will not alter the status of the facilities on the lists.

Lead Agency:	**Division:**
South Coast Air Quality Management District	Planning, Rule Development, and Implementation

The NOP/IS and all supporting documentation are available for public review from:

- South Coast AQMD's website: http://www.aqmd.gov/home/research/documents-reports/lead-agency-scaqmd-projects
- South Coast AQMD Public Information Center: by email at PICrequests@aqmd.gov and by phone at: (909) 396-2039
- Governor's Office of Planning and Research - State Clearinghouse website at: https://ceqanet.opr.ca.gov/search/recent

The 2022 AQMP and all supporting documentation are available from South Coast AQMD's website at: http://www.aqmd.gov/2022aqmp

The NOP/IS is provided to the public through the following:

☑ Los Angeles Times (May 13, 2022)
☑ Orange County Register (May 13, 2022)
☑ Riverside Press Enterprise (May 13, 2022)
☑ San Bernardino Sun (May 13, 2022)
☑ South Coast AQMD Mailing List & Interested Parties
☑ South Coast AQMD Public Information Center
☑ South Coast AQMD Website
☑ Governor's Office of Planning and Research – State Clearinghouse Website

NOP/IS Review Period (32 days): May 13, 2022 to June 14, 2022

NOP OF A DRAFT PROGRAM EIR, IS, AND OPPORTUNITY FOR PUBLIC COMMENT (concluded)

Scheduled Public Meeting Date(s) (subject to change): The proposed project may have statewide, regional, or areawide significance; therefore, a CEQA scoping meeting is required pursuant to Public Resources Code Section 21083.9(a)(2) and CEQA Guidelines Section 15162(d). The public is invited to attend and provide public comments at the following meetings:

Date/Time	Draft 2022 AQMP Regional Public Workshops and CEQA Scoping Meetings	Locations
May 25, 2022 1:00 p.m.	Meeting #1 for entire South Coast AQMD Jurisdiction – *Hybrid Format*	Remotely via Zoom videoconference and by telephone: https://scaqmd.zoom.us/j/91200605609 Zoom Webinar ID: 912 0060 5609 Teleconference Dial In +1 669 900 6833 In-person at South Coast AQMD Headquarters: Dr. William A. Burke Auditorium 21865 Copley Drive Diamond Bar, CA 91765
May 25, 2022 6:00 p.m.	Meeting #2 for entire South Coast AQMD Jurisdiction – *Remote Only Format*	Remotely via Zoom videoconference and by telephone: https://scaqmd.zoom.us/j/91200605609 Zoom Webinar ID: 912 0060 5609 Teleconference Dial In +1 669 900 6833
May 26, 2022 6:00 p.m.	Meeting for Coachella Valley – *Hybrid Format*	Remotely via Zoom videoconference and by telephone: https://scaqmd.zoom.us/j/95634334998 Zoom Webinar ID: 956 3433 4998 Teleconference Dial In +1 669 900 6833 In-person at California State University San Bernardino - Palm Desert Campus: Oliphant Auditorium 37500 Cook Street Palm Desert, CA 92211

The proposed project will be considered at the Governing Board Meeting (Public Hearing) on October 7, 2022 at 9:00 a.m. (subject to change).

Send CEQA Comments to:	**Phone:**	**Email:**	**Fax:**
Kevin Ni	(909) 396-2462	kni@aqmd.gov	(909) 396-3982
Direct Questions on the 2022 AQMP to:	**Phone:**	**Email:**	**Fax:**
Sang-Mi Lee	(909) 396-3169	AQMPteam@aqmd.gov	(909) 396-3982

Date: May 12, 2022 **Signature:** 

Barbara Radlein
Program Supervisor, CEQA
Planning, Rule Development, and
Implementation

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Initial Study: 2022 Air Quality Management Plan

May 2022

State Clearinghouse No. TBD
South Coast AQMD No. 05122022KN

Executive Officer
Wayne Nastri

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Planning, Rule Development and Implementation
Sarah Rees, Ph.D.

Assistant Deputy Executive Officer
Planning, Rule Development and Implementation
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Environmental Audit, Inc.

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Barbara Baird	Chief Deputy Counsel
Kathryn Roberts	Deputy District Counsel II

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
GOVERNING BOARD

CHAIR: BEN BENOIT
Mayor, Wildomar
Cities of Riverside County

VICE CHAIR: VANESSA DELGADO
Senate Rules Committee Appointee

MEMBERS:

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Cities of Los Angeles County/Eastern Region

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County of Orange

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Mayor, Highland
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Supervisor, Fourth District
County of Riverside

NITHYA RAMAN
Council Member, Fourth District
City of Los Angeles Representative

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Vice Mayor, City of Long Beach
Cities of Los Angeles County/Western Region

CARLOS RODRIGUEZ
Mayor, Yorba Linda
Cities of Orange County

JANICE RUTHERFORD
Supervisor, Second District
County of San Bernardino

EXECUTIVE OFFICER:
WAYNE NASTRI

TABLE OF CONTENTS

ACRONYMS

AAQS	Ambient air quality standards
AB	Assembly Bill
AIR	Association of Irritated Residents
AQMP	Air Quality Management Plan
ALUC	Airport Land Use Commission
ARA	Air Resource Advisors
BACT	Best Available Control Measure
BARCT	Best Available Reasonable Control Measure
Basin	South Coast Air Basin
bhp	brake horsepower
BIO	Biological Sources
BMPs	Best management practices
BTU	British Thermal Units
BTU/hr	British Thermal Units per hour
CAA	Federal Clean Air Act
CAAQS	California Ambient Air Quality Standard
CARB	California Air Resources Board
CalEPA	California Environmental Protection Agency
CALGreen	California Green Building Standards Code
CAL FIRE	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CBC	California Building Code
CCAA	California Clean Air Act
CCP	Clean Construction Policy
CEQA	California Environmental Quality Act
CFC	California Fire Code

CGP	Construction General Permit
CMB	Combustion Sources
CO	Carbon monoxide
CO_2	Carbon dioxide
CPUC	California Public Utilities Commission
CTS	Coatings and Solvents
CWA	Clean Water Act
dBA	Decibel
ECC	Energy and Climate Change Programs
EGM	Emission Growth Management
EIR	Environmental Impact Report
FCEV	Fuel Cell Electric Vehicle
FLX	Compliance Flexibility Programs
FR	Federal Register
FUG	Fugitive VOC Emissions
FTIP	Federal Transportation Implementation Plan
GHG	Greenhouse gas
GSAs	Groundwater Sustainability Agencies
GSP	Groundwater Sustainability Plan
GVWR	gross vehicle weight rating
HOV	High Occupancy Vehicles
IS	Initial Study
lbs/day	pounds per day
LDAR	leak detection and reporting
LNB	low NOx burner
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SCR	Selective Catalytic Reduction
SIP	State Implementation Plan
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SRA	State responsibility area
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SWPPP	Stormwater Pollution Prevention Plan
TAC	Toxic air contaminant
TCM	Transportation control measure
tBAc	tert butyl acetate

TBD	to be determined
TDM	Transportation design measure
tpd	tons per day
TSM	Transportation System Management
$\mu g/m^3$	micrograms per cubic meter
ULNB	ultra low NOx burner
U.S. EPA	United States Environmental Protection Agency
UST	Underground storage tank
VMT	Vehicle miles traveled
VOC	Volatile organic compounds
WFAQRP	Wildland Fire Air Quality Response Program

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CHAPTER 1

PROJECT DESCRIPTION

Introduction

California Environmental Quality Act

Project Location

Project Background and Overall Attainment Strategy

Project Description

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INTRODUCTION

The California Legislature created the South Coast AQMD in 1977[1] as the agency responsible for developing and enforcing air pollution control rules and regulations in the South Coast Air Basin (Basin) and portions of the Salton Sea Air Basin (SSAB) and Mojave Desert Air Basin (MDAB). By statute, the South Coast AQMD is required to adopt an Air Quality Management Plan (AQMP) demonstrating compliance with all federal and state ambient air quality standards for the areas under the jurisdiction of the South Coast AQMD[2]. Furthermore, the South Coast AQMD must adopt rules and regulations that carry out the AQMP[3]. The AQMP is a regional blueprint for how the South Coast AQMD will achieve air quality standards and healthful air; it contains multiple goals promoting reductions of criteria air pollutants including nitrogen oxides (NOx) and volatile organic compounds (VOC), as well as co-benefits of reducing greenhouse gases (GHGs) and toxic air contaminants (TACs).

In 1977, amendments to the Federal Clean Air Act (CAA) included requirements for submitting State Implementation Plans (SIPs) for nonattainment areas that failed to meet all federal ambient air quality standards (CAA Section 172), and similar requirements exist in state law (Health and Safety Code Section 40462). The Federal CAA was amended in 1990 to specify attainment dates and SIP requirements for ozone, carbon monoxide (CO), nitrogen dioxide (NO2), and particulate matter (PM) with an aerodynamic diameter of less than 10 microns (PM10). In 1997, the United States Environmental Protection Agency (U.S. EPA) promulgated ambient air quality standards for PM with an aerodynamic diameter less than 2.5 microns (PM2.5 or fine particulate matter). U.S. EPA is required to periodically update the national ambient air quality standards (NAAQS).

In addition, the California Clean Air Act (CCAA), which was adopted in 1988, requires the South Coast AQMD to achieve and maintain state ambient air quality standards for ozone, CO, sulfur dioxide (SO2), and NO2 by the earliest practicable date.[4] The CCAA requires air districts, including South Coast AQMD, to achieve and maintain state standards by the earliest practicable date and for extreme nonattainment areas, to include all feasible measures pursuant to Health and Safety Code Sections 40913, 40914, and 40920.5. While not defined in these sections of the Health and Safety Code, the term "feasible" is defined in the California Environmental Quality Act (CEQA) pursuant to Public Resources Code Section 21061.1 and CEQA Guidelines[5] Section 15364, as a measure capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.

In 2015, the U.S. EPA lowered the primary and secondary 8-hour ozone standard to 70 parts per billion (ppb) for ground-level ozone. As such, the South Coast AQMD developed the 2022 AQMP (referred to herein as the proposed project) which contains a variety of control measures designed to bring the region into attainment with this standard by 2037 for Basin and the Coachella Valley and comply with the federal and state ambient air quality standards for ozone. NOx emissions are a precursor to the formation of ozone and reductions in NOx remain key to attain the 2015 ozone standard. The proposed control measures in the 2022 AQMP therefore primarily focus on reducing NOx emissions from existing emission sources and promoting the use of the cleanest available

[1] The Lewis-Presley Air Quality Management Act, 1976 Cal. Stats., Ch. 324 (codified at Health and Safety Code Section 40400-40540).
[2] Health and Safety Code Sections 40460(a); 40001
[3] Health and Safety Code Section 40440(a).
[4] Health and Safety Code Section 40910
[5] The CEQA Guidelines are codified at Title 14 California Code of Regulations Section 15000 *et seq.*

new emission sources. Specifically, the proposed control measures focus on maximizing the implementation of existing zero, low or ultra-low NOx technologies in combination with the potential for the ongoing development of additional zero emission and low NOx technologies.

Implementation of the proposed control measures which comprise the 2022 AQMP may affect existing and new development as well as stationary and mobile sources within South Coast AQMD's jurisdiction and may result in emission reductions, an environmental benefit, but may also cause potential secondary environmental impacts which are required to be evaluated pursuant to CEQA. As such, the South Coast AQMD has prepared a Notice of Preparation (NOP) of a Draft Program Environmental Impact Report (Draft Program EIR) and Initial Study (IS).

CALIFORNIA ENVIRONMENTAL QUALITY ACT

The California Environmental Quality Act (CEQA) is comprised of Public Resources Code Section 21000 *et seq.* and CEQA Guidelines which are codified at Title 14 California Code of Regulations, Section 15000 *et seq.* CEQA requires all potential adverse environmental impacts of proposed projects be evaluated and methods to reduce or avoid identified significant adverse environmental impacts of these projects be implemented, if feasible. [Public Resources Code Section 21061.1 and CEQA Guidelines Section 15364]. The purpose of the CEQA process is to inform decision makers, public agencies, and interested parties of potential adverse environmental impacts that could result from implementing a proposed project and to identify feasible mitigation measures or alternatives, when an impact is significant.

The proposed adoption of the 2022 AQMP is a discretionary action subject to South Coast AQMD Governing Board consideration, which has the potential for resulting in direct or indirect change to the environment and, therefore, is considered a "project" as defined by CEQA. [CEQA Guidelines Section 15378]. The lead agency is the "public agency that has the principal responsibility for carrying out or approving a project that may have a significant effect upon the environment." [Public Resources Code Section 21067]. Since the South Coast AQMD Governing Board has the primary responsibility for approving the entire project as a whole, the South Coast AQMD is the most appropriate public agency to act as lead agency for the proposed project. [CEQA Guidelines Section 15051(b)].

A Program Environmental Impact Report (Program EIR) for the 2022 AQMP is considered to be the appropriate document pursuant to CEQA Guidelines Section 15168(a)(3), because the 2022 AQMP constitutes a series of actions that can be characterized as one large project in connection with the issuance of rules, regulations, plans, or other general criteria required to govern the conduct of a continuing program. The use of a Program EIR provides several advantages including:

- Providing an occasion for a more exhaustive consideration of effects and alternatives than would be practical in an EIR on an individual action;
- Ensuring a consideration of cumulative impacts that might be slighted in a case-by-case analysis;
- Avoiding duplicative reconsideration of basic policy considerations;
- Allowing consideration of broad policy alternatives and program wide mitigation measures at an early time when the Lead Agency has greater flexibility to deal with basic problems of cumulative impacts; and

- Allowing its use with a later activity if the later activity is within the scope of the project analyzed in the Program EIR without requiring further environmental documents.

The first step of the Program EIR process is to prepare a NOP with an IS that includes an Environmental Checklist and project description. The Environmental Checklist provides a standard evaluation tool to identify a project's adverse environmental impacts. The NOP/IS is also intended to provide information about the proposed project to other public agencies and interested parties prior to the release of the Draft Program EIR for public review and comment.

Implementation of the 2022 AQMP is anticipated to reduce NOx, VOC, toxics, and GHG emissions through control measures primarily designed to accelerate a transition to vehicles and equipment with low NOx and zero emissions. However, it is not possible to quantify the magnitude of emissions benefits at this preliminary stage. While implementation is expected to result in NOx, VOC, toxic and GHG emission reductions in order to assist in meeting federal air quality standards for ozone (an environmental benefit), the proposed project also has the potential to generate potentially significant adverse environmental impacts to the environmental topic areas of air quality and GHG emissions, energy, hazards and hazardous materials, hydrology and water quality, noise, and solid and hazardous waste. Thus, in accordance with CEQA Guidelines Section 15063, this IS identifies these potential adverse effects.

As the lead agency for the proposed project, South Coast AQMD has prepared this NOP/IS for the 2022 AQMP. The NOP/IS is being released for a 32-day public review and comment period from May 13, 2022 to June 14, 2022. Written comments received during the public comment period on the scope of the environmental analysis presented in the NOP/IS will be considered when preparing the Draft Program EIR and included in an appendix of the Draft Program EIR.

Because the proposed project may have statewide, regional, or areawide significance, a CEQA scoping meeting is required pursuant to Public Resources Code Section 21083.9(a)(2) and CEQA Guidelines Section 15162(d). The public is invited to attend and provide public comments at the following meetings:

Date/ Time	Draft 2022 AQMP Regional Public Workshops and CEQA Scoping Meetings	Location
May 25, 2022 1:00 p.m.	Meeting #1 for entire South Coast AQMD Jurisdiction – *Hybrid Format*	Remotely via Zoom videoconference and by telephone: https://scaqmd.zoom.us/j/91200605609 Zoom Webinar ID: 912 0060 5609 Teleconference Dial In +1 669 900 6833 In-person at South Coast AQMD Headquarters: Dr. William A. Burke Auditorium 21865 Copley Drive Diamond Bar, CA 91765
May 25, 2022 6:00 p.m.	Meeting #2 for entire South Coast AQMD Jurisdiction – *Remote Only Format*	Remotely via Zoom videoconference and by telephone: https://scaqmd.zoom.us/j/91200605609 Zoom Webinar ID: 912 0060 5609 Teleconference Dial In +1 669 900 6833
May 26, 2022 6:00 p.m.	Meeting For Coachella Valley – *Hybrid Format*	Remotely via Zoom videoconference and by telephone: https://scaqmd.zoom.us/j/95634334998 Zoom Webinar ID: 956 3433 4998 Teleconference Dial In +1 669 900 6833 In-person at California State University, San Bernardino Palm Desert Campus: Oliphant Auditorium 37500 Cook St, Palm Desert, CA 92211

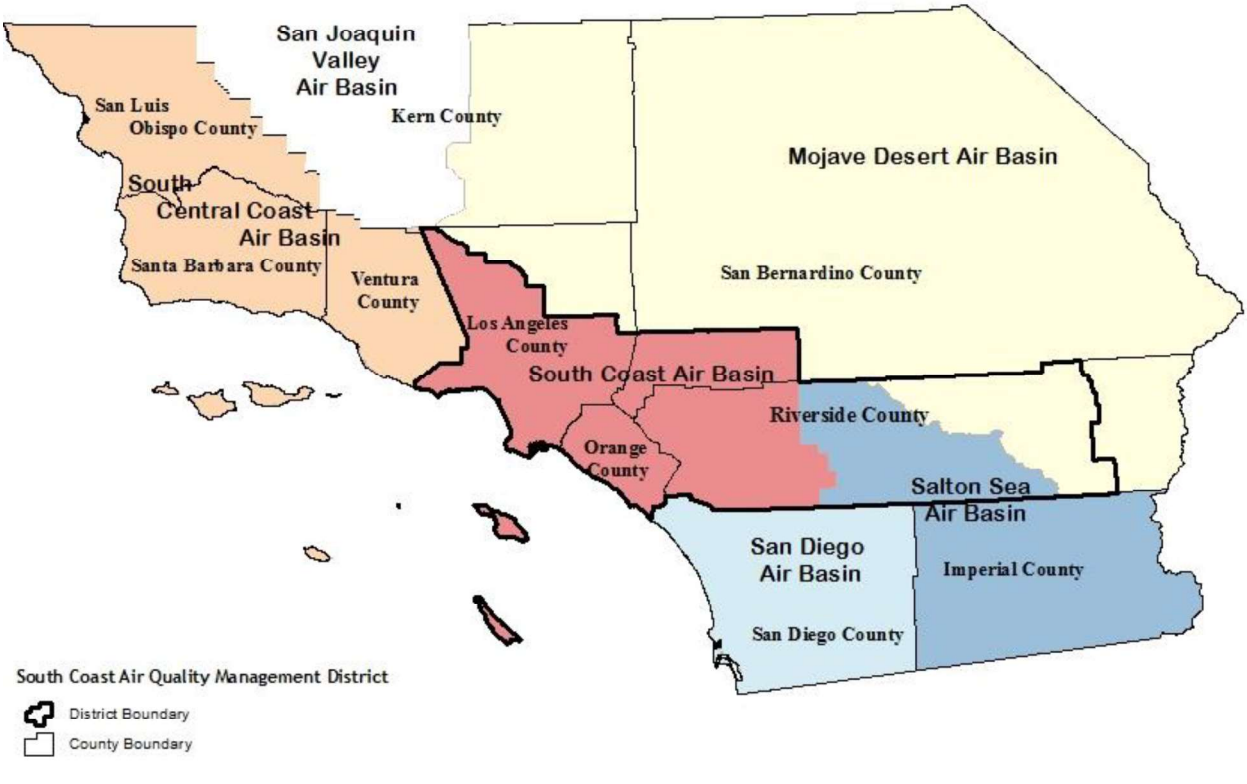
Any CEQA-related comments made at the Regional Public Workshops/CEQA scoping meetings relative to the proposed project will be considered during the preparation of the Draft Program EIR and responses to the CEQA-related comments will be included in an appendix of the Draft Program EIR. Further, pursuant to CEQA Guidelines Section 15252, since significant adverse impacts have been identified in the NOP/IS for the proposed project, an alternatives analysis along with mitigation measures are required and will also be included in the Draft Program EIR upon its release.

Prior to making a decision on the adoption of the proposed project, the South Coast AQMD Governing Board must review and certify the Final Program EIR, including responses to comments, as providing adequate information on the potential adverse environmental impacts that may occur as a result of adopting the proposed project.

PROJECT LOCATION

The proposed project is located with South Coast AQMD's jurisdiction, which covers an area of approximately 10,743 square miles, and includes the four-county Basin (all of Orange County and the non-desert portions of Los Angeles, Riverside and San Bernardino counties), and the Riverside County portion of the SSAB and the non-Palo Verde, Riverside County portion of the MDAB. The Basin is a subarea of South Coast AQMD's jurisdiction, it is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. The Riverside County portion of the SSAB, which is a federal nonattainment area known as the Coachella Valley Planning Area, is bounded by the San Jacinto Mountains to the west and spans the eastern boundary of the Coachella Valley up to the Palo Verde Valley (see Figure 1-1).

Figure 1-1
Southern California Air Basins and South Coast AQMD's Jurisdiction



PROJECT BACKGROUND AND OVERALL ATTAINMENT STRATEGY

The Federal CAA requires areas that do not meet the health-based NAAQS to develop and implement an emission reduction strategy to attain healthful levels of air quality in a timely manner. The State of California also requires areas that do not meet the California ambient air quality standards (CAAQS or State standards) to take all feasible measures towards achieving the CAAQS at the earliest practicable date. AQMPs provide the strategy and the underlying technical analysis for how the region will meet federal standards by the required dates and continue progress to achieve the State standards. As the U.S. EPA is required by law to review the NAAQS every five years, an AQMP is usually developed every four to six years to address requirements of a new NAAQS.

TIMELINE OF PREVIOUS AQMPS AND AQMP-RELATED ACTIVITIES

The South Coast AQMD Governing Board adopted the first AQMP in 1979 and the 2022 AQMP will be the twelfth plan prepared by the South Coast AQMD. In between the adoption and amendment of the various AQMPs over the years, other AQMP-related actions were taken to modify the SIP for specific pollutants, e.g., PM10 for the Coachella Valley and for the Basin, CO, and lead for Los Angeles County. The following bullets provide a historical summary of the main components of the AQMP development activities, including updates and revisions, that have occurred over the years:

- The 1982 AQMP was developed to reflect better data and modeling tools. However, in 1987, a federal court ordered the U.S. EPA to disapprove the 1982 AQMP because it did not demonstrate attainment of all NAAQS by 1987 as required by the Federal CAA. This, in part, led to the preparation of the 1989 AQMP.

- The 1989 AQMP was specifically designed to attain all NAAQS and included three "tiers" of control measures needed to attain all standards by relying on significant future technology advancement to attain these standards.

- The 1991 AQMP was developed to comply with the CCAA. Shortly after its adoption, the 1991 AQMP was amended to add a control measure containing market incentive programs which was subsequently adopted as South Coast AQMD's Regulation XX - Regional Clean Air Incentives Market (RECLAIM).

- The 1994 AQMP was developed to comply with the CCAA three-year update requirement and to meet the Federal CAA requirement for an ozone SIP, and included the following:
  - All geographical areas under the jurisdiction of the South Coast AQMD, compared to just the Basin;
  - The basic control strategies remained the same although the three-tiered structure of control measures was replaced and measures previously referred to as Tiers I, II or III were replaced with short-/intermediate-term or long-term control measures;
  - Updated and refined control measures carried over from the 1991 AQMP;
  - Best Available Control Measure PM10 Plan;
  - The Ozone Attainment Demonstration Plan;
  - Amendments to the federal Reactive Organic Compound Rate-of-Progress Plan (also referred to as the VOC Rate-of-Progress Plan); and
  - Attainment Demonstration Plans for the federal PM10, NO2, and CO air quality standards.

- The 1997 AQMP was designed to comply with the three-year update requirements specified in the CCAA as well as to include an attainment demonstration for PM10 as required by the Federal CAA. When compared to the 1994 AQMP relative to ozone, the 1997 AQMP contained the following changes to the control strategies:
  - Less reliance on transportation control measures (TCMs);
  - Less reliance on long-term control measures that rely on future technologies as allowed under Federal CAA Section 182(e)(5); and
  - Removal of other infeasible control measures and indirect source measures that had been substantially impacted by the State legislature in enacting new provisions in the Health and Safety Code.

- The 1999 Amendment to the 1997 AQMP revised the ozone portion of plan in response to U.S. EPA's partial disapproval, a settlement of litigation by environmental groups challenging the 1997 AQMP, and to address the State's requirements for a triennial plan update. The 1999 amendment was approved by U.S. EPA in 2000 and provided the following:
  - Greater emission reductions in the near-term than would occur under the 1997 AQMP;
  - Early adoption of the measures that would otherwise be contained in the next three-year update of the AQMP; and
  - Additional flexibility relative to substituting new measures for infeasible measures and recognition of the relevance of cost effectiveness in determining feasibility.

- The 2003 AQMP was approved and adopted by the South Coast AQMD Governing Board but was never fully approved by the U.S. EPA as part of the SIP. Instead, the 2003 AQMP was partially approved and partially disapproved by U.S. EPA, based on CARB's withdrawal of mobile source measures after the 1-hour ozone standard was revoked. The 2003 AQMP addressed the following control strategies:
  - Attaining the federal PM10 ambient air quality standard for the Basin and Coachella Valley and these portions were initially approved by the U.S. EPA but then the attainment demonstration was disapproved for both areas after the California Air Resources Board (CARB) withdrew its measures;
  - Attaining the federal 1-hour ozone standard;
  - Control measures from the 1997 AQMP and 1999 AQMP that were not yet implemented;
  - Revisions to the Post-1996 VOC Rate-of-Progress Plan and SIP for CO; and
  - Initial analysis of emission reductions necessary to attain the PM2.5 and 8-hour ozone standards.

- The 2007 AQMP focused on reducing ozone and PM10. When CARB adopted their State Strategy for the 2007 SIP, they also adopted the 2007 AQMP as part of the SIP which was forwarded to U.S. EPA for approval. The following summarizes the major components of the 2007 AQMP:
  - The most current air quality setting at the time (i.e., 2005 data);
  - Updated emission inventories using 2002 as the base year, which also incorporated measures adopted since adopting the 2003 AQMP;
  - Updated emission inventories of stationary and mobile on-road and off-road sources;
  - 2003 AQMP control measures not yet implemented (eight of the control measures originally contained in the 2003 AQMP were updated or revised for inclusion into the 2007 AQMP);
  - 24 new measures were incorporated into the 2007 AQMP based on replacing the South Coast AQMD's long-term control measures from the 2003 AQMP with more defined or new control measures and control measure adoption and implementation schedules;
  - South Coast AQMD's recommended control measures to reduce emissions from sources that are primarily under State and federal jurisdiction, including on-road and off-road mobile sources, and consumer products;
  - Southern California Association of Governments' (SCAG) regional transportation strategy and control measures; and
  - Analysis of emission reductions necessary and attainment demonstrations to achieve the federal 8-hour ozone and PM2.5 air quality standards.

- The March 2011 Revisions to the 2007 PM2.5 and Ozone SIP for the Basin and Coachella Valley were adopted which consisted of the following:
  - Updated implementation status of South Coast AQMD control measures necessary to meet the 2015 PM2.5 attainment date;
  - Revised the control measure adoption schedule;
  - Changed the emission inventory resulting from CARB's December 2010 revisions to the on-road truck and off-road equipment rules; and
  - A South Coast AQMD commitment to its "fair share" of additional NOx emission reductions, if needed, in the event U.S. EPA does not voluntarily accept the "federal assignment."

- The October 2011 Further Revisions to the PM2.5 and Ozone SIP for the Basin and Coachella Valley followed a three-prong approach for identifying contingency measures which:
  - Identified equivalent emission reductions achieved through improvements in air quality;
  - Relied on committed emissions reductions for the 2007 ozone plan; and
  - Quantified excess emissions reductions achieved by existing rules and programs that were not originally included in the 2007 PM2.5 SIP.

- The 2012 AQMP was primarily designed to meet all requirements to demonstrate attainment of the 2006 24-hour PM2.5 standard of 35 micrograms per cubic meter ($\mu g/m^3$). In 2013, Control Measure IND-01 – Backstop Measure for Indirect Sources of Emissions from Ports and Port-Related Facilities, was incorporated into the Final 2012 AQMP which:
  - Incorporated the most current science and analytical tools;
  - Contained a comprehensive strategy aimed at controlling pollution from stationary (point) sources, on-road and off-road mobile sources and area sources;
  - Demonstrated attainment with the federal 24-hour PM2.5 standard by 2014 in the Basin through adoption of control measures;
  - Updated the U.S. EPA approved 8-hour ozone control plan with new measures designed to reduce reliance on Federal CAA Section 182 (e)(5) long-term measures for achieving NOx and VOC reductions;
  - Addressed several state and federal planning requirements by incorporating new scientific information, primarily in the form of updated emissions inventories, ambient measurements, and new meteorological air quality models;
  - Updated the air quality status of the SSAB in the Coachella Valley;
  - Discussed the emerging issues of ultrafine particles and near-roadway exposures;
  - Analyzed the energy supply and demand issues that face the Basin and their relationship to air quality;
  - Demonstrated attainment with the 1-hour ozone standard and vehicle miles travelled (VMT) emission offsets, per U.S. EPA requirements based on the court case of Association of Irritated Residents (AIR) vs. U.S. EPA (2012); and
  - Specified measures to further implement the ozone strategy in the 2007 AQMP.

- The 2015 Supplement to the 24-Hour PM2.5 (35 $\mu g/m^3$) SIP demonstrated attainment with the 2006 24-hour PM2.5 NAAQS by 2015 pursuant to the Federal CAA (Title 1, Part D, Subpart 4) by including a discussion of the effects of the drought on the attainment date, in

response to a court case. The 2015 Supplement also included new transportation conformity budgets for 2015.

- In January 2016, the South Coast AQMD requested and received from the U.S. EPA a redesignation of the 24-hour PM2.5 standard to serious nonattainment area with a new attainment deadline of 2019.

- The 2016 AQMP was developed to demonstrate attainment of the 1-hour and 8-hour ozone NAAQS, as well as the latest 24-hour and annual PM2.5 standards. The following summarizes the major components of the 2016 AQMP:
  - Promoted emission reductions in criteria pollutant, GHG and toxic air contaminants to improve human health in the region;
  - Recognized the importance of reducing emissions from mobile sources and worked closely with CARB and the U.S. EPA to reduce mobile source emissions, especially along transportation corridors and related to goods movement;
  - Encouraged transition of vehicles, building, and industrial facilities to cleaner technologies; and
  - Included transportation control measures developed by SCAG from the 2016 RTP/SCS.

- The 2018 Update to the 1-hour Ozone Standard Attainment Demonstration from the 2016 AQMP included: 1) a revised emission inventory; 2) revised air quality modeling; and 3) an updated attainment strategy to be consistent with the final emissions inventory in the 2016 AQMP that was used for the 8-hour ozone and PM2.5 standards attainment demonstrations.

- The November 2019 Contingency Measure Plan addressed the contingency measure requirements for the 1997 8-hour ozone NAAQS for the Basin so as to achieve the 108 tons per day (tpd) of NOx reductions allocated to Federal CAA Section 182(e)(5) measures needed to attain the 1997 8-hour ozone standard in 2023 and includes: 1) newly identified emission reduction strategies; 2) additional incentive funding to further accelerate the transition to the cleanest available technologies; and 3) federal measures and/or significant level of funding to achieve the required reductions from sources under federal responsibility.

- The 2019 Reclassification of the Coachella Valley from a Severe nonattainment area to an Extreme nonattainment area for the 1997 8-hour ozone standard extended the attainment date to June 15, 2024 from June 15, 2019.

- The June 2020 the Reasonably Available Control Technology (RACT) Demonstration and Emissions Statement Certification for 2015 8-Hour Ozone Standard was developed to be consistent with the Federal CAA and the U.S. EPA's guidelines, and are required as part of the 2022 AQMP.

- The December 2020 the Coachella Valley Extreme Area Plan was developed to demonstrate attainment of the 1997 8-hour ozone standard before the required deadline of June 15, 2024 and to address the new Federal CAA requirements for the Extreme nonattainment areas. In addition, the December 2020 Attainment Plan for the 2006 24-hour PM2.5 Standard for the Basin was developed to demonstrate attainment of the 2006 24-

hour PM2.5 standard by 2023 and to address other federal Clean Air Act requirements through the continued implementation of existing regulations and programs.

- In June 2021, the 2021 PM10 Maintenance Plan for the Basin was developed because the Basin was redesignated in 2013 as attainment for the 24-hour average PM10 NAAQS and the Federal CAA requires the State to submit a subsequent maintenance plan eight years after an attainment redesignation to provide for maintenance of the NAAQS for the next 10 years after the period covered by the first maintenance plan (2023-2033). The 2021 PM10 Maintenance Plan included a maintenance demonstration that the Basin will continue to attain the standard, verification of continued attainment, a commitment to a future monitoring network, a contingency plan, and provisions for contingency plan implementation.

- In November 2021, the 2021 Redesignation Request and Maintenance Plan for the 2006 and 1997 PM2.5 Standards for the Basin sought to redesignate the Basin as attainment, and included the following: 1) a maintenance demonstration that the Basin will maintain attainment through 2035; 2) a mechanism to verify continued attainment; 3) a commitment to continue monitoring PM2.5; 4) a contingency plan in case the standard is violated in the future; and 5) provisions for contingency plan implementation.

DEVELOPMENT OF 2022 AQMP AND OVERALL ATTAINMENT STRATEGY

In 2015, the U.S. EPA strengthened the 8-hour NAAQS for ground-level ozone by lowering the primary and secondary ozone standard levels to 70 ppb. The Basin is classified as an "extreme" nonattainment area and the Coachella Valley is classified as a "severe-15" nonattainment area for the 2015 ozone NAAQS. The 2022 AQMP focuses on attaining the 2015 8-hour ozone NAAQS by 2037, and addressing the state Clean Air Act requirements.

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest available new emission sources. The proposed control measures in the 2022 AQMP focus on maximizing the implementation of existing zero emission and low NOx technologies. It also recognizes that new low NOx and zero emitting technologies and ultra-low NOx technologies may still need to be invented or may not yet be commercially available to achieve the necessary reductions in order to achieve the ambient air quality standards for ozone (e.g., 70 ppb for both the federal and State standards). Because NOx emissions are a precursor to the formation of ozone and a key component to reduce ozone levels low enough to meet the standard, the 2022 AQMP primarily focuses on achieving NOx emission reductions in order to attain the ozone standard. Preliminary analyses indicate that in order to achieve the ozone standards by 2037, approximately 71 percent of additional NOx emission reductions will be needed, above and beyond the previously adopted measures in the 2016 AQMP.

VOC emissions are also a precursor to the formation of ozone such that achieving emission reductions of VOCs can help contribute to the overall goal of attaining the ozone standard and reduce exposure to harmful air pollutants. As such, some of the proposed control measures in the 2022 AQMP focus on achieving VOC emission reductions. However, VOC emission reductions are much less effective at reducing ozone at the low NOx levels needed for attainment.

Traditional air quality planning relies on a combination of controlling emissions at the tailpipe or exhaust stack, new engine technologies, and improvements to existing fuels. These traditional

approaches are effective to an extent but since most affected sources are already equipped with NOx control equipment, traditional approaches are not expected to be able to achieve the additional reduction of 71 percent needed to achieve the ozone standard. Under the 2022 AQMP, the proposed control measures would:

- accelerate the replacement of high-emitting mobile sources with zero emission or low NOx technologies;
- encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments;
- develop incentives to remove/replace higher-emitting equipment;
- establish greater control of industrial stationary sources; control indirect sources of emissions; improve detection and procedures; and
- establish educational and outreach programs.

In order to attain the ozone standards, the majority of NOx emission reductions must come from mobile sources, including ships, aircraft, and locomotive engines, all of which are primarily regulated by federal and international laws, depending on the applicable jurisdiction, with limited authority by CARB at the State level and the South Coast AQMD at the local level. Attainment is not possible without significant reductions from these sources. The South Coast AQMD will continue to work closely with CARB in their efforts to further control mobile source emissions where federal or State actions do not meet regional needs.

PROJECT DESCRIPTION

The 2022 AQMP contains:

- Stationary and mobile source control measures that would be implemented by the South Coast AQMD;
- CARB-developed control measures and strategies from CARB's 2022 Strategy for the State Implementation Plan which includes State and Federal Mobile Source Control Measures; and
- SCAG-developed transportation control measures from SCAG's 2020 RTP/SCS.

The 2022 AQMP control measures primarily rely on the acceleration of zero emission and low NOx technologies, incentive programs, and advanced technologies. A summary of the proposed control measures is provided in the following subsections. The following bullet points summarize the major components of the 2022 AQMP:

- The air pollutant emissions baseline (e.g., 2018 data);
- Updated emission inventories using 2018 as the baseline year and reflecting control measures that have been implemented since the 2016 AQMP;
- New South Coast AQMD measures for stationary and mobile sources to be incorporated into the 2022 AQMP;
- SCAG's 2020 RTP/SCS based on Final 2020-2045 RTP/SCS, and related transportation control measures;

- CARB's 2022 State SIP Strategy;
- Analysis of emission reductions necessary to achieve the federal 8-hour ozone air quality standard;
- Overview of state and federal planning requirements; and,
- Implementation schedule for adoption of the proposed control measures.

South Coast AQMD Control Measures for Stationary and Mobile Sources

A control measure is a set of specific technologies and methods identified for potential implementation to achieve reductions in air pollutant emissions to attain an air quality standard. The proposed stationary source ozone measures are designed to assist to attain the 2015 8-hour ozone standard (70 ppb) via reductions in emissions of NOx and VOC. Since NOx and VOC are primary precursor pollutants to form ground-level ozone, the stationary source ozone measures are identified by the primary pollutant targeted to achieve emission reductions (e.g., primarily NOx but some focus on VOC) group. These measures target a number of source categories, including Combustion Sources (CMB), Energy and Climate Change Programs (ECC), Petroleum Operations and Fugitive VOC Emissions (FUG), Coatings and Solvents (CTS), Compliance Flexibility Programs and Public Outreach (FLX), Multiple Component Sources (MCS), and Biogenic Sources (BIO). Combustion Sources are further divided into Residential Combustion Sources (R-CMB), Commercial Combustion Sources (C-CMB), and Large Combustion Sources (L-CMB). Each control measure may rely on several control methods. For the 2022 AQMP, the South Coast AQMD proposed a total of 48 control measures. Out of the 48 proposed control measures, 30 target reductions from stationary sources with the majority anticipated to be developed in the next several years and implemented prior to 2037. Table 1-1 provides a list of the South Coast AQMD proposed ozone measures for stationary sources along with the proposed adoption date, proposed implementation timeframe, and emission reductions in 2032 and 2037.

Table 1-1
South Coast AQMD Proposed Stationary Source 8-Hour Ozone Control Measures

Control Measure Number	Title	Proposed Adoption Date	Proposed Implementation Timeframe	Emission Reductions (tpd) (2032/2037)
R-CMB-01	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances - Residential Water Heating [NOx]	2024	2029	0.48 / 1.29
R-CMB-02	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Residential Space Heating	2024	2029	0.45 / 1.20
R-CMB-03	Emission Reductions from Residential Cooking	2024	2029	0.30 / 0.81
R-CMB-04	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Residential Other Combustion Sources	2024	2029	1.17 / 3.13

Table 1-1 (continued)
South Coast AQMD Proposed Stationary Source 8-Hour Ozone Control Measures

Control Measure Number	Title	Proposed Adoption Date	Proposed Implementation Timeframe	Emission Reductions (tpd) (2032/2037)
C-CMB-01	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances - Commercial Water Heating [NOx]	2025	2031	0.04 / 0.25
C-CMB-02	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances - Commercial Space Heating [NOx]	2025	2031	0.04 / 0.21
C-CMB-03	Emission Reductions from Commercial Cooking Devices [NOx]	2025	2031	0.21 / 0.62
C-CMB-04	Emission Reductions from Small Internal Combustion Engines [NOx]	2025	2026	0 / 2.1
C-CMB-05	NOx Reductions from Small Miscellaneous Commercial Combustion Equipment (Non-Permitted) [NOx]	2027	2037	0 / 4.24
L-CMB-01	NOx Reductions from RECLAIM Facilities [NOx]	2022	2025	0 / 0.28
L-CMB-02	Reductions from Boilers and Process Heaters (Permitted) [NOx]	2027	2037	0 / 0.5
L-CMB-03	NOx Emission Reductions from Permitted Non-Emergency Internal Combustion Engines [NOx]	2026	2031	0 / 0.31
L-CMB-04	Emission Reductions from Emergency Standby Engines (Permitted) [NOx, VOC]	2025	2031	0.0 / 2.0
L-CMB-05	NOx Emission Reductions from Large Turbines [NOx]	2027	2037	0 / 0.06
L-CMB-06	NOx Emission Reductions from Electric Generating Facilities [NOx]	2027	2037	0.09 / 0.62
L-CMB-07	Emission Reductions from Petroleum Refineries [NOx]	2027	2037	0 / 0.77
L-CMB-08	NOx Emission Reductions from Combustion Equipment at Landfills and Publicly Owned Treatment Works [NOx]	2025	2037	0 / 0.33
L-CMB-09	NOx Reductions from Incinerators [NOx]	2024	2029	0 / 0.89
L-CMB-10	NOx Reductions from Miscellaneous Permitted Equipment [NOx]	2027	2037	0 / 1.16
ECC-01	Co-Benefits from Existing and Future Greenhouse Gas Programs, Policies, and Incentives [NOx]	2023	2023	TBD / TBD[b]
ECC-02	Co-Benefits from Existing and Future Residential and Commercial Building Energy Efficiency Measures [NOx, VOC]	2024	2024	TBD / TBD
ECC-03	Additional Enhancements in Reducing Existing Residential Building Energy Use [NOx, VOC]	2025	2029	TBD / TBD

Table 1-1 (concluded)
South Coast AQMD Proposed Stationary Source 8-Hour Ozone Control Measures

Control Measure Number	Title	Proposed Adoption Date	Proposed Implementation Timeframe	Emission Reductions (tpd) (2032/2037)
FUG-01	Improved Leak Detection and Repair [VOC]	2023	2028	0.6 / 0.6
FUG-02	Emission Reductions from Industrial Cooling Towers [VOC]	2026	2031	TBD / TBD
CTS-01	Further Emission Reductions from Coatings, Solvents, Adhesives, and Lubricants [VOC]	2023	2031	0.5 / 0.5
FLX-02	Stationary Source VOC Incentives [VOC]	2024	2025	TBD / TBD
BIO-01	Assessing Emissions from Urban Vegetation [VOC]	2025	2025	TBD / TBD
MCS-01	Application of All Feasible Measures [All Pollutants]	2023	2037	TBD / TBD
MCS-02	Wildfire Prevention [NOx, PM]	2026	2031	N/A / N/A
FLX-01	Improved Education and Public Outreach [All Pollutants]	2023	2023	N/A / N/A

Key: tpd = tons per day; TBD = to be determined; N/A = not applicable

The following text provides a brief description of the proposed control measures presented in Table 1-1. Details of the following control measures are in Appendix IV-A[6] of the Draft 2022 AQMP.

R-CMB-01: Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Residential Water Heating: This control measure seeks to reduce NOx emissions from residential building water heating sources that are subject to Rule 1121 – Control of Oxides of Nitrogen (NOx) from Residential Type, Natural Gas-Fired Water Heaters. The measure proposes to: 1) develop a rule to require zero emission water heating units for installations in both new and existing residences; and 2) allow low NOx technologies as a transitional alternative when installing a zero emission unit is determined to be infeasible (e.g., colder climate zones, or architecture design obstacles). This control measure would include incentive funds to facilitate the transition to zero emission technologies and promote further emission reductions earlier than required. A primary zero emission residential water heating technology is currently available with the all-electric heat pump water heater.

R-CMB-02: Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Residential Space Heating: This control measure seeks to reduce NOx emissions from residential space heating sources regulated by Rule 1111 – Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces (Rule 1111). The measure proposes to: 1) develop a rule to require zero emission space heating units for installations in both new and existing residences; and 2) allowing low NOx technologies as a transitional alternative when installing a zero emission unit is determined to be infeasible. This control measure would also provide

[6] Draft 2022 AQMP Appendix IV-A: South Coast AQMD's Stationary and Mobile Source Control Measures. http://www.aqmd.gov/2022aqmp.

incentive funds to facilitate adoption of zero emission technologies that would promote further emission reductions earlier than required.

R-CMB-03: Emissions Reductions from Residential Cooking Devices: This control measure seeks to reduce NOx emissions from residential cooking devices including stoves, ovens, griddles, broilers, and others in new and existing buildings. Replacing gas burners with electric cooking devices, induction cooktops, or low NOx gas burner technologies will reduce NOx emissions. NOx reductions will be pursued through a combination of regulatory approaches and incentive programs. Proposed method of control consists of two steps: step one includes a technology assessment of emissions testing of various cooking devices to establish emissions rates. Once emissions rates are defined, step two supports future rule development and incentive programs. The rule would apply to manufacturers, distributors, and installers establishing emission limits. The incentive programs would provide funds to encourage and promote adoption of zero and low NOx emission technologies.

R-CMB-04: Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Residential Other Combustion Sources: This control measure seeks to reduce NOx emissions from residential combustion sources that are not water heating (see R-CMB-01), space heating (see R-CMB-02) and cooking equipment (see R-CMB-03). R-CMB-04 sources are miscellaneous, but primarily comprised of natural gas and liquified petroleum gas (LPG) fired swimming pool heaters, laundry dryers, and barbecue grills. The measure proposes to: 1) develop a rule to require zero emission technologies for some emission sources in both new and existing residences; and 2) allow low NOx technologies as an alternative for the rest of emission sources. Mitigation fees may be required for certain lower NOx technology applications which will be evaluated during the future rulemaking process. During the rulemaking, staff will assess the universe of equipment. Incentive funds will be considered to facilitate adoption of zero emission technologies that would promote further emission reductions earlier than required.

C-CMB-01: Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Commercial Water Heating: This control measure seeks to reduce NOx emissions from commercial building water heating sources that are subject to Rule 1146.2 – Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters (Rule 1146.2). The measure proposes to: 1) develop a rule to require zero emission commercial water heating units for installations in both new and existing buildings; and 2) allow low NOx technologies as a transitional alternative when installing a zero emission unit is determined to be infeasible. This control measure would also provide incentive funds to facilitate adoption of zero emission technologies that would promote further emission reductions earlier than required.

C-CMB-02: Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Commercial Space Heating: This control measure seeks to reduce NOx emissions from commercial building space heating sources. (i.e., forced air furnaces) with a rated heat input capacity between 175,000 and 2,000,000 British Thermal Units per hour (BTU/hr). Those sources are currently not subject to the South Coast AQMD NOx rules. The measure proposes to: 1) develop rules to require zero emission commercial space heating units for installations in both new and existing buildings; and 2) allow low NOx technologies as a transitional alternative when installing a zero emission unit is determined to be infeasible. This control measure would also provide incentive funds to facilitate adoption of zero emission technologies that would promote

further emission reductions earlier than required. Heat pumps have been broadly applied in commercial applications as the primary zero emission technology.

C-CMB-03: Emission Reductions from Commercial Cooking Devices: This control measure seeks to reduce NOx emissions from commercial cooking devices including stoves, ovens, griddles, broilers, and others in new and existing buildings. Replacing gas burners with electric cooking devices, induction cooktops, or low NOx gas burner technologies will reduce NOx emissions. NOx reductions will be pursued through a combination of regulatory approaches and incentive programs. Proposed method of control consists of two steps: step one includes a technology assessment of emissions testing of various cooking devices to establish emissions rates. Once emissions rates are defined, step two supports future rule development and incentive programs. The rule will apply to manufacturers, distributors, and installers establishing emission limits. The incentive programs would provide funds to encourage and promote adoption of zero and low NOx emission technologies.

C-CMB-04: Emission Reductions from Small Internal Combustion Engines: This control measure seeks to reduce NOx emissions from non-permitted engines rated 50 brake horsepower (bhp) or less. Such engines may be used in generators, pumps, or air compressors. Operators of these engines can include private residences or business and governmental entities. Because these small engines are not subject to South Coast AQMD regulations, approaches to reducing emissions will focus on education and outreach and incentive programs to encourage consumers to purchase zero emission technologies. Improved technologies and resulting cost reductions are anticipated to ease the transition towards zero emission alternative technologies.

C-CMB-05: NOx Reductions from Small Miscellaneous Commercial Combustion Equipment (Non-Permitted): This control measure seeks to reduce NOx emissions by replacing combustion with zero and low NOx emission technologies on miscellaneous unpermitted combustion equipment. Such equipment includes ovens, furnaces, dryers, and other fuel combustion equipment too small to require a permit. Zero emission technologies, including electrification will be used where and when technically feasible and cost-effective. This control measure will develop rules to require zero and low NOx emission technologies at point-of-sale, establish incentive programs to facilitate adoption of cleaner technologies, and reassess permit and source specific exemption thresholds.

L-CMB-01: NOx Reductions for RECLAIM Facilities: This control measure reduces NOx emissions by transitioning NOx RECLAIM facilities to a command-and-control regulatory structure requiring BARCT level controls. Source categories covered by this control measure include metal melting and heating furnaces, food ovens, and nitric acid tanks. The following rules would implement this control measure: Proposed Amended Rule 1147.2 – NOx Reductions from Metal Melting and Heating Furnaces (PAR 1147.2); Proposed Amended Rule 1153.1 – Emissions of Oxides of Nitrogen from Commercial Food Ovens (PAR 1153.1); and Proposed Rule 1159.1 – Control of NOx Emissions from Nitric Acid Tanks (PR 1159.1). Staff is proposing to evaluate a variety of different NOx control technologies depending on the type of NOx source.

L-CMB-02: Reductions from Boilers and Process Heaters (Permitted): This control measure reduces NOx emissions by replacing or retrofitting boilers and process heaters used in industrial, institutional, and commercial operations with zero and low NOx emission technologies. It would apply to units with a rated heat input greater than or equal to 2 MMBTU/hr. Boilers and process heaters used in industrial, institutional, and commercial operations with a rated heat input greater

than or equal to 2 MMBTU/hr are currently regulated under Rules 1146 and 1146.1. This control measure will establish rules to set standards for new equipment, replacements, or retrofits of boilers and process heaters.

L-CMB-03: NOx Emission Reductions from Permitted Non-Emergency Internal Combustion Engines: This control measure targets emission reductions from permitted non-emergency internal combustion engines rated over 50 bhp regulated by Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines (Rule 1110.2). It proposes to transition, older, higher-emitting engines in the RECLAIM program to newer technology that can meet the NOx emission limits set forth in Rule 1110.2. Low NOx and zero emission technologies may be available in the future and will be evaluated to determine feasibility of implementation.

L-CMB-04: Emission Reductions from Emergency Standby Engines (Permitted): This control measure seeks reductions of NOx emissions from emergency standby engines rated over 50 bhp. Over 12,000 internal combustion engines are permitted for emergency standby power in the South Coast AQMD, however due to the essential nature, limited operations of these engines, and high replacement costs, multiple approaches are proposed to reduce emissions from this source category. The approaches involve an education and outreach program to encourage the transition to zero-emission technologies. Regulatory strategies include replacing older, higher emitting engines with cleaner engines or with alternative technologies, requiring the use of lower emission fuels, and a future prohibition of the use of Internal Combustion Engines for emergency backup power. As alternative technologies mature and new technologies emerge, the South Coast AQMD will undertake rulemaking to maximize emission reductions utilizing zero emission equipment where cost-effective and feasible and low NOx emission equipment in all other applications.

L-CMB-05: NOx Emission Reductions from Large Turbines: This control measure aims to reduce NOx from turbines in the South Coast AQMD subject to Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines (Rule 1134). Fuel cells and electrification are ways to shift away from combustion sources generating NOx emissions wherever feasible. As older higher emitting turbines reach the end of their equipment life it is expected that some facilities will opt to replace turbines with fuel cells or electrify facility operations.

L-CMB-06: NOx Emission Reductions from Electricity Generating Facilities: This control measure reduces NOx emissions from electric generating units regulated by Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities (Rule 1135). This measure proposes to develop a rule to implement low NOx and zero emission technologies at electricity generating facilities. The target of this approach is to replace boiler units with lower-emitting turbines, implement zero emission technologies such as fuel cells or electrification for 10 percent of gas-fired sources and other lower NOx emission technologies for the rest of gas-fired sources, and require stricter emission requirements from diesel internal combustion engines.

L-CMB-07: Emission Reductions from Petroleum Refineries: The goal of this measure is to assess and identify potential actions to further reduce NOx emissions by 20 percent for large refinery heaters and boilers with a maximum rated heat input of 40 MMBTU/hour. This would be accomplished by developing a rule requiring a lower NOx concentration limit of 2 parts per million (ppm). South Coast AQMD staff identified three potential technological approaches to further reduce emissions for the large heaters and boilers category. The three approaches include next-generation ultra-low NOx burners, advanced SCR, and transition to zero emission technology.

L-CMB-08: NOx Emission Reductions from Combustion Equipment at Landfills and Publicly Owned Treatment Works: This control measure aims to reduce NOx emissions through a regulatory approach. The source categories for this control measure are biogas fueled combustion equipment, specifically boilers, turbines, and engines, which are regulated by Rule 1150.3 – Emissions of Oxides of Nitrogen from Combustion Equipment at Landfills (Rule 1150.3) and Rule 1179.1 – Emission Reductions from Combustion Equipment at Publicly Owned Treatment Works Facilities (Rule 1179.1).

L-CMB-09: NOx Reductions from Incinerators: This control measure seeks emission reductions of NOx by replacing or retrofitting incinerators and other combustion equipment associated with incinerators with zero and low NOx emission technologies. Incinerators are used to burn waste material at high temperatures until reduced to ash. This control measure will achieve reductions by developing a rule, and implementation of low NOx burner systems or ultra-low NOx burner systems.

L-CMB-10: NOx Reductions from Miscellaneous Permitted Equipment: The goal of this measure is to assess and identify potential actions to further reduce NOx emissions associated with miscellaneous permitted equipment located in the South Coast AQMD jurisdiction. South Coast AQMD staff will convene a stakeholder working group to discuss and identify actions or approaches to further reduce NOx emissions from these sources. Miscellaneous permitted equipment is regulated under Rule 1147 – NOx Reductions from Miscellaneous Sources (Rule 1147) with NOx emission limits depending on equipment category.

ECC-01: Co-Benefits from Existing and Future Greenhouse Gas Programs, Policies, and Incentives: This control measure seeks to quantify and take credit for the criteria pollutant co-benefits associated with programs to reduce GHG emissions. The processes that emit criteria pollutants and their precursors also typically emit GHGs. Mandates and programs that reduce GHG emissions will therefore also reduce criteria pollutant emissions. Significant efforts are currently being planned and implemented to reduce GHG emissions under State programs such as California Governor Executive Order B-55-18 and Senate Bill (SB) 100 (California Renewables Portfolio Standard Program: Emissions of Greenhouse Gases), which established reduction goals for 2030, 2045, and 2050.

ECC-02: Co-Benefits from Existing and Future Residential and Commercial Building Energy Efficiency Measures: This control measure seeks to quantify and take credit for criteria pollutant co-benefits resulting from the implementation of energy efficiency mandates such as California's Title 24 program. In addition, there are multiple programs that provide incentives, rebates, and loans for residential and commercial building efficiency projects. Improvements in weatherization and other efficiency measures provide emission reductions through reduced energy use for heating, cooling, lighting, cooking, and other needs. South Coast AQMD staff will work with agencies, utilities, and other stakeholders to implement innovative measures that provide energy savings along with emission reductions.

ECC-03: Additional Enhancements in Reducing Existing Residential Building Energy Use: This control measure seeks to provide incentive funding to enhance the objectives of ECC-02. Incentives will be used to further promote programs reducing energy use associated with space heating, water heating, and other large residential energy sources, achieving emission reductions beyond the levels expected from program mandates. Residential incentive programs would be developed to facilitate weatherization, replace older appliances with highly efficient technologies

and encourage renewable energy adoption. Incorporating efficient appliance technologies, improving weatherization, and encouraging renewables such as solar thermal and photovoltaics will reduce energy demand and provide additional emission reductions within the residential sector. The South Coast AQMD will collaborate with utilities, agencies, and organizations to help leverage funding and coordinate incentives with existing programs.

FUG-01: Improved Leak Detection and Repair: This proposed control measure seeks to reduce emissions of VOCs from fugitive leaks from process and storage equipment located at a variety of sources including, but not limited to, oil and gas production, petroleum refining, chemical products processing, storage and transfer, marine terminals, and other. Some of these facilities are subject to leak detection and repair (LDAR) requirements established by the South Coast AQMD and the U.S. EPA that include periodic VOC concentration measurements using an approved portable organic vapor analyzer (OVA) to identify leaks. This measure would implement the use of advanced leak detection technologies including optical gas imaging devices (OGI), open path detection devices, and gas sensors for earlier detection of VOC emissions from leaks.

FUG-02: Emission Reductions from Industrial Cooling Towers: This proposed control measure seeks to reduce VOC emissions from industrial cooling towers through enhanced leak identification and repair requirements. Industrial cooling towers remove heat absorbed in the circulating cooling water systems at power plants, petroleum refineries, petrochemical plants, natural gas processing plants, and a wide variety of industrial operations. This control measure proposes to first assess the need for additional monitoring and practices to reduce industrial cooling tower VOC emissions. The assessment will include a review of the emissions inventory, costs for monitoring equipment, and the control requirements established by other governmental agencies. Findings from this assessment will be the basis of potential future rulemaking activities.

CTS-01: Further Emission Reductions from Coatings, Solvents, Adhesives, and Lubricants: This proposed control measure seeks VOC emission reductions by focusing on select coating, adhesive, solvent and sealant categories by further limiting the allowable VOC content in formulations or incentivizing the use of super-compliant technologies. Categories to be considered include but are not limited to, metal part and product coatings, automotive refinishing coatings, adhesives, and sealants. Use of super-compliant zero and low VOC materials, such as powder coating, aqueous coatings, and some ultraviolet light, electron beam, and light emitting diode cured coatings, eliminate or substantially reduce emissions compared to similar products that are not zero or low VOC products. There are several product categories where these materials perform as well as traditional products and are widely available in the market. The proposal is anticipated to be accomplished with a multi-phase adoption and implementation schedule. Tightening regulatory exemptions that may be used as loopholes and enhanced enforcement can also lead to reduced emissions.

FLX-02: Stationary Source VOC Incentives: This control measure seeks to provide incentive funding to facilitate the adoption of clean, low VOC emission technologies from stationary sources. Facilities would be able to qualify for incentive funding if they use equipment or accept permit conditions which result in cost-effective emission reductions that are beyond existing requirements. The program would establish procedures for quantifying emission benefits from clean technology implementation and develop cost-effectiveness thresholds for funding eligibility. Mechanisms will be explored to incentivize businesses to choose the cleanest technologies as they replace equipment and upgrade facilities, and to provide incentives to encourage businesses to move into these technologies sooner. Potential incentive concepts include incentive funding,

permitting and fee incentives and enhancements, New Source Review (NSR) incentives and enhancements, branding incentives, and recordkeeping and reporting incentives.

BIO-01: Assessing Emissions from Urban Vegetation: This control measure seeks to improve the understanding of VOCs emitted by trees and vegetation (biogenic sources) and their contribution to PM and ozone formation. Certain VOCs emitted by biogenic sources are highly reactive and potent ozone precursors. A recent analysis of municipal tree inventories across the Basin demonstrated that many recently planted species are either high emitters (e.g., Quercus ilex, Quercus agrifolia, Platanus species) or are trees for which emission factors are unknown or highly uncertain (e.g., Koelreuteria bipinnata, Cercis canadensis, Pistacia chinensis, Podocarpus gracilor, Hymenosporum flavum). High resolution data combined with accurate emissions factor measurements of common tree species will be used to improve the biogenic VOC emissions inventory. Based on these findings, the South Coast AQMD will explore the need for tree planting programs that promote the planting of low VOC emitting tree species.

MCS-01: Application of All Feasible Measures: This control measure is to address the State's requirement to take all feasible measures to reduce ozone. Existing rules and regulations for pollutants including VOC and NOx reflect current Best Available Retrofit Control Technology (BARCT). However, BARCT continually evolves as new technology becomes available that is feasible and cost-effective. South Coast AQMD staff will continue to review new emission limits or controls introduced through federal, State or local regulations to determine if South Coast AQMD regulations remain equivalent or more stringent than rules in other regions. If not, a rulemaking process will be initiated to perform a BARCT analysis and potential rule amendments if deemed feasible. In addition, the South Coast AQMD will consider adopting and implementing new retrofit technology control standards, based on research and development and other information, that are feasible and cost-effective.

MCS-02: Wildfire Prevention: This proposed control measure will seek to reduce the impacts of wildfires on PM and ozone levels from efforts to reduce wildfire fuel. Fuel reduction efforts include hand-thinning, mechanical thinning, and the use of chipping equipment (chipping) to mitigate excess fuels at properties located in the residential urban-wild-interface (UWI) areas of the San Bernardino National Forest (SBNF). To support efforts of wildfire prevention and aid compliance with Zone 0 defensible space requirements of California Assembly Bill (AB) 3074, incentive funding will be provided for a pilot project of approximately 1,400 acres. The South Coast AQMD will identify and coordinate implementation of the pilot project with established organizations and their contractors such as the Inland Empire Fire Safe Alliance, Mountain Rim Fire Safe Council, and Big Bear Fire Authority to provide fuel load reducing curbside chipping services to residents of these UWI areas.

FLX-01: Improved Education and Public Outreach: This control measure seeks to provide education, outreach, and incentives for consumers, business owners, and residences to contribute to clean air efforts. Examples include informing consumer choices such as the use of energy efficient products and appliances, new lighting technology, "super-compliant" coatings, and planting low VOC emitting trees. In addition, this measure intends to increase the effectiveness of energy conservation programs through public education and awareness as to the environmental and economic benefits of conservation. Educational and incentive tools to be used include social comparison applications such as comparing your personal environmental impacts with other individuals, social media, and public/private partnerships. These efforts will be complemented with currently available incentive programs.

South Coast AQMD Mobile Source Control Measures

The proposed South Coast AQMD mobile source measures are based on a variety of control technologies that are commercially available and/or technologically feasible to implement prior to the attainment year of 2037. The focus of these measures includes accelerated retrofits or replacement of existing vehicles or equipment, acceleration of vehicle turnover through voluntary vehicle retirement programs, and greater use of cleaner fuels in the near-term. The measures will encourage greater deployment of low NOx and zero emission vehicle and equipment technologies to the maximum extent feasible as such technologies are commercialized and available everywhere else. In the longer-term, there is a need to significantly increase the penetration and deployment of low NOx and zero emission vehicles, greater use of cleaner technologies, and substantial emission reductions from federal and international sources such as locomotives, ocean-going vessels (OGVs), and aircraft. While shifting to zero emission is necessary where feasible and available, low NOx and ultra-low NOx technology are inevitable for sectors where zero emission technologies are not available or mature commercially.

A total of 18 measures are proposed as actions to reduce mobile source emissions (see Table 1-2). Three emission growth management measures (EGM-01 to EGM-03) are proposed to identify actions to help mitigate and potentially provide emission reductions due to new development and redevelopment projects, projects subject to general conformity requirements, and clean construction policy. Four facility-based mobile source measures (FBMSMs) (MOB-01 to MOB-04) seek to identify actions that will result in additional emission reductions at commercial marine ports, rail yards and intermodal facilities, warehouse distribution centers, and commercial airports. FBMSMs for marine ports and intermodal rail yards are currently undergoing an Indirect Source Rule development process. Six on-road and off-road mobile measures focus on on-road light/medium/heavy-duty vehicles, international shipping vessels, passenger locomotives and small off-road engines. Additionally, incentive-based measures such as MOB-11 will use established protocols such as Carl Moyer Program guideline and report to the Governing Board periodically. MOB-12, Pacific Rim Initiative for Maritime Emission Reductions seeks NOx emission reductions from partnership with local, State, federal and international entities. Three other measures (MOB-13 to MOB-15) focus on fugitive VOC emissions from tanker vessels, fleet vehicles mitigation options, and the development of a work plan to support and accelerate the deployment of zero emission infrastructure needed for the widespread adoption of zero emission vehicles and equipment that is described in more detail in Appendix IV-A[7] of the Draft 2022 AQMP. A summary of the mobile source control measures to be implemented as part of the 2022 AQMP is provided in Table 1-2.

[7] Draft 2022 AQMP Appendix IV-A: South Coast AQMD's Stationary and Mobile Source Control Measures. http://www.aqmd.gov/2022aqmp.

Table 1-2
South Coast AQMD Proposed Mobile Source 8-Hour Ozone Control Measures

Control Measure Number	Title	Proposed Adoption Date	Proposed Implementation Timeframe	Emission Reductions (tpd) (2032/2037)
EGM-01	Emission Reductions from New Development and Redevelopment [All Pollutants]	2025	2026-2037	TBD / TBD
EGM-02	Emission Reductions from Projects Subject to General Conformity Requirements [All Pollutants]	2026	2026-2037	TBD / TBD
EGM-03	Emission Reductions from Clean Construction Policy [All Pollutants]	2025	2025-2037	TBD / TBD
MOB-01	Emission Reductions at Commercial Marine Ports [NOx]	2023	2023-2037	
MOB-02A	Emission Reductions at New Rail Yards and Intermodal Facilities [NOx, PM]	2022-2024	2023-2037	TBD / TBD
MOB-02B	Emission Reductions at Existing Rail Yards and Intermodal Facilities [NOx, PM]	2022-2024	2023-2037	TBD / TBD
MOB-03	Emission Reductions at Warehouse Distribution Centers [NOx]	Adopted 2021 (Reassess every 3 years)	2022-2037	TBD / TBD
MOB-04	Emission Reductions at Commercial Airports [All Pollutants]	Approved 2019 (Reassess in 2027)	2020-2037	TBD / TBD
MOB-05	Accelerated Retirement of Older Light-Duty and Medium-Duty Vehicles [VOC, NOx, CO]	N/A	Ongoing	0.21 / 0.14 [NOx]
MOB-06	Accelerated Retirement of Older On-Road Heavy-Duty Vehicles [NOx, PM]	N/A	Ongoing	TBD / TBD
MOB-07	On-Road Mobile Source Emission Reduction Credit Generating Program [NOx, PM]	TBD	TBD	TBD / TBD
MOB-08	Small Off-Road Engine Equipment Exchange Program [VOC, NOx, PM]	N/A	Ongoing	TBD / TBD
MOB-09	Further Emission Reductions from Passenger Locomotives [NOx, PM]	N/A	Ongoing	TBD / TBD
MOB-10	Off-Road Mobile Source Emission Reduction Credit Generation Program [NOx, PM]	TBD	TBD	TBD / TBD
MOB-11	Emission Reductions from Incentive Programs [NOx, PM]	N/A	Ongoing	10.72 / 9.88 [NOx]
MOB-12	Pacific Rim Initiative for Maritime Emission Reductions	N/A	Ongoing	TBD / TBD
MOB-13	Fugitive VOC Emissions from Tanker Vessels [VOC]	2024	2024-2037	TBD / TBD

Table 1-2 (concluded)
South Coast AQMD Proposed Mobile Source 8-Hour Ozone Control Measures

Control Measure Number	Title	Proposed Adoption Date	Proposed Implementation Timeframe	Emission Reductions (tpd) (2032/2037)
MOB-14	Rule 2202 – On-Road Motor Vehicle Mitigation Options [VOC, NOx, CO]	2023	2023-2037	TBD / TBD
MOB-15	Zero-Emission Infrastructure for Mobile Sources [All Pollutants]	N/A	Ongoing	TBD / TBD

Key: tpd = tons per day; TBD = to be determined

The following text provides a brief description of the proposed mobile source control measures presented in Table 1-2. Details of the measures are in Appendix IV-A[8] of the Draft 2022 AQMP.

EGM-01: Emission Reductions from New Development and Redevelopment: The goal of this measure is to identify emission reduction opportunities and to mitigate and, where appropriate, reduce emissions from new development or redevelopment projects such as residential, commercial, and industrial projects that are otherwise not included in other FBMSMs identified in the 2022 AQMP. Based on Governing Board direction, South Coast AQMD staff has held three Working Group meetings for the development of EGM-01 and released a Request for Proposal in 2019 to profile the universe of off-road construction equipment available in the South Coast Air Basin and identify the incremental cost to upgrade existing off-road construction equipment to Tier 4 standards; no proposals were received on the Request for Proposal. South Coast AQMD staff will re-convene the Working Group to continue the information gathering process and work towards the development of a method of control for EGM-01. The amount emission reductions that can be achieved and their SIP creditability will be determined dependent on the final method of control to be implemented.

EGM-02: Emission Reductions from Projects Subject to General Conformity Requirements: General conformity is a process intended to prevent the air quality impacts of a proposed federal project from causing or contributing to new violations of the air quality standards, exacerbating existing violations, or interfering with the purpose of the applicable implementation plan. The 2016 AQMP established a SIP set-aside account, with an initial balance of 2.0 tons per day of NOx and 0.5 ton per day of VOC each year from 2017 to 2030, and 0.5 ton per day of NOx and 0.2 ton per day of VOC in 2031, to accommodate projects with a positive conformity determination (i.e., emissions that exceed the de minimis threshold). This measure seeks to undertake a rulemaking process in order to accommodate general conformity determination using mechanisms other than the current set-aside account. Mitigation or offset mechanisms including those adopted by other air districts in California will be explored during the rulemaking process. Such mechanisms may include the imposition of fees to fund air quality improvement programs or a requirement to purchase surplus emission reduction credits.

EGM-03: Emission Reductions from Clean Construction Policy: The purpose of this control measure is to identify potential approaches to mitigate and control emissions from construction activities in the South Coast Air Basin. This control measure will seek to develop a Clean Construction Policy (CCP) which can be utilized for reference and voluntary implementation by

[8] Draft 2022 AQMP Appendix IV-A: South Coast AQMD's Stationary and Mobile Source Control Measures. http://www.aqmd.gov/2022aqmp.

local municipalities and public agencies. The South Coast AQMD will work in collaboration with local municipalities and agencies, construction industry, and other affected stakeholders to develop such a policy and will consider existing control measures and best management practices that are currently being implemented by entities throughout California.

MOB-01: Emission Reductions at Commercial Marine Ports: This measure seeks to reduce NOx, VOC, and PM emissions related to on-road heavy-duty vehicles, ocean going vessels, cargo handling equipment, locomotives, and harbor craft that go to and from the Ports of Los Angeles and Long Beach (Ports). As a follow up to implementation of MOB-01 from the 2016 AQMP, the South Coast AQMD is working on an indirect source rule (Proposed Rule 2304) to address emissions from marine ports. Through a public rulemaking process, rule concepts will be proposed to address emissions from these sources. Rule development will continue to focus on deploying the cleanest technologies possible and supporting zero emissions fueling charging infrastructure as quickly as feasible. Incentive funding that supports the transition to cleaner technologies will also continue to be pursued to assist in implementing this measure.

MOB-02A: Emission Reductions at New Rail Yards and Intermodal Facilities: This measure seeks to reduce NOx and PM emissions related to on-road heavy-duty vehicles, off-road equipment, and locomotives at new rail yards and intermodal facilities. Through the public process, the South Coast AQMD will assess and identify potential actions that limit additional emissions created by the new operations. To implement this measure, staff will continue rule development for Proposed Rule 2306 for new railyards. Rule development will continue to focus on implementation of cleanest locomotives, switchers, on-road heavy-duty trucks, cargo-handling equipment, transportation refrigeration units available and requiring necessary infrastructure to support zero and low NOx emission technologies.

MOB-02B: Emission Reductions at Existing Rail Yards and Intermodal Facilities: The goal of this measure is to reduce NOx and PM emissions related to on-road heavy-duty vehicles, off-road equipment, and locomotives located at existing rail yards and intermodal facilities. Through a public rulemaking process, rule concepts will be proposed to address emissions from these sources. Rule development will focus on transitioning locomotives, switchers, on-road heavy-duty trucks, cargo-handling equipment, transportation refrigeration units to zero and low NOx emission technologies. The rule development will include necessary infrastructure measures to support the transition.

MOB-03: Emission Reductions at Warehouse Distribution Centers: The goal of this measure to reduce NOx and PM emissions related to mobile sources and other equipment associated with warehouses. The strategy utilizes a menu-based point system in Rule 2305 – Warehouse Indirect Source Rule - Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program, adopted in May 2021 to implement MOB-03 from the 2016 AQMP (Rule 2305) where warehouses subject to the rule must annually earn points based on the amount of truck traffic at their facility. The menu includes actions that warehouse operators can take to reduce emissions, or to facilitate emission reductions from their operations. Required actions result in emission reductions when compared to conventional diesel technology, assist in implementation of other related measures, promote the demand for zero emission and low NOx technology, foster early action of compliance, and infrastructure installation to support new or emerging zero emission technologies. Implementation of this measure will include ensuring that applicable warehouses comply with Rule 2305, quantifying the air quality benefits of Rule 2305 as they occur and seeking to incorporate those benefits as SIP-creditable emission reductions, and evaluating the state of

technology every three years to identify if Rule 2305 should potentially be amended to increase the air quality benefits.

MOB-04: Emission Reductions at Commercial Airports: The Facility-Based Mobile Source Measure for Commercial Airports, which controls non-aircraft mobile sources at commercial airports, was adopted by the South Coast AQMD on December 6, 2019. The measure consists of MOUs between the South Coast AQMD and five commercial airports in the Basin to develop and implement air quality improvement plans. The MOUs were executed with Los Angeles International Airport, John Wayne Orange County Airport, Hollywood Burbank Airport, Ontario International Airport, and Long Beach Airport. Each MOU contains performance targets for cleaner ground support equipment, airport shuttle buses, and heavy-duty trucks. Based on the measures in the MOUs, the South Coast AQMD committed to achieve 0.52 and 0.37 ton per day NOx reductions in 2023 and 2031, respectively. This measure seeks to estimate emission reductions through 2037, beyond the term of the MOUs, based on continued implementation of the airports' Air Quality Improvement Plans/Measures. Opportunities for additional feasible emission reductions will be explored through the Airport MOU Working Group.

MOB-05: Accelerated Retirement of Older Light-Duty and Medium-Duty Vehicles: The purpose of this control measure is to achieve emission reductions by accelerating retirement of older gasoline- and diesel-powered vehicles with up to 8,500 lbs. gross vehicle weight rating (GVWR). These vehicles include passenger cars, sports utility vehicles, vans, and light-duty pick-up trucks. The South Coast AQMD has been implementing the Replace Your Ride Program (RYR) since 2015 which provides a rebate to low- and moderate-income applicants for replacing their existing cars with newer, cleaner conventionally powered vehicles, plug-in hybrid electric vehicles or dedicated zero emission vehicles. This measure seeks to retire up to 2,000 light- and medium-duty vehicles annually through continued implementation of the Replace Your Ride Program with incentives up to $9,500 provided which includes $5,000 for residents in a Disadvantaged Community (DAC) zip code. For plug-in hybrid and battery electric vehicles, an additional incentive of up to $2,000 is also provided for the installation of electric vehicle charging equipment. As an alternative, the RYR program also offers a voucher of up to $7,500 for other clean modes of transportation, such as car-sharing, public transportation or e-bikes, in exchange for the retirement of an old vehicle.

MOB-06: Accelerated Retirement of Older On-Road Heavy-Duty Vehicles: This proposed control measure seeks additional emission reductions from existing heavy-duty vehicles with GVWR greater than 8,500 lbs through an accelerated vehicle replacement program with zero emission or low NOx vehicles. A new pilot program, the Trade Up Program for On-Road Heavy-Duty Vehicles, is proposed to achieve enforceable emission reductions by replacing old, high-polluting vehicles with a new, low-NOx CNG powered vehicles through a three-way exchange approach. Under this pilot program, qualified participants can trade in their MY 2014 or newer heavy-duty diesel truck to a South Coast AQMD-approved dealership and receive an incentive toward the purchase of a new low NOx emission (0.02 gram NOx) natural gas-powered truck. The dealer then sells the trade-in diesel truck to an owner or fleet with a MY 2009 or older truck that will be scrapped by an approved dismantler to ensure permanent and enforceable reductions. The objective of this pilot program is to accelerate the turnover of 2009 and older heavy-duty diesel trucks while also increasing the deployment of low NOx natural gas-powered heavy-duty trucks and maximizing emission reductions. If proven successful, this program can be further expanded to include other alternative-fuel vehicles including battery electric and fuel cell trucks.

MOB-07: On-Road Mobile Source Emission Reduction Credit Generating Program: This proposed measure seeks to accelerate the early deployment of low NOx and zero emission on-road heavy-duty trucks through the generation of mobile source emission reduction credits (MSERCs) which can be used as an alternative means of compliance with certain South Coast AQMD regulations. These MSERCs will be used only by entities affected by the 2022 AQMP control measures MOB-01 through MOB-04, EGM-01, and EGM-03. The need for MOB-07 will be evaluated as these other control measures are implemented. South Coast AQMD staff will develop amendments to Rule 1612 – Credits for Clean On-Road Vehicles (Rule 1612) and Rule 1612.1 – Mobile Source Credit Generation Pilot Program (Rule 1612.1) to reflect the latest advanced low NOx and zero emission technologies and quantification methodologies. MSERCs generated will be discounted to provide additional benefits to the environment and to help meet air quality standards.

MOB-08: Small Off-Road Engine Equipment Exchange Program: This measure seeks to reduce NOx emissions by promoting and expanding the accelerated turn-over of in-use small off-road engines and other engines, through expanded voluntary exchange programs. Examples of these types of engines include those used in larger diesel-powered lawn and garden equipment. Since 2003, the South Coast AQMD has sponsored lawn mower buyback programs for residential users of old lawn mowers. This program has resulted in over 57,000 high polluting gasoline-powered lawn mowers taken out of service from 2003 to the present. The South Coast AQMD also launched the Commercial Electric Lawn and Garden Equipment Incentive and Exchange Program (Commercial L&G Equipment Program) in 2018 to accelerate the replacement of old gasoline- or diesel-powered commercial lawn and garden equipment with zero emission, battery electric technology. This program provides a point-of-sale discount of up to 75 percent off the purchase price of a variety of new electric equipment. More recently, the South Coast AQMD has also started a new battery rebate program for commercial lawn and garden equipment that funds up to 75 percent of the rechargeable battery cost with a maximum limit of three batteries per equipment. Moving forward, the South Coast AQMD will increase the number of outreach and exchange events as well as continue to seek additional funding opportunities and resources to expand the scope and types of equipment and engines that can be funded by these programs.

MOB-09: Further Emission Reductions from Passenger Locomotives: This measure seeks to promote voluntary replacement or upgrade of existing passenger locomotives with Tier 4 or cleaner locomotives including zero emission locomotives. The South Coast AQMD continues to work collaboratively with technology providers and other stakeholders to explore the feasibility of zero and low NOx emission locomotive technologies such as battery electric or fuel cell engine-driven systems. For example, since 2018, the South Coast AQMD has been actively participating in the development and demonstration of zero emission battery-operated switcher locomotives in CARB-funded projects in the San Pedro Bay Ports. Through this measure, the South Coast AQMD will continue to promote accelerated replacement or upgrade of existing passenger trains with Tier 4 locomotives and support the development and adoption of zero emission or low NOx technologies.

MOB-10: Off-Road Mobile Source Emission Reduction Credit Generation Program: This measure seeks to develop mechanisms to incentivize the early deployment of Tier 4, low NOx, and zero off-road equipment, where applicable, through the generation of mobile source emission reduction credits (MSERCs). These MSERCs will be used only by entities affected by the 2022 AQMP control measures MOB-01 through MOB-04, EGM-01, and EGM-03; and cannot be used to offset emissions from stationary sources. These MSERCs will be discounted to provide

additional emission reductions to help meet air quality standards. South Coast AQMD staff will develop amendments to Rule 1620 – Credits for Clean Off-Road Mobile Equipment (Rule 1620) to reflect the latest advanced low NOx and zero emission technologies and revise the quantification methodologies in Rule 1620.

MOB-11: Emission Reductions from Incentive Programs: This control measure seeks to quantify and take credit for the emission reductions achieved through the implementation of South Coast AQMD-administered incentive programs for SIP purposes. The South Coast AQMD has been implementing a variety of incentive programs including, but not limited to, Carl Moyer Memorial Air Quality Standards Attainment Program, Proposition 1B, Lower Emission School Bus, Community Air Protection Program, and Volkswagen Environmental Mitigation Trust. Examples of projects funded by these programs include heavy-duty vehicle/equipment replacements, installation of retrofit units, and engine repowers. The emission reductions from these incentive programs are calculated in two parts. First, the actual emission reductions associated with existing projects that will have remaining useful life in 2031, 2032 and 2037 are quantified. Second, potential reductions that are projected from the implementation of future projects are quantified. These reductions are estimated based on the projected level of funding for these incentive programs and average emission reductions from existing projects, discounted by control factors for future years. These incentive programs result in substantial emission reductions that are typically not eligible for credit in plans to attain ozone standards because they are not required by regulation. However, actual emission reductions that are realized and quantified may qualify for credit.

MOB-12: Pacific Rim Initiative for Maritime Emission Reductions: This measure seeks to reduce emissions from OGV through an incentive-based program to encourage the deployment of cleaner OGV to the Ports. This approach includes collaborating with international port authorities and shipping lines to establish common goals to reduce criteria pollutants from OGV. Incentives could be monetary (e.g., a per-visit payment for cleaner ships) or non-monetary (e.g., preferred berthing for cleaner ships). The cleanest commercially available OGV currently meet Tier III emission standards, however this class of vessels is not expected to be widely deployed for many years, in part due to the high cost of constructing new vessels and the difficulty in retrofitting existing vessels to Tier III standards. This measure would quicken the return on investment for these cleaner vessels by ensuring that shipping lines receive a benefit for every clean ship visit to a port with an incentive program. Clean ships could include Tier III vessels, retrofitted vessels that surpass Tier II standards, and eventually zero emissions shipping when it becomes available.

MOB-13: Fugitive VOC Emissions from Tanker Vessels: The goal of this measure is to quantify fugitive VOC emissions from petroleum tanker vessels during venting events and from other leaks and to better control these VOC emissions through enhanced monitoring and reporting, and inspections as well as changes to vessel operating procedures. Ocean-going petroleum tankers and barges transport approximately 400 million barrels per year of crude oil, refined petroleum products and unfinished petroleum products through the Ports. While these tanker vessels are in transit and at anchorage, temperature variations from day to night and other operational factors can cause pressure fluctuations in the vessels' cargo storage tanks. Vessels that transport volatile products such as crude oil and gasoline are most susceptible to pressure increases and these vessels must vent to the atmosphere to control cargo tank pressure that may result in the release of several tons of VOCs in a 15-to-30-minute period. The South Coast AQMD will collaborate with industry representatives, P/V valve manufacturers, environmental/community organizations and other

stakeholders to develop control strategies and best management practices to control these VOC emissions.

MOB-14: Rule 2202 – On-Road Motor Vehicle Mitigation Options: This control measure proposes to reduce emissions by evaluating potential amendments to Rule 2202. Rule 2202 has been developed to reduce emissions associated with work commute trips. Specifically, larger employers in the region with more than 250 employees are required to mitigate employee commute trips into the worksite. Rule 2202 provides employers with a menu of options to select from to implement a combination of emission reduction strategies in order to meet the emission reduction target (ERT) for their worksite. During the Coronavirus Disease 2019 (COVID-19) pandemic in 2020 and 2021, many Rule 2202 regulated employers (where applicable) incorporated widespread telecommuting practices which can further reduce emissions by reducing commute trips into the worksite. While Rule 2202 currently provide credit for telecommuting, future rule amendments may include a larger focus on telecommuting strategies and provide additional incentives for regulated employers to adopt telecommuting policies. Other future rule amendments may include enhancements on current basic support and direct strategies, as well as streamlined compliance and reporting options. Options for gaining credit for emission reductions associated with Rule 2202 for the purposes of plans to meet ozone standards will also be explored.

MOB-15: Zero Emission Infrastructure for Mobile Sources: This control measure proposes to develop a work plan to support and accelerate the deployment of zero emission infrastructure needed for the widespread adoption of zero emission vehicles and equipment. The work plan will, in conjunction with the California Energy Commission, the California Public Utilities Commission, and other partner agencies, assess the present and future zero emission infrastructure needs of the air basin and use information gathered to support market acceptance of zero emission vehicles and equipment. The work plan will further investigate the basin-wide costs of the infrastructure needed to support a widespread adoption of zero emission vehicles and equipment, including on-road, off-road and stationary applications. The work plan is anticipated to require coordination with all stakeholders and identify informational gaps and challenges in the planning and development of zero emission infrastructure. This plan will also aim to support the State's goals and requirements for zero emission vehicles and equipment. Information gathered can then be used to create or support policies and incentives that will ease this transition. AB 2127 estimated that the State will need 157,000 electric vehicle charging stations for medium and heavy-duty vehicles by 2030. AB 8 assessed the fueling needs for hydrogen fuel cell vehicles and found that 1,700 hydrogen stations will be needed to support 1.8 million FCEVs statewide by 2035. The proposed measure seeks to address these concerns and identify the unique challenges and opportunities for zero emission infrastructure development in the South Coast Air Basin, particularly as it relates to zero emission medium and heavy vehicle deployments.

Federal, State and Regional Mobile Source Control Measures

As previously discussed, in order to attain the 8-hour ozone standard, the majority of NOx emission reductions must come from mobile sources, including ships, aircraft, and locomotive engines, that are primarily regulated under federal and international jurisdiction, with limited authority for CARB and the South Coast AQMD. Attainment is not possible without significant reductions from these sources. For California to achieve the ambient air quality standards, it is imperative that the federal government act to reduce emissions from regulated sources of air pollution which are primarily regulated at the federal level. Absent federal action, in 2020, NOx emissions from primarily federally-regulated sources exceeded emissions from California-regulated mobile

sources statewide and by 2030, NOx emissions from primarily federally-regulated sources will be double California-regulated mobile sources.

CARB has prepared the Draft 2022 State Strategy for the State Implementation Plan (Draft 2022 State SIP Strategy) which describes the State's strategy and commitments to reduce emissions from State-regulated sources needed to support attainment of the 70 ppb 8-hour ozone standard.[9] With the Draft 2022 State SIP Strategy CARB is exploring and proposing an unprecedented variety of new measures to reduce emissions from sources under their authority using all mechanisms available. Since mobile sources account for about two-thirds of the NOx emissions statewide, significant mobile source emission reductions are needed to meet the 70 ppb ozone standard. While the 2022 State SIP Strategy is being developed primarily as a roadmap for attaining the 70 ppb ozone standard, the emissions reductions will also support attainment of other ozone and fine particulate matter national air quality standards and make progress towards the State air quality standards.

The Draft 2022 State SIP Strategy effort builds on the measures and commitments already made in the 2016 State SIP Strategy and expands on the scenarios and concepts included in the 2020 Mobile Source Strategy, CARB's multi-pollutant planning effort that identifies the pathways forward to achieve the State's air quality, climate, and community risk reduction goals. CARB finalized the 2020 Mobile Source Strategy in October 2021, as a conceptual road map for potential future measures. The measure concepts in the 2020 Mobile Source Strategy form the basis for the measures in the Draft 2022 State SIP Strategy. CARB estimates that the mobile source control measures will achieve almost 50 percent reduction in total NOx emissions needed to attain the standard in 2037. Those reductions include variety of on-road mobile, off-road mobile and other sources. This reductions reflect CARB's commitment identified in the 2016 and 2022 State SIP Strategy. However, more NOx emission reductions from sources under local, state, and federal jurisdiction will be needed to attain the 8-hour ozone standard. The proposed Draft 2022 State SIP Strategy measures are summarized below.

- On-Road Vehicles including, advanced clean fleets regulation, zero emission trucks, on-road motorcycle standards; and clean miles standard.
- Off-Road Vehicles and Equipment including Tier 5 off-road new compression-ignition engine standards, amendments to the in-use off-road diesel-fueled fleets regulation, transportation refrigeration unit regulation, commercial harbor craft amendments, cargo handling equipment amendments, off-road zero emission targeted manufacturer rule, clean off-road fleet recognition program, and spark-ignition marine engine standards.
- Off-Road Primarily-Federally and Internationally Regulated Sources including in-use locomotive regulation, future measures for aviation emission reductions, and future measures for OGV emission reductions.
- Other categories including consumer products regulation, zero emission standards for space and water heaters, and enhanced regional emission analysis in State Implementation Plans.

Table 1-3 summarizes the Draft 2022 State SIP Strategy measures and the expected emission reductions.

[9] Draft 2022 State Strategy for the State Implementation Plan, January 31, 2022. Available at: https://ww2.arb.ca.gov/resources/documents/2022-state-strategy-state-implementation-plan-2022-state-sip-strategy.

Table 1-3
Draft 2022 State SIP Strategy Measures and Estimated Emission Reductions

CARB Proposed Measures	2037 Estimated Emission Reductions (tpd)	
	NOx	VOC
On-Road Heavy-Duty		
Advanced Clean Fleets Regulation	5.3	0.5
Zero Emissions Trucks Measure	NYQ	NYQ
On-Road Light-Duty		
On-Road Motorcycle New Emissions Standards	0.9	2.1
Clean Miles Standard	<0.1	<0.1
Off-Road Equipment		
Tier 5 Off-road Vehicles and Equipment	1.8	NYQ
Amendments to the In-Use Off-road Diesel-Fueled Fleets Regulation	1.3	0.1
Transport Refrigeration Unit Regulation	4.6	NYQ
Commercial Harbor Craft Amendments	2.6	0.2
Cargo Handling Equipment Amendments	1.2	0.3
Off-Road Zero Emission Targeted Manufacturer Rule	1.1	NYQ
Clean off-Road Fleet Recognition Program	NYQ	NYQ
Spark-Ignition Marine Engine Standards	0.3	1.2
Other Categories		
Consumer Products Standards	NYQ	8.0
Zero-Emission Standard for Space and Water Heaters	5.8	0.8
Enhanced Regional Emission Analysis in SIP	NYQ	NYQ
Primarily-Federally and Internationally Regulated Sources – CARB Measures		
In-Use Locomotive Regulation	12.7	0.3
Future Measures for Aviation Emission Reductions	NYQ	NYQ
Future Measures for OGV Emission Reductions	NYQ	NYQ
Primarily-Federally and Internationally Regulated Sources – Federal Action Needed		
On-Road Heavy-Duty Vehicle Low-NOx Engine Standards	10.2	NYQ
On-Road Heavy-Duty Vehicle Zero-Emission Requirements	NYQ	NYQ
Off-Road Equipment Tier 5 Standard for Preempted Engines	2.0	NYQ
Off-Road Equipment Zero Emission Standards Where Feasible	1.2	NYQ
More Stringent Aviation Engine Standards	NYQ	NYQ
Cleaner Fuel and Visit Requirements for Aviation	NYQ	NYQ
Zero-Emission On-Ground Operation Requirements at Airports	NYQ	NYQ
More Stringent National Locomotive Emission Standards	NYQ	NYQ
Zero-Emission Standards for Switch Locomotives	NYQ	NYQ
Address Locomotives Remanufacturing Loophole	NYQ	NYQ
More Stringent NOx and PM Standards for OGVs	0.8	NYQ
Cleaner Fuel and Vessel Requirements for OGVs	21.1	NYQ
AGGREGATE EMISSION REDUCTIONS:	**72.9**	**13.5**

Key: tpd = tons per day; NYQ = not yet quantified

SCAG's Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and Transportation Control Measures (TCMs)

SCAG, the Metropolitan Planning Organization (MPO) for the Southern California region, is mandated to comply with federal and state transportation and air quality regulations. In consultation with federal, state and local transportation and air quality planning agencies and other stakeholders, SCAG developed the Final 2020–2045 2020 RTP/SCS, also known as Connect SoCal, and the 2021 Federal Transportation Improvement Program (FTIP), with TCMs to address the 2015 8-hour ozone standards in the Basin and these are included in three Sections of Appendix IV-C of the Draft 2022 AQMP[10] as follows:

Section I. Introduction

As required by federal and state laws, SCAG is responsible for ensuring that the regional transportation plan, program, and projects are supportive of the goals and objectives of applicable AQMPs and State Implementation Plans (AQMPs/SIPs). SCAG is also required to develop demographic projections and regional transportation strategy and control measures for the South Coast AQMD's AQMP/SIP.

SCAG is obligated to develop an RTP/SCS every four years. The RTP/SCS is a long-range regional transportation plan that provides for the development and integrated management and operation of transportation systems and facilities that will function as an intermodal transportation network for the SCAG region (which includes all of the South Coast AQMD jurisdiction and the non-South Coast AQMD-jurisdiction portions of Los Angeles and San Bernardino counties, and all of Ventura and Imperial counties). The RTP/SCS also outlines certain land use growth strategies that provide for more integrated land use and transportation planning, and enhances transportation investments. The RTP/SCS is required by federal laws to demonstrate transportation conformity and also to achieve regional GHG reduction targets set by the CARB pursuant to SB 375. Pursuant to the California Health and Safety Code, the RTP/SCS constitutes the Regional Transportation Plan/Sustainable Communities and Transportation Control Measures of the South Coast AQMD's AQMPs.

In addition, SCAG biennially develops the FTIP which contains a list of multimodal capital improvement projects to be implemented over a six-year period. The FTIP implements the programs and projects in the RTP/SCS.

Section II. Regional Transportation Plan/Sustainable Communities Strategy and Transportation Control Measures (TCMs)

Connect SoCal was developed to provide a blueprint to integrate land use and transportation strategies to help achieve a coordinated and balanced regional transportation system. Connect SoCal was adopted by SCAG's governing board, the Regional Council, on May 7, 2020 for transportation conformity purposes only and on September 3, 2020 for all purposes.

Connect SoCal includes a Core Vision that centers on maintaining and better managing the transportation network for moving people and goods, while expanding mobility choices by locating housing, jobs and transit closer together and increasing investment in transit and complete streets; five Key Connections that augment the Core Vision to address trends and emerging challenges while closing the gap between what can be accomplished through intensification of core planning strategies alone and what must be done to meet increasingly aggressive greenhouse

[10] Draft 2022 AQMP Appendix IV-C: South Coast AQMD's Stationary and Mobile Source Control Measures. http://www.aqmd.gov/2022aqmp.

gas reduction goals; as well as action-oriented transportation strategies and Sustainable Communities Strategy.

Core Vision

- Sustainable Development
- System Preservation and Resilience
- Demand and System Management
- Transit Backbone
- Complete Streets
- Goods Movement

Key Connections

- Smart Cities and Job Centers
- Housing Supportive Infrastructure
- Go Zones
- Accelerated Electrification
- Shared Mobility and Mobility as a Service

Transportation Strategies

- Preserve and Optimize Our Current System
  - Congestion Management
  - Congestion Pricing
  - Transportation Demand Management (TDM)
  - Transportation System Management (TSM)

- Completing Our Transportation System
  - Transit
  - Passenger Rail
  - Active Transportation
  - Transportation Safety
  - Highway and Arterial Network
  - Regional Express Lane Network
  - Goods Movement
  - Aviation
  - Technological Innovations and Emerging Technology

Sustainable Communities Strategy

- Focus Growth Near Destinations & Mobility Options
- Promote Diverse Housing Choices
- Leverage Technology Innovations
- Support Implementation of Sustainability Policies
- Promote a Green Region

Transportation Control Measures (TCMs)

Connect SoCal includes, as a subset of transportation strategies, SIP-committed transportation programs and projects that reduce vehicle use or change traffic flow or congestion conditions for the purposes of reducing emissions from transportation sources and improving air quality, better known as Transportation Control Measures or "TCMs." In the Basin, TCMs include the following three main categories of transportation improvement projects and programs that have funding programmed for right-of-way and/or construction in the first two years of the 2021 FTIP:

1. Transit and non-motorized modes;
2. High Occupancy Vehicle (HOV) Lanes and their pricing alternatives; and
3. Information-based strategies (e.g., traffic signal synchronization).

Attachment A of Appendix IV-C of the Draft 2022 AQMP contains a list of transportation control measure projects that are from SCAG's 2021 FTIP and specifically identified and committed to in the 2022 AQMP. Per the Federal CAA, these committed TCMs are required to receive funding priority and be implemented in a timely manner. In the event that a committed TCM cannot be delivered or will be significantly delayed, there must be a substitution for the TCM. It is important to note that as the SCAG's FTIP is updated every two years, new committed TCMs are automatically added to the applicable SIP from the previous FTIP.

Plan Emissions Reduction Benefits

Connect SoCal is estimated to yield a reduction in NOx emissions by about 1.5 tons per day (tpd) in 2025, 4.1 tpd in 2035, and 6.8 tpd in 2045 compared with their respective baselines without Connect SoCal. However, if accounting for mandated future improvement in vehicle fleet mix and emission factors, the estimated NOx emission reduction from Connect SoCal is reduced by 60 to 73 percent, because the vehicles as a whole are becoming much cleaner and reduction of every vehicle mile traveled from Connect SoCal yields less reduction in NOx emissions.

Plan Investment

The total expenditure for the various strategies in Connect SoCal is forecasted to be $638.9 billion for the entire six-county SCAG region. Connect SoCal has identified the same amount of total revenues from both existing and several new funding sources that are reasonably expected to be available.

Cost-Benefit Analysis

To demonstrate how effective Connect SoCal would be toward achieving regional goals, SCAG conducted a Connect SoCal vs. Connect SoCal Baseline cost-benefit analysis utilizing the Cal-B/C Model to calculate regional network benefits by essentially comparing how the region would perform with and without implementation of the Connect SoCal. Compared with the alternative without the Plan, Connect SoCal would result in significant benefits to the SCAG region, not only with respect to mobility and accessibility, but also in the areas of air quality, economic growth and job creation, sustainability and environmental justice.

Section III. TCM Reasonably Available Control Measure Analysis

As required by the Federal CAA, a Reasonably Available Control Measure (RACM) analysis must be included as part of the overall control strategy in the ozone SIP to ensure that all potential control measures are evaluated for implementation and that justification is provided for those measures that are not implemented. Appendix IV-C of the Draft 2022 AQMP contains the TCM

RACM component for the South Coast ozone control strategy. In accordance with the U.S. EPA procedures, this analysis considers TCMs in Connect SoCal, measures identified by the Federal CAA, and relevant measures adopted in other ozone nonattainment areas of the country. Based on this comprehensive review, it is determined that the TCMs being implemented in the Basin are inclusive of all TCM RACM.

South Coast AQMD Proposed Contingency Measures

Pursuant to Federal CAA Section 172(c)(9), contingency measures are emission reduction measures that are to be automatically triggered and implemented if an area fails to attain the national ambient air quality standard by the applicable attainment date, or fails to make reasonable further progress (RFP) toward attainment. For the 2022 AQMP, attainment contingency measures rely on Federal CAA Section 182(e)(5) and will be developed three years prior to attainment. RFP contingency measures will be addressed separately in a parallel process. Chapter 4 of the Draft 2022 AQMP discusses in detail how the contingency measure requirements are addressed for the 8-hour ozone NAAQS.

CHAPTER 2

ENVIRONMENTAL CHECKLIST

Introduction

General Information

Environmental Factors Potentially Affected

Determination

Environmental Checklist and Discussion

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INTRODUCTION

The environmental checklist provides a standard evaluation tool to identify a project's potential adverse environmental impacts. This checklist identifies and evaluates potential adverse environmental impacts that may be created by the proposed project.

GENERAL INFORMATION

Project Title:	2022 Air Quality Management Plan
Lead Agency Name:	South Coast AQMD
Lead Agency Address:	21865 Copley Drive Diamond Bar, CA 91765
CEQA Contact Person:	Kevin Ni, (909) 396-2462, kni@aqmd.gov
Plan Contact Person:	Sang Mi Lee, (909) 396-3169, AQMPteam@aqmd.gov
Project Sponsor's Name:	South Coast AQMD
Project Sponsor's Address:	21865 Copley Drive Diamond Bar, CA 91765
General Plan Designation:	Not applicable
Zoning:	Not applicable
Description of Project:	In accordance with the United States Environmental Protection Agency strengthening the NAAQS for ground-level 8-hour ozone in 2015, by lowering the primary and secondary 8-hour ozone standard to 70 ppb, the 2022 AQMP identifies control measures and strategies which have been developed to bring the region into attainment with this standard by 2037 for the Basin and the Coachella Valley. The 2022 AQMP control measures and strategies were developed to achieve this NAAQS by focusing on reducing emissions of NOx, which are precursors to form ozone, and other air pollutants. The 2022 AQMP is comprised of the following control measures which address stationary point and area and mobile sources: 1) the South Coast AQMD's Stationary and Mobile Source Control Measures; 2) control measures identified in the 2022 State Strategy for the SIP by CARB; and 3) approved RTP/SCS and TCMs provided by SCAG. The 2022 AQMP also includes emission inventories, the most current air quality setting, updated growth projections, new up-to-date modeling techniques, demonstrations of compliance with state and federal Clean Air Act requirements, and an adoption and implementation schedule for the proposed

	control strategies. The 2022 AQMP is designed to protect and improve public health for those living, working and visiting the region within South Coast AQMD's jurisdiction. However, the NOP/IS identified potentially significant adverse impacts to the following environmental topic areas: air quality and greenhouse gas emissions, energy, hazards and hazardous materials, hydrology and water quality, noise, and solid and hazardous waste, which will be analyzed in the Draft Program EIR. Some facilities affected by the 2022 AQMP may be identified on lists compiled by the California Department of Toxic Substances Control per Government Code Section 65962.5. However, the implementation of the 2022 AQMP will not alter the status of the facilities on the lists.
Surrounding Land Uses and Setting:	All land uses including industrial, commercial, and residential.
Other Public Agencies Whose Approval is Required:	CARB and U.S. EPA

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The following environmental impact areas have been assessed to determine their potential to be affected by the proposed project. As indicated by the checklist on the following pages, environmental topics marked with a "□" involve at least one impact that is a "Potentially Significant Impact". An explanation relative to the determination of impacts can be found following the checklist for each area.

☐	Aesthetics	☐	Geology and Soils	☐	Population and Housing
☐	Agriculture and Forestry Resources	☑	Hazards and Hazardous Materials	☐	Public Services
☑	Air Quality and Greenhouse Gas Emissions	☑	Hydrology and Water Quality	☐	Recreation
☐	Biological Resources	☐	Land Use and Planning	☑	Solid and Hazardous Waste
☐	Cultural and Tribal Cultural Resources	☐	Mineral Resources	☐	Transportation
☑	Energy	☑	Noise	☐	Wildfire
☑	Mandatory Findings of Significance				

DETERMINATION
On the basis of this initial evaluation:

☐ I find the proposed project, in accordance with those findings made pursuant to CEQA Guidelines Section 15252, COULD NOT have a significant effect on the environment, and that an ENVIRONMENTAL ASSESSMENT with no significant impacts has been prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will NOT be significant effects in this case because revisions in the project have been made by or agreed to by the project proponent. An ENVIRONMENTAL ASSESSMENT with no significant impacts will be prepared.

☑ I find that the proposed project MAY have a significant effect(s) on the environment, and an ENVIRONMENTAL ASSESSMENT will be prepared.

☐ I find that the proposed project MAY have a "potentially significant impact" on the environment, but at least one effect: 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards; and, 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL ASSESSMENT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects: 1) have been analyzed adequately in an earlier ENVIRONMENTAL ASSESSMENT pursuant to applicable standards; and, 2) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL ASSESSMENT, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Date: May 12, 2022 **Signature:** 

Barbara Radlein
Program Supervisor, CEQA
Planning, Rule Development, and
Implementation

ENVIRONMENTAL CHECKLIST AND DISCUSSION

The 2022 AQMP could result in the implementation of a number of control measures. Those control measures are summarized in Chapter 1 and the potential environmental impacts associated with those control measures are summarized in Appendix A.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
I.	**AESTHETICS.** Except as provided in Public Resources Code Section 21099, would the project:				
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☑	☐
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☑	☐
c)	In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point(s).) If the project is in an urbanized area, would the project conflict with applicable zoning or other regulations governing scenic quality?	☐	☐	☑	☐
d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☑	☐

Significance Criteria

The proposed project impacts on aesthetics will be considered significant if:

- The project will block public views from a scenic highway or corridor.
- The project will adversely affect the visual continuity of public views of the surrounding area.
- The impacts on light and glare will be considered significant if the project adds lighting which would add glare to residential areas or sensitive receptors.

Discussion

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest available new emission sources. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with

low NOx and zero-emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

Appendix A lists all the 2022 AQMP control measures and identifies those control measures that have the potential to generate significant adverse impacts. The discussion in this section identifies the net effect on aesthetic resources from implementing the proposed project.

I. a), b) & c) Less Than Significant Impact. For the purpose of determining significance under CEQA, a scenic vista is generally considered a viewpoint that provides expansive views of a highly valued landscape for the benefit of the general public. Some scenic vistas are officially designated by public agencies, or informally designated by tourist guides. Vistas provide visual access or panoramic views to a large geographic area and are generally located at a point where surrounding views are greater than one mile away. Panoramic views are usually associated with vantage points over a section of urban or natural areas that provide a geographic orientation not commonly available. Examples of panoramic views might include an urban skyline, valley, mountain range, a large open space area, the ocean, or other water bodies. A substantial adverse effect to a scenic vista is one that degrades the view from such a designated view spot.

A scenic highway is generally considered a stretch of public roadway that is designated as a scenic corridor by a federal, state, or local agency. The California Department of Transportation (Caltrans) defines a scenic highway as any freeway, highway, road, or other public right of way, that traverses an area of exceptional scenic quality.

The majority of control measures implemented within South Coast AQMD's jurisdiction would typically affect industrial, institutional, or commercial facilities located in appropriately zoned areas (e.g., industrial and commercial areas) that are not usually associated with scenic resources. Further, modifications would typically occur inside the buildings or within the confines of the affected facilities, or because of the nature of the business (e.g., commercial or industrial) can easily blend with the facilities with little or no noticeable effect on adjacent areas. In addition, the Draft 2022 AQMP contains some proposed control measures which focus on certain residential sources of air pollution (e.g., water heaters, space heaters, cooking devices and other combustion source), and any modifications needed would occur inside the buildings or in the case of energy efficiency improvements such as installing solar, on the roofs of residential buildings. Finally, because the purpose of implementing the 2022 AQMP control measures is to reduce emissions and improve air quality to attain state and federal ambient air quality standards, improved air quality would provide benefits to scenic vistas and resources in South Coast AQMD's jurisdiction.

Mobile control measures would accelerate replacement of high emitting on-road and off-road mobile sources with lower emitting mobile sources. Accelerating the penetration of lower emitting mobile sources would not be expected to adversely affect scenic resources because these strategies do not require construction or disturbance to such resources.

Control Measures EGM-01, MOB-02A, MOB-02B, MOB-06 and MOB-07 could potentially encourage the use overhead power lines (catenary lines) to provide electricity. The areas affected by the proposed zero emission and low NOx control measures that could result in the installation of catenary lines are expected to be located in commercial, industrial areas, and along existing

truck and rail transportation corridors. The truck and rail corridors likely to be involved are primarily associated with rail yards and intermodal facilities in industrial zones within Southern California. Examples of these areas include, but are not limited to, the Port of Los Angeles, Port of Long Beach, and industrial areas in and around container transfer facilities near the Terminal Island Freeway, along the Alameda Corridor, as well as inland rail yards near downtown Los Angeles. The nearest scenic highway to either of the Ports, the cargo transfer facilities serving the Ports, along the Alameda Corridor, or the inland rail yards, would be Route 2 (Angeles Crest Scenic Byway) near La Canada/Flintridge, in the northeastern portion of Los Angeles County. It is approximately 14 miles from the northern terminus of the Alameda Corridor and the rail yards downtown to the most southern portion of Route 2. The Ports, the Alameda Corridor and downtown rail yards are not visible from Route 2 due to the distance, presence of numerous large buildings of downtown Los Angeles, and the intervening topography (hills and mountains) between downtown Los Angeles and the beginning of Route 2 near La Canada/Flintridge. The nearest roadway eligible for State scenic highway designation, to either of the Ports, the cargo transfer facilities serving the ports, along the Alameda Corridor, or the downtown rail yards, would be Route 1 (Pacific Coast Highway at State Route 19 – Lakewood Boulevard, in Long Beach) in the southernmost portion of Los Angeles County. It is approximately five miles from the cargo transfer facilities serving the Ports to the intersection of State Route 19 and Route 1 where it becomes eligible to become a State scenic highway. The potential locations for catenary overhead power lines (near the Ports' facilities, transportation corridors and rail yards) would not be visible to Route 1 at State Route 19 due to the numerous structures and topography between the two locations.

There are no officially designated scenic highways or highways eligible for State scenic highway designation in areas affected by construction of zero emission or low NOx equipment associated with the 2022 AQMP, therefore construction impacts on aesthetic impacts are considered to be less than significant.

I. d) Less Than Significant Impact. Implementation of the proposed control measures is not expected to create additional demand for new lighting or exposed combustion sources (e.g., flares) that could create glare, adversely affecting day or nighttime views in any areas. Implementation of the proposed control measures may affect operations at industrial or commercial facilities, but is not expected to affect hours of operation. Further, many types of industrial or commercial facilities are already lighted at night for safety and security reasons. As noted in Section I. a) through c), facilities affected by the proposed control measures typically make modifications in the interior of an affected facility so any new light sources would typically be inside a building or not noticeable because of the presence of existing outdoor light sources.

Conclusion

Based upon these considerations, significant adverse aesthetics impacts are not expected from implementing the 2022 AQMP. Since no significant aesthetics impacts were identified, no mitigation measures are necessary or required and therefore will not be further discussed in the Draft Program EIR.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
II.	**AGRICULTURE AND FORESTRY RESOURCES.** Would the project:				
a)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland mapping and Monitoring Program of the California Resources Agency, to non- agricultural use?	☐	☐	☐	☑
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☑
c)	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☑
d)	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☑
e)	Involve other changes in the existing environment which, due to their location or nature, could result in the conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☑

Significance Criteria

Project-related impacts on agriculture and forest resources will be considered significant if any of the following conditions are met:

- The proposed project conflicts with existing zoning or agricultural use or Williamson Act contracts.
- The proposed project will convert prime farmland, unique farmland or farmland of statewide importance as shown on the maps prepared pursuant to the farmland mapping and monitoring program of the California Resources Agency, to non-agricultural use.
- The proposed project conflicts with existing zoning for, or causes rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined in Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g)).

- The proposed project would involve changes in the existing environment, which due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use.

Discussion
The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest available new emission sources. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero-emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

Appendix A lists all the 2022 AQMP control measures and identifies those control measures that have the potential to generate significant adverse impacts. The discussion in this section identifies the net effect on agricultural resources from implementing the proposed project.

II. a), b), c), d) & e) No Impact. Pursuant to the California Land Conservation Act of 1965, a Williamson Act contract enables private landowners to voluntarily enter into contracts with local governments for the purpose of restricting specific parcels of land to agricultural or related open space use. In return, landowners receive lower property tax assessments based upon farming and open space uses as opposed to full market value.

Implementation of the proposed control measures is not expected to generate any new construction of buildings or other structures that would require conversion of farmland to non-agricultural use or conflict with zoning for agricultural uses or a Williamson Act contract. Further, proposed control measures would typically affect existing facilities that are located in appropriately zoned areas. Any new facilities that may be affected by the proposed control measures would be constructed and operated for reasons other than complying with the control measures. Improvements would continue to be subject to project-level review, including review of agricultural impacts under CEQA, as applicable. Therefore, implementation of the proposed project would not affect Prime Farmland, Unique Farmland, or Farmland of Statewide Importance or conflict with a Williamson Act contract, if implemented.

Physical changes associated with the 2022 AQMP is expected to be at previously developed sites and would not warrant construction in undeveloped areas where agricultural and forest resources are more likely to occur. AQMP control measures, including control measures related to mobile sources, would have no direct or indirect effects on agricultural or forest land resources because these types of control measures would typically reduce emissions by increasing the penetration of low NOx and zero-emission mobile sources. The 2022 AQMP could provide benefits to agricultural and forest land resources by improving air quality in the region, thus, reducing the adverse oxidation impacts of ozone on plants and animals.

Therefore, the 2022 AQMP would not conflict with existing zoning for, or cause rezoning of, forest land or timberland zoned Timberland Production. Additionally, the proposed project would not result in the loss of forest land or conversion of forest land to non-forest use.

Conclusion

Based upon these considerations, significant adverse agricultural and forest resources impacts are not expected from implementing the proposed project. Since no significant agriculture and forest resources impacts were identified, no mitigation measures are necessary or required and therefore will not be further discussed in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
III. AIR QUALITY AND GREENHOUSE GAS EMISSIONS. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☑
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☑	☐	☐	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☑	☐	☐	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☑	☐
e) Diminish an existing air quality rule or future compliance requirement resulting in a significant increase in air pollutant(s)?	☐	☐	☑	☐
f) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☑	☐	☐	☐
g) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☑	☐	☐	☐

Significance Criteria

To determine whether or not air quality and greenhouse gas impacts from implementing the proposed project are significant, impacts will be evaluated and compared to the criteria in Table 2-1. The proposed project will be considered to have significant adverse impacts if any one of the thresholds in Table 2-1 are equaled or exceeded.

Table 2-1
South Coast AQMD Air Quality Significance Thresholds

Mass Daily Thresholds [a]		
Pollutant	**Construction [b]**	**Operation [c]**
NO_x	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
$PM_{2.5}$	55 lbs/day	55 lbs/day
SO_x	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Toxic Air Contaminants (TACs), Odor, and GHG Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to South Coast AQMD Rule 402	
GHG	10,000 MT/yr CO_2eq for industrial facilities	
Ambient Air Quality Standards for Criteria Pollutants [d]		
NO_2 1-hour average annual arithmetic mean	South Coast AQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)	
PM_{10} 24-hour average annual average	10.4 μg/m^3 (construction)[e] & 2.5 μg/m^3 (operation) 1.0 μg/m^3	
$PM_{2.5}$ 24-hour average	10.4 μg/m^3 (construction)[e] & 2.5 μg/m^3 (operation)	
SO_2 1-hour average 24-hour average	0.25 ppm (state) & 0.075 ppm (federal – 99th percentile) 0.04 ppm (state)	
Sulfate 24-hour average	25 μg/m^3 (state)	
CO 1-hour average 8-hour average	South Coast AQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)	
Lead 30-day Average Rolling 3-month average	1.5 μg/m^3 (state) 0.15 μg/m^3 (federal)	

[a] Source: South Coast AQMD CEQA Handbook (South Coast AQMD, 1993)
[b] Construction thresholds apply to both the South Coast Air Basin and Coachella Valley (Salton Sea and Mojave Desert Air Basins).
[c] For Coachella Valley, the mass daily thresholds for operation are the same as the construction thresholds.
[d] Ambient air quality thresholds for criteria pollutants based on South Coast AQMD Rule 1303, Table A-2 unless otherwise stated.
[e] Ambient air quality threshold based on South Coast AQMD Rule 403.

KEY: lbs/day = pounds per day ppm = parts per million μg/m^3 = microgram per cubic meter ≥ = greater than or equal to
MT/yr CO_2eq = metric tons per year of CO_2 equivalents > = greater than

Revision: April 2019

Discussion
The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest available new emission sources. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero-emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

Appendix A lists all the 2022 AQMP control measures and identifies those control measures that have the potential to generate significant adverse impacts. The discussion in this section identifies the net effect on air quality resources from implementing the proposed project.

III. a) No Impact. Pursuant to the provisions of both the Federal CAA and CCAA, the South Coast AQMD is required to attain the NAAQS and CAAQS for all criteria pollutants. To this end, the South Coast AQMD is required by law to prepare a comprehensive AQMP which includes strategies (e.g., control measures) to reduce emission levels to achieve and maintain state and federal ambient air quality standards, to ensure that new sources of emissions are planned and operated to be consistent with the South Coast AQMD's air quality goals, and to protect sensitive receptors and the public in general from the adverse effects of pollutants which are known to have adverse human health effects. The AQMP's air pollution reduction strategies include control measures that target stationary, mobile and indirect sources. These control measures are based on feasible methods of attaining the AAQS.

The proposed project would be a 2022 update to the South Coast AQMD's 2016 AQMP, as required pursuant to state law. By revising and updating emission inventories and control strategies, the South Coast AQMD is complying with state law, and furthering development of new AQMP control measures, which would be expected to reduce emissions and make progress towards attaining and maintaining NAAQS and CAAQS in South Coast AQMD's jurisdiction. The 2022 AQMP is required by law and would not obstruct the implementation of the local air quality plan but would update the local air quality plan. Therefore, this impact will not be evaluated further in the Draft Program EIR.

III. b), c) f), and g) Potentially Significant Impact. The following describes impacts from short-term construction activities and long-term operation of the proposed project.

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest available new emission sources and the proposed control measures would apply to both stationary and mobile sources. Although the proposed control measures are designed to improve overall air quality, implementation of some control measures may have the potential of generating secondary air quality impacts, these secondary impacts will be analyzed in the Draft Program EIR. The following are examples of potential secondary impacts:

- Impacts Associated with Construction – Implementing some of the proposed control measures may involve retrofitting, replacing, or installing new air pollution control

equipment, and may require physical modifications at affected facilities (e.g., C-CMB-01 through C-CMB-05, and L-CMB-01 through L-CMB-10). Physical modifications may involve the use of construction equipment for demolition, site preparation, site grading, and construction. Exhaust emissions from on-road and off-road equipment during construction activities may be substantial depending on the number, types, and activity levels of the construction equipment used. Similarly, if large areas need to be graded to install equipment foundations or construct buildings, fugitive dust emissions may also be substantial.

- Impacts Associated with Use of Control Equipment - Implementing some of the proposed control measures may require the use of additional air pollution control equipment (e.g., L-CMB-01, L-CMB-02, L-CMB-03, L-CMB-06, L-CMB-07, L-CMB-08, L-CMB-10, and MCS-01). Although the primary purpose of air pollution control equipment is to reduce emissions of a particular pollutant, some air pollution control equipment may have the potential to create secondary adverse air quality impacts. For example, control measures intended to reduce NOx emissions from stationary or mobile sources, such as selective catalytic reduction (SCR), may use ammonia as part of the control process. Ammonia use may result in increased ammonia emissions and, since ammonia is a precursor to particulate formation, increased particulate emissions. In addition, in the event of an accidental release of ammonia, sensitive receptors in the vicinity of the release may be exposed to harmful concentrations of ammonia vapor.
- Impacts Associated with Electrification – Implementing some of the proposed control measures, although expected to improve overall air quality, may serve to increase electricity demand and potentially result in the construction and operation of new infrastructure including fueling/powering stations, additional electrical power plants, and increased emissions from power plants (e.g., R-CMB-01 through R-CMB-04, C-CMB-01 through C-CMB-05, MOB-04, MOB-05, MOB-06, MOB-07, MOB-08, MOB-09, and MOB-10).
- Impacts Associated with Product Reformulation and Alternative Fuels – Implementing some of the proposed control measures may potentially increase air toxic emissions due to reformulation of coatings or solvents (e.g., CTS-01). Low-VOC coating and solvent formulations may contain toxic compounds, such as formaldehyde or glycol ethers, or compounds that have a higher flammability rating. As a result, material replacement or reformulation to reduce the use of high-VOC materials has the potential to result in health risks associated with exposure to both carcinogenic and non-carcinogenic toxic air contaminants. Similarly, alternative or reformulated fuels may require the construction and operation of infrastructure to produce additional quantities of alternatives fuels e.g., hydrogen. Examples of these types of control measures include L-CMB-05, L-CMB-06, EGM-01, and MOB-01 through MOB-10.

Although the proposed control measures are designed to reduce criteria pollutant emissions, some may have the potential to generate combustion emissions that could increase GHG emissions. For example, implementation of some of the control measures propose to accelerate low NOx and zero-emission technologies which may rely on electricity, thereby causing a potential increase in electrical demand and increased electricity generation with subsequently increased GHG emissions associated with combustion and power plants. Potential GHG emission increases and their potential to conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the GHG emission impacts will be analyzed in the Draft Program EIR.

Secondary air quality impacts associated with some of the proposed control measures may generate increased emissions. Because the proposed control measures may result in significant adverse secondary air quality effects, the proposed project's incremental contribution to a cumulative effect may also be cumulatively considerable. Cumulative air quality impacts will be evaluated in the Draft Program EIR.

III. d) Less Than Significant Impact. The threshold for an odor impact is if a project creates an odor nuisance pursuant to South Coast AQMD Rule 402 – Nuisance, which states: "A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property."

Emissions from construction equipment, such as diesel exhaust and volatile organic compounds, might generate odors. However, these odors would be low in concentration, temporary, and are not expected to affect a substantial number of people. Any odors produced during the construction phase are not expected to be significant or highly objectionable and would be in compliance with Rule 402. Diesel fueled construction equipment would also comply with South Coast AQMD Rule 431.2 – Sulfur Content of Liquid Fuels, which is expected to minimize odor. The operation of construction equipment will occur within the confines of existing affected facilities. Dispersion of diesel emissions over distance generally occurs so that odors associated with diesel emissions may not be discernable to offsite receptors, depending on the location of the equipment and its distance relative to the nearest offsite receptor. Further, the diesel trucks that will be operated onsite will not be allowed to idle longer than five minutes per any one location in accordance with the CARB idling regulation, so odors from these vehicles would not be expected for a prolonged period of time. Therefore, the addition of several pieces of construction equipment and trucks that will operate intermittently, over a relatively short period of time, are not expected to generate diesel exhaust odor substantially greater than what is already typically present at the affected facilities. In the long term, the 2022 AQMP includes control measures that are expected to reduce the use of diesel-fueled mobile sources (e.g., EGM-01, EGM-03, and MOB-10), thereby reducing the potential for odors from these sources.

The 2022 AQMP seeks to accelerate the deployment of low NOx and zero-emission sources, which would be expected to reduce the use of fossil fuels, and minimize the potential for odors in the long-term. Therefore, impacts would be less than significant, no mitigation measures are necessary, and this will not be discussed further in the Draft Program EIR.

III. e) Less than Significant Impact. Promulgating AQMP control measures, such as control requirements for stationary sources, mobile sources, incentive programs, etc., into rules or regulations typically would serve to strengthen an existing rule or regulation. Similarly, an AQMP control measure may be promulgated as a new rule or regulation, which would serve to control emissions from an unregulated or minimally regulated source. As a result, the proposed project would be expected to strengthen air quality rules, and not diminish any existing air quality rule. Therefore, this impact will not be analyzed further in the Draft Program EIR.

Conclusion

Based upon these considerations, potentially significant construction related air quality and GHG emissions impacts may occur from the implementation of some of the control measures. These impacts will be further analyzed in the Draft Program EIR.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
IV.	**BIOLOGICAL RESOURCES.** Would the project:				
a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☑
b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☑
c)	Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☑
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☑
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☑
f)	Conflict with the provisions of an adopted Habitat Conservation plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☑

Significance Criteria

Impacts on biological resources will be considered significant if any of the following criteria apply:

- The project results in a loss of plant communities or animal habitat considered to be rare, threatened or endangered by federal, state or local agencies.
- The project interferes substantially with the movement of any resident or migratory wildlife species.
- The project adversely affects aquatic communities through construction or operation of the project.

Discussion

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest available new emission sources. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero-emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

Appendix A lists all the 2022 AQMP control measures and identifies those control measures that have the potential to generate significant adverse impacts. The discussion in this section identifies the net effect on biological resources from implementing the proposed project.

IV. a), b), c), d), e) & f) No Impact. Implementation of the proposed control measures is not expected to result in habitat modification, adversely affect any riparian habitat or interfere with the movement of any native resident or migratory fish or wildlife species. Facilities affected by the proposed control measures have already been disturbed and typically do not contain open space, water features, or natural vegetation. Sites might contain landscaping that consists of ornamental trees, vegetation, and turf. The sites of the affected facilities that would be subject to the majority of the proposed control measures are not expected to support riparian habitat, federally protected wetlands, or migratory corridors because they are existing developed and established industrial and commercial facilities. Similarly, for the proposed control measures that will affect residential land uses, any modifications needed would occur inside the buildings or in the case of energy efficiency improvements such as installing solar, on the roofs of residential buildings, and would not be expected to create any greater impact than the residential developments themselves. Additionally, special status plants, animals, or natural communities identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service are not expected to be found on or in close proximity to the affected facilities. Construction projects that impact affected species are not reasonably foreseeable as part of implementation of the 2022 AQMP. Any new development potentially affecting biological resources would not be as a result of the 2022 AQMP control measures and approval of those projects, including evaluation of their environmental impacts, would occur regardless of the 2022 AQMP.

Furthermore, the proposed control measures would not include provisions that would allow affected facility operators to violate existing zoning ordinances or regional plans, policies, or

regulations. The proposed control measures would not conflict with any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or any other relevant habitat conservation plan, and would not create divisions in any existing communities because onsite activities associated with complying with the proposed control measures would occur at existing facilities in previously disturbed areas which are not typically subject to Habitat or Natural Community Conservation Plans. The 2022 AQMP aims to control emissions from mobile sources but is not expected to require the construction of new transportation facilities or corridors. Any control measure that would electrify a railroad or truck route (e.g., EGM-01, MOB-02A, MOB-02B, MOB-06, and MOB-07) would be expected to occur within existing transportation corridors. Construction of new electricity or hydrogen infrastructure would be expected to occur in areas where they would be compatible with the land uses, i.e., primarily industrial or commercial areas, and not in sensitive habitat areas. Activities resulting from the compliance with control measures would be subject to project-level review, including review of biological impacts under CEQA, as applicable.

The 2022 AQMP includes Control Measure BIO-01 which would assess the inventory of trees that are potential ozone precursors to determine whether tree planting programs to promote the planting of low VOC-emitting trees would be effective. These tree planting programs are expected to be limited to landscape vegetation and would not replace or remove native vegetation. Finally, improving air quality is expected to provide health benefits to plant and animal species in South Coast AQMD's jurisdiction.

Conclusion

Based upon these considerations, significant adverse biological resources are not expected from implementing the proposed project. Since no significant biological resources impacts were identified, no mitigation measures are necessary or required and therefore will not be further discussed in the Draft Program EIR.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
V.	**CULTURAL AND TRIBAL CULTURAL RESOURCES.** Would the project:				
a)	Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5?	☐	☐	☐	☑
b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?	☐	☐	☑	☐
c)	Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☐	☑	☐
d)	Cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code Section 21074, as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is either:				
	• Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?	☐	☐	☑	☐
	• A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in Public Resources Code Section 5024.1(c)? (In applying the criteria set forth in Public Resources Code Section 5024.1(c), the lead agency shall consider the significance of the resource to a California Native American tribe.)	☐	☐	☑	☐

Significance Criteria

Impacts to cultural resources will be considered significant if:

- The project results in the disturbance of a significant prehistoric or historic archaeological site or a property of historic or cultural significance, or tribal cultural significance to a community or ethnic or social group or a California Native American tribe.
- Unique resources or objects with cultural value to a California Native American tribe are present that could be disturbed by construction of the proposed project.
- The project would disturb human remains.

Discussion

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest available new emission sources. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero-emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

Appendix A lists all the 2022 AQMP control measures and identifies those control measures that have the potential to generate significant adverse impacts. The discussion in this section identifies the net effect on cultural and tribal cultural resources from implementing the proposed project.

V. a) No Impact. Existing laws are in place to protect and mitigate potential impacts to cultural resources. For example, the CEQA Guidelines state that generally, a resource shall be considered "historically significant" if the resource meets the criteria for listing in the California Register of Historical Resources, which include the following:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- Is associated with the lives of persons important in our past;
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- Has yielded or may be likely to yield information important in prehistory or history (CEQA Guidelines Section 15064.5).

Buildings, structures, and other potential culturally significant resources that are less than 50 years old are generally excluded from listing in the National Register of Historic Places, unless they are shown to be exceptionally important. Any of the buildings or structures that may be affected by the proposed control measures that are older than 50 years are buildings that are industrial or commercial facilities and would generally not be considered historically significant since they would not have any of the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possesses high artistic values. Further, historic resources generally consist of buildings, structures, improvements, and remnants associated with a significant historic event or person(s) and/or have a historically

significant style, design, or achievement. Damaging or demolition of historic resources is typically considered to be a significant impact. Impacts to historic resources can occur through direct impacts, such as destruction or removal, and indirect impacts, such as a change in the setting of a historic resource. Industrial and commercial properties are generally not historic resources, are not located in historic districts, and do not typically meet the criteria identified in CEQA Guidelines Section 15064.5(a)(3). Additionally, the proposed control measures are not expected to result in demolition of existing structures. Any construction activities pursuant to the 2022 AQMP would need to obtain city or county planning department approvals prior to commencement of any construction activities and would be subject to project-level review, including review of historic impacts under CEQA, if applicable. Therefore, the 2022 AQMP is not expected to cause any impacts to significant historic cultural resources.

V. b) & c) Less Than Significant Impact. Although most facilities affected by 2022 AQMP control measures would be located on previously disturbed sites where there is little likelihood of remaining identifiable artifacts, it is possible, that cultural or archaeological resources or human remains may nevertheless be discovered. While the likelihood of encountering cultural resources or human remains is low, there is still a potential that additional buried archaeological resources may exist. Any such impact would be eliminated by using standard construction practices and complying with state law including Public Resources Code Section 21083.2 and CEQA Guidelines Section 15064.5, which require the following, in the event that unexpected sub-surface resources were encountered:

- Conduct a cultural resources orientation for construction workers involved in excavation activities. This orientation will show the workers how to identify the kinds of cultural resources that might be encountered, and what steps to take if this occurred;
- Monitoring of subsurface earth disturbance by a professional archaeologist and a representative of the tribe with tribal cultural resources in the area, if cultural resources are exposed during construction;
- Provide the archaeological monitor with the authority to temporarily halt or redirect earth disturbance work in the vicinity of cultural resources exposed during construction, so the find can be evaluated and mitigated as appropriate; and,
- As required by State law in Public Resources Code Sections 5097.94 and 5097.98, prevent further disturbance if human remains are unearthed, until the County Coroner has made the necessary findings with respect to origin and disposition, and the Native American Heritage Commission has been notified if the remains are determined to be of Native American descent.

Construction-related activities are expected to be confined to the existing footprint of the affected facilities and developed areas that have already been fully developed and paved. Therefore, implementation of the 2022 AQMP control measures is not expected to require physical changes to the environment which may disturb paleontological or archaeological resources. Activities that result from compliance with the proposed control measures would be subject to project-level review, including review of cultural resources impacts under CEQA, as applicable.

As such, the proposed project will not cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5 or disturb any human remains, including those interred outside of formal cemeteries. Impacts would be less than significant.

V. d) Less Than Significant Impact. Regarding historical resources, refer to Section V. a). Commercial and industrial areas are generally not located in historic districts and implementation of the proposed control measures is not expected to cause a substantial adverse change in the significance of a historical resource. As part of releasing this CEQA document for public review and comment, the South Coast AQMD also provided a formal notice of the proposed project to all California Native American Tribes (Tribes) that requested to be on the Native American Heritage Commission's (NAHC) notification list per Public Resources Code Section 21080.3.1(b)(1). The NAHC notification list provides a 30-day period during which a Tribe may respond to the formal notice, in writing, requesting consultation on the proposed project.

In the event that a Tribe submits a written request for consultation during this 30-day period, the South Coast AQMD will initiate a consultation with the Tribe within 30 days of receiving the request in accordance with Public Resources Code Section 21080.3.1(b). Consultation ends when either: 1) both parties agree to measures to avoid or mitigate a significant effect on a Tribal Cultural Resource and agreed upon mitigation measures shall be recommended for inclusion in the environmental document [see Public Resources Code Section 21082.3(a)]; or, 2) either party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. [Public Resources Code Section 21080.3.2(b)(1)-(2) and Section 21080.3.1(b)(1)].

Furthermore, the provisions of CEQA, Public Resources Code Section 21080.3.1 et seq. (also known as AB 52), requires meaningful consultation with California Native American Tribes on potential impacts to tribal cultural resources, as defined in Public Resources Code Section 21074. Tribal cultural resources are sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either eligible or listed in the California Register of Historical Resources or local register of historical resources. As part of the AB 52 process, Native American tribes must submit a written request to the relevant lead agency if it wishes to be notified of projects that require CEQA public noticing and are within its traditionally and culturally affiliated geographical area.

Construction resulting from implementation of the control measures would need to obtain city or county planning department approvals prior to commencement of any construction activities and would be subject to project-level review, including separate tribal consultation pursuant to AB 52, as applicable, to address site-specific requests identified by the tribes. Therefore, impacts to tribal cultural resources are less than significant.

Conclusion

Based upon these considerations, significant adverse cultural or tribal cultural resources impacts are not expected from implementing the proposed project. Since no significant cultural and tribal cultural resources impacts were identified, no mitigation measures are necessary or required and therefore will not be further discussed in the Draft Program EIR.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
VI.	**ENERGY.** Would the project:				
a)	Conflict with or obstruct adopted energy conservation plans, a state or local plan for renewable energy, or energy efficiency?	☐	☐	☑	☐
b)	Result in the need for new or substantially altered power or natural gas utility systems?	☑	☐	☐	☐
c)	Create any significant effects on local or regional energy supplies and on requirements for additional energy?	☑	☐	☐	☐
d)	Create any significant effects on peak and base period demands for electricity and other forms of energy?	☑	☐	☐	☐
e)	Comply with existing energy standards?	☐	☐	☑	☐
f)	Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☑	☐
g)	Require or result in the relocation or construction of new or expanded electric power, natural gas or telecommunication facilities, the construction or relocation of which could cause significant environmental effects?	☑	☐	☐	☐

Significance Criteria

Impacts to energy resources will be considered significant if any of the following criteria are met:

- The project conflicts with adopted energy conservation plans or standards.
- The project results in substantial depletion of existing energy resource supplies.
- An increase in demand for utilities impacts the current capacities of the electric and natural gas utilities.
- The project uses energy resources in a wasteful and/or inefficient manner.

Discussion
The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest available new emission sources. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero-emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

Appendix A lists all the 2022 AQMP control measures and identifies those control measures that have the potential to generate significant adverse impacts. The discussion in this section identifies the net effect on energy from implementing the proposed project.

VI. a), e), & f) Less than Significant Impact. The 2022 AQMP includes control measures that would promote energy efficiency and conservation (e.g., ECC-02, ECC-03, and EGM-01), thereby providing potential energy conservation benefits. The proposed control measures do not require any action which would result in any conflict with an adopted energy conservation or efficiency plan or result in potentially significant environmental impacts due to wasteful energy use. Any existing or future facilities that implement the requirements of the proposed control measures would be expected to continue implementing any existing energy conservation plans that are currently in place regardless of whether the proposed project is implemented.

Additionally, the 2022 AQMP does not require any measures which would conflict with a state or local plan for renewable energy. Renewable energy sources include wind, small hydropower, solar, geothermal, biomass, and biogas. California's Renewables Portfolio Standard (RPS) was established in 2002 under SB 1078 and was amended in 2006 and 2011. The RPS program requires investor-owned utilities, electric service providers, and community choice aggregators to increase the use of eligible renewable energy resources to 33 percent of total procurement by 2020. Executive Order S-14-08, signed in November 2008, expanded the RPS to 33 percent renewable power by 2020. This standard was adopted by the legislature in 2011 (SB X1-2). SB 350 was signed into law September 2015 and establishes tiered increases to the RPS. SB 350 requires renewable energy resources of 40 percent by 2024, 45 percent by 2027, and 50 percent by 2030. SB 350 also set a new goal to double the energy-efficiency savings in electricity and natural gas through energy efficiency and conservation measures. On September 10, 2018, Governor Brown signed SB 100, which raised California's RPS requirements to 60 percent by 2030, with interim targets, and 100 percent by 2045. The bill also established a state policy requiring eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045. Under SB 100, California cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target. Electricity production from renewable sources is generally considered carbon neutral. Therefore, the control measures in the 2022 AQMP would not obstruct a state or local plan for renewable energy.

VI. b), c), d) & g) Potentially Significant Impact. Construction and operational activities associated with implementation of the 2022 AQMP will require additional energy sources, as explained in the following discussion.

Construction

Construction activities to implement the 2022 AQMP would consume energy, in the short term, due to gasoline and/or diesel fuel and electricity consumed by construction vehicles and equipment. Construction activities may require the use of energy-consuming construction equipment for grading, hauling, and building activity. Electricity use during construction activities is expected to vary depending on which phase of construction is occurring—with the majority of construction-related energy consumption resulting from fossil fuel use such as gasoline or diesel fuel occurring during activities such as grading and the majority of electricity use occurring during the later construction phases which may require more electric powered equipment. The use of electricity during construction would be temporary and would fluctuate according to the phase of construction.

Construction transportation energy use depends on the type of vehicle, number of trips, vehicle miles traveled, fuel efficiency of vehicles, and travel mode. Transportation energy use during construction activities is derived from the use of gasoline and diesel fuel consumption required to operate vendor trucks that provide deliveries of equipment and building materials, as well as worker vehicles as they commute to construction sites. Construction transportation energy could be potentially significant and will be discussed further in the Draft Program EIR.

Operation

Implementation of some proposed control measures may potentially increase energy demand in the region, as follows:

- Control measures that promote stationary source controls may increase electrical demand (e.g., R-CMB-01, R-CMB-02, R-CMB-03, R-CMB-04, C-CMB-01, C-CMB-02, C-CMB-03, C-CMB-04, C-CMB-05, L-CMB-01 through L-CMB-07, and L-CMB-10). These control measures may promote the use of low NOx and zero-emission sources and would increase the demand for electricity.
- Control measures that accelerate the penetration of low NOx and zero-emission vehicles may result in increased electrical and natural gas demand (e.g., FLX-02, MCS-01, EGM-01, EGM-03, MOB-02A, MOB-02B, MOB-04, MOB-05, MOB-06, MOB-07, MOB-08, MOB-09, and MOB-10).

The proposed control measures could result in an increase in electricity, hydrogen, and/or natural gas consumption during the operational phase. Electricity, hydrogen, and natural gas would be used to charge and fuel stationary and mobile sources. If the net effect of implementing AQMP control measures would be an increase in regional energy demand, in spite of implementing energy efficiency and energy conservation measures, the 2022 AQMP may result in the need for new or substantially altered power or natural gas utility systems, create significant effects on peak and base period demands for electricity and other forms of energy, and create significant effects on peak and base period demands for electricity and other forms of energy.

Conclusion

Based upon these considerations, significant impacts from energy use for construction related activities may occur. Significant operational energy impacts may also arise from using on-road and off-road mobile sources and well as stationary sources of low NOx and zero emission technologies. These impacts will be further analyzed in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
VII. GEOLOGY AND SOILS. Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
• Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	☐	☐	☑	☐
• Strong seismic ground shaking?	☐	☐	☑	☐
• Seismic-related ground failure, including liquefaction?	☐	☐	☑	☐
• Landslides?	☐	☐	☑	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☑	☐
c) Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☑	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☑	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☑
f) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?	☐	☐	☑	☐

Significance Criteria

Impacts on the geological environment will be considered significant if any of the following criteria apply:

- Topographic alterations would result in significant changes, disruptions, displacement, excavation, compaction or over covering of large amounts of soil.
- Unique geological resources (paleontological resources or unique outcrops) are present that could be disturbed by the construction of the proposed project.
- Exposure of people or structures to major geologic hazards such as earthquake surface rupture, ground shaking, liquefaction or landslides.
- Secondary seismic effects could occur which could damage facility structures, e.g., liquefaction.
- Other geological hazards exist which could adversely affect the facility, e.g., landslides, mudslides.
- Unique paleontological resources or sites or unique geologic features are present that could be directly or indirectly destroyed by the proposed project.

Discussion

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest available new emission sources. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero-emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

Appendix A lists all the 2022 AQMP control measures and identifies those control measures that have the potential to generate significant adverse impacts. The discussion in this section identifies the net effect on geology and soils resources from implementing the proposed project.

VII. a) Less Than Significant Impact. The proposed control measures would not directly or indirectly expose people or structures to earthquake faults, seismic shaking, seismic-related ground failure including liquefaction, lateral spreading, landslides, mudslides or substantial soil erosion. AQMP control measures affecting mobile sources, such as those that would accelerate the penetration of zero or low emission vehicles into fleets in the South Coast AQMD's jurisdiction, would not affect geology or soils because on-road vehicles would continue to operate on existing roadways. Although some AQMP control measures would accelerate the penetration of zero emission or low NOx off-road equipment, replacing one type of off-road engine with a lower emitting off-road engine would not be expected to affect construction activities as construction activities would occur for reasons other than complying with AQMP control measures.

Proposed control measures that promote implementation of rules or regulations for stationary sources would neither directly nor indirectly promote new land use projects that could be located on earthquake faults, seismic zones, etc. Seismic-related activities, in areas where facilities affected by the proposed control measures are located, would be part of the existing setting. Some minor structural modifications, however, at existing affected facilities may occur as a result of

installing control equipment or making process modifications. Such modifications would not likely require large heavy-duty construction equipment or substantial site modifications, as they would be expected to occur in existing industrial/commercial areas. In addition, affected facilities or modifications to affected facilities, including the construction of new electricity or hydrogen infrastructure, would be required to comply with relevant California Building Code requirements in effect at the time of initial construction or modification of a structure.

Southern California is an area of known seismic activity. The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. Surface rupture is the most easily avoided seismic hazard. Fault rupture generally occurs within 50 feet of an active fault line and is limited to the immediate area of the fault zone where the fault breaks along the surface. The main purpose of the Alquist-Priolo Earthquake Fault Zoning Act is to prevent construction of buildings used for human occupancy on the surface of active faults, in order to minimize the hazard of surface rupture of a fault to people and habitable buildings. Before cities and counties can permit development within Alquist-Priolo Earthquake Fault Zones, geologic investigations are required to show that a proposed development site is not threatened by surface rupture from future earthquakes. Therefore, any future project development would not subject people or structures to hazards arising from surface rupture of a known active fault.

The most significant geologic hazard is the potential for moderate to strong ground shaking resulting from earthquakes generated on the faults in seismically active southern California. It is anticipated that future projects would likely be subject to strong ground shaking due to earthquakes on nearby faults. The intensity of ground shaking would depend on the magnitude of the earthquake, distance to the epicenter, and the geology of the area between the epicenter and the project sites.

The California Building Code (CBC) as promulgated in the CCR, Title 24, Part 2, contains provisions to safeguard against major structural failures or loss of life caused by earthquakes or other geologic hazards. The CBC contains provisions for earthquake safety based on factors including the types of soil and rock onsite, and the strength of ground motion with specified probability of occurring at the site. The CBC requirements operate on the principle that providing appropriate foundations, among other aspects, helps to protect buildings from failure during earthquakes. The basic formulas used for the CBC seismic design require a determination of the seismic zone and site coefficient, which represent the foundation conditions at the site. Additionally, CBC Section 1803.2 requires a geotechnical investigation that must evaluate soil classification, slope stability, soil strength, position and adequacy of load-bearing soils, the effect of moisture variation on soil-bearing capacity, compressibility, liquefaction, and expansiveness, as necessary. The geotechnical investigation must be prepared by registered professionals (i.e., California Registered Civil Engineer or Certified Engineering Geologist). Recommendations of the report pertaining to structural design and construction recommendations for earthwork, grading, slopes, foundations, pavements, and other necessary geologic and seismic considerations must be incorporated into the design and construction of a new project. Compliance with the requirements of the CBC for structural safety during a seismic event would reduce hazards from strong seismic ground shaking to less than significant.

Liquefaction is a phenomenon that occurs when soil undergoes a transformation from a solid state to a liquified condition. It refers to loose, saturated sand or silt deposits that behave as a liquid and lose their load-supporting capability when strongly shaken. Loose granular soils and silts that are

saturated by relatively shallow groundwater are susceptible to liquefaction. When subjected to seismic ground shaking, affected soils lose strength during liquefaction and foundation failure can occur. Landslides are the downslope movement of geologic materials. Slope failures in the form of landslides are common during strong seismic shaking in areas of steep hills.

Any potentially affected facilities that are located in areas where there has been historic occurrence of liquefaction, e.g., coastal zones, or existing conditions indicate a potential for liquefaction, including expansive or unconsolidated granular soils and a high water table, may have the potential for liquefaction-induced impacts at the project sites. The CBC requirements consider liquefaction potential and establish more stringent requirements for building foundations in areas potentially subject to liquefaction. Compliance with the CBC requirements is expected to minimize the potential impacts associated with liquefaction. The issuance of building permits from the local cities or counties will assure compliance with the California Building Code requirements. Finally, no control measures would require the location of new, or relocation of existing facilities in areas prone to liquefaction. Land use decisions are under the authority of the local jurisdictions, typically cities or counties. The South Coast AQMD has no authority over land use decisions except to impose specific air pollution control requirements, which do not drive the land use approval process, and CEQA does not grant an agency new powers independent of the powers granted to the agency by other laws. [CEQA Guidelines Section 15040(b)]. Therefore, no significant impacts from liquefaction are expected and this potential impact will not be considered further.

VII. b) Less Than Significant Impact. Erosion is the movement of rock and soil from place to place and is a natural process. Common agents of erosion include wind and flowing water. Significant erosion typically occurs on steep slopes where stormwater and high winds can carry topsoil down hillsides. Erosion can be increased greatly by earthmoving activities if erosion-control measures are not used.

Soil erosion at construction sites could be caused by water, wind, or vehicles tracking soil offsite. However, projects that occur as a result of the 2022 AQMP are largely expected to occur at commercial and industrial areas and have a small construction footprint. Construction activities would be subject to local, regional, and state codes and requirements for erosion control and grading during construction. Projects would be subject to the National Pollution Discharge Elimination System (NPDES) permitting regulations, including the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP) as applicable. Construction contractors would be required to prepare and implement a SWPPP and associated Best Management Practices (BMPs) in compliance with the Construction General Permit (CGP) during grading and construction of any site that disturbs more than one acre of land. Adherence to the BMPs in the SWPPP and adherence with local, regional, and state codes and requirements for erosion control and grading during construction would reduce, prevent, or minimize soil erosion from grading and construction activities. Therefore, soil erosion impacts would be less than significant.

VII. c) & d) Less Than Significant Impact. Hazards from liquefaction and lateral spreading are addressed in Section VII. a). As concluded in that section, impacts would be less than significant, and no mitigation measures are necessary. Following is a discussion of the potential impacts resulting from other geologic and soil conditions.

Lateral Spreading
Lateral spreading is a phenomenon that occurs in association with liquefaction and includes the movement of non-liquefied soil materials.

Subsidence
The major cause of ground subsidence is the excessive withdrawal of groundwater. Soils with high silt or clay content are particularly susceptible to subsidence.

Expansive Soils
Expansive soils shrink or swell as the moisture content decreases or increases; the shrinking or swelling can shift, crack, or break structures built on such soils.

Geotechnical investigations, as required by the CBC, evaluate the potential for adverse impacts from lateral spreading, subsidence, and expansive soils and propose appropriate site design measures. Any grading, design, and construction work that may be associated with the proposed control measures would conform with the recommended design parameters of a geotechnical investigation. Cities and Counties would impose the recommended design parameters as a condition of any required planning approval, and compliance would be ensured through plan checks and development review processes. Compliance with the requirements of the CBC would reduce hazards to less than significant.

VII. e) No Impact. Septic tanks or other similar alternative wastewater disposal systems are typically associated with small residential projects in remote areas. The 2022 AQMP does not contain control measures that would promote the construction of new residential or other types of land use projects in remote areas. The South Coast AQMD has no land use approval authority. Consequently, construction of land uses that use septic systems would occur for reasons other than complying with AQMP control measures. Furthermore, AQMP control measures typically affect existing industrial or commercial facilities that already have appropriate sewerage facility connections and are subject to wastewater control requirements, typically through NPDES permits. Based on these considerations, the use of septic tanks or other alternative wastewater disposal systems will not be further evaluated in the Draft Program EIR.

VII. f) Less Than Significant Impact. Paleontological resources, commonly known as fossils, are the recognizable physical remains or evidence of past life forms found on earth in past geological periods — and can include bones, shells, leaves, tracks, burrows, and impressions. Ground-disturbing activities such as grading, or excavation have the potential to unearth paleontological resources. Most facilities affected by 2022 AQMP control measures would be located on previously disturbed industrial and commercial sites where there is little likelihood of identifiable artifacts, it is possible, that cultural or archaeological resources or human remains may nevertheless be discovered. New control equipment or infrastructure for zero emission and low NOx equipment are unlikely to require substantial soil excavation and would be located on already disturbed and developed industrial land uses. Therefore, no significant impact would occur. Further, projects implemented as a result of the 2022 AQMP would be subject to project-level review, including review of paleontological impacts under CEQA, as applicable. Therefore, implementation of the 2022 AQMP is not expected to directly or indirectly destroy a unique paleontological resource or site or unique geological feature.

Conclusion

Based upon these considerations, significant adverse geology and soils impacts are not expected from the implementation of control measures in the 2022 AQMP. Since no significant geology and soils impacts were identified, no mitigation measures are necessary or required and therefore will not be further discussed in the Draft Program EIR.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
VIII.	**HAZARDS AND HAZARDOUS MATERIALS.** Would the project:				
a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☑	☐	☐	☐
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☑	☐	☐	☐
c)	Emit hazardous emissions, or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☑	☐	☐	☐
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment?	☐	☐	☑	☐
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☑
f)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☑
g)	Significantly increased fire hazard in areas with flammable materials?	☐	☐	☑	☐

Significance Criteria

Impacts associated with hazards will be considered significant if any of the following occur:

- Non-compliance with any applicable design code or regulation.
- Non-conformance to National Fire Protection Association standards.
- Non-conformance to regulations or generally accepted industry practices related to operating policy and procedures concerning the design, construction, security, leak detection, spill containment or fire protection.
- Exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Response Planning Guideline (ERPG) 2 levels.

Discussion

The term "hazardous material" can be defined in different ways. For purposes of this environmental document, the definition of "hazardous material" is the one outlined in the Health and Safety Code Section 25501:

Hazardous materials include materials that, because of their quantity, concentration, or physical or chemical characteristics, pose a significant present or potential hazard to human health and safety or to the environment if released. Hazardous materials include, but are not limited to, hazardous substances, hazardous waste, and any material that would be injurious to the health and safety of persons or harmful to the environment if released.

"Hazardous waste" is a subset of hazardous materials, and the definition is essentially the same as in the Health and Safety Code Section 25117, and in the California Code of Regulations, Title 22, Section 66261.2:

Hazardous wastes are those that, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may either cause, or significantly contribute to an increase in mortality or an increase in serious illness, or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Exposure of the public or the environment to hazardous materials could occur through but not limited to the following means: improper handling or use of hazardous materials or waste, particularly by untrained personnel; transportation accident; environmentally unsound disposal methods; and/or fire, explosion, or other emergencies. The severity of potential effects varies with the activity conducted, the concentration and type of hazardous material or wastes present, and the proximity of sensitive receptors.

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest available new emission sources. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero-emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

Appendix A lists all the 2022 AQMP control measures and identifies those control measures that have the potential to generate significant adverse impacts. The discussion in this section identifies the net effect on hazard and hazardous materials from implementing the proposed project.

VIII. a), b) & c) Potentially Significant Impact. The 2022 AQMP has the potential to create direct or indirect hazard impacts as follows:

- Control measures that promote the use of SCR control equipment (e.g., L-CMB-01, L-CMB-02, L-CMB-03, L-CMB-06, L-CMB-07, L-CMB-08, and MCS-01) may result in the increased use of ammonia and related hazards associated with ammonia use, as well as generate additional hazardous waste.
- Control measures that increase the penetration of low NOx and zero-emission sources (e.g., L-CMB-04, L-CMB-05, L-CMB-06, CMB-10, EGM-01, EGM-03, MOB-04, MOB-05, MOB-06, MOB-07, MOB-09, and MOB-10) could increase the use and production of electricity and alternative fuels, requiring the use of natural gas and hydrogen, which are hazardous materials and could result in additional hazards impacts in the event of an accidental release of these materials into the environment. Some of these control measures could involve the use and disposal of batteries associated with zero emission cars and trucks, as well as filters.
- Control measures that promote the reformulation of coatings with lower-VOC content (CTS-01) may result in reformulated products with hazardous physical or chemical properties (e.g., highly flammable or acutely hazardous), which could create hazard impacts through the routine transport or disposal of these materials or through upset conditions involving the accidental release of these materials into the environment.

For these reasons, the potential hazard impacts will be further evaluated in the Draft Program EIR.

VIII. d) Less Than Significant Impact. Government Code Section 65962.5 typically refers to a list of facilities that may be subject to Resource Conservation and Recovery Act (RCRA) permits or site cleanup activities. RCRA facilities affected by the proposed control measures would be required to continue managing hazardous materials in accordance with federal, state and local regulations. Implementation of the proposed control measures is not expected to interfere with site cleanup activities due to historic operations or create additional site contamination. Numerous rules and regulations are in place to regulate the use of hazardous materials and require the clean-up of existing contaminated sites, including the following:

- **Transportation of Hazardous Waste.** Hazardous materials and hazardous wastes will be transported to and/or from the sites are required to comply with the U.S. Department of Transportation regulations listed in the Code of Federal Regulations (Title 49, Hazardous Materials Transportation Act); Caltrans standards; and the California Occupational Safety and Health Administration standards.
- **Resource Conservation and Recovery Act.** Hazardous waste generation, transportation, treatment, storage, and disposal will be conducted in compliance with the Subtitle C of the Resource Conservation and Recovery Act (RCRA) (Code of Federal Regulations, Title 40, Part 263), including the management of nonhazardous solid wastes and underground tanks storing petroleum and other hazardous substances. Designated Certified Unified Program Agencies would implement state and federal regulations for the following programs: 1) Hazardous Materials Release Response Plans and Inventory Program; 2) California

Accidental Release Prevention Program; 3) Aboveground Petroleum Storage Act Program; and 4) Underground Storage Tank Program; 5) Hazardous Waste Generator and Onsite Hazardous Waste Treatment Programs; and 6) Hazardous Materials Management Plan and Hazardous Material Inventory Statement Program.

- **California UST Regulations.** Underground storage tank (UST) repairs and/or removals will be conducted in accordance with the California UST Regulations (Title 23, Chapter 16 of the California Code of Regulations). Any unauthorized release of hazardous materials will require release reporting, initial abatement, and corrective actions that will be completed with oversight from the Regional Water Quality Control Board, Department of Toxic Substances Control, Fire Protection Districts, South Coast AQMD, and/or other regulatory agencies, as necessary.
- **Volatile Organic Compound Emissions.** South Coast AQMD Rule 1166 − Volatile Organic Compound Emissions from Decontamination of Soil, establishes requirements to control VOC emissions from excavating, grading, handling, and treating soil contaminated from leakage, spillage, or other means of VOC deposition. Rule 1166 stipulates that any parties planning on excavating, grading, handling, transporting, or treating soils contaminated with VOCs must first apply for and obtain, and operate pursuant to, a mitigation plan prior to commencement of operation. BACT is required during all phases of remediation of soil contaminated with VOCs. Rule 1166 also sets forth testing, record keeping and reporting procedures that must be followed at all times. Non-compliance with Rule 1166 can result in the revocation of the approved mitigation plan, the owner and/or the operator being served with a Notice of Violation for creating a public nuisance, or an order to halt the offending operation until the public nuisance is mitigated.
- **Earth Moving Activities of Soils Contaminated by Toxic Air Contaminants.** South Coast AQMD Rule 1466 − Control of Particulate Emissions from Soils with Toxic Air Contaminants, applies to any owner or operator conducting earth-moving activities of soil with applicable toxic air contaminant(s) that have been identified as contaminant(s) of concern at a site. The provisions in Rule 1466 include ambient PM10 monitoring, dust control measures, notification, signage, and recordkeeping requirements. The rule does not apply to earth-moving activities of soil with applicable toxic air contaminant(s) of less than 50 cubic yards.

Excavation activities that may occur are expected to be minimal as it would be confined to existing industrial and commercial facilities that have been previously developed. Installation of equipment such as air pollution control equipment is not expected to require substantial ground disturbance to create compliant foundations. Projects that would require a grading permit prior construction infrastructure would be subject to local regulations. Activities resulting from implementation of the proposed control measures would also be subject to project-level review, including review of hazard impacts under CEQA, as applicable. Therefore, significant hazards from sites that might be included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 would be less than significant. Therefore, this topic will not be further evaluated in the Draft Program EIR.

VIII. e) No Impact. The State Aeronautics Act of the California Public Utilities Code establishes statewide requirements for the airport land use compatibility planning and requires nearly every county to create an Airport Land Use Commission or an alternative process with a designated responsible agency or agencies. The main goal of the Airport Land Use Commission (ALUC) or

designated responsible agency is to protect the public health, safety and welfare by ensuring the orderly expansion of airports and the adoption of land use measures that minimize the public's exposure to extensive noise and safety hazards within areas around airports. Compatibility issues are identified and analyzed in Airport Land Use Compatibility Plans for each airport, as applicable, and implementation of these plans promotes compatible development around the airports. ALUCs and/or designated responsible agencies would review land use compatibility issues for any projects that may occur due to the implementation of the proposed control measures that are within airport safety zones including safety, noise, overflight and airspace protection.

Furthermore, Federal Aviation Administration regulation, 14 CFR Part 77 – Safe, Efficient Use and Preservation of the Navigable Airspace, provides information regarding the types of projects that may affect navigable airspace. Projects may adversely affect navigable airspace if they involve construction or alteration of structures greater than 200 feet above ground level within a specified distance from the nearest runway or objects within 20,000 feet of an airport or seaplane base with at least one runway more than 3,200 feet in length and the object would exceed a slope of 100:1 horizontally (100 feet horizontally for each one foot vertically from the nearest point of the runway). As such, the installation of air pollution control equipment or measures within industrial and commercial areas is not expected to involve construction or alteration of structures greater than 200 feet or affect navigable airspace. Therefore, projects located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would not result in a safety hazard for people residing or working in the project area.

VIII. f) No Impact. Local emergency management plans, evacuation plans, and/or safety elements included in General Plans typically include emergency evacuation route maps that help residents evacuate during emergencies while simultaneously allowing first responders' access into a disaster area without congestion and gridlock. Identified routes consist mostly of interstate freeways and state highways. The maps are intended to support pre-emergency identification of options for ingress and egress. The specific emergency routes employed in the case of an actual emergency are usually designated by evacuation authorities based on emergency conditions and are communicated to residents at the time of the emergency.

Local emergency management plans or hazard mitigation plans address how counties and cities should respond to extraordinary events or disasters (e.g., aviation accidents, civil unrest and disobedience/riot, dam and reservoir failure, disease, earthquake, flood, etc.), from the preparedness phase through recovery. County or city fire and law enforcement departments are responsible for coordinating all emergency management activities and implementing local emergency management or hazard mitigation plans.

Implementing certain control measures may result in the need for additional storage of hazardous materials (e.g., ammonia) at industrial facilities. Such modifications may require revisions to the emergency response plans at these facilities if new hazardous materials are introduced to a facility. However, these facility modifications would not be expected to interfere with emergency response procedures. For the proposed control measures that will affect residential land uses, any modifications needed involving the replacement of water heaters, space heaters, cooling devices, and other combustion sources would occur inside the buildings or in the case of energy efficiency improvements such as installing solar, on the roofs of residential buildings and would not require the use of hazardous materials and would also not be expected to interfere with emergency response procedures. Further, the 2022 AQMP is not expected to cause physical changes to roadways or alter traffic patterns on highways and freeways. Any construction activities associated

with the proposed project would occur within the boundaries of industrial/commercial facilities and/or residential land uses and would not occur on any major arterials or highways that may be used during potential emergency situations. Activities resulting from the compliance of the proposed project would also be required to provide adequate access for emergency vehicles per the California Fire Code. Any short-term temporary impacts on adjacent roadways would be temporary and limited to the construction period. Therefore, the 2022 AQMP is not expected to impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

VIII. g) Less than Significant Impact. The California Fire Code and CBC set standards intended to minimize risks from flammable or otherwise hazardous materials. Local jurisdictions are required to adopt the uniform codes or comparable regulations. Local fire agencies require permits for the use or storage of hazardous materials and permit modifications for proposed increases in their use. Permit conditions depend on the type and quantity of the hazardous materials at the facility. Permit conditions may include, but are not limited to, specifications for sprinkler systems, electrical systems, ventilation, and containment. The fire departments make annual business inspections to ensure compliance with permit conditions and other appropriate regulations. Further, businesses are required to report increases in the storage or use of flammable and otherwise hazardous materials to local fire departments. Local fire departments ensure that adequate permit conditions are in place to protect against the potential risk of upset. In addition, the National Fire Protection Association has special designations for deflagrations (e.g., explosion prevention) when using materials that may be explosive. Therefore, impacts associated with the 2022 AQMP on fire hazards would be less than significant.

Conclusion

Based upon these considerations, potentially significant adverse hazards and hazardous materials impacts could occur due to the increased use of hazardous materials, including ammonia, natural gas and alternative fuels. Impacts associated with being located on a site listed pursuant to Government Code Section 65962.5, being located within an airport land use plan or two miles from an airport, interference with an emergency response plan or the use of flammable materials are not expected from implementing the proposed project. The impacts of the project on hazards and hazardous materials will be addressed in the Draft Program EIR.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
IX.	**HYDROLOGY AND WATER QUALITY.** Would the project:				
a)	Violate any water quality standards, waste discharge requirements, or otherwise substantially degrade surface or ground water quality?	☑	☐	☐	☐
b)	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☑	☐
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
	• Result in substantial erosion or siltation on- or off-site?	☐	☐	☐	☑
	• Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☐	☑
	• Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☑
	• Impede or redirect flood flows?	☐	☐	☐	☑
d)	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☑
e)	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☑	☐

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
f)	Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, facilities or new storm water drainage facilities, the construction or relocation of which could cause significant environmental effects?	☑	☐	☐	☐
g)	Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☑	☐	☐	☐
h)	Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☑	☐	☐	☐

Significance Criteria

Potential impacts on water resources will be considered significant if any of the following criteria apply:

Water Demand

- The existing water supply does not have the capacity to meet the increased demands of the project, or the project would use more than 262,820 gallons per day of potable water.
- The project increases demand for total water by more than five million gallons per day.

Water Quality

- The project will cause degradation or depletion of ground water resources substantially affecting current or future uses.
- The project will cause the degradation of surface water substantially affecting current or future uses.
- The project will result in a violation of National Pollutant Discharge Elimination System (NPDES) permit requirements.
- The capacities of existing or proposed wastewater treatment facilities and the sanitary sewer system are not sufficient to meet the needs of the project.
- The project results in substantial increases in the area of impervious surfaces, such that interference with groundwater recharge efforts occurs.
- The project results in alterations to the course or flow of floodwaters.

Discussion

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest available new emission sources. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero-emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

Appendix A lists all the 2022 AQMP control measures and identifies those control measures that have the potential to generate significant adverse impacts. The discussion in this section identifies the net effect on hydrology and water quality from implementing the proposed project.

IX. a) and h) Potentially Significant Impact. Implementation of the proposed control measures may result in increased or altered wastewater streams, as follows:

- Control measures that promote reformulation of coatings, solvents, adhesives or lubricants (CTS-01). It is not expected that there would be a substantial increase in the volume of wastewater generated by facilities affected by the control measures, but there may be a change in the nature and toxicity of wastewater effluent.
- Control measures that may result in an increase in steam and potential increase in water use if new steam turbines are installed (e.g., L-CMB-05, and L-CMB-06).
- Control measures that promote the use of alternative fuels may have the potential to create water quality impacts in the event of accidental releases of alternative fuels during transport, storage or handling (e.g., MOB-05, MOB-06, MOB-07, and MOB-08).
- Control measures that result in additional water use from composting handling (e.g., MCS-02).

Implementation of the proposed control measures may result in the increased use of water. In addition, some of the proposed control measures may result in the generation of increased volumes of wastewater that could adversely affect water quality standards or waste discharge requirements resulting in the need for new or increased wastewater treatment capacity. Therefore, these topics will be evaluated further in the Draft Program EIR.

IX. b) and e) Less Than Significant Impact. Implementation of the proposed control measures may result in an increased demand for water. However, because of existing state regulations and requirements, the impact on ground water supplies is expected to be less than significant.

On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package, composed of AB 1739 (Dickinson), SB 1168 (Pavley), and SB 1319 (Pavley), collectively known as the Sustainable Groundwater Management Act (SGMA). The SGMA sets a framework for sustainable, groundwater management. SGMA requires governments and water agencies of high and medium priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. SGMA empowers local agencies to form Groundwater Sustainability

Agencies (GSAs) to manage basins sustainably and requires those GSAs to adopt Groundwater Sustainability Plans (GSPs) for crucial groundwater basins in California. Activities undertaken to comply with the 2022 AQMP would be located in areas that are governed under a GSP. However, activities that result from compliance with the proposed project would still be required to comply with applicable groundwater quality standards and will be expected to comply with the applicable GSPs, and would not be expected to substantially interfere with implementation of any GSP. Therefore, the 2022 AQMP would not conflict with or obstruct the implementation of a groundwater management plan and impacts would be less than significant.

IX. c) No Impact. Implementation of the proposed control measures would not be expected to generate construction of new structures that could alter existing drainage patterns by altering the course of a river or stream that would result in substantial erosion, siltation, or flooding on or offsite, increase the rate or amount of surface runoff that would exceed the capacity of existing or planned stormwater drainage systems, etc. Although minor modifications might occur at commercial or industrial facilities affected by the proposed control measures, these facilities have, typically, already been graded and the areas surrounding them have likely already been paved over or landscaped. New structures would be expected to occur in industrial or commercials areas (e.g., alternative fuel stations) and would not be developed in streams, rivers, or other drainage systems. As a result, further modifications at affected facilities that may occur as a result of implementing the proposed control measures are not expected to alter existing drainage patterns or stormwater runoff. Since this potential adverse impact is not considered to be significant, it will not be further evaluated in the Draft Program EIR.

IX. d) No Impact. Implementation of the proposed control measures would not include the construction of new or relocation of new structures or facilities and, as such, would not require the placement of new structures within a tsunami or seiche zones area.

A seiche is an oscillating surface wave in a restricted or enclosed body of water, generated by ground motion, usually during an earthquake. Seiches are of concern for water storage facilities because inundation from a seiche can occur if the wave overflows a containment wall, such as the wall of a reservoir, water storage tank, dam, or other artificial body of water. Activities undertaken to comply with control measures that are developed as part of the 2022 AQMP may be at risk of inundation due to seiches however any flood event of this nature would be part of the existing setting that is present for reasons unrelated to implementation of the 2022 AQMP.

Tsunamis are a type of earthquake-induced flooding produced by large-scale sudden disturbances of the sea floor. Tsunami waves interact with the shallow sea floor when approaching a landmass, resulting in an increase in wave height and a destructive wave surge into low-lying coastal areas. Activities undertaken to comply with control measures that are part of the 2022 AQMP may be at risk of inundation due to tsunamis if they occur at existing locations which are at risk for tsunamis. However, any tsunami hazard would be part of the existing setting and unrelated to implementation of the 2022 AQMP.

It should be noted that activities undertaken to comply with control measures in the 2022 AQMP would be subject to project-level review, including the review of impacts due to inundation under CEQA, as applicable. Furthermore, the storage of hazardous materials onsite would be governed by existing regulations of several agencies, including the U.S. EPA, U.S. Department of Transportation, the California RWQCB, California Division of Occupational Safety and Health, and local or regional environmental health departments and fire departments. Strict adherence to

all local and regional emergency response plan requirements would also be required. In addition, implementing the proposed control measures in the 2022 AQMP would not be expected to violate any regulatory requirements in regard to storage of hazardous materials onsite. Based on the preceding discussion, activities that result from compliance with the proposed project would not release pollutants as the result of floods, tsunami, or seiche. Therefore, no impact would occur and no mitigation measures are necessary.

IX. f) and g) Potentially Significant Impact. As indicated in Section IX. a), implementation of the proposed control measures may result in the generation of increased volumes of wastewater that could adversely affect water quality standards or waste discharge requirements resulting in the need for new or increased wastewater treatment capacity. Implementation of the proposed control measures may result in an increased demand for water, as follows:

- Control measures that promote reformulation of coatings, solvents, adhesives or lubricants (CTS-01). It is not expected that there would be a substantial increase in the volume of wastewater generated by facilities affected by the control measures, but there may be a change in the nature and toxicity of wastewater effluent.
- Control measures that may result in an increase in steam and potential increase in water use if new steam turbines are installed (e.g., L-CMB-05, and L-CMB-06).
- Control measures that promote the use of alternative fuels may have the potential to create water quality impacts in the event of accidental releases of alternative fuels during transport, storage or handling (e.g., MOB-05, MOB-06, MOB-07, and MOB-08).
- Control measures that result in additional water use from composting handling (e.g., MCS-02).

These proposed control measures may require additional water, may require expansion of existing water supply facilities or require new water supply facilities. Therefore, this topic is potentially significant and will be evaluated further in the Draft Program EIR.

Conclusion

Based upon these considerations, significant hydrology and water quality impacts may occur due to the increase in water demand and wastewater discharge due to implementation of some of the 2022 AQMP control measures. These impacts will be further analyzed in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
X. LAND USE AND PLANNING. Would the project:				
a) Physically divide an established community?	☐	☐	☐	☑
b) Cause an environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☑

Significance Criteria
Land use and planning impacts will be considered significant if the project conflicts with the land use and zoning designations established by local jurisdictions.

Discussion
The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest available new emission sources. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero-emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

Appendix A lists all the 2022 AQMP control measures and identifies those control measures that have the potential to generate significant adverse impacts. The discussion in this section identifies the net effect on land use from implementing the proposed project.

X. a) No Impact. Implementation of the proposed control measures that promote the installation of stationary source control equipment at existing commercial or industrial facilities would not create land use impacts because construction of major new developments (e.g., new neighborhoods) affecting land use planning would occur for reasons other than implementation of the proposed control measures and could occur regardless of the 2022 AQMP. Facilities required to support the 2022 AQMP control measures would be expected to occur in industrial and commercial areas that would be compatible with such development. Similarly, for the proposed control measures that will affect residential land uses, any modifications needed would occur inside the buildings or in the case of energy efficiency improvements such as installing solar, on the roofs of residential buildings, and would not be expected to require new residential developments. Furthermore, the South Coast AQMD has no land use approval authority except to impose air pollution control requirements, which do not drive the land use approval process; this

authority lies within the jurisdiction of public agencies with general government authority such as cities or counties. Since the 2022 AQMP does not require construction of major new land use developments in any areas of the South Coast AQMD's jurisdiction, it is not expected to physically divide any established communities within this region.

EGM-01 would affect new or redevelopment projects but would not affect the land use or zoning aspects of projects. EGM-01 would minimize air quality impacts but would not impact planning decisions made by local jurisdictions so no impacts on land use would be expected. Implementation of the proposed control measures that accelerate the use of zero emission or low NOx mobile sources or the use of alternative clean fuels would not create land use impacts because on-road vehicles would continue to operate on existing roadways and would not require construction of new roadways that could physically divide communities.

Potential land use impacts associated with the 2022 AQMP could be associated with the construction of support systems (e.g., catenary overhead electrical lines or magnetic infrastructure related to operation of zero- and low NOx transport systems). For purposes of evaluating potential land use impacts, it has been assumed herein that no new rail or truck traffic routes would be constructed, but rather that existing truck and rail routes/corridors would be modified. The truck and rail corridors likely to be involved are primarily associated with rail yards and intermodal facilities in industrial zones within the Southern California area. Examples of these areas include, but are not limited to, the Port of Los Angeles, Port of Long Beach, and industrial areas in and around container transfer facilities near the Terminal Island Freeway, along the Alameda Corridor, as well as inland rail yards near downtown Los Angeles. Since only existing transportation routes would likely be modified (e.g., electric lines installed) and no new transportation routes are anticipated, no land use conflicts, or inconsistencies with any general plan, specific plan, local coastal program, or zoning ordinance are expected.

Construction activities would be required to install these systems and would require the use of heavy construction equipment, e.g., backhoes, cranes, front end loaders, and other types of equipment, for installation. These construction activities are expected to occur along heavily travelled roadways near the existing ports and rail yards. While these projects would require local approvals, they are not expected to result in significant land use impacts as they would occur within or adjacent to existing transportation corridors.

It is possible that construction activities could temporarily disrupt or divide a community. However, because construction of new traffic routes/corridors or widening of existing routes/corridors are not expected to be required as part of the proposed project, once construction activities are finished and the physical barriers removed, no long-term land use impacts are anticipated. The installation of electric and/or magnetic infrastructure is only expected to occur along existing roadways/freeways and transportation corridors, which are already heavily traveled and in many cases, may already divide existing communities. The installation of the electric and/or magnetic infrastructure is not expected to create any new barriers or further physically divide an established community, following the completion of construction.

Activities that result from compliance with the proposed project would be subject to project-level review that would assess consistency with these adopted land use regulations, including review of impacts to land use and planning under CEQA, as applicable. Any proposed modification to an existing rail or truck traffic route/corridor will require a separate CEQA evaluation. No significant land use impacts were identified because the proposed control measures would be expected to

comply with, and not interfere with, applicable land use plans, policies, or regulations of an agency with jurisdiction over the project (including, but not limited to the general plans, specific plans, local coastal programs or zoning ordinances).

No provisions of the proposed project would directly affect applicable land use plans, policies or regulations. The South Coast AQMD is specifically excluded from infringing on existing city or county land use authority. [Health and Safety Code Section 40414]. Land use and other planning considerations are determined by local governments and no present or planned land uses in the region or planning requirements will be altered by the proposed project. There are existing links between population growth, land development, housing, traffic and air quality. SCAG's 2020 RTP/SCS (SCAG, 2020) accounts for these links when designing ways to improve air quality, transportation systems, land use, compatibility and housing opportunities in the region. Land use planning is handled at the local level and contributes to development of the 2022 AQMP's growth projections. The 2022 AQMP does not affect local government land use planning decisions; instead, it incorporates local land use planning decisions and population growth. The proposed control measures in the 2022 AQMP complement SCAG's Regional Comprehensive Plan. Therefore, the proposed project is not expected to result in significant land use impacts.

Conclusion

Based upon these considerations, significant land use and planning impacts are not expected from implementing the proposed project. Since no significant land use and planning impacts were identified, no mitigation measures are necessary or required and therefore will not be further discussed in the Draft Program EIR.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XI.	**MINERAL RESOURCES.** Would the project:				
a)	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☑
b)	Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☑

Significance Criteria

Project-related impacts on mineral resources will be considered significant if any of the following conditions are met:

- The project would result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.
- The proposed project results in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Discussion

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest available new emission sources. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero-emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

Appendix A lists all the 2022 AQMP control measures and identifies those control measures that have the potential to generate significant adverse impacts. The discussion in this section identifies the net effect on mineral resources from implementing the proposed project.

XI. a) & b) No Impact. There are no provisions in the 2022 AQMP that would result in the loss of availability of a known mineral resource of value to the region and the residents of the state, or of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan. Some examples of mineral resources are gravel, asphalt, bauxite, and gypsum, which are commonly used for construction activities or industrial processes. The 2022 AQMP provides incentives for the penetration of low NOx and zero emission technologies which

are not expected to result in an increase in the use of mineral resources. The proposed project is not expected to require substantial construction activities and would not have any significant effects on the use of important minerals, such as those described above (with the exception of the use of a minimal amount of gravel and asphalt for limited paving activities), nor would the project result in covering over or otherwise making mineral resources unrecoverable. Therefore, no new demand for mineral resources is expected to occur and no significant adverse mineral resources impacts from implementing the proposed project are anticipated.

Conclusion

Based upon these considerations, significant adverse mineral resource impacts are not expected from implementing the proposed project. Since no significant mineral resource impacts were identified, no mitigation measures are necessary or required and therefore will not be further discussed in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XII. NOISE. Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☑	☐	☐	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☑	☐	☐	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☑

Significance Criteria

Noise impact will be considered significant if:

- Construction noise levels exceed the local noise ordinances or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three decibels (dBA) at the site boundary. Construction noise levels will be considered significant if they exceed federal Occupational Safety and Health Administration (OSHA) noise standards for workers.
- The proposed project operational noise levels exceed any of the local noise ordinances at the site boundary or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three dBA at the site boundary.

Discussion

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest available new emission sources. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero-emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

Appendix A lists all the 2022 AQMP control measures and identifies those control measures that have the potential to generate significant adverse impacts. The discussion in this section identifies the net effect on noise from implementing the proposed project.

XII. a) Potentially Significant Impact. Implementation of the proposed control measures would promote installation of control equipment or modification of operational practices at existing commercial or industrial facilities, typically located in appropriately zoned industrial or commercial areas. Although installation of some control equipment may generate noise impacts, control equipment would typically be installed within the boundaries of industrial and commercial facilities. However, once construction is complete, air pollution control equipment does not typically generate high noise levels. Similarly, for the proposed control measures that will affect residential land uses, any modifications needed involving the replacement of water heaters, space heaters, cooling devices, and other combustion sources would occur inside the buildings or in the case of energy efficiency improvements such as installing solar, on the roofs of residential buildings. Although installation of these equipment may generate noise impacts, once construction is complete, operation of the new equipment does not typically generate high noise levels.

Ambient noise levels associated with commercial and industrial areas are typically driven by noise from freeway and/or highway traffic in the area and heavy-duty equipment used for materials manufacturing or processing at nearby facilities. It is not expected that installation of air pollution control equipment would substantially increase ambient [operational] noise levels in an area, either permanently or intermittently, or expose people to excessive noise levels that would be noticeable above and beyond existing ambient levels. The proposed measures that could increase the use of alternative fuels could result in the construction of new industrial facilities, such as hydrogen plants, which are sources of industrial noise. Commercial and industrial facilities are typically located in areas with high levels of local ambient noise, building walls promote noise dampening, and noise levels attenuate with separation distance. Affected facilities would be required to comply with local noise ordinances, which may require construction of noise barriers or other noise control devices. Noise associated with potential construction activities is potentially significant and will be evaluated in the Draft Program EIR.

Implementation of 2022 AQMP control measures that could result in the construction of electric or magnetic infrastructure (e.g., EGM-01, MOB-02A, MOB-02B, MOB-06 and MOB-07) could increase noise by concentrating traffic along specific corridors. Construction activities would be required to install these systems and would require the use of heavy equipment to install the electric or magnetic systems. Heavy construction equipment such as backhoes, cranes, aerial lifts, front end loaders, and other types of equipment would be required for installation. The electrical or magnetic systems would be installed within or adjacent to existing roadways. These construction activities are expected to occur along heavily travelled roadways (e.g., roads near the ports and near intermodal train yards). Construction activities are expected to generate noise due to the presence of heavy construction equipment. Some of the construction activities could occur near residential areas, e.g., communities adjacent to the ports and Alameda Corridor. Therefore, noise impacts associated with the construction activities are potentially significant and will be evaluated in the Draft Program EIR.

Implementation of the proposed control measures that promote the acceleration of zero emission electric vehicle technologies would result in noise reductions. Electric vehicles generate less noise than diesel or gasoline engines because the electric engines have substantially fewer moving parts than conventional engines. Therefore, increasing the fleet of electric vehicles while removing

diesel or gasoline engines from the fleet is expected to result in a reduction in noise from on-road vehicles.

XII. b) Potentially Significant. Operation of the proposed project would not generate substantial levels of vibration because there are no notable sources of vibrational energy associated with the proposed project. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero emission mobile sources; establish greater control of industrial stationary sources; control indirect sources of emissions; develop incentives to remove/replace higher emitting equipment; improve detection and procedures; and establish educational and outreach programs. Implementation of the proposed control measures would not result in an increase in groundborne vibration levels because air pollution control equipment is not typically vibration intensive equipment. As noted above, early penetration of zero emission electric vehicles would also not generate groundborne vibration impacts because such vehicles have fewer moving parts that could generate vibrations compared to gasoline or diesel vehicles. The proposed project would control emissions from mobile sources, but would not be expected to result in an increase in mobile sources (e.g., trains or trucks) that produce significant groundborne vibration impacts. Consequently, the proposed control measures would not cause substantial noise or excessive groundborne vibration impacts. Operational noise impacts, therefore, will not be further evaluated in the Draft Program EIR.

Construction activities generate varying degrees of ground vibration, depending on the construction procedures, construction equipment used, and proximity to vibration-sensitive uses. The generation of vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibrations at moderate levels, to slight damage at the highest levels. Vibration associated with ground-borne sources is generally not a common environmental problem. However, construction activities such as blasting, pile driving, and heavy earthmoving equipment are potential sources of vibration during construction activities. In general, demolition of structures during construction generates the highest levels of vibration. The proposed project could result in vibration associated with construction activities including pile driving in areas where the geological conditions require piles for stable foundations for new infrastructure, and potential demolition activities. Although these activities are limited to the construction phase of projects, vibration is potentially significant and will be evaluated in the Draft Program EIR.

XII. c) Less Than Significant Impact. Although some of the facilities affected by the proposed project may be located at sites within an airport land use plan, or within two miles of a public airport or private airstrip, the addition of new or modification of existing control equipment would not expose people residing or working in the project area to appreciably greater noise levels. All noise producing equipment must comply with local noise ordinances and applicable OSHA or Cal/OSHA workplace noise reduction requirements. Therefore, less than significant noise impacts are expected to occur at sites located within an airport land use plan, or within two miles of an airport or airstrip.

Conclusion

Based upon the above considerations, significant adverse project-specific noise impacts could occur during construction activities associated with implementation of the 2022 AQMP control measures and, therefore, will be further evaluated in the Draft Program EIR. Operational noise impacts are expected to be less than significant and will not be further evaluated.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XIII.	**POPULATION AND HOUSING.** Would the project:				
a)	Induce substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	☐	☐	☐	☑
b)	Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑

Significance Criteria

Impacts of the proposed project on population and housing will be considered significant if the following criteria are exceeded:

- The demand for temporary or permanent housing exceeds the existing supply.
- The proposed project produces additional population, housing or employment inconsistent with adopted plans either in terms of overall amount or location.

Discussion

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest available new emission sources. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero-emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

Appendix A lists all the 2022 AQMP control measures and identifies those control measures that have the potential to generate significant adverse impacts. The discussion in this section identifies the net effect on population and housing from implementing the proposed project.

XIII. a) & b) No Impact. The proposed project is not anticipated to generate any significant effects, either direct or indirect, on the population or population distribution of people living in the South Coast AQMD's jurisdiction as no additional workers are anticipated to be required to comply with the implementations of the proposed control measures. As published in the Connect

SoCal (the 2020 – 2045 RTP/SCS), the population in the SCAG region (which includes all of the South Coast AQMD jurisdiction and the non-South Coast AQMD-jurisdiction portions of Los Angeles and San Bernardino counties, and all of Ventura and Imperial counties) is expected to grow by 3.7 million people by 2045 (SCAG, 2020). Population growth within South Coast AQMD's jurisdiction is projected to increase regardless of the implementation of proposed control measures.

Consistent with past experience, it is expected that the existing labor pool within the southern California area would accommodate the labor requirements for any modifications requiring construction at affected facilities.

It is expected that few or no new employees would need to be hired at affected facilities to operate and maintain new control equipment because air pollution control equipment is typically not labor intensive equipment. In the event that new employees are hired, it is expected that the existing local labor pool in the South Coast AQMD jurisdiction can accommodate the increase in worker demand that might occur as a result of implementation the proposed control measures. Based on the above, it is not expected that the implementation of the proposed control measures would induce population growth resulting in the need for new housing, roads or other infrastructure. As such, implementation of the proposed control measures is not expected to result in changes in population densities or induce significant growth in population. The population is expected to grow regardless of implementing the proposed control measures. Implementation of proposed mobile source control measures, such as those that would accelerate the penetration of zero emission or low NOx vehicles within the South Coast AQMD jurisdiction, would not induce population growth because there is a finite number of drivers in the region at any one time; drivers who purchase low or zero emission vehicles would not be driving the old high emitting vehicles at the same time they are driving the new low emitting vehicles. Although projected increases in population in the region may result in the continued use of the replaced high emitting vehicles, as already noted, future population growth in the region would occur for reasons other than complying with the proposed control measures.

Additionally, the proposed control measures contain no provisions that would cause displacement of substantial numbers of people or housing necessitating construction of replacement housing elsewhere. As noted in the discussions under "Land Use and Planning," the proposed 2022 AQMP contains control measures that may result in installing control equipment on stationary sources at existing commercial or industrial facilities and accelerating the penetration of zero emission or low NOx mobile sources. Construction of new structures affecting land use planning would occur for reasons other than complying with the proposed control measures. The installation of electric and/or alternative fuel infrastructure is expected to occur along existing roadways/freeways and transportation corridors. These roads and freeways already exist and are heavily traveled. The installation of electric and/or alternative fuel infrastructure is not expected to displace existing housing. As a result, the 2022 AQMP would not be expected to affect the location of people or housing in any areas of the South Coast AQMD jurisdiction.

Conclusion

Based upon these considerations, no population and housing impacts are not expected from the implementation of the proposed 2020 AQMP control measures. Since no significant population and housing impacts were identified, no mitigation measures are necessary or required and, therefore, population and housing impacts will not be further discussed in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XIV. PUBLIC SERVICES. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:				
a) Fire protection?	☐	☐	☑	☐
b) Police protection?	☐	☐	☐	☑
c) Schools?	☐	☐	☐	☑
d) Parks?	☐	☐	☐	☑
e) Other public facilities?	☐	☐	☐	☑

Significance Criteria

Impacts on public services will be considered significant if the project results in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response time or other performance objectives.

Discussion

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest available new emission sources. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero-emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

Appendix A lists all the 2022 AQMP control measures and identifies those control measures that have the potential to generate significant adverse impacts. The discussion in this section identifies the net effect on public services from implementing the proposed project.

XIV. a) Less Than Significant Impact. Fire protection and emergency medical services would be provided to affected facilities and residential developments by local county and city fire departments. Although the implementation of the proposed control measures would use alternative fuels (e.g., hydrogen), alternative fuels would displace gasoline and diesel fuels. As first responders to emergency situations, fire departments are trained to respond to a variety of situations related to hazardous materials. Large industrial facilities (e.g., electric generating plants and refineries) have on-site fire response personnel and the local fire departments provide assistance to the on-site personnel. Therefore, no increase in calls for fire protection, and emergency medical service would be expected from implementation of the proposed control measures. New residential development would be required to comply with the proposed control measures (e.g., R-CMB-01, R-CMB-02, R-CMP-03, and R-CMB-04) and would be subject to project-level review, including review of fire protection impacts under CEQA, as applicable.

Furthermore, all activities undertaken as a result of implementing the proposed control measures would be required to comply with fire-related safety features in accordance with the applicable provisions of the adopted California Fire Code and any county or city ordinances, and standard regarding fire prevention and suppression measures related to water improvement plans, fire hydrants, fire access, and water availability.

Based on the preceding, implementation of the proposed control measures would not adversely affect the ability of local fire protection to provide adequate service and impacts would be less than significant and no mitigation measures are necessary.

XIV. b), c) d) & e) No Impact. Implementation of the proposed control measures would not result in an increase in calls for police protection. Implementation of the proposed control measures occur at existing facilities or transition to cleaner emitting equipment at new developments but would not facilitate the construction of new developments. At industrial facilities, on-site security is in place and would continue to provide security for existing facilities with the same demand for police department support as is currently needed. In addition, new residential development would be required to comply with the proposed control measures (e.g., R-CMB-01, R-CMB-02, R-CMP-03, and R-CMB-04) and would be subject to project-level review, including review of police protection impacts under CEQA, as applicable.

The need for new or the expansion of existing schools, parks, or library services and facilities is tied to population growth. As indicated in Section XIII. Population and Housing, implementation of the proposed control measures would not induce population growth either directly or indirectly. Therefore, with no increase in local population, there would be no additional demand for new or expanded schools, parks, and libraries and no impacts are expected.

Conclusion

Based upon these considerations, significant adverse public services impacts are not expected from implementing the proposed control measures. Since no significant public services impacts were identified, no mitigation measures are necessary or required and therefore will not be further discussed in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XV. RECREATION.				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☑
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☑

Significance Criteria

Impacts to recreation will be considered significant if:

- The project results in an increased demand for neighborhood or regional parks or other recreational facilities.
- The project adversely affects existing recreational opportunities.

Discussion

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest available new emission sources. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero-emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

Appendix A lists all the 2022 AQMP control measures and identifies those control measures that have the potential to generate significant adverse impacts. The discussion in this section identifies the net effect on recreation from implementing the proposed project.

XV. a) & b) No Impact. Demand for parks and recreational facilities in an area is usually determined by the area's population. As discussed in XIII Population and Housing, the implementation of the proposed control measures does not include the development of new homes, which would lead to an increase in population and thereby, the need for additional park and recreation facilities. Therefore, the implementation of the proposed control measures would not increase the use of existing neighborhood and regional parks or other recreational facilities, nor

would it require construction of new or expanded parks or recreational facilities. No impact to park and recreational facilities would occur and no mitigation measures are necessary.

Furthermore, the implementation of the proposed control measures does not include the development of recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

Conclusion
Based upon these considerations, significant adverse recreation impacts are not expected from the implementation of the proposed control measures. Since no significant recreation impacts were identified, no mitigation measures are necessary or required and therefore will not be further discussed in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XVI. SOLID AND HAZARDOUS WASTE. Would the project:				
a) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☑	☐	☐	☐
b) Comply with federal, state, and local management and reduction statutes and regulations related to solid and hazardous waste?	☐	☐	☐	☑

Significance Criteria

The proposed project impacts on solid and hazardous waste will be considered significant if the following occurs:

- The generation and disposal of hazardous and non-hazardous waste exceeds the capacity of designated landfills.

Discussion

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest available new emission sources. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero-emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

Appendix A lists all the 2022 AQMP control measures and identifies those control measures that have the potential to generate significant adverse impacts. The discussion in this section identifies the net effect on solid and hazardous waste from implementing the proposed project.

XVI. a) Potentially Significant Impact.

Construction

To accommodate the electrification of equipment and vehicles, it is expected that installation of zero emission and low NOx charging/fueling infrastructure would result in minor construction activities that may result in the generation of some construction waste that may need to be disposed in a landfill. The proposed control measures do not contain any requirements that would cause

existing practices for disposing of solid and hazardous waste to change. For this reason, facilities which currently comply with all applicable local, state, or federal waste disposal regulations would not be expected to change their current practices due to implementation of the proposed control measures. If a facility requires construction such as onsite fueling, charging infrastructure, or air pollution control equipment, there is a possibility that small amounts of waste will be generated from replacement of parts during routine servicing and maintenance of the onsite improvements. The amount of waste generated would be negligible when considering the existing regular waste generation from ordinary facility operations. Further, all construction activities associated with implementation of the proposed control measures should abide by the requirements of CALGreen Section 5.408 - Construction Waste Reduction, Disposal and Recycling, as applicable. As currently codified, these regulatory sections require diversion of 65 percent of nonhazardous construction and demolition waste through recycling, reuse, and diversion programs.

Operation

The implementation of the proposed control measures would potentially increase solid and hazardous waste disposal due to accelerated replacement of equipment to convert to electrified equipment and additional use of pollution controls. Electrification of equipment may increase the generation of solid waste by replacement of combustion devices with electric equipment and increase the generation of spent batteries. Additional pollution control may increase the frequency of catalyst replacements, which would generate additional hazardous waste.

Numerous control measures in the 2022 AQMP are aimed at accelerating the penetration of zero emission and low NOx mobile sources, including L-CMB-01 through L-CMB-10, MSC-01, EGM-01, MOB-02A, MOB-02B, MOB-04, MOB-05, MOB-06, MOB-07, MOB-08, MOB-09, and MOB-10. Some of these measures may increase the use of lithium ion (Li-ion) batteries and nickel-metal hydride batteries. While these batteries are generally recyclable, improper disposal of batteries poses potential environmental hazards and impacts. The potential increased use of catalyst associated with the manufacture of alternative fuels could also generate increased amounts of solid and hazardous waste. Based on the preceding discussion, impacts on the generation of solid and hazardous waste are potentially significant and will be analyzed in the Draft Program EIR.

XVI. b) No Impact. The following federal, state, and local laws and regulations govern solid and hazardous waste disposal:

- AB 598 established the California Hazardous Waste Control Act of 1972 which established state hazardous waste management and disposal requirements.
- U.S. EPA's Resource Conservation and Recovery Act (RCRA) of 1976 which contains regulations for municipal solid waste landfills and requires states to implement their own permitting programs incorporating the federal landfill criteria. RCRA also regulates the management and disposal of solid hazardous waste.
- AB 341 (Chapter 476, Statutes of 2011) which increases the statewide waste diversion goal to 75 percent by 2020.
- AB 939 (Integrated Solid Waste Management Act of 1989; Public Resources Code Section 40050 et seq.) which requires every California city and county to divert 50 percent of its waste from landfills by the year 2000 by such means as recycling, source reduction, and composting. In addition, AB 939 requires each county to prepare a countywide siting

element specifying areas for transformation or disposal sites to provide capacity for solid waste generated in the county that cannot be reduced or recycled for a 15-year period.

Any project-related construction and operation resulting from implementation of the proposed control measures would be implemented in accordance with all applicable federal, state, and local laws and regulations governing solid waste disposal. Therefore, no impact would occur, and no mitigation measures are necessary.

Conclusion

Based upon these considerations, potential significant adverse solid and hazardous waste impacts may occur due to implementing some of the proposed control measures. Since potentially significant solid and hazardous waste impacts were identified related to landfill capacity, solid and hazardous waste impacts will be further discussed in the Draft Program EIR.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XVII. TRANSPORTATION.					
	Would the project:				
a)	Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☐	☑
b)	Conflict with or be inconsistent with CEQA Guidelines Section 15064.3(b)?	☐	☐	☑	☐
c)	Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☑
d)	Result in inadequate emergency access?	☐	☐	☐	☑

Significance Criteria

Impacts on transportation will be considered significant if any of the following criteria apply:

- A major roadway is closed to all through traffic, and no alternate route is available.
- The project conflicts with applicable policies, plans or programs establishing measures of effectiveness, thereby decreasing the performance or safety of any mode of transportation or contributes to changes in overall vehicle miles traveled.
- There is an increase in vehicle miles traveled that is substantial in relation to the existing travel activity.
- Water borne, rail car or air traffic is substantially altered.
- Traffic hazards to motor vehicles, bicyclists or pedestrians are substantially increased.
- The need for more than 350 employees.
- An increase in heavy-duty transport truck traffic to and/or from the facility by more than 350 truck round trips per day.
- Increase customer traffic by more than 700 visits per day.

Discussion

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest available new emission sources. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero-emission mobile sources; encourage the use of lower-emitting alternative fuels;

affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

Appendix A lists all the 2022 AQMP control measures and identifies those control measures that have the potential to generate significant adverse impacts. The discussion in this section identifies the net effect on transportation from implementing the proposed project.

XVII. a) No Impact. The 2022 AQMP would affect existing commercial/industrial facilities and residential developments; accelerate the replacement of high-emitting mobile sources with low NOx and zero-emission mobile sources; establish greater control of industrial stationary sources; control indirect sources of emissions; develop incentives to remove/replace higher emitting equipment; establish specifications for fuels and mobile source exhaust emissions; improve detection and procedures; and establish educational and outreach programs. Implementation of the proposed control measures is not expected to substantially alter vehicle mileage or transportation routes. The 2022 AQMP builds upon transportation and related TCMs developed by SCAG and included in the SCAG RTP/SCS. Therefore, the proposed control measures would not conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.

The 2022 AQMP would revise the previous motor vehicle emissions budgets with new emission calculations using the latest motor vehicle emission factors and planning assumptions. The U.S. EPA's Transportation Conformity Rule requires that transportation plans and projects must not exceed SIP motor vehicle emission budgets for attaining and maintaining health-based air quality standards or a conformity lapse would occur (preventing further funding of transportation projects). By avoiding a conformity lapse, the region would continue to receive federal funding for future transportation projects, which would generally improve traffic flow, thus, providing a beneficial traffic impact.

XVII. b) Less Than Significant Impact. Implementation of the proposed control measures has the potential to result in an increase in transportation related to construction of new or modified air pollution control equipment. Construction trips and vehicle miles traveled (VMT) are associated with contractors and vendors delivering and installing equipment at affected facilities. Construction activity impacts are temporary in nature and will vary depending on the number and location of facilities and the size of the construction workforce needed.

The CARB Technical Advisory on Evaluating Transportation Impacts in CEQA to comply with CEQA Guidelines Section 15064.3 focuses on permanent new employee vehicle miles traveled (California Office of Planning and Research, 2018). Because of the temporary nature of construction activities, any increase in VMT related to construction activities would occur on a short-term basis at each location. In general, temporary construction-related increases in VMT are not considered to be a transportation impact or inconsistent with CEQA Guidelines Section 15064.3. These construction projects would not have a substantial, permanent effect on regional VMT, including commute VMT, in the SCAG region (which includes all of the South Coast AQMD jurisdiction and the non-South Coast AQMD-jurisdiction portions of Los Angeles and San Bernardino counties, and all of Ventura and Imperial counties). Additionally, discretionary projects at affected facilities could be subject to project-level review under CEQA. As a result, construction projects would not have a permanent effect on regional VMT. Therefore, temporary

effects of construction-related vehicles would not conflict with the state's GHG reduction and associated VMT goals for the transportation sector.

Operational transportation impacts associated with the implementation of the proposed control measures focus on replacement. In particular, Control Measures L-CMB-01, L-CMB-03, L-CMB-07, CMB-10, ECC-02, and MOB-07 have the potential to affect transportation by potentially increasing the amount of ammonia and or catalyst needed to operate SCR units. These deliveries are expected to be accomplished using heavy-duty trucks and occur periodically (i.e., conservatively estimated to be no more than one truck per week per affected facility but could be less frequent).

One of the primary goals of the 2022 AQMP is the replacement of high-emitting mobile sources with low NOx and zero emission mobile sources. Control measures aimed at mobile sources are not expected to result in an increase in mobile sources (e.g., an increase in automobiles or trucks) but would instead replace the higher emission vehicles with lower emitting mobile sources. Therefore, these types of control measures would not result in an increase in VMT, but would instead encourage the use of lower-emitting mobile sources.

CEQA Guidelines Section 15064.3(a) clarifies that the primary consideration in evaluating a project's transportation impacts for CEQA purposes is the amount and distance that a project might cause people to drive. This captures two measures of transportation impacts: number of automobile trips generated and VMT. Additional permanent employees are not expected to be required to operate equipment that may require additional air pollution control equipment, due to implementation of the 2022 AQMP. As discussed in Section XIII. Population and Housing, implementation of the 2022 AQMP is not expected to generate additional employee or population increases. Therefore, no increase in vehicle trips or VMT is expected.

As noted earlier, CEQA Guidelines Section 15064.3(a) pertains to automobile travel attributable to a project.[11] It does not require any analysis of increased VMT from heavy-duty truck trips. In fact, in CARB's 2017 Scoping Plan, the state's strategy for the goods-movement sector does not focus on reducing VMT but rather, on advances in technology zero-emissions and near-zero-emissions control strategies (CARB, 2017).[12] Therefore, less than significant impacts from the implementation of the proposed control measures is expected to occur.

XVII. c) No Impact. Implementation of the proposed control measures does not involve or require the construction of new roadways, alter existing roadways, or introduce incompatible uses to existing roadways. However, some of the proposed control measures could result in the construction of catenary overhead electrical lines or magnetic infrastructure to operate zero- and low NOx transport systems (e.g., EGM-01, MOB-02A, MOB-02B, MOB-06, and MOB-07). No new rail or truck traffic routes are expected to be constructed, but rather existing truck and rail routes/corridors would be modified. The truck and rail corridors likely to be involved are primarily associated with rail yards and intermodal facilities in industrial zones within the Southern California area. Examples of these areas include, but are not limited to, the Ports and other

[11] South Coast AQMD staff conducted extensive research on the state's guidance for how to analyze truck VMT under SB 743 in CEQA documents. Searches included reviews of OPR's December 2018 Technical Advisory, CARB's 2017 Scoping Plan Update, the California Natural Resources Agency's rulemaking documents for the Updates to the 2019 CEQA Guidelines, which includes the incorporation of SB 743 requirements, and consultation with SCAG staff.

[12] California Air Resources Board, 2017, California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target, https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf, accessed on March 18, 2019.

industrial areas located in and around container transfer facilities near the Terminal Island Freeway, along the Alameda Corridor, as well as inland rail yards near downtown Los Angeles. Since only existing transportation routes would likely be modified (e.g., electric lines installed) and no new transportation routes are anticipated, and no increase in traffic hazards are expected.

XVII. d) No Impact. Implementation of the proposed control measures primarily requires replacement or additional control of existing equipment. No changes are expected to emergency access at or in the vicinity of the affected facilities. Further, implementation of the proposed control measures do not contain any requirements specific to emergency access points and each facility would be expected to continue to maintain their existing emergency access. Based on the preceding discussion, no impact to emergency access would occur.

Conclusion

Based upon these considerations, significant transportation during construction or operation are not expected to occur due to implementation of the proposed control measures as the proposed project is not expected to result in an increase in VMT. Since no significant transportation impacts were identified, no mitigation measures are necessary or required and therefore will not be further discussed in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XVIII. WILDFIRE. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☑
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☑
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☑
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☑
e) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildfires?	☐	☐	☐	☑

Significance Criteria

A project's ability to contribute to a wildfire will be considered significant if the project is located in or near state responsibility areas or lands classified as very high fire hazard severity zones, and any of the following conditions are met:

- The project would substantially impair an adopted emergency response plan or emergency evacuation plan.
- The project may exacerbate wildfire risks by exposing the project's occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire due to slope, prevailing winds, and other factors.
- The project may exacerbate wildfire risks or may result in temporary or ongoing impacts to the environment because the installation or maintenance of associated infrastructure

(such as roads, fuel breaks, emergency water sources, power lines, or other utilities) are required.

- The project would expose people or structures to significant risks such as downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.
- The project would expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildfires.

Discussion

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest available new emission sources. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero-emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

Appendix A lists all the 2022 AQMP control measures and identifies those control measures that have the potential to generate significant adverse impacts. The discussion in this section identifies the net effect on wildfire from implementing the proposed project.

XVIII. a) No Impact. As explained in Section VIII. f), activities that result from implementation of the proposed control measures would not block or otherwise interfere with the use of evacuation routes nor would they interfere with operations of emergency response agencies or with coordination and cooperation between such agencies. Therefore, there would be no impacts.

XVIII. b) No Impact. Wildland fire protection in California is the responsibility of either the local government, state, or the federal government. State Responsibility Areas (SRA) are the areas in the state where the State of California has the primary financial responsibility for the prevention and suppression of wildland fires.[13] Local responsibility areas (LRA) include incorporated cities, cultivated agriculture lands, and portions of the desert. LRA fire protection is typically provided by city fire departments, fire protection districts, counties, and by California Department of Forestry and Fire Protection (CAL FIRE) under contract to local government. CAL FIRE uses an extension of the SRA Fire Hazard Severity Zone model as the basis for evaluating fire hazard in LRAs. The local responsibility area hazard rating reflects flame and ember intrusion from adjacent wildlands and from flammable vegetation in the urban area. Fire hazard severity zones are identified by Moderate, High and Very High in an SRA, and Very High in an LRA.

Implementation of the proposed control measures would affect existing commercial/industrial facilities and residential developments; accelerate the replacement of high-emitting mobile sources with low NOx and zero emission mobile sources; establish greater control of industrial stationary

[13] California Department of Forestry and Fire Prevention's Fire and Resource Assessment Program. 2022. Wildfire Hazard Real Estate Disclosure. https://frap.fire.ca.gov/frap-projects/wildfire-hazard-real-estate-disclosure/.

sources; control indirect sources of emissions; develop incentives to remove/replace higher emitting equipment; establish specifications for fuels and mobile source exhaust emissions; improve detection and procedures; and establish educational and outreach programs in appropriately zoned areas. Since commercial and industrial areas are not typically located near wildland or forested areas, implementation of the proposed control measures is not expected to increase the risk of wildland fires. Further, site preparation of industrial facilities often includes the removal of vegetation for fire safety. Therefore, affected industrial facilities are expected to be devoid of plant life (except landscape vegetation), especially native vegetation. The 2022 AQMP is comprise of proposed control measures which primarily focus on accelerating the penetration of low NOx and zero-emission technologies which are not expected to result in an impact on wildfires.

Similarly, for the proposed control measures that will affect residential land uses, any modifications needed would occur inside the buildings or in the case of energy efficiency improvements such as installing solar, on the roofs of residential buildings, and would not be expected to create any greater risk of wildland fires than the existing residential developments themselves. Moreover, the proposed residential control measures may involve replacing gas-fired water heaters, space heaters, cooling devices, and other combustion sources with electric devices whereby reducing the use of fuel and the potential to cause wildland fires.

Any structures subject to the implementation of proposed control measures that would be located in fire hazard severity zones are required to be designed, built, and operated in accordance with state regulations specifying building materials and structural designs for structures in such zones, including CBC Chapter 7A and California Fire Code Chapter 49; regulatory requirements for defensible space including Public Resources Code Section 4291 et seq.; and subject to project-level CEQA review, including review of wildfire impacts, as applicable. Furthermore, structures subject to the implementation of proposed control measures located in SRA areas will implement the Wildfire SRA Fire Safe Regulations' basic wildland fire protection standards. Electric utilities are required to abide by the requirements of the California Public Utilities Commission (CPUC) Fire Safety Regulations as they relate to utility poles and wires, and vegetation management.

Additional measures are in place to sidestep the impacts of pollutant concentrations from wildfire ash. Recognition of the growing threat that wildfire smoke poses to public health and safety has resulted in a response led by the U.S. Forest Service and enhanced through partnership with many other agencies, such as the National Park Service. The Wildland Fire Air Quality Response Program (WFAQRP) was created to directly assess, communicate, and address risks posed by wildfire smoke to the public as well as fire personnel. The program depends on four primary components: 1) specially trained personnel called Air Resource Advisors (ARAs); 2) air quality monitoring; 3) smoke concentration and dispersion modeling, and 4) coordination and cooperation with agency partners. ARAs are technical specialists who are trained to work on smoke issues from wildland fires and they are deployed nationwide during large smoke events. ARAs are dispatched to an incident to assist with understanding and predicting smoke impacts on the public and fire personnel. They analyze, summarize, and communicate these impacts to incident teams, air quality regulators, and the public.[14] South Coast AQMD also issues air quality alerts, advisories, and forecasts by email through AirAlerts.org. South Coast AQMD also maintains an

[14] US Forest Service, Wildland Fire Air Quality Response Program. United States Department of Agriculture, https://www.wildlandfiresmoke.net/ , accessed February 15, 2022.

interactive online map to view current air quality conditions in the region.[15] Therefore, the proposed control measures in the 2022 AQMP are not expected to result in structures being built within or adjacent to wildfire areas or result in an increased risk of wildfire.

XVIII. c) No Impact. Implementation of proposed control measures would not add new structures that might need to be supported by expanded infrastructure and associated maintenance, including new roads, fuel breaks, emergency water sources, power lines and other utilities. However, structures subject to the implementation of proposed control measures that are developed in fire hazard safety zones are required to comply with regulations governing development in such zones, including CBC Chapter 7A, California Fire Code Chapter 49; Public Resources Code Section 4291 et seq.; and, subject to project-level CEQA review, including review of wildfire impacts, as applicable. Any new powerlines associated with new structures would be required to comply with fire safety regulations pertaining to electric utilities including California Code of Regulations, Title 14, Section 1250 et seq., CPUC fire safety regulations, and subject to project-level CEQA review, including review of wildfire impacts, as applicable.

Implementation of the proposed control measures in the 2022 AQMP could result in the construction of catenary overhead electrical lines or magnetic infrastructure to operate zero- and low NOx transport systems (e.g., Control Measures EGM-01, MOB-01, MOB-06, and MOB-07). No new rail or truck traffic routes are expected to be constructed, but rather existing truck and rail routes/corridors would be modified. The truck and rail corridors likely to be involved are primarily associated with rail yards and intermodal facilities in industrial zones within the Southern California area. Examples of these areas include, but are not limited to, the Ports, and other industrial areas located in and around container transfer facilities near the Terminal Island Freeway, along the Alameda Corridor, as well as inland rail yards near downtown Los Angeles. Since existing transportation routes are located in heavily populated and urbanized areas, these proposed control measures would not result in new power lines in high risk wildfire areas. Therefore, the installation or maintenance of infrastructure, such as roads, fuel breaks, emergency water sources, power lines or other utilities in wildfire areas are not expected to be required as part of the 2022 AQMP.

XVIII. d) No Impact. Catastrophic wildfire can create favorable conditions for other hazards, such as flooding and landslides during the rainy season. However, since commercial and industrial areas are not typically located near wildland or forested areas, implementing the 2022 AQMP control measures would not expose people or structures to post-fire hazards such as flooding, landslides, slope instability, or drainage changes. Any new structures subject to the implementation of proposed control measures (e.g., new residential developments) that would be located in fire hazard severity zones would be subject to project-level CEQA review, including review of wildfire impacts, as applicable. Control measures applicable to reducing emissions from residential developments (e.g., R-CMB-01 through R-CMB-04) do not affect the siting of residential developments. Therefore, there would be no impacts or increase fire risks to people or structures associated with implementation of the 2022 AQMP.

XVIII. e) No Impact. Any new development or redevelopment in fire hazard safety zones are required to comply with regulations governing development in such zones, including CBC Chapter 7A, California Fire Code Chapter 49, and California Public Resources Code Section 4291 et seq.,

[15] South Coast AQMD, Wildfire Smoke & Ash Health & Safety Tips, http://www.aqmd.gov/home/air-quality/wildfire-health-info-smoke-tips, accessed February 15, 2022.

and subject to project-level CEQA review, including review of wildfire impacts, as applicable. Therefore, there would be no impacts or increased risk of loss of structures or human life due to wildlife.

Conclusion

Based upon these considerations, significant adverse wildfire impacts are not expected from implementation of proposed control measures. Since no significant wildfire impacts were identified, no mitigation measures are necessary or required and therefore will not be further discussed in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XIX. MANDATORY FINDINGS OF SIGNIFICANCE.				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☑	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)	☑	☐	☐	☐
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☑	☐	☐	☐

Discussion

The 2022 AQMP is designed to reduce emissions from existing emission sources and promote the use of the cleanest available new emission sources. The proposed control measures focus on maximizing the implementation of existing zero emission and low NOx technologies, recognizing that new zero emissions and ultra-low NOx technologies may still need to be invented or made commercially available to achieve the necessary reductions required to attain the 70 ppb ozone standard. The 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero-emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve detection and procedures; and establish educational and outreach programs.

Appendix A lists all the 2022 AQMP control measures and identifies those control measures that have the potential to generate significant adverse impacts. The discussion in this section identifies the net effect on wildfire from implementing the proposed project.

XIX. a) Less than Significant Impact. As explained in Section IV. Biological Resources, the 2022 AQMP is not expected to significantly adversely affect any biological resources including wildlife and the resources on which it relies. Activities resulting from implementing the proposed control measures in the 2022 AQMP are expected to be located near industrial, commercial, or urbanized areas. Such project sites would not typically include appropriate habitat for fish or wildlife species or rare, endangered species of plant or animal. Overall improvements in air quality are, ultimately, expected to provide substantial benefits to local biological resources in South Coast AQMD's jurisdiction.

Further, construction activities resulting from implementing the proposed control measures in the 2022 AQMP are expected to be confined to the existing footprint of the affected facilities, which have been developed and paved. In addition, tribal and other cultural resources are generally limited at such sites. Therefore, implementation of the 2022 AQMP is not expected to require physical changes to the environment which may disturb paleontological, archaeological, or tribal cultural resources.

Additionally, the proposed control measures are not expected to result in demolition of existing structures. Furthermore, individual development projects would be subject to project-level review under CEQA, as applicable. Thus, impacts to biological and cultural resources, including historic resources, would be less than significant.

XIX. b) Potentially Significant Impact. The 2022 AQMP may have the potential to generate significant adverse project-specific environmental impacts in several environmental areas. If project-specific impacts are deemed cumulatively considerable, the 2022 AQMP may have the potential to create significant adverse cumulative impacts. Significant adverse cumulative impacts will be further analyzed in the Draft Program EIR if impacts to any of the following project-specific environmental topic areas are deemed significant: air quality and GHGs, energy, hazards and hazardous materials impacts, hydrology and water resources, noise, and solid and hazardous waste.

In addition, SCAG is periodically required to prepare a RTP/SCS, which contains TCMs, pursuant to Health and Safety Code Section 65080. SCAG is responsible for preparing and approving the portions of the plan relating to regional demographic projections and integrated regional land use, housing, employment and transportation programs, measures and strategies, and is required to analyze and provide emissions data related to its planning responsibilities to appropriate local agencies such as South Coast AQMD, pursuant to Health and Safety Code Section 40460(b).

On September 3, 2020, the 2020-2045 RTP/SCS was adopted and the Final Program EIR was certified by SCAG (SCAG, 2020). Thus, SCAG's 2020 RTP/SCS and associated TCMs will be implemented regardless of the 2022 AQMP. However, the TCMs will become part of the SIP. Since the environmental impacts from the 2020 RTP/SCS and associated TCMs were analyzed in the Final Program EIR, the Draft 2022 AQMP Program EIR will evaluate potential cumulative impacts from implementing the 2022 AQMP and the TCMs evaluated in SCAG's Final Program EIR for the 2020 RTP/SCS.

In addition, CARB is developing the 2022 State SIP Strategy which describes the measures that CARB proposes to implement to reduce emissions needed to support attainment of the 70 ppb 8-hour ozone standard from State-regulated sources. These measures are focused on mobile sources, including on-road vehicles and off-road vehicles and equipment over which CARB has jurisdiction. The cumulative impact of CARB's SIP measures will also be evaluated in the Draft Program EIR.

XIX. c) Potentially Significant Impact. The 2022 AQMP may have the potential to create significant adverse impacts to human beings because it may create potentially significant adverse impacts in the following areas: air quality and GHGs, energy, hazards and hazardous materials impacts, hydrology and water resources, noise, and solid and hazardous waste, as well as cumulative impacts. Significant adverse impacts to any of these areas may have the potential to adversely affect public health. Potentially significant adverse environmental impacts that could cause substantial adverse effects on human beings, either directly or indirectly will be evaluated in the Draft Program EIR. If any impacts are concluded to be significant, evaluation of feasible mitigation measures and alternatives to the project will be included in the Draft Program EIR.

Conclusion

As previously discussed in Sections I. through XIX., the proposed project has the potential to cause significant adverse environmental effects to the environmental topics of air quality and GHGs, energy, hazards and hazardous materials impacts, hydrology and water resources, noise, and solid and hazardous waste, as well as cumulative impacts. Impacts for these environmental topic areas will be analyzed in further detail in the Draft Program EIR.

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APPENDIX A

SUMMARY OF PROPOSED CONTROL MEASURES IN DRAFT 2022 AQMP AND POTENTIAL IMPACTS

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APPENDIX A: SUMMARY OF PROPOSED CONTROL MEASURES IN DRAFT 2022 AQMP AND POTENTIAL IMPACTS

Control Measure Number	Title	Pollutant	Effect of Implementation and Nature of Potential Impact(s)	Potential Adverse Impact(s)						
				No Impact	Air Quality/ GHG	Energy	Hazards/ Hazardous Materials	Hydrology/ Water Quality	Noise	Solid/ Hazardous Waste
R-CMB-01	Emission Reduction from Replacement with Zero Emission or Low NOx Appliances – Residential Water Heating	NOx	Installation of zero emission water heaters and low NOx technologies (when zero emission is infeasible) in new and existing residences may cause impacts to: 1) air quality and GHGs during minor construction activities and from utilities producing more electricity; 2) energy due to a potential increased demand for electricity which may be produced from natural gas; and 3) noise and solid waste during minor construction activities.		X	X			X	X
R-CMB-02	Emission Reduction from Replacement with Zero Emission or Low NOx Appliances – Residential Space Heating	NOx	Installation of zero emission space heaters and low NOx technologies (when zero emission is infeasible) in new and existing residences may cause impacts to: 1) air quality and GHGs during minor construction activities and from utilities producing more electricity; 2) energy due to a potential increased demand for electricity which may be produced from natural gas; and 3) noise and solid waste during minor construction activities.		X	X			X	X
R-CMB-03	Emission Reductions from Residential Cooking Devices	NOx	Installation of electric cooking devices, induction cooktops, or low-NOx burners in new and existing residences may cause impacts to: 1) air quality and GHGs during minor construction activities and from utilities producing more electricity; 2) energy due to a potential increased demand for electricity which may be produced from natural gas; and 3) noise and solid waste during minor construction activities.		X	X			X	X
R-CMB-04	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Residential Other Combustion Sources	NOx	Installation of zero emission or low NOx technologies in new and existing residences to replace equipment such as pool heaters, dryers, grills, etc. may cause impacts to: 1) air quality and GHGs during minor construction activities and from utilities producing more electricity; 2) energy due to a potential increased demand for electricity which may be produced by natural gas; and 3) noise and solid waste during minor construction activities.		X	X			X	X

APPENDIX A: SUMMARY OF PROPOSED CONTROL MEASURES IN DRAFT 2022 AQMP AND POTENTIAL IMPACTS

				Potential Adverse Impact(s)						
Control Measure Number	**Title**	**Pollutant**	**Effect of Implementation and Nature of Potential Impact(s)**	**No Impact**	**Air Quality/ GHG**	**Energy**	**Hazards/ Hazardous Materials**	**Hydrology/ Water Quality**	**Noise**	**Solid/ Hazardous Waste**
C-CMB-01	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Commercial Water Heating	NOx	Installation of zero emission water heaters and low NOx technologies (when zero emission is infeasible) in commercial buildings may cause impacts to: 1) air quality and GHGs during minor construction activities and from utilities producing more electricity; 2) energy due to a potential increased demand for electricity which may be produced from natural gas; and 3) noise and solid waste during minor construction activities.		X	X			X	X
C-CMB-02	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Commercial Space Heating	NOx	Installation of zero emission space heaters and low NOx technologies (when zero emission is infeasible) in commercial buildings may cause impacts to: 1) air quality and GHGs during minor construction activities and from utilities producing more electricity; 2) energy due to a potential increased demand for electricity which may be produced by natural gas; and 3) noise and solid waste during minor construction activities.		X	X			X	X
C-CMB-03	Emission Reductions from Commercial Cooking Devices	NOx	Replacing gas burners with zero emission and low NOx technologies (e.g., electric cooking devices, induction cooktops, or low-NOx gas burner technologies) may cause impacts to: 1) air quality and GHGs during minor construction activities and from utilities producing more electricity; 2) energy due to a potential increased demand for electricity which may be produced by natural gas; and 3) noise and solid waste during minor construction activities.		X	X			X	X
C-CMB-04	Emission Reductions from Small Internal Combustion Engines	NOx	Incentivizing consumers to purchase zero emission ICEs may cause impacts to: 1) air quality and GHGs during minor construction activities and from utilities producing more electricity and increased use of hydrogen and natural gas; 2) energy due to a potential increased demand for electricity and hydrogen and natural gas; 3) hazards due to increase in hydrogen production; and 4) noise and solid waste during minor construction activities.		X	X	X		X	X

APPENDIX A: SUMMARY OF PROPOSED CONTROL MEASURES IN DRAFT 2022 AQMP AND POTENTIAL IMPACTS

				Potential Adverse Impact(s)						
Control Measure Number	**Title**	**Pollutant**	**Effect of Implementation and Nature of Potential Impact(s)**	**No Impact**	**Air Quality/ GHG**	**Energy**	**Hazards/ Hazardous Materials**	**Hydrology/ Water Quality**	**Noise**	**Solid/ Hazardous Waste**
C-CMB-05	NOx Reductions from Small Miscellaneous Commercial Combustion Equipment (Non-Permitted)	NOx	Incentivizing feasible zero emission and low NOx technologies for small combustion equipment may cause impacts to: 1) air quality and GHGs during minor construction activities and from utilities producing more electricity; 2) energy due to a potential increased demand for electricity; and 3) noise and solid waste during minor construction activities.		X	X			X	X
L-CMB-01	NOx Reductions for RECLAIM Facilities	NOx	Installation of NOx pollution control equipment including SCRs and low NOx burners may cause impacts to: 1) air quality and GHGs during construction and due to the potential use of ammonia during operation of SCR equipment, if installed, and the periodic replacement of catalyst;2) energy due to a potential increased demand in electricity to operate new equipment; 3) hazards and hazardous materials due to the potential use of ammonia during operation of SCR equipment, if installed; 4) noise during construction; and 5) solid and hazardous waste due to potential replacement of burners during construction and spent SCR catalyst during operation.		X	X	X		X	X
L-CMB-02	Reductions from Boilers and Process Heaters (Permitted)	NOx	Installation of zero emission and low NOx technologies for boilers and heaters may cause impacts to: 1) air quality and GHGs during construction and due to the potential use of ammonia during operation of SCR equipment, if installed, and the periodic replacement of catalyst; 2) energy due to a potential increased demand in electricity which may be produced by natural gas; 3) hazards and hazardous materials due to the potential use of ammonia during operation of SCR equipment, if installed; 4) noise during construction; and 5) solid and hazardous waste due to disposal of replaced equipment and spent SCR catalyst during operation.		X	X	X		X	X

APPENDIX A: SUMMARY OF PROPOSED CONTROL MEASURES IN DRAFT 2022 AQMP AND POTENTIAL IMPACTS

				Potential Adverse Impact(s)						
Control Measure Number	**Title**	**Pollutant**	**Effect of Implementation and Nature of Potential Impact(s)**	**No Impact**	**Air Quality/ GHG**	**Energy**	**Hazards/ Hazardous Materials**	**Hydrology/ Water Quality**	**Noise**	**Solid/ Hazardous Waste**
L-CMB-03	NOx Reductions from Permitted Non-Emergency Internal Combustion Engines (ICEs)	NOx	Installation of zero emission and low NOx technologies for non-emergency ICEs could result in the installation and operation of additional NOx pollution control equipment, including SCRs, and may cause impacts to: 1) air quality and GHGs during construction and due to the potential use of ammonia during operation of SCR equipment, if installed, and the periodic replacement of catalyst; 2) energy due to a potential increased demand in electricity to operate new equipment; 3) hazards and hazardous materials due to the potential use of ammonia during operation of SCR equipment, if installed; 4) noise during construction; and 5) solid and hazardous waste due to potential replacement of burners or equipment during construction and spent SCR catalyst during operation.		X	X	X		X	X
L-CMB-04	Emission Reductions from Emergency Standby Engines (Permitted)	NOx, VOC	Installation of zero emission and low NOx technology alternatives to emergency ICEs may cause impacts to: 1) air quality and GHGs during minor construction, and from utilities producing more electricity and hydrogen; 2) energy due to a potential increased demand for electricity and hydrogen which may be produced by natural gas and natural gas to operate new equipment; 3) hazards associated with the increased production of hydrogen; and 4) noise and solid waste during minor construction activities.		X	X	X		X	X
L-CMB-05	NOx Emission Reductions from Large Turbines	NOx	Installation of zero emission and low NOx emissions technologies for electric generating units such as fuel cells may cause impacts to: 1) air quality and GHGs during construction and from utilities producing more electricity and hydrogen; 2) energy impacts due to a potential increased demand for electricity and hydrogen; 3) hazards associated with increase hydrogen production; 4) hydrology and water quality if existing steam turbines are modified or replaced; 5) noise during construction; and 6) solid waste due to disposal of replaced equipment.		X	X	X	X	X	X

APPENDIX A: SUMMARY OF PROPOSED CONTROL MEASURES IN DRAFT 2022 AQMP AND POTENTIAL IMPACTS

Control Measure Number	Title	Pollutant	Effect of Implementation and Nature of Potential Impact(s)	Potential Adverse Impact(s)						
				No Impact	Air Quality/ GHG	Energy	Hazards/ Hazardous Materials	Hydrology/ Water Quality	Noise	Solid/ Hazardous Waste
L-CMB-06	NOx Emission Reductions from Electricity Generating Facilities	NOx	Replacement of boilers with lower-emitting turbines, installation of zero emission and low NOx emissions technologies, and the application of stricter emission requirements for diesel internal combustion engines may result in the installation and operation of additional NOx pollution control equipment, including SCRs which may cause impacts to: 1) air quality and GHGs during construction, due to the potential use of ammonia during operation of SCR equipment, if installed, and the periodic replacement of catalyst and from utilities producing more electricity and hydrogen; 2) energy due to a potential increased demand for electricity which may be produced by natural gas and hydrogen and natural gas to operate new equipment; 3) hazards and hazardous materials due to the potential use of ammonia during operation of SCR equipment, if installed, and increased hydrogen production; 4) hydrology and water quality if new steam turbines are installed; 5) noise during construction; and 6) solid waste due to disposal of replaced equipment and spent SCR catalyst during operation.		X	X	X	X	X	X
L-CMB-07	Emission Reductions from Petroleum Refineries	NOx	Installation of NOx pollution control equipment including Advanced SCRs and Ultra low-NOx burners, and electrification of certain refinery boilers or process heaters or steam-driven equipment such as pumps or blowers, may cause impacts to: 1) air quality and GHGs during construction and due to the potential use of ammonia during operation of SCR equipment, if installed, and the periodic replacement of catalyst; 2) energy due to a potential increased demand in electricity to operate new equipment; 3) hazards and hazardous materials due to the potential use of ammonia during operation of SCR equipment, if installed; 4) noise during construction; and 5) solid waste due to potential replacement of equipment/burners during construction and spent SCR catalyst during operation.		X	X	X		X	X

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				No Impact	Air Quality/ GHG	Energy	Hazards/ Hazardous Materials	Hydrology/ Water Quality	Noise	Solid/ Hazardous Waste
L-CMB-08	NOx Emission Reductions from Combustion Equipment at Landfills and Publicly Owned Treatment Works	NOx	Installation of lean pre-mixed combustion turbines, NOx pollution control equipment including SCRs and low-NOx burners on biogas fueled combustion equipment and/or routing landfill produced biogas to existing natural gas pipelines may cause impacts to: 1) air quality and GHGs during construction and due to the potential use of ammonia during operation of SCR equipment, if installed, and the periodic replacement of catalyst; 2) energy due to a potential increased demand in electricity to operate new equipment; 3) hazards and hazardous materials due to the potential use of ammonia during operation of SCR equipment, if installed; 4) noise during construction; and 5) solid waste due to potential replacement of equipment/burners during construction and spent SCR catalyst during operation.		X	X	X		X	X
L-CMB-09	NOx Reductions from Incinerators	NOx	Installation of low NOx and ultra low NOx burners for incinerators and other associated equipment may cause impacts to: 1) air quality and GHGs during minor construction activities; and 2) noise and solid waste during minor construction activities.		X				X	X
L-CMB-10	NOx Reductions from Miscellaneous Permitted Equipment	NOx	Replacement of existing equipment with zero emission technology and installation of NOx pollution control equipment including SCRs and low NOx/Ultra low NOx burners may cause impacts to: 1) air quality and GHGs during construction, from installing electricity charging infrastructure and due to the potential use of ammonia during operation of SCR equipment, if installed, the periodic replacement of catalyst, and from utilities producing more electricity; 2) energy due to a potential increased demand in electricity to operate new equipment which may be produced from natural gas; 3) hazards and hazardous materials due to the potential use of ammonia during operation of SCR equipment, if installed; 4) noise during construction; and 5) solid waste due to potential replacement of equipment/burners during construction and spent SCR catalyst during operation.		X	X	X		X	X

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ECC-01	Co-Benefit from Existing and Future Greenhouse Gas Programs, Policies, and Incentives	NOx	Evaluating renewable energy targets with existing and further GHG emission reduction mechanisms, including market, incentive and rebate programs, and promoting the implementation and development of new technologies, which may involve the use of electricity in order to reduce emissions of criteria air pollutants and GHGs, may cause impacts to energy due to potential increased demand for electricity.			X				
ECC-02	Co-Benefits from Existing and Future Residential and Commercial Building Energy Efficiency Measures	NOx, VOC	Quantifying the criteria air pollutant and GHG emission reduction benefits from existing and future energy efficiency programs adopted by other regulatory authorities (e.g., improving weatherization and energy efficiency) is an administrative exercise with no impacts.	X						
ECC-03	Additional Enhancements in Reducing Existing Residential Building Energy Use	NOx, VOC	Incentivizing additional reductions in energy use associated with space heating, water heating, and other large residential energy sources through facilitating weatherization, replacing older appliances with highly efficient technologies and encouraging renewable energy adoption such as solar thermal and photovoltaics may reduce emissions of criteria air pollutants and GHGs but may also cause impacts to air quality and GHGs, noise, and solid waste during construction.		X				X	X
FUG-01	Improved Leak Detection and Repair	VOC	Implementation of advanced leak detection technologies including optical gas imaging devices (OGI), open path detection devices, and gas sensors for earlier detection of VOC emissions from leaks may cause impacts to air quality and GHGs during minor construction activities.		X					

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				No Impact	Air Quality/ GHG	Energy	Hazards/ Hazardous Materials	Hydrology/ Water Quality	Noise	Solid/ Hazardous Waste
FUG-02	Emission Reductions from Industrial Cooling Towers	VOC	Assessing the need for additional monitoring and practices to reduce industrial cooling tower VOC emissions by conducting a review of the emission inventory, costs for monitoring equipment, and identifying the control requirements established by other governmental agencies, is an administrative exercise with no impacts.	X						
CTS-01	Further Emission Reduction from Coatings, Solvents, Adhesives, and Lubricants	VOC	Revising the VOC content for select product categories and incentivizing the use of super-compliant zero emission and low NOx VOC materials and technologies and removing the VOC exemption status for parachlorobenzotriflouride (PCBTF) and tert-butyl acetate (tBAc) to address toxicity concems may result in reformulated products which may cause impacts to: 1) air quality (increased VOC emissions) and GHGs associated with the removal of the exemption for PCBTF and tBAc; 2) hazards and hazardous materials due to the potential use of more flammable materials; and 3) hydrology and water quality due to increase in water-based formulations.		X		X	X		
FLX-02	Stationary Source VOC Incentives	VOC	Installation of newer, lower-emitting equipment to replace older, higher-emitting equipment for area and stationary sources as a result of incentives may cause impacts to: 1) air quality and GHGs during minor construction activities; 2) energy due to a potential increased demand for electricity; and 3) noise and solid waste during minor construction activities.		X	X			X	X
BIO-01	Assessing Emissions from Urban Vegetation	VOC	Assessing the inventory of trees that are highly reactive and potent ozone precursors in order to determine whether tree planting programs would be necessary to promote the planting of low VOC emitting tree species is not expected to cause significant potential adverse environmental impacts.	X						

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				Potential Adverse Impact(s)						
Control Measure Number	**Title**	**Pollutant**	**Effect of Implementation and Nature of Potential Impact(s)**	**No Impact**	**Air Quality/ GHG**	**Energy**	**Hazards/ Hazardous Materials**	**Hydrology/ Water Quality**	**Noise**	**Solid/ Hazardous Waste**
MCS-01	Application of All Feasible Measures	All Pollutants	Retrofitting existing equipment and installation of newer, lower-emitting equipment to replace older, higher-emitting equipment for sources as a result of new emission limits introduced through federal, state, or local regulations may cause impacts to: 1) air quality and GHGs during construction and due to the potential use of ammonia during operation of SCR equipment, if installed, and the periodic replacement of catalyst; 2) energy due to a potential increased demand in electricity to operate new equipment; 3) hazards and hazardous materials due to the potential use of ammonia during operation of SCR equipment, if installed; 4) noise during construction; and 5) solid and hazardous waste due to potential replacement of burners during construction and spent SCR catalyst during operation.		X	X	X		X	X
MCS-02	Wildfire Prevention	NOx, PM	Mechanical thinning and chipping activities during fuel reduction and removal efforts may cause impacts to: 1) air quality and GHGs associated with decomposition of greenwaste/woodwaste; 2) hazards (potential fire hazard during chipping and grinding activities); 3) hydrology (increased water use for composting); 4) noise due to chipping and grinding; and 5) solid waste (collected greenwaste/woodwaste).		X		X	X	X	X

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FLX-01	Improved Education and Public Outreach	All Pollutants	Educating consumers about the effectiveness of energy conservation programs may influence consumer choices to select energy efficient products and appliances, install new lighting technology, apply "super-compliant" coatings, and plant low VOC-emitting trees but these activities may cause impacts associated with installing new appliances and lighting prior to the end of their useful lives, and planting trees to: 1) air quality and GHGs due to minor construction associated with installing new appliances and lighting prior to the end of their useful lives, and planting trees; 2) hazards and hazardous materials from installing new lighting prior to the end of their useful lives; 3) hydrology (water demand) due to an increased need for water from planting trees; 4) noise during construction associated with installing new appliances and lighting prior to the end of their useful lives, and planting trees; and 5) solid and hazardous waste from installing new appliances and lighting prior to the end of their useful lives, and planting trees.		X		X	X	X	X
EGM-01	Emission Reductions from New Development and Redevelopment (NOTE: Potential Indirect Source Rule and ports affected).	All Pollutants	Replacing or upgrading off-road construction equipment as part of development/redevelopment efforts may result in the use of zero-emission technologies in construction, the installation of charging and alternative fueling infrastructure, the use of alternative fuels; and the use construction equipment with low-emitting engines fitted with diesel PM filters, may cause impacts to: 1) air quality and GHGs during construction and the periodic replacement of diesel PM filters; 2) energy due to a potential increased demand in electricity to operate vehicles, rail, or new equipment; 3) hazards associated with the increased alternative fuels production (e.g., hydrogen); 4) noise during construction; and 5) solid waste due to potential replacement of diesel PM filters.		X	X	X		X	X

APPENDIX A: SUMMARY OF PROPOSED CONTROL MEASURES IN DRAFT 2022 AQMP AND POTENTIAL IMPACTS

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EGM-02	Emission Reductions from Projects Subject to General Conformity Requirements	All Pollutants	Impacts from seeking emission reductions by eliminating the SIP set-aside account for general conformity purposes and setting up a new mechanism to offset emission increases, via Voluntary Emission Reduction Agreements, or the purchase of ERCs are speculative because projects that would implement voluntary emission reductions and the method of achieving the desired reductions are unknown.	X						
EGM-03	Emission Reductions from Clean Construction Policy	All Pollutants	Incentivizing the use of zero emission and low NOx equipment by adopting a voluntary measure for municipalities and public agencies to reduce emissions generated by construction activities may include use of zero emission and low NOx construction equipment, dust control, alternative fuels, diesel PM filtration, low-emitting engines, and low VOC materials. Implementation of this control measure may cause impacts to: 1) air quality and GHGs from installing electricity charging infrastructure and utilities producing more electricity; 2) energy due to a potential increased demand for electricity which may be produced from natural gas; and 3) noise and solid waste during minor construction activities.		X	X	X		X	X
MOB-01	Emission Reductions at Commercial Marine Ports	NOx	Infrastructure development required to achieve emission reductions at commercial marine ports from on-road heavy-duty vehicles, ocean-going vessels, cargo handling equipment, locomotives, and harbor craft may cause impacts to: 1) air quality and GHGs from construction activities and the combustion of alternative fuels; 2) energy due to increased demand for electricity (for vehicles, rail, and equipment) and natural gas; 3) hazards and hazardous materials associated with engine replacements; 4) noise during construction; and 5) solid and hazardous waste associated with engine replacements.		X	X	X		X	X

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Control Measure Number	Title	Pollutant	Effect of Implementation and Nature of Potential Impact(s)	Potential Adverse Impact(s)						
				No Impact	Air Quality/ GHG	Energy	Hazards/ Hazardous Materials	Hydrology/ Water Quality	Noise	Solid/ Hazardous Waste
MOB-02A	Emission Reductions at New Rail Yards and Intermodal Facilities	NOx, PM	Infrastructure development required to achieve emission reductions at new rail yards and intermodal facilities from on-road heavy-duty vehicles, off-road equipment, and locomotives may cause impacts to: 1) air quality and GHGs from construction activities and the combustion of alternative fuels; 2) energy due to increased demand for electricity (for vehicles, rail, and equipment) and natural gas; 3) hazards and hazardous materials associated with engine replacements; 4) noise during construction; and 5) solid and hazardous waste associated with engine replacements.		X	X	X		X	X
MOB-02B	Emission Reductions at Existing Rail Yards and Intermodal Facilities	NOx, PM	Infrastructure development required to achieve emission reductions at existing rail yards and intermodal facilities from on-road heavy-duty vehicles, off-road equipment, and locomotives may cause impacts to: 1) air quality and GHGs from construction activities and the combustion of alternative fuels; 2) energy due to increased demand for electricity (for vehicles, rail, and equipment) and natural gas; 3) hazards and hazardous materials associated with engine replacements; 4) noise during construction; and 5) solid and hazardous waste associated with engine replacements.		X	X	X		X	X
MOB-03	Emission Reductions at Warehouse Distribution Centers	NOx	Reducing emissions and exposure of mobile sources associated with warehouse distribution centers by requiring actions or investments to offset the emissions of the mobile sources (trucks) attracted to the warehouses has been executed in Rule 2305 which was adopted by the South Coast AQMD Governing Board on May 7, 2021. The environmental effects from implementing Rule 2305 were previously analyzed in the certified Final Environmental Assessment. Since this control measure does not propose any additional elements for achieving emission reductions at warehouse distribution centers, no new impact areas have been identified.	X						

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				No Impact	Air Quality/ GHG	Energy	Hazards/ Hazardous Materials	Hydrology/ Water Quality	Noise	Solid/ Hazardous Waste
MOB-04	Emission Reductions at Commercial Airports	All Pollutants	Deploying additional cleaner technologies, such as increasing efficiencies, implementing air quality improvement options or by deploying zero emission and low NOx technologies, alternative fuels, diesel PM filters, and low-emitting engines for additional equipment beyond the commitments made in the existing Memoranda of Understanding with the commercial airports may cause impacts to: 1) air quality and GHGs during minor construction activities and from utilities producing more electricity and hydrogen; 2) energy due to a potential increased demand for electricity and hydrogen; 3) hazards and hazardous materials associated with increased production of alternative fuels (e.g., hydrogen); and 4) noise and solid waste during construction.		X	X	X		X	X
MOB-05	Accelerated Retirement of Older Light-Duty and Medium-duty Vehicles	VOC, NOx, CO	Accelerating the retirement of up to 2,000 light- and medium-duty vehicles per year through the Replace Your Ride Program and accelerating the penetration of zero and near–zero emission vehicles may cause impacts to: 1) air quality and GHGs during construction of infrastructure, from scrapping retired vehicles, and from utilities producing more electricity and refineries manufacturing more hydrogen; 2) energy due to potential increased demand for electricity produced by, natural gas, and hydrogen; 3) hazards and hazardous materials from the use of alternative fuels and fuel additives and scrapping retired vehicles; 4) hydrology and water quality(surface and ground water) from accidental spills; 5) noise during construction; and 6) solid and hazardous waste from scrapping retired vehicles and disposal of batteries and fluids.		X	X	X	X	X	X

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				No Impact	Air Quality/ GHG	Energy	Hazards/ Hazardous Materials	Hydrology/ Water Quality	Noise	Solid/ Hazardous Waste
MOB-06	Accelerated Retirement of Older On-Road Heavy-duty Vehicles	NOx, PM	Retiring older, heavy-duty vehicles and replacing them with low-NOx vehicles fueled with CNG or other alternative fuels (e.g., battery electric and hydrogen fuel cells) may cause impacts to: 1) air quality and GHGs from construction activities associated with installing electric charging infrastructure, scrapping retired vehicles, combusting alternative fuels, and refineries manufacturing more hydrogen and other alternative fuels; 2) energy due to potential increased demand for electricity produced from, natural gas, and hydrogen; 3) hazards and hazardous materials from scrapping retired vehicles and disposal of batteries and fluids and increased production of alternative fuels; 4) hydrology and water quality (surface and ground water) from disposal of batteries and fluids and accidental spills; 5) noise during construction; and 6) solid and hazardous waste from scrapping retired vehicles and disposal of batteries and fluids.		X	X	X	X	X	X
MOB-07	On-Road Mobile Source Emission Reduction Credit Generating Program	NOx, PM	Incentivizing the early deployment of zero emission and low NOx emission heavy-duty trucks through the generation of mobile source emission credits may cause impacts to: 1) air quality and GHGs from construction activities associated with installing electric charging infrastructure, scrapping retired vehicles, combusting alternative fuels, and refineries manufacturing more hydrogen and other alternative fuels; and 2) energy due to potential increased demand for electricity, natural gas and hydrogen; 3) hazards and hazardous materials from scrapping retired vehicles and disposal of batteries and fluids and increased production of alternative fuels (e.g., hydrogen); 4) hydrology and water quality (surface and ground water) from disposal of batteries and fluids and accidental spills; 5) noise during construction ; and 6) solid and hazardous waste from scrapping retired vehicles and disposal of batteries and fluids.		X	X	X	X	X	X

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MOB-08	Small Off-Road Engine Equipment Exchange Program	VOC, NOx, CO	Promoting the accelerated turn-over of in-use small off-road engines and other engines, such as gasoline- and diesel-powered commercial lawn and garden equipment through expanded voluntary exchange programs will contribute to the retirement of older off-road engines which may cause impacts to: 1) air quality and GHGs from scrapping retired equipment; 2) energy due to potential increased demand for electricity; 3) hazards and hazardous materials from scrapping retired equipment and disposal of batteries and fluids; 4) hydrology and water quality (surface and ground water) from disposal of batteries and fluids and accidental spills; and 5) solid and hazardous waste from scrapping retired equipment and disposal of batteries and fluids.		X	X	X	X		X
MOB-09	Further Emission Reductions from Passenger Locomotives	NOx, PM	Promoting earlier and cleaner replacement or upgrade of existing passenger locomotives capable of achieving Tier 4 emission standards and supporting the development of zero emission or low NOx technologies (e.g., battery electric and hydrogen fuel cells) may cause impacts to: 1) air quality and GHGs from construction activities installing electric charging infrastructure and the combustion of alternative fuels, and refineries manufacturing more hydrogen and other alternative fuels; 2) energy due to potential increased demand for electricity produced from natural gas, and hydrogen; 3) hazards and hazardous materials from scrapping retired locomotives and increased production and use of alternative fuels; 4) noise during construction; and 5) solid and hazardous waste from scrapping retired locomotives.		X	X	X		X	X

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MOB-10	Off-Road Mobile Source Emission Reduction Credit Generation Program	NOx, PM	Accelerating the deployment of zero (e.g. battery-electric or fuel cell powered equipment) and low NOx emission off-road mobile equipment (e.g., 90 percent cleaner than Tier 5) that do not receive public funding may cause impacts to: 1) air quality and GHGs from construction activities installing electric charging infrastructure and the combustion of alternative fuels, and refineries manufacturing more hydrogen and other alternative fuels; 2) energy due to potential increased demand for electricity, produced from natural gas, and hydrogen; 3) hazards and hazardous materials associated with the increased production and use of alternative fuels and fuel additives; 4) noise during construction; and 5) solid and hazardous waste from scrapping retired equipment.		X	X	X		X	X
MOB-11	Emission Reductions from Incentive Programs	NOx, PM	Allowing the South Coast AQMD to take credit for emission reductions for SIP purposes achieved through past and future projects (e.g., replacing heavy-duty vehicle/equipment, installing retrofit units, and repowering engines for marine vessels, locomotives, trucks, school buses, agricultural equipment, construction equipment, commercial harbor craft, airport support equipment, and oil drilling equipment) is an administrative exercise which is not expected to cause any environmental impacts.	X						
MOB-12	Pacific Rim Initiative for Maritime Emission Reductions		This measure seeks to recognize ocean-going vessel emission reductions that are the result of voluntary actions and may be considered surplus to the emission reduction commitments of the State SIP Strategy "Federal Action: Cleaner fuel and Vessel Requirements for Ocean-Gong-Vessels." Allowing the South Coast AQMD to take credit for emission reductions achieved through this SIP measure is an administrative exercise which is not expected to cause any environmental impacts.	X						

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MOB-13	Fugitive VOC Emissions from Tanker Vessels	VOC	Installing electronic monitors for pressure/vacuum valves, and inspecting for leaks using analyzers or imaging camera when entering South Coast AQMD waters will increase ongoing monitoring, inspection, and repair activities without causing any adverse environmental impacts.	X						
MOB-14	Rule 2202 – On-Road Motor Vehicle Mitigation Options	VOC, NOx, CO	Amending Rule 2202 to take into account emission reductions due to telecommuting strategies such as allowing employees to work from home is expected to provide a benefit to air quality and GHGs without causing any adverse environmental impacts.	X						
MOB-15	Zero-Emission Infrastructure for Mobile Sources	All Pollutants	Developing a work plan to support and accelerate the deployment of zero emissions infrastructure needed to implement the other control measures/strategies which promote the widespread adoption of zero-emission vehicles and equipment is not expected to cause any additional impacts to areas that were previously identified for the individual control measures which target zero emissions technology.	X						

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APPENDIX B

RESPONSES TO COMMENTS RECEIVED ON THE NOTICE OF PREPARATION AND INITIAL STUDY

APPENDIX B

COMMENTS LETTERS RECEIVED ON THE NOP/IS FOR THE 2022 AQMP AND RESPONSES TO COMMENTS

INTRODUCTION

As the lead agency, the South Coast AQMD must consider all information and comments received relative to the NOP/IS to assist in the preparation of the Draft Program EIR [CEQA Guidelines Section 15084(c)]. In accordance with CEQA, the South Coast AQMD has prepared this appendix to the Program EIR which contains the comments received relative to the NOP/IS. While CEQA does not require the lead agency to provide responses to comments on the NOP/IS, this appendix includes responses to all of the written comments received during the public review and comment period of the NOP/IS. The comment letters and their respective responses are included in this appendix. The South Coast AQMD thanks all who participated in the review process and provided comments on the NOP/IS relative to the proposed project.

CEQA PROCESS OF THE NOP/IS

The NOP/IS was circulated for a 32-day public review with the comment period starting on May 13, 2022 and ending on June 14, 2022. In addition, the South Coast AQMD conducted three CEQA scoping meetings which were held remotely on May 25, 2022 at 1:00 p.m. and 6:00 p.m. for the entire South Coast AQMD jurisdiction, and on May 26, 2022 at 6:00 p.m. for the Coachella Valley. The NOP/IS was filed with the Governor's Office of Planning and Research (OPR) (State Clearinghouse (SCH) # 2022050287) and posted on the State Clearinghouse's CEQAnet Web Portal at: https://ceqanet.opr.ca.gov/2022050287. The NOP was filed for posting with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino Counties.

The NOP/IS was also distributed using electronic mail to various government agencies and other interested agencies, organizations, and individuals (collectively referred to as the public) on May 13, 2022. The NOP was also provided to all California Native American Tribes (Tribes) that requested to be on the Native American Heritage Commission's (NAHC) notification list per Public Resources Code Section 21080.3.1(b)(1). The NAHC notification list provides a 30-day period during which a Tribe may respond to the formal notice, in writing, requesting consultation on the NOP/IS. Additionally, the NOP/IS was published in the following newspapers on May 13, 2022: Los Angeles Times, Orange County Register, Riverside Press Enterprise, and San Bernardino Sun. The NOP/IS was posted on South Coast AQMD's website at: http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2022/2022-aqmp-nopis.pdf. An email notification of the availability of the NOC and the Draft SEA was also sent to interested parties on May 13, 2022.

LIST OF COMMENTERS

Five comment letters were received by South Coast AQMD during the NOP/IS public review and comment period and one additional comment letter was received after the public review and comment period closed. This appendix contains responses to comments received relative to the analysis in the NOP/IS. Responses to comments received relative to Draft 2022 AQMP can be found in "Comments and Responses to Comments" in the Revised Draft 2022 AQMP at www.aqmd.gov/2022aqmp.

For the purposes of identifying and responding to comments on the NOP/IS, comment letters are assigned a reference number and each comment within each letter is bracketed and assigned a comment number. The following is a list of comment letters received relative to the NOP/IS along with the date each letter was submitted.

Comment Letter Number	Commenter	Date of Letter	Page No.
Received During the Public Review Period			
1	Andrew Green, Native American Heritage Commission	May 13, 2022	B-3
2	Dr. Clyde T. Miller, President, Citizens Coalition for a Safe Community	May 23, 2022	B-9
3	Shasta C. Gaughen, Pala Band of Mission Indians	May 23, 2022	B-14
4	Bill Quinn, California Council for Environmental and Economic Balance	June 14, 2022	B-16
5	Crystal Mendoza, Santa Ynez Band of Chumash Indians	June 22, 2022	B-31
Received After the Public Review Period Closed			
6	Joseph P. Lala, PQ Corporation	July 1, 2022	B-33

COMMENT LETTER #1 - Native American Heritage Commission, May 13, 2022 (p. 1 of 5)

STATE OF CALIFORNIA Gavin Newsom, Governor

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

May 13, 2022

Kevin Ni
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4182

Re: 2022050287, 2022 Air Quality Management Plan Project, Los Angeles, Orange, Riverside, and San Bernardino Counties

Dear Mr. Ni:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply. 1-1

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

COMMENT LETTER #1 - Native American Heritage Commission, May 13, 2022 (p. 2 of 5)

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

- **a.** A brief description of the project.
- **b.** The lead agency contact information.
- **c.** Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
- **d.** A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

- **a.** For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

- **a.** Alternatives to the project.
- **b.** Recommended mitigation measures.
- **c.** Significant effects. (Pub. Resources Code §21080.3.2 (a)).

1-1 continued

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:

- **a.** Type of environmental review necessary.
- **b.** Significance of the tribal cultural resources.
- **c.** Significance of the project's impacts on tribal cultural resources.
- **d.** If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

- **a.** Whether the proposed project has a significant impact on an identified tribal cultural resource.
- **b.** Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

Page 2 of 5

COMMENT LETTER #1 - Native American Heritage Commission, May 13, 2022 (p. 3 of 5)

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or

b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

a. Avoidance and preservation of the resources in place, including, but not limited to:

i. Planning and construction to avoid the resources and protect the cultural and natural context.

ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:

i. Protecting the cultural character and integrity of the resource.

ii. Protecting the traditional use of the resource.

iii. Protecting the confidentiality of the resource.

c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).

e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).

f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.

b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.

c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

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1-1 continued

COMMENT LETTER #1 - Native American Heritage Commission, May 13, 2022 (p. 4 of 5)

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
   a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
   b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/.

1-1 continued

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (https://ohp.parks.ca.gov/?page_id=30331) for an archaeological records search. The records search will determine:
   a. If part or all of the APE has been previously surveyed for cultural resources.
   b. If any known cultural resources have already been recorded on or adjacent to the APE.
   c. If the probability is low, moderate, or high that cultural resources are located in the APE.
   d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
   a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
   b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

COMMENT LETTER #1 - Native American Heritage Commission, May 13, 2022 (p. 5 of 5)

3. Contact the NAHC for:
   - **a.** A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
   - **b.** A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
   - **a.** Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
   - **b.** Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
   - **c.** Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

1-1 concluded

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

cc: State Clearinghouse

Page 5 of 5

RESPONSE TO COMMENT LETTER # 1 - Native American Heritage Commission, May 13, 2022

Response 1-1
The South Coast AQMD understands the CEQA requirements imposed by Assembly Bill (AB) 52. As explained in the introduction of this appendix, the South Coast AQMD provided formal notice of a consultation opportunity regarding the NOP/IS for the 2022 AQMP to all local California Native American Tribes known as being traditionally and culturally affiliated with the project area as identified on the NAHC notification list prepared pursuant to Public Resources Code Section 21080.3.1(b)(1). The NAHC notification list provides a 30-day period during which a Tribe may respond to the formal notice, in writing, requesting consultation on the NOP/IS. However, no California Native American Tribe requested a consultation. Thus, no further action is required under CEQA.

COMMENT LETTER #2 – Citizens Coalition for a Safe Community, May 23, 2022 (p. 1 of 2)

From: Tom Williams <ctwilliams2012@yahoo.com>
Date: May 23, 2022 at 1:49:04 PM PDT
To: AQMPTeam <AQMPteam@aqmd.gov>
Cc: Sang-Mi Lee <slee@aqmd.gov>, Darrell Clarke <darrell.clarke@sierraclub.org>, Charming Evelyn <bcharmz@aol.com>, "Ywatson dslextreme.com" <ywatson@dslextreme.com>
Subject: AQMP Public Comments on NOP/Initial Study SCH#: 2022050287 - Revise/Recirculate

DATE: May 23, 2022 5pm

TO: AQMPteam@aqmd.gov
South Coast Air Quality Management District
21865 Copley Dr. Diamond Bar, CA 91765

ATTN: Sang-Mi Lee slee@aqmd.gov (909) 396-3169
CC: Kevin Ni kni@aqmd.gov (909) 396-2462
Barbara Radlein CEQA bradlein@aqmd.gov

FROM: Dr Clyde T. Williams 323-528-9682
ctwilliams2012@yahoo.com
Pres. Citizens Coalition for A Safe Community

SUBJECT: Draft 2022 Southern California AQMD
Air Quality Management Plan (AQMP)
Programmatic Env.Impact Rpt. SCH#: 2022050287

RE: Public Comments on NOP/Initial Study

I have reviewed the NOP/IS for this 2022 AQMP and find the NOP/IS totally inadequate and incomplete for commenting on the proposed Draft Programmatic Environmental Impact Report (DPEIR) for this importance program. I prepared my first Draft EIR in 1972 and have prepared/contributed to/reviewed more than 400 DEIRs/DEISs for California, US, and international agencies. 2-1

COMMENT LETTER #2 – Citizens Coalition for a Safe Community, May 23, 2022 (p. 2 of 2)

Scoping for the DEIR must include an adequate Project/Program Description with clearly stated and quantifiable Goals and Objectives for the program to achieve. This NOP/IS does not provide such goals and objectives, and thereby commentors cannot provide suitable alternatives to the proposed program.

Provide a list of clear and quantifiable goals and related objectives.

2-1 concluded

Furthermore the NOP/IS does not clearly state any alternatives to the proposed actions which have been considered and reviewed along with the proposed Program.

Provide a list of clearly described and compared alternatives (at least 2) and a sample of a numeric comparison.

2-2

The NOP/IS does not mention "Environmental Justice" more than once and does not consider the importance of EJ for those in the Worst Area of the Worst Air Quality Basin in the US (e.g., SR-1/-47 x I-110 x SR60 s I-710).

Provide sufficient discussions (say 1 pg.) of EJ for the AQMP and some relations of AQMP and EJ sector issues and areas, both past, current, and expected.

2-3

The NOP/IS mentions economics, financials, costs, subsidies, and feasibility but without even the least amount of such documentation of what the AQMP will cost, who pays, when pays, and who benefits and receives monetary compensation.

Provide financial backgrounds and programs that currently exist and would be supported by the AQMP 2022.

2-4

These deficiencies in the current NOP/IS must be corrected and provided for the public to understand and provide focused meaningful comments for the DPEIR.

Please withdraw, revise, and reissue the NOP/IS for the AQMP DPEIR.

2-5

RESPONSE TO COMMENT LETTER # 2 – Citizens Coalition For A Safer Community, May 23, 2022

Response 2-1
A detailed project description for the 2022 AQMP was included in Chapter 1 of the NOP/IS which described that the goal of the project was to comply with the 2015 federal 8-hour ozone standard. Specific project objectives are not required to be included in the NOP/IS per CEQA Guidelines Section 15082, but are required to be included in the EIR per CEQA Guidelines Section 15124(b). The project objectives for the 2022 AQMP are included in Chapter 2.6 of this Program EIR. These project objectives were used to develop the alternatives which are analyzed in Chapter 5 of the Program EIR. A more detailed project description is included in Chapter 2 of this Program EIR which further elaborates on the details in the 2022 AQMP. The entire 2022 AQMP is also available from the South Coast AQMD's website at: http://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan#.

Response 2-2
An analysis of project alternatives is not required to be included in the NOP/IS per CEQA Guidelines Section 15082, but is required to be included in the Program EIR. The project alternatives for the 2022 AQMP are included in Chapter 5 of the Program EIR.

Response 2-3
Under state law, the term environmental justice means the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies [Government Code Section 65040.12(e)]. Fairness in this context means that the benefits of a healthy environment should be available to everyone, and the burdens of pollution should not be focused on sensitive populations or on communities that already are experiencing its adverse effects. It should be noted that the primary goal of the 2022 AQMP to attain with the 2015 federal 8-hour ozone standard for all areas within the South Coast AQMD's jurisdiction, including disadvantaged communities. Neither the CEQA statute nor the CEQA Guidelines explicitly require consideration of environmental justice when evaluating the environmental effects of a proposed project.

While there are no procedures to evaluate potential environmental justice impacts under CEQA, the South Coast AQMD considers disproportionate impacts on disadvantaged communities as related to environmental justice by evaluating a proposed project's potential public health and environmental impacts during the CEQA assessment of potential environmental impacts. The Program EIR includes an extensive analysis of the proposed project's potential impacts on air quality and GHG emissions (including air toxics), energy, hazards and hazardous materials, hydrology and water quality, noise, and solid and hazardous waste. In addition, Chapter 5 of the Program EIR analyzes the project alternatives. Because the overarching goal of implementing the 2022 AQMP is to attain the 2015 federal 8-hour ozone standard, the proposed project is expected to provide health benefits to all communities within the South Coast AQMD's jurisdiction including environmental justice and disadvantaged communities.

For non-CEQA purposes, South Coast AQMD adopted an environmental justice initiative to ensure that everyone has the right to equal protection from air pollution and fair access to the decision-making process that works to improve the quality of air within their communities. Environmental justice is a program defined by the South Coast AQMD as the "...equitable environmental policymaking and enforcement to protect the health of all residents, regardless of age, culture, ethnicity, gender, race, socioeconomic status, or geographic location, from the health effects of air pollution." One of the South Coast AQMD's top environmental justice priorities is the implementation of AB 617 and AB 134 (http://www.aqmd.gov/nav/about/initiatives/environmentaljustice/ab617-134). It is important to note, that for communities awarded with incentive funds, the money is allocated for projects or improvements that would provide an environmental benefit for the entire community. As such, financial compensation to individual residents is not a feature of the incentive funding structure for AB 617 communities. Similarly, Senate Bill (SB) 535 identifies environmental justice communities for the purpose of diverting at least 25 percent of the funds generated by AB 32 to be allocated for projects that benefit disadvantaged communities, with at least 10 percent for projects located within these communities.

SB 1000 requires every California city and county that contains a disadvantaged community to address environmental justice in their General Plan. AB 617 establishes Community Air Protection Programs for select environmental justice communities for community air monitoring systems and/or community wide emissions reduction to reduce disproportionate impacts on minority or low-income populations. In addition, CalEnviroScreen is a tool that was developed by the Office of Environmental Health Hazard Assessment (OEHHA) to help implement SB 535 by identifying communities facing toxic exposure and that are vulnerable to pollution and environmental hazards. To accomplish its purpose, the tool uses environmental, health, and socioeconomic data. While this economic and social effects data can be included in the Program EIR, the CEQA Guidelines state that economic or social effects of a project shall not be treated as significant effects on the environment [CEQA Guidelines Sections 15064 and 15131]. Note however, the economic and social effects data in CalEnviroScreen is not intended to be used to determine significance under CEQA.

Finally, Chapter 8 of the 2022 AQMP discusses air quality in environmental justice communities within the South Coast AQMD's jurisdiction and determined the following:

- The impacts of air pollution are not distributed equitably throughout the South Coast AQMD jurisdiction, with some communities bearing much higher air pollution burdens.
- The 2022 AQMP includes control measures to reduce the levels of ozone – a regional pollutant. The South Coast AQMD, however, addresses disproportionate impacts of local air pollution in disadvantaged communities through the AB 617 program.
- While Environmental Justice communities typically experience the same or lower levels of ozone than other parts of the region, these communities see higher PM2.5 levels and higher cancer risks from air toxics.
- Measures associated with the 2022 AQMP will help reduce air pollution in disproportionately impacted areas.

- In the implementation of both existing and future incentive programs, the South Coast AQMD will continue to prioritize environmental justice areas to address the issues of the most disadvantaged communities.

Response 2-4
Financial and economic analyses are not topics that require analyses under CEQA. However, a socioeconomic impact assessment is being prepared to evaluate the potential benefits and costs of implementing the 2022 AQMP control measures. The assessment will discuss the distribution of costs and potential job impacts on various industry sectors, as well as how the health benefits, or the reductions in health risk, are expected to impact environmental justice versus non-environmental justice communities.

Response 2-5
The issues raised in Comments 2-1 through 2-5 are not required by CEQA to be included in the NOP/IS. Therefore, the NOP/IS does not require revision and recirculation. Topics such as project objectives and project alternatives have been addressed, and are included in the Program EIR for the 2022 AQMP. Environmental justice issues are discussed in Chapter 8 of the 2022 AQMP and the related health risk implications will be evaluated in the upcoming Socioeconomic Report, along with the benefits and costs of implementing the 2022 AQMP.

The 2022 Air Quality Management Plan (AQMP) is a plan focused on attaining the 2015 8- hour ozone standard. While ozone is a regional pollutant, environmental justice communities in the South Coast AQMD's jurisdiction typically experience similar or even lower levels of ozone than other areas. This is because they are mostly located upwind of areas where we see peak levels of ozone formation. However, efforts to achieve the Nitrogen Oxides (NOx) emission reductions will reduce ozone and fine particulate matter (PM2.5) levels, benefiting environmental justice communities. In addition, incentive funding programs to assist transition to zero emissions technology in both stationary and mobiles sources will be prioritized for environmental justice communities.

COMMENT LETTER #3 – Pala Band of Mission Indians, May 23, 2022
(p. 1 of 1)

PALA ENVIRONMENTAL DEPARTMENT
PALA BAND OF MISSION INDIANS
PMB 50, 35008 Pala Temecula Road | Pala, CA 92059
Phone 760-891-3510 | Fax 760-742-3189

May 23, 2022

South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4178
Attention: Kevin Ni

Re: Notice of Proposed Project 2022 AQMP

Dear Mr. Ni,

Thank you for the notice referenced above. This letter constitutes our response on behalf of Robert Smith, Chairman of the Pala Band of Mission Indians.

At this time, the Pala Band has no objection to the action outlined in the notice as proposed. We reserve the right to comment in the future should there be modifications or if new information becomes available.

If you have any questions or comments, please contact Darold Wallick, Air Specialist for the Pala Environmental Department, at dwallick@palatribe.com or 760-891-3540.

3-1

Sincerely,

Shasta C. Gaughen, PhD
Environmental Director

THINK GLOBALLY | ACT TRIBALLY

RESPONSE TO COMMENT LETTER # 3 – Pala Band of Mission Indians, May 23, 2022

Response 3-1
This comment does not raise any CEQA issues related to the NOP/IS or potential environmental impacts of the 2022 AQMP; therefore, no further response is required.

COMMENT LETTER #4 – California Council for Environmental and Economic Balance, June 14, 2022 (p. 1 of 12)

California Council for Environmental and Economic Balance
101 Mission Street, Suite 1440, San Francisco, California 94105
415-512-7890 phone, 415-512-7897 fax, www.cceeb.org

June 14, 2022

Kevin Ni
Air Quality Specialist, CEQA
South Coast Air Quality Management District
Submitted via email to kni@aqmd.gov

RE: Notice of Preparation of a Draft Program EIR and the Initial Study (NOP/IS) for the 2022 Air Quality Management Plan (AQMP)

Dear Kevin,

On behalf of the California Council for Environmental and Economic Balance (CCEEB), we submit the following comments on the South Coast Air Quality Management District (SCAQMD) NOP/IS for the 2022 Draft AQMP. While we generally agree with preliminary findings in terms of areas of potentially significant impact, and we support staff efforts to conduct further analysis for the Draft Program Environmental Impact Report (EIR), we do wish to bring to attention differences in findings between the NOP/IS and the California Air Resources Board (CARB) Draft Environmental Assessment (draft EA) for its revised 2022 State Implementation Plan (SIP). A summary of these preliminary findings from both agencies is provided below in Figure 1. As further background, we have attached CCEEB comments to CARB on the draft EA as Appendix 1.

Figure 1: Comparison of NOP/IS to CARB Draft Environmental Assessment for the 2022 SIP

Environmental Impact Areas *"x" indicates a finding of potential significance* *"b" indicates a finding of beneficial impact* *"-" indicates impact was not directly assessed*	**CARB**		**SCAQMD**	
	Short-Term	Long-Term	Short-Term	Long-Term
Aesthetics	x	x		
Agriculture & Forestry				
Air Quality and GHG Emissions	x	b	x	x
Biological Resources	x	x		
Cultural & Tribal Cultural Resources	x	x		
Energy			x	x
Geology & Soils	x	x		
Hazards & Hazardous Materials	x	x	-	x
Hydrology & Water Quality	x	x		
Land Use & Planning	x	x	-	x
Mineral Resources				
Noise	x	x	x	

4-1

COMMENT LETTER #4 – California Council for Environmental and Economic Balance, June 14, 2022 (p. 2 of 12)

Population & Housing				
Public Services				
Recreation				
Solid & Hazardous Waste	-	-		x
Transportation	x	x		
Wildfire				

4-1 cont.

In particular, CCEEB notes key differences in the areas of Air Quality, Energy, and Transportation. We also make note of preliminary assessment of Public Services and Solid and Hazardous Waste.

- **Air Quality** – CARB found potentially significant air quality impacts associated with short-term construction projects, but concluded that long-term operational impacts would be beneficial since the overall impact of the 2022 SIP would be to reduce regional and statewide emissions of criteria pollutants. In regards to air emissions related to vehicle electrification, CARB concluded that, "...a shift to ZEV and PHEVs from fossil-fuel ICEs would yield increasing operational air quality benefits over time as the State's electrical grid becomes more renewable pursuant to the RPS."[1] The SCAQMD likewise found potentially significant impacts from construction projects, but also noted the potential for increased construction and operational impacts resulting from electrification of combustion sources. It also found potential impacts from product reformulation and alternative fuels, including a potential increase in air toxics. CCEEB appreciates the more nuanced approach taken by the District as it seems to consider what could be localized, near source, and/or cumulative impacts associated with electrification and other measures in the AQMP and SIP.

4-2

- **Energy** - CARB found less than significant impacts for both short-term, construction-related projects as well as long-term, operation-related energy impacts, mainly because the SIP "would not result in the wasteful, unnecessary, or inefficient use of energy." CCEEB commented to CARB that its decision not to conduct any further CEQA analysis on energy impacts was a concern, and suggested several areas where further analysis was warranted. CCEEB appreciates that some of these potential areas of energy-related impacts will be further analyzed by SCAQMD staff in the Draft EIR, and hope our attached comments can help inform that work.

4-3

- **Transportation** – CARB found potentially significant transportation impacts mainly due to increased VMT for both short-term construction projects as well as long-term operational-related impacts. In contrast, the NOP/IS did not identify any potentially significant transportation impacts. While CCEEB understands that CARB's analysis must consider a broader range of measures, the majority of

4-4

[1] CARB Draft Environmental Assessment for the Proposed 2022 State Strategy for the Implementation Plan, Appendix B, March 29, 2022. Page 58.

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which are mobile source or transportation related, we believe that both analyses omit discussion of potential goods movement impacts that could conceivably arise. For example, recent supply chain problems illustrate the sensitivity of the goods movement system to disruptions, with the resulting impact of increases in air pollutant emissions. CCEEB recommends that both CARB and the District expand assessment of transportation impacts to include consideration of potential goods movement impacts.

4-4 cont.

- **Public Services** – neither CARB nor the District found potentially significant impacts to public services, although CARB did note the potential for less than significant cumulative impacts. CCEEB believes this area warrants further consideration by both agencies. In particular, CCEEB believes that emergency response capabilities for providers of essential public services should be further analyzed. For example, L-CMB-04 and Advanced Clean Fleets could both impact the ability to emergency response, especially in cases where the duration or geographic scope of an emergency is significant.

4-5

- **Solid and Hazardous Waste** - CCEEB appreciates inclusion of solid and hazardous waste impacts in the NOP/IS and agrees that this area should be further discussed in the draft EIR. This is particularly important for battery recycling and disposal, as well as other electronic waste and disposal of combustion devices. We are strongly in favor of cross media analyses that minimize shifting environmental harms from the air quality arena to the waste sector, and believe that solving today's climate challenges should not result in tomorrow's hazardous waste problems. As we raised in our letter to CARB, we believe that recommendations from the CalEPA Lithium-Ion Battery Recycling Advisory Group could be of particular use, and that end-of-life issues generally should be considered as part of any measure that seeks to shift combustion impacts to battery electric solutions.

4-6

Thank you for considering our views. Please do not hesitate to contact me should you have any questions.

Sincerely,

Attachment

cc: Michael Krause, SCAQMD
Ian MacMillan, SCAQMD
CCEEB South Coast Air Project Members
Ariel Fideldy, CARB
Austin Hicks, CARB

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California Council for Environmental and Economic Balance
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May 13, 2022

Austin Hicks, Air Pollution Specialist
Ariel Fideldy, Manager
California Air Resources Board
Electronic Submittal: http://www.arb.ca.gov/lispub/comm/bclist.php

RE: Draft Environmental Analysis for the Proposed 2022 SIP

Dear Mr. Hicks and Ms. Fideldy,

On behalf of the members of the California Council for Environmental and Economic Balance (CCEEB), we submit the following comments on the California Air Resources Board (CARB) draft Environmental Analysis (draft EA) for the 2022 State Strategy for the State Implementation Plan (2022 SIP). CCEEB members manage and operate numerous sources of criteria pollutant emissions across the state, and have a long, shared history working with CARB to reduce all types of emissions and exposures from industry, energy, and transportation systems, as well as consumer products and other area sources.

Many CCEEB members are also at the forefront of efforts to transition California to a carbon neutral economy, including public and private utilities, fuel and transportation energy producers, power generators, and many other providers of essential public services. In addition to our engagement with CARB on both the 2022 SIP and the 2022 Scoping Plan, CCEEB is also active at the South Coast Air Quality Management District (SCAQMD) on its preparation of the 2022 Air Quality Management Plan (AQMP) to meet the federal 2015 8-hour ozone standard. It is from this perspective that we offer these comments on the draft EA.

4-7

The Draft EA Fails to Meet the Basic Purpose of CEQA, Even If Legally Defensible

Guidelines for the implementation of the California Environmental Quality Act (CEQA) state that the basic purposes of CEQA review are to (1) inform decision makers and the public about potential significant environmental effects that could occur from a project, (2) identify ways to avoid or reduce damage, (3) prevent significant but avoidable damage through the use of alternatives and mitigation measures, and (4) disclose to the public reasons why an agency might approve a project even if it results in significant environmental effects.[1] While CCEEB has no doubt that CARB's counsel is well versed on CEQA case law and statutory requirements for environmental review, we wonder if the simple intent of CEQA – to inform decision makers and

[1] See California Code of Regulations, Title 14, Division 6, Chapter 3, Article 1.

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the public about possible tradeoffs, and discuss, in earnest, ways to avoid or mitigate harm – has been lost over time. Put simply, we did see not a clearly articulated discussion of the very real and potentially significant environmental questions related to the 2022 SIP, despite the more than three hundred pages of carefully worded text and tables. This may pass legal muster and judicial review; however, it does not seem meaningful to decision makers or the public. Problems with CARB's environmental review can be put into two general buckets: key environmental questions that largely go unanswered, and general assumptions that are questionable or lack rigor and data. Put together, CCEEB believes these limitations detract from the usefulness of the draft EA and fail to meet the basic purpose of CEQA. We provide some examples to help illustrate our point.

Examples of Key Questions that Go Largely Unanswered

Battery Recycling and Mining Metals

Perhaps the most obvious example can be seen in CARB's limited review of the impact from the increased demand for batteries, which results from measures to electrify combustion sources, like heavy-duty vehicles, cargo handling and off-road equipment. Here we note that CCEEB supports California's climate and carbon neutrality goals, and recognizes that deploying electric batteries across many applications will be a critical part of achieving those goals. However, we believe that California should avoid, as much as possible, creating tomorrow's environmental problem as we try to solve the problems of today. In terms of batteries, this means addressing the whole spectrum of potentially significant impacts that can occur from mining to recycling.

4-7 continued

Although the draft EA does acknowledge, in general terms, issues related to mining and recycling, it largely absolves CARB and the State from responsibility by citing jurisdictional boundaries, even though it will be CARB mandates that require the shift to batteries and fuel cells in the first place. The only mitigation measures offered are an explanation that any battery recycling or heavy metal mining operation in California would be subject to project-level CEQA review by a local lead agency, and that any remaining impacts are unavoidable.

> *"Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Although unlikely after implementation of Mitigation Measure 9-2, it is possible that significant impacts related to hazards and hazardous materials could still occur.*
>
> *"Consequently, while impacts could be reduced to a less than significant level with mitigation measures imposed by the land use and/or permitting agencies acting as lead agencies for these individual projects under CEQA, if and when a project proponent seeks a permit for compliance-response related project, this Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses, for CEQA*

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> *compliance purposes, that the potential long-term operation-related impacts regarding hazards and hazardous materials associated with the 2022 State SIP Strategy would remain potentially significant and unavoidable."*[2]

Strikingly, no mention is made of either AB 1125 (Pavley, 2005), the Rechargeable Battery Recycling Act, or AB 2832 (Dahle, 2018), which established the Lithium-Ion Battery Recycling Advisory Group at CalEPA, and certainly no mention is made of California's responsibility for mining impacts that occur outside the state, which if poorly managed can lead to severe local environmental outcomes and increased GHG emissions.[3] Importantly, the AB 2832 advisory group is in the final stages of drafting recommendations for end-of-life (EOL) policies for lithium-ion batteries, with a particular focus on batteries used in electric vehicles. Table 2 of the draft report lists lithium-ion recyclers in North America, including those planned for development, noting that, "As EVs have not yet retired at a large scale, the feedstock for these facilities is primarily production scrap from manufacturing and consumer electronics."[4] Not one is in California, suggesting that many if not most of California's battery recycling will occur somewhere else and that the state will export its environmental impacts. As the draft report concluded, "Since EVs are not currently being retired at a large scale, California does not currently have the needed capacity in terms of trained personnel to handle high voltage batteries. Lack of infrastructure in California could encourage EV battery retirement in other states or international export."[5]

CCEEB's point here is that the discussion in the draft EA does very little to illuminate the very real challenges inherent to ramping up use of rechargeable batteries, and provides CARB decision makers and the public with no sense of the options or alternatives that could potentially help mitigate the problem. It also seems to assume that new facilities could somehow be permitted in California to meet the state's need for battery recycling, ignoring the more likely scenario that California would simply export its problem elsewhere.[6] Similarly, impacts from mining happen elsewhere and, as such, are outside of CARB's requirements for

4-7 continued

[2] See "2022 State Strategy for the State Implementation Plan: Draft Environmental Analysis," pages 74-75 and pages 78-79. Nearly identical language is used for Mitigation Measures 9-1 (short term) and 9-2 (long term).
[3] https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions/sustainable-and-responsible-development-of-minerals
[4] AB 2832 Advisory Group Draft Report, revised March 11, 2022, pages 17-19. Accessed online at https://calepa.ca.gov/wp-content/uploads/sites/6/2022/03/AB-2832-Final-Draft-Policy-Recommendations-Lithium-ion-Car-Battery-Recycling-Advisory-Group-As-of-3-11-22.a.hp .pdf#page=1 on May 5, 2022.
[5] Ibid, page 34.
[6] Lead acid batteries are also used in battery electric vehicles and pose their own EOL problems. The now shuttered Exide battery recycling facility in Vernon became one of the state's largest industrial cleanup sites in California, costing tax payers hundreds of millions of dollars and causing one of the worst environmental injustices in recent memory. After the closure of Exide, Quemetco in the City of Industry remains the only lead acid battery recycling facility west of the Rockies, and itself is under close scrutiny by impacted communities and regulators. If nothing else, the history of these facilities serves as an example of how permitting new battery recycling facilities could face serious challenges and community opposition.

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CEQA review, and other impacts, such as increased fire risks and illegal disposal, are not mentioned at all.[7]

CARB's Actions Foretell and Require Additional Analysis on Electrification

Control measures in the 2022 SIP that seek to electrify sources of combustion in California will necessarily lead to major and significant infrastructure development that need to be analyzed as part of the draft EA. These include measures affecting heavy-duty vehicles, transport refrigeration units, cargo handling equipment, off-road vehicles and equipment, locomotives, and residential and commercial space and water heaters. The choice by CARB to require electrification directly leads to more demand, which in turn leads to the development of solar and wind projects in the state, which then lead to reasonably foreseeable environmental impacts. These can't be ignored under CEQA.

However, the draft EA asserts that CARB neither knows where specific projects will be located, nor does it have authority over these projects. "Because CARB cannot predict the location, design, or setting of specific projects that may result and does not have authority over implementation of development that may occur, the programmatic analysis in the Draft EA does not allow for identification of the precise details of project-specific mitigation." CCEEB disagrees with this assertion, and notes that modeling done by CARB contractors E3 for its Scoping Plan includes multiple studies laying out fairly specific areas in California that wind and solar and infrastructure for ZEVs will be deployed.

4-7 continued

CCEEB is concerned that CARB has made no attempt to quantify the levels of increased electricity demand, or how many additional generation, distribution, or transmission assets may be needed to facilitate the increased electricity demand that will surely stem from implementation of the Project, or how the actual construction or relocation of such assets could impact the environment. Using the Scoping Plan's high electrification scenario as an example, new solar arrays and wind power farms will need to be fabricated, transported to, and installed throughout California at more than five times the historical rate of deployment every year for the next 25 years.[8] This deployment will significantly impact the physical environment in all California communities throughout the state. The fabrication, transportation and construction of the required generation facilities will also generate GHG emissions in and

[7] In addition to the work by the AB 2832 Advisory Group to understand EOL issues, CARB should also review data from the Department of Toxic Substances Control on the recycling of consumer rechargeable batteries. This shows that rates of recycling have declined since 2016, when data first began being collected. See https://dtsc.ca.gov/how-is-california-doing-with-recycling-rechargeable-batteries.

[8] See the September 19, 2019 comments from the Clean Air Task Force to the California Energy Commission on the SB 100 Joint Agency Report, "Charting a Path to 100% Clean Energy Future. The Task Force explains that to meet its climate goals with renewable power alone, California would need to deploy new solar and wind generation at five times the state's historical rate every year for the next quarter century and install "the equivalent of nearly ten of the world's largest onshore or offshore windfarms every year." Accessed via https://efiling.energy.ca.gov/GetDocument.aspx?tn=229800&DocumentContentId=61244.

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outside of each community that could have cumulative climate change impacts. Even a lesser level of this activity would likely create CEQA impacts that must be discussed and analyzed.

Unfortunately, CARB has not demonstrated how the Project will impact existing electricity demand. The draft EA does not analyze (or even acknowledge) how development of foreseeable additional renewable generating resources will impact the environment. Because it is likely that CARB can determine with particularity the amount of MW or MWh that will be needed to fully implement the Project in years to come, an accompanying analysis of generating resources and their potential environmental impacts must be provided to comply with CEQA's requirements. These renewable resource facilities are known to have environmental impacts in their own right, including but not limited to, impacts on federal and California sensitive species, water quality and quantity, nearby noise receptors, and project-related air quality impacts.

As more electric energy is utilized throughout California, new energy transmission capacity must be fabricated, transported to, and installed throughout the state to connect with thousands of miles of new nationwide transmission lines. Additional transmission facilities will have significant impacts to the physical environment and result in aesthetic and potentially cultural impacts. The fabrication, transportation, and construction of new transmission equipment and capacity will also generate GHG emissions which would have cumulative climate change impacts.

4-7 continued

In addition, California communities and businesses will be required to install onsite charging, hydrogen fueling, and power storage infrastructure in order to comply with CARB mandates, as described in the 2022 SIP. For heavy-duty vehicles, at least, CARB collected detailed facility data through its Advanced Clean Trucks (ACT) Large Entity Reporting requirements, and has address-specific information about where facilities are located and where infrastructure will be needed. As the draft SIP notes, the volume of these projects is not insignificant; between the ACT rule and the proposed Advanced Clean Fleets rule, CARB expects 651,000 heavy-duty ZEVs will be deployed by 2037, all requiring extensive infrastructure to support load demand, charging, power storage, and hydrogen fueling. The fabrication, transportation, and installation of materials and equipment from these projects would have significant hazardous materials, human health, fire, fire suppression and policing services, GHG emissions, and physical impacts. For example, the energy intensity of battery core raw material mining, transportation, and fabrication alone could be expected to result in cumulatively significant climate change impacts.

CEQA caselaw holds that EIRs must consider the effects of changes to the environment that can result from an expansion of facilities, services, or utilities to serve the project. *Goleta Union Sch. Dist. v. Regents of Univ. of Cal*. (1995) 37 Cal.App.4th 1025; *El Dorado Union High Sch. Dist. v. City of Placerville* (1983) 144 Cal.App.3d 123. CCEEB believes that approach taken in the draft EA is inadequate, and that CARB does have data it can use to improve analysis of impacts stemming from its electrification policies.

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Zero-Emission Vehicles and Equipment During Electrical Emergencies

Also not addressed in the draft EA are questions about what happens to zero-emission vehicles and equipment during electrical power emergencies. This problem has two main aspects to consider in terms of environmental effects: facilities that have backup power, and facilities that don't. For the former, a few facilities and homeowners may choose to install newly emerging zero-emission options, like onsite battery storage or fuel cells, but most likely will opt for traditional diesel-fueled emergency generators, especially in early years when the incremental cost of zero-emission options will be prohibitive. For example, a study of the recent increase in permitted emergency generators found that 90 percent were diesel fueled.[9] CARB has made no attempt to discuss or quantify the air pollution impacts from this likely outcome, nor has the need for backup power been materially addressed in any of its zero-emission rulemakings or public meetings.

For facilities that do not have onsite backup power, other environmental and public safety effects could occur. For example, all-electric buildings and homes could face risks from a loss of heating, cooling, and refrigeration during emergency events or power shutoffs, and manufacturing and industrial operations could face workplace hazards due to a sudden or persistent loss of power. CCEEB has raised the need for contingency planning in the past to CARB staff, and reiterates its request here, even if it happens outside the scope of the draft EA.

4-7 continued

Examples of Questionable Assumptions or Lack of Data

Air Quality Emissions Inventory Based on Outdated 2012 Data

CCEEB was surprised that the air quality section of the draft EA offered no quantification of either emission reduction benefits or increases due to compliance actions stemming from the proposed SIP measures. Moreover, the inventory used to establish the environmental setting in the draft EA is based on 2012 data and simply repeats (verbatim) what was used in CARB's 2016 SIP. CCEEB is concerned by this failure to quantify air impacts, particularly for the measures that shift emissions from the tailpipe to the power generation sector. For example, some experts estimate that electrifying heavy-duty vehicles in California could increase peak demand by as much as 11 gigawatts, based on California Energy Commission forecasts of charging infrastructure needed. This level of load represents about twenty percent of California's historical peak demand. Rather than assess how load growth could affect air quality over time (or how communities in proximity to power generation or renewable energy facilities could be impacted by near-source pollution), the draft EA simply recites the SB 100 goal to have 100 percent renewable energy by 2045, and says that the purpose of the SIP in any case is to reduce *mobile* sources of emissions.

[9] See https://www.businesswire.com/news/home/20211006005088/en/New-Study-Shows-a-Rapid-Increase-of-Diesel-Fueled-Backup-Generators-Across-California.

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CCEEB is unclear why CARB ceased production of its Air Almanac, as it was a useful document that showed 20-years of air quality trends for all five criteria pollutants, as well as ten high priority toxic air contaminants. CCEEB believes it should be updated, especially if CARB intends to use it for SIP purposes. Additionally, CCEEB believes that the Air Almanac was meant to serve the purpose of meeting CARB's statutory requirements to develop a statewide emissions inventory for mobile and area sources, and to compile this data along with air toxics data reported quadrennially by stationary sources to the air districts.[10] Indeed, it was this same section of code that staff used to justify some of its recently adopted changes to the AB 2588 Emissions Inventory Criteria and Guidelines.[11] CCEEB does not understand why CARB is collecting new data, ostensibly for the statewide inventory, but not actually publishing the inventory. That is, we do not understand why staff stopped implementing the statewide inventory program after the 2013 version of the Air Almanac, or why all previous iterations of the quadrennial inventory are no longer posted to the CARB website. We believe that this historical trend analysis provides value to the public, policy decision makers, and CARB partner agencies, and that it should be reinstituted.

Draft EA Assumes Infrastructure Projects Will Stay Within Existing Facility Footprint

4-7 continued

Throughout the draft EA, CARB assumes that development of new or expanded facilities in response to the 2022 SIP measures would occur "in areas within existing footprints or in areas with consistent zoning." This core assumption applies to mining-related impacts, construction impacts, impacts to tribal cultural resources, wildfire impacts, expansion of public services like utility electricity distribution lines, manufacturing of ZEVs and zero-emission equipment, battery recycling and refurbishing, and other impacts. What is not addressed is the physical footprint of needed charging and hydrogen fueling infrastructure, which will be needed at publicly accessible facilities as well as in-depot/at-residence to support ZEVs. Impacts from building out this infrastructure will be significant and will affect the environment, yet have not been considered in the draft EA at all.[12]

Draft EA Assumes Total Heavy-Duty Vehicle Population Will Decrease Over Time

Although the draft EA does not present CARB assumptions about changes in the number of heavy-duty vehicles operating in California, data shared with the California Energy Commission for demand forecasting purposes seems to indicate that CARB staff assume the total population

[10] See Health & Safety Code Section 44345
[11] See the Staff Report: Initial Statement of Reason for the Amendments to the Emission Inventory Criteria and Guidelines Report for the Air Toxics "Hot Spots" Program, September 29, 2020, page 50: "In addition, the information on activity of mobile sources also supports the estimation of toxics from mobile and areawide sources that CARB is required to compile pursuant to Health and Safety Code Section 44345(b)."
[12] In contrast, the Port of Long Beach did a comprehensive public charging study for its drayage fleets, with detailed assessment of physical footprint requirements, costs, and electricity/grid demand, among other impacts. See https://www.businesswire.com/news/home/20211006005088/en/New-Study-Shows-a-Rapid-Increase-of-Diesel-Fueled-Backup-Generators-Across-California.

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of vehicles will *decrease* as compared to the reference scenario (i.e., baseline conditions). That is, CARB assumes that ZEVs will ship more than their combustion counterparts; therefore, fewer vehicles will be needed for the same share of goods movement. CCEEB questions this assumption, especially given reduced payload capacities for battery electric vehicles. Moreover, assumptions about lower downtime for repairs and maintenance have not be substantiated by real-world studies, and in most applications, there are no or insufficient numbers of heavy-duty ZEVs deployed to provide any data. Indeed, lessons learned from early adopters and pilot projects indicate that more than one ZEV is needed to replace a single combustion-powered vehicle, suggesting that the total population of heavy-duty vehicles would need to increase over time to handle the same about of goods movement. More trucks could mean more particulate matter from road dust and tire wear, which has not be evaluated, as well as increased noise and congestion from roadways and vehicular transportation corridors.

A Multi-Technology Pathway Should Have Been Considered for the Alternatives Assessment

In October 18, 2021 comments to the Board on the Mobile Source Strategy, CCEEB asked that a multi-technology pathway be considered in the draft EA alternatives assessment for the 2022 SIP. CCEEB and others had previously raised the near-term benefits of a more nuanced, multi-technology approach to CARB, including work done by the Center for Environmental Research and Technology at the University of California, Riverside,[13] as well as comments to CARB from the South Coast Air Quality Management District about the need for near-term actions.[14] We are disappointed that no effort was made by CARB staff to incorporate any of these points or emissions analyses into the alternatives assessment. Again, we reflect back on statutory language of intent for CEQA review, and find the draft EA unfortunately lacking.

4-7 continued

Conclusion

CCEEB appreciates the work that staff has done in developing the proposed 2022 SIP and its efforts to engage with stakeholders and agency partners like the SCAQMD and San Joaquin Valley Air Pollution Control District. CCEEB also recognizes CARB's need to conduct legally defensible CEQA impact assessments for its programs and rules, as well as the expertise of its legal counsel and air planners responsible for these tasks. Our comments on the draft EA are not meant as a criticism on CARB staff or its work. Instead, we have tried to use our comments as an opportunity to raise important questions about tradeoffs and unintended consequences that we believe should be discussed by the Board, senior staff, and stakeholders across the spectrum of interests. CEQA, which was originally intended as the mechanism for these types of

[13] See Arun S.K. Raju, Barry R. Wallerstein, Kent C. Johnson, "Achieving NOx and Greenhouse gas emissions goals in California's Heavy-Duty transportation sector," Transportation Research Part D: Transport and Environment, Volume 97, 2021, 102881, ISSN 1361-9209, https://doi.org/10.1016/j.trd.2021.102881 .
[14] See, for example, the May 14, 2021 SCAQMD letter to Executive Officer Corey on the Revised Draft 2020 Mobile Source Strategy. Accessed online via https://ww2.arb.ca.gov/sites/default/files/2021-05/6-SCAQMD_Comment_RevisedDraft2020MobileSourceStrategy.pdf#page=2.

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considerations and policy debates, does not seem to be as useful for such purposes anymore, and the draft EA appears more perfunctory than thought provoking.

CCEEB will continue to look for ways to engage with CARB and all interested parties to have these discussions and find space to explore and (hopefully) solve implementation challenges. For example, we were encouraged by the recent series of infrastructure work group meetings held in support of the Advanced Clean Fleet rulemaking. While these meetings have only started the conversation about ZEV infrastructure, they reflect what we hope is a genuine desire at CARB to have substantive discussions and to look for innovative ways to explore complex issues with the public. For now, we recommend that CARB think seriously about reinstituting its Air Almanac and updating the statewide emissions inventory, and that CARB continue to facilitate multi-agency discussions on infrastructure and energy challenges that will come from implementation of the 2022 SIP.

4-7 concluded

If you have any questions or wish to discuss these concerns further, please contact CCEEB's Air Project Regulatory Manager, Jon Costantino with Tradesman Advisors at jon@tradesmanadvisors.com. Thank you.

Sincerely,

Bill Quinn
President
CCEEB

cc:
Mr. Jackson Gualco, The Gualco Group, Inc.
Members of the CCEEB Air Project

RESPONSE TO COMMENT LETTER # 4 – California Council for Environmental and Economic Balance, June 14, 2022

Response 4-1
This comment provides introductory remarks which present a summary comparison between the key environmental topic areas with potentially significant impacts that were analyzed in the NOP/IS for the 2022 AQMP prepared by South Coast AQMD to the Draft Environmental Assessment for the Revised 2022 State SIP Strategy prepared by CARB. While the two projects are related in that they both contain blueprints for achieving attainment with the federal ozone standard, it is important to note that the project analyzed for the 2022 AQMP is limited to the South Coast AQMD's jurisdiction while project analyzed for the Draft 2022 State SIP Strategy, is applicable to all of California. Thus, staff recognizes that there are nuanced differences between the analyses in these CEQA documents.

For context, this comment also provided a copy of the comment letter submitted to CARB relative to the Draft Environmental Assessment for the Revised 2022 State SIP Strategy which is identified as Comment 4-7. Please see Response 4-7.

Response 4-2
This comment concurs with the findings on the potential air quality impacts in the NOP/IS. No further responses are required. Air quality and GHG impacts are evaluated in Chapter 4.2 of the Program EIR.

Response 4-3
The NOP/IS identified potentially significant energy impacts, and these energy impacts are evaluated in the Chapter 4.3 of Program EIR for the 2022 AQMP, including analyses on the potential increases in the need for electricity, natural gas, and the potential production of alternative fuels.

Response 4-4
Relative to transportation impacts, the 2022 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero emission mobile sources, control indirect sources of emissions, and incentivize the use of alternative fuels. However, implementation of the proposed control measures in the 2022 AQMP is not expected to substantially alter vehicle mileage or transportation routes.

The proposed project also has the potential to increase transportation impacts related to construction of new or modified air pollution control equipment. Construction trips and vehicle miles traveled (VMT) are associated with contractors and vendors delivering and installing equipment at affected facilities, and will vary depending on the number and location of facilities and the size of the construction workforce needed. Because of the temporary nature of construction activities, any increase in VMT related to construction activities would occur on a short-term basis at each location. In general, temporary construction-related increases in VMT are not considered to be a transportation impact or inconsistent with CEQA Guidelines Section 15064.3. These construction projects would not have a substantial, permanent effect on regional VMT.

Additionally, discretionary projects at affected facilities could be subject to project-level review under CEQA. As a result, construction projects were concluded in the NOP/IS to not have a permanent effect on regional VMT. Therefore, temporary effects of construction-related vehicles would not conflict with the state's GHG reduction and associated VMT goals for the transportation sector.

One of the primary goals of the 2022 AQMP is the replacement of high-emitting mobile sources with low NOx and zero emission mobile sources. Control measures aimed at mobile sources are not expected to result in an increase in total mobile sources (e.g., an increase in automobiles or trucks), but would instead replace the higher emitting vehicles with lower emitting mobile sources. Therefore, these types of control measures would not result in an increase in VMT, but would instead encourage the use of lower-emitting mobile sources. Further, the 2022 AQMP would not require the construction of additional roadways.

CEQA Guidelines Section 15064.3(a) clarifies that the primary consideration in evaluating a project's transportation impacts for CEQA purposes is the amount and distance that a project might cause people to drive. This captures two measures of transportation impacts: number of automobile trips generated and VMT. As discussed in Section XIII. Population and Housing of the NOP/IS, implementation of the 2022 AQMP is not expected to generate additional employee or population increases. Therefore, no increase in vehicle trips or VMT is expected, and the NOP/IS concluded that project impacts relating to VMT would be less than significant. Based upon these considerations, the Program EIR does not further analyze transportation impacts.

Response 4-5
The NOP/IS determined that, although the implementation of the proposed control measures in the 2022 AQMP would use alternative fuels (e.g., hydrogen), the use of alternative fuels over time would displace gasoline and diesel fuels. As first responders to emergency situations, fire departments are trained to respond to a variety of situations related to hazardous materials. Large industrial facilities (e.g., electric generating plants and refineries) have on-site fire response personnel and the local fire departments provide assistance to the on-site personnel. Therefore, no increase in calls for fire protection and emergency medical service would be expected from implementation of the proposed control measures.

Furthermore, all activities undertaken as a result of implementing the proposed control measures in the 2022 AQMP would be required to comply with fire-related safety features in accordance with the applicable provisions of the adopted California Fire Code, any county or city ordinances, and standards regarding fire prevention and suppression measures related to water improvement plans, fire hydrants, fire access, and water availability.

For these same reasons, implementation of the proposed control measures would not be expected to result in an increase in calls for police protection. At industrial and commercial facilities, on-site security is in place and would continue to provide security for existing facilities with the same demand for police department support as is currently needed.

The need for new or the expansion of existing schools, parks, or library services and facilities is tied to population growth. Implementation of the proposed control measures would not induce

population growth either directly or indirectly. Therefore, with no increase in local population, there would be no additional demand for new or expanded schools, parks, and libraries and no impacts are expected.

Thus, the NOP/IS concluded that implementation of the proposed control measures would not adversely affect the ability of local fire or police protection to provide adequate service, or impact any other public service, and public service impacts would be less than significant. Based upon these considerations, the Program EIR does not further analyze impacts to public services.

Response 4-6
The NOP/IS identified potentially significant solid and hazardous waste impacts and these impacts are evaluated in Chapter 4.7 of the Program EIR for the 2022 AQMP, including analyses on the potential increases in the use and disposal of batteries, as well as the potential disposal of vehicles, heaters, and other equipment that could be replaced at or before its end of line.

Response 4-7
This comment is comprised of a comment letter submitted to CARB relative to the Draft Environmental Assessment for the Revised 2022 State SIP Strategy. Because this comment does not raise any CEQA issues relative to the NOP/IS or potential environmental impacts of the 2022 AQMP, no further response is required.

COMMENT LETTER #5 – Santa Ynez Band of Chumash Indians, June 22, 2022 (p. 1 of 1)

SANTA YNEZ CHUMASH TRIBAL ELDER'S COUNCIL
TO PROTECT AND PRESERVE TRIBAL ANCESTRY, TRADITIONS AND CULTURE

Santa Ynez Band of Chumash Indians
Tribal Elders' Council
P.O. Box 517 ◆ Santa Ynez ◆ CA ◆ 93460
Phone: (805)688-7997 ◆ Fax: (805)688-9578 ◆ Email: elders@santaynezchuhmash.org

June 22, 2022

South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4178

Att.: Kevin Ni, Assistant Air Quality Engineer

Re: 2022 Air Quality Management Plan (AQMP)

Dear Mr. Ni:

Thank you for contacting the Tribal Elders' Council for the Santa Ynez Band of Chumash Indians.

At this time, the Elders' Council requests no further consultation on this project; however, we understand that as part of NHPA Section 106, we must be notified of the project.

Thank you for remembering that at one time our ancestors walked this sacred land.

5-1

Sincerely Yours,

Crystal Mendoza

Crystal Mendoza
Administrative Assistant | Cultural Resource Management
Santa Ynez Band of Chumash Indians | Tribal Hall
(805) 325-5537
cmendoza@santaynezchumash.org

RESPONSE TO COMMENT LETTER # 5 – Santa Ynez Band of Chumash Indians, June 22, 2022

Response 5-1
This comment does not raise any CEQA issues related to the NOP/IS or potential environmental impacts of the 2022 AQMP; therefore, no further response is required.

COMMENT LETTER #6 – PQ Corporation, July 1, 2022 (p. 1 of 3)

From: Joe Lala (Chester) <Joe.Lala@pqcorp.com>
Sent: Friday, July 1, 2022 1:54 PM
To: Kevin Ni <kni@aqmd.gov>
Cc: Jim Olivier (SouthGate) <Jim.Olivier@PQCorp.com>
Subject: PQ LLC Comments DEIR 2022 Air Quality Management Plan

Dear Mr. Ni,

Attached are several comments on behalf of PQ LLC for the SCAQMD's Notice of Preparation of a Draft Program Environmental Impact Report regarding the 2022 AQMP.

We appreciate the opportunity to comment and look forward to working with the department.

Best Regards,

Joe

Joseph P. Lala
PQ
Sr. environmental Manager
(M) (484)402-0791

COMMENT LETTER #6 – PQ Corporation, July 1, 2022 (p. 2 of 3)

PQ Corporation

Via E-Mail
Kevin Ni
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4178
kni@aqmd.gov

RE: Comments on Notice of Preparation of Draft Program Environmental Impact Report 2022 Air Quality Management Plan

Dear Mr. Ni,
PQ LLC (PQ) is writing to submit comments on the South Coast Air Quality Management District's (SCAQMD's) Notice of Preparation of a Draft Program Environmental Impact Report (DEIR) regarding the 2022 Air Quality Management Plan (AQMP), in regards to the 2015 ozone national ambient air quality standard (NAAQS). PQ operates a sodium silicate manufacturing facility in South Gate, CA and is regulated by the SCAQMD. PQ offers the following comments:

1. SCAQMD proposed in the AQMP nitrogen oxides (NOx) emission reductions by "replacing or retrofitting boilers and process heaters used in industrial, institutional, and commercial operations with zero and low NOx emission technologies." The AQMP estimates an emission reduction of 0.5 tons/day by 2037 under this control strategy.

   PQ does not believe that zero emission boilers are available at commercial scale or with adequately demonstrated reliability in industrial applications such as at PQ's facility. PQ encourages SCAQMD to carefully examine the availability of zero emission boilers on an industry and facility-specific basis before incorporating it as a strategy for attaining the 2015 ozone NAAQS. Moreover, for many facilities, revisions to SCAQMD Rule 1146 required implementation of additional NOx reductions in as recently as 2018, which is well after the 2015 ozone NAAQS. It is not clear whether the AQMP's quantification of NOx reductions to achieve the 2015 ozone NAAQS factors these emission reductions from revisions to Rule 1146. Reductions of NOx that have been achieved recently by many facilities, such as use of low-NOx burners, should be factored into the AQMP in determining the need for additional NOx reductions.

2. The AQMP proposes to achieve additional NOx reductions from RECLAIM facilities through implementation of best available retrofit control technology (BARCT). PQ notes that AQMD recently determined in the development of amendments to Rule 1117 that ceramic catalytic filter systems such as the Tri-mer control system that PQ currently uses on its sodium silicate furnace would constitute BARCT. At this time, PQ is not aware of other technologies that are commercially available that reasonably achieve a greater level of NOx emissions reduction. Therefore, for sources such as sodium silicate manufacturers, the AQMP should not include additional NOx reductions.

6-1

COMMENT LETTER #6 – PQ Corporation, July 1, 2022 (p. 3 of 3)

PQ Corporation

PQ appreciates the opportunity to comment on the 2022 AQMP DEIR. IF you have any questions, please contact me at 484-402-0791 or Jim Olivier at our Southgate plant at 323-326-1100.

Best Regards,

Joseph P. Lala
Sr. Environmental Manager

RESPONSE TO COMMENT LETTER # 6 – PQ Corporation, July 1, 2022

Response 6-1
This comment letter does not raise any CEQA issues related to the NOP/IS or potential environmental impacts of the 2022 AQMP. This comment letter is identical to Comment Letter #57 in the "Comments and Responses to Comments" section in the Revised Draft 2022 AQMP which is available at www.aqmd.gov/2022aqmp; please see Responses to Comment Letter #57.

APPENDIX C

COMMENT LETTERS RECEIVED ON THE DRAFT PROGRAM EIR FOR THE 2022 AQMP AND RESPONSES TO COMMENTS

APPENDIX C

COMMENT LETTERS RECEIVED ON THE DRAFT PROGRAM EIR FOR THE 2022 AQMP AND RESPONSES TO COMMENTS

INTRODUCTION

As the lead agency, the South Coast AQMD must consider all information and comments received relative to the Draft Program EIR. [CEQA Guidelines Section 15088]. In accordance with CEQA, the South Coast AQMD has prepared this appendix to the Final Program EIR which contains the comments received relative to the Draft Program EIR. This appendix includes responses to all of the written comments received during the public review and comment period of the Draft Program EIR. The comment letters and their respective responses are included in this appendix. The South Coast AQMD thanks all who participated in the review process and provided comments on the Draft Program EIR relative to the proposed project.

CEQA PROCESS FOR THE DRAFT PROGRAM EIR

The Draft Program EIR was circulated to the public for a 46-day review and comment period from September 16, 2022 to November 1, 2022. A Notice of Completion (NOC) was filed with the Governor's Office of Planning and Research (OPR) (State Clearinghouse (SCH) No. 2022050287) and posted on the State Clearinghouse's CEQAnet Portal on September 16, 2022 at: https://ceqanet.opr.ca.gov/2022050287/2. The NOC was distributed using electronic mail to various government agencies and other interested agencies, organizations, and individuals (collectively referred to as the public). The NOC was also provided to all California Native American Tribes that requested to be on the Native American Heritage Commission's (NAHC) notification list per Public Resources Code Section 21080.3.1(b)(1). The NAHC notification list provides a 30-day period during which California Native American Tribes may respond to the formal notice, in writing, requesting consultation on the Draft Program EIR. The NOC was published in the Los Angeles Times, the Orange County Register, the Riverside Press Enterprise, and the San Bernardino Sun on September 16, 2022. Additionally, the Draft Program EIR was posted on South Coast AQMD's website at: http://www.aqmd.gov/home/research/documents-reports/lead-agency-scaqmd-projects. An email notification of the availability of the NOC and the Draft Program EIR was also sent to interested parties on September 16, 2022.

The public was invited to attend and provide public comments on the 2022 Draft Final AQMP and the Draft Program EIR at five regional public hearings that were held virtually: 1) October 12, 2022 at 2:00 p.m. for Los Angeles County; 2) October 12, 2022 at 6:00 p.m. for San Bernardino County; 3) October 18, 2022 at 6:00 p.m. for Coachella Valley; 4) October 19, 2022 at 1:00 p.m. for Orange County; and 5) October 20, 2022 at 1:00 p.m. for Riverside County. No CEQA comments were raised at any of the regional public hearings.

LIST OF COMMENTERS

Six comment letters were received by South Coast AQMD during the Draft Program EIR public review and comment period. This appendix contains responses to comments received relative to the analysis in the Draft Program EIR. The comment letters and individual responses to all comments related to potential environmental impacts from the 2022 AQMP are provided in this appendix.

Responses to comments received relative to Revised Draft 2022 AQMP can be found in "Comments and Responses to Comments" in the Draft Final 2022 AQMP at www.aqmd.gov/2022aqmp.

For the purposes of identifying and responding to comments on the Draft Program EIR, comment letters are assigned a reference number and each comment within each letter is bracketed and assigned a comment number. The following is a list of comment letters received relative to the Draft Program EIR along with the date each letter was submitted.

Comment Letter Number	Commenter	Date of Letter	Page No.
1	Crystal Mendoza, Santa Ynez Band of Chumash Indians	September 28, 2022	C-4
2	Andrew Green, Native American Heritage Commission	September 29, 2022	C-6
3	Duncan McKee	October 18, 2022	C-14
4	Duncan McKee	October 31, 2022	C-36
5	Daniel McGivney, SoCalGas	October 31, 2022	C-45
6	Michael J. Carroll, Latham & Watkins on behalf of the Regulatory Flexibility Group (RFG) and the Western States Petroleum Association (WSPA)	October 31, 2022	C-47

CEQA Guidelines Section 15204(b) outlines parameters for submitting comments and reminds persons and public agencies that the focus of review and comment of the Draft Program EIR should be "on the proposed finding that the project will not have a significant effect on the environment." If persons and public agencies believe that the proposed project may have a significant effect, the commenter should: 1) identify the specific effect; 2) explain why they believe the effect would occur; and 3) explain why they believe the effect would be significant. Comments are most helpful when they are as specific as possible. At the same time, reviewers of the Program EIR should be aware that CEQA does not require a lead agency to conduct every test or perform all research, study, and experimentation recommended or demanded by commenters. CEQA Guidelines Section 15204(c) further advises, "Reviewers should explain the basis for their comments, and should submit data or references offering facts, reasonable assumptions based on facts, or expert opinion supported by facts in support of the comments. Pursuant to CEQA Guidelines Section 15064, an effect shall not be considered significant in the absence of substantial evidence." CEQA Guidelines Section 15204(e) also states, "This section shall not be used to restrict

the ability of reviewers to comment on the general adequacy of a document or of the lead agency to reject comments not focused as recommended by this section." Written responses have been prepared pursuant to the CEQA Guidelines and the level of detail contained in each response corresponds to the level of detail provided in the comment (i.e., responses to general comments may be general).

COMMENT LETTER #1 – Santa Ynez Board of Chumash Indians, September 28, 2022 (p. 1 of 1)

SANTA YNEZ CHUMASH TRIBAL ELDER'S COUNCIL
TO PROTECT AND PRESERVE TRIBAL ANCESTRY, TRADITIONS AND CULTURE

Santa Ynez Band of Chumash Indians
Tribal Elders' Council
P.O. Box 517 ◆ Santa Ynez ◆ CA ◆ 93460
Phone: (805)688-7997 ◆ Fax: (805)688-9578 ◆ Email: elders@santaynezchuhmash.org

September 28, 2022

Southern Coast Air Quality Management District
Planning, Rule Development and Area Sources
21865 Copley Drive
Diamond Bar, CA 91765-4178

Att.: Kevin Ni,

Re: 2022 Air Quality Management – Notice of Completion of a Draft Program EIR and Opportunity

Dear Mr. Ni:

Thank you for contacting the Tribal Elders' Council for the Santa Ynez Band of Chumash Indians.

At this time, the Elders' Council requests no further consultation on this project; however, we understand that as part of NHPA Section 106, we must be notified of the project. 1-1

Thank you for remembering that at one time our ancestors walked this sacred land.

Sincerely Yours,

Crystal Mendoza

Crystal Mendoza
Administrative Assistant | Cultural Resources
Santa Ynez Band of Chumash Indians | Tribal Hall
(805) 325-5537
cmendoza@santaynezchumash-nsn.gov

RESPONSE TO COMMENT LETTER #1 – Santa Ynez Board of Chumash Indians, September 28, 2022

Response 1-1

The South Coast AQMD provided a formal notice of the proposed project to all California Native American Tribes that either requested to be on the Native American Heritage Commission's (NAHC) notification list or South Coast AQMD's mailing list per Public Resources Code Section 21080.3.1(b)(1) and a notice of the proposed project was provided to the commenter. These notices provide an opportunity for California Native American Tribes to request a consultation with the South Coast AQMD if potentially significant adverse impacts to Tribal cultural resources are identified. The Draft Program EIR for the proposed project did not identify any potentially significant adverse impacts to Tribal cultural resources and the commenter requests no further consultation. Further, the South Coast AQMD did not receive any consultation requests from any California Native American Tribes, including the commenter, relative to the proposed project. This comment does not raise any CEQA issues relative to the Draft Program EIR or potential environmental impacts of the 2022 AQMP; therefore, no further response is required by CEQA.

COMMENT LETTER #2 – Native American Heritage Commission, September 29, 2022 (p. 1 of 7)

STATE OF CALIFORNIA Gavin Newsom, Governor

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

September 29, 2022

Kevin Ni
South Coast AQMD

Via Email to: kni@aqmd.gov

Re: Native American Consultation, Pursuant to Senate Bill 18 (SB18), Government Codes §65352.3 and §65352.4, as well as Assembly Bill 52 (AB52), Public Resources Codes §21080.1, §21080.3.1 and §21080.3.2, 2022 Air Quality Management Plan (AQMP) Project, Los Angeles, Orange, Riverside, San Bernardino Counties

Dear Mr. Ni:

Attached is a consultation list of tribes with traditional lands or cultural places located within the boundaries of the above referenced counties or projects.

Government Codes §65352.3 and §65352.4 require local governments to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose of avoiding, protecting, and/or mitigating impacts to cultural places when creating or amending General Plans, Specific Plans and Community Plans.

Public Resources Codes §21080.3.1 and §21080.3.2 requires public agencies to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose of avoiding, protecting, and/or mitigating impacts to tribal cultural resources as defined, for California Environmental Quality Act (CEQA) projects.

The law does not preclude local governments and agencies from initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction. The NAHC believes that this is the best practice to ensure that tribes are consulted commensurate with the intent of the law.

2-1

Best practice for the AB52 process and in accordance with Public Resources Code §21080.3.1(d), is to do the following:

Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.

The NAHC also recommends, but does not require that lead agencies include in their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential affect (APE), such as:

COMMENT LETTER #2 – Native American Heritage Commission, September 29, 2022 (p. 2 of 7)

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

   - A listing of any and all known cultural resources have already been recorded on or adjacent to the APE, such as known archaeological sites;
   - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
   - Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the APE; and
   - If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

   - Any report that may contain site forms, site significance, and suggested mitigation measures.

     All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code Section 6254.10.

3. The result of the Sacred Lands File (SLF) check conducted through the Native American Heritage Commission. The request form can be found at http://nahc.ca.gov/wp-content/uploads/2015/08/Local-Government-Tribal-Consultation-List-Request-Form-Update.pdf.

4. Any ethnographic studies conducted for any area including all or part of the potential APE; and

5. Any geotechnical reports regarding all or part of the potential APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS is not exhaustive, and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event, that they do, having the information beforehand well help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance we can assure that our consultation list remains current.

If you have any questions, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

2-1 continued

Page 2 of 2

COMMENT LETTER #2 – Native American Heritage Commission, September 29, 2022 (p. 3 of 7)

Native American Heritage Commission
Tribal Consultation List
San Bernardino, Los Angeles, Riverside, Orange Counties
9/29/2022

Agua Caliente Band of Cahuilla Indians
Patricia Garcia-Plotkin, Director
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264
Phone: (760) 699 - 6907
Fax: (760) 699-6924
ACBCI-THPO@aguacaliente.net

Agua Caliente Band of Cahuilla Indians
Reid Milanovich, Chairperson
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264
Phone: (760) 699 - 6800
Fax: (760) 699-6919
laviles@aguacaliente.net

Augustine Band of Cahuilla Mission Indians
Amanda Vance, Chairperson
84-001 Avenue 54 — Cahuilla
Coachella, CA, 92236
Phone: (760) 398 - 4722
Fax: (760) 369-7161
hhaines@augustinetribe.com

Barbareno/Ventureno Band of Mission Indians
Dayna Barrios, Chairperson
Phone: (805) 890 - 6855 — Chumash
barrios_dayna@yahoo.com

Barbareno/ Ventureno Band of Mission Indians
Annette Ayala, MLD
188 S. Santa Rosa Street — Chumash
Ventura, CA, 93001
Phone: (805) 515 - 9844
annetteayala78@yahoo.com

Cabazon Band of Mission Indians
Doug Welmas, Chairperson
84-245 Indio Springs Parkway — Cahuilla
Indio, CA, 92203
Phone: (760) 342 - 2593
Fax: (760) 347-7880
jstapp@cabazonindians-nsn.gov

Cahuilla Band of Indians
Daniel Salgado, Chairperson
52701 U.S. Highway 371 — Cahuilla
Anza, CA, 92539
Phone: (951) 763 - 5549
Fax: (951) 763-2808
Chairman@cahuilla.net

Campo Band of Diegueno Mission Indians
Ralph Goff, Chairperson
36190 Church Road, Suite 1 — Diegueno
Campo, CA, 91906
Phone: (619) 478 - 9046
Fax: (619) 478-5818
rgoff@campo-nsn.gov

Chemehuevi Indian Tribe
Sierra Pencille, Chairperson
P.O. Box 1976 1990 Palo Verde Drive — Chemehuevi
Havasu Lake, CA, 92363
Phone: (760) 858 - 4219
Fax: (760) 858-5400
chairman@cit-nsn.gov

Chumash Council of Bakersfield
Julio Quair, Chairperson
729 Texas Street — Chumash
Bakersfield, CA, 93307
Phone: (661) 322 - 0121
chumashtribe@sbcglobal.net

Coastal Band of the Chumash Nation
Mia Lopez, Chairperson
P. O. Box 4464 — Chumash
Santa Barbara, CA, 93140
Phone: (805) 324 - 0135
cbcntribalchair@gmail.com

Coastal Band of the Chumash Nation
Gabe Frausto, Vice Chair
P.O. Box 4464 — Chumash
Santa Barbara, CA, 93140
Phone: (805) 324 - 0135
cbcn22vicechair@gmail.com

2-1 continued

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable only for consultation with Native American tribes under Government Code Sections 65352.3, 65352.4 et seq. and Public Resources Code Sections 21080.3.1 for the proposed 2022 Air Quality Management Plan (AQMP) Project, San Bernardino, Los Angeles, Riverside, Orange Counties.

COMMENT LETTER #2 – Native American Heritage Commission, September 29, 2022 (p. 4 of 7)

Native American Heritage Commission
Tribal Consultation List
San Bernardino, Los Angeles, Riverside, Orange Counties
9/29/2022

Colorado River Indian Tribes
Rebecca Loudbear, Attorney General
26600 Mohave Road — Chemehuevi, Mojave
Parker, AZ, 85344
Phone: (928) 669 - 1271
Fax: (928) 669-5675
rloudbear@critdoj.com

Ewiiaapaayp Band of Kumeyaay Indians
Robert Pinto, Chairperson
4054 Willows Road — Diegueno
Alpine, CA, 91901
Phone: (619) 368 - 4382
Fax: (619) 445-9126
ceo@ebki-nsn.gov

Ewiiaapaayp Band of Kumeyaay Indians
Michael Garcia, Vice Chairperson
4054 Willows Road — Diegueno
Alpine, CA, 91901
Phone: (619) 933 - 2200
Fax: (619) 445-9126
michaelg@leaningrock.net

Fernandeno Tataviam Band of Mission Indians
Rudy Ortega, Tribal President
1019 Second Street, Suite 1 — Tataviam
San Fernando, CA, 91340
Phone: (818) 837 - 0794
Fax: (818) 837-0796
thcp@tataviam-nsn.us

Fort Mojave Indian Tribe
Timothy Williams, Chairperson
500 Merriman Ave — Mojave
Needles, CA, 92363
Phone: (760) 629 - 4591
Fax: (760) 629-5767
lindaotero@fortmojave.com

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas, Chairperson
P.O. Box 393 — Gabrieleno
Covina, CA, 91723
Phone: (626) 926 - 4131
admin@gabrielenoindians.org

Gabrieleno/Tongva San Gabriel Band of Mission Indians
Anthony Morales, Chairperson
P.O. Box 693 — Gabrieleno
San Gabriel, CA, 91778
Phone: (626) 483 - 3564
Fax: (626) 286-1262
GTTribalcouncil@aol.com

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St., #231 — Gabrielino
Los Angeles, CA, 90012
Phone: (951) 807 - 0479
sgoad@gabrielino-tongva.com

Gabrielino Tongva Indians of California Tribal Council
Robert Dorame, Chairperson
P.O. Box 490 — Gabrielino
Bellflower, CA, 90707
Phone: (562) 761 - 6417
Fax: (562) 761-6417
gtongva@gmail.com

Gabrielino Tongva Indians of California Tribal Council
Christina Conley, Tribal Consultant and Administrator
P.O. Box 941078 — Gabrielino
Simi Valley, CA, 93094
Phone: (626) 407 - 8761
christina.marsden@alumni.usc.edu

Gabrielino-Tongva Tribe
Charles Alvarez,
23454 Vanowen Street — Gabrielino
West Hills, CA, 91307
Phone: (310) 403 - 6048
roadkingcharles@aol.com

Juaneno Band of Mission Indians
Sonia Johnston, Chairperson
P.O. Box 25628 — Juaneno
Santa Ana, CA, 92799
sonia.johnston@sbcglobal.net

2-1 continued

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable only for consultation with Native American tribes under Government Code Sections 65352.3, 65352.4 et seq. and Public Resources Code Sections 21080.3.1 for the proposed 2022 Air Quality Management Plan (AQMP) Project, San Bernardino, Los Angeles, Riverside, Orange Counties.

COMMENT LETTER #2 – Native American Heritage Commission, September 29, 2022 (p. 5 of 7)

Native American Heritage Commission
Tribal Consultation List
San Bernardino, Los Angeles, Riverside, Orange Counties
9/29/2022

Juaneno Band of Mission Indians Acjachemen Nation - Belardes
Matias Belardes, Chairperson
32161 Avenida Los Amigos — Juaneno
San Juan Capisttrano, CA, 92675
Phone: (949) 293 - 8522
kaamalam@gmail.com

Juaneno Band of Mission Indians Acjachemen Nation 84A
Heidi Lucero, Chairperson
31411-A La Matanza Street — Juaneno
San Juan Capistrano, CA, 92675
Phone: (562) 879 - 2884
hllucero105@gmail.com

Kern Valley Indian Community
Robert Robinson, Chairperson
P.O. Box 1010 — Kawaiisu
Lake Isabella, CA, 93240 — Tubatulabal
Phone: (760) 378 - 2915 — Koso
bbutterbredt@gmail.com

Kitanemuk & Yowlumne Tejon Indians
Delia Dominguez, Chairperson
115 Radio Street — Kitanemuk
Bakersfield, CA, 93305 — Southern Valley
Phone: (626) 339 - 6785 — Yokut
2deedominguez@gmail.com

La Jolla Band of Luiseno Indians
Norma Contreras, Chairperson
22000 Highway 76 — Luiseno
Pauma Valley, CA, 92061
Phone: (760) 742 - 3771

La Posta Band of Diegueno Mission Indians
Gwendolyn Parada, Chairperson
8 Crestwood Road — Diegueno
Boulevard, CA, 91905
Phone: (619) 478 - 2113
Fax: (619) 478-2125
LP13boots@aol.com

La Posta Band of Diegueno Mission Indians
Javaughn Miller, Tribal Administrator
8 Crestwood Road — Diegueno
Boulevard, CA, 91905
Phone: (619) 478 - 2113
Fax: (619) 478-2125
jmiller@LPtribe.net

Los Coyotes Band of Cahuilla and Cupeño Indians
Ray Chapparosa, Chairperson
P.O. Box 189 — Cahuilla
Warner Springs, CA, 92086-0189
Phone: (760) 782 - 0711
Fax: (760) 782-0712

Manzanita Band of Kumeyaay Nation
Angela Elliott Santos, Chairperson
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Mesa Grande Band of Diegueno Mission Indians
Michael Linton, Chairperson
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Morongo Band of Mission Indians
Ann Brierty, THPO
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abrierty@morongo-nsn.gov

2-1 continued

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This list is applicable only for consultation with Native American tribes under Government Code Sections 65352.3, 65352.4 et seq. and Public Resources Code Sections 21080.3.1 for the proposed 2022 Air Quality Management Plan (AQMP) Project, San Bernardino, Los Angeles, Riverside, Orange Counties.

COMMENT LETTER #2 – Native American Heritage Commission, September 29, 2022 (p. 6 of 7)

Native American Heritage Commission
Tribal Consultation List
San Bernardino, Los Angeles, Riverside, Orange Counties
9/29/2022

Morongo Band of Mission Indians
Robert Martin, Chairperson
12700 Pumarra Road — Cahuilla, Serrano
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Northern Chumash Tribal Council
Violet Walker, Chairperson
P.O. Box 6533 — Chumash
Los Osos, CA, 93412
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violetsagewalker@gmail.com

Pala Band of Mission Indians
Shasta Gaughen, Tribal Historic Preservation Officer
PMB 50, 35008 Pala Temecula Rd. — Cupeno, Luiseno
Pala, CA, 92059
Phone: (760) 891 - 3515
Fax: (760) 742-3189
sgaughen@palatribe.com

Pauma Band of Luiseno Indians
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Pauma Valley, CA, 92061
Phone: (760) 742 - 1289
Fax: (760) 742-3422
bennaecalac@aol.com

Pechanga Band of Indians
Mark Macarro, Chairperson
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Temecula, CA, 92593
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Quechan Tribe of the Fort Yuma Reservation
Jill McCormick, Historic Preservation Officer
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Yuma, AZ, 85366
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Ramona Band of Cahuilla
Joseph Hamilton, Chairperson
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admin@ramona-nsn.gov

Rincon Band of Luiseno Indians
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San Fernando Band of Mission Indians
Donna Yocum, Chairperson
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ddyocum@comcast.net

San Luis Obispo County Chumash Council
1030 Ritchie Road — Chumash
Grover Beach, CA, 93433

2-1 continued

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COMMENT LETTER #2 – Native American Heritage Commission, September 29, 2022 (p. 7 of 7)

Native American Heritage Commission
Tribal Consultation List
San Bernardino, Los Angeles, Riverside, Orange Counties
9/29/2022

San Luis Rey Band of Mission Indians
San Luis Rey, Tribal Council
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Fax: (760) 724-2172
cjmojado@slrmissionindians.org

San Manuel Band of Mission Indians
Jessica Mauck, Director of Cultural Resources
26569 Community Center Drive — Serrano
Highland, CA, 92346
Phone: (909) 864 - 8933
Jessica.Mauck@sanmanuel-nsn.gov

Santa Rosa Band of Cahuilla Indians
Lovina Redner, Tribal Chair
P.O. Box 391820 — Cahuilla
Anza, CA, 92539
Phone: (951) 659 - 2700
Fax: (951) 659-2228
lsaul@santarosa-nsn.gov

Santa Ynez Band of Chumash Indians
Kenneth Kahn, Chairperson
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Santa Ynez, CA, 93460
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Fax: (805) 686-9578
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Serrano Nation of Mission Indians
Wayne Walker, Co-Chairperson
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Soboba Band of Luiseno Indians
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Soboba Band of Luiseno Indians
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Torres-Martinez Desert Cahuilla Indians
Thomas Tortez, Chairperson
P.O. Box 1160 — Cahuilla
Thermal, CA, 92274
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Fax: (760) 397-8146
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Twenty-Nine Palms Band of Mission Indians
Darrell Mike, Chairperson
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Fax: (760) 863-2449
29chairman@29palmsbomi-nsn.gov

2-1 concluded

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This list is applicable only for consultation with Native American tribes under Government Code Sections 65352.3, 65352.4 et seq. and Public Resources Code Sections 21080.3.1 for the proposed 2022 Air Quality Management Plan (AQMP) Project, San Bernardino, Los Angeles, Riverside, Orange Counties.

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RESPONSE TO COMMENT LETTER #2 – Native American Heritage Commission, September 29, 2022

Response 2-1

South Coast AQMD provided a formal notice of the proposed project to all California Native American Tribes that requested to be on the NAHC's Tribal Consultation Notification List per Public Resources Code Section 21080.3.1(b)(1), including the list of Tribal contacts provided in this comment letter. The provisions of CEQA, Public Resources Code Sections 21080.3.1 et seq. (also known as AB 52), requires meaningful consultation with California Native American Tribes on potential impacts to tribal cultural resources, as defined in Public Resources Code Section 21074. This comment letter reiterates the requirements of AB 52. Since this comment does not raise any CEQA issues relative to the Draft Program EIR or potential environmental impacts of the 2022 AQMP, no further response is required by CEQA.

COMMENT LETTER #3 – Duncan McKee, October 18, 2022 (p. 1 of 18)

10/18/2022

Duncan McKee
738 S. 3rd Avenue
Avocado Heights, CA 91746
Tele: (626) 330-5123

SCAQMD
Kevin Ni (c/o CEQA)
21865 Copley Drive
Diamond Bar, CA 91765

Dear SCAQMD Staff:

On behalf of the residents and business owners in Avocado Heights, Bassett, City of Industry, Hacienda Heights, La Puente and North Whittier, thank you for the opportunity to provide comments on the AQMP. We formally request that a proposal be included in the AQMP to work with private industry to build hazardous waste disposal facilities that recycle lead acid and other types of batteries and that they be constructed outside of the South Coast Basin. It is irresponsible to rely on one company, Quemetco/RSR/Ecobat, to process batteries from the entire western United States and batteries and other lead bearing hazardous waste imported from all over the world. This is currently occurring in close proximity to numerous schools, parks, residences and businesses. SCAQMD has documented serious health issues potentially attributable to this facility for years. SCAQMD has no plan to deal with this hazardous waste if the critical emission control equipment blows up and burns or if the facility is forced to cease operation for months because the roof over the 8 refining kettles is so corroded that it is in danger of collapse. This occurred in the recent past and SCAQMD has no contingency plan. 3-1

The fact that Wayne Nastri who is the current Executive Officer, worked for Quemetco when he was with Environmental Mediation, E4 Strategic Solutions and other companies should not be a reason for SCAQMD as the leading Air District (perhaps in the world) to give Quemetco/RSR/ Ecobat and their owners, special consideration when approving a Federal Title V Permit modification with as many serious unresolved impacts as there are. Thomas Lohff and I served many years ago on the SCAQMD Pilot Environmental Justice Council spearheaded by Dr. William Burke and Barry Wallerstein. In 2010 to 2016 we served on the working group along with Susan Nakamura, Michael Morris, Philip Fine Ph.D. and Ian MacMillan to write and implement Rule 1420.1 and PAR 1420.1. Wayne Nastri and his partner Howard Berman attended the meetings and worked very hard developing the strategy that former Governing Board Member, the Honorable Mayor Yates, described as "the nail in Exide's coffin". Dr. Wallerstein cautioned to be careful that the batteries processed at Exide did not come to Quemetco. We served in good faith and never in our wildest dreams could have envisioned the day when the very person whose company along with Quemetco's attorneys, developed the strategy and delivered the SCAQMD connections.to position Quemetco/RSR/Ecobat and their owners to corner the market on the processing of lead acid batteries, would be the Executive Officer of SCAQMD. Mr. Nastri should do the right thing and work with his friends and former employers at Ecobat/Quemetco/RSR to facilitate the construction of additional 3-2

1

COMMENT LETTER #3 – Duncan McKee, October 18, 2022 (p. 2 of 18)

facilities in a less populated location to process these batteries coming in from all over the world. A five year plan should be included in this AQMP that outlines a phasing out of the current City of Industry location so that the inevitable cleanup of the documented contaminated in the community and environment can commence.

I have included with this input submissions on the 2003 AQMP documenting outrageous practices facilitated and permitted by SCAQMD. SCAQMD has still not adequately addressed the issues raised so we are hoping that they will take the opportunity to do so in their response and stop protecting this big polluter.

Thank you.

Duncan McKee

Critical emission control equipment on fire at Quemetco that forced the extended closure of the hazardous waste disposal site.

3-2 concluded

3-3

COMMENT LETTER #3 – Duncan McKee, October 18, 2022 (p. 3 of 18)

Duncan McKee
738 S. 3rd Avenue
Avocado Heights, Ca. 91746

5/22/03

Mr. Michael Krause c/o
CEQA Section,
Planning, Rules Development and
Area Sources
21865 E. Copley Drive,
Diamond Bar CA. 91765-4182

Dear Mr. Michael Kruse:

This letter is to voice comments and ask questions on behalf of residents of Avocado Heights, La Puente, North Whittier, Bassett, Hacienda Heights and employees and business owners in the City of Industry, concerning the Draft Program Environmental Impact Report titled the Proposed Draft Air Quality Plan recently released by SCAQMD. SCAQMD staff has done an excellent job compiling data, developing models and patting themselves on the back; however we are extremely concerned regarding shortfalls, oversights and fundamental problems in the EIR. We find it hard to swallow that many of the most important issues are not addressed as well as the fact that some of the proposals will exacerbate air quality problems in these and surrounding communities.

For example, SCAQMD is proposing the replacement of many propane-powered forklifts with battery-powered forklifts. Does SCAQMD propose that the additional batteries that will be required end up at Quemetco/RSR Inc. in the City of Industry for "recycling" of the lead and disposal of hazardous waste into the local community through the process of incineration and wastewater discharge to LACOSD? I have included with this response a previous letter to your department that contains information regarding this outrageous practice and SCAQMD involvement in it. To avoid duplication please answer the unanswered questions as part of this document as well. We expect that you will need to include a solution to this problem in your long-term plan to attempt to come close to meeting Federal Clean Air Standards. Both SCAQMD and CARB have not tackled some of the most important issues that must be taken seriously to address the task of improving air quality in this region. When major projects such as the recent granting of the Conditional Use Permit for the Puente Hills Landfill are based on false sworn testimony before the LACO Planning Commission regarding the permits issued by SCAQMD we have major problems that SCAQMD needs to confront and not hide from.

The Draft EIR fails to address the fact that permits issued by SCAQMD currently stand in the way of long term goals of groundwater, surface water and soil cleanup in various areas of the basin. For example DTSC has identified that soil and groundwater underlying the area in and around Quemetco/RSR in the City of Industry contain unsafe levels of various contaminants. DTSC reports "**Lead, selenium, barium, chromium,**

3-3 continued

3

COMMENT LETTER #3 – Duncan McKee, October 18, 2022 (p. 4 of 18)

cadmium, copper, iron, and mercury concentrations in groundwater samples exceeded Maximum Contaminant Levels (MCLs)."[1]

The fact of the matter is that it would be irresponsible to not immediately institute cleanup of the toxicity that exists beneath this site. It would be careless to overlook this problem. In the DTSC report it indicates that lower contaminant concentrations that Quemetco claims, are likely a result of contamination moving offsite and into the local aquifers when ground water fluctuations occur. According to DTSC scientists "The agencies have attributed this shift from relatively high lead concentrations in the first year of monitoring to progressively lower lead levels to contaminant plume migration. Based on the above-mentioned trends, it is likely that a plume of contaminated ground water has moved from the WMA [Waste Management Area] toward downgradient points."[2]

In addition, "Highly elevated lead contamination from soil samples has been reported from within the boring for MW-10 (**1800 mg/kg at 69 ft. bgs**[3]**).** In the DTSC Internal Memorandum, June 7, 1989, prepared by David Schwartzbart (GSU) to Willie Ndubuizu, it was noted that of all the soil samples taken to that point in time, only soil samples from MW-8 were not found to contain lead and that in some of the borings, lead was encountered to the full vertical extent of the borings."[4] DTSC additionally reports that "previous boring logs indicate that the soils around this "background" monitoring well are reported to be contaminated to depths of up to 68 feet bgs with up to 1800 mg/kg of lead."[5]

Surface water appears to be threatened as well as DTSC reports that contaminated groundwater underlying this facility is potentially entering the surface waters of the San Jose Creek at a estimated rate of 3 cubic feet per second which is 22.441 gallons per second or over **80,789 gallons per hour!**

"Some of the following findings are of significance with regard to Quemetco, Inc.

> " ... EPA has identified the San Jose Creek (channel and subdrain structure) as a potential contaminant pathway to downstream areas. Between 1980 and 1988, potentiometric contours appear to intersect the lined San Jose Creek channel along a reach in the City of Industry. Between 1980 and 1984, average groundwater discharge to the creek was estimated to be approximately 3 cubic feet per second (cfs) (EPA, 1992).

3-3 continued

[1] Comprehensive Ground Water Monitoring Evaluation Report, Quemetco Inc., RSR Corporation, City of Industry, Ca. March 8, 1996 EPA ID No. CADO66233966 page 16

[2] Comprehensive Ground Water Monitoring Evaluation Report, Quemetco Inc., RSR Corporation, City of Industry, Ca. March 8, 1996 EPA ID No. CADO66233966, Page 98

[3] -Environmental Strategies Corporation, July 9, 1991, Supplemental Soil and Groundwater Investigations, Quemetco, Inc. Facility, City of Industry, California. Page 115

[4] Comprehensive Ground Water Monitoring Evaluation Report, Quemetco Inc., RSR Corporation, City of Industry, Ca. March 8, 1996 EPA ID No. CADO66233966 page 42

[5] Comprehensive Ground Water Monitoring Evaluation Report, Quemetco Inc., RSR Corporation, City of Industry, Ca. March 8, 1996 EPA ID No. CADO66233966 56

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Surface and subdrain discharge water sampling results have indicated the presence of VOCs."

"Surface water samplings previously performed for the Quemetco Facility investigation, have not included sampling of the subdrain structure beneath San Jose Creek. This structure has the potential to have been or still being a major contaminant pathway from this site since it has an influence on ground water chemistry and since lead contaminate wastes had been routinely discharged to the creek by Quemetco for almost two decades.
In order to meet this criteria for "clean closure" there has to be a determination that no releases that have affected ground water have occurred or are continuing to occur and that the Facility once "closed" will not be a threat to ground water. Such a determination is unlikely, based on the following facts and previous determinations to the contrary."
The closure plan did not satisfactorily consider that ground water beneath the Facility has already been determined to be contaminated by lead, cadmium, mercury, and chromium as supported by groundwater monitoring analytical data from 1982-1987 (monitoring wells MW-1, MW-2, MW-3 and MW-4). These data indicate that lead and other metals had, at that time, contaminated ground water across the entire boundaries monitored at the site. Those concentrations appear to have decreased over time, possibly due to lead contamination in ground water precipitating out and/or sorbing to aquifer materials as stable lead compounds which are not soluble under non-acidic conditions, or most probably due to migration of lead contamination off-site and downgradient. The latter hypothesis for the fate of previously detected contamination is proposed since detection of lead contamination has been irregular in recent years of groundwater monitoring results and Quemetco has never performed off-site investigation to determine what was happening with the earlier detected contamination.

3-3 continued

Quemetco has failed to determined specifically which regulated unit or solid waste management unit or combinations of these was responsible for the reported lead contamination. Without such a determination it must be taken that the surface impoundment contributed to groundwater contamination. This is made likely by the fact that: it was the collection point for all contaminated fluids generated from the drainage of batteries, run-on and run-off from the waste piles containing scrap lead, plastic and hard rubber battery case chips; and contained a significant depth of liquid to generate a hydraulic head to support downward migration. The following facts further support a determination that Quemetco's regulated unit has contributed to groundwater contamination:

! Historic and contemporary concentrations at this site of sulfate compounds (1200 - 250 mg/l) from five to twenty times the Puente Basin water quality goals (50 mg/l), probably indicate that a release of sulfuric acid occurred and may be continuing to impact groundwater quality.

5

COMMENT LETTER #3 – Duncan McKee, October 18, 2022 (p. 6 of 18)

- Historical records indicate the surface impoundment held extremely high concentrations of lead compounds in sulfuric acid solutions with pH as low as 0 to 4. Samples from the surface impoundment liner contained concentrations of total **lead exceeding 10,000 mg/kg."**[6]

Quemetco themselves admit that "**Non-Compliance with established water quality standards for groundwater resulting from continued operations at the Quemetco Facility is considered a significant impact. Impacts remain significant and unavoidable."**[7]

I have included the above referenced report so that you will have an idea as to the extent of this problem and as a guide to development of plans to assist with the relocation of this facility so that the inevitable clean up of this mess can commence. This report indicates that Quemetco is also using rubber and plastic as "fuel" and/or "reducing agents" in their reverberatory furnace.[8]
Will SCAQMD please explain how facilitating this company's continued expansion of operations will expedite the clean up of this site? I have also included several examples of hundreds of reports to SCAQMD regarding adverse effects from the toxic plumes from this facility. Why has SCAQMD ignored these and similar reports to them and continued to permit this company to increase production? Why would SCAQMD not consider that the Best Available Control Technology (BACT) is to not feed hazardous waste rubber and plastic to the furnace in the first place? I have provided you with several petitions, with hundreds of signatures, formally requesting revocation of the current permit that permits this company to burn plastic and rubber. We request that Quemetco submit a plan of corrective action that includes separating out any and all rubber and plastic from their furnace feeds and shipping it off site for proper disposal or recycling in a responsible manner. SCAQMD current plans for risk reduction at this facility are entirely inadequate. Will SCAQMD require Quemetco to replace contaminated soil prior to paving over it?

3-3 continued

[6] Comprehensive Ground Water Monitoring Evaluation Report, Quemetco Inc., RSR Corporation, City of Industry, Ca. March 8, 1996 EPA ID No. CADO66233966, Page 93-94
[7] Chambers Group, Inc. Draft Environmental Impact Report for the Hazardous Waste Management Operation and Post Closure Permit for Quemetco, Inc. June 2001, page 1-2
[8] Comprehensive Ground Water Monitoring Evaluation Report, Quemetco Inc., RSR Corporation, City of Industry, Ca. March 8, 1996 EPA ID No. CADO66233966, Page 17& 86

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COMMENT LETTER #3 – Duncan McKee, October 18, 2022 (p. 7 of 18)

Duncan McKee
738 S. 3rd Avenue
Avocado Heights, Ca. 91746

3/27/03
Zorik Pirveysian
Planning and Rules Manager
SCAQMD
21865 E. Copley Dr., Diamond Bar, Ca.

91765-4182

Dear Zorik Pirveysian and SCAQMD personnel:

This letter is to voice public input concerning SCAQMDs AQMP on behalf of residents and businesses in the Avocado Heights, La Puente, North Whittier, Bassett, Hacienda Heights and City of Industry areas. We are concerned that both CARB and SCAQMD have not addressed some of the most important issues concerning this region. The facts are that the air quality in these areas has decreased significantly over the past 10 years due to the loss of nearly all landfills in Los Angeles County except for Puente Hills and one other, the increase in industrial emissions from new development and new activities of existing companies in the City of Industry.

3-3 continued

In 1993 when SCAQMD was devising plans to attempt to comply with federal clean air standards SCAQMD issued a permit that permitted Quemetco/RSR Inc. to engage in the practice of charging over 12,000 lbs./day of plastic and rubber to their furnaces where it is incinerated. This occurred in spite of repeated reports of adverse health effects resulting from exposure to toxic fumes discharged from this facility. In 1997 to reward local residents and businesses for their repeated reports of headaches, nausea, sore throats and even more serious problems after exposure to noxious plumes from this facility, SCAQMD issued a permit that permitted this company to increase the quantity of previously separated plastic and rubber charged to the furnace, to 25,200 lbs./day. Additionally, DTSC reports that rubber is "used as fuel in the reverberatory furnaces. These materials were contaminated with acid or lead particulates". [9] Could SCAQMD please explain to us how allowing a company to incinerate hazardous waste that previously was required to either be recycled or land filled at a certified hazardous waste landfill, fits in to the long-term plan for improving the air quality in the Greater Los Angeles Region? Why would SCAQMD ignore hundreds of reports of adverse effects from this disposal method and the fact that under the terms and conditions of Quemetco's TSDF (Interim Status) DTSC prohibits them from engaging in disposal practices, and permit this company to incinerate hazardous waste rather than dealing with it in a responsible manner? Is using plastic and rubber as fuel and "reducing agents" in a

[9] Comprehensive Ground Water Monitoring Evaluation Report, Quemetco Inc., RSR Corporation, City of Industry, Ca. March 8, 1996 EPA ID No. CADO66233966 page 86

7

COMMENT LETTER #3 – Duncan McKee, October 18, 2022 (p. 8 of 18)

manufacturing process a responsible practice in the South Coast Basin? [10] I have included a recent letter to DTSC that contains information regarding the quantities of plastic and rubber incinerated in the Quemetco furnace and it appears the amount may total over **27,594,000 lbs. each year**. Please review this information for accuracy to determine whether it would be prudent to immediately address this "little problem".

In addition, the documented inaccurate information provided to both the public and elected officials by SCAQMD Compliance personnel regarding this matter is overwhelming. Recently a LACOSD representative gave sworn testimony before the LACO Planning Commission, based on less than accurate information (provided by SCAQMD and/or Quemetco), that SCAQMD did not permit Quemetco to incinerate 25,000 lbs. of plastic and rubber/day. She testified that the plastic miraculously "passes thru the furnace and is recycled". It is imperative that the facts be known so that decisions can be based on accurate information when planning major projects such as the Puente Hills Landfill. We find it extremely hard to believe that SCAQMD Engineering and Compliance Division for over a decade has been unable to definitively track the burning plastic-like plumes back to their source. Children in this area less than 10 years old, using the exact same techniques as SCAQMD inspectors, have eliminated other potential sources and determined the source of the elusive noxious plumes. 85-year-old dear little old ladies know where the terrible clouds originate so we are suggesting that enforcement in this case leaves much room for improvement. The fact that to this day SCAQMD has never taken a sample for analysis let alone walked around and experienced the burning plastic-like smelling plumes firsthand prior to issuance of this permit is inexcusable. In this case it appears that SCAQMD issued a permit to engage in practices that they are either unwilling or unable to regulate. Why was this facility not required to re-permit as a "new facility" after the "loss of interim status" and "an U.S. EPA Cessation of Operations and Corrective Action Compliance Order, "?[11]

3-3 continued

We hope that SCAQMD will seriously plan to enlist the assistance from numerous sources to aid in the relocation of this facility rather than facilitate Quemetco's publicly stated plan to remain in operation for 20+ years at this location. This will allow the inevitable decontamination of the site to commence avoiding further damage to ground and surface water in the area. Common sense tells us that it is not good planning to bake McDonalds buns within hundreds of feet of a facility that admits to having released 7121 lbs. of lead from it's stacks and fugitive dust emissions between 1995 and 1999.[12] That's an average of 11.12 lbs./acre in 1 square mile around that facility. We think that most people will agree that the large quantities of arsenic, chromium 6, cadmium, mercury, benzene, 1,3-butadiene, etc. released by this company into the community are probably not a good idea either. USEPA lists this company as the number one releaser of toxic chemicals into the environment in California in 1997 ahead of Exxon/Mobile and Chevron refineries at 2.6 million lbs. released.[13] Certainly this is not a

[10] Comprehensive Ground Water Monitoring Evaluation Report, Quemetco Inc., RSR Corporation, City of Industry, Ca. March 8, 1996 EPA ID No. CADO66233966 page 17
[11] Comprehensive Ground Water Monitoring Evaluation Report, Quemetco Inc., RSR Corporation, City of Industry, Ca. March 8, 1996 EPA ID No. CADO66233966 page 78
[12] http://www.Envirofacts%20TRI%20Report.htm page 5
[13] http://www.lfr.com/news/regupdate/regupdate009.htm

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COMMENT LETTER #3 – Duncan McKee, October 18, 2022 (p. 9 of 18)

good idea with numerous large food-manufacturing facilities in such close proximity and schools with thousands of children affected. We urge SCAQMD planners to rectify past blunders such as this which have undoubtedly added to the so called "black box" that represents emissions that need to be cut; but we do not have a current plan to do so.

Another area where we must take serious action is the "little matter" of emission test smart chips in diesel trucks. The Department of Justice and USEPA are derelict in their duty to allow the responsible parties off the hook with no criminal convictions and immediate corrective action in this matter. I urge both SCAQMD and the Air Resource Board to enlist support from lawmakers to require the manufacture to immediately re-chip these trucks as a requirement for licensing. This dirty trick has set this region back decades in the effort to reduce diesel emissions. Our particular area is severely impacted by this foul up as colossal numbers of trucks pass through on the 605 and 60 freeways as well as travel in and out of City of Industry and the Puente Hills Landfill. In addition, several large trucking companies such as Viking Freight are located in this vicinity.

3-3 continued

We are also concerned that we are not adequately considering the rate of development and the potential for increases in emissions in relation to the projected decreases. For example, City of Industry is considering building a power generating facility in close proximity to neighborhoods in Hacienda Heights. City of Industry also currently has extensive plans for future "redevelopment" and new additions. If this occurs it will be an additional major source of air emissions in an already overburdened semi-closed basin. Will SCAQMD permit City of Industry to burn Quemetco's excess plastic and rubber as fuel in furnaces?

Thank you for the opportunity to participate.

Duncan McKee

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COMMENT LETTER #3 – Duncan McKee, October 18, 2022 (p. 10 of 18)

Duncan McKee
738 S. 3rd Ave.
Avocado Heights, Ca. 91746
Tele: (626) 330-5123

3/23/03

Regional Records Office
Attention: Jamshid Shahi,
Project Manager Southern California Permitting Branch
1011 N. Grandview Avenue
Glendale, California 91201

Dear Mr. Jamshid Shahi and DTSC Personnel:

It has come to our attention that SCAQMD has granted a permit that according to the engineer (Marco Polo) who actually wrote it permits our self-proclaimed "good neighbors" in the City of Industry (Quemetco/RSR Inc.) to "incinerate hazardous waste".[14] It is my understanding that under the terms and conditions of Quemetco's TSDF, DTSC strictly prohibits Quemetco from engaging in disposal processes. DTSC themselves state "Quemetco is both a hazardous waste treatment Facility and a generator of hazardous waste, **but it is not permitted to serve as a disposal site**." [15] It appears that SCAQMD may have overstepped its bounds and usurped DTSC authority in this matter. We formally request that as the Lead Agency you exercise your influence to halt this outrageous practice. I have provided you with a copy of the 1997 permit that was issued despite repeated reports of adverse health effects from these toxic plumes to DTSC, SCAQMD, LACODHS and Quemetco in 1996. SCAQMD has to this day, never sampled and analyzed air to determine MCGL (Maximum Concentration at Ground Level) during times when large quantities (tractor scoops full) of plastic and rubber are fed to the furnace. MCGL has only been calculated based on annual averages that have a tendency to mask high concentrations during periods of peak production and outdated wind data from a weather station located on the opposite side of the Puente Hills. I have provided you with a document (Figure 3) that documents SCAQMD inability to regulate the furnace feeds and therefore the true and accurate cancer risk resulting from combustion of this material. It appears (Figure 1) that according to "confidential" SCAQMD documents the quantity of "additional plastic and rubber" is over 25,200 lbs./day. Do the math. This is **9,198,000 lbs./year!** I have provided a copy of two documents so that you can verify this. You will need to combine information from the two documents (Figure 1&2) and do a little simple math (34,080 lbs./day-8, 880 lbs calcined carbon coke/day=25,200 lbs. plastic and rubber/day) to arrive at the quantity of "additional plastic and rubber" that is according to "confidential" SCAQMD documents, initially separated, transported by screw conveyor to what would normally be considered a "hazardous waste" pile and then charged back into the furnace by the tractor scoop full.

3-3 continued

[14] December meeting with Senior Engineer, Tom Liebel and Marco Polo, Air Quality Engineer II. At SCAQMD 21865 E. Copley Dr. Diamond Bar, Ca. 91765
[15] Comprehensive Ground Water Monitoring Evaluation Report, Quemetco Inc., RSR Corporation, City of Industry, Ca. March 8, 1996 EPA ID No. CADO66233966 page 5

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Keep in mind that acid; lead other substances contaminate this material. Even SCAQMD Engineering and Compliance personnel indicate that there are serious problems with this method of "weighing" as the document below indicates (Figure 3). In addition to the 25,200 lbs./day of plastic and rubber SCAQMD engineer, Marco Polo, stated to us that "2/3 of the rubber and plastic cannot be separated" using Quemetco's outdated system and is therefore fed to the furnace.[16] This would be an additional 50,400 lbs./day or an additional 18,396,000-lbs./yr. that condition 5 permits Quemetco to feed directly to the furnace where it is incinerated. This is not counting the amount that may or may not be land filled or recycled. Below is a simplification of the math:

34,080 lbs./day calcined carbon coke and "additional plastic and rubber"- 8,880 lbs./day calcined carbon coke= 25,880 lbs./day "additional plastic and rubber" charged to the furnace. Then we must add the 50,400 lbs./day plastic and rubber that is not separated during the crushing process (covered in condition 5) which brings us to a total of 75,600 lbs./day or 27,594,000 lbs./yr. plastic and rubber permitted to be potentially incinerated, burned, combusted, cremated, disposed of or however you want to say it, in the Quemetco furnace. Keep in mind that we still have not taken into account the plastic that is recycled or the rubber that may or may not be land filled and factored it into the equation. For example, if the figure is 80,000 lbs./mo. then that would add an additional 640,000 lbs./yr. plastic and/or rubber that is incinerated. Please call Marco Polo Air Quality Engineer II, who actually wrote this permit, so that you can verify this information. His number is (909) 396-2633.

3-3 continued

In addition, it appears that the waste water permits issued by LACOSD may have been issued prior to commencement of the practice of disposing of hazardous waste rubber and plastic by incineration and the substances tested do not appear to include the long list of VOCs and aromatic compounds associated with this practice. For example, if Quemetco's scrubbers are 99+% effective and they release 6.9 lbs/day of 1,3-butadiene, this would mean that nearly 100 Xs that amount is contained in the scrubber water. This applies to benzene and all VOCs and other aromatic compounds that might be escaping detection both onsite and also between Quemetco's discharge to the sewer and LACOSDs ultimate disposition of the water. It appears that SCAQMD exempts the wastewater treatment facility as a closed system despite compelling evidence that the system may not be a "closed system". If this is true, huge amounts of toxic chemicals are not taken into account in the HHRA or reported to USEPA.

Dr. Barry Wallerstein, Executive Director SCAQMD, indicated he would not be opposed to interdepartmental cooperation to coordinate simultaneous testing by LACOSD and/or DTSC of wastewater during up coming air stack source testing. This will help to determine whether this company can actually operate according to permit limitations and if their permit needs to be modified to include chemicals not presently required to be tested for. We urge that DTSC take advantage of this unprecedented

[16] December meeting with Senior Engineer, Tom Liebel and Marco Polo, Air Quality Engineer II. At SCAQMD 21865 E. Copley Dr. Diamond Bar, Ca. 91765

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opportunity and require this to occur. His phone number is (909) 396-2100 so that you can make the arrangements.

You mentioned that you were meeting with CEQA people and we would like you to point out to them that this particular site is located adjacent to the San Jose Creek, a tributary to the San Gabriel River, is within the Conservancy and subject to CEQA guidelines. In addition, I have provided a copy of two of many CEQA 400 forms submitted by Quemetco that contain inaccurate information and effectively allow them to circumvent normal CEQA guidelines. This is unheard of in a case of this magnitude and we request that DTSC give this immediate attention or enlist the appropriate authorities to do so.

Quemetco's claim to grand fathered rights in this matter is absurd and does not apply as this is a "new" practice and until 1992 this material was either recycled or sent offsite to a certified hazardous waste landfill. In addition, Quemetco's claim that grand fathered rights allows them to construct new facilities, engage in new processes, increase production and do whatever they so choose is a misuse and a perversion of the "grandfather principle".

3-3 continued

We hope that DTSC will exercise its authority and initiate immediate corrective action that would include new technologies to separate out this material so it can be dealt with in a responsible manner and the cessation of the practice of adding back to the furnace, material that has already been separated. We realize that this will cost Quemetco more for cleaner fuel in their furnaces such as natural gas and fees to transport and landfill the hazardous waste. We are certain that the cost to the community if your immediate action in this matter does not occur by far out weighs any financial burden that this might incur to Quemetco. Please feel free to contact me if you require additional information and/or if any of the information that I have provided you is not accurate, so that I can remain informed in this case.

Thank you for your immediate action in this matter.

Duncan McKee

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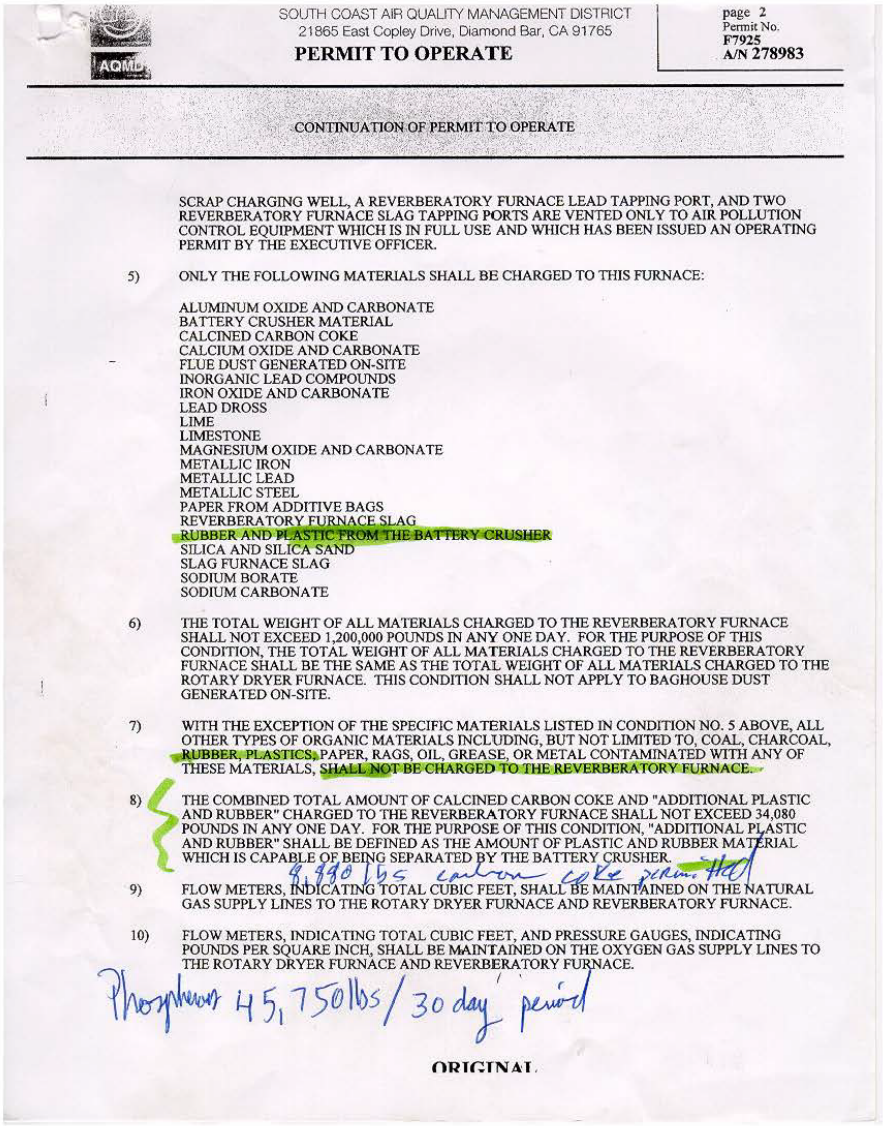

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 East Copley Drive, Diamond Bar, CA 91765

PERMIT TO OPERATE

page 2
Permit No.
F7925
A/N 278983

CONTINUATION OF PERMIT TO OPERATE

SCRAP CHARGING WELL, A REVERBERATORY FURNACE LEAD TAPPING PORT, AND TWO REVERBERATORY FURNACE SLAG TAPPING PORTS ARE VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED AN OPERATING PERMIT BY THE EXECUTIVE OFFICER.

5) ONLY THE FOLLOWING MATERIALS SHALL BE CHARGED TO THIS FURNACE:

ALUMINUM OXIDE AND CARBONATE
BATTERY CRUSHER MATERIAL
CALCINED CARBON COKE
CALCIUM OXIDE AND CARBONATE
FLUE DUST GENERATED ON-SITE
INORGANIC LEAD COMPOUNDS
IRON OXIDE AND CARBONATE
LEAD DROSS
LIME
LIMESTONE
MAGNESIUM OXIDE AND CARBONATE
METALLIC IRON
METALLIC LEAD
METALLIC STEEL
PAPER FROM ADDITIVE BAGS
REVERBERATORY FURNACE SLAG
RUBBER AND PLASTIC FROM THE BATTERY CRUSHER
SILICA AND SILICA SAND
SLAG FURNACE SLAG
SODIUM BORATE
SODIUM CARBONATE

6) THE TOTAL WEIGHT OF ALL MATERIALS CHARGED TO THE REVERBERATORY FURNACE SHALL NOT EXCEED 1,200,000 POUNDS IN ANY ONE DAY. FOR THE PURPOSE OF THIS CONDITION, THE TOTAL WEIGHT OF ALL MATERIALS CHARGED TO THE REVERBERATORY FURNACE SHALL BE THE SAME AS THE TOTAL WEIGHT OF ALL MATERIALS CHARGED TO THE ROTARY DRYER FURNACE. THIS CONDITION SHALL NOT APPLY TO BAGHOUSE DUST GENERATED ON-SITE.

7) WITH THE EXCEPTION OF THE SPECIFIC MATERIALS LISTED IN CONDITION NO. 5 ABOVE, ALL OTHER TYPES OF ORGANIC MATERIALS INCLUDING, BUT NOT LIMITED TO, COAL, CHARCOAL, RUBBER, PLASTICS, PAPER, RAGS, OIL, GREASE, OR METAL CONTAMINATED WITH ANY OF THESE MATERIALS, SHALL NOT BE CHARGED TO THE REVERBERATORY FURNACE.

8) THE COMBINED TOTAL AMOUNT OF CALCINED CARBON COKE AND "ADDITIONAL PLASTIC AND RUBBER" CHARGED TO THE REVERBERATORY FURNACE SHALL NOT EXCEED 34,080 POUNDS IN ANY ONE DAY. FOR THE PURPOSE OF THIS CONDITION, "ADDITIONAL PLASTIC AND RUBBER" SHALL BE DEFINED AS THE AMOUNT OF PLASTIC AND RUBBER MATERIAL WHICH IS CAPABLE OF BEING SEPARATED BY THE BATTERY CRUSHER.

8,990 lbs carbon coke perm. limit

9) FLOW METERS, INDICATING TOTAL CUBIC FEET, SHALL BE MAINTAINED ON THE NATURAL GAS SUPPLY LINES TO THE ROTARY DRYER FURNACE AND REVERBERATORY FURNACE.

10) FLOW METERS, INDICATING TOTAL CUBIC FEET, AND PRESSURE GAUGES, INDICATING POUNDS PER SQUARE INCH, SHALL BE MAINTAINED ON THE OXYGEN GAS SUPPLY LINES TO THE ROTARY DRYER FURNACE AND REVERBERATORY FURNACE.

Phosphorus 45,750lbs / 30 day period

ORIGINAL

Figure 1 This and the following SCAQMD documents took over 90 days of wrestling between AQMD and Quemetco attorneys to release. Quemetco representatives made 2 trips to AQMD to attempt to stop the release. Condition 5 permits Quemetco to feed to the furnace "some" rubber and plastic from the battery crusher that is not easily separated. According to Marco Polo from SCAQMD 2/3 (50,400+ lbs) cannot be separated because of outdated technology and is fed to the furnace where it is incinerated. In addition to condition 5 (50,400 lbs/day), condition 8 appears to permit Quemetco to charge an additional 25,200 lbs./day of rubber and plastic that is capable of being separated to the furnace, where it burns, combusts, incinerates, is cremated or however you want to say it!

3-3 continued

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

MEMORANDUM

DATE: April 4, 1997

TO: File

FROM: Marco A. Polo, Air Quality Engineer II

SUBJECT: T/C

4-2-97, approximately 7:30 am to 8:00 am, T/C to Steve Reynolds
214-583-0244

I outlined the proposed permit conditions that I have been able to complete so far. I mentioned that the following limits will apply:

1,200,000 lbs/day total reverb feed limit

feed composition record keeping requirement

8,880 lbs/day carbon coke limit

56 % minimum O_2 enrichment in reverb

82 % maximum O_2 enrichment in reverb

7.77×10^5 SCF/day natural gas limit in reverb

2.29×10^5 SCF/day natural gas limit in dryer

8,510 gallons/day propane limit in reverb

2,500 gallons/day propane limit in dryer

average minimum lead temp limit of 1,300 ^oF in reverb

measure lead temp every two hours

For record keeping cycle definition, the applicant should talk to the facility inspector.

4-4-97, 1:14 PM, T/C from Steve Reynolds

I discussed the status of the current permit evaluation. I indicated that the Toxics group had met with the RECLAIM Administration group and that resolution on existing policy issues was not fully achieved in this initial meeting. It was clear that more discussion, probably at the management level, would be required to fully resolve all outstanding issues. Some of the options that were discussed were converting NOx sources to "Major"

(cont. next page)

Figure 2 Calcined Carbon Coke limitation. The 8,880 lbs. calcined carbon coke must be subtracted from the 34,080 lbs. in condition 8 of the permit above to arrive at the 25,200 lbs./day "additional plastic and rubber".

3-3 continued

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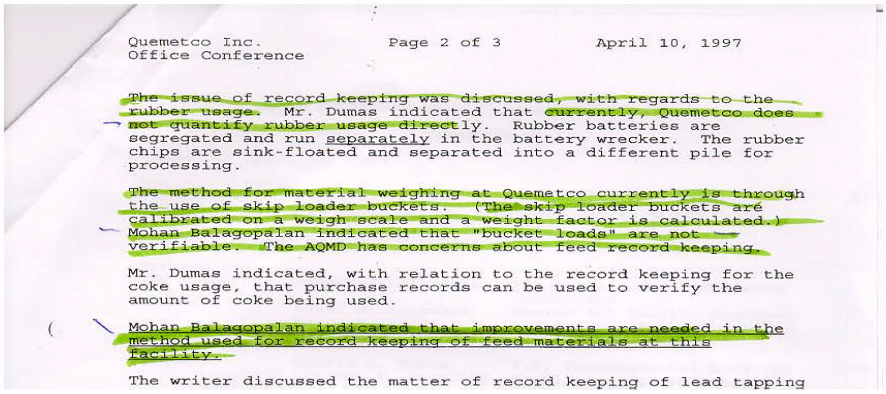


Quemetco Inc. Page 2 of 3 April 10, 1997
Office Conference

The issue of record keeping was discussed, with regards to the rubber usage. Mr. Dumas indicated that currently, Quemetco does not quantify rubber usage directly. Rubber batteries are segregated and run separately in the battery wrecker. The rubber chips are sink-floated and separated into a different pile for processing.

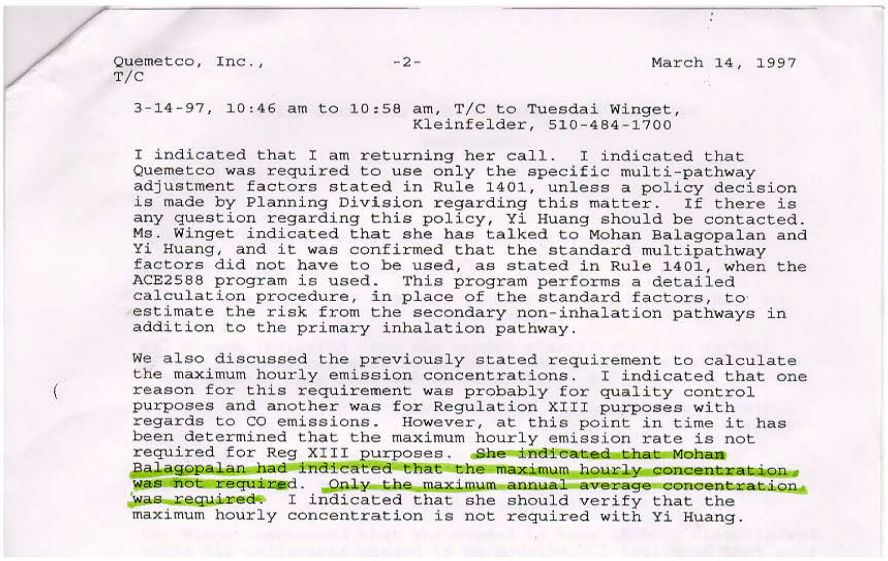
The method for material weighing at Quemetco currently is through the use of skip loader buckets. (The skip loader buckets are calibrated on a weigh scale and a weight factor is calculated.) Mohan Balagopalan indicated that "bucket loads" are not verifiable. The AQMD has concerns about feed record keeping.

Mr. Dumas indicated, with relation to the record keeping for the coke usage, that purchase records can be used to verify the amount of coke being used.

Mohan Balagopalan indicated that improvements are needed in the method used for record keeping of feed materials at this facility.

The writer discussed the matter of record keeping of lead tapping

Figure 3 This documents SCAQMD concerns with the practice of feeding tractor scoops of material to the furnace and would explain the concentrated bursts that we are currently subjected to. SCAQMD has never sampled or analyzed these toxic plumes despite over 100 complaints to them of this last year alone.



Quemetco, Inc., -2- March 14, 1997
T/C

3-14-97, 10:46 am to 10:58 am, T/C to Tuesdai Winget, Kleinfelder, 510-484-1700

I indicated that I am returning her call. I indicated that Quemetco was required to use only the specific multi-pathway adjustment factors stated in Rule 1401, unless a policy decision is made by Planning Division regarding this matter. If there is any question regarding this policy, Yi Huang should be contacted. Ms. Winget indicated that she has talked to Mohan Balagopalan and Yi Huang, and it was confirmed that the standard multipathway factors did not have to be used, as stated in Rule 1401, when the ACE2588 program is used. This program performs a detailed calculation procedure, in place of the standard factors, to estimate the risk from the secondary non-inhalation pathways in addition to the primary inhalation pathway.

We also discussed the previously stated requirement to calculate the maximum hourly emission concentrations. I indicated that one reason for this requirement was probably for quality control purposes and another was for Regulation XIII purposes with regards to CO emissions. However, at this point in time it has been determined that the maximum hourly emission rate is not required for Reg XIII purposes. She indicated that Mohan Balagopalan had indicated that the maximum hourly concentration was not required. Only the maximum annual average concentration was required. I indicated that she should verify that the maximum hourly concentration is not required with Yi Huang.

Figure 4 This appears to document verbal permission to use average annual concentrations rather than the normal maximum hourly concentration. In addition the first paragraph appears to document some sort of "policy decision" made by planning division to allow Quemetco to use factors other than those required by Rule 1401.

3-3 continued

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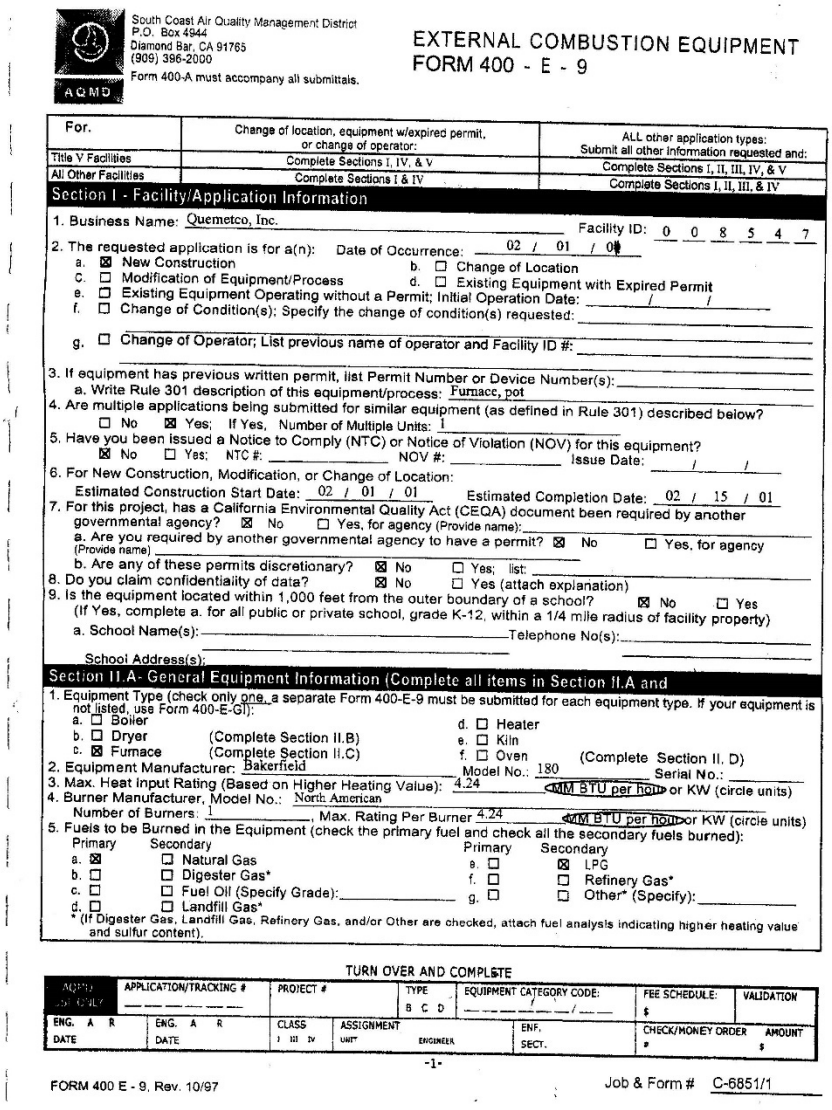

South Coast Air Quality Management District
P.O. Box 4944
Diamond Bar, CA 91765
(909) 396-2000
Form 400-A must accompany all submittals.

AQMD

EXTERNAL COMBUSTION EQUIPMENT
FORM 400 - E - 9

For.	Change of location, equipment w/expired permit, or change of operator:	ALL other application types: Submit all other information requested and:
Title V Facilities	Complete Sections I, IV, & V	Complete Sections I, II, III, IV, & V
All Other Facilities	Complete Sections I & IV	Complete Sections I, II, III, & IV

Section I - Facility/Application Information

1. Business Name: Quemetco, Inc. Facility ID: 0 0 8 5 4 7
2. The requested application is for a(n): Date of Occurrence: 02 / 01 / 0[illegible]
   a. ☒ New Construction b. ☐ Change of Location
   c. ☐ Modification of Equipment/Process d. ☐ Existing Equipment with Expired Permit
   e. ☐ Existing Equipment Operating without a Permit; Initial Operation Date: / /
   f. ☐ Change of Condition(s); Specify the change of condition(s) requested:
   g. ☐ Change of Operator; List previous name of operator and Facility ID #:
3. If equipment has previous written permit, list Permit Number or Device Number(s):
   a. Write Rule 301 description of this equipment/process: Furnace, pot
4. Are multiple applications being submitted for similar equipment (as defined in Rule 301) described below?
   ☐ No ☒ Yes; If Yes, Number of Multiple Units: 1
5. Have you been issued a Notice to Comply (NTC) or Notice of Violation (NOV) for this equipment?
   ☒ No ☐ Yes; NTC #: NOV #: Issue Date: / /
6. For New Construction, Modification, or Change of Location:
   Estimated Construction Start Date: 02 / 01 / 01 Estimated Completion Date: 02 / 15 / 01
7. For this project, has a California Environmental Quality Act (CEQA) document been required by another governmental agency? ☒ No ☐ Yes, for agency (Provide name):
   a. Are you required by another governmental agency to have a permit? ☒ No ☐ Yes, for agency (Provide name)
   b. Are any of these permits discretionary? ☒ No ☐ Yes; list:
8. Do you claim confidentiality of data? ☒ No ☐ Yes (attach explanation)
9. Is the equipment located within 1,000 feet from the outer boundary of a school? ☒ No ☐ Yes
   (If Yes, complete a. for all public or private school, grade K-12, within a 1/4 mile radius of facility property)
   a. School Name(s): Telephone No(s):
   School Address(s):

Section II.A- General Equipment Information (Complete all items in Section II.A and

1. Equipment Type (check only one, a separate Form 400-E-9 must be submitted for each equipment type. If your equipment is not listed, use Form 400-E-GI):
   a. ☐ Boiler
   b. ☐ Dryer (Complete Section II.B)
   c. ☒ Furnace (Complete Section II.C)
   d. ☐ Heater
   e. ☐ Kiln
   f. ☐ Oven (Complete Section II. D)
2. Equipment Manufacturer: Bakerfield Model No.: 180 Serial No.:
3. Max. Heat Input Rating (Based on Higher Heating Value): 4.24 (MM BTU per hour) or KW (circle units)
4. Burner Manufacturer, Model No.: North American
   Number of Burners: 1, Max. Rating Per Burner 4.24 (MM BTU per hour) or KW (circle units)
5. Fuels to be Burned in the Equipment (check the primary fuel and check all the secondary fuels burned):

	Primary	Secondary		Primary	Secondary
a.	☒	☐ Natural Gas	e.	☐	☒ LPG
b.	☐	☐ Digester Gas*	f.	☐	☐ Refinery Gas*
c.	☐	☐ Fuel Oil (Specify Grade):	g.	☐	☐ Other* (Specify):
d.	☐	☐ Landfill Gas*			

* (If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content).

TURN OVER AND COMPLETE

AQMD USE ONLY	APPLICATION/TRACKING #	PROJECT #	TYPE B C D	EQUIPMENT CATEGORY CODE: / /	FEE SCHEDULE: $	VALIDATION
ENG. A R DATE	ENG. A R DATE	CLASS I III IV	ASSIGNMENT UNIT ENGINEER	ENF. SECT.	CHECK/MONEY ORDER #	AMOUNT $

-1-

FORM 400 E - 9, Rev. 10/97 Job & Form # C-6851/1

Figure 5 This is one of many CEQA 400 forms submitted by Quemetco and approved by SCAQMD that contains false and misleading information. Notice that 2a is checked <u>new construction</u>. On this particular form Quemetco erroneously claims that no claim to confidentiality of data is made. This is patently false as every source test and interpretation of that data for all furnaces and the rotary dryer are confidential as the one example (Figure7) of hundreds that I have provided below

3-3 continued

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documents. In addition the fact that Quemetco is using these materials as fuel in furnaces and does not list that fact in Section IIA #5 is dangerously deceptive and must be corrected.

South Coast Air Quality Management District
21865 East Copley Drive
Diamond Bar, CA 91765
(909) 396- 2000

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) APPLICABILITY FORM 400 - CEQA

The SCAQMD is required by state law, the California Environmental Quality Act (CEQA), to review discretionary permit project applications for potential air quality and other environmental impacts. This form is a screening tool to assist the SCAQMD in clarifying whether or not the project[1] has the potential to generate significant adverse environmental impacts that might require preparation of a CEQA document [CEQA Guidelines §15060(a)].[2] Refer to the attached instructions for guidance in completing this form.[3] For each Form 400-A application, also complete and submit one Form 400-CEQA. If submitting multiple Form 400-A applications for the same project, only one 400-CEQA form is necessary for the entire project. If you need assistance completing this form, contact Lori Inga at (909) 396-3109.

FACILITY INFORMATION

Facility Name: Quemetco, Inc. **Facility ID** (6-Digit): 008547

Project Description: Permit two new refinery pots and modify the refinery baghouse.

REVIEW FOR EXEMPTION FROM FURTHER CEQA ACTION

Check "Yes" or "No" as applicable

	Yes	No	
A.	☐	☒	**A request for a change of permittee only (without equipment modifications)?**
B.	☐	☒	**Equipment certification or equipment registration?**
C.	☐	☒	**A CEQA and/or NEPA document previously or currently prepared that specifically evaluates this project?** If yes, a permit cannot be issued until a Final CEQA document and Notice of Determination is submitted.
D.	☐	☒	**Equipment damaged as a result of a disaster during state of emergency?**
E.	☐	☒	**A Title V permit renewal (without equipment modifications)?**
F.	☐	☒	**A Title V administrative permit revision?**
G.	☐	☒	**The conversion of an existing permit into an initial Title V permit?**
H.	☐	☒	**A functionally identical permit unit replacement with no increase in rating or emissions?**
I.	☐	☒	**A change of daily VOC permit limit to a monthly VOC permit limit?**

If **"Yes"** is checked for any question above, your application does not require additional evaluation for CEQA applicability. Skip to page 2, "SIGNATURES" and sign and date this form.

REVIEW OF IMPACTS WHICH MAY TRIGGER CEQA

Complete Sections I-V by checking "Yes" or "No" as applicable. To avoid delays in processing your application(s), explain all "Yes" responses on a separate sheet and attach it to this form.

	Yes	No	
1.	☐	☒	**Has this project generated any known public controversy regarding potential adverse impacts that may be generated by the project?** Controversy may be construed as concerns raised by local groups at public meetings; adverse media attention such as negative articles in newspapers or other periodical publications, local news programs, environmental justice issues, etc.
2.	☐	☒	**Is this project part of a larger project?**
3.	☐	☒	**Will there be any demolition, excavating, and/or grading construction activities that encompass an area exceeding 20,000 square feet?**
4.	[redacted]	☒	**Does this project include the open outdoor storage of dry bulk solid materials that could generate dust?** If Yes, include a plot plan with the application package.

1. A "project" means the whole of an action which has a potential for resulting in physical change to the environment, including construction activities, clearing or grading of land, improvements to existing structures, and activities or equipment involving the issuance of a permit. For example, a project might include installation of a new, or modification of an existing internal combustion engine, dry-cleaning facility, boiler, gas turbine, spray coating booth, solvent cleaning tank, etc.
2 To download the CEQA guidelines, visit http://ceres.ca.gov/env_law/state.html.
3 To download this form and the instructions, visit http://www.aqmd.gov/ceqa.

Figure 6 Another CEQA 400 form for new construction containing inaccurate statements (1.) by Quemetco that was approved by SCAQMD. The effect is that the regulatory agencies have allowed Quemetco to circumvent normal CEQA review. Could SCAQMD please explain why these gross errors escaped detection when they reviewed and approved these documents?

3-3 continued

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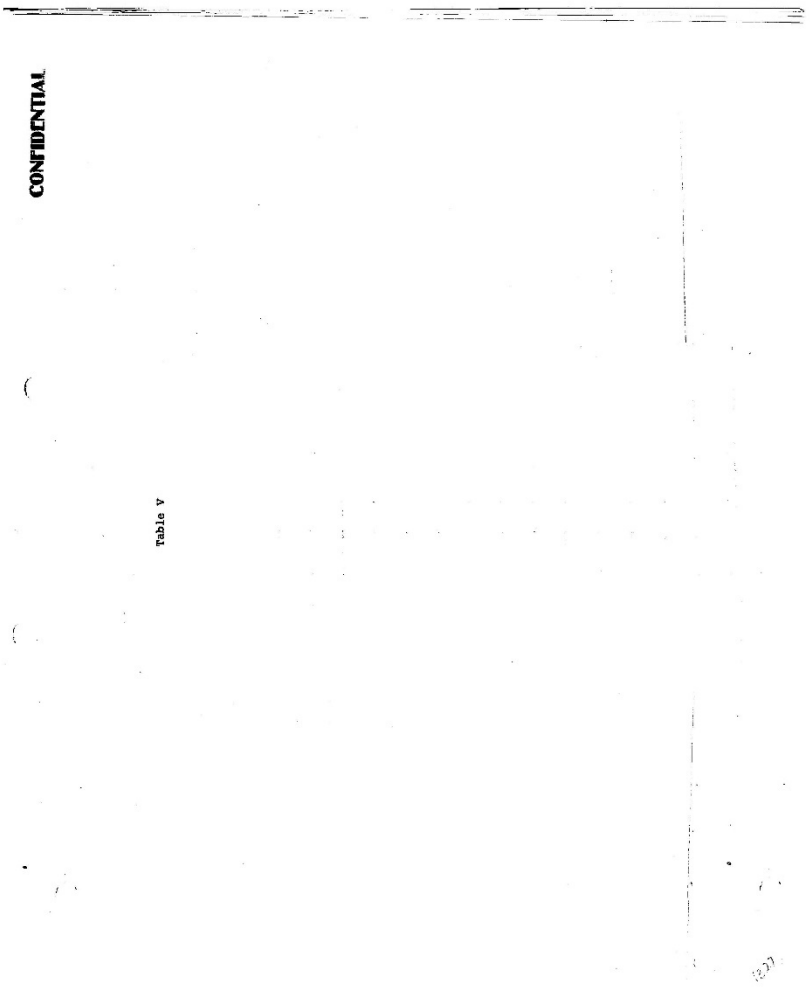


3-3 concluded

Figure 7 One example of hundreds of pages of confidential data that directly pertains to the Health Risk Assessment.

18

RESPONSE TO COMMENT LETTER #3 – Duncan McKee, October 18, 2022

Response 3-1
The comment is seeking an expansion of the proposed 2022 AQMP to include a requirement for the South Coast AQMD to work with private industry to build other hazardous waste disposal facilities that recycle lead acid and other batteries outside of the South Coast Air Basin. The comment also focuses on an individual facility, Quemetco, a lead acid battery recycling facility.

The California Legislature created the South Coast AQMD in 1977[1] as the agency responsible for developing and enforcing air pollution control rules and regulations in the South Coast Air Basin, and portions of the Salton Sea Air Basin and Mojave Desert Air Basin. By statute, the South Coast AQMD is required to adopt an AQMP demonstrating compliance with all federal and state ambient air quality standards for the areas under the jurisdiction of the South Coast AQMD.

The proposed project that is evaluated in the Program EIR is the 2022 AQMP which has been developed to demonstrate compliance with the federal 8-hour ozone standard of 70 parts per billion (ppb) for ground-level ozone. The 2022 AQMP is a regional planning document and is not designed to focus on any individual facility. The 2022 AQMP contains a variety of control measures designed to bring the region into attainment with this standard by 2037 for the South Coast Air Basin and the Coachella Valley, and to comply with the federal and state ambient air quality standards for ozone. The project objectives of the 2022 AQMP as summarized in the following bullet points are specific to reducing ozone for the entire South Coast AQMD jurisdiction:

- Reduce ozone and its precursors on an expeditious implementation schedule.
- Demonstrate attainment of the 2015 federal 8-hour federal ozone standard (70 ppb) in the South Coast Air Basin by 2037.
- Redesignate the Coachella Valley to "extreme" nonattainment and demonstrate attainment of the 2015 federal 8-hour federal ozone standard (70 ppb) by 2037.
- Reduce the population's exposure to nonattainment pollutants (e.g., ozone and ozone precursor pollutants) according to the prescribed schedule and minimize adverse health impacts.
- Update planning assumptions and the best available information such as SCAG's 2020 Connect SoCal RTP/SCS.
- Utilize SCAG's growth forecast to project future baseline emissions. Update emission inventories using 2018 as the base year and incorporate emission reductions achieved from all applicable rules and regulations and the latest demographic forecasts.
- Achieve widespread adoption of zero emission and low NOx technologies across all mobile sectors and stationary sources large and small.
- Seek substantial funding for incentives to implement early deployment and commercialization of zero and low NOx emission technologies.

[1] The Lewis-Presley Air Quality Management Act, 1976 Cal. Stats., Ch. 324 (codified at Health and Safety Code Section 40400-40540).

- Update any remaining control measures from the 2016 AQMP and incorporate into the 2022 AQMP as appropriate.
- Calculate and take credit for co-benefits from other planning efforts (e.g., GHG reduction targets, energy efficiency, and transportation).
- Prioritize distribution of incentive funding in environmental justice areas and see opportunities to focus benefits on the most disadvantaged communities.
- Continue to work closely with businesses and industry groups to identify the most cost effective and efficient path to meeting clean air goals while being sensitive to economic concerns.
- Develop a strategy with fair-share emission reductions at the federal, state, and local levels.
- Comply with federal contingency measure requirements.
- Enhance the socioeconomic analysis and pursue the most efficient and cost-effective path to achieve multi-pollutant and multi-deadline targets.
- Prioritize regulatory opportunities and innovative non-regulatory "win-win" approaches for emission reduction.

Control measures in the 2022 AQMP are aimed primarily at reducing NOx emissions and, secondarily, VOC emissions, because these pollutants are precursors to the formation of ozone. Implementation of the control measures in the 2022 AQMP are expected to result in a reduction in NOx emissions, and potentially other criteria air pollutants. The 2022 AQMP is comprised of control measures that have been crafted to reduce NOx emissions from affected facilities, including Quemetco (if applicable). For example, Control Measure L-CMB-02 would replace or retrofit existing boilers and process heaters used in industrial operations with zero or low NOx emission technologies. However, none of the control measures in the 2022 AQMP target reducing toxic metals from hazardous waste facilities such as Quemetco because toxic metals such as lead do not contribute to the formation of ozone. Relative to lead emissions, the 2012 Lead State Implementation Plan (SIP) addresses the National Ambient Air Quality Standard (NAAQS) for lead, and outlines the strategies, planning, and pollution control activities that demonstrate attainment of the lead NAAQS.[2]

As discussed in the 2022 AQMP Program EIR, implementation of some of the control measures is expected to result in the use of zero emission technologies, including electrification of sources and use of electric mobile sources. As discussed in the 2022 AQMP Program EIR (see Subchapter 4.7.3.2.1), the batteries used in electric vehicles are primarily comprised of lithium ion technology (Li-ion) and do not use lead-acid batteries. An increased use of fuel cell and electric hybrid vehicles is correspondingly expected to reduce the use of conventional vehicles within California and the South Coast AQMD jurisdiction. Conventional vehicles use lead-acid batteries; therefore, a reduction in the use of conventional vehicles would be expected to reduce the volume of lead-acid batteries that need recycling in a hazardous waste facility such as Quemetco. Specifically, lead-acid batteries have a three-to-five year life, which is much less than the life of a vehicle, so lead-

[2] South Coast AQMD, 2012. Lead State Implementation Plan (SIP). https://www.aqmd.gov/home/air-quality/clean-air-plans/lead-state-implementation-plan.

acid batteries need to be replaced periodically. Electric vehicles batteries are typically lithium-based, such as lithium-ion (Li-ion) and have a much longer lifespan than lead-acid batteries. For example, California requires batteries in electric vehicles to have warranties for 10 years or 150,000 miles. Thus, the replacement rate of electric vehicle batteries is not as frequent as for lead-acid batteries.

Finally, the Quemetco facility is designed to recycle lead and lead-acid batteries and not Li-ion batteries. The South Coast AQMD air permit for Quemetco limits the amount and type of materials that can be handled at the facility. Lithium and the other materials in Li-ion batteries are not materials permitted for processing at the Quemetco facility and are expected to be recycled at other facilities instead, which are currently located outside of California. For these reasons, implementation of the 2022 AQMP is not expected to result in an increase in Li-ion batteries that would be recycled by the Quemetco facility.

South Coast AQMD is not responsible for the development and siting of any facilities, including hazardous waste disposal facilities, or the relocation of those facilities. In addition, South Coast AQMD may not interfere with the authority of cities and counties to plan and control land use. [Health and Safety Code Section 40414]. The bulk of the regulations for the siting and permitting hazardous waste disposal facilities are enforced by the California Department of Toxic Substances Control at the state level, and the U.S. EPA at the federal level.

Under federal and state law, the South Coast Air Quality Management District is under a legal obligation to enforce air pollution regulations. These regulations are primarily meant to ensure that the surrounding (or ambient) air meets federal and state air quality standards. The South Coast AQMD also has broad authority to regulate toxic and hazardous air emissions, and these regulations are enforced in the same manner as those which pertain to the ambient air quality standards. Thus, the South Coast AQMD has air permitting authority over these hazardous waste facilities if their operation requires an air permit and the facility is located within the South Coast AQMD's jurisdiction. As the commenter notes, the Quemetco facility has been issued air permits from the South Coast AQMD.

In addition, South Coast AQMD compliance staff conduct regular inspections of businesses to ensure that equipment and processes are operating in compliance with applicable clean air rules and regulations. During the inspection process, it may become necessary to issue a compliance notice to a business either to provide information necessary to make the compliance determination or to document non-compliant items found during the inspection. Thus, should there be an equipment malfunction or failure as hypothesized in the comment, there are a number of compliance and enforcement actions that may be taken by South Coast AQMD personnel to mitigate potential impacts.

The Quemetco facility is currently proposing modifications to its air permit, referred to as the Quemetco Capacity Upgrade Project, but the proposal does not indicate any plans to process lithium in addition to lead. A separate CEQA document, a Draft EIR, has been prepared to evaluate the environmental effects of the Quemetco Capacity Upgrade Project. Information regarding the permit evaluation and CEQA review process is available from the South Coast AQMD's webpage here: http://www.aqmd.gov/home/research/documents-reports/lead-agency-permit-projects. In

any event, the Quemetco Capacity Upgrade Project is a separate project from the 2022 AQMP. Several letters from this commenter raising the same issues in Comment Letter #3 have been previously submitted relative to the Quemetco Capacity Upgrade Project Draft EIR and responses are currently being prepared and will be included in the Final EIR for that project.

Response 3-2
Comment 3-2 is specific to the operation and permitting of the Quemetco facility and suggests its relocation via a five-year phase out and the construction of new facilities located elsewhere. As explained in Response 3-1, the South Coast AQMD does not have the authority to relocate the existing facility. In addition, South Coast AQMD may not interfere with the authority of cities and counties to plan and control land use regarding existing or new facilities. [Health and Safety Code Section 40414]. Since this comment does not raise any issues relative to the environmental analysis in the 2022 AQMP Program EIR, no further response is required by CEQA. [CEQA Guidelines Section 15088(a)].

Response 3-3
Comment 3-3 seeks to incorporate by reference three letters which were previously submitted regarding the Draft 2003 AQMP and specifically pertain the Quemetco facility: two letters were addressed to South Coast AQMD on May 22, 2003 (p. 3 of 18 to p. 6 of 18) and March 27, 2003 (p. 7 of 18 to p. 9 of 18) and one letter was addressed to the DTSC, dated March 23, 2003, and submitted to the South Coast AQMD as an attachment to the March 27, 2003 letter (p. 10 of 18 to p. 18 of 18). These letters do not address the environmental analysis in the 2022 AMQP Program EIR. A lead agency is not required to respond to comments that repeat comments already considered. (*Environmental Protection Information Center v. California Department of Forestry and Fire Protection* (44 Cal.4th 459, 487.) Responses to these comments that were submitted on the 2003 AQMP were previously provided under 2003 AQMP Program EIR Comment Letter No. 12 (see p. D12-5 through D12-6 of http://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/2003-aqmp---final-peir) and 2003 AQMP Comment Letter No. 24 (see p. 24-1 of https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2003-air-quality-management-plan/2003-aqmp-response-to-comments-document.pdf). No further response is required by CEQA.

COMMENT LETTER #4 – Duncan McKee, October 31, 2022 (p. 1 of 8)

From: mckeepalms@aol.com
To: Kevin Ni; AQMPTeam
Subject: Input on AQMD
Date: Tuesday, November 1, 2022 3:50:43 PM
Attachments: AQMP Input 2.docx

Dear SCAQMD Personnel,
Please find attached input on the AQMP.
Thank you for the opportunity to comment.
Duncan McKee

4-1

COMMENT LETTER #4 – Duncan McKee, October 31, 2022 (p. 2 of 8)

10/31/2022

Duncan McKee
738 S. 3rd Avenue
Avocado Heights, CA 91746
Tele: (626) 330-5123

SCAQMD
Kevin Ni (c/o CEQA)
21865 Copley Drive
Diamond Bar, CA 91765

Dear SCAQMD Staff:

On behalf of the residents and business owners in Avocado Heights, Bassett, City of Industry, Hacienda Heights, La Puente and North Whittier, thank you for the opportunity to provide comments on the AQMP. We would like to see an addition of a plan to facilitate the construction and operation of additional Lead Acid Battery recycling facilities that are not located within the South Coast Basin. The outrageous proposal by SCAQMD on behalf of Quemetco/RSR/Ecobat to increase the quantity of hazardous waste and other toxic materials processed as well as their request to use petroleum coke in lieu of and in addition to, cleaner burning calcined carbon coke, the proposal to increase the temperature of the Rotary Kiln Dryer and to increase the quantity of dangerous substances used in their processes as well as the increase of potable drinking water they pollute and put down the sewer is not a permanent solution to the world's spent batteries. Business owners in the City of Industry are speculating that Quemetco/RSR/ Ecobat has plans to recycle lithium, nickel metal hydride and other batteries that are increasingly being used.

4-2

Below is just a taste of the historical things wrong with continuing to permit Quemetco/RSR/ Ecobat to operate and expand in the center of our community and why SCAQMD should include a plan to solve this problem in the AQMP.

The facts are that the above-mentioned areas have continued to suffer a degradation of air quality thanks to the misguided policies of the SCAQMD. Under the authority of SCAQMD Quemetco/ RSR Inc. has been allowed to continue to operate with a cancer burden of 1.16 despite the fact that they exceed SCAQMD rules that set the cancer burden limit at .5. SCAQMD gave its blessing and permitted this company to increase the throughput to their furnaces by nearly 50% to 1.2 million lbs. /day and double the number of refining kettles from 4 to 8 even though SCAQMD knew that they exceeded the cancer burden and AB 2588 cancer risk limitations. At the same time SCAQMD permitted this company to increase the addition of sulfur from 400 lbs./day to 400 lbs./hour and increase the addition of red phosphorus from 1500 lbs./month to 45,750 lbs./month. SCAQMD allowed them to offset the increased emissions by the use of either ETCs or ERCs and the increase in SOx and NOx by the use of RECLAIM credits.

COMMENT LETTER #4 – Duncan McKee, October 31, 2022 (p. 3 of 8)

Duncan McKee

738 S. 3rd Avenue

Avocado Heights, CA. 91746

(626) 330-5123

Barry Wallerstein, D.Env.

21865 E. Copley Dr.

Diamond Bar, CA. 91765

Dear Barry Wallerstein and Staff:

On behalf of residents and businesses in Avocado Heights, Bassett, City of Industry, Hacienda Heights, La Puente and North Whittier this letter is in response to the recently released HHRA for the Quemetco facility located at 720 S. 7th Ave. in City of Industry, CA. 91746. Thank you for the opportunity to review and submit comments. Below are some potential problems that we have identified.

1. The HHRA lacks data for the highly concentrated noxious bursts that reliable sources have repeatedly reported to SCAQMD and other agencies for over a decade. Despite literally hundreds of complaints SCAQMD scientists have not identified or taken 1 sample for analysis of these toxic plumes. These plumes have been repeatedly reported to cause such adverse health effects such as nausea, headache, sore throat, shortness of breath and vomiting.

4-3

2. Dispersion Modeling does not include the fact that these highly concentrated plumes are entering residences and businesses (buildings) and lingering for extended periods of time. This has been repeatedly reported to SCAQMD by reliable sources for at least a decade.

3. Dispersion Modeling does not accurately depict the fact that often fumes from the facility linger when winds are calm or non-existent. The local topography creates a semi-closed basin that when inundated with emissions from Quemetco operating at full capacity, the air is barely breathable. On overcast days and during our frequent foggy weather the air is so laden with contaminants that it is clear that during these times the air quality is extremely unhealthful.

COMMENT LETTER #4 – Duncan McKee, October 31, 2022 (p. 4 of 8)

4. Wind data is not from a certified source and should not be allowed as data in the HHRA and dispersion modeling.

5. Source Testing does not accurately depict normal operations. Numerous photos taken during source testing and during "normal operations " clearly document that emissions during the source tests were not indicative of emissions during normal operations.
•LACOSD documents show that Quemetco used nearly their entire permitted quantity of water during the source testing.

•Tom Libel told us that they were not adding plastic and rubber or processing slag during these tests.

•We did not observe visible emissions or typical unpleasant odors during the source testing.
•We did detect burning plastic odors and visible emissions from the stacks after testing was completed for the day.

•Community member who observed testing from inside Quemetco states there were no visible emissions from stacks, no foul odors and he did not see anything burning in or being added to the furnace.

•739,400 lbs. per day/1,200,000 lbs. per day=61.61% capacity.
•SCAQMD claims in the same document that they were tested at 97% capacity?

•Note that SCAQMD also admits that the feed material used "most likely" had a lower organic content. [1]

4-3 continued

6. High levels of lead and other heavy metals recently found in soils surrounding Quemetco are not taken into account in the HHRA. In fact SCAQMD has gone to extensive lengths to eliminate this data from the current HHRA. The experts we have spoken with from various agencies have expressed grave concern in this matter. SCAQMD appears to have used either 69-PPM or 89-PPM lead when soils contain up to 5,300-PPM lead. Was the private firm that reviewed the HHRA informed of these facts? Are USEPA, DTSC, CARB and other agencies informed in this matter?

7. The data from a single test for fallout of particulate matter is the only source of data in the HHRA. This test was taken using a 1- square meter piece of glass placed in an area that is regularly swept and DTSC mandated soil replacement had occurred. Soils in this area were required to contain only 150-PPM lead not the 5,300-PPM found outside the Quemetco fence line.

[1] Figure 1

COMMENT LETTER #4 – Duncan McKee, October 31, 2022 (p. 5 of 8)

8. Not all sources of emissions are taken into account in the HHRA. For example, numerous tanks that hold scrubber water and liquids containing VOCs appear to show signs that they may not be a "closed system". These tanks are supposedly exempt from regulation of air emissions. Are VOCs and other compounds being emitted from these tanks? What happens to the VOCs when they are contained in scrubber water? Are they vented to the atmosphere unregulated? In addition, SCAQMD has received numerous reports as well as photographs of visible emissions from sources other than stacks.

9. Testing for arsenic appears to subtract off arsenic emissions initially produced when the lead is melted. It appears that this might be an additional source of arsenic that is not taken into account in the HHRA calculations.[2]

10. We petition SCAQMD to include a condition that requires regular unannounced air monitoring for the most dangerous chemicals associated with Quemetco processes. This is imperative in light of the fact that Quemetco effectively lobbied DTSC to drop requirements for air monitoring from the DTSC permit. If SCAQMD does not include these provisions there is no mechanism to insure compliance with air quality regulations. Keep in mind that with the exception of lead, the substances that the permit requires Quemetco to monitor for (SOX, NOX) are substances that are not the most dangerous substances associated with Quemetco processes.

11. The fact that SCAQMD uses averages including annual, daily and hourly affects the HHRA calculations. We a very concerned that Quemetco may have lowered the risk only temporarily due to the fact that there were many days in both 2003 and 2005 (data used in HHRA) where Quemetco was shut down for various reasons. In addition, we are concerned that the use of averages could mask highly concentrated bursts resulting from the large batches that are routinely processed during short periods at the facility.

12. We are extremely concerned that the quantities used in the HHRA may not be as great as actual quantities released. For example, SCAQMD has stated in writing that Quemetco released 306 lbs./year of lead. There is an 1804 lb./ year discrepancy between the 2124 lbs./ year that the SCAQMD document in figure 3 indicates.[3] In addition if my memory serves me correctly there is a huge discrepancy between the 2,300 lbs./year of 1,3-butadiene that SCAQMD and DTSC document and the around 1300 lbs. used in the HHRA. The exact same thing applies to benzene and other cancer causing chemicals. This is a major problem that warrants immediate serious investigation. Bob Blaisdell at the OEHHA is telling us that it is potentially a serious offence to under estimate the release of chemicals for the purpose of a HHRA.

4-3 continued

[2] Figure 2
[3] Figure 3

COMMENT LETTER #4 – Duncan McKee, October 31, 2022 (p. 6 of 8)

Again, we urge SCAQMD and USEPA to address these and other issues prior to issuance of the Title V Permit. Please do not hesitate to contact me if you require additional information or if any of the information I have provided is not accurate.

Thank you for the opportunity to submit comments.

Duncan McKee

4-3 continued

COMMENT LETTER #4 – Duncan McKee, October 31, 2022 (p. 7 of 8)

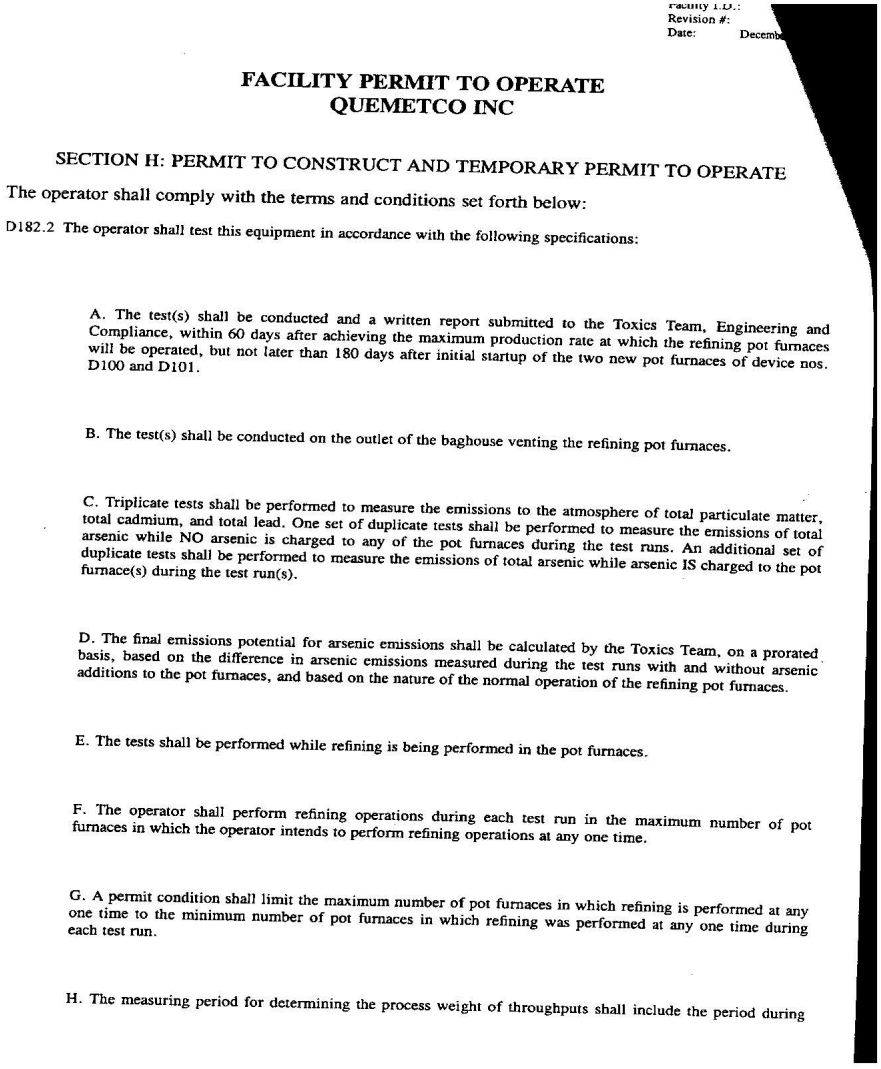
Quemetco, Inc. Page 7 Facility ID 8547
Title V Comments and Responses

Comment or Item	Response
	the 24 hour periods corresponding to these two dates in 2003. The results of the AQMD's calculations after making these corrections were Feed/Pb factors of 1.22 and 1.25, respectively for these two dates. The average resulting factor is **1.235**. Next, based on the numbers supplied in the Quemetco material balance flow charts, an average wet wrecker material feed charging rate of 739,400 lbs/day was reconciled with the reported furnace log data for each of the 12 days studied in 2003. The results of this analysis produced factors of 1.25 and 1.28, an average of **1.265, in exact agreement with the Quemetco estimate**. Finally, the average of all 12 day's factors was determined to be equal to a value of **1.28**. The average lead scrap and lead dross charging rates were determined to be 10.37 % and 22.04 %, respectively, for these twelve days **when source tests were being performed.** In fact, based on the results of 22 days of direct weight measurement in May/June of 2005, the actual feed to lead ratio is actually an average of 1.409 lbs feed/lb Pb. This agrees extremely well with the previously predicted factor of 1.429 within a difference of only 1.4%. Since the direct measured factor during the tests in 2003 was 1.325, it is most likely that the feed material used during the 2003 source tests had a lower moisture and organic content.
A11	
Quemetco has recently proposed a direct measurement device which will not require the use of production data or factors. On April 19, 2005, Quemetco filed an application for a change of permit conditions to install "load cell" systems which will use an on-board module for the front end loaders.	The AQMD has evaluated this proposal and has recommended approval with appropriate conditions to verify the reliable operation of the proposed, modular weighing system. The recommended conditions are included in the revised draft permit.

4-3 continued

Figure 1 Data appears to document that the Rotary Dryer was tested at around 60% permitted capacity like Jay Chen and SCAQMD staff told us. Also, note that SCAQMD states that the feed "most likely" had a lower moisture and organic content.

COMMENT LETTER #4 – Duncan McKee, October 31, 2022 (p. 8 of 8)



Facility I.D.:
Revision #:
Date: Decemb

FACILITY PERMIT TO OPERATE
QUEMETCO INC

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

D182.2 The operator shall test this equipment in accordance with the following specifications:

A. The test(s) shall be conducted and a written report submitted to the Toxics Team, Engineering and Compliance, within 60 days after achieving the maximum production rate at which the refining pot furnaces will be operated, but not later than 180 days after initial startup of the two new pot furnaces of device nos. D100 and D101.

B. The test(s) shall be conducted on the outlet of the baghouse venting the refining pot furnaces.

C. Triplicate tests shall be performed to measure the emissions to the atmosphere of total particulate matter, total cadmium, and total lead. One set of duplicate tests shall be performed to measure the emissions of total arsenic while NO arsenic is charged to any of the pot furnaces during the test runs. An additional set of duplicate tests shall be performed to measure the emissions of total arsenic while arsenic IS charged to the pot furnace(s) during the test run(s).

D. The final emissions potential for arsenic emissions shall be calculated by the Toxics Team, on a prorated basis, based on the difference in arsenic emissions measured during the test runs with and without arsenic additions to the pot furnaces, and based on the nature of the normal operation of the refining pot furnaces.

E. The tests shall be performed while refining is being performed in the pot furnaces.

F. The operator shall perform refining operations during each test run in the maximum number of pot furnaces in which the operator intends to perform refining operations at any one time.

G. A permit condition shall limit the maximum number of pot furnaces in which refining is performed at any one time to the minimum number of pot furnaces in which refining was performed at any one time during each test run.

H. The measuring period for determining the process weight of throughputs shall include the period during

4-3 concluded

Figure 2 This condition appears to allow the initial arsenic released to be subtracted from arsenic released when arsenic is added to the process. Is arsenic released that is not taken into account in the HHRA?

RESPONSE TO COMMENT LETTER #4 – Duncan McKee, October 31, 2022

Response 4-1
Comment 4-1 contains introductory remarks without raising any issues relative to the environmental analysis in the 2022 AQMP Program EIR. Therefore, no further response is required by CEQA. [CEQA Guidelines Section 15088(a)].

Response 4-2
Comment 4-2 repeats the request made in Comment 3-1 seeking a requirement in the 2022 AQMP for the South Coast AQMD to contemplate other hazardous waste disposal facilities that recycle lead acid and other batteries outside of the South Coast Air Basin. Comment 4-2 also speculates that Quemetco intends to recycle Li-ion batteries. Lastly, Comment 4-2 disagrees with the currently proposed modifications to the air permit for the Quemetco facility, referred to as the Quemetco Capacity Upgrade Project which has been evaluated in a separate CEQA document and is unrelated to the 2022 AQMP and the CEQA evaluation in the corresponding Draft Program EIR. See also Response 3-1.

Response 4-3
Comment 4-3 is an undated letter directed to the previous Executive Officer of South Coast AQMD, Barry Wallerstein, whose tenure ended in March 2016. Comment 4-3 provides detailed comments on a "recently released" hazards health risk assessment (HHRA) and references the Title V Permit for the Quemetco facility. This comment does not raise any issues relative to the 2022 AQMP or the environmental analysis in the Program EIR for the 2022 AQMP. Therefore, no further response is required by CEQA. [CEQA Guidelines Section 15088(a)].

COMMENT LETTER #5 – SoCalGas, October 31, 2022 (p. 1 of 1)

From: McGivney, Daniel
To: Kevin Ni
Cc: Barker, Kevin M; Hamilton, Priscilla R; Lorenz, Megan
Subject: SoCalGas Comments on 2022 draft PEIR for the draft 2022 AQMP
Date: Tuesday, November 1, 2022 2:17:32 PM

Mr. Kevin Ni,
Thank you for the opportunity to comment on the Draft 2022 Program Environmental Impact Report (PEIR) developed in support of the draft 2022 Air Quality Management Plan (AQMP). The Draft 2022 PEIR does not analyze or account for the emission impacts associated with the operation of back-up emergency engine power generation equipment to support the electric grid in response to heatwaves or public safety power shutoff (PSPS) events. These emissions should be analyzed in the draft 2022 PEIR and evaluated for their potential impacts upon the environment. SoCalGas commented on this issue in past comment letters regarding proposed control measures and the draft 2022 AQMP.

At the California Extreme Heat Symposium held on October 18 at the California Natural Resources Agency (CNRA) in Sacramento, Wade Crowfoot, CNRA Secretary, stated that "Just last month in September, we endured the hottest, longest heat wave in our state's history literally breaking thousands of temperature records across our State and creating a situation where we very nearly lost electric power in different parts of our state." At the same event, Public Utilities Commissioner Siva Gunda stated "The sobering part of the story is we've turned on every backup generator we had available in the State. We paid them to be turned on, and those are diesel backup generators, oftentimes in disadvantaged communities."

The above statements highlight the importance of this issue and the need to analyze the impacts of the operation of these back-up generators upon the environment in the draft 2022 PEIR. Please let us know if there are any questions. Thank you for the opportunity to provide these comments.

5-1

Daniel McGivney
Environmental Affairs Program Manager
Environmental Affairs
SoCalGas
Mobile: 951-225-2958
dmcgivney@socalgas.com

RESPONSE TO COMMENT LETTER #5 – SoCalGas, October 31, 2022

Response 5-1
Comment 5-1 requests the analysis of emissions from Public Safety Power Shutoff (PSPS) events to be included in the Program EIR. Staff acknowledges the potential emissions from the use of emergency diesel engines during PSPS or extreme heat events. On October 1, 2021, the Governing Board adopted Rule 118.1 which was developed to allow critical service facilities operating emergency standby engines to exclude operating hours during a Public Safety Power Shutoff (PSPS) event and activities associated with a PSPS event from counting towards an annual operating limit of up to 200 hours. Rule 118.1 also contains notification and summary report requirements for facilities that elect to exclude engine operating hours due to a PSPS event. Since Rule 118.1 was comprised of specific actions to prevent or mitigate an emergency, the Governing Board determined that Rule 118.1 was statutorily exempt from CEQA pursuant to CEQA Guidelines Section 15269(c) – Emergency Projects. Because the environmental effects associated with implementing Rule 118.1 are separate and pre-date the development of the 2022 AQMP, the Program EIR does not contain an analysis of PSPS events. Further, the need to use emergency back-up generators because of an emergency caused by an extreme weather event, for example, is not part of the proposed project and would not be impacted by the proposed project.

In addition, Control Measure L-CMB-04 – Emission Reductions From Emergency Standby Engines is included in the 2022 AQMP and is aimed at addressing the concerns raised in this comment letter. Specifically, Control Measure L-CMB-04 seeks reductions of NOx emissions from emergency standby engines rated over 50 brake horsepower. The control measure also includes an education and outreach program to encourage the transition to zero-emission technologies. Regulatory strategies include replacing older, higher emitting engines with cleaner engines or with alternative technologies, requiring the use of lower emission fuels, and a future prohibition on the use of Internal Combustion Engines for emergency back-up power. As alternative technologies mature and new technologies emerge, the South Coast AQMD plans on undertaking rulemaking to maximize emission reductions utilizing zero emission equipment where cost-effective and feasible, and low NOx emission equipment in all other applications. Staff estimates that Control Measure L-CMB-04 would reduce NOx emissions by an estimated two tons per day. Control Measures L-CMB-05 and L-CMB-06 are both aimed at reducing NOx emissions from large turbines and electricity generating facilities, which would improve air quality, including during extreme weather events.

Staff again acknowledges the potential emissions from the use of emergency diesel engines during PSPS or extreme heat events. Emissions associated with such events will be tracked and evaluated to ensure they do not interfere with attainment of the standard. Future rulemaking activities would further refine the emissions inventory based on best available information on methodology and emissions data. While there is uncertainty in emissions during PSPS events, the anticipated future benefit of L-CMB-04 will likely exceed the potential increases from the use of backup generators during PSPS events.

COMMENT LETTER #6 - Latham & Watkins LLP, November 1, 2022 (p. 1 of 57)

From:	John.Heintz@lw.com
To:	AQMPTeam; Kevin Ni
Cc:	psenecal@wspa.org; rcromartie@wspa.org; MICHAEL.CARROLL@LW.com
Subject:	RFG/WSPA Comments on Draft Program Environmental Impact Report for the Proposed 2022 Air Quality Management Plan
Date:	Tuesday, November 1, 2022 4:49:54 PM
Attachments:	RFG_WSPA_Comments on 2022 AQMP Draft PEIR.pdf

Good afternoon.

On behalf of the RFG and WSPA, please see the attached comment letter on the Draft Program Environmental Impact Report for the Proposed 2022 Air Quality Management Plan.

Thank you for all that staff is doing.

Very best,

John

6-1

John C. Heintz

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COMMENT LETTER #6 - Latham & Watkins LLP, November 1, 2022 (p. 2 of 57)

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November 1, 2022

VIA EMAIL

Sarah Rees, Ph.D., Deputy Executive Officer
Dr. Sang-Mi Lee, Planning & Rules Manager
Planning, Rule Development, and Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Re: Regulatory Flexibility Group/Western States Petroleum Association Comments on the Draft Program Environmental Impact Report for the Proposed 2022 Air Quality Management Plan

Dear Dr. Rees:

Thank you for the opportunity to submit these comments on the South Coast Air Quality Management District's Draft Program Environmental Impact Report for the Proposed 2022 Air Quality Management Plan (the "Draft PEIR") on behalf of the Regulatory Flexibility Group ("RFG") and the Western States Petroleum Association ("WSPA"). RFG is a coalition of California entities whose operations are subject to regulation under the Clean Air Act and corresponding state and regional air quality programs. RFG members include manufacturers, natural gas utilities, and oil and chemical companies. WSPA is a non-profit trade association representing companies that explore for, produce, refine, transport, and market petroleum, petroleum products, natural gas, and other energy supplies in five western states, including California. WSPA has been an active participant in air quality planning issues for more than 35 years. As expressed in our other comment letters, RFG and WSPA appreciate the efforts of the District staff during this AQMP process. 6-2

As expressed in other letters submitted during the District's consideration of the 2022 AQMP,[1] we are extremely concerned with the District's potential fundamental shift in the approach to the tiered analysis associated with cost-effectiveness thresholds. The proposed "health benefit-based threshold" for stationary sources would severely undercut the potential effectiveness and Health and Safety Code-required analytical rigor for technological feasibility, cost-effectiveness, and incremental cost-effectiveness in rulemakings going forward. This 6-3

[1] We incorporate each of the letters submitted by RFG and WSPA by reference into this letter on the Draft PEIR. For ease of review, we are attaching the previous letters to this communication. In addition to the more general concerns identified in previous comments, this letter provides additional specific comments on the Draft PEIR.

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eleventh hour shift in approach also raises a number of CEQA concerns, which we summarize below.

We are also concerned with the Draft PEIR's analysis of the potential environmental impacts associated with both (1) the contemplated electrification this AQMP will drive and (2) certain specific control measures. These concerns are also summarized below.

6-3 concluded

The Proposed Shift in Cost-Effectiveness Thresholds Conflict with the CEQA-Identified Project Objectives

The Draft PEIR does not include any substantive assessment of the environmental impacts of what such a fundamental shift in tiered cost-effectiveness analysis would mean for the regulated community. This potential change in approach is in direct conflict with the Draft Program Environmental Impact Report's "Project Objectives" to:

- Continue to work closely with businesses and industry groups to identify the most cost-effective and efficient path to meeting clean air goals, while being sensitive to economic concerns.
- Develop a strategy with fair-share emission reductions at the federal, state, and local levels.
- Enhance the socioeconomic analysis and pursue the most efficient and cost-effective path to achieve multi-pollutant and multi-deadline targets.[2]

6-4

Without a tiered analysis with reasonable, control measure-based cost-effectiveness thresholds, future rulemakings will lose the benefit of a rigorous and careful consideration of the balance between air quality improvements and the economic concerns and impacts on the regulated community. Essentially abandoning the tiered analysis will also continue to force a disproportionate weight of the burden to reduce emissions on stationary sources. It will further result in the adoption of rules that are inefficient and will cause the loss of important economic activity in the region. All of these risks conflict with the identified Project Objectives.

We also note that the Health & Safety Code contains a number of provisions aimed at providing financial assistance to small businesses affected by District rules and regulations.[3] RFG/WSPA members support thousands of small businesses throughout the South Coast Basin. The Legislature has stated that "[i]t is necessary to increase the availability of financial assistance

6-5

[2] South Coast Air Quality Management District, Draft Program Environmental Impact Report for Proposed 2022 Air Quality Management Plan 2-12 (Sept. 2022) *hereinafter* Draft PEIR.

[3] *See, e.g.*, Health & Safety Code §§ 40448, 40448.6, and 40448.8.

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to small businesses that are subject to the rules and regulations of the south coast district, in order to minimize economic dislocation and adverse socioeconomic impacts."[4]

These provisions reflect the Legislature's intent that the District consider alternative means of achieving lower emissions, cost-effectiveness, socioeconomic impacts, and impacts to small businesses. In light of these principles, we request the District update the "Project Objectives" to include the following:

- Reducing emissions while minimizing impacts to small business owners; and
- Minimizing other socioeconomic impacts to the public.

RFG/WSPA requests that the potential transition from a control measure-based cost-effectiveness threshold be fully analyzed against the Project Objectives, as proposed for revision in this letter.

6-5 concluded

The Project Definition is Not Consistent with the Project Analyzed

The tiered cost-effectiveness analysis based on control measure costs has been a staple in District rulemakings since 2003, and it has helped to ensure that rulemakings comply with the Health & Safety Code requirements. It has also advanced rulemaking outcomes that have seen a significant reduction of emissions from stationary sources over the last 20 years without, for the most part, driving technologically infeasible and economically devastating outcomes.

The Draft PEIR makes no reference to the shift to "health benefit-based thresholds" and the potential environmental impacts of the same. CEQA requires that an EIR provide an accurate and consistent description of the proposed project.[5] The "project description is the Sine qua non of an informative and legally sufficient EIR."[6] A project description that is unstable and changing results in an EIR that fails to disclose the actual impacts of the project.[7] As stated in *Inyo County*, "shifts among different project descriptions do vitiate the City's EIR process as a vehicle for intelligent public participation."[8] Moreover, "[a] project description that omits integral components of the project may result in an EIR that fails to disclose the actual impacts of the project."[9] Without additional environmental review of the shift in rulemaking approach and an opportunity to comment on the resulting potential environmental impacts, the Draft EIR is legally deficient.

6-6

[4] Health & Safety Code § 40448.6(a); s*ee also,* §§ 40448, 40448.8 requiring the District to provide assistance to small businesses.

[5] *See* Cal. Code Regs. tit. 14, § 15124.

[6] *Cnty of Inyo v. City of Los Angeles*, 71 Cal.App.3d 185, 193 (1977).

[7] *Id.* at 198.

[8] *Id.* at 197.

[9] *Dry Creek Citizens Coalition v. Cnty. of Tulare*, 70 Cal.App.4th 20, 26 (1999).

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The Draft PEIR Does Not Appropriately Evaluate Potential Land Use Impacts Associated with the Transition to Zero Emission Technologies

The Draft PEIR found that impacts to land use and planning would not be significant.[10] The Draft PEIR notes that potential land use impacts are associated primarily with the construction of support systems to accommodate zero and near-zero emission transportation systems.[11] The finding that there would be no significant impacts associated with land use was predicated upon the assumption that no new rail or truck traffic routes would be constructed, because new routes and corridors would not be required to accommodate the growing fleet of zero and near-zero emission vehicles.[12] The Draft EIR found that while there may be impacts associated with construction to retrofit existing routes, there would not be lasting, significant land use impacts.[13]

Requiring accelerated adoption of zero and near-zero emission vehicles may result in demand for retrofitted transportation routes that far exceeds the assumptions included in the Draft PEIR. Accelerated adoption of these vehicular technologies will require accelerated retrofitting efforts to ensure that transportation routes can accommodate the new vehicles. The construction efforts needed to complete these projects could result in significant construction-related impacts that were not evaluated in the Draft PEIR. In addition, contrary to the Draft PEIR's assumption, the accelerated adoption of zero and near-zero emission vehicles may require the construction of new corridors and routes to accommodate the increase in new vehicles requiring support systems. Further, potential impacts would result from such changes as zoning ordinance modifications and may be cumulative. The Draft PEIR is required to analyze these potential impacts.

6-7

The Draft PEIR Does Not Appropriately Evaluate Potential Geophysical Impacts Associated with the Transition to Zero Emission Technologies

In dismissing potential geophysical impacts, the Draft PEIR concludes "projects that occur as a result of the 2022 AQMP are largely expected to occur at commercial and industrial areas and have a small construction footprint. Construction activities would be subject to local, regional, and state codes and requirements for erosion control and grading during construction."[14] The sheer scale of construction needed to facilitate the AQMP's contemplated transition to zero emission technologies will potentially require projects within residential areas and may be cumulative. A more detailed analysis of the breadth, scale, and location of electrification projects and the potential geophysical impacts of the same is warranted.

6-8

[10] Draft PEIR, *supra* note 2, at 4.8-6.
[11] *Id.*
[12] *Id.*
[13] *Id.*
[14] *Id.* at 2-31.

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The Draft PEIR's Environmental Analysis of L-CMB-07 (Emission Reductions from Petroleum Refineries [NOx]) is Insufficient

We also have concerns with the scope of environmental analysis associated with proposed control measure L-CMB-07. The measure contemplates the development of a rule "requiring a lower NOx concentration of 2 ppm" for large refinery heaters and boilers and identifies three approaches: ultra-low NOx burners, advanced SCR, and transition to zero emission technology.[15] The Draft PEIR does not appropriately and meaningfully consider the potential environmental impacts associated with the contemplated installation of ULNBs, SCR, and electrification.

These impacts could not only come in the form of stranded assets (given the adoption of Rule 1109.1 in 2021 and the ongoing implementation of the same), but also in the potential impacts associated with SCR performance (and associated uncertainty of the same) and the ability for refiners to retrofit the broad universe of process heaters and the physical implications of the same, etc. While there are a number of passing references to the potential impacts throughout the Draft PEIR, a comprehensive CEQA analysis to determine the full range of costs, benefits, and consequences associated with the contemplated expanded scope of Rule 1109.1 is necessary. Specifically: 6-9

FUG-01 proposes reductions of VOC emissions from implementation of an enhanced leak detection and repair (LDAR) program.[16] SCAQMD is currently in the process of amending Rule 1178 (PAR 1178), Further Reductions of VOC Emissions from Storage Tanks at Petroleum Facilities, and has proposed both engineering controls, as well as enhanced monitoring through the use of optical gas imaging (OGI) to control fugitive emissions from storage tanks. The PAR 1178 rulemaking, which is expected to have a public hearing in Q1 2023, raises questions on the inclusion of FUG-01 in the 2022 AQMP, as the VOC emissions that FUG-01 purports to control will arguably already have been addressed under the PAR 1178 rulemaking. 6-10

L-CMB-07 contemplates installation of next generational ULNB products.[17] The District reviewed these technologies during the recently concluded Rule 1109.1 rulemaking, and presented information showing that the technologies are not commercially available, and that the manufacturers have not demonstrated lower emission rates when burning refinery fuel gas. With L-CMB-07, the District suggests that these technologies might be required for equipment that is currently being modified to meet the Rule 1109.1 NOx BARCT emission limits. Aside from the commercial availability issues, Staff has not considered the technical feasibility of retrofitting those technologies into existing process heaters, or the constructability of the same. Such an added mandate could render certain equipment as stranded assets if the burner products cannot be 6-11

[15] South Coast Air Quality Management District, Revised Draft 2022 Air Quality Management Plan 4-21 to 4-22 (2022) *hereinafter* Draft 2022 AQMP..

[16] *Id.* at 4-23; Draft PEIR, *supra* note 2, at 2-20.

[17] Draft 2022 AQMP, *supra* note 15, at 4-21 to 4-22.

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physically or economically retrofit into the existing equipment. These issues and potential environmental effects were not considered in the Draft PEIR.

6-11 concluded

Additional Analysis of L-CMB-03 (NOx Emission Reductions from Permitted Non-Emergency Internal Combustion Engines [NOx]), L-CMB-04 (Emission Reductions from Emergency Standby Engines (Permitted) [NOx, VOCs]), and L-CMB-05 (NOx Emission Reductions from Large Turbines [NOx]) is Warranted

As currently analyzed, the Draft PEIR does not appropriately take into consideration the considerable stranded asset impacts associated with the above-referenced control measures and the potential reduction in reliability of energy delivery, which, of course, could have significant safety and economic impacts. Additional analysis of the potential impacts associated with the potential inability to reliably deliver energy in times of Public Safety Power Shutoff events and wildfire risks is needed to understand the full effects of these control measures.

6-12

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Thank you for your attention to these comments. If you would like to discuss our concerns, please contact me on (714) 755-8105, or by email at michael.carroll@lw.com.

Sincerely,

/s Michael J. Carroll

Michael J. Carroll
of LATHAM & WATKINS LLP

cc: RFG Members
Ramine Cromartie, WSPA
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Enc.

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Comment Letter #43

WSPA

Ramine Cromartie
Senior Manager, Southern California Region

June 17, 2022

Dr. Sang-Mi Lee
Planning & Rules Manager
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Via e-mail at: AQMPteam@aqmd.gov

Re: WSPA Comments on SCAQMD Draft 2022 Air Quality Management Plan

Dear Dr. Lee,

Western States Petroleum Association (WSPA) appreciates the opportunity to participate in the working group and workshops for the South Coast Air Quality Management District's (SCAQMD or District) 2022 Air Quality Management Plan (AQMP or Plan). The AQMP is a regional blueprint for achieving the national ambient air quality standards (NAAQS). On October 1, 2015, the U.S. Environmental Protection Agency (EPA) strengthened the National Ambient Air Quality Standards (NAAQS) for ground-level ozone, lowering the primary and secondary ozone standard levels to 70 parts per billion (ppb).[1] The 2022 AQMP is being developed to address the requirements for meeting this standard through proposed control measures.

WSPA is a non-profit trade association representing companies that explore for, produce, refine, transport, and market petroleum, petroleum products, natural gas, renewable fuels, and other energy supplies in five western states including California. WSPA has been an active participant in air quality planning issues for over 30 years. WSPA member companies operate petroleum refineries and other facilities in the South Coast Air Basin that are regulated by the SCAQMD and will be impacted by the 2022 AQMP.

We understand the challenges that the District faces in attaining the NAAQS. The region's unique topography and meteorology combined with mobile source emissions continues to produce significant ozone pollution for which the District has limited control authority. Additionally, as cost-effective controls have been implemented, it has become increasingly difficult to identify and implement additional control measures that are cost-effective. On May 6, 2022, SCAQMD released the Draft 2022 AQMP.[2] WSPA offers the following comments:

6-13

[1] 2015 Revision to 2008 Ozone NAAQS. Available at: https://www.federalregister.gov/documents/2015/10/26/2015-26594/national-ambient-air-quality-standards-for-ozone.
[2] SCAQMD Draft 2022 AQMP. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/draft2022aqmp.pdf?sfvrsn=12.

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1. **The California Air Resources Board (CARB) and U.S. Environmental Protection Agency (EPA) must be accountable for their share of emission reductions.**

   As noted in the Draft 2022 AQMP, "the overwhelming majority of NOx emissions" in the South Coast Air Basin are from trucks and other mobile sources regulated by federal or state authorities and are largely beyond SCAQMD control.[3] Mobile sources emit approximately 80% of the NOx in the South Coast Air Basin. EPA and CARB have the primary authority to regulate emissions from mobile sources. As a result of the 2016 AQMP, SCAQMD began development of indirect source rules to reduce emissions from mobile sources associated with facilities such as warehouses, railyards, and ports. EPA and CARB must be required to provide their share of emission reductions in order to ensure the emission reductions forecast in the 2022 AQMP are met. Stationary sources should not be penalized if EPA and CARB fail to meet their obligations.

2. **The District has stated that the only viable path to achieving the NAAQS for ozone may be a significant push to zero emission technology, with an approach that includes new zero emissions (ZE) and ultra-low NOx technologies that have yet to be invented and/or commercialized for many stationary and mobile use categories. The District's draft AQMP would rely on flexibility provided under Clean Air Act (CAA) Section 182(e)(5) for potential emission reductions from future technologies. Given the long-term planning horizon of this AQMP (e.g., 2037), WSPA believes this approach will be necessary.**

   CAA Section 182(e)(5) allows the Administrator to "approve provisions of an implementation plan for an Extreme Area which anticipate development of new control techniques or improvement of existing control technologies…".[4] The District has outlined a potential approach for the 2022 AQMP which includes maximized implementation of existing ZE and low NOx technologies. The District acknowledges that new ZE and ultra-low NOx technologies will still need to be invented for many use cases, both stationary and mobile (see Figure 1). For this reason, the District has proposed using the flexibility provided by the CAA §182(e)(5). WSPA supports this approach and suggests that the District maintain fuel neutrality, particularly in the area of ZE, as it evaluates technologies.

6-13 continued

[3] SCAQMD Draft 2022 AQMP, page 8. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/draft2022aqmp.pdf?sfvrsn=12.
[4] Clean Air Act Title I Part D, Plan Requirements for Nonattainment Areas, §182, Plan Submissions and Requirements. Available at: https://www.govinfo.gov/content/pkg/USCODE-2013-title42/html/USCODE-2013-title42-chap85-subchapI-partD-subpart2-sec7511a.htm.

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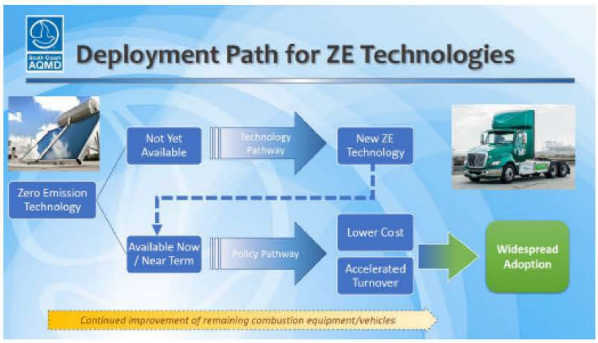
Figure 1: SCAQMD Proposed Deployment Path for ZE Technologies



Source: 2022 AQMP Control Measures Workshop, November 10, 2021, Agenda Item 3.

New funding and programs will be needed to support research, development, and commercial demonstration of new technologies. Additionally, new policies and incentives will need to be implemented to regulate any new technologies developed. These items will be developed over a longer timeline.

The District is in the process of developing new Best Available Retrofit Control Technology (BARCT) rules to transition facilities out of the REgional CLean Air Incentives Market (RECLAIM) program. For example, the District Governing Board just adopted Rule 1109.1 (R1109.1), Emissions of Oxides of Nitrogen from Petroleum Refineries and Related Operations, which introduces BARCT requirements for subject facilities. The majority of the control technologies specified in that rulemaking were developed and tested technologies. Just the same, the final compliance milestones for R1109.1 implementation are as late as 2034. The District will need to consider whether other technologies can be developed and commercialized on the timeline necessary for achieving the NAAQS for ozone by 2037.

3. **SCAQMD has proposed widespread deployment of zero emission technology, including electric technology options for multiple sectors. Prior to implementation of control measures, SCAQMD must be able to assure that the electrical grid will be able to supply the electric power needed to meet the increased demand.**

   SCAQMD has stated that widespread deployment of zero emission technology is needed for all sectors.[5] Electric technology options have been proposed for residential and commercial water heating, space heating, and cooking devices, as well as for non-emergency internal combustion engines, large turbines, electrical generation facilities, and petroleum refineries.[6]

[5] 2022 AQMP Control Measures Workshop, Agenda Item 3, South Coast AQMDs Proposed Draft VOC Stationary Source and Other Measures, Slide 9. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/am-pres-agenda-item-3-zero-emission-technology-110621.pdf?sfvrsn=6
[6] 2022 AQMP Control Measures Workshop, Agenda Item 5, South Coast AQMDs Proposed Draft VOC Stationary Source and Other Measures, Slides 7-34. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/am-pres-agenda-item-5-nox-measures-110621.pdf?sfvrsn=6.

6-13 continued

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In the SCAQMD Control Measures Workshop, Staff acknowledged that the existing infrastructure is currently not sufficient for widespread adoption of ZE technologies.[7] On August 2, 2021, Wayne Nastri, SCAQMD Executive Officer, issued a response to letters received from environmental organizations stating that "the charging/fueling infrastructure (plugs and hydrogen dispensing stations), the electrical distribution system (neighborhood transformers, substations, etc.) and the power/fuel supply to support widespread deployment will take many years to develop."

California has had difficulty supplying sufficient electricity during certain times of year, and siting and construction of new power generating facilities and electric transmission lines is extremely difficult in California. Prior to implementation of control measures, SCAQMD must be able to assure that the electrical grid in California will be able to supply the electrical power needed to meet the increased demand.

4. **With the Proposed Control L-CMB-07 measure, the District suggests transition of refinery boilers and process heaters to ZE, NZE, and other technologies. With the adoption of R1109.1 in November 2021, the District expended significant resources arriving at the country's most stringent refinery BARCT rule. This rulemaking was extremely challenging and is likely the most expensive single rule adopted by the District's Governing Board. Given that R1109.1 has final implementation deadlines stretching to the mid-2030's, the District's proposal to use other yet to be defined technologies to achieve a further 20% emission reduction goal by 2037 seems highly uncertain.**

Proposed Control Measure L-CMB-07 addresses NOx emissions at petroleum refineries, and specifically calls out refinery boilers and process heaters.[8,9] The District suggests additional reductions can be achieved through the implementation of next generation ultra-low NOx burners, advanced SCR technology, and the transition to zero emission technology.[3]

The California Health & Safety Code (CHSC) requires the District, in adopting any BARCT standard, to ensure the standard is technologically feasible, and take into account "environmental, energy, and economic impacts" and assess the cost-effectiveness of the proposed control options.[10] R1109.1 was just adopted in November 2021 and has final implementation deadlines stretching to the mid-2030s. This timeline overlaps with the anticipated timeline for the rule development associated with Proposed Control Measure L-CMB-7, which is expected to begin between 2025 to 2027.[3]

WSPA agrees that development of new technologies is crucial to the reduction of pollutants; however, the timeline for development of these emerging technologies is distant. R1109.1 already included implementation of emerging burner technologies to control NOx emissions

6-13 continued

[7] 2022 AQMP Control Measures Workshop, Agenda Item 3, South Coast AQMDs Proposed Draft VOC Stationary Source and Other Measures, Slide 13. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/am-pres-agenda-item-3-zero-emission-technology-110621.pdf?sfvrsn=6

[8] 2022 AQMP Control Measures Workshop, Agenda Item 5, South Coast AQMDs Proposed Draft NOx Stationary Source Measures, Slide 31. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/am-pres-agenda-item-5-nox-measures-110621.pdf?sfvrsn=6.

[9] Draft 2022 AQMP Appendix IV-A, South Coast AQMD's Stationary and Mobile Source Control Measures, Pages IV-A-114-117. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/appiv-a.pdf?sfvrsn=18.

[10] California Health & Safety Code §40406, 40440, 40920.6. Available at: https://leginfo.legislature.ca.gov/faces/codes_displayexpandedbranch.xhtml?tocCode=HSC&division=26.&title=&part=&chapter=&article=&nodetreepath=31.

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from boilers and heaters <40 MMBtu/hr input. These emerging technologies are still under development and are not commercially available. For this reason, the District acknowledged the need to review and report on the status of the emerging technologies in 2029 and conduct a technology assessment if those technologies are not being commercialized quickly enough.[11]

Proposed Control Measure L-CMB-07 also suggests potential for use of "advanced selective catalytic reduction" (SCR) such as multi-stage reactors. Such multi-stage reactors were exhaustively evaluated during R1109.1 development,[12] and the District and its third-party engineering expert (i.e., Fossil Energy Research Corporation (FERCo)) was unable to show them to be technologically feasible or cost effective.

5. **The District has suggested a transition of higher emitting turbines to ZE technologies. The technologies proposed for equipment replacement must be fit for the operational purpose and of the same scale as those they are replacing in order to be successfully implemented.**

   Proposed Control Measure L-CMB-05 addresses NOx emissions from large gas turbines ≥0.3 MW regulated by Rule 1134, Emissions of Oxides of Nitrogen from Stationary Gas Turbines.[13] Similar turbines found at refineries are covered under R1109.1. The District is suggesting a transition of higher emitting turbines to ZE technologies, but the ZE technology cited (i.e., fuel cells) is a comparatively small-scale product. In addition to producing electricity, many turbines are configured also to provide process heat in combined heat and power designs. The District will need to consider these varied types of operational requirements.

6. **The District has suggested ZE and near zero emission (NZE) technologies, as well as other technologies as potential replacements for existing emergency standby engines. Technologies proposed must be fit for purpose to be successful.**

   Proposed Control Measure L-CMB-04 addresses NOx reductions from permitted emergency standby engines used to provide backup power during power outages.[14] These engines are not subject to the requirements of R1109.1. SCAQMD has suggested ZE and NZE technologies, as well as other technologies as potential replacement options for existing emergency standby engines. Loss of power at essential public services would pose a public health danger. Technologies proposed must be fit for purpose in order to be successful. The battery power and electrification concepts cited may not be suitable for emergency applications. Multiple factors must be considered, including supply lines and distribution, not just the equipment itself.

   Battery energy storage quickly becomes infeasible for emergency backup applications where potential duration of a backup requirement is unknowable. For example, when an emergency event lasts longer than the battery storage specifications, there could be severe

[11] SCAQMD Draft Staff Report, Proposed Rule 1109.1, Emissions of Oxides of Nitrogen from Petroleum Refineries and Related Operations, page 3-12, October 2021. Available at: http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1109.1/dsr_pr_1109-1_30_day_package.pdf?sfvrsn=4.
[12] PR1109.1 WGM #22 presentation, slide 27, June 30, 2021. Available at: http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1109.1/pr1109-1_wgm22_presentation.pdf?sfvrsn=18.
[13] 2022 AQMP Control Measures Workshop, Agenda Item 5, South Coast AQMDs Proposed Draft NOx Stationary Source Measures, Slide 29. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/am-pres-agenda-item-5-nox-measures-110621.pdf?sfvrsn=6.
[14] 2022 AQMP Control Measures Workshop, Agenda Item 5, South Coast AQMDs Proposed Draft NOx Stationary Source Measures, Slides 27-28. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/am-pres-agenda-item-5-nox-measures-110621.pdf?sfvrsn=6.

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consequences. There may be other dispatchable generation technologies which, while currently non-economical for emergency applications, could eventually become alternatives to diesel-fueled generators. But those technologies are not ZE technologies.

There is a critical need for reliable and instantaneous emergency power in the event the electric grid fails. Therefore, fossil fuel powered emergency electrical generators will likely still be necessary under certain circumstances. Analysis of types of equipment suitable to various situations is necessary to ensure continued on-demand emergency power availability.

7. **SCAQMD has spent the past several years on the development and adoption of rules associated with the transition from the RECLAIM program to command and control rules. As a result, many facilities are in the process of upgrading their combustion equipment to comply with BARCT standards at a substantial cost. These investments should be protected for the useful life of the equipment.**

   As a result of the transition from the RECLAIM program to command and control rules for NOx emissions, substantial investments are being made for planning and implementation of BARCT on existing equipment. Compliance schedules proposed in the 2022 AQMP must acknowledge the investments and implementation schedule of the current BARCT rules. The refinery sector alone is required to invest billions of dollars to comply with R1109.1. In some cases, it will be necessary to replace basic equipment and upgrade infrastructure, not just the control equipment. SCAQMD should allow the facilities to operate newly installed/retrofitted equipment for its useful life prior to necessitating transition to other technologies.

8. **The District needs to present a technical basis for the emission reduction goal presented for the FUG-01 control measure.**

   Proposed Control Measure FUG-01 discusses improved leak detection and repair on process and storage equipment at a variety of facilities.[15] The District is also proposing enhanced leak detection under the Wilmington, Carson, West Long Beach (WCWLB) Community Emissions Reduction Plan (CERP) to achieve emission reductions, suggesting a potential 50% reduction goal through amendments to the following rules:

   - Rule 1178, Further Reductions of VOC Emissions from Storage Tanks at Petroleum Facilities;
   - Rule 1118, Control of Emissions from Refinery Flares; and/or
   - Rule 1173, Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants.

   However, the District provides no technical basis for the proposed 50% VOC reduction goal based upon proven emission reduction methodology and current rule compliance framework.

6-13 continued

[15] 2022 AQMP Control Measures Workshop, Agenda Item 7, South Coast AQMDs Proposed Draft VOC Stationary Source and Other Measures, Slide 3. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/am-pres-agenda-item-7-voc-and-other-measures-110521.pdf?sfvrsn=6.

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9. SCAQMD must carefully consider mineral resource management when considering implementation of zero emission equipment. Global mineral resources are critical to the technology proposed in the control measures.

The expected rise in battery-powered electric vehicles, as well as growth in stationary storage will put a strain on mineral resources. There are 12 minerals used in energy storage technologies, of which 7 are on the US Department Interior Critical Minerals List.[16] WSPA is concerned that the control measures provided in the draft 2022 AQMP may not be achievable given the constraints on global mineral resources. In CARB's ACCII Public Workshop, it was noted that the rate of depletion for several critical minerals is increasing.[17] Significant increases in the rate of battery production will be required to meet both CARB's goals for vehicle electrification and the control measures proposed in the draft 2022 AQMP. SCAQMD must study resource and recycling availability prior to imposing control measures reliant on battery storage.

WSPA appreciates the opportunity to provide these comments related to the 2022 AQMP. We look forward to continued discussion of this important Plan development. If you have any questions, please contact me at (310) 808-2146 or via e-mail at rcromartie@wspa.org.

Sincerely,

Marnie Comate

Cc:
Wayne Nastri, SCAQMD
Sarah Rees, SCAQMD
Ian MacMillan, SCAQMD
Sang-Mi Lee, SCAQMD
Elaine Shen, SCAQMD
Patty Senecal, WSPA

6-13 concluded

[16] Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition. The World Bank. Available at: https://pubdocs.worldbank.org/en/961711588875536384/Minerals-for-Climate-Action-The-Mineral-Intensity-of-the-Clean-Energy-Transition.pdf.
[17] CARB Advanced Clean Cars (ACC) II Workshop, May 6th, 2021. Available at: https://ww2.arb.ca.gov/sites/default/files/2021-05/acc2_workshop_slides_may062021_ac.pdf. Accessed: June 2021

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July 5, 2022

Via email

Sarah Rees, Ph.D.
Deputy Executive Officer
Planning, Rule Development, and Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Re: Regulatory Flexibility Group ("RFG") Comments Regarding South Coast Air Quality Management District ("SCAQMD") 2022 Air Quality Management Plan

Dear Dr. Rees:

Thank you for the opportunity to submit these comments on the May 2022 draft of the South Coast Air Quality Management District's Air Quality Management Plan (the "2022 Draft AQMP") on behalf of the RFG, a coalition of California entities whose operations are subject to regulation under the Clean Air Act and corresponding state and regional air quality programs. RFG members include manufacturers, natural gas utilities, oil and chemical companies and other regulated entities. We are very grateful for the SCAQMD staff's careful review of our general comments submitted in March 2022, and the reflection of many of the principles we put forward in the 2022 Draft AQMP and associated Briefing Papers. We look forward to continuing to work with staff in advance of the Governing's Board's consideration of the AQMP later this year. Our remaining general comments follow.

Stationary Source NOx Incentives

6-14

As RFG members have previously shared with staff in the context of the various RECLAIM landing rules, the regulated community continues to face challenges in obtaining construction and operating permits for required control technology installations. Resolving fundamental New Source Review (NSR) issues as stationary sources transition from RECLAIM Regulation XX NSR to Regulation XIII NSR remains a critical path item to protect against unintended adverse environmental or economic impacts. We appreciate the inclusion of Control Measure FLX-02 (Stationary Source VOC Incentives) and the identified potential incentive concepts included in the Measure, and the stated commitment to investigating incentive funding, permitting and fee incentives and enhancements, NSR incentives and enhancements, CEQA incentives, branding incentives, and recordkeeping and reporting incentives. Appropriately implemented, these types of measures can help businesses offset regulatory compliance costs and

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advance attainment objectives. Given the potential economic and environmental benefits of these types of incentive programs, we request a similar FLX measure for NOx. Exhibit A to this letter includes a proposed NOx incentive measure for staff's consideration.

Coordination of Control Measures and the RECLAIM Transition

RFG members have and continue to make significant investments to implement recently adopted/amended RECLAIM landing rules. We appreciate that the 2022 Draft AQMP acknowledges the need for technology assessments "to better understand where and when zero emission and low NOx technologies can be implemented." As we have previously indicated, these assessments must demonstrate that the proposed emission reduction can be achieved through technologically feasible means prior to adoption, and any new proposals must be evaluated in the context of controls installed or planned to implement recently adopted/amended RECLAIM landing rules to avoid inconsistent or duplicative regulation of stationary sources and take into account practical considerations such as space constraints within facilities. Applicable rulemakings should also evaluate the potential environmental impacts and legal factors associated with the proposed control measures and the RECLAIM transition to ensure that both programs are effectively and efficiently implemented and do not result in unintended adverse environmental or economic impacts (e.g., stranded assets). We offer proposed language for select draft control measures to address these concerns in Exhibit A.

Establishing a Cost-Effectiveness Threshold Cap

6-14 continued

We appreciate that the 2022 Draft AQMP proposes cost effectiveness thresholds of $36,000 per ton of VOC and $59,000 per ton of NOx. We also recognize the SCAQMD's note in the 2022 Draft AQMP that, in connection with rulemakings associated with the 2016 AQMP, "emission standards that had controls that were well above the cost-effectiveness threshold were rejected with the goal of keeping the average cost-effectiveness for each class and category for equipment under the cost-effectiveness threshold." However, we are concerned that the 2022 Draft AQMP leaves open the possibility of adopting emission standards that exceed the cost-effectiveness thresholds. Given the economic and employment risk of further burdening stationary sources, we strongly urge staff to amend the 2022 Draft AQMP to indicate that the cost effectiveness thresholds for stationary sources **will function as a hard cap** (as opposed to a trigger for staff to "hold a public meeting to discuss other emission standards with a cost-effectiveness at or below the cost-effectiveness threshold and/or compliance or implementation options to address an emission standard that is above the cost-effectiveness threshold.")

Provision of Alternative Compliance Mechanisms When Implementing Control Measures

The final 2022 AQMP should direct that any future stationary source control measures contain appropriate alternative compliance mechanisms (e.g., an alternative compliance fee set at the relevant cost effectiveness threshold level and used to fund clean technologies or mass-based facility caps) to ensure that stationary sources have a ready compliance alternative when costs approach the threshold level. Alternative compliance approaches will also help address the technical feasibility concerns RFG members have communicated to the SCAQMD in the context of the RECLAIM landing rules. The final 2002 AQMP should further direct that the control measure review processes specify incremental cost-effectiveness scenarios and methodology and

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identify industry-specific affordability issues. We have offered specific language to the draft control measures that we believe will implement these important concepts in Exhibit A.

Fuel Neutrality

As recognized in the 2016 AQMP, "[a]ir quality regulatory agencies have traditionally set policies and requirements that are performance-based, and thus technology- and fuel-neutral. This is a policy that the SCAQMD intends to continue."[1] This is critical. As we have consistently advocated, AQMPs should not pick winners and losers, but instead should force technologies to compete against one another to maximize air quality benefits and provide products that meet residential, commercial and industrial needs at reasonable costs. Technology and fuel neutrality promotes competition, which forces technologies to become cleaner and drives down prices. Importantly, technology and fuel neutrality also protects against price spikes and shortages, which can have devastating impacts on the economy. Based on our review of the 2022 Draft AQMP, we could not identify language expressly confirming that the SCAQMD intends to continue its technology- and fuel-neutral policy, and we respectfully request that the final 2022 AQMP expressly indicate that the SCAQMD in fact intends to continue this important policy. Again, we offer proposed language to address this request in Exhibit A.

6-14 continued

Infrastructure and Grid Reliability

As previously communicated, we are concerned that the increasing load on the grid at the scale proposed under the 2022 AQMP will adversely impact the affordability, availability and reliability of the regional energy market. We appreciate the Briefing Paper prepared on Infrastructure and its identification of many of the challenges wide-scale deployment of near-zero and zero emission infrastructure faces in the South Coast Air Basin (and California more broadly). We are concerned, however, that the Briefing Paper does not appropriately detail the real cost and timing challenges associated with deployment of the infrastructure needed to achieve the identified emission reductions. These cost and timing challenges will come in many forms, including likely delays in wide-scale implementation driven by strategic litigation brought under CEQA. Given these realities, we recommend that the work plan contemplated by MOB-15 identify and develop proposed legislation and rulemaking to reduce litigation risk and the abuse of the environmental review process when public utilities and private parties make investments into grid reliability and scalable deployment of zero and near-zero emission support infrastructure. And beyond MOB-15, we support and encourage the District to fully explore any and all potential incentive funding sources through the stakeholder process over the next several years that would help offset costs and fund and facilitate grid reliability.

[1] SCAQMD, 2016 AQMP, March 2017, pp. 4-9.

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Conclusion

Thank you for the opportunity to submit these comments and the proposed language in Exhibit 1. We look forward to further discussions with the SCAQMD staff and other stakeholders in advance of the Governing Board's consideration of the final AQMP.

6-14 concluded

Sincerely,

Michael J. Carroll

Michael J. Carroll
of LATHAM & WATKINS LLP

Enc.

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EXHIBIT 1: PROPOSED MODIFICATIONS TO THE DRAFT 2022 AQMP

…

The Draft 2022 AQMP builds upon measures already in place from previous AQMPs. It also includes a variety of additional strategies such as regulation, accelerated deployment of available cleaner technologies (e.g., zero emission technologies, when cost-effective and feasible, and low NOx technologies in other applications), best management practices, co-benefits from existing programs (e.g., climate and energy efficiency), incentives, and other CAA measures to achieve the 2015 8-hour ozone standard. **Air quality regulatory agencies have traditionally set policies and requirements that are performance-based, and thus technology- and fuel-neutral. As it has with prior AQMPs, this is a policy that the SCAQMD intends to continue in this AQMP.**

…

A. South Coast AQMD Proposed Stationary Source 8-Hour Ozone Measures

…

TABLE 4-2

SOUTH COAST AQMD PROPOSED STATIONARY SOURCE 8-HOUR OZONE MEASURES

Number	Title [Pollutant]	Emission Reductions (tpd) (2032/2037)
South Coast AQMD Stationary Source NOx Measures:		
Residential Combustion Source Measures:		
R-CMB-01	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances - Residential Water Heating [NOx]	0.48 / 1.29
R-CMB-02	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances - Residential Space Heating [NOx]	0.45 / 1.20
R-CMB-03	Emissions Reductions from Residential Cooking Devices [NOx]	0.30 / 0.81
R-CMB-04	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances - Residential Other Combustion Sources [NOx]	1.17 / 3.13
	Total Residential Combustion Source Reductions	**2.4 / 6.43**
Commercial Combustion Source Measures:		
C-CMB-01	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances - Commercial Water Heating [NOx]	0.04 / 0.25

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Number	Title [Pollutant]	Emission Reductions (tpd) (2032/2037)
C-CMB-02	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances - Commercial Space Heating [NOx]	0.04 / 0.21
C-CMB-03	Emission Reductions from Commercial Cooking Devices [NOx]	0.21 / 0.62
C-CMB-04	Emission Reductions from Small Internal Combustion Engines [NOx]	0 / 2.1
C-CMB-05	NOx Reductions from Small Miscellaneous Commercial Combustion Equipment (Non-Permitted) [NOx]	0 / 4.24
	Total Commercial Combustion Source Reductions	**0.29 / 7.42**
Large Combustion Source Measures:		
L-CMB-01	NOx Reductions from RECLAIM Facilities [NOx]	0 / 0.28
L-CMB-02	Reductions from Boilers and Process Heaters (Permitted) [NOx]	0 / 0.5
L-CMB-03	NOx Emission Reductions from Permitted Non-Emergency Internal Combustion Engines [NOx]	0 / 0.31
L-CMB-04	Emission Reductions from Emergency Standby Engines (Permitted) [NOx, VOCs]	0.0 / 2.0
L-CMB-05	NOx Emission Reductions from Large Turbines [NOx]	0 / 0.06
L-CMB-06	NOx Emission Reductions from Electricity Generating Facilities [NOx]	0.09 / 0.62
L-CMB-07	Emission Reductions from Petroleum Refineries [NOx]	0 / 0.77
L-CMB-08	NOx Emission Reductions from Combustion Equipment at Landfills and Publicly Owned Treatment Works [NOx]	0 / 0.33
L-CMB-09	NOx Reductions from Incinerators [NOx]	0 / 0.89
L-CMB-10	NOx Reductions from Miscellaneous Permitted Equipment [NOx]	0 / 1.16
	Total Large Combustion Source Reductions	**0.09 / 6.92**
FLX-03	Stationary Source NOx Incentives [NOx]	TBD / TBD

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TABLE 4-2 (CONTINUED)

SOUTH COAST AQMD PROPOSED STATIONARY SOURCE 8-HOUR OZONE MEASURES

Number	Title [Pollutant]	Emission Reductions (tpd) (2032/2037)
South Coast AQMD Co-Benefits from Energy and Climate Change Programs Measures:		
ECC-01	Co-Benefits from Existing and Future Greenhouse Gas Programs, Policies, and Incentives [NOx]	TBD / TBD[b]
ECC-02	Co-Benefits from Existing and Future Residential and Commercial Building Energy Efficiency Measures [NOx, VOCs]	TBD / TBD
ECC-03	Additional Enhancements in Reducing Existing Residential Building Energy Use [NOx, VOCs]	TBD / TBD
South Coast AQMD Stationary Source VOC Measures:		
FUG-01	Improved Leak Detection and Repair [VOCs]	0.6 / 0.6
FUG-02	Emission Reductions from Industrial Cooling Towers [VOCs]	TBD / TBD
CTS-01	Further Emission Reductions from Coatings, Solvents, Adhesives, and Lubricants [VOCs]	0.5 / 0.5
FLX-02	Stationary Source VOC Incentives [VOCs]	TBD / TBD
BIO-01	Assessing Emissions from Urban Vegetation [VOCs]	TBD / TBD
L-CMB-04[c]	Emission Reductions from Emergency Standby Engines (Permitted) [NOx, VOCs]	0.0 / 0.1
	Total Stationary Source VOC Reductions	**1.1 / 1.2**
South Coast AQMD Stationary Source Other Measures:		
MCS-01	Application of All Feasible Measures [All Pollutants]	TBD / TBD
MCS-02	Wildfire Prevention [NOx, PM]	N/A / N/A
FLX-01	Improved Education and Public Outreach [All Pollutants]	N/A / N/A

a N/A are reductions that cannot be quantified due to the nature of the measure (e.g., outreach) or if the measure is designed to ensure reductions that have been assumed to occur will in fact occur.
b TBD are reductions to be determined once the measure is further evaluated, the technical assessment is complete, and inventories and cost-effective control approaches are identified, and are not relied upon for attainment demonstration purposes.
c This is a NOx control measure with co-benefits of VOC reductions.

6-15 continued

1. South Coast AQMD Stationary Source NOx Measures

…

a. Large Combustion Source Measures

In the large combustion sources category, there are 10 proposed NOx control measures:

- L-CMB-01: NOx Reductions for RECLAIM Facilities

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- L-CMB-02: Reductions from Boilers and Process Heaters (Permitted)
- L-CMB-03: NOx Emission Reductions from Permitted Non-Emergency Internal Combustion Engines
- L-CMB-04: Emission Reductions from Emergency Standby Engines (Permitted)
- L-CMB-05: NOx Emission Reductions from Large Turbines
- L-CMB-06: NOx Emission Reductions from Electricity Generating Facilities
- L-CMB-07: Emission Reductions from Petroleum Refineries
- L-CMB-08: NOx Emission Reductions from Combustion Equipment at Landfills and Publicly Owned Treatment Works
- L-CMB-09: NOx Reductions from Incinerators
- L-CMB-10: NOx Reductions from Miscellaneous Permitted Equipment

L-CMB-01: NOX REDUCTIONS FOR RECLAIM FACILITIES: This control measure reduces NOx emissions by transitioning NOx RECLAIM facilities to a command-and-control regulatory structure requiring BARCT level controls. Source categories covered by this control measure include metal melting and heating furnaces, food ovens, and nitric acid tanks. The following rules would implement this control measure: Proposed Rule 1147.2 – NOx Reductions from Metal Melting and Heating Furnaces (PR 1147.2); Proposed Amended Rule 1153.1 – Emissions of Oxides of Nitrogen from Commercial Food Ovens (PAR 1153.1); and Proposed Rule 1159.1 – Control of NOx Emissions from Nitric Acid Tanks (PR 1159.1). Staff is proposing to evaluate a variety of different NOx control technologies depending on the type of NOx source. **The control technology evaluation processes and subsequent rulemakings will include incremental cost-effectiveness scenarios and methodology, identify industry-specific affordability issues, and provide alternative compliance mechanisms.**

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L-CMB-02: REDUCTIONS FROM BOILERS AND PROCESS HEATERS (PERMITTED): This control measure reduces NOx emissions by replacing or retrofitting boilers and process heaters used in industrial, institutional, and commercial operations with zero and low NOx emission technologies. It would apply to units with a rated heat input greater than or equal to 2 million BTU per hour. Boilers and process heaters used in industrial, institutional, and commercial operations with a rated heat input greater than or equal to 2 million BTU per hour are currently regulated under Rules 1146 and 1146.1. This control measure will establish rules to set standards for new equipment, replacements, or retrofits of boilers and process heaters. **Any rulemaking will consider other rules associated with the transitioning of NOx RECLAIM facilities to a command-and-control regulatory structure, include incremental cost-effectiveness scenarios and methodology, identify industry-specific affordability issues, and provide alternative compliance mechanisms.**

L-CMB-03: NOX EMISSION REDUCTIONS FROM PERMITTED NON-EMERGENCY INTERNAL COMBUSTION ENGINES: This control measure targets emission reductions from permitted non-emergency internal combustion engines rated over 50 bhp regulated by Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines. It proposes to transition, older, higher-emitting engines in the RECLAIM program to newer technology that can meet the NOx emission limits set forth in Rule 1110.2. Low NOx and zero emission technologies may be available in the future and will be evaluated to determine feasibility of implementation. **Any rulemaking will consider other rules associated with the transitioning of NOx**

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RECLAIM facilities to a command-and-control regulatory structure, include incremental cost-effectiveness scenarios and methodology, identify industry-specific affordability issues, and provide alternative compliance mechanisms.

L-CMB-04: EMISSION REDUCTIONS FROM EMERGENCY STANDBY ENGINES (PERMITTED): This control measure seeks reductions of NOx emissions from emergency standby engines rated over 50 brake horsepower. Over 12,000 internal combustion engines are permitted for emergency standby power in the South Coast AQMD, however due to the essential nature, limited operations of these engines, and high replacement costs, multiple approaches are proposed to reduce emissions from this source category. The approaches involve an education and outreach program to encourage the transition to zero-emission technologies. Regulatory strategies include replacing older, higher emitting engines with cleaner engines or with alternative technologies, requiring the use of lower emission fuels, and a future prohibition of the use of Internal Combustion Engines for emergency backup power. As alternative technologies mature and new technologies emerge, the South Coast AQMD will undertake rulemaking to maximize emission reductions utilizing zero emission equipment where cost-effective and feasible and low NOx emission equipment in all other applications. Any rulemaking will consider other rules associated with the transitioning of NOx RECLAIM facilities to a command-and-control regulatory structure, include incremental cost-effectiveness scenarios and methodology, identify industry-specific affordability issues, and provide alternative compliance mechanisms.

L-CMB-05: NOX EMISSION REDUCTIONS FROM LARGE TURBINES: This control measure aims to reduce NOx from turbines in the South Coast AQMD subject to Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines (Rule 1134). Fuel cells and electrification are ways to shift away from combustion sources generating NOx emissions wherever feasible. As older higher emitting turbines reach the end of their equipment life it is expected that some facilities will opt to replace turbines with fuel cells or electrify facility operations. Any rulemaking will consider other rules associated with the transitioning of NOx RECLAIM facilities to a command-and-control regulatory structure, include incremental cost-effectiveness scenarios and methodology, identify industry-specific affordability issues, and provide alternative compliance mechanisms.

6-15 continued

L-CMB-06: NOX EMISSION REDUCTIONS FROM ELECTRICITY GENERATING FACILITIES: This control measure reduces NOx emissions from electric generating units regulated by Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities (Rule 1135). This measure proposes to develop a rule to implement low NOx and zero emission technologies at electricity generating facilities. The target of this approach is to replace boiler units with lower-emitting turbines, implement zero emission technologies such as fuel cells or electrification for 10 percent of gas-fired sources and other lower NOx emission technologies for the rest of gas-fired sources, and require stricter emission requirements from diesel internal combustion engines.

L-CMB-07: EMISSION REDUCTIONS FROM PETROLEUM REFINERIES: The goal of this measure is to assess and identify potential actions to further reduce NOx emissions by 20 percent for large refinery heaters and boilers with a maximum rated heat input of 40 MMBtu/hour. This would be accomplished by developing a rule requiring a lower NOx concentration limit of 2 ppm. South Coast AQMD staff identified three potential technological

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approaches to further reduce emissions for the large heaters and boilers category. The three approaches include next-generation ultra-low NOx burners, advanced SCR, and transition to zero emission technology. **Any rulemaking will consider other rules associated with the transitioning of NOx RECLAIM facilities to a command-and-control regulatory structure, include incremental cost-effectiveness scenarios and methodology, identify industry-specific affordability issues, and provide alternative compliance mechanisms.**

L-CMB-08: NOX EMISSION REDUCTIONS FROM COMBUSTION EQUIPMENT AT LANDFILLS AND PUBLICLY OWNED TREATMENT WORKS: This control measure aims to reduce NOx emissions through a regulatory approach. The source categories for this control measure are biogas fueled combustion equipment – specifically boilers, turbines, and engines – regulated by Rule 1150.3 – Emissions of Oxides of Nitrogen from Combustion Equipment at Landfills (Rule 1150.3) and Rule 1179.1 – Emission Reductions from Combustion Equipment at Publicly Owned Treatment Works Facilities (Rule 1179.1).

L-CMB-09: NOX REDUCTIONS FROM INCINERATORS: This control measure seeks emission reductions of NOx by replacing or retrofitting incinerators and other combustion equipment associated with incinerators with zero and low NOx emission technologies. Incinerators are used to burn waste material at high temperatures until reduced to ash. This control measure will achieve reductions by developing a rule, and implementation of low NOx burner systems or ultra-low NOx burner systems. **Any rulemaking will consider other rules associated with the transitioning of NOx RECLAIM facilities to a command-and-control regulatory structure, include incremental cost-effectiveness scenarios and methodology, identify industry-specific affordability issues, and provide alternative compliance mechanisms.**

6-15
continued

L-CMB-10: NOX REDUCTIONS FROM MISCELLANEOUS PERMITTED EQUIPMENT: The goal of this measure is to assess and identify potential actions to further reduce NOx emissions associated with miscellaneous permitted equipment located in the South Coast AQMD jurisdiction. South Coast AQMD staff will convene a stakeholder working group to discuss and identify actions or approaches to further reduce NOx emissions from these sources. Miscellaneous permitted equipment is regulated under Rule 1147 – NOx Reductions from Miscellaneous Sources with NOx emission limits depending on equipment category. **Any rulemaking will consider other rules associated with the transitioning of NOx RECLAIM facilities to a command-and-control regulatory structure, include incremental cost-effectiveness scenarios and methodology, identify industry-specific affordability issues, and provide alternative compliance mechanisms.**

FLX-03: STATIONARY SOURCE NOx INCENTIVES: This control measure seeks to provide incentive funding to facilitate the adoption of clean, zero or low NOx emission technologies from stationary sources. Facilities would be able to qualify for incentive funding if they use equipment or accept permit conditions which result in cost-effective emission reductions that are beyond existing requirements. The program would establish procedures for quantifying emission benefits from clean technology implementation and develop cost-effectiveness thresholds for funding eligibility. Mechanisms will be explored to incentivize businesses to choose the cleanest technologies as they replace equipment and upgrade facilities, and to provide incentives to encourage businesses to move into these technologies sooner. Potential incentive concepts include incentive funding, permitting and fee incentives

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and enhancements, New Source Review (NSR) incentives and enhancements, branding incentives, and recordkeeping and reporting incentives.

6-15 concluded

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Comment Letter #72

WSPA

Ramine Cromartie
Senior Manager, Southern California Region

July 5, 2022

Dr. Sang-Mi Lee
Planning & Rules Manager
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Via e-mail at: AQMPteam@aqmd.gov

Re: WSPA Comments on SCAQMD Draft 2022 Air Quality Management Plan

Dear Dr. Lee,

Western States Petroleum Association (WSPA) appreciates the opportunity to participate in the working group and workshops for the South Coast Air Quality Management District's (SCAQMD or District) 2022 Air Quality Management Plan (AQMP or Plan). The AQMP is a regional blueprint for achieving the national ambient air quality standards (NAAQS). On October 1, 2015, the U.S. Environmental Protection Agency (EPA) strengthened the National Ambient Air Quality Standards (NAAQS) for ground-level ozone, lowering the primary and secondary ozone standard levels to 70 parts per billion (ppb).[1] The 2022 AQMP is being developed to address the requirements for meeting this standard through proposed control measures.

WSPA is a non-profit trade association representing companies that explore for, produce, refine, transport, and market petroleum, petroleum products, natural gas, renewable fuels, and other energy supplies in five western states including California. WSPA has been an active participant in air quality planning issues for over 30 years. WSPA-member companies operate petroleum refineries and other facilities in the South Coast Air Basin that are regulated by the SCAQMD and will be impacted by the 2022 AQMP.

We understand the challenges that the District faces in attaining the NAAQS. The region's unique topography and meteorology combined with mobile source emissions continues to produce significant ozone pollution for which the District has limited control authority. And as cost-effective controls have been implemented, it has become increasingly difficult to identify and implement additional control measures that are cost-effective. On May 6, 2022, SCAQMD released the Draft 2022 AQMP, with additional appendices released on June 1, 2022.[2] WSPA offers the following comments.

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[1] 2015 Revision to 2008 Ozone NAAQS. Available at: https://www.federalregister.gov/documents/2015/10/26/2015-26594/national-ambient-air-quality-standards-for-ozone.
[2] SCAQMD Draft 2022 AQMP. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/draft2022aqmp.pdf?sfvrsn=12.

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1. **SCAQMD has proposed a control measure L-CMB-07 to reduce NOx emissions from petroleum refineries by 0.77 tons per day, or 20% below post Rule 1109.1 implementation levels. The petroleum refining industry will be working to meet the requirements of the recently adopted Rule 1109.1 for the next decade. L-CMB-07 describes several technologies that were recently demonstrated by the District as infeasible, unproven, or not to be cost effective. Furthermore, the timetable for the proposed measure would overlap with the Rule 1109.1 compliance schedule. Given these facts, SCAQMD should reconsider the inclusion of proposed control measure L-CMB-07.**

   SCAQMD Rule 1109.1, Emissions of Oxides of Nitrogen from Petroleum Refineries and Related Operations, was developed as a result of the 2016 AQMP control measure CMB-05, which required a transition from RECLAIM to a command and control regulatory structure requiring Best Available Retrofit Control Technology (BARCT) level controls as soon as practicable.[3,4] That rule, adopted in November 2021, will reduce NOx emissions from refinery boilers, process heaters, fluid catalytic cracking units, gas turbines, and other equipment, and is one of the most complex and costly rules ever adopted by the SCAQMD. Costs of implementation for the rule are expected to range from $2.3 billion to $2.9 billion and will result in 7.7 – 7.9 tons per day (tpd) NOx reductions. This would involve installation of approximately 70 new selective catalytic reduction (SCR) systems, upgrades to about 30 existing SCR systems, and other equipment modifications.[5]

   Due to the complexity of the equipment installations and the number of units that must be modified because of the rule, the District's compliance schedule provides flexibility such that the last permit applications are not due until January 1, 2031, with compliance required no later than 36 months after Permit to Construct (PTC) issuance. Depending on permit application processing time, final compliance with Rule 1109.1 requirements for some equipment could be as late as 2034-2036.

   The 2022 AQMP states that the remaining emission inventory for petroleum refineries after implementation of Rule 1109.1 requirements will be 3.82 tpd. SCAQMD has proposed control measure L-CMB-07 to reduce NOx emissions from petroleum refineries by an additional 20% (0.77 tpd) by 2037 through further control of large boilers and process heaters (i.e., rated at 40 million BTU/hr or larger). Rule 1109.1 already requires this equipment to meet a NOx emission limit of 5 ppm. SCAQMD now suggests that further emission reductions can be achieved through the use of next generation ultra-low NOx burner (ULNB), advanced SCR design, and zero emission technologies. SCAQMD is proposing rule development to be initiated between 2025 and 2027 to achieve emission reductions by 2037.

   The District has suggested that next generation ULNB products can alleviate some of the challenges of conventional ULNB such as safety concerns associated with retrofit applications. At Proposed Rule 1109.1 (PR1109.1) Working Group Meeting (WGM) #17, one vendor provided a presentation on development of their core process burner. The presentation cited < 7 ppm NOx emissions for a limited number of projects involving

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[3] SCAQMD Rule 1109.1. Available at: https://www.aqmd.gov/docs/default-source/rule-book/reg-xi/r1109-1.pdf?sfvrsn=8.
[4] SCAQMD 2016 AQMP. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf?sfvrsn=15.
[5] SCAQMD Rule 1109.1 Governing Board Package, November 5, 2021, Agenda No. 34. Available at: http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2021/2021-Nov5-034.pdf?sfvrsn=6.

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equipment rated at 39 MMBtu/hr or less.[6] However, it was unclear if any of the projects were able to demonstrate the lower emission rate when burning refinery fuel gas, or whether any of the projects involved equipment rated at ≥40 MMBtu/hr input, as suggested in the proposed L-CMB-07 measure. SCAQMD provided information on a different burner technology at PR1109.1 WGM #12, noting that the burner system requires heat releases between 1 and 20 MMBtu/hr, and has been demonstrated to achieve approximately 5 ppm NOx using natural gas at a test facility. That vendor noted that refinery fuel gas may result in higher emissions.[7] Due to the expectation of higher emissions when burning refinery fuel gas, SCAQMD evaluated the cost-effectiveness of a 9 ppm BARCT endpoint for NOx for equipment burning refinery fuel gas.

There are several design criteria necessary for safe and effective operation of ULNB in refinery heaters. For example, due to higher flame lengths generated by ULNB, the radiant section of the heater fire box needs to be long enough to avoid flame impingement on internal surfaces (i.e., a significant safety concern). Additionally, to take advantage of internal flue gas recirculation (IFGR) patterns to lower NOx, both burner-to-burner spacing and the spacing between burners and heater internals must be appropriate to avoid flame impingement. Refinery heaters and boilers have fixed radiant section geometries, tube configurations, and other internal surfaces that in many cases limit the unit's ability to accommodate additional spacing demands needed for newer ULNB products. Flame impingement can cause tube rupture of radiant tubes which contain flammable material, resulting in a potentially catastrophic explosion event, making it impossible to safely retrofit ULNB in many existing refinery heaters and boilers. Options to avoid flame impingement would include significant rebuild of the unit's geometry (if feasible), or complete replacement of the refinery heater or boiler.

For L-CMB-07, WSPA understands that SCAQMD is suggesting a new 2 ppm endpoint through an additional requirement to add these emerging technologies. However, SCAQMD has provided no technical basis to support the claim that this will be achievable for refinery boilers and process heaters rated at ≥40 MMBtu/hr input using refinery fuel gas. The PR1109.1 Final Staff Report identified one example of next generation ULNB installed on a 39 MMBtu/hr vertical cylindrical heater at a refinery which was reportedly demonstrated with NOx levels at 29.3 ppmv.[8] Further, it has not been explained how any of the concerns raised in the PR1109.1 proceedings will be overcome. Those concerns include process safety and technical feasibility issues such as flame impingement and boiler geometry. Given these retrofit uncertainties, cost-effectiveness is likely to be a challenge

SCAQMD has referenced recent SCR installations use of advanced feedback controls to modulate ammonia injection to reduce ammonia consumption and minimize ammonia emissions while maintaining high NOx removal efficiencies. They do not propose that these feedback controls actually increase NOx removal efficiencies. Instead, they suggest that there are existing SCR installations utilizing a dual stage reactor design to maximize NOx reductions, noting that removal efficiencies of up to 99% are possible with this design. The District has not provided any information to suggest that such technology can be retrofit to

6-16 continued

[6] SCAQMD Proposed Rule 1109.1 WGM #17. ClearSign Technologies Presentation. Available at: http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1109.1/clearsign-update-for-scaqmd---pr-1109-1.pdf?sfvrsn=6.
[7] SCAQMD PR1109.1 WGM #9 Presentation. Available at: http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1109.1/pr1109-1-wgm_9_final.pdf?sfvrsn=12.
[8] SCAQMD PR1109.1 Final Staff Report, page A-9. Available at: http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2021/2021-Nov5-034.pdf?sfvrsn=6.

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existing SCR systems – systems which are presently being retrofit to comply with existing R1109.1.

WSPA notes that SCAQMD exhaustively evaluated the option of dual SCR designs during the development of PR1109.1. SCAQMD contracted two third-party engineering consultants to review the staff's preliminary BARCT assessment. The assignments for each consultant were defined as follows:[9]

- Norton Engineering Consultants (NEC):
  - Perform a BARCT feasibility assessment which includes commercially viable NO_x control technologies and emission reduction levels that each technology can achieve and any caveats associated with achieving NOx reductions; and
  - Review and verify cost analysis including the use of the U.S. Environmental Protection Agency (EPA) SCR Cost Model, model input assumptions, local labor costs, and other factors that affect the cost-effectiveness evaluation.
- Fossil Energy Research Corporation (FERCo):
  - Conduct facility visits to make detailed on-site observations and engineering evaluations of affected equipment;
  - Review the feasibility of installation, including feasibility of installation of new control technologies;
  - Consider challenges associated with installation of control technologies such as space constraints, and burner technology; and
  - Determine if further optimization can be performed on currently installed NO_X control systems to help achieve further emission reductions.

In PR1109.1 WGM #17, the District stated that "Staff consulted with NEC, FERCo , and SCR catalyst vendors regarding the feasibility of installing ULNB and achieving 2 ppmv NOx for units with sub optimal conditions" and the "consultants stated that regardless of ULNB NOx performance, the proposed 2 ppm endpoint is feasible by installing multiple catalyst reactors or a two stage SCR."[10] NEC's expert opinion was that the proposed BARCT endpoint would require secondary ammonia injection grids (AIG) for downstream SCR catalyst bed(s).[11] This design effectively requires two SCR systems in series.

The November 2020 FERCo report stated that the physical spaces around the refinery heater units are typically very congested, significantly limiting the distance available between the AIG and the SCR catalyst.[12] That report noted that achieving the high level of NOx removal necessary requires exceptionally good mixing of ammonia into the flue gas stream ahead of the catalyst, which could require two reactors.[13] While FERCo offered some ideas concerning the location of one AIG relative to the SCR catalyst grid, FERCo did not consider more complicated spatial requirements for accommodating multiple AIG. SCAQMD did acknowledge this obstacle in L-CMB-07, stating "a case-by-case evaluation

6-16
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[9] Execute Contracts for Engineering Consultant to Review the BARCT Assessment for Proposed Rule 1109.1 – NOx Emission Reductions for Refinery Equipment. SCAQMD Governing Board Meeting. May 3, 2019. Available at: http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2019/2019-may3-005.pdf?sfvrsn=2.
[10] PR1109.1 WGM #17 presentation. Available at: http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1109.1/pr1109-1_wgm17_020421.pdf?sfvrsn=6.
[11] Norton Engineering Proposed Rule 1109.1 NOx BARCT Review. Available at: http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1109.1/norton-report.pdf?sfvrsn=6.
[12] FERCo South Coast Air Quality Management District Rule 1109.1 Study Final Report (FERCo Report), page 5-3, November 2020. Available at: http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1109.1/ferco-report.pdf?sfvrsn=6.
[13] FERCo Report (page 5-3).

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will be needed to assess the feasibility due to the additional footprint requirements associated with a dual stage SCR arrangement."[14]

The final control method suggested in L-CMB-07 is zero emission technologies, including electrification of steam driven equipment and replacement of gas fired boilers and process heaters with electric boilers and process heaters. WSPA is not aware that such zero emission technology has been demonstrated for these types of refinery equipment. Additionally, SCAQMD correctly notes in their evaluation of this option that "this alternative needs to consider electrical infrastructure and potential impacts on refinery fuel gas balance, as there may be an excess of waste refinery fuel gas if combustion equipment is replaced with electrified versions." WSPA agrees that broad replacement of fuel fired equipment with electric equipment would require careful consideration of capacity and infrastructure availability. Please see Comment #4.

The petroleum refining industry is in the process of designing and installing equipment to meet the requirements of Rule 1109.1 at a District-estimated capital investment cost of $180 million to $1 billion per refinery, with final compliance dates stretching out to as late as 2036.[15] Industry estimates of implementation costs were considerably higher.[16] Emission reductions attributed to the petroleum refining industry in the District's proposed L-CMB-07 would depend entirely on emerging ULNB technology that is not demonstrated. Additionally, the District is proposing potential unquantified emission reductions from dual SCR installations when they are aware that there are significant technical feasibility problems. Considering the Rule 1109.1 implementation timeline, capital cost investment, and reliance on unproven technology, SCAQMD should reconsider the inclusion of proposed control measure L-CMB-07 in this Draft AQMP.

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2. **The District provides estimated reductions from each proposed stationary source control measure in Table 4-2 of the 2022 AQMP. Where the District has not provided any technical feasibility or cost-effectiveness support, values should be moved to the District's Clean Air Act (CAA) Section 182(e)(5) estimate.**

Clean Air Act (CAA) Section 182(e)(5) allows the Administrator to "approve provisions of an implementation plan for an Extreme Area which anticipate development of new control techniques or improvement of existing control technologies…."[17] Extreme nonattainment areas with approved Section 182(e)(5) commitments only need to submit attainment contingency measures three years prior to the attainment date.[18] The 2022 Draft AQMP measures include Section 182(e)(5) NOx reductions of 3 tpd for stationary sources.[19]

The District provides estimated reductions from each proposed stationary source control measure in Table 4-2 of the 2022 AQMP. However, many of these reductions are based on concepts where the District has not demonstrated technical feasibility or cost-effectiveness.

[14] SCAQMD Draft 2022 AQMP, Appendix IV-A. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/appiv-a.pdf?sfvrsn=18.
[15] SCAQMD Rule 1109.1 Governing Board Package, November 5, 2021, Agenda No. 34. Available at: http://www.aqmd.gov/docs/default-source/Agendas/Governing_Board/2021/2021_Nov5_034.pdf?sfvrsn=6.
[16] WSPA Proposed Rule 1109.1 Comment Letter, February 16, 2021. Available at: http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1109.1/wspa-pr1109-1-bh-comment-letter-02162021.pdf?sfvrsn=8.
[17] Clean Air Act Title I Part D, Plan Requirements for Nonattainment Areas, §182, Plan Submissions and Requirements. Available at: https://www.govinfo.gov/content/pkg/USCODE-2013-title42/html/USCODE-2013-title42-chap85-subchapI-partD-subpart2-sec7511a.htm.
[18] Clean Air Act Title I Part D, Plan Requirements for Nonattainment Areas, §182, Plan Submissions and Requirements. Available at: https://www.govinfo.gov/content/pkg/USCODE-2013-title42/html/USCODE-2013-title42-chap85-subchapI-partD-subpart2-sec7511a.htm.
[19] SCAQMD Draft 2022 AQMP. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/draft2022aqmp.pdf?sfvrsn=12

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California Health and Safety Code §40920.6 requires districts to assess the cost-effectiveness of a potential control option prior to adopting rules or regulations to meet the requirement for best available retrofit control technology.[20] SCAQMD has proposed a cost-effectiveness threshold of $59,000/ton NOx reduced for stationary sources, but notes in the 2022 Draft AQMP that this value will be adjusted to the dollar year used for socioeconomic modeling in each subsequent rulemaking in order to account for annual inflation.

Table 1 provides the stationary source control measures, estimated emission reductions, and associated cost-effectiveness for NOx reduction.

Table 1: 2022 AQMP Stationary Source Control Measures

Measure	Control Measure Name	2037 NOx Reductions	Cost-Effectiveness
R-CMB-01	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances - Residential Water Heating [NOx]	1.29	$0 - $230,000
R-CMB-02	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances - Residential Space Heating [NOx]	1.2	$0 - $200,000
R-CMB-03	Emissions Reductions from Residential Cooking Devices [NOx]	0.81	Cost Savings
R-CMB-04	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances - Residential Other Combustion Sources [NOx]	3.13	TBD
C-CMB-01	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances - Commercial Water Heating [NOx]	0.25	$0 - $105,000
C-CMB-02	Emission Reductions from Replacement with Zero Emission or Low NOx Appliances - Commercial Space Heating [NOx]	0.21	$0 - $56,000
C-CMB-03	Emission Reductions from Commercial Cooking Devices [NOx]	0.62	$0 - $290,000
C-CMB-04	Emission Reductions from Small Internal Combustion Engines [NOx]	2.1	TBD
C-CMB-05	NOx Reductions from Small Miscellaneous Commercial Combustion Equipment (Non-Permitted) [NOx]	4.24	$196,000
L-CMB-01	NOx Reductions from RECLAIM Facilities [NOx]	0.28	$11,900
L CMB 02	Reductions from Boilers and Process Heaters (Permitted) [NOx]	0.5	$19,000 $88,000
L-CMB-03	NOx Emission Reductions from Permitted Non-Emergency Internal Combustion Engines [NOx]	0.31	TBD
L-CMB-04	Emission Reductions from Emergency Standby Engines (Permitted) [NOx, VOCs]	2	TBD

[20] California Health and Safety Code 40920.6. Available at: https://codes.findlaw.com/ca/health-and-safety-code/hsc-sect-40920-6.html.

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L-CMB-05	NOx Emission Reductions from Large Turbines [NOx] .	0.06	$368,000
L-CMB-06	NOx Emission Reductions from Electricity Generating Facilities [NOx]	0.62	$722,000
L-CMB-07	Emission Reductions from Petroleum Refineries [NOx]	0.77	$50,300
L-CMB-08	NOx Emission Reductions from Combustion Equipment at Landfills and Publicly Owned Treatment Works [NOx]	0.33	$20,000
L-CMB-09	NOx Reductions from Incinerators [NOx]	0.89	$2,500
L-CMB-10	NOx Reductions from Miscellaneous Permitted Equipment [NOx]	1.16	$5,600 - $49,000

As shown in Table 1, eight control measures either exceed or potentially exceed the proposed cost-effectiveness threshold of $59,000 per ton of NOx reduced. These eight control measures are estimated by staff to provide 8.78 tpd NOx reductions. An additional four control measures, with estimated NOx reductions of 7.54 tpd, have cost-effectiveness that is yet to be estimated. Additionally, as discussed in Comment #1, there are potential refinery equipment redesign or replacement costs that could increase the cost-effectiveness for proposed L-CMB-07.

Additionally, SCAQMD has noted that technical feasibility for some control measures is unknown. SCAQMD estimates approximately 1.6 tpd NOx reduction by 2037 from control measure L-CMB-10 utilizing ULNB and LNB based on next generation ULNB such as ClearSign™ and Solex™. However, staff goes on to note that "these burner technologies are also being installed at heavy industrial processes such as refinery operations which are generally larger than the equipment currently regulated under Rule 1147. *It is unknown at this time whether the technologies can be scaled to smaller processes seen in Rule 1147.*"[21] [Emphasis added]. In fact, those same technologies have also not yet been commercialized in the larger scale equipment.

For those control measures that have yet to have cost-effectiveness determined, exceed the cost-effectiveness threshold, or have not been estimated on the potential to be technically feasible, SCAQMD should move the estimated emission reductions to the Section 182(e)(5) measures.

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[21] SCAQMD 2022 AQMP, Appendix IV-A. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/appiv-a.pdf?sfvrsn=18.

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3. SCAQMD uses the California Air Resources Board (CARB) EMission FACtor 2017 (EMFAC2017) model to calculate the on-road motor vehicle emission estimates used in the 2022 AQMP. This model is outdated and does not consider emission reductions from recently adopted regulations. Baseline and future year emission estimates should be based on the 2021 version of the model.

The 2022 AQMP calculates on-road motor vehicle emissions using CARB's EMFAC2017 model and travel activity data provided by the Southern California Association of Governments (SCAG). The EMFAC model calculates exhaust and evaporative emission rates by vehicle type for different vehicle speeds and environmental conditions.[22]

CARB released EMFAC2021 on January 15, 2021. The updated version of the model reflects CARB's understanding of statewide and regional vehicle activities, emissions, and recently adopted regulations. The updated model includes new features such as:[23]

- Expansion of fuel technologies to include plug-in hybrid electric vehicles and natural gas-powered vehicles
- Expansion of heavy-duty truck categories to provide higher resolution on weight classes
- Updated approach to light-duty activity forecasting using economic indicators to optimize the performance in predicting historical data
- A new heavy-duty vehicle miles traveled (VMT) forecasting framework. EMFAC 2017 projected diesel heavy duty VMT at a statewide level, while EMFAC 2021 forecasts VMT by county.
- A light-duty zero emission vehicle (ZEV) forecasting framework. EMFAC 2017 projected ZEV market share based on the most likely compliance scenario with California's ZEV mandate, whereas EMFAC2021 California Energy Commission (CEC) vehicle choice models coupled with CARB's updated ZEV input attributes.

In addition to the new features, major changes to were made to:

- Fleet characterization using the most recent Department of Motor Vehicle (DMV) registration data
- In-use emissions for light-duty and heavy-duty vehicles
- Updates to operational characteristics influencing vehicle emissions, including mileage accrual rates, starts per day, and temporal distribution of VMT and trips.
- New sales and VMT forecasting
- Include updated policies and regulations such as:
  - Innovative Clean Transit (ICT), which requires public transit agencies to transition to a 100% ZE bus fleet.[24]
  - Advanced Clean Truck (ACT), which requires a certain percentage of zero emission truck sales to be sold on an annual basis.[25]
  - Heavy-Duty Omnibus, which ensures that heavy-duty engines will emit much lower NOx emissions throughout their lifetimes.[26]

6-16
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[22] CARB EMFAC Model. Available at: https://arb.ca.gov/emfac/.
[23] CARB EMFAC2021 Volume III Technical Document. Available at: https://ww2.arb.ca.gov/sites/default/files/2021-08/emfac2021_technical_documentation_april2021.pdf.
[24] CARB Innovative Clean Transit Regulation. Available at: https://ww2.arb.ca.gov/our-work/programs/innovative-clean-transit
[25] CARB Advanced Clean Trucks Regulation. Available at: https://ww2.arb.ca.gov/our-work/programs/advanced-clean-trucks.
[26] CARB Heavy-Duty Engine and Vehicle Omnibus Regulation. Available at: https://ww2.arb.ca.gov/rulemaking/2020/hdomnibuslownox.

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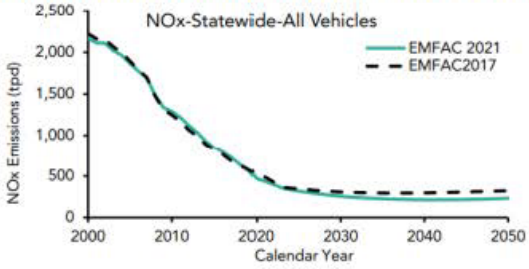
EMFAC2017 does not address changes in emissions as a result of recently adopted vehicle regulations. These regulations will drastically change the emissions profile of on-road vehicle emissions in the coming years. As shown in Figure 1, EMFAC 2017 was shown by CARB to overstate projected NOx emissions when compared with EMFAC2021.[27]

Figure 1. Comparison of NOx emission estimates between EMFAC2017 & EMFAC2021



WSPA understands that SCAQMD used EMFAC2017 because it has been approved by EPA for SIP and conformity purposes. However, relying on the outdated model for this AQMP will result in an overstatement of on-road emissions in baseline emissions inventory. WSPA encourages SCAQMD to evaluate the differences between the two models and include a certain percentage of the NOx emissions resulting from the use of EMFAC2017 in the Section 182(e)(5) emissions estimate.

4. **The 2022 Draft AQMP includes a number of control measures which would force electrification of different types of equipment. Before advancing such measures, SCAQMD must consider the potential grid reliability impacts, costs impacts, and demands for electricity infrastructure that such control measures would place on California's already strained electric grid infrastructure.**

   The District has stated that the only viable solution to achieving the NAAQS for ozone requires a significant push to zero emission technology.[28] California faces unresolved grid reliability issues that will be exacerbated by the proposed AQMP control measures and the resulting electricity demand increases. SCAQMD has not considered the generation, transmission, or distribution constraints of the electric grid in its proposals.

   Californians have already been experiencing an increasing number of electricity outages. In response to an August 2020 heatwave that caused nearly half a million Californians to lose power, the California Independent System Operator (CAISO), California Public Utilities Commission (CPUC), and the California Energy Commission (CEC) jointly prepared a

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[27] CARB EMFAC2021 Volume III Technical Document. Available at: https://ww2.arb.ca.gov/sites/default/files/2021-03/emfac2021_volume_3_technical_document.pdf.
[28] SCAQMD 2022 AQMP Control Measures Workshop, Agenda Item 3. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/am-pres-agenda-item-3-zero-emission-technology-110621.pdf?sfvrsn=6.

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Preliminary Root Cause Analysis of the outages.[29] The report identified several factors that contributed to the rotating outages:

- The climate change-induced extreme heat storm across the western United States resulted in the demand for electricity exceeding the existing electricity resource planning targets. The existing resource planning processes are not designed to fully address an extreme heat storm like the one experienced in mid-August.
- In transitioning to a reliable, clean, and affordable resource mix, resource planning targets have not kept pace to lead to sufficient resources that can be relied upon to meet demand in the early evening hours. This makes balancing demand and supply more challenging. These challenges were amplified by the extreme heat storm.
- Some practices in the day-ahead energy market exacerbated the supply challerges under highly stressed conditions.

Governor Gavin Newsom issued a Proclamation of a State of Emergency in 2021, noting that there is a shortfall of up to 5,000 megawatts projected for the summer of 2022 given the likelihood that trends of drought, wildfire, and heatwaves continue.[30] The proclamation ordered that all energy agencies act immediately to achieve energy stability, including accelerated plans for construction, procurement, and deployment of new clean energy and storage projects to mitigate the risk of capacity shortages.

Generation capacity is only one aspect of the strains on the electric grid. Both transmission and distribution must also be considered. The CEC recently reviewed constraints associated with electricity transmission and distribution. The CEC's Electric Vehicle Supply Equipment Deployment and Grid Evaluation (EDGE) tool compares load contributions from the CEC infrastructure model results to the capacities of existing distribution grids in the state to host new electricity loads.[31] The EDGE model flags locations needing an infrastructure upgrade if there is a capacity deficiency. Figure 2 shows that the California grid has no additional capacity to add electrical load on most circuits.[32] 30% to 76% of circuit segments have no capacity to integrate additional load.[33] Thus no appreciable load can be added to most of these circuits without additional construction of transmission and distribution infrastructure.

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[29] CAISO, CPUC, CEC Preliminary Root Cause Analysis, Mid August 2020 Heat Storm. Available at: http://www.caiso.com/Documents/Preliminary-Root-Cause-Analysis-Rotating-Outages-August-2020.pdf.
[30] State of California Proclamation of A State of Emergency, July 30, 2021. Available at: https://www.gov.ca.gov/wp-content/uploads/2021/07/Energy-Emergency-Proc-7-30-21.pdf.
[31] CARB Advanced Clean Cars II Draft Environmental Analysis. Available at: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/accii/appe1.pdf.
[32] CARB Advanced Clean Cars II Draft Environmental Analysis. Available at: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/accii/appe1.pdf.
[33] Virtual Medium and Heavy-Duty Infrastructure Workgroup Meeting - 01/12/22. Available at: https://www.youtube.com/watch?v=_mr0TmwxGZQ.

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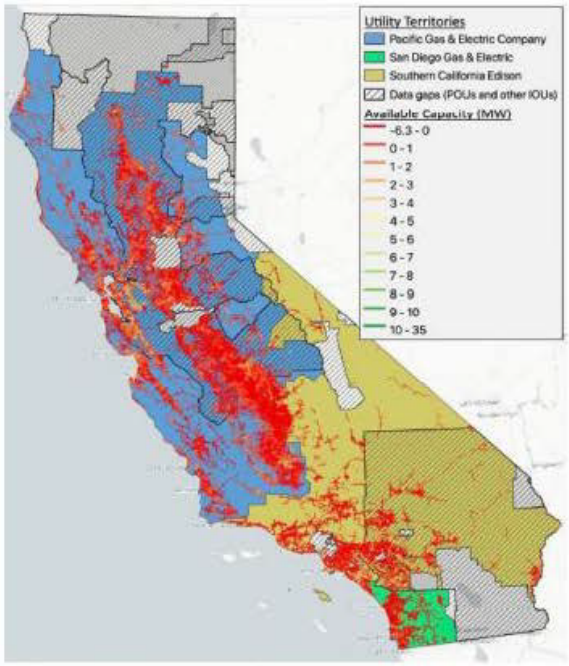
Figure 2. Capacity Analysis from CEC's EDGE Tool (note: dark red indicates no available additional capacity).



SCAQMD notes that the preliminary estimates of statewide ZE infrastructure needs developed by the CEC and CARB "are largely based on a transition to ZE vehicles for on-road transportation sources, and do not fully address the adoption of ZE technologies by other emission sources, including stationary, locomotives, and off-road equipment."[34] SCAQMD has proposed strategies to advance deployment of ZE technologies, including researching the specific needs of the South Coast Air Basin (SCAB), and supporting existing work by other agencies.

SCAQMD and CARB must ensure that electric grid capacity, transmission, and distribution is available to support the number of equipment required by the proposed measures which would depend on broad electrification. For this AQMP, SCAQMD must consider the cost of required grid infrastructure upgrades in their cost-effectiveness and socioeconomic analyses.

[34] SCAQMD 2022 AQMP Policy Brief, Infrastructure – Energy Outlook. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/combined-infrastructure---energy-outlook.pdf?sfvrsn=8

6-16 continued

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5. **The 2022 State SIP Strategy is insufficient to attain the 70-ppb federal 8-hour ozone standard by 2037. In fact, CARB's singular focus on zero emission vehicles has undermined the commitments that CARB made in the 2016 Mobile Source Strategy, which would have resulted in greater and faster NOx emission reductions through the use of low-emitting internal combustion engine technologies and fuels.**

   SCAQMD projects that emissions of NOx must be reduced by 71% beyond what would be achieved through current regulations by 2037 in order to meet the federal 8-hour ozone standard. Mobile sources, regulated by CARB, are responsible for over 80% of NOx emissions in the SCAB. CARB is required by law to adopt rules, regulations, and other measures that, in conjunction with district and US EPA measures, will achieve federal ambient air quality standards by the applicable attainment date.[35] CARB's Mobile Source Strategy and State Mobile Source SIP Strategy are key elements for meeting the ozone attainment standards in the SCAB.

   CARB released a draft version of the 2022 State Strategy for the State Implementation Plan (SIP) on January 31, 2022.[36] Throughout the development and discussion of the Draft 2022 State SIP Strategy, stakeholders have expressed repeated concern that CARB's proposed pathway fails to provide the emission reductions necessary to achieve key attainment targets in the state. The Draft 2022 State SIP Strategy does not appear to be sufficient to attain the 70-ppb federal 8-hour ozone standard by 2037 in the SCAB. CARB acknowledges that there is a 47 tpd emission reduction shortfall necessary for attainment in the SCAB.[37] However, CARB's strategy is focused almost entirely on ZEV deployment, relying upon uncertain vehicle and infrastructure availability, with a timeline spanning to 2045 and emission benefits realized only in later years. CARB is ignoring potential near-term emission reductions by refusing to discuss broader use of lower-emitting internal combustion engine technologies, which results in delayed attainment in the SCAB.

   Additionally, the State SIP Strategy and this 2022 Draft AQMP completely disregard the state's federal Clean Air Act obligations to attain the 1979 1-hr ozone NAAQS (120-ppb, 2023 deadline, currently exceeded by 39%), 1997 8-hour ozone NAAQS (80-ppb, 2024 deadline, currently exceeded by 43%), and 2008 8-hour ozone NAAQS (75-ppb, 2032 deadline, currently exceeded by 52%).[38] The District should revise the 2022 AQMP to remedy this deficiency.

6. **The District has proposed control measures addressing both VOC and NOx reductions. However, the District's attainment strategy has demonstrated no need for the VOC control measures. These measures should be removed from the AQMP.**

   The District has asserted that to meet the 2015 ozone standard, NOx emissions must be reduced by 157 tons per day. SCAQMD performed modeling of future ozone concentrations using the Community Multiscale Air Quality (CMAQ) model to model emissions in 2018, 2037 baseline emissions, and 2037 control case which contains additional emission reductions proposed in the 2022 AQMP. SCAQMD conducted a series of ozone simulations with varying NOx and VOC emissions to estimate the quantity of reductions needed to meet

6-16 continued

[35] California Health and Safety Code §39602.5. Available at: https://codes.findlaw.com/ca/health-and-safety-code/hsc-sect-39602-5.html.
[36] CARB Draft 2022 State Strategy for State Implementation Plan, January 31, 2022. Available at: https://ww2.arb.ca.gov/sites/default/files/2022-01/Draft_2022_State_SIP_Strategy.pdf.
[37] CARB Draft 2022 State Strategy for State Implementation Plan, January 31, 2022. Available at: https://ww2.arb.ca.gov/sites/default/files/2022-01/Draft_2022_State_SIP_Strategy.pdf.
[38] SCAQMD 2022 AQMP, Chapter 5. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/appiv-a.pdf?sfvrsn=18

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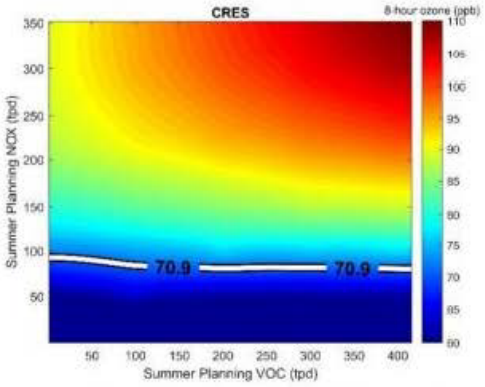
the NAAQS. Isopleths were created to approximate the expected ozone design value for given levels of VOC and NOx emissions.

Figure 3 shows the District's isopleth for Crestline where NOx and VOC emissions correspond to basin wide emissions totals. Under this model, the Crestline area would achieve attainment when the design value is less than or equal to 70.9 ppb, denoted by the white line.[39]

Figure 3. Isopleth for Crestline Depicting Basin Total NOx and VOC Emissions and Corresponding Ozone Design Value



In describing the results of this isopleth analysis, the District stated:[40]

> "With VOC emissions greater than 300 tons per day, the corresponding NOx emissions along the white contour are approximately 60-70 tons per day at GLEN and 70-80 tons per day at CRES. The isopleth further demonstrates that VOC reductions alone are insufficient to demonstrate attainment; **NOx reductions are the only pathway to attainment.**" [emphasis added]

Despite this NOx only attainment strategy, the District has included several control measures to reduce VOC emissions in the basin. However, they have provided no foundation for why these VOC reductions are necessary to meet the ozone standards. Given that the isopleths do not support the need for additional VOC reductions, SCAQMD should provide additional documentation demonstrating the reasoning behind their decision to propose VOC control measures.

6-16
continued

[39] SCAQMD Draft 2022 AQMP, Appendix V. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/combined-appendix-v.pdf?sfvrsn=8.
[40] SCAQMD Draft 2022 AQMP, Appendix V. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/combined-appendix-v.pdf?sfvrsn=8.

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WSPA appreciates the opportunity to provide these comments related to the 2022 AQMP. We look forward to continued discussion of this important Plan development. If you have any questions, please contact me at (310) 808-2146 or via e-mail at rcromartie@wspa.org.

Sincerely,

Marvin Comate

Cc:
Wayne Nastri, SCAQMD
Sarah Rees, SCAQMD
Ian MacMillan, SCAQMD
Sang-Mi Lee, SCAQMD
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6-16 concluded

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October 18, 2022

Via email

Sarah Rees, Ph.D.
Deputy Executive Officer
Planning, Rule Development, and Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Re: Regulatory Flexibility Group ("RFG") Comments on South Coast Air Quality Management District ("SCAQMD") 2022 Draft Air Quality Management Plan

Dear Dr. Rees:

Thank you for the opportunity to submit these comments on the revised 2022 draft of the South Coast Air Quality Management District's Air Quality Management Plan (the "2022 Draft AQMP") on behalf of the RFG, a coalition of California entities whose operations are subject to regulation under the Clean Air Act and corresponding state and regional air quality programs. RFG members include manufacturers, natural gas utilities, oil and chemical companies, and other regulated entities. We appreciate SCAQMD staff's careful review and responses to our July comments, and the reflection of many of our comments in the 2022 Draft AQMP.

We particularly appreciate the District's acknowledgment that subsequent rule developments arising from the 2022 AQMP will evaluate technological feasibility, cost-effectiveness, and incremental cost-effectiveness, pursuant to Health and Safety Code Section 40920.6, when establishing BARCT emission limits, and the reflection of the same in applicable control measure language. 6-17

We also appreciate your recognition of the District's long-standing policy of technology and fuel neutrality. We encourage the District to continue this policy in support of meeting the challenges the region will face as it moves towards attainment. As we continue to move towards attainment, it is critical that policies and rules recognize the incredible efforts the regulated community has undertaken over the last 30 years to control emissions and the risk that, without appropriate policies and recognition, our region could face significant economic impacts without correspondingly meaningful advancements towards attainment.

Thank you also for the acknowledgement of the subsequent challenges regarding grid reliability and the widespread transition to zero emission technologies. As with many in the region, RFG is extremely concerned with the costs and timing for bringing the needed generation and

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associated infrastructure online, along with the potential environmental impacts associated with the same.

RFG recognizes the balance staff is seeking to achieve with the 2022 Draft AQMP, and it appreciates the extensive work and outreach that has gone into this AQMP cycle. Notwithstanding, we continue to have a few significant concerns with the revised document, summarized below.

Maintaining a Control Measure-Based Cost-Effectiveness Threshold Approach

We are extremely concerned with the District's potential fundamental shift in the approach to the tiered analysis associated with cost-effectiveness thresholds. In 2003, the District recognized the challenges placed on the regulated community and established a $13,000 per ton of VOC reduction to trigger "more rigorous" cost-effectiveness, incremental cost-effectiveness, and socioeconomic impact analysis. As reflected in that 2003 AQMP:

> Specifically, proposed rules with an average cost-effectiveness above the threshold will trigger a ***more rigorous average cost-effectiveness, incremental cost effectiveness, and socioeconomic impact analysis***. A public review and decision process will be instituted to seek lower cost alternatives. In addition, the District staff, with input from stakeholders, will attempt to develop viable control alternatives within the industry source categories that a rule is intended to regulate. If it is determined that control alternatives within the industry source category are not feasible, staff will perform an evaluation of the control measure as described in the next paragraph. Viable alternatives shall be reviewed by the District Governing Board at a public meeting no less than 90 days prior to rule adoption and direction given back to staff for further analysis. ***During this review process, incremental cost effectiveness scenarios and methodology will be specified, and industry-specific affordability issues will be identified as well as possible alternative control measures***. The District Governing Board may adopt the original or an alternative that is consistent with state and federal law. In addition, staff shall include in all set hearing items a notification that proposed rules do or do not exceed the cost threshold.[1]

6-17 continued

While the cost per ton of reduction for the threshold has increased, for the last two decades the District has implemented a tiered cost-effectiveness approach based on control measure costs. And given the economic and employment risk of further burdening stationary sources, we have continuously advocated that the cost-effectiveness threshold ***should function as a hard cap in rulemaking***.

While your response to our May 2022 letter declined to adopt what RFG believes to be an important safeguard for future rulemakings (again, the "hard cap" approach), we did appreciate your acknowledgement of the future evaluation of technological feasibility, cost-effectiveness, and

[1] South Coast Air Quality Management District 2003 Air Quality Management Plan at 4-59:60 (emphasis added) (adopted August 1, 2003).

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incremental cost-effectiveness, pursuant to Health and Safety Code Section 40920.6, when establishing BARCT emission limits.

However, the proposed "health benefit based threshold" for stationary sources would severely undercut the potential effectiveness and Health and Safety Code-required analytical rigor for technological feasibility, cost-effectiveness, and incremental cost-effectiveness going forward. The tiered cost-effectiveness analysis based on control measure costs has been a staple in District rulemakings since 2003, and it has helped to ensure that rulemakings comply with the Health & Safety Code requirements. It has also advanced rulemaking outcomes that have seen a significant reduction of emissions from stationary sources over the last 20 years without, for the most part, driving technologically infeasible and economically devastating outcomes.

By considering the shift to this untested and unvetted health benefit based threshold this late in the AQMP cycle, the District is placing the regulated community in the extremely difficult position of facing significant uncertainty in future rulemaking. The alternative approach will establish a screening threshold approximately ***6.5 times*** the screening threshold when compared to the 2016 AQMP and ***25 times*** the screening threshold when compared to the 2003 AQMP. In practice, ***this approach will effectively remove tiered analysis for stationary source control measures that the regulated community has relied on for the last two decades***.

6-17 continued

Without the benefit of an AQMP-established tiered cost-effectiveness analysis at a reasonable per ton cost, ***we expect future rulemakings will impose technically infeasible and economically untenable control limits on stationary sources in violation of Health & Safety Code §§ 40406 (economic impacts should be taken into account) and 40920.6 (setting forth specific requirements for cost-effectiveness and incremental cost-effectiveness analyses).***

In particular, Health & Safety Code § 40920.6 is a critical element of the BARCT determination process. In establishing BARCT, the District must, among other things:[2]

1) Review the information developed to assess the cost-effectiveness of the potential control option. For purposes of this paragraph, "cost-effectiveness" means the cost, in dollars, of the potential control option divided by emission reduction potential, in tons, of the potential control option.
2) Calculate the incremental cost-effectiveness for the potential control options. To determine the incremental cost-effectiveness under this paragraph, the district shall calculate the difference in the dollar costs divided by the difference in the emission reduction potentials between each progressively more stringent potential control option as compared to the next less expensive control option.
3) And consider the effectiveness of the proposed control option, the cost-effectiveness of each potential control option, and the incremental cost-effectiveness between the potential control options.

[2] Health & Safety Code § 40920.6.

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LATHAM&WATKINS LLP

Again, while we appreciate the District's acknowledging it will continue to comply with § 40920.6, we are concerned that the rigor of the analysis without the tiered approach for stationary sources will fail to satisfy the critical safeguards set forth directly above.

We reiterate our request that the District adopt hard caps based on control measure costs. However, if the District is not inclined to do so, we strongly encourage the District to, at a minimum, retain the control measure-based cost-effectiveness threshold approach for stationary sources, which are already heavily controlled and where there is significant risk that, without a rigorous cost-effectiveness analysis, the rulemaking would have significant impacts on the economy and potentially run afoul of the Health & Safety Code. Looking specifically at large combustion measures, if the District will not adopt hard caps, we would encourage *all* stationary source rulemakings to include a tiered analysis. While we recognize this will place an increased burden on District resources during rulemakings, we believe it is a critical component for future rulemakings affecting highly regulated sources that have and continue to make significant investments in emission controls.

The Proposed Shift in Cost-Effectiveness Thresholds Conflict with the CEQA-Identified Project Objectives

We are also concerned that there has been no substantive assessment of the environmental impacts (under CEQA or otherwise) or socioeconomic impacts of what such a fundamental shift in tiered cost-effectiveness analysis would mean for the regulated community. We also view the potential change in approach as directly conflicting with the Draft Program Environmental Impact Report's "Project Objectives" to:

- Continue to work closely with businesses and industry groups to identify the most cost-effective and efficient path to meeting clean air goals while being sensitive to economic concerns.
- Develop a strategy with fair-share emission reductions at the federal, state, and local levels.
- Enhance the socioeconomic analysis and pursue the most efficient and cost-effective path to achieve multi-pollutant and multi-deadline targets.[3]

We anticipate providing further comments on these CEQA issues in our forthcoming comments on the Draft Program Environmental Impact Report.

The Health & Safety Code and CEQA Require Additional Assessment of the Cost-Effectiveness and Technological Feasibility of Select Control Measures

Health & Safety Code § 40922 requires the AQMP to include an "assessment of the cost-effectiveness of available and proposed control measures" and to consider factors such as technological feasibility when developing an implementation schedule for specific control

6-17 continued

[3] *See* Draft Program Environmental Impact Report for Proposed 2022 Air Quality Management Plan at 2-12 (September 2022).

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measures. While we have appreciated the District's efforts, it has not yet conducted an appropriately rigorous and legally supportable analysis of the cost-effectiveness and technological feasibility of proposed Control Measure L-CMB-07 and L-CMB-03, L-CMB-04, and L-CMB-05.

- *L-CMB-07 (Emission Reductions from Petroleum Refineries [NOx])*

L-CMB-07 contemplates development of a rule "requiring a lower NOx concentration of 2 ppm" for large refinery heaters and boilers and identifies three approaches: ultra-low NOx burners, advanced SCR, and transition to zero emission technology.[4] The 2022 Draft AQMP identifies certain next-generation ultra-low NOx burners ("ULNB"), indicating they can potentially "alleviate some of the challenges of conventional ULNBs and achieve a NOx concentration of 9 ppmv or less using refinery fuel gas."[5] The 2022 Draft AQMP does not, however, adequately analyze the cost-effectiveness or technical feasibility of these next-generation ULNBs.[6] As you know, safe and effective operation of ULNBs for refinery heaters requires very careful design considerations. These design considerations (such as flame impingement and boiler geometry) will drive cost-effectiveness challenges, and this has not been meaningfully analyzed in the 2022 Draft AQMP.

6-17 continued

Further, the next-generation ULNBs identified in the 2022 Draft AQMP have not been widely deployed, and we believe District has not appropriately analyzed the technical feasibility of such deployment for equipment rated at greater than or equal to 40 MMBtu/hr in the document . Passing references to "projects in the works"[7] does not satisfy the District's obligations under Health & Safety Code § 40922. We note that during the consideration of Rule 1109.1 (Emissions of Oxides of Nitrogen from Petroleum Refineries and Related Operations), the District identified a single "demonstration project" implementing one of the next-generation ULNBs referenced in the 2022 Draft AQMP.[8] At that time, the unit was reported to achieve "around 29.3 ppmv" on a less than 40 MMBtu/hr process heater.[9] Less than a year later, and without meaningful additional technical analysis, the 2022 Draft AQMP now concludes that this technology "may be feasible for a wide range of process heaters at petroleum refineries in the future," including for boilers and process heaters greater than or equal to 40 MMBtu/hr.[10]

Importantly, the District adopted Rule 1109.1 for petroleum refineries and related equipment in November 2021, with approximate industry costs of $2.3-2.9 billion and

[4] 2022 Draft AQMP at 4:-21:22.

[5] *Id.* at IV-A-118.

[6] While our comments focus on next generation ULNBs, RFG also has concerns with the sufficiency of the cost-effectiveness and technical feasibility analysis of advanced SCR and transition to zero emission technology contained in the 2022 Draft AQMP. As opposed to moving forward with this control measure, as described herein, we encourage the District to allow for the implementation of the Rule 1109.1 (Emissions of Oxides of Nitrogen from Petroleum Refineries and Related Operations).

[7] *See* Comments and Responses to Comments on the 2022 AQMP at 388 (September 2022).

[8] *See* Proposed Rule 1109.1 – Emissions of Oxides of Nitrogen from Petroleum Refineries and Related Operations and Proposed Rescinded Rule 1109 – Emissions of Oxides of Nitrogen from Boilers and Process Heaters in Petroleum Refineries, Final Staff Report (referred to herein as the "PR 1109.1 Final Staff Report") at 2-13.

[9] *Id.*

[10] *See* 2022 Draft AQMP at IV-A-118.

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implementation timelines that extend to 2036.[11] The Rule is estimated to deliver 7.7-7.9 tons per day in NOx reductions once fully implemented.[12] ULNB technologies described in L-CMB-07 were found to not be technically feasible or cost-effective for refinery installations in the Rule 1109.1 BARCT analysis and supported in findings by third-party consultants Norton Engineering and Fossil Energy Research Corporation (FERCo), largely due to commercial availability and refinery physical space constraints.[13]

Vendors of UNLB technology presented on its development during the Rule 1109.1 rulemaking; however, there was a limited number of projects that were able to achieve emission limits below 7 ppm NOx, with no projects using refinery fuel gas or being demonstrated outside of a test facility.[14] If staff intends to commence rulemaking for L-CMB-07 in the next several years, the maturity of ULNB technologies in terms of commercial availability and technical feasibility will likely not have a significant change from the analysis of Rule 1109.1, due to no existence of projects being commercially implemented at a refinery.

Further, the Draft Program Environmental Impact Report does not sufficiently analyze the potential environmental impacts of the deployment of the identified technologies in L-CMB-07. These impacts could not only come in the form of stranded assets (given the adoption of Rule 1109.1 in 2021 and the ongoing implementation of the same), but also in the potential impacts associated with SCR performance (and associated uncertainty of the same), the ability for refiners to retrofit the broad universe of process heaters and the physical implications of the same, etc.[15]

Ultimately, the 2022 Draft AQMP's analysis in support of L-CMB-07 does not meet Health & Safety Code requirements and leaves the AQMP lacking as an appropriately vetted planning document. Given this, we strongly encourage the District to remove proposed L-CMB-07 from the AQMP and instead acknowledge the significant anticipated emission reductions associated with the implementation of Rule 1109.1. RFG believes it represents the most comprehensive and stringent air quality regulation in the nation. It calls for billions of dollars of investment for southern California refineries and will result in dramatic reductions in NOx emissions. Implementation will require a monumental effort to engineer, permit, procure, and construct new emission control equipment, and this monumental effort should not be derailed by new rulemakings driven by L-CMB-07.

6-17 continued

[11] *See* Final Socioeconomic Impact Assessment For Proposed Rule 1109.1 – Emissions of Oxides of Nitrogen from Petroleum Refineries and Related Operations *et al.* at ES-5 (November 2021).

[12] *See* PR 1109.1 Final Staff Report at 4-4.

[13] *See generally*, PR 1109.1 Final Staff Report, BARCT Assessment at 2-1 *et seq.*

[14] *See* SCAQMD Proposed Rule 1109.1 WGM #17, ClearSign Technologies Presentation (available at: http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1109.1/clearsign-update-for-scaqmd---pr-1109-1.pdf?sfvrsn=6).

[15] Again, we anticipate providing further comments on these CEQA issues in our forthcoming comments on the Draft Program Environmental Impact Report.

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- *L-CMB-03 (NOx Emission Reductions from Permitted Non-Emergency Internal Combustion Engines [NOx]), L-CMB-04 (Emission Reductions from Emergency Standby Engines (Permitted) [NOx, VOCs]), and L-CMB-05 (NOx Emission Reductions from Large Turbines [NOx])*

We are also concerned with sufficiency of the analysis of cost-effectiveness and technological feasibility of Control Measures L-CMB-03, L-CMB-04, and L-CMB-05. As currently analyzed, the AQMP does not appropriately take into consideration the considerable stranded asset costs associated with the Control Measures and the potential reduction in reliability of energy delivery, which, of course, could have significant safety and economic impacts. The Draft Program Environmental Impact Report also does not sufficiently analyze the potential environmental impacts of these rules. Additional analysis of the potential impacts associated with the potential inability to reliably deliver energy in times of PSPS events and wildfire risks is needed to understand the full effects of these Control Measures.[16]

6-17 concluded

Conclusion

Again, thank you for all of the dialogue to date, and thank for considering and implementing a number of the RFG comments to date. We also thank you for the opportunity to submit these comments, and we look forward to further discussions with the SCAQMD staff and other stakeholders in advance of the Governing Board's consideration of the final AQMP.

Sincerely,

s/ Michael J. Carroll

Michael J. Carroll
of LATHAM & WATKINS LLP

[16] Again, we anticipate providing further comments on these CEQA issues in our forthcoming comments on the Draft Program Environmental Impact Report.

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Comment Letter #101

WSPA

Ramine Cromartie
Senior Manager, Southern California Region

October 18, 2022

Dr. Sang-Mi Lee
Planning & Rules Manager
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Via e-mail at: AQMPteam@aqmd.gov

Re: WSPA Comments on SCAQMD Revised Draft 2022 Air Quality Management Plan

Dear Dr. Lee,

Western States Petroleum Association (WSPA) appreciates the opportunity to participate in the working group and workshops for the South Coast Air Quality Management District's (SCAQMD or District) 2022 Air Quality Management Plan (AQMP or Plan). The AQMP is a regional blueprint for achieving the national ambient air quality standards (NAAQS). On October 1, 2015, the U.S. Environmental Protection Agency (EPA) strengthened the National Ambient Air Quality Standards (NAAQS) for ground-level ozone, lowering the primary and secondary ozone standard levels to 70 parts per billion (ppb).[1] The 2022 AQMP is being developed to address the requirements for meeting this standard through proposed control measures.

WSPA is a non-profit trade association representing companies that explore for, produce, refine, transport, and market petroleum, petroleum products, natural gas, renewable fuels, and other energy supplies in five western states including California. WSPA has been an active participant in air quality planning issues for over 30 years. WSPA-member companies operate petroleum refineries and other facilities in the South Coast Air Basin (SCAB) that are regulated by the SCAQMD and will be impacted by the 2022 AQMP.

We understand the challenges that the District faces in attaining the NAAQS. The region's unique topography and meteorology combined with mobile source emissions continues to produce significant ozone pollution for which the District has limited control authority. And as cost-effective controls have been implemented, it has become increasingly difficult to identify and implement additional control measures that are cost-effective. On September 2, 2022, SCAQMD released the Revised Draft 2022 AQMP.[2] On October 1, 2022, SCAQMD released the Draft Socioeconomic Report for the Revised Draft 2022 AQMP.[3] WSPA offers the following comments.

6-18

[1] 2015 Revision to 2008 Ozone NAAQS. Available at: https://www.federalregister.gov/documents/2015/10/26/2015-26594/national-ambient-air-quality-standards-for-ozone.
[2] 2022 Revised Draft AQMP. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/revised-draft-2022-aqmp/revised-draft-2022-aqmp.pdf?sfvrsn=4.
[3] 2022 Draft AQMP Socioeconomic Report. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/draft-socioeconomic-report.pdf?sfvrsn=4.

Western States Petroleum Association 1415 L Street, Suite 900, Sacramento, CA 95814 805.701.9142 wspa.org

1

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1. **SCAQMD should reaffirm their commitment to a technology and fuel neutral policy consistent with historical air quality management plan and rulemaking development.**

   In previous AQMPs and rulemakings, SCAQMD has taken a position of technology and fuel neutrality. In the 2016 AQMP, SCAQMD stated:[4]

   > *Air quality regulatory agencies have traditionally set policies and requirements that are performance-based, and thus technology- and fuel-neutral.* ***This is a policy that the SCAQMD intends to continue.*** *[Emphasis added]*

   To realize the emission reductions required by the 2022 AQMP, SCAQMD has stated that widespread deployment of zero emission (ZE) technology must be implemented over all sectors. The 2022 AQMP Policy Brief on Infrastructure and Energy Outlook states[5]:

   > *The only pathway to attainment requires widespread deployment of ZE technologies* at scale.

   However, by shifting to a singular technology/fuel approach, SCAQMD would limit the flexibility of industries and technology manufacturers to develop emission reduction strategies at lower costs. SCAQMD's objectives for air quality improvement would be further advanced by allowing competition among more technologies and fuels. SCAQMD's long-held technology neutral policy should be applied to the 2022 AQMP.

2. **The 2022 Draft AQMP includes numerous control measures which would require electrification of different types of equipment. California's electric grid infrastructure is already strained, and SCAQMD representatives have acknowledged the infrastructure will take years to develop. Yet the Draft AQMP does not consider the time or cost constraints electrification would impose. Before advancing such measures, SCAQMD should consider whether (or when) the region will be able to accommodate additional electric grid demands.**

   In the 2022 AQMP, electric technology options have been proposed for residential and commercial water heating, space heating, and cooking devices, as well as for non-emergency internal combustion engines, large turbines, electrical generation facilities, and petroleum refineries.[6] SCAQMD staff have acknowledged that the existing infrastructure is not sufficient for widespread adoption of ZE technologies and will take many years to develop.[7,8] SCAQMD also notes that the preliminary estimates of statewide ZE infrastructure needs developed by the California Energy Commission (CEC) and California Air Resources Board (CARB) "are largely based on a transition to ZE vehicles for on-road transportation sources, and do not fully address the adoption of ZE technologies by other emission sources, including stationary, locomotives, and off-road equipment."[9]

6-18 continued

[4] SCAQMD Final 2016 AQMP. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf?sfvrsn=15.
[5] 2022 AQMP Policy Brief on Infrastructure – Energy Outlook. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/combined-infrastructure---energy-outlook.pdf?sfvrsn=8.
[6] 2022 AQMP Control Measures Workshop, Agenda Item 5, South Coast AQMDs Proposed Draft VOC Stationary Source and Other Measures, Slides 7-34. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/am-pres-agenda-item-5-nox-measures-110621.pdf?sfvrsn=6.
[7] 2022 AQMP Control Measures Workshop, Agenda Item 3, South Coast AQMDs Proposed Draft VOC Stationary Source and Other Measures, Slide 13. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/am-pres-agenda-item-3-zero-emission-technology-110621.pdf?sfvrsn=6
[8] August 2, 2021 letter to environmental organizations from Wayne Nastri, SCAQMD Executive Officer.
[9] SCAQMD 2022 AQMP Policy Brief, Infrastructure – Energy Outlook. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/combined-infrastructure---energy-outlook.pdf?sfvrsn=8.

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During a recent SCAQMD Legislative Committee meeting, Mayor Michael Cacciotti, Committee Chair and SCAQMD Governing Board Member, questioned whether the region in general, and certain utilities in particular, will be able to accommodate the new electric demands, and whether there is money being put into the updated grid.[10] In response, Wayne Nastri, SCAQMD Executive Officer, stated that California will need to build 7 gigawatts (GW) of power per year for the next 40 years to meet projected demand, and the most power California has built in a year thus far has been 1.2 GW. He stated that the question on everyone's mind is: If we have never met that level of increase in power, what makes us think we are going to be able to get the needed increases? Mr. Nastri continued, stating that it is going to be very difficult to get the required infrastructure we need to deploy to a fully zero-emission society.[11]

California faces significant and unresolved grid infrastructure and reliability concerns that would only be exacerbated by the electrification requirements in the proposed AQMP control measures. SCAQMD has not considered or analyzed any of the generation, transmission, or distribution constraints in its proposals. SCAQMD notes repeatedly in their responses to comments that control measure MOB-15, ZE Infrastructure for mobile sources, is a commitment to engage with stakeholders involved with the transition to ZE fueling with the goal of identifying potential shortfalls in technologies and energy availability while assisting in an effort to address these concerns.[12] However, assistance in planning does not provide a guarantee that the infrastructure will be in place to support the transition to ZE and near ZE technologies. SCAQMD must consider electrical infrastructure development and availability of reliable electrical power in the rulemaking process.

6-18 continued

3. **The 2022 AQMP Draft Socioeconomic Report omits expenditures related to ZE infrastructure, making it an incomplete analysis of the impacts to residents in the South Coast Air Basin.**

The 2022 AQMP Draft Socioeconomic Report (Socioeconomic Report) states that the impact of implementing ZE and fuel-cell technologies on the existing infrastructure "presents challenges in quantifying cost and determining the level of uncertainty in scale and distribution."[13]

SCAQMD has stated that three categories of expenditures are expected for installation of future ZE infrastructure, as presented in Figure 1.[14]

[10] SCAQMD Legislative Committee Meeting, September 9, 2022. Meeting recording available at: http://www.aqmd.gov/home/news-events/webcast/live-webcast?ms=1jo6esFRYug.
[11] Ibid.
[12] 2022 Revised Draft AQMP Comments and Responses to Comments. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/revised-draft-2022-aqmp/revised-draft-2022-aqmp-comments-and-responses-to-comments.pdf?sfvrsn=6.
[13] 2022 AQMP Draft Socioeconomic Report. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/draft-socioeconomic-report.pdf?sfvrsn=4.
[14] SCAQMD 2022 AQMP Draft Socioeconomic Report. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/draft-socioeconomic-report.pdf?sfvrsn=4.

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Figure 1: Three Categories of Costs for Zero Emissions Infrastructure.

ZE Equipment	Energy Systems	'Soft' Costs
• Hardware • Installation • Operations and maintenance • Building electrification • Stationary source ZE equipment	• Energy supply (e.g., power plants, microgrids) • Regional transmission • Local distribution	• Land use (e.g., site acquisition, site re-design, easements, etc.) • Opportunity costs (e.g., permitting delays, new technology malfunctions) • Marketing • Employee training • Future-proofing (e.g., overbuilding infrastructure to prepare for future changes) • Stranded assets (e.g., new plug technology replacing older plugs) •Climate resiliency

The Socioeconomic Report notes the uncertainties in each of the above categories, stating that the level of uncertainty is the least for ZE equipment, and highest for soft costs, noting that:

> *…further research is needed to determine how these costs for each project can be considered broadly when zero emission technologies are deployed at the scale needed to meet air quality standards.*

SCAQMD further states that "'soft' costs are generally not included in current estimates." Additionally, the Socioeconomic Report states, "Due to high uncertainty, these speculative future energy system costs are not considered in the socioeconomic analysis…." But in fact, the scale of these costs is not impossible to estimate.

For example, a 2021 study of published literature on transportation electrification infrastructure costs in California estimated the cumulative costs from 2020-2050 for generation, transmission, distribution, maintenance, and electric vehicle chargers to achieve a statewide on-road zero emission vehicle (ZEV) fleet to be $2.1 to $3.3 trillion.[15] This cost estimate did not include:

- Infrastructure upgrade costs for generation, transmission, and supply of renewable hydrogen that is needed for operating fuel cell electric vehicles;
- Additional costs associated with upgrades to the electric grid to address grid reliability issues that could arise from increased use of renewables, public safety power shutoffs (PSPS) to avoid wildfires, and/or aging infrastructure;
- Potential stranded asset costs, if any, arising from policies implemented to achieve a statewide on-road ZEV fleet and zero-carbon electricity supply in 2050.

[15] Transportation Electrification Infrastructure Costs in California: A Meta-Study of Published Literature. Available at: https://www.arb.ca.gov/lists/com-attach/80-sp22-concepts-ws-AmNWJVA2VFgEM1Bn.pdf.

6-18
continued

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The above estimate was solely considering transportation electrification impacts and would not include costs for upgrading the grid for residential electrical use or other stationary source control measures as proposed in the 2022 Revised Draft AQMP. But this example suggests that those costs would be quite considerable. By failing to provide even planning-level costs for electrical infrastructure costs, the Socioeconomic Report vastly understates the cost of the Revised Draft AQMP.

SCAQMD should revise the cost analysis to include cost estimates for electrical infrastructure development and include them in the Socioeconomic Report.

4. **Implementation of the 2022 AQMP will be considerably more costly compared to the 2016 AQMP. This cost will be largely carried by residents of the SCAB. In addition, there are considerable job losses expected from implementation of the 2022 AQMP. As the District's costs and job loss estimates do not account for electrical infrastructure costs, those estimates are almost certainly understated.**

The 2016 AQMP proposed NOx reductions at an amortized cost of $0.85 billion, with over 90% of that cost attributed to publicly funded incentive programs.[16] Additionally, the net job impacts in the 2016 AQMP were between 9,000 jobs lost for a worst-case scenario and 29,000 jobs gained in a best-case scenario.

The Draft 2022 AQMP Socioeconomic Report states that the Revised Draft 2022 AQMP would be projected to result in an amortized cost of $2.85 billion more than business-as-usual (BAU); a cost that is 3.3 times higher than the 2016 AQMP. Costs are divided as follows:[17]

> *Nearly 57 percent or about $1.61 billion of the annual incremental cost is related to mobile source control strategies, and these strategies are expected to lead to about 80 percent of the emission reductions needed to attain the 8- hour ozone standard by 2037. The remaining 43 percent of the annual amortized average cost, or $1.24 billion, is associated with reducing stationary and area source emissions in the Basin which account for about 20 percent of the necessary emission reductions for regional air quality attainment.*

The Socioeconomic Report states that only 10% of the total incremental cost is attributed to incentive programs that can be used to offset the purchase of cleaner technologies. The large reduction in available incentives will likely result in costs being passed on to consumers.

The 2022 AQMP will also impact employment. The Socioeconomic Report defines Jobs Foregone as follows:

> *Jobs Foregone = Loss of Existing Jobs + Forecasted Jobs Not Created*

The Socioeconomic Report estimates between 17,000 - 29,000 jobs foregone annually, or a staggering 238,800 – 406,000 jobs foregone between 2023 and 2037.

As significant as that sounds, it is incomplete because the Socioeconomic Report does not consider costs related to necessary expansion of grid infrastructure. Governing Board

6-18 continued

[16] SCAQMD 2016 AQMP Socioeconomic Report. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/socioeconomic-analysis/final/sociofinal_030817.pdf?sfvrsn=2.
[17] SCAQMD 2022 AQMP Draft Socioeconomic Report. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/draft-socioeconomic-report.pdf?sfvrsn=4.

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Member Carlos Rodriguez recently noted that it is concerning that we do not have at least a planning level estimate for grid infrastructure development costs.[18]

Both the cost and job loss estimates presented in the Socioeconomic Report are incomplete and significantly understated. Even with these omissions, the cost and projected job loss figures are dramatically higher than the 2016 AQMP.

5. **The Revised Draft AQMP includes a health-based cost effectiveness threshold. The basis for this proposal is incomplete, and many of the assumptions are not well documented. Any threshold to consider societal health costs must also include all of the associated economic costs. This would need to include job losses, stranded asset costs, and any higher consumer prices.**

In the Revised Draft AQMP, SCAQMD has introduced a health-benefit cost-effectiveness threshold of $325,000/ton NOx-reduced. SCAQMD's analysis is based first on EPA's "Estimating the Benefit per Ton of Reducing Directly-Emitted $PM_{2.5}$, $PM_{2.5}$ Precursors, and Ozone Precursors from 21 Sectors".[19] This analysis relies on the Benefits Mapping and Analysis Program Community Edition (BenMAP-CE v.1.5) model to estimate the potential health impacts and economic values of impacts associated with the attributable ambient concentrations of primary $PM_{2.5}$, sulfate and nitrate $PM_{2.5}$, and ozone resulting from VOC or summer season NOx.[20] SCAQMD used the state level analysis for three industrial sectors to arrive at a benefits per ton of NOx estimates in California.[21]

Table 1: 2035 Benefits-Per-Ton of NOx Estimates in California (2021 Dollars)

Sector Name	NOx (tpy)	Short Term O_3 Exposure	Long Term O_3 Exposure	$PM_{2.5}$	Total
Boilers	5,706	$14,793	$119,972	$57,074	$191,839
ICE	4,121	$22,946	$180,540	$88,057	$291,543
EGU	9,403	$40,767	$313,325	$30,867	$384,959
				Benefits-per-ton (weighted by tons reduced)	**$307,636**

6-18 continued

[18] SCAQMD Governing Board Meeting, October 7, 2022. Available at: http://www.aqmd.gov/home/news-events/webcast/live-webcast?ms=mQOlxYZ-Cm4.
[19] Estimating the Benefit per Ton of Reducing Directly-Emitted PM2.5, PM2.5 Precursors, and Ozone Precursors from 21 Sectors. Available at: https://www.epa.gov/system/files/documents/2021-10/source-apportionment-tsd-oct-2021_0.pdf.
[20] BenMAP-CE. Available at: https://www.epa.gov/benmap.
[21] 2022 Revised Draft AQMP. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/revised-draft-2022-aqmp/revised-draft-2022-aqmp.pdf?sfvrsn=4.

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SCAQMD states[22]:

> *As an additional check on this estimate based on EPA analysis, a comparison can be made with estimates from the 2016 AQMP and its associated Socioeconomic Impact Assessment… Based on these analyses, Option 2 would use a screening threshold of $325,000 per ton (2021 dollars) when evaluating the cost-effectiveness of proposed rules ($325,00 is the mid-point between the estimates from the 2016 AQMP and Table 4-16).*

The 2016 Socioeconomic Report also used BenMAP to assess health benefits associated with reductions in exposure to criteria pollutants. Therefore, the use of the 2016 Socioeconomic Report results really does not provide a true "check" on the EPA document, as the model used in the evaluation is the same.

Within this analysis the cost valuation of health effects prevented relies on willingness-to-pay (WTP) methodologies, however WTP estimates (current or historical) are not available for all included health endpoints. For that reason, the AQMP employs a mixed-methods approach which utilizes WTP estimates for some health endpoints, and cost-of-illness (COI) estimates for others – or occasionally both.

WTP and COI values are derived using very different techniques – WTP being based on querying of individuals on how much they would pay to avoid experiencing (or having their family members experience) given symptoms or illnesses. As such, WTP is dependent upon a wide variety of economic and behavioral individual perspectives and is adjusted in this analysis for income elasticity. In contrast, COI is measured by summing the costs incurred by the payer (typically an insurance company) for treating the given condition, including emergency room (ER) visits, in-patient hospital stays, outpatient hospital visits, prescriptions, etc. For some conditions, these quantities are summed over multiple years (e.g., Alzheimer's disease), whereas for other conditions the cost represents a single short-term health event (e.g., bronchitis).

In other locations within the documentation of the Revised Draft AQMP, COI is alternately defined as "lost work time due to absences from work to recover or take care of ill dependents."[23] Whereas the first definition for COI above represents direct costs, this second definition represents only *indirect* costs associated with productivity lost. But these two interpretations of COI are not interchangeable. Health economic analyses can be performed from the payer perspective (including direct costs only) and/or the societal perspective (including both direct and indirect costs). For the SCAQMD analysis, it is unclear which perspective is being presented for analysis.

Valuation functions for various health endpoints are provided in the Revised Draft AQMP documents, however it is not specified which are WTP valuations and which are COI. The documentation suggests that WTP is mainly utilized for mortality endpoints and COI for morbidity, but also acknowledges that for some morbidity endpoints WTP are used.[24] While WTP estimates are not available for every health effect of interest to this analysis, combining WTP and COI methodologies introduces significant uncertainties to the results.

Appendix 3-B includes a table (Table 3B-1) with a column for "Valuation Function" in which the monetary values range broadly (e.g., $0.35 per inhaler use, $9.2 million for respiratory

6-18 continued

[22] 2022 Revised Draft AQMP. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/revised-draft-2022-aqmp/revised-draft-2022-aqmp.pdf?sfvrsn=4.
[23] 2022 AQMP Draft Socioeconomic Report Appendices. Available at: https://www.aqmd.gov/docs/default-source/clean-air-plans/socioeconomic-analysis/2022-aqmp-socioeconomic-report/draft-socioeconomic-report-appendices.pdf?sfvrsn=2
[24] Ibid.

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mortality, etc.). Additional details on how these numbers were incorporated into the total estimate provided are lacking and should be provided.

SCAQMD states[25]:

> *The morbidity-related health benefits were valued by a combination of COI and WTP. The directly avoided COI or the WTP for reduced risk of various morbidity symptoms were modeled as reduced consumer spending on healthcare-related goods and services and a corresponding reallocation of consumer spending from healthcare to other goods, services, and savings. The indirectly avoided COI, which was valued by the lost work time due to absences from work to recover or take care of ill dependents, were assumed to increase labor productivity for all industries.*

The health-based cost-effectiveness threshold analysis discusses how changes in the local economy resulting from avoided health costs may increase migration of new workers into the region, and provides calculations associated with economic migration.[26] The number of assumptions made in these analyses appears to be high; this in turn significantly affects uncertainty associated with the final model outcome. While it appears that outside bodies may have reviewed the methods and performed some sensitivity analyses to explore uncertainty associated with a small number of parameters, these results are also not provided in the SCAQMD's report.

Finally, if societal health costs are to be factored into cost effectiveness thresholds, they must include all the associated economic costs including but not limited to stranded assets, job losses, and possible higher consumer prices. As noted previously, these have not been factored.[27]

6-18 continued

6. **The 2022 State Strategy for the State Implementation Plan acknowledged a NOx emission reduction shortfall for SCAB. That shortfall could be addressed in part through use of low-emitting internal combustion engine technologies and fuels.**

As stated in WSPA's comment letter dated July 5, 2022, CARB acknowledged in the Draft 2022 State Strategy for the State Implementation Plan an emission reduction shortfall necessary for attainment in the SCAB.[28] The State SIP strategy is therefore insufficient to attain the 70 ppb federal 8-hour ozone standard by 2037. Additionally, the State SIP Strategy and the 2022 AQMP do not address the federal Clean Air Act obligations to attain earlier ozone standards. WSPA noted that CARB is ignoring potential near term emission reductions by dismissing broader use of lower-emitting internal combustion technologies, resulting in delayed attainment in the SCAB.

In response to this comment, SCAQMD states[29]:

> *South Coast AQMD concurs that low NOx combustion technologies are critical to achieving NOx reductions in the near-term, which assists with attainment of ozone and PM2.5 standards with earlier attainment dates. Staff continues to advocate for the*

[25] Ibid.
[26] Ibid.
[27] SCAQMD Mobile Source Committee Meeting, September 16, 2022. Available at: http://www.aqmd.gov/home/news-events/webcast/live-webcast?ms=z5MKn4miXuk.
[28] CARB Draft 2022 State Strategy for State Implementation Plan, January 31, 2022. Available at: https://ww2.arb.ca.gov/sites/default/files/2022-01/Draft_2022_State_SIP_Strategy.pdf.
[29] SCAQMD Revised Draft AQMP Comments and Responses to Comments. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/revised-draft-2022-aqmp/revised-draft-2022-aqmp-comments-and-responses-to-comments.pdf?sfvrsn=6.

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deployment of low NOx technologies in the absence of readily available zero emission technologies.

WSPA appreciates SCAQMD Staff's acknowledgement that attaining NOx reductions in the near term via low NOx technologies is critical to meeting attainment deadlines. WSPA encourages SCAQMD to consider rapid deployment of low NOx technology in the short term to achieve the necessary attainment goals not currently met through previous AQMPs.

7. **The District has proposed control measures addressing both VOC and NOx reductions. However, the District's attainment strategy has not demonstrated a need for VOC control measures.**

As discussed in WSPA's comment letter dated July 5, 2022, the District has proposed control measures addressing both VOC and NOx reductions, without showing that VOC reductions are necessary to meet ozone standards. The District's modeling provides isopleths which provide guidance for the formulation of future control strategies. The isopleths approximate the expected ozone design value for a given level of NOx and VOC emissions. As described by SCAQMD[30]:

With VOC emissions greater than 300 tons per day, the corresponding NOx emissions along the white contour are approximately 60-70 tons per day at GLEN and 70-80 tons per day at CRES. The isopleth further demonstrates that VOC reductions alone are insufficient to demonstrate attainment; ***NOx reductions are the only pathway to attainment****. [emphasis added]*

SCAQMD responded to this comment, stating that VOC reductions are necessary due to the "NOx disbenefit," which is an atmospheric phenomenon whereby decreases in NOx can lead to increases in ozone.[31] However, SCAQMD did not provide any documentation showing that the NOx disbenefit is not already accounted for in the modeling analysis. We respectfully request that SCAQMD provide that technical basis.

8. **In order to demonstrate attainment by the 2037 deadline, the next generation ultra-low NOx burners proposed by control measure L-CMB-07 must be developed and commercially available on a timeline that allows for rulemaking and facility engineering to be complete.**

Proposed Control Measure L-CMB-07 addresses NOx emissions at petroleum refineries, and specifically calls out refinery boilers and process heaters. The District suggests a transition of such equipment to ZE, near ZE, or "other technologies."

SCAQMD Rule 1109.1, Emissions of Oxides of Nitrogen from Petroleum Refineries and Related Operations, was developed as a result of the 2016 AQMP control measure CMB-05, which required a transition from RECLAIM to a command and control regulatory structure requiring Best Available Retrofit Control Technology (BARCT) level controls as soon as practicable.[32,33] As discussed in WSPA's comment letter dated July 5, 2022, the final permit actions required under R1109.1 are not due until January 1, 2031, with compliance required no later than 36 months after Permit to Construct (PTC) issuance.

6-18 continued

[30] SCAQMD Draft 2022 AQMP, Appendix V. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/combined-appendix-v.pdf?sfvrsn=8.
[31] SCAQMD Revised Draft AQMP Comments and Responses to Comments. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/revised-draft-2022-aqmp/revised-draft-2022-aqmp-comments-and-responses-to-comments.pdf?sfvrsn=6.
[32] SCAQMD Rule 1109.1. Available at: https://www.aqmd.gov/docs/default-source/rule-book/reg-xi/r1109-1.pdf?sfvrsn=8.
[33] SCAQMD 2016 AQMP. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf?sfvrsn=15.

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Depending on permit application processing time, final compliance with Rule 1109.1 requirements for some equipment could be as late as 2034-2036.

In their response to this comment, SCAQMD acknowledged that there are a small number of units that will be subject to the above stated schedule but noted that the majority of the NOx control projects would be implemented by 2031.[34] While that may be true, adding a new refinery equipment rule while the current one (i.e., R1109.1) is still being implemented could cause capital project planning problems and potentially stranded assets.

Implementation of control measures under this AQMP would need to be in place by 2035 to be useful for the 2037 attainment demonstration. Refinery capital projects are complex affairs, requiring significant planning, engineering, and then sequencing construction with unit turnaround schedules. These projects would need to begin by 2028 in order to support this AQMP's attainment demonstration. SCAQMD has proposed to initiate rule development for L-CMB-07 between 2025 and 2027 to achieve emission reductions by 2037.[35] The SCAQMD response to WSPA comments in the July 5, 2022 letter acknowledges that the rule development process for Rule 1109.1 took approximately 3.5 years and a similar timeframe will be needed for rule development related to L-CMB-07.[36] Using that math, L-CMB-07 rulemaking would start in approximately 2025.

Additional controls and proposed reductions in L-CMB-07 are focused primarily on boilers and process heaters with a maximum rated heat input of 40 MMBtu/hr or larger. SCAQMD is proposing that all of the emission reductions for the control measure can be achieved using next generation ultra-low NOx burner technology (ULNB).[37] These technologies are still under development and are not commercially available. In order to be incorporated into the rulemaking timeline listed above, these ULNB technologies would now need to be fully developed and proven by ~2025.

At Proposed Rule 1109.1 (PR1109.1) Working Group Meeting (WGM) #17, one vendor provided a presentation on development of their core process burner. The presentation cited < 7 ppm NOx emissions for a limited number of projects involving equipment rated at 39 MMBtu/hr or less.[38] However, it was unclear if any of the projects were able to demonstrate the lower emission rate when burning refinery fuel gas, or whether any of the projects involved equipment rated at ≥40 MMBtu/hr input, as suggested in the proposed L-CMB-07 measure. SCAQMD provided information on a different burner technology at PR1109.1 WGM #12, noting that the burner system requires heat releases between 1 and 20 MMBtu/hr, and has been demonstrated to achieve approximately 5 ppm NOx using natural gas at a test facility. That vendor noted that refinery fuel gas may result in higher emissions.[39] Due to the expectation of higher emissions when burning refinery fuel gas, SCAQMD evaluated the cost-effectiveness of a 9 ppm BARCT endpoint for NOx for

6-18 continued

[34] SCAQMD Revised Draft 2022 AQMP, Comments and Responses to Comments. Response to Comment 72-2. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/revised-draft-2022-aqmp/revised-draft-2022-aqmp-comments-and-responses-to-comments.pdf?sfvrsn=6.
[35] SCAQMD Revised Draft AQMP, Appendix IV. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/revised-draft-2022-aqmp/revised-draft-2022-aqmp-appendix-iv-a.pdf?sfvrsn=6.
[36] SCAQMD Revised Draft 2022 AQMP, Comments and Responses to Comments. Response to Comment 72-2. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/revised-draft-2022-aqmp/revised-draft-2022-aqmp-comments-and-responses-to-comments.pdf?sfvrsn=6.
[37] SCAQMD Revised Draft AQMP, Appendix IV. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/revised-draft-2022-aqmp/revised-draft-2022-aqmp-appendix-iv-a.pdf?sfvrsn=6.
[38] SCAQMD Proposed Rule 1109.1 WGM #17. ClearSign Technologies Presentation. Available at: http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1109.1/clearsign-update-for-scaqmd---pr-1109-1.pdf?sfvrsn=6.
[39] SCAQMD PR1109.1 WGM #9 Presentation. Available at: http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1109.1/pr1109-1-wgm_9_final.pdf?sfvrsn=12.

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equipment burning refinery fuel gas. These technologies must be developed by 2025, with demonstration showing that the technology can result in desired NOx emission rates when burning refinery fuel gas.

In addition to commercial demonstrations, the equipment for the emerging technologies must be able to fit into the existing boiler or process heater footprint so as not to require complete replacement of the equipment. As noted by the November 2020 Fossil Energy Research Corporation (FERCo) report, the physical spaces around refinery heater units are typically very congested.[40] Cost considerations associated with dimensional constraints must be considered during the rulemaking process and associated cost-effectiveness analysis. These is no reason to expect that these factors/constraints have changed since R1109.1 was adopted.

9. **The District needs to provide an explanation for the change in the proposed emission reductions for L-CMB-07.**

   The Revised Draft 2022 AQMP included a new value for L-CMB-07 emissions reductions at 0.88 tons per day, increased from 0.77 tons per day provided in the Draft 2022 AQMP, a 14% increase. Given that the proposed control technologies under this measure have not changed, SCAQMD should provide further information on this change and its technical feasibility.

6-18 concluded

WSPA appreciates the opportunity to provide these comments related to the 2022 AQMP. We look forward to continued discussion of this important Plan development. If you have any questions, please contact me at (310) 808-2146 or via e-mail at rcromartie@wspa.org.

Sincerely,

Marnie Comate

Cc:
Wayne Nastri, SCAQMD
Sarah Rees, SCAQMD
Ian MacMillan, SCAQMD
Sang-Mi Lee, SCAQMD
Elaine Shen, SCAQMD
Patty Senecal, WSPA

[40] FERCo South Coast Air Quality Management District Rule 1109.1 Study Final Report (FERCo Report), page 5-3, November 2020. Available at: http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1109.1/ferco-report.pdf?sfvrsn=6.

RESPONSE TO COMMENT LETTER #6 - Latham & Watkins LLP, November 1, 2022

Response 6-1
Comment 6-1 explains that the comment letter is being transmitted to the South Coast AQMD without raising any issues relative to the environmental analysis in the 2022 AQMP Program EIR. Therefore, no further response is required by CEQA. [CEQA Guidelines Section 15088(a)].

Response 6-2
Comment 6-2 contains introductory remarks without raising any issues relative to the environmental analysis in the 2022 AQMP Program EIR. Therefore, no further response is required by CEQA. [CEQA Guidelines Section 15088(a)].

Response 6-3
Comment 6-3 generally refers to concerns about the method applied for determining cost-effectiveness in the 2022 AQMP that will later be used as a guideline for evaluating cost-effectiveness of rules to implement defined control measures in the AQMP. It further alludes to unspecified concerns about the Program EIR while indicating that more detailed comments are provided in the Comments 6-4 through 6-11. See Responses 6-4 through 6-11.

Response 6-4
The proposed project is the 2022 AQMP which provides a blueprint of how the region can attain the 2015 federal 8-hour ozone standard of 70 ppb. The federal standard was developed, approved, and implemented by the U.S. EPA based on health effects data including decreased pulmonary function, asthma and chronic obstructive pulmonary disease exacerbation, respiratory infections, increase school absences and hospital admissions, and increase mortality associated with ozone exposure. By statute, the South Coast AQMD is required to adopt an AQMP demonstrating compliance with all federal and state ambient air quality standards for the areas under the jurisdiction of the South Coast AQMD. Furthermore, the South Coast AQMD must adopt rules and regulations that carry out the AQMP.

Chapter 2 of the Program EIR contains the project description which includes a description of the major components of the 2022 AQMP, e.g., the control measures and associated emission reductions needed to achieve the 2015 federal 8-hour ozone standard (70 ppb). Chapter 2 of the Program EIR also contains the project objectives (see Subsection 2.6).

Cost-effectiveness, a method for evaluating how effective a control measure or rule is at reducing emissions relative to its cost, is not required to be analyzed in CEQA documents. As allowed by CEQA Guidelines Section 15130, the South Coast AQMD presents the economic and social effects of proposed projects, including an analysis of cost-effectiveness, in a separate socioeconomic analysis and not in CEQA documents.

For this reason, the economic and social effects of implementing the 2022 AQMP, including the cost-effectiveness analysis, are neither addressed in the Program EIR nor included in the project description or project objectives. Instead, a separate socioeconomic analysis was conducted for the 2022 AQMP and was presented in the Draft Socioeconomic Report released on October 1, 2022 which analyzes the economic costs and benefits of implementing the control measures in the 2022

AQMP.[3] Therefore, since cost-effectiveness is not part of the project design, any changes to the method for calculating cost-effectiveness would not require a change in or conflict with the project description or the project objectives outlined in the Program EIR.

The comment cites the following three project objectives from the Program EIR and claims that they are in direct conflict with the change in how the cost-effectiveness analysis was conducted:

- Continue to work closely with businesses and industry groups to identify the most cost effective and efficient path to meeting clean air goals while being sensitive to economic concerns.
- Develop a strategy with fair-share emission reductions at the federal, state, and local levels.
- Enhance the socioeconomic analysis and pursue the most efficient and cost-effective path to achieve multi-pollutant and multi-deadline targets.

However, the cost-effectiveness method proposed is not at all inconsistent with the above-listed project objectives because: 1) its development was conducted with input from business and industry groups while taking into account their economic concerns; 2) it triggers procedural requirements without defining or prescribing changes in the rules that will be developed in response to the control measures; 3) any changes in environmental effects due to the modified cost-effectiveness method would be speculative at this time since the specific requirements in future rules to be developed as part of implementing individual control measures are unknown; and 4) an additional CEQA analysis will be conducted for the future development of rules as part of implementing individual control measures which will analyze the potential environmental effects, if any.

Please also refer to the general response on 9. Cost-Effectiveness Method and Threshold which is available in Volume I: Comments and Responses to Comments on the Revised Draft 222 AQMP.

Response 6-5
Per CEQA Guidelines Section 15131, the Program EIR does not analyze economic or social effects as economic or social effects are not considered to be significant impacts on the environment.

As outlined in the Draft Final Socioeconomic Report, Table 2-3 provides information on the share of small businesses in each industry potentially impacted by the Draft Final 2022 AQMP. As noted in the Draft Final Socioeconomic Report, small business impacts will be assessed in further detail during the rulemaking process, when more facility-specific data will be available. However, Health and Safety Code Sections 40448, 40448.6 and 40448.8 require the South Coast AQMD to: maintain an office of public advisor and small business to provide information to small businesses and the public; develop funds to assist small business; and establish a small business technical and compliance assistance program. None of these requirements would change under the 2022 AQMP. Thus, there is no requirement to change the project objectives in the Program EIR. See also Response 6-4 for the explanation as to why cost-effectiveness is not a component of the project description and the project objectives and is not required to be analyzed in the Program EIR. Lastly, as explained in Response 6-5, any changes in environmental effects due to the modified cost-

[3] http://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/socioeconomic-analysis

effectiveness method would be speculative at this time since the specific requirements in future rules to be developed as part of implementing individual control measures are unknown.

Response 6-6

Chapter 2 of the Program EIR contains the project description which includes a description of the major components of the 2022 AQMP, which are the control measures and associated emission reductions needed to achieve the 2015 federal 8-hour ozone standard (70 ppb). Chapter 2 of the Program EIR accurately reflects and summarizes the control measures in the 2022 AQMP. The change to health-based thresholds to be used to evaluate cost-effectiveness during the rulemaking to implement control measures has no bearing on the control measure or the associated commitment to emission reductions. While a rule exceeding the cost-effectiveness threshold will require an additional public meeting, the 2022 AQMP includes aggregated total emission reductions needed to attain the 2015 8-hour ozone standard, therefore, the project description in the Program EIR is stable and has not shifted or changed from the 2022 AQMP. The environmental analysis in Chapter 4 of the Program EIR is based on the project description, as well as assumptions for how those control measures may be implemented, and provides an accurate estimate of the environmental impacts of implementing the 2022 AQMP. Further, Comment 6-6 does not provide any evidence of where the project description fails to provide sufficient information, where it is unstable, or where environmental impacts are inaccurate. Therefore, no further response is required by CEQA. See also Response 6-4 for the explanation as to why cost-effectiveness is not a component of the project description and the project objectives and is not required to be analyzed in the Program EIR.

Response 6-7

Comment 6-7 suggesting that new transportation corridors would be needed is not supported by substantial evidence. The existing transportation corridors (e.g., freeways and major arterials) can and currently already handle conventional vehicles, electric vehicles, alternate fueled vehicles, and hybrid vehicles. As explained in the Program EIR, the 2022 AQMP is expected to result in the conversion of existing conventional fueled vehicles and mobile sources to zero emission or low NOx technologies. The 2022 AQMP is not expected to result in an increase in population, an increase in the number of vehicles on the road, or an increase in vehicle miles travelled. Therefore, the existing transportation system is expected to be sufficient to continue to be used for travel. While there may be modifications to transportation systems, e.g., potential electrification of rail lines or truck routes, those modifications would be expected to follow existing transportation routes and not require new routes.

Extensive research conducted by South Coast AQMD staff as part of developing several AB617 Community Emission Reduction Plans indicated that installation of infrastructure to fuel/charge electric and hydrogen-fueled vehicles has been historically treated by local planning departments as exempt from CEQA. Thus, significant adverse land use impacts are not expected from these activities. Further, it is expected that infrastructure for alternate fuel vehicles would commonly occur at existing commercial areas (e.g., existing gas stations), continuing the use of these automotive hubs as a known, established commercial entity. As shown on the Hydrogen Fuel Cell Partnership webpage, most existing and new hydrogen stations are being developed at existing gas stations or commercial buildings.[4] Further, electric vehicles are also likely to be fueled at home

[4] https://h2fcp.org/stationmap

and not require a substantial increase or change in infrastructure that would cause land use issues. Neither of these methods to fuel/charge vehicles would require a change in zoning as electric utilities already provide a streamline permitting process for installing charging equipment in residential and commercial settings. Therefore, significant land use impacts associated with alternative fuel vehicles is not expected.

To the extent there is a buildout of infrastructure, those activities would not be solely the result of the 2022 AQMP since they would be needed to meet California's climate goals. In addition, future activities that result from implementing the various proposed control measures in the 2022 AQMP would be subject to project-level review that would assess consistency with adopted land use regulations, including review of impacts to land use and planning under CEQA, as applicable. Any proposed modification to an existing rail or truck traffic route/corridor will require a separate CEQA evaluation. No significant land use impacts were identified in the NOP/IS or in the Draft Program EIR because any activities undertaken to implement the proposed control measures would be expected to comply with, and not interfere with, applicable land use plans, policies, or regulations of an agency with jurisdiction over the project, including, but not limited to the general plans, specific plans, local coastal programs, or zoning ordinances.

Response 6-8
As explained in Response 6-7, installation of infrastructure to fuel/charge electric and hydrogen-fueled vehicles has been historically treated by local planning departments as exempt from CEQA so significant geophysical use impacts are not expected. Further, it is expected that infrastructure for alternate fuel vehicles would commonly occur at existing commercial areas (e.g., existing gas stations), which have already been graded, developed, and where electricity service is already provided. In commercial areas, construction activities may include shallow depth trenching to lay the conduit underground and transmit electricity to the charging devices. In addition, based on the thousands of electric vehicle chargers that are already installed in residential settings where electricity service is provided, there is no indication that the installation of electric vehicle infrastructure in residential neighborhoods would need to go beyond installing individual residential chargers which only require minimal, if any, disturbance to soil as electric vehicle infrastructure involves running conduit from the electrical panel to the charging device. In any case, these activities were previously analyzed and dismissed as less than significant for soil disturbance, as minimal to no substantial soil disturbance is expected, especially in residential areas. Moreover, geology and soils impacts were evaluated and dismissed in the NOP/IS (and summarized in Subsection 4.8 of the Program EIR) and no comments disputing this conclusion were submitted at that time.

Finally, this comment does not provide any evidence to support the claim that geophysical impacts are potentially significant. As discussed in the NOP/IS and summarized in Subsection 4.8.5 of the 2022 AQMP Program EIR, the California Building Code (CBC) as promulgated in the CCR, Title 24, Part 2, contains provisions to safeguard against major structural failures or loss of life caused by earthquakes or other geologic hazards. The CBC requirements operate on the principle that providing appropriate foundations, among other aspects, helps to protect buildings from failure during earthquakes. Additionally, CBC Section 1803.2 requires a geotechnical investigation that must evaluate soil classification, slope stability, soil strength, position and adequacy of load-bearing soils, the effect of moisture variation on soil-bearing capacity, compressibility,

liquefaction, and expansiveness, as necessary. The geotechnical investigation must be prepared by registered professionals (i.e., California Registered Civil Engineer or Certified Engineering Geologist). The issuance of building permits from the local cities or counties will assure compliance with the CBC requirements. Compliance with the CBC requirements for structural safety during a seismic event would reduce hazards from strong seismic ground shaking, as well as liquefaction, to less than significant levels.

Therefore, as evaluated in the NOP/IS and summarized in Subsection 4.8 of the Program EIR, significant geology and soil impacts associated with alternative fuel vehicles is not expected.

Response 6-9
Regarding Control Measure L-CMB-07, the Program EIR evaluated the use of SCRs, ultra-low NOx burners, and electrification. However, the worst-case environmental impacts associated with implementing this control measure was concluded to be the use of SCRs, as they are larger structures, require more construction, require the use of ammonia on a routine operational basis, use more electricity, etc. If ultra-low NOx burners are installed instead, the overall environmental impacts would be fewer due to less construction, no need for ammonia deliveries, storage and use, no increase in electricity, etc. when compared to the impacts evaluated in the Program EIR for SCR technology. The impacts associated with potential electrification of these sources are analyzed in Chapter 4.3 of the Program EIR (see Subsection 4.3.3.2.2).

Per CEQA Guidelines Section 15131, the 2022 AQMP Program EIR does not analyze economic or social effects as economic or social effects are not considered to be significant impacts on the environment. However, the potential economic costs and benefits of implementing the control measures in the 2022 AQMP have been evaluated in the Draft Socioeconomic Report which is available on the South Coast AQMD's website at: http://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/socioeconomic-analysis.

Also please note that in addition, when the rule development process for Control Measure L-CMB-07 is underway, more specific details on the rule implementation and feasible technologies will be available, including whether ultra-low NOx burners, SCRs and/or electric heaters/boilers are feasible/available, and additional CEQA analysis will be conducted as part of that rulemaking effort.

Response 6-10
Control Measure FUG-01 seeks to control emissions from fugitive components, which is far broader than storage tanks regulated by Rule 1178. Other types of equipment that would be evaluated for inclusion under Control Measure FUG-01 include fugitive components (e.g., valves, flanges, pumps, compressors), sumps and wastewater separators, marine vessel operations, and oil well drilling. The other South Coast AQMD Rules besides Rule 1178 that may be modified to implement Control Measure FUG-01 include Rules 463, 1148.1, 1142, 1173, and 1176. So even though proposed amendments to Rule 1178 are currently under development and are not yet finalized, Control Measure FUG-01 is included with the control measures that comprise the 2022 AQMP and the impacts of implementing this control measure has been evaluated in the Program EIR. Comment 6-9 does not raise any CEQA issues so no further comment is required.

Response 6-11
As noted in Response 6-9, the Program EIR evaluates the worst-case environmental impacts associated with implementing Control Measure L-CMB-07, which would be the use of SCR technology. If ultra-low NOx burners are installed instead, the overall environmental impacts would be fewer due to less construction, no need for ammonia deliveries, storage and use, no increase in electricity, etc. when compared to the impacts evaluated in the Program EIR for SCR technology. The impacts associated with potential electrification of these sources are analyzed in Chapter 4.3 of the Program EIR (see Subsection 4.3.3.2.2).

Per CEQA Guidelines Section 15131, the 2022 AQMP Program EIR does not analyze social or economic effects such as stranded assets because they are not considered to be significant impacts on the environment. However, the potential economic costs and benefits of implementing the control measures in the 2022 AQMP have been evaluated in the Draft Final Socioeconomic Report available on the South Coast AQMD's website at: http://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/socioeconomic-analysis. In addition, for future significant rules that are required to be developed to implement the 2022 AQMP control measures, a socioeconomic analysis will be conducted which will evaluate stranded assets, job impacts, and other macroeconomic impacts.

Response 6-12
The potential increase in electricity associated with implementation of the 2022 AQMP control measures for large stationary sources, including Control Measures L-CMB-03, L-CMB-04, and L-CMB-05 is evaluated in Chapter 4.3, Subsection 4.3.3.2.2 of the Program EIR. NOx emission reductions for these control measures are expected to be achieved through the use of low NOx technologies or zero emission technologies, which may include SCR technology, low NOx burners, newer equipment, and electrification in lieu of utilizing post-combustion air pollution control technology. However, the availability of electrified equipment to replace the existing combustion-based equipment is unknown at this time.

As disclosed in the Program EIR (see Subsection 4.3.3.2.2), a small industrial boiler or heater (60 mmBtu/hr) would use an estimated 17.6 MWh of electricity at maximum capacity (instantaneous demand of 0.7 MW if the unit is operated 24 hours per day). Similarly, the electric equivalent of a large industrial boiler or heater rated at 950 mmBtu/hr would be a boiler rated at 278.4 MWh which would convert to an instantaneous electrical demand of 11.6 MW if the unit is operated 24 hours per day. The amount of electricity needed to provide the same amount of capacity as one boiler that relies on combustion for its operation is substantial. Multiple conversions of combustion equipment to electrified versions would require a potentially significant amount of electricity for their operation. (Note that the total number of heaters/boilers that would be electrified due to implementation of the 2022 AQMP is currently unknown). The Program EIR concluded that electricity use was a potentially significant impact as sufficient electricity supplies are not currently available.

With respect to wildfires, as evaluated in the NOP/IS and summarized in the Program EIR in Chapter 4.8, Subsection 4.8.12 of the Program EIR, any structures subject to the implementation of proposed control measures that would be located in fire hazard severity zones are required to be designed, built, and operated in accordance with state regulations specifying building materials and structural designs for structures in such zones, including CBC Chapter 7A and California Fire Code

Chapter 49. Further, these structures would be subject to regulatory requirements for defensible space including Public Resources Code Section 4291 et seq. and a project-level CEQA review, including review of wildfire impacts, as applicable. Electric utilities are required to abide by the requirements of the California Public Utilities Commission Fire Safety Regulations as they relate to utility poles and wires, and vegetation management. Because of these requirements, wildfire hazards were concluded to be less than significant.

Regarding the request for an impacts analysis of PSPS events in the Program EIR, on October 1, 2021, the Governing Board adopted Rule 118.1 which was developed to allow critical service facilities operating emergency standby engines to exclude operating hours during a PSPS event and activities associated with a PSPS event from counting towards an annual operating limit of up to 200 hours. Rule 118.1 also contains notification and summary report requirements for facilities that elect to exclude engine operating hours due to a PSPS event. Since Rule 118.1 was comprised of specific actions to prevent or mitigate an emergency, the Governing Board determined that Rule 118.1 was statutorily exempt from CEQA pursuant to CEQA Guidelines Section 15269(c) – Emergency Projects. Because the environmental effects associated with implementing Rule 118.1 are separate and pre-date the development of the 2022 AQMP, the Program EIR does not contain an analysis of PSPS events. Further, the need to use emergency back-up generators because of extreme weather events is not part of the proposed project and would not be impacted by the proposed project.

In addition, Control Measure L-CMB-04 – Emission Reductions From Emergency Standby Engines is included in the 2022 AQMP and is aimed at addressing the concerns raised in this comment letter. Specifically, Control Measure L-CMB-04 seeks reductions of NOx emissions from emergency standby engines rated over 50 brake horsepower. The control measure also includes an education and outreach program to encourage the transition to zero-emission technologies. Regulatory strategies include replacing older, higher emitting engines with cleaner engines or with alternative technologies, requiring the use of lower emission fuels, and a future prohibition on the use of Internal Combustion Engines for emergency back-up power. As alternative technologies mature and new technologies emerge, the South Coast AQMD plans on undertaking rulemaking to maximize emission reductions utilizing zero emission equipment where cost-effective and feasible, and low NOx emission equipment in all other applications. Staff estimates that Control Measure L-CMB-04 would reduce NOx emissions by an estimated two tons per day. Control Measures L-CMB-05 and L-CMB-06 are both aimed at reducing NOx emissions from large turbines and electricity generating facilities, which would improve air quality, including during extreme weather events.

Staff acknowledges the potential emissions from the use of emergency diesel engines during PSPS or extreme heat events. Emissions associated with such events will be tracked and evaluated to ensure they do not interfere with attainment of the standard. Future rulemaking activities would further refine the emissions inventory based on best available information on methodology and emissions data. While there is uncertainty in emissions during PSPS events, the anticipated future benefit of L-CMB-04 will likely exceed the potential increases from the use of backup generators during PSPS events.

Response 6-13
Comment 6-13 is a comment letter (dated June 17, 2022) that was previously submitted by WSPA relative to the Draft 2022 AQMP and has been incorporated by reference but does not raise any CEQA issues relative to the analysis in the Program EIR. Responses to these previously submitted comments can be found in Comments and Responses to Comments Volume I, Section I for comment letter 43. Since this comment letter does not raise any CEQA issues, no further response is required by CEQA.

Response 6-14
Comment 6-14 is a comment letter (dated July 5, 2022) that was previously submitted by Latham & Watkins on behalf of the Regulatory Flexibility Group (RFG) relative to the 2022 Draft AQMP and has been incorporated by reference but does not raise any CEQA issues relative to the analysis in the Program EIR. Responses to these previously submitted comments can be found in Comments and Responses to Comments Volume I, Section I for comment letter 71. Since this comment letter does not raise any CEQA issues, no further response is required by CEQA.

Response 6-15
Comment 6-15 is an Exhibit 1 to the July 5, 2022 comment letter submitted by Latham & Watkins, which contains suggested modifications to the Draft 2022 AQMP which have also been incorporated by reference. Responses to this previously submitted document can be found in Comments and Responses to Comments Volume I, Section I for comment letter 71. Since Exhibit 1 does not raise any CEQA issues, no further response is required by CEQA.

Response 6-16
Comment 6-16 is a comment letter (dated July 5, 2022) that was submitted by WSPA relative to the 2022 Draft AQMP and has been incorporated by reference but does not raise any CEQA issues relative to the analysis in the Program EIR. Responses to these previously submitted comments can be found in Comments and Responses to Comments Volume I, Section I for comment letter 72. Since this comment letter does not raise any CEQA issues, no further response is required by CEQA.

Response 6-17
Comment 6-17 is a comment letter (dated October 18, 2022) that was submitted by Latham & Watkins on behalf of the RFG relative to the Revised Draft 2022 AQMP and has been incorporated by reference but does not raise any CEQA issues relative to the analysis in the Program EIR. Responses to these comments can be found in Comments and Responses to Comments Volume II, Section II for comment letter 101. Since this comment letter does not raise any CEQA issues, no further response is required by CEQA.

Response 6-18
Comment 6-18 is a comment letter (dated October 18, 2022) that was submitted by WSPA and has been incorporated by reference on the Draft AQMP but does not raise any CEQA issues relative to the analysis in the 2022 AQMP Draft EIR. Responses to these comments on the 2022 Revised Draft AQMP can be found in Comments and Responses to Comments Volume II, Section II for comment letter 101. Since the comment letter does not raise any CEQA issues, no further response is required by CEQA.