

CHAPTER 6

PROJECT ALTERNATIVES

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6.0 PROJECT ALTERNATIVES

6.1 INTRODUCTION

Chapter 6 provides a discussion of alternatives to the proposed projects as required by CEQA. Pursuant to CEQA Guidelines, §15126.6, an EIR shall describe a range of reasonable alternatives to the project that would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the alternatives. In addition, though the range of alternatives must be sufficient to permit a reasoned choice, they need not include every conceivable project alternative. The key issue is whether the selection and discussion of alternatives fosters informed decision making and public participation.

The alternatives were developed by reviewing options to achieving most or some of the objectives of the proposed projects. Consequently, each project alternative described below is similar to the proposed projects in most respects, generating generally the same (in some cases slightly less, and in others, slightly more) adverse environmental impacts. The objectives of the proposed projects are to:

1. Comply with recent revisions to SCAQMD Rule 1105.1 - PM10 and Ammonia Emissions from Fluid Catalytic Cracking Units (Wilmington Plant);
2. Further reduce emissions of ammonia and sulfur oxides (Wilmington Plant); and
3. Reduce NOx emissions to comply with recent revisions of SCAQMD Regulation XX – RECLAIM (Wilmington and Carson Plants).

CEQA Guidelines §15126.6(f) stipulates that the range of alternatives required in an EIR is governed by a rule of reason in that the EIR must discuss only those alternatives “necessary to permit a reasoned choice” and those that could feasibly attain most of the basic objectives of the proposed project. The range of alternatives to the proposed projects is relatively limited because the project proponent must comply with the PM10 and ammonia reduction requirements of Rule 1105.1, as well as the NOx emission reductions required by Regulation XX, RECLAIM. Since the proposed projects are emission reduction projects, the range of control technologies is limited.

The project alternatives were developed by modifying one or more components of the proposed projects taking into consideration the projects’ limitations as to facility space and permitting requirements. Unless otherwise stated, all other components of each project alternative are identical to the proposed projects. The identified feasible project alternatives as well as the alternatives rejected as infeasible are discussed further below. Aside from the alternatives described below, no other project alternatives were identified that met the objectives of the proposed projects while substantially reducing significant adverse environmental impacts.

6.2 ALTERNATIVES REJECTED AS INFEASIBLE

In accordance with CEQA Guidelines §15126.6(c), a CEQA document should identify any alternatives that were considered by the lead agency, but were rejected as infeasible and briefly explain the reason 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. Furthermore, CEQA Guidelines §15126.6(f)(2)(B) indicates that if the lead agency concludes that no feasible alternative locations for the project exist, it must disclose the reasons for this conclusion, and should include the reasons in the EIR.

Alternative Sites: One alternative deemed infeasible was to build the new air pollution control equipment in a location other than that proposed (i.e., other than adjacent to the existing FCCU and existing boilers).

Regarding the WGS, the ConocoPhillips Wilmington Plant has limited space and logistical constraints associated with the placement of air pollution control equipment to comply with Rule 1105.1. The WGS must be located adjacent to the existing FCCU. As a result, the current site is the only available location and alternative sites are not feasible because:

- The ConocoPhillips Los Angeles Refinery has only one existing FCCU, which is located at the Wilmington Plant;
- The new WGS must be located adjacent to the existing FCCU in order to treat the emissions from the FCCU;
- Constructing the WGS in another location, further away from the existing FCCU is infeasible because the WGS and FCCU regenerator must be located adjacent to each other in order to operate efficiently. Building the WGS in another location (other than adjacent to the existing FCCU), would require additional duct work, more blowers, more support facilities, increased energy use (to accommodate any potential pressure drops), and more extensive construction activities than the proposed project. Therefore, this alternative would generate greater environmental impacts (e.g., air quality and energy) than the proposed project.

Regarding the SCR units, the SCR units also must be located adjacent to or near the existing boilers in order to operate efficiently. Constructing the SCR units at other locations, further away from the existing boilers is infeasible because they would require additional duct work, more blowers, more support facilities, increased energy use (to accommodate any potential pressure drops), and more extensive construction activities than the proposed project. Therefore, this alternative would generate greater environmental impacts (e.g., air quality and energy) than the proposed project.

Alternative Control Technologies for NOx Reductions: ConocoPhillips investigated the use of alternative control technologies for NOx reductions from heaters and boilers to comply with RECLAIM requirements, including the use of low NOx boilers. Boilers 7 and 11 already have low NOx burners installed. Most of the heaters and boilers at the Refinery are also equipped with low NOx burners. It was determined that the use of low NOx burners alone would not be sufficient to provide necessary NOx emission reductions to comply with Regulation XX requirements.

Postponing Construction Activities: Another alternative deemed infeasible was postponing some construction activities until other overlapping construction activities are completed. This alternative was evaluated and found to reduce potential cumulative construction-related air quality impacts. Postponing construction activities associated with the WGS, however, would not allow ConocoPhillips to meet the objectives of the project and comply with the emission reduction requirements by the applicable compliance deadlines.

6.3 DESCRIPTION OF THE PROJECT ALTERNATIVES

6.3.1 ALTERNATIVE 1 – NO PROJECT ALTERNATIVE

CEQA Guidelines § 15126.6 (e) requires evaluation of a “No Project Alternative.” Under the “No Project Alternative,” no Refinery modifications would occur. The proposed modifications to the FCCU to comply with Rule 1105.1 and the proposed new SCR Units would not occur and both the Carson and Wilmington Plants would continue to operate under its current configuration.

The “No Project Alternative” would not meet the objectives of the proposed project to comply with SCAQMD Rule 1105.1, further reduce emissions of ammonia and sulfur oxides, or comply with recent revisions of SCAQMD Regulation XX – RECLAIM to reduce NOx emissions.

6.3.2 ALTERNATIVE 2 – ALTERNATIVE TECHNOLOGIES FOR PARTICULATE MATTER REDUCTION

Alternative 2 includes an alternative strategy for complying with SCAQMD Rule 1105.1. ConocoPhillips operators are proposing to comply with SCAQMD Rule 1105.1-PM10 and Ammonia Emissions from Fluid Catalytic Cracking Units by installing a new WGS with a WESP. Under Alternative 2, ConocoPhillips would comply with Rule 1105.1 by installing a new dry ESP. The project under Alternative 2 would remain the same as the proposed projects described in Chapter 2, except for the air pollution control equipment that ConocoPhillips would use to comply with SCAQMD Rule 1105.1. Under Alternative 2, a new duct would be installed to direct the FCCU flue gas to a new dry ESP. The FCCU flue gas from the dry ESP would be discharged to the atmosphere via a stack. The environmental impacts associated with dry ESPs as the means of complying with Rule 1105.1 were analyzed in the 2003 Final EA for Rule 1105.1, which was upheld

by the court in *Western States Petroleum Association v. SCAQMD* (2006) 136 Cal.App.4th 1012. Alternative 2 might achieve the project objectives for PM10 reduction, but would not achieve the other objectives of providing additional emission reductions of ammonia beyond that required by the Rule 1105.1 and significant emission reductions of sulfur oxides. Ammonia would most likely still be used at times in a dry ESP to achieve the efficiency required to meet the stringent PM10 limits in the Rule 1105.1, while the WGS and WESP use no ammonia. Dry ESP technology can capture only solid particles and cannot control SOx emissions at all; on the other hand, WGS technology has been established by U.S. EPA as BACT for SOx control on FCCU's.

6.3.3 ALTERNATIVE 3 – ALTERNATIVE METHODOLOGY FOR NOx EMISSION REDUCTIONS

Alternative 3 would develop an alternative strategy for complying with SCAQMD Regulation XX, RECLAIM. ConocoPhillips operators are proposing to reduce NOx emissions using SCR units on two existing boilers. Under Alternative 3, ConocoPhillips operators would achieve additional NOx emission reductions using other options. The use of SCR is considered to be BACT for the control of NOx emissions from refinery heaters and boilers and the only feasible technology that would achieve sufficient emission reductions to help towards compliance with Regulation XX. ConocoPhillips could also comply with Regulation XX by purchasing RECLAIM Trading Credits (RTCs). RTCs represent emission reductions made at other facilities where credits have been issued and are available for purchase. The project under Alternative 3 would include the WGS as described in Chapter 2; however, the SCR units would be eliminated. Under Alternative 3, RTCs would be purchased to meet the projective of complying with Regulation XX. Alternative 3 would achieve some of the project objectives, but would not provide additional NOx reductions from the Refinery itself. Further, the RTC market is subject to availability and price fluctuations, therefore, using RTCs to comply may be difficult in the future, should sufficient RTCs not be available for purchase. This alternative is considered feasible based on the current RTC market conditions; however, the alternative may not be feasible in the future as sufficient RTCs may not be available for purchase.

6.4 ENVIRONMENTAL IMPACTS FROM THE PROJECT ALTERNATIVES

6.4.1 ALTERNATIVE 1 – NO PROJECT ALTERNATIVE

Aesthetics: The project-specific aesthetic impacts associated with the installation of the WGS would be eliminated since no construction activities would occur and no new equipment would be installed at the Refinery. Under Alternative 1, the project-specific aesthetic impacts would be unchanged from the existing setting and, therefore, less than significant. The aesthetic impacts associated with the proposed project were considered to be adverse, but less than significant, because the new equipment to be installed would

occur within an existing industrial area and large steam plumes are only expected under rare meteorological conditions.

Air Quality: Air quality impacts associated with construction under Alternative 1 would be eliminated (see Table 4-3) because no construction activities would be required. Construction emissions associated with the proposed project were concluded to be significant for NO_x emissions. Under Alternative 1, air quality impacts during construction would remain less than significant for all pollutants since no construction emissions would be expected.

Operational emissions reductions under Alternative 1 would not occur because emissions reductions of PM₁₀ and NO_x would not be achieved in compliance with SCAQMD Rule 1105.1 or Regulation XX, and the primary objectives of the proposed projects would not be met. The No Project Alternative would eliminate all mandated emission reductions and all emission benefits associated with the proposed projects during the operational phase. The operational emissions from the proposed projects were considered to be less than significant, because the primary effects of the proposed projects were NO_x, SO_x and PM₁₀ emission reductions. Consequently, Alternative 1 would result in the potential violation of SCAQMD Rule 1105.1 and Regulation XX because the required emission reductions and air quality benefits associated with the proposed projects would not occur creating significant adverse air quality impacts.

Alternative 1 would not alter the existing conditions at the Refinery associated with TAC emissions and health risks. Alternative 1 would eliminate the increased use of ammonia associated with the proposed new SCR units, the related ammonia slip emissions, and the increased emissions associated with additional ammonia deliveries; however, the project-related impacts associated with the increased use of ammonia were concluded to be less than significant.

Hydrology and Water Quality: Alternative 1 would eliminate the proposed project's increase in water use and wastewater discharged from the proposed project at the Wilmington Plant, since the WGS and the WESP would not be built. However, the proposed project impacts on water quality and wastewater discharge were considered to be less than significant, so Alternative 1 would not eliminate any potentially significant hydrology or water quality impacts.

Traffic/Transportation: The No Project Alternative would eliminate traffic associated with construction activities since no portion of the proposed projects would be constructed. The construction traffic impacts associated with the proposed projects were concluded to be less than significant. The No Project Alternative would eliminate traffic impacts as no construction activities would be required. The proposed projects' impacts on traffic during the operational phase were considered to be less than significant and they would remain less than significant under this alternative. The No Project Alternative would eliminate any construction and operation traffic impacts associated with the proposed projects.

6.4.2 ALTERNATIVE 2 – ALTERNATIVE TECHNOLOGIES FOR PARTICULATE MATTER REDUCTION WGS

Aesthetics: Alternative 2 would result in the installation of a dry ESP instead of a WGS with a WESP. The project-specific impacts associated with the installation of the WGS/WESP would be eliminated, so Alternative 2 would eliminate the visible steam plume that would be generated by the proposed project. The ESP would still require a new stack, but it would likely be less than 200 feet and not be as noticeable as the WGS stack because it would not generate a steam plume. The new SCR units on the existing heaters will still be constructed; however, they are not expected to be visible to the surrounding area. The aesthetic impacts associated with the proposed project were considered to be less than significant because the new equipment to be installed would occur within an existing industrial area. Under Alternative 2, the stack would still be constructed in an existing industrial area, but would be shorter than 200 feet. Therefore, the significance conclusions for Alternative 2 related to aesthetic impacts would be the same as for the proposed project, i.e., less than significant.

Air Quality: Air quality impacts associated with construction under Alternative 2 are expected to be essentially the same as the proposed projects (see Table 4-3) because the construction activities associated with the dry ESP are expected to be about the same as the proposed projects. Construction emissions associated with the proposed projects were considered significant only for NOx emissions. Under Alternative 2, air quality impacts during construction would also be expected to exceed the NOx significance threshold.

The emissions associated with the operational phase of Alternative 2 are expected to be similar to the proposed projects. Under Alternative 2, compliance with Rule 1105.1 would presumably be achieved using a dry ESP, which would be expected to control PM10 emissions to a similar level as the WGS with a WESP. However, the installation of the WGS is expected to provide more air quality benefits compared to a dry ESP, including, further reduction of ammonia emissions, and reduced sulfur oxide emissions, because a WGS does not use any ammonia and a dry ESP cannot control SOx. The WGS requires no ammonia use (where ammonia is sometimes used to condition the flue gas in dry ESPs), can control SOx emissions, a precursor to PM2.5, in addition to PM10, and can better control particulates during transient conditions like start-ups and shut downs. Therefore, the operational emissions associated with Alternative 2 are expected to be beneficial and less than significant; however, the emission reductions and air quality benefits are expected to be less than the proposed projects.

Alternative 2 would not alter the existing conditions at the Refinery associated with TAC emissions and health risks. Alternative 2 is expected to require the use of additional ammonia in the SCR's; however, the impacts associated with the increased use of ammonia are expected to be less than significant, as permit conditions would be imposed to limit ammonia emissions.

Hydrology and Water Quality: Alternative 2 would eliminate the proposed project's increase in water use and wastewater discharged, as was evaluated in Chapter 4 of the EIR, from the proposed projects at the Wilmington Plant, since the WGS would not be built. However, the proposed projects' impact on water quality and wastewater discharge were considered to be less than significant, so Alternative 2 would not eliminate any potentially significant impacts. Dry ESPs generally do not require additional water use or generate wastewater discharges. As a result, hydrology and water quality impacts from Alternative 2 would be less compared to the proposed projects.

Traffic/Transportation: The construction traffic impacts associated with the proposed projects were concluded to be less than significant. Alternative 2 would be expected to require about the same construction activities as the proposed projects. Therefore, traffic/transportation impacts during construction of Alternative 2 would be expected to be equivalent to the proposed projects and also less than significant.

The proposed projects impacts on traffic during the operational phase were considered to be less than significant and they would remain less than significant under Alternative 2. Alternative 2 is not expected to require any additional workers. No more than one additional truck trip on any one day was assumed to be required to transport additional ammonia for the SCR. The transportation impacts associated with Alternative 2 are expected to remain less than significant.

6.4.3 ALTERNATIVE 3 – ALTERNATIVE METHODOLOGY FOR NO_x EMISSION REDUCTIONS

Aesthetics: The project-specific impacts associated with Alternative 3 are expected to be generally the same as the proposed projects. Alternative 3 would eliminate the construction of the SCR units; however, these units are not expected to be visible to the surrounding community. The WGS would be constructed under this alternative and would still be visible. The aesthetic impacts associated with Alternative 3 are expected to be equivalent to the proposed projects and also less than significant.

Air Quality: Air quality impacts associated with construction activities under Alternative 3 are expected to be less than the proposed projects (see Table 6-1) because the construction activities associated with the SCR units would not occur. However, the major portion of the construction activities associated with the proposed projects are associated with construction of the WGS. Air quality impacts associated with construction activities under Alternative 3 are expected to be less than the impacts from the proposed project and less than significant for all pollutants, in comparison to the proposed project that was significant for NO_x emissions.

The emissions associated with the operational phase of Alternative 3 are expected to be similar to the proposed projects. Under Alternative 3, compliance with Rule 1105.1 would still be achieved using a WGS. However, compliance with Regulation XX would

be achieved by purchasing RTCs. The operational emissions associated with Alternative 3 are still expected to be beneficial (i.e., emission reductions) because the WGS would still be installed. However, RTCs would be purchased, rather than reducing emissions from the boilers at the Carson and Wilmington Plants producing a regional air quality benefit. Therefore, the local area would not have the benefit of the NOx emission reductions associated with the proposed projects. Thus, the operational emissions associated with Alternative 3 are expected to be beneficial and less than significant; however, the local air quality benefits are expected to be less than the air quality benefits associated with the proposed projects.

TABLE 6-1

**Alternative 3 Peak Construction Emissions
(lbs/day)⁽¹⁾**

ACTIVITY	CO	VOC	NOx	SOx	PM10	PM2.5 ⁽²⁾
Wilmington Plant						
Construction Equipment	38.20	13.22	64.78	0.06	1.46	1.34
Vehicle Emissions and Road Dust:	25.31	2.92	8.70	0.02	1.44	1.32
Fugitive Dust From Construction	--	--	--	--	32.20	6.70
Subtotal, Wilmington Plant	63.51	16.13	73.48	0.08	35.10	9.36
SCAQMD Threshold Level	550	75	100	150	150	55
Significant?	NO	NO	NO	NO	NO	NO
Proposed Project Emissions	92.73	17.63	74.04	0.10	63.95	41.46

(1) Construction emissions at the Wilmington Plant only. The emissions in the table may differ slightly from those in Appendix B due to rounding.

(2) PM2.5 fraction of PM10 calculated using Profile ID #391 from the SCAQMD PM10 to PM2.5 fraction file available at https://www.aqmd.gov/ceqa/handbook/PM2_5/pm2_5ratio.xls.

Alternative 3 would reduce the ammonia use associated with the proposed new SCR units; however, the impacts associated with the increased use of ammonia are expected to be less than significant, as permit conditions are imposed on SCR units to minimize ammonia slip emissions. Alternative 3 would not alter the existing conditions at the Refinery associated with TAC emissions and health risks.

Hydrology and Water Quality: The WGS would still be installed under Alternative 3 so the proposed project’s impacts on hydrology and water quality would be equivalent to the proposed projects. The SCR units do not require any water for operational purposes. The proposed project impacts on water use and wastewater discharge were considered to be less than significant, and would remain less than significant under Alternative 3.

Traffic/Transportation: Alternative 3 would be expected to require slightly less traffic than the proposed projects because the construction activities associated with the SCR units are relatively minor. Therefore, traffic/transportation impacts during construction of Alternative 3 would be expected to be less than the proposed projects and less than significant.

The proposed project impacts on traffic during the operational phase were considered to be less than significant and they would remain less than significant under Alternative 3. Alternative 3 is not expected to require any additional workers. Alternative 3 would still be expected to result in a maximum of one delivery truck per day to transport sodium hydroxide to supply the WGS. The transportation impacts associated with Alternative 3 are expected to remain less than significant.

6.5 CONCLUSION

Table 6-2 compares the potential environmental impacts of the various alternatives relative to the proposed projects. Based on the analyses herein, no feasible alternatives were identified that would achieve the all of the objectives of the proposed projects (see Section 6.1).

TABLE 6-2

**Environmental Impacts of Alternatives
As Compared to Proposed Project**

ENVIRONMENTAL TOPIC	Proposed Project	Alternative 1	Alternative 2	Alternative 3
Aesthetics	NS	NS(-)	NS(-)	NS(=)
Air Quality				
Construction	S	NS(-)	S(=)	NS(-)
Operation	NS	S(+)	NS(+)	NS(+)
Toxic Air Contaminants	NS	NS(-)	NS(+)	NS(-)
Hydrology/Water Quality	NS	NS(-)	NS(-)	NS(=)
Transportation/Circulation				
Construction	NS	NS(-)	NS(=)	NS(-)
Operation	NS	NS(-)	NS(=)	NS(=)

Notes:

- S = Significant
- NS = Not Significant
- (-) = Potential impacts are less than the proposed project.
- (+) = Potential impacts are greater than the proposed project.
- (=) = Potential impacts are approximately the same as the proposed project.

The No Project Alternative (Alternative 1) would: (1) prevent ConocoPhillips from complying with SCAQMD Rule 1105.1, and (2) make compliance with Regulation XX more difficult.

Alternative 2 would have similar impacts to the proposed projects for air quality and traffic. Alternative 2 would result in reduced aesthetic and water/hydrology impacts because the WGS would not be built. Alternative 2 would not provide the added air

quality benefits associated with further reduction of ammonia emissions, and sulfur oxides.

Alternative 3 would have similar impacts to the proposed projects for water and hydrology, and would result in less than significant impacts to air quality during construction activities as the proposed projects. Alternative 3 would result in slightly reduced air quality impacts because there would be no ammonia emissions from the SCR's. However, the proposed projects are not expected to result in significant adverse impacts to any environmental resource, except for construction emissions of NOx. Although Alternative 3 would allow the Refinery to meet the project objective of complying with Regulation XX by reducing regional NOx emissions, by purchasing RTCs, local air quality benefits would not be realized because NOx emissions reductions would not occur onsite. Therefore, the proposed projects are preferred because they would attain all project objectives while generating environmental impacts equivalent to the project alternatives and not result in any significant adverse environmental impacts.