SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Preliminary Draft Staff Report
Proposed Rule 218.2 – Continuous Emission Monitoring System: General Provisions
Proposed Rule 218.3 – Continuous Emission Monitoring System: Performance Specifications
Proposed Amended Rule 218 – Continuous Emission Monitoring

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EXECUTIVE SUMMARY

A continuous emission monitoring system (CEMS) is the combination of equipment necessary for the determination of pollutant concentrations or emission rate on a continuous basis using analyzer measurements and a conversion equation, graph, or computer program to produce results in units of the applicable emission limitation or standard.

The South Coast Air Quality Management District (South Coast AQMD) has various rules, regulations and permit conditions that require the installation and operation of CEMS as a means to determine compliance with an emission limitation or standard. The South Coast AQMD has established CEMS monitoring rules to provide the guidance and specifications for the CEMS installation and operation and to ensure accuracy and precision of the CEMS. For facilities that under a command-and-control regulatory structure and are not in the Regional Clean Air Incentives Market (RECLAIM), CEMS provisions are specified in Rule 218 – Continuous Emissions Monitoring and Rule 218.1 – Continuous Emissions Monitoring Performance Specifications. For RECLAIM facilities, CEMS provisions are specified in Rule 2011 – Requirements for Monitoring, Reporting, and Recordkeeping for SOx Emissions and Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for NOx Emissions.

The United States Environmental Protection Agency specifies requirements on stationary source continuous emission monitoring under several programs, including 40 CFR Part 60 - New Source Performance Standards (NSPS) and 40 CFR Part 75 – Continuous Emission Monitoring that is in support of the EPA's Acid Rain Program.

There are equipment in the South Coast AQMD subject to both federal requirements and local rules for the CEMS. While the equipment installation and setup are generally compatible, the difference between various regulations are mainly on testing, performance standards, and data handling.

Rule 2012- Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions, and specifically Rule 2012 Chapter 2 – Continuous Emission Monitoring System (CEMS), provide requirements on NOx CEMS subject to the NOx RECLAIM program (NOx RECLAIM CEMS) for mass emission monitoring. When the RECLAIM program transitions to a command-and-control regulatory structure requiring Best Available Retrofit Control Technology (BARCT), the CEMS of RECLAIM facilities would become former RECLAIM CEMS. Unless otherwise specified by source specific rules, the design of a former RECLAIM CEMS would change from mass emission monitoring to concentration limit compliance demonstration.

Rules 218 and 218.1 are the existing monitoring rules for CEMS with a focus on concentration limit compliance demonstration. Rule 218 – Continuous Emission Monitoring, and Rule 218.1- Continuous Emission Monitoring Performance Specifications, are applicable to owners or operators of all CEMS that are required by the South Coast AQMD rules, regulations or permit conditions, except for CEMS under the RECLAIM program, or CEMS for equipment performance evaluation instead of compliance determination. CEMS subject to Rules 218 and 218.1 are also referenced as non-RECLAIM CEMS.

For the RECLAIM program transition, staff is proposing to develop two new monitoring rules and amend Rule 218. Proposed Rule 218.2 (PR 218.2) - Continuous Emission Monitoring System: General Provision, and Proposed Rule 218.3 (PR 218.3) - Continuous Emission Monitoring

System: Performance Specification, would provide specifications for both former RECLAIM CEMS that are previously certified according to the RECLAIM program, as well as non-RECLAIM CEMS that are previously certified according to Rules 218 and 218.1. An implementation schedule is specified under Proposed Rules 218.2 and 218.3 (PR 218.2 and 218.3) to define the compliance date of each system. Prior to the compliance date, former RECLAIM CEMS would continue to be subject to their current monitoring provisions under RECLAIM (i.e., Rule 2012 for NOx CEMS), and non-RECLAIM CEMS would continue to be subject to Rules 218 and 218.1.

PR 218.2 is based on Rule 218 with a focus on CEMS administrative requirements and staff proposes to: (1) revise the provisions retained from Rule 218 with key modifications on certification process for CEMS modification and the requirements for reporting; and (2) incorporate a new provision (subdivision (e)) that would require CEMS to be in a continuous operation, except during the defined CEMS maintenance and repair, and allow CEMS to be shut down when the unit (emission source) becomes offline for at least one week.

PR 218.3 is based on Rule 218.1 with a focus on CEMS performance specification and staff proposes to: (1) revise the provisions retained from Rule 218.1 with key modifications on span range, data acquisition and handling system, relative accuracy test audit, and calibration gas requirements; and (2) incorporate a new provision (subdivision (i)) that would provide specifications on data handling method for data measured below 10 percent or above 95 percent of the upper span value, emission data averaging method, CEMS data availability requirements, and CEMS out-of-control period and alternative data acquisition.

For the provisions provided under Rules 218 and 218.1 that staff proposes under PR 218.2 and 218.3 without revision for the requirements, there may be terminology, sentence or structure changes. The terminology and sentence changes are for consistency and conciseness. The structures changes could be rearranging one paragraph into more levels of expression (such as by paragraph, subparagraph, clause, etc.) for better comprehension. There are also practices for certification and testing that have been consistently applied and are now included in PR 218.2 and 218.3.

With regards to the compliance date, PR 218.2 and 218.3 would be applicable to non-RECLAIM CEMS at the time of the CEMS certification/recertification. This would be applied during the period of one to four years after the rule adoption, or at the end of four years after the rule adoption if there is no certification/recertification application in that period. The owner or operator of the CEMS may also opt to implement PR 218.2 and 218.3 according to the implementation date of a landing rule, for which the CEMS would be recertified as part of the landing rule implementation. Landing rules amended or adopted are presumably preparing for the RECLAIM facilities transitioning to a command and control regulatory structure.

PR 218.2 and 218.3 would be applicable to former RECLAIM CEMS at the time of the CEMS certification/recertification after the facility exits NOx RECLAIM but no later than two years after exiting NOx RECLAIM, or at the end of two years after exiting NOx RECLAIM if there is no CEMS certification/recertification application during that period. Similar to non-RECLAIM CEMS, the owner or operator of the former RECLAIM CEMS may also opt to implement PR 218.2 and 218.3 by the implantation date of a landing rule that is amended or adopted, for which the CEMS would be recertified as part of the landing rule implementation.

Staff also proposes to amend Rule 218 to incorporate a phase out provision that requires the owner or operator of any CEMS subject to Rules 218 and 218.1 to transition to comply with PR 218.2 and 218.3 according to the implementation schedule specified in PR 218.2 (d)(2) or PR 218.3 (d)(2).

PR 218.2 and 218.3, and proposed amended rule 218 (PAR 218) provide administrative and technical guidelines for installing and operating the CEMS required by the South Coast AQMD rules or permit conditions. As these rules do not directly regulate sources for emissions control, there is not emission reductions entailed by this rule development.

CHAPTER 1: BACKGROUND

INTRODUCTION

A continuous emission monitoring system (CEMS) is the combination of equipment necessary for the determination of pollutant concentrations or emission rate on a continuous basis using analyzer measurements and a conversion equation, graph, or computer program to produce results in units of the applicable emission limitation or standard. The South Coast Air Quality Management District (South Coast AQMD) has various rules, regulations and permit conditions that require the installation and operation of CEMS to determine compliance with an emission limitation or standard. The South Coast AQMD has established CEMS monitoring rules to provide the guidance and specifications for the CEMS installation and operation and to ensure accuracy and precision of the CEMS. For facilities that under a command-and-control regulatory structure and are not in the Regional Clean Air Incentives Market (RECLAIM), CEMS provisions are specified in Rule 218 – Continuous Emissions Monitoring and Rule 218.1 – Continuous Emissions Monitoring Performance Specifications. For RECLAIM facilities, CEMS provisions are specified in Rule 2011 – Requirements for Monitoring, Reporting, and Recordkeeping for SOx Emissions and Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for NOx Emissions.

The United States Environmental Protection Agency (U.S. EPA) specifies requirements on stationary source continuous emission monitoring under several programs, including 40 CFR Part 60 - New Source Performance Standards (NSPS) and 40 CFR Part 75 – Continuous Emission Monitoring that is in support of the EPA's Acid Rain Program.

NEED FOR RULE AMENDMENTS

Staff is developing Proposed Rule 218.2 (PR 218.2) - Continuous Emission Monitoring System: General Provision, and Proposed Rule 218.3 (PR 218.3) - Continuous Emission Monitoring System: Performance Specification to update CEMS requirements and to prepare for the transition of facilities in RECLAIM to a command-and-control regulatory program. Since requirements for installation and operation of CEMS for RECLAIM facilities resides in Rules 2011 and 2012, as these facilities transition to command-and-control CEMS requirements for all facilities will reside under Proposed Rules 218.2 and 218.3 to ensure consistency for all facilities required to meet emission limits for command-and-control rules. Many of the revisions to the CEMS requirements are not new, however, will provide more clarity and codify practices that are currently being implemented to improve the transparency and streamline implementation.

Staff has initiated rulemaking to establish Best Available Control Technology (BARCT) for facilities in the RECLAIM program consistent with Control Measure CMB-05: Further NOx Reductions from RECLAIM Assessment (NOx) in the 2016 Air Quality Management Plan (2016 AQMP). CMB-05 includes a series of options to achieve additional NOx reductions from RECLAIM facilities including transitioning facilities to a command-and-control regulatory structure requiring Best Available Retrofit Control Technology (BARCT). In addition, California State Assembly Bill 617 (AB 617), which was signed by the Governor on July 26, 2017 and affects RECLAIM facilities that are also in the California Greenhouse Gas Cap and Trade program, requires implementation of Best Available Retrofit Control Technology (BARCT) no later than December 31, 2023, with priority given to older, higher polluting units.

As facilities begin to transition out of RECLAIM the focus on monitoring will be on the NOx concentration limit instead of the mass emission limit. In addition, RECLAIM facilities will transition from compliance with Rule 2012 to Proposed Rules 218.2 and 218.3. Rule 2011-Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Sulfur (SOx) Emissions, provides requirements for CEMS for SOx RECLAIM facilities. While the current

transition is focused on NOx RECLAIM, staff will be working on a transition of SOx RECLAIM facilities. Similar to NOx RECLAIM facilities, SOx RECLAIM facilities with CEMS would be subject to 218.2 and 218.3 upon transitioning to a command-and-control regulatory program.

REGULATORY HISTORY

The following provides the regulatory history of the current CEMS rules under the South Coast AQMD's regulatory programs and federal programs. Within the South Coast AQMD's regulatory program there are two regulatory programs for the installation and operation of CEMS: RECLAIM CEMS requirements which are specified under Rules 2011 and 2012; and non-RECLAIM which are specified under Rules 218 and 218.1. CEMS requirements under the RECLAIM program focuses on mass emission compliance since the RECLAIM program is a market incentives program that focuses on mass emissions. CEMS monitoring for non-RECLAIM sources under a command-and-control regulatory structure focus on compliance with concentration limits. This section also discusses the rules that specify what sources are required to install CEMS. Lastly, a general overview of federal CEMS requirements is discussed as there are some facilities that are concurrently subject to CEMS monitoring requirements under the federal program, such as the Acid Rain Program.

Rules 2011 and 2012

The adoption of the RECLAIM program in October 1993, included Rules 2011 and 2012 that established the monitoring, reporting, and recordkeeping requirements for SOx and NOx emissions under the RECLAIM program. For the largest sources, Rules 2011 and 2012 required CEMS, which at the time were state of the art monitoring systems that were critical for the RECLAIM program where compliance was based on mass emissions as compared to NOx concentration limits under command-and-control. The most recent amendments to Rule 2012 were made in January 2005 and May 2005 that included allowing a delay in the due date for the Relative Accuracy test Audit (RATA) for a unit that is operated intermittently and specifying mass emissions reporting through the South Coast AQMD's website. Rule 2012 was last approved by the US EPA on September 14, 2017 into the California State Implementation Plan (SIP).

Rules 218 and 218.1

Rule 218 - Stack Monitoring was adopted on January 9, 1976 for requirements on continuous stack emission monitoring, with provisions on both administrative and technical guidelines. Rule 218 was amended several times, with the most significant amendment on May 14, 1999 to recognize the advancements in CEMS and to separate certain requirements from Rule 218 to a new Rule 218.1. Rule 218 focused on administrative requirements and the new Rule 218.1 focused on performance specifications.

Rule 218.1 was further amended in 2012 to align the calibration requirements for CEMS for non-operating days with the provisions in Regulation XX, specifically Rule 2011 for SOx CEMS and Rule 2012 for NOx CEMS, under the RECLAIM program. Rules 218 and 218.1 were last approved by the U.S. EPA on June 8, 2010 into the California SIP.

Source-Specific Rules that Require CEMS

The South Coast AQMD source-specific rules establish emission standards for various source categories and specify monitoring, recordkeeping, and reporting requirements. The source-specific rules set CEMS applicability, the criteria for the requirement of continuous emission monitoring. Some source specific rules may impose additional requirements for CEMS (e.g., CEMS data averaging time under Rule 1134 and CEMS operating and compliance schedule under Rule

1110.2). CEMS monitoring rules, such as Rules 218 and 218.1, provide extensive specifications for CEMS installation, operation, certification, quality assurance, recordkeeping, and reporting.

When RECLAIM facilities transition to the command and control structure for NOx sources, the applicability of CEMS for the sources, previously determined by Rule 2012, would be subject to the applicability requirements specified in the source-specific rules. Table 1-1 provides the comparison between Rule 2012 and source-specific rules for CEMS applicability. The main differences are between industrial boilers and internal combustion engines. For industrial boilers, CEMS monitoring may no longer be required for certain RECLAIM units (potentially eight units identified during the rulemaking Rule 1146 in 2018). For internal combustion engines, CEMS monitoring would be required for some units that had no CEMS monitoring requirements under RECLAIM.

Table 1-1:
Comparison Between CEMS Applicability by Rule 2012 and Source-Specific Rules

	Rule 2012 CEMS Applicability	**Source-Specific Rule CEMS Applicability**	**Changes to RECLAIM Facilities**
Rule 1146 (Amended December 7, 2018) Industrial Boilers and Heaters (Not including Refinery Boilers and Heaters)	• Heat input > = 40 MMBtu/hr but < 500 MMBtu/hour and annual heat input > 90 x 10^9 Btu/year; or • Heat input > = 500 MMBtu/hour	• Heat input > = 40 MMBtu/hour and annual heat input > 200 x 10^9 Btu/year	Some CEMS may no longer be required if the source's annual heat input is no more than 200 x 10^9 Btu/year
Rule 1110.2 (Amended November 1, 2019) Internal Combustion Engine (Non-Electric Generating Facilities)	>= 1,000 bhp and operating > 2,190 hours/year	• >= 1,000 bph; or • Multiple units (each >= 500 bhp) with combined rating >= 1,500 bhp and combined fuel usage >= 16 x 10^9 Btu/year •	Some units with an on-site aggregate horsepower rating ≥ 1500 hp would require CEMS under Rule 1110.2
Rule 1135 (Amended November 2, 2018) Internal Combustion Engine at Electric Generating Facilities	>= 1,000 bhp and operating > 2,190 hours/year	Applicability remains the same for NOx source for ICE in EGF former RECLAIM facilities	No change
Rule 1134 (Amended April 5, 2019)	>= 2.9 megawatts excluding emergency standby equipment or peaking unit	Applicability remains the same for former RECLAIM NOx source	No change

	Rule 2012 CEMS Applicability	Source-Specific Rule CEMS Applicability	Changes to RECLAIM Facilities
Gas Turbines (Non-Electric Generating Facilities)			
Rule 1135 (Amended November 2, 2018) Gas Turbines at Electric Generating Facilities	>= 2.9 megawatts excluding emergency standby equipment or peaking unit	Applicability remains the same for former RECLAIM NOx source	No change
Rule 1117 (Amended June 5, 2020) Furnaces at Container Glass and Silicate Facilities	• Heat input > = 40 MMBtu/hr but < 500 MMBtu/hr and annual heat input > 90 x 109 Btu/yr; or • Heat input > = 500 MMBtu/hr	Applicability remains the same for former RECLAIM NOx source	No change
Proposed Amended Rule 1109.1 Refinery FCCU, refinery tail gas unit, and Calciner at Petroleum Refineries and Related Industries	Any	Proposed applicability remains the same for former RECLAIM NOx source	No change
Proposed Amended Rule 1147 Furnace, oven, dryer, heater, incinerator, test cell and any solid, liquid or gaseous fueled equipment	• Heat input > = 40 MMBtu/hr but < 500 MMBtu/hr and annual heat input > 90 x 109 Btu/yr; or • Heat input > = 500 MMBtu/hr	Applicability will be reassessed	To be determined
Proposed Amended Rule 1147 Kiln	Process >=10 tons/hour and >21,9000 tons/year, except brick kilns	Applicability will be reassessed	To be determined

Federal Requirements for CEMS

Federal requirements for stationary source emission monitoring are specified under several programs, including 40 CFR Part 60 - New Source Performance Standards (NSPS) and 40 CFR Part 75 – Continuous Emission Monitoring. Part 60 establishes air pollution control standards for various individual industrial or source categories. Part 60 Appendix B contains performance specifications on installation and certification procedures for CEMS SO2, NOx, CO2, O2, CO, VOC, etc., and Appendix F details on CEMS quality assurance procedures. Part 75 establishes requirements for monitoring, recordkeeping, and reporting of SO2, NOx, and CO2 emissions, volumetric flow, and opacity data from affected units under the Acid Rain Program. Part 75 Appendix A defines CEMS installation, equipment, and performance specification for certification, and Appendix B provides quality assurance and quality control procedures.

There are equipment in the South Coast AQMD subject to both federal requirements and local rules for the CEMS. While the equipment installation and setup are generally compatible, the differences between local and federal regulations are generally limited to on testing, performance standards, and data handling.

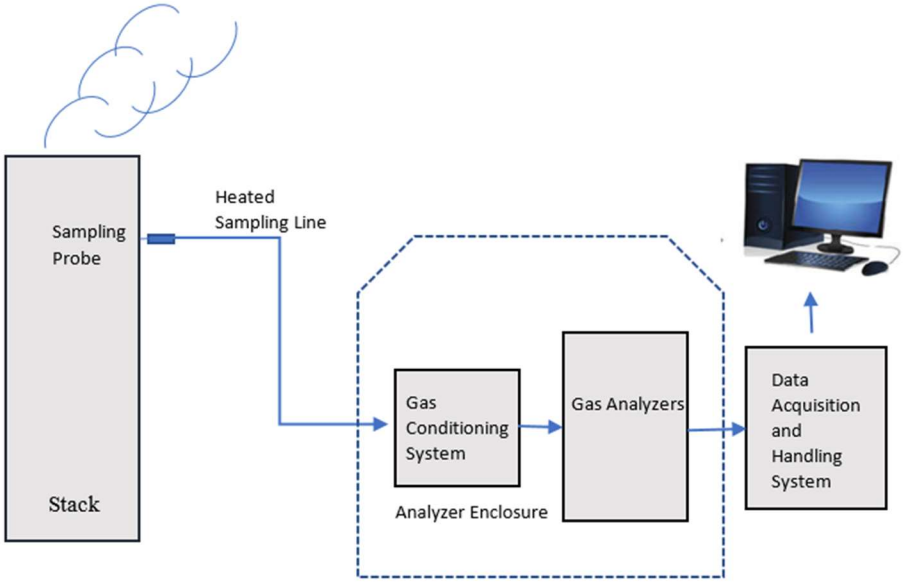
REGULATORY APPROACH FOR RULEMAKING FOR RULE 218 SERIES

To address the revisions and incorporate the revised provisions into Rules 218 and 218.1, staff initially proposed to amend Rules 218 and 218.1. During the rulemaking process, staff recognized that there is a need to retain the existing requirements for the transitional period before the proposed new requirements become effective and was concerned that the existing and revisions and changes to the rule structure would be very confusing to the regulated community if the provisions were embodied in Rules 218 and 218.1. Therefore, the current approach is to: (1) maintain Rules 218 and 218.1 for the existing provisions; and (2) establish PR 218.2 and 218.3 as the revised CEMS provisions for revised and new requirements. The existing provisions for Proposed Rule 218.2 are in Rule 218, and the existing provisions for Proposed Rule 218.3 are in Rule 218.1.

OVERVIEW OF CEMS

The standard CEMS consists of a sample probe, filter, sample line (umbilical), gas conditioning system, calibration gas system, and a series of gas analyzers which reflect the parameters being monitored (See Figure 1-1). Monitored pollutants generally include nitrogen oxides, sulfur dioxide, carbon monoxide, carbon dioxide, and oxygen. CEMS can also measure air flow, flue gas opacity and moisture. The South Coast AQMD also requires a data acquisition and handling system to collect, record, and report the measured data.

Figure 1-1
Typical CEMS Setup



Different Types of CEMS

PR 218.2 and 218.3 would apply to non-RECLAIM facilities and RECLAIM and former RECLAIM facilities where a CEMS that also includes Alternative Continuous Emission Monitoring System (ACEMS) and Semi-Continuous Emission Monitoring System (SCEMS) is required. A CEMS directly monitors emissions in the stack. An ACEMS, uses process or control device operating parameter measurements and a conversion equation, a graph, or computer program to produce results in units of the applicable emission limitation or standard on a continuous monitoring basis. A SCEMS is only different from a regular CEMS on response time and data acquisition frequency. SCEMS continuously takes and records measurements (e.g. concentration, mass emission, flow rate) at a minimum of once in every fifteen (15) minutes, versus once every minute for a regular CEMS. A time shared CEMS is also considered as a SCEMS. In this report staff will be using the term CEMS in representing all regulated monitoring systems including CEMS, ACEMS and SCEMS, unless otherwise specified.

AFFECTED FACILITIES

Based on the RECLAIM compliance year 2017 audit data, there are 84 RECLAIM facilities that in total operate 501 units with NOx emissions monitored by CEMS. It should be noted that one CEMS may monitor emissions for several units, which is common in a petroleum refining facilities.

Based on the South Coast AQMD's data base for non-RECLAIM CEMS applications, there are 126 non-RECLAIM facilities that previously installed one or more CEMS, estimating 250 units monitored by CEMS. Since records do not indicate the current status of the CEMS, some of non-RECLAIM CEMS may no longer be active. The CEMS universe may change when some landing rules are adopted or amended and become applicable to RECLAIM facilities.

PUBLIC PROCESS

The development of Proposed Amended Rules 218 and 218.1 and Proposed Rules 218.2 and 218.3 and was conducted through a public process. Eleven Working Group Meetings were held on: March 13, 2019, May 2, 2019, June 11, 2019, September 12, 2019, November 12, 2019, February 13, 2020, June 26, 2020, July 16, 2020, October 6, 2020, and November 5, 2020. Working Groups included a wide variety of stakeholders such as affected facilities, consultants, environmental and community groups, and other agencies. The objective of the Working Group Meetings is to build consensus and resolve key issues with the stakeholders.

Staff also has had numerous individual meetings with stakeholders and conducted multiple site visits as part of this rulemaking process. In addition, staff has had discussions with staff from the U.S. EPA and the California Air Resource Board (CARB) for issues related to the PR 218.2 and 218.3.

CHAPTER 2: PROPOSED RULE 218.2

PROPOSED RULE REQUIREMENTS

INTRODUCTION

Similar to Rule 218, PR 218.2 focuses on administrative CEMS requirements. PR 218.2 proposes to incorporate: (1) revisions to the provisions retained from Rule 218; and (2) new monitoring requirements in subdivision (e). PR 218.2 subdivision (e) require a CEMS to be in continuous operation, except during the defined CEMS maintenance and repair, or during a scheduled CEMS shut down when the unit (emission source) becomes offline for at least one week.

PR 218.2 (a) – PURPOSE

The purpose of this rule is to specify requirements for CEMS, Alternative Continuous Emission Monitoring System (ACEMS), and Semi-Continuous Emission Monitoring System (SCEMS). This rule refers to Rule 218.3 for requirements for certifications and quality assurance of CEMS, ACEMS, and SCEMS. While Rule 218 does not have a similar provision, this subdivision expresses the same intended purpose of Rule 218.

PR 218.2 (b) - APPLICABILITY

PR 218.2 subdivision (b) is based on the same applicability as Rule 218 subdivision (b). PR 218.2 provides further clarification. PR 218.2 applies to owners and operators of continuous monitoring systems in demonstrating compliance with emission limits or standards required by the South Coast AQMD rules, regulations or permit conditions, excluding any CEMS for performance evaluation that is not required by the South Coast AQMD, or any CEMS in the RECLAIM program.

An example of a CEMS for performance evaluation that is not required by the South Coast AQMD would be a CEMS that is monitoring upstream emissions of a Selective Catalytic Reduction (SCR) control equipment. The upstream emissions monitored by this CEMS, in conjunction with the emissions at the exhaust stack monitored by a certified CEMS, are utilized to calculate the control efficiency of the SCR. Instead of demonstrating compliance with an emission standard, this CEMS determines the performance of the SCR, and thus is not subject to PR 218.2.

A CEMS in the RECLAIM program that is monitoring NOx or SOx emissions is not subject to PR 218.2 since it is subject to Rule 2012 for NOx CEMS and Rule 2011 for SOx CEMS. However, when a RECLAIM facility transitions out of the RECLAIM program, the CEMS would be subject to PR 218.2 according to an implementation schedule specified under PR 218.2 subdivision (d). At this time only NOx RECLAIM program is transitioning to a command and control regulatory structure.

PR 218.2 (c) - DEFINITIONS

Table 2-1 lists the definitions that have been removed or added in PR 218.2, as compared to the definitions in Rule 218. Definitions were removed because they either were no longer used in the rule or are now integrated into the provision. Definitions were added because it is a new terminology used in the rule or to provide additional clarification. There are also several definitions (e.g., DILUENT GAS) that are being revised. The revisions are to provide clarity for the same meaning.

Table 2-1: PR 218.2 Definitions Removed and Added as compared to Rule 218 Definitions

	Definitions
Definitions Removed	• CALIBRATION CHECK • CERTIFIED GAS MIXTURE • MODIFICATION REQUIRING RECERTIFICATION

	Definitions
	• WORKING DAY • ZERO CHECK • ZERO GAS
Definitions Added	• ACEMS • CALIBRATION ERROR TEST • CEMS FAILURE • CEMS FINAL CERTIFICATION LETTER • CEMS MODIFICATION • RECLAIM • RECLAIM FACILITY • FORMER RECLAIM FACILITY • UNIT

PR 218.2 (d) - IMPLEMENTATION SCHEDULE

The CEMS certified for operation are categorized into two groups:

- RECLAIM CEMS,
- Non-RECLAIM CEMS.

RECLAIM CEMS are currently subject to Regulation XX, specifically Rule 2012 for NOx RECLAIM CEMS, while non-RECLAIM CEMS are subject to Rules 218 and 218.1 for CEMS specifications. Non-RECLAIM CEMS, and any RECLAIM CEMS after exiting RECLAIM, will transition to PR 218.2 and 218.3 according to the implementation schedule specified in this subdivision.

There are several considerations in establishing the CEMS implementation schedule. For RECLAIM facilities, NOx RECLAIM facilities would first need to exit RECLAIM before transitioning their CEMS to PR 218.2 and 218.3. However, prior to the transition it is important that RECLAIM facilities continue complying with Rule 2012 as the CEMS requirements ensure compliance with mass emission as compared to emission concentration requirements. Second, CEMS certification/recertification is a critical point in commencing the implementation of the CEMS to the requirements specified in PR 218.2 and 218.3. For a CEMS without a foreseeable recertification date (e.g., units already meeting the new NOx limits), a final implementation date would be established in the PR 218.2 and 218.3. The landing rule implementation date could be an option for the CEMS implementation. For most units, the implementation timeline would be staggered based on equipment modifications to meet NOx limits specified in the landing rules. Based on the above considerations, the implementation schedules are proposed as specified in subdivision (d). These implementation schedules are presented in Figures 2-1, 2-2, 2-3, and 2-4.

PR 218.2 and 218.3 are applicable to non-RECLAIM CEMS at the time of the CEMS certification/recertification. This would be applied during the period of one to four years after the rule adoption, or at the end of four years after the rule adoption if there is no certification/recertification application in that period. The owner or operator of the CEMS may also opt to implement PR 218.2 and 218.3 according to the implementation date of a landing rule,

for which the CEMS would be recertified as part of the landing rule implementation. Landing rules amended or adopted are presumably preparing for transitioning the NOx RECLAIM facilities to a command and control regulatory structure.

PR 218.2 and 218.3 would also be applicable to RECLAIM CEMS at the time of the CEMS certification/recertification after the facility exits NOx RECLAIM but no later than two years after exiting NOx RECLAIM, or at the end of two years after exiting NOx RECLAIM if there is no CEMS certification/recertification application during that period. Similar to non-RECLAIM CEMS, the owner or operator of the RECLAIM CEMS may also opt to implement PR 218.2 and 218.3 by the implementation date specified in the landing rule that has been amended or adopted, for which the CEMS would be recertified as part of the landing rule implementation.

If the CEMS shares the sampling interface or more component(s) with another CEMS, each CEMS would be subject to a different implementation schedule. For example, a NOx and CO CEMS may both monitor emissions from a turbine in a RECLAIM facility. The NOx emissions monitoring portion is subject to Rule 2012 and considered a RECLAIM CEMS. However, the CO emission monitoring portion is subject to Rules 218/218.1 and considered a non-RECLAIM CEMS. In this example these two CEMS share the same sampling interface and some part (e.g., the hardware) of the data acquisition system, yet operate with different analyzers and data processing modules. To streamline the implementation, the owner or operator of these two CEMS will be given the option to select the later implementation date for both CEMS.

Figure 2-1:
Applicability Prior to the Implementation of PR 218.2 and PR 218.3

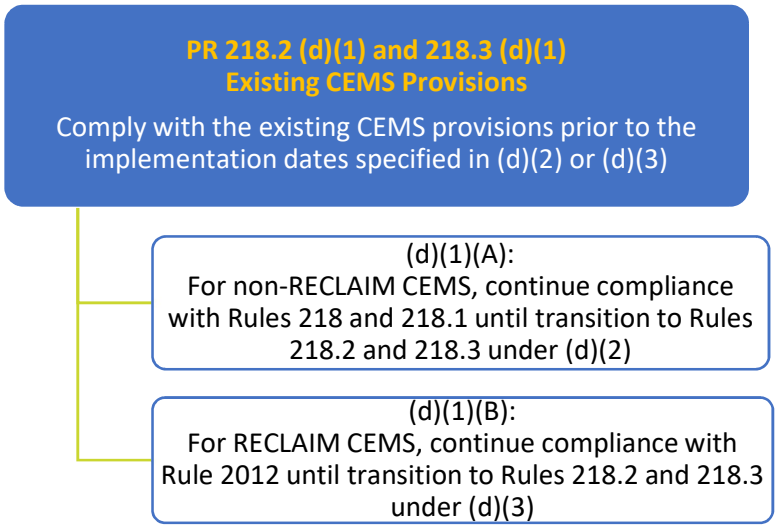


Figure 2-2:
Transition Dates for Non-RECLAIM CEMS

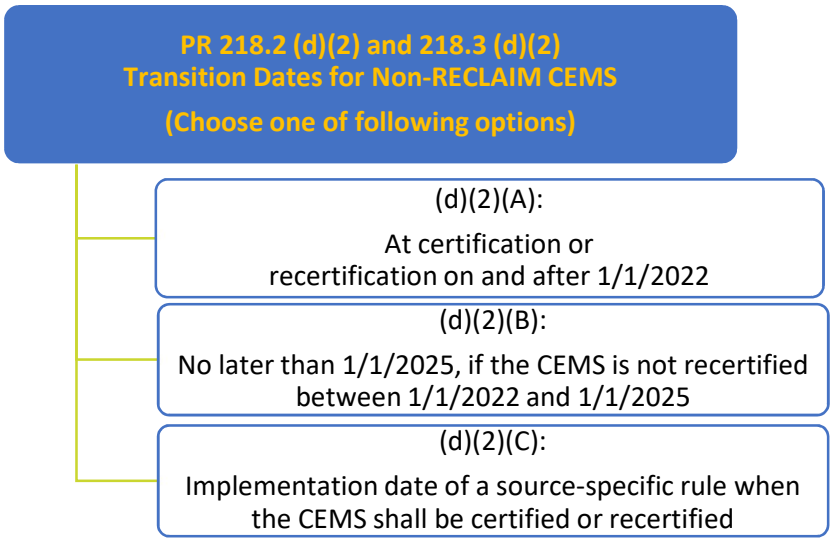


Figure 2-3:
Transition Dates for RECLAIM CEMS

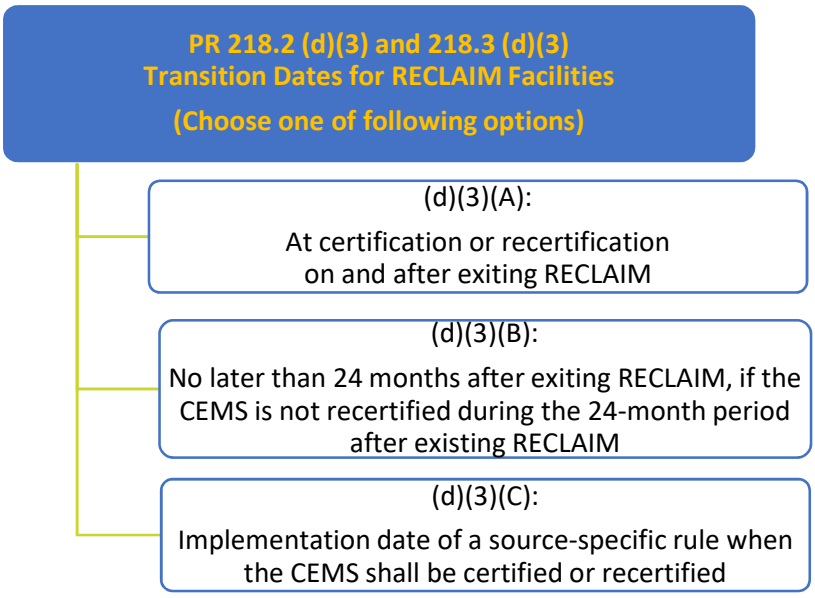
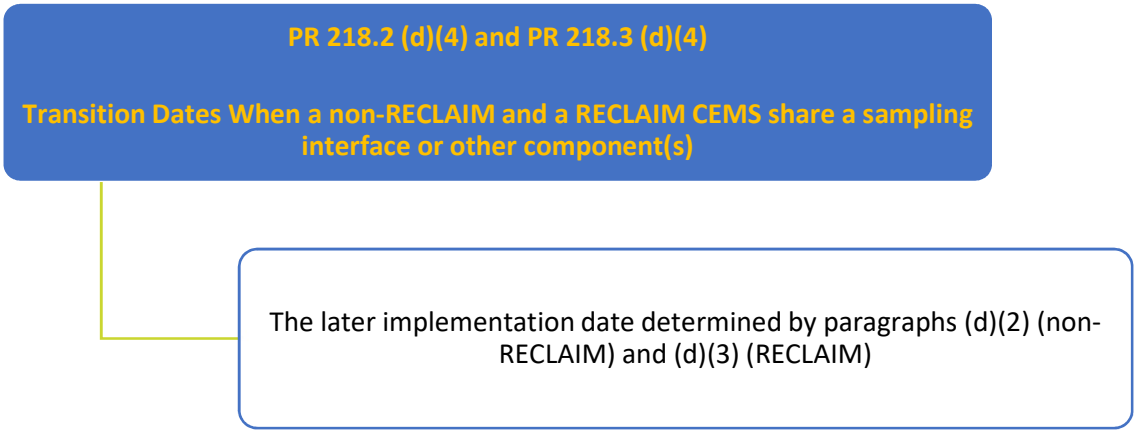


Figure 2-4:
Transition Dates When a Non-RECLAIM CEMS and a RECLAIM CEMS Share a Sampling Interface or Other Component (s)



PR 218.2 (e) - MONITORING REQUIREMENTS

Currently, Rules 2011 and 2012 require continuous operation, except during a scheduled or unscheduled CEMS maintenance or repair for up to 96 hours for each occurrence. Rules 2011 and 2012 allow an extension for an additional 96 hours if the emitting source is not operating.

Currently, Rules 218 and 218.1 also require to maintain continuous operation, except during CEMS maintenance or repair for up to 96 hours, however, if additional hours are needed, the owner or operator of the non-RECLAIM CEMS will need to make a request to the South Coast AQMD Hearing Board through an interim variance. Stakeholders suggested at the Working Group Meetings that the variance process is burdensome to the regulated industry. In addition, stakeholders requested to allow CEMS non-operation when the emitting source is not operating.

PR 218.2 (e)(2) will align the RECLAIM requirement during the CEMS maintenance or repair for all facilities. PR 218.2 will allow CEMS non-operation for up to 96 hours, with an additional 96 hours if the emitting source (unit) is not operating or generating emissions, for each occurrence. For the purpose of demonstrating that the unit is not operating or generating emissions, the owner or operator of the CEMS would be required to refer to one of the options specified under PR 218.2 (e)(4).

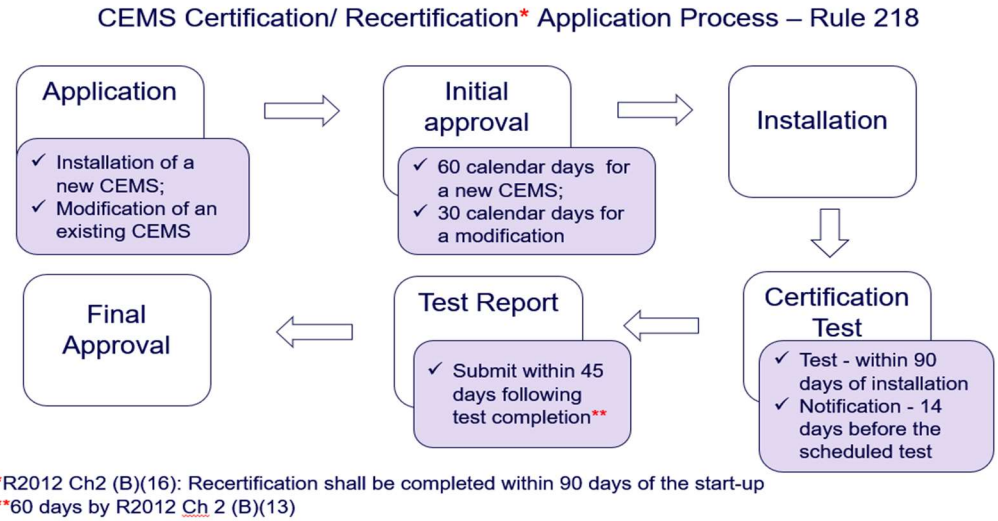
In addition, PR 218.2 (e)(3) will allow the owner or operator to shut down the CEMS when the unit is scheduled to be off for a minimum 168 consecutive hours, provided specific conditions are met. PR 218.2(e)(3) provides monitoring relief during a long-term unit shutdown that is demonstrated by one of the options specified under paragraph (e)(4). For any unit with a shutdown period shorter than 168 consecutive hours, the owner or operator of the CEMS would not be permitted to use this provision for monitoring relief.

PR 218.2 (f) - CERTIFICATION REQUIREMENTS

Certification or Recertification Application Process for a CEMS new installation or modification

PR 218.2 will retain the application process for a full CEMS certification or recertification as specified in Rule 218, including the same application form ST-220, (See Figure 2-5). The initial approval ensures that the application package is complete.

Figure 2-5: CEMS Certification and Recertification Application Process



Similar to Rule 218, Proposed Rule 218.2 will only allow testing laboratories or firms that are approved under the South Coast AQMD Laboratory Approval Program (LAP) to perform CEMS certification and other performance tests. The LAP is a program administered by the South Coast AQMD and grants test method-specific approvals to private testing laboratories or firms to perform tests in determining source compliance with the South Coast AQMD rules and regulations.

Recertification Application Process for a CEMS Modification required within 30 days due to CEMS failure

A concern was raised on the timeline needed to recertify a CEMS when an immediate replacement is required due to a CEMS component failure (e.g., and emergency repair or replacement). According to the currently required recertification process defined by paragraph (f)(2) (depicted by Figure 2-5), a CEMS modification could be put on hold for up to 30 days in anticipation of an initial approval. As such, without a properly operating CEMS, the delay in the CEMS modification would result in an emission data loss and an adverse impact on CEMS data availability.

PR 218.2 (f)(3) proposes a recertification process for a CEMS modification that is required for the CEMS to operate properly and when the modification takes place within 30 days from the time the CEMS failed. According to this alternative recertification process, an initial approval would not be required prior to the CEMS modification and the owner or operator of the CEMS would be allowed to start the modification after submitting a written notification to the Executive Officer. However, after this necessary modification, the owner or operator of the CEMS will be required to comply with the recertification process similar to paragraph (f)(2) with the application form due within 30 days of the CEMS modification.

Recertification or Alternative Process for a CEMS Modification
Currently under R218 and 218.1 the Executive Officer determines if a full certification process is required when a modification to the CEMS occurs. After the final approval of the certification for a new CEMS, any future modification to the CEMS will either trigger a recertification requiring an application or trigger an alternative process not requiring an application. To clarify the recertification process, PR 218.2 includes criteria that would determine CEMS modification recertification process approval. In addition, PR 218.2 includes a new definition "CEMS Final Certification Letter". This definition identifies the minimum information that should be listed on a CEMS certification letter receiving final approval.

For a CEMS modification on a component that is identified in the CEMS final certification letter, the recertification process specified in PR 218.2 subparagraph (f)(2) or (f)(3) would be required. These modifications are expected to better ensure CEMS integrity in providing quality assured data.

For a CEMS modification on a component that is not identified on the CEMS final certification letter but is listed on the South Coast AQMD Technical Guidance Document R-002, a simplified alternative process defined by PR 218.2 subparagraphs (f)(8) would be required. This simplified process involves three steps: (1) notifying the Executive Office prior to the modification; (2) conducting the required quality assurance tests in accordance with the South Coast AQMD Technical Guidance Document R-002 (TGD R-002); and (3) submitting the test report for the Executive Officer's review. The notification prior to the modification provides the Executive Officer an opportunity to evaluate the impacts on CEMS performance, confirming or denying whether the simplified process can be applied. If the Executive Officer deems that the modification does significantly impact the CEMS performance, then the full certification process would be required as specified under PR 218.2 subparagraph (f)(9).

For a CEMS modification on a component that is not identified in the CEMS final certification letter or listed in the South Coast AQMD Technical Guidance Document R-002 but is listed in the Quality Assurance/Quality Control Plan, an even more simplified alternative process defined by PR 218.2 subparagraphs (f)(10) can be applied. In this process, the owner or operator of the CEMS would notify the Executive Officer of the modification prior to the change, and then start the modification without prior approval. However, the Executive Officer reserves the opportunity to evaluate the modification and require additional tests as needed.

Referencing Part 60 Appendices B and F Provided by Rule 218
Rule 218 subparagraph (c)(1)(B) provides an option to allow the less stringent certification and ongoing QA/QC requirements of Part 60 Appendices B and F for CEMS certification and ongoing QA/QC requirements. This option would also relieve the owner or operator of the CEMS from complying with the corresponding provisions in Rule 218.1 but would still maintain compliance with Rule 218 (e) and (f) recordkeeping and reporting requirements.

Some differences have been identified between Rule 218.1 and Part 60 Appendices B and F for requirements on CEMS certification and ongoing QA/QC. First, there are certification tests required by Rule 218.1 but not by Part 60. These tests include system bias check, NOx conversion, response, and systems without a CEMS enclosure. In addition, there are more stringent standards for certification and QA/QC tests in Rule 218.1, as compared to Part 60. These tests are as follows:

- ✓ For the carbon dioxide analyzer 7-day calibration drift test, Rule 218.1 requires the test to meet the standard for all days, while Part 60 requires the same standard for only 6 out of 7 days.
- ✓ For CEMS out-of-control triggering point by failing daily calibration, Rule 218.1 requires the calibration error to be within 2 times the performance standard for any one test. By contrast, Part 60 allows 2 times the same performance standard over five consecutive days or 4 times the performance standard for any one test before deeming a CEMS to be out-of-control.
- ✓ For the relative accuracy test audit (RATA), Rule 218.1 relative accuracy standard is more stringent for diluent gas. Furthermore, Rule 218.1 requires criteria and approval for rejecting any run, while Part 60 allows the tester to reject up to 3 runs at their discretion.

There are some differences between Rule 218.1 and Part 60 in the number and types of required certification tests. The additional certification tests are important in demonstrating the accuracy and reliability of the system. In practice, non-RECLAIM CEMS have all been certified according to the same criteria, no matter if the owner or operator of the CEMS has opted to comply with the Rule 218.1 or Part 60 Appendices B and F requirements. In practice, staff has utilized and referenced the South Coast AQMD certification testing guidance document in working with the owner or operator of the CEMS to obtain CEMS certification. Application of the guidance document includes the previously mentioned certification tests required by Rule 218.1, but not by Part 60.

The QA/QC test methods are consistent in Rule 218.1 and Part 60. There are differences in the standards for the test results. Given the QA/QC test method consistency and the current practice of utilizing the abovementioned certification testing documents, it is feasible for the owner or operator of the CEMS who opted for the Part 60 requirement to meet the Rule 218.1 standards.

Removing the Part 60 option would not have an impact on the data acquisition and handling system (DAHS). PR 218.2 and 218.3 implements the valid hour and hourly average method as specified in Part 60.

Data Validity for the Interim Period

Rule 218 does not specify for the validity of the CEMS data recorded during the interim period when the CEMS is being certified or recertified. PR 218.2 (f)(11) allows all the emission data measured and recorded by the CEMS to be considered valid for compliance purposes, beginning at the hour of when the calibration error test is passed. The calibration error test for this purpose must be passed before any of the required recertification tests have commenced, but no longer than 14 days prior to the completion of all the required certification tests. However, if the Executive Officer disapproves the final CEMS certification or recertification, all the valid emission data would be retroactively considered invalid. This provision aligns with the Part 75 requirements.

PR 218.2 (f)(13) clarifies the criteria for certifying a SCEMS and adds criteria for certifying a time-shared CEMS and an ACEMS. Paragraph (f)(13) codifies the criteria which is currently being implemented in practice.

PR 218.2 (g) - QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) PLAN

Based on Rule 218 paragraph (c)(4) for QA/QC plan requirements, PR 218.2 subdivision (g) provides additional details in paragraph (g)(1) on what must be included in the plan and in paragraph (g)(3) for the requirements of a revised plan. The guidance document "Guidelines for

Continuous Emission Monitoring System Quality Assurance and Quality Control Plan" is an existing document, which will be posted on the South Coast AQMD webpage along with other CEMS guidance documents.

PR 218.2 (h) - RECORDKEEPING REQUIREMENTS

PR 218.2 subdivision (h) provides additional clarity regarding recordkeeping requirements for data and files that should be maintained.

PR 218.2 (h)(1) requires maintenance of records for all raw and processed data that PR 218.3 specifies for the Data Acquisition and Handling System. This also includes data for any compliance demonstrations. PR 218.2 (h)(2) also requires maintaining records of reports, CEMS deviations, maintenance and repair, and activities according to the QA/QC plan that would be needed for compliance demonstration or system evaluation. As required under Rule 218, all the records must be maintained for a minimum period of two years unless otherwise specified.

PR 218.2 (i) - REPORTING REQUIREMENTS

PR 218.2 subdivision (i) reporting requirements is based on Rule 218 subdivision (f). This subdivision retains the requirements for semi-annual reporting under paragraph (i)(1), reorganize the rule structure for clarification, specify the reporting period, and move the rule language related to recordkeeping to PR 218.2 subdivision (h). It is also proposed to retain the requirements for excess emission reporting under paragraph (i)(2) with minor word changes. In addition, the requirements for CEMS failure reporting under paragraph (i)(3) would be retained but the required information for the report would be specified.

New provisions are proposed under paragraphs (i)(4) and (i)(5). Contingent on PR 218.2 (e)(3), which allows a CEMS shutdown during a scheduled unit shutdown that lasts for a minimum 168 consecutive hours, the requirement under paragraph (i)(4) would ensure that the owner or operator of the CEMS notifies the Executive Officer and submits a written report. The requirement under paragraph (i)(5) for Relative Accuracy Test Audit Reporting is an existing requirement by Rule 2012 for RECLAIM CEMS but it is a new requirement for non-RECLAIM CEMS.

PR 218.2 subdivision (i) does not specify the reporting format. However, staff is planning to develop electronic reporting and enable owners or operators of the CEMS to submit the reports through the South Coast AQMD website using streamlined reporting forms. Staff will have further discussion with the stakeholders regarding this when the electronic reporting development work commences.

PR 218.2 (j) - POSTING OF WRITTEN APPROVAL OF CEMS CERTIFICATION

PR 218.2 subdivision (j) is based on Rule 218 subdivision (g). There is no change proposed to these requirements which requires that a CEMS certification letter for the CEMS is equivalent to a Permit to Operate for an CEMS unit. The certification letter will be posted in a manner prescribed in Rule 206, and any alternative posting manner would require the Executive Officer's approval.

PR 218.2 (k) - EXEMPTION

A South Coast AQMD source-specific rule or permit condition may define different CEMS requirements that are specified in PR 218.2, most commonly on the emissions data averaging method. Different CEMS requirements can also include other CEMS specifications. For example, Rule 1110.2 - Emissions from Gaseous- And Liquid-Fueled Engines defines different implementation dates and testing schedule. In these cases, the requirements defined by the source-

specific rule or permit condition will supersede the corresponding requirement specified in Rule 218.2, unless otherwise notified by the Executive Officer.

CHAPTER 3: PROPOSED RULE 218.3

PROPOSED RULE REQUIREMENTS

INTRODUCTION

PR 218.3 is based on Rule 218.1, with a focus on performance specifications. PR 218.3 incorporates: (1) revisions to the provisions retained from Rule 218.1; and (2) a new subdivision (i) on data handling requirements. Subdivision (i) provides specifications on the data handling method for emissions measured below 10 percent or above 95 percent of the upper span value, emission date averaging method, CEMS data availability requirements, and CEMS out-of-control period and alternative data acquisition.

PR 218.3 (a) - PURPOSE

This subdivision describes the purpose of PR 218.3 which is to establish performance specifications for certification and quality assurance and quality control programs for CEMS. Although Rule 218.1 does not explicitly describe its purpose, this subdivision expresses the same intended purpose of Rule 218.1.

PR 218.3 (b) - APPLICABILITY

PR 218.3 subdivision (b) is identical to PR 218.2 subdivision (b), which retains the concept of the applicability under Rule 218, but provides further clarification. Although Rule 218.1 does not have this subdivision, this was added to PR 218.3 consistent with most South Coast AQMD rules. See discussion for PR 218.2 subdivision (b) in this report for more details.

PR 218.3 (c) - DEFINITIONS

Table 3-1 lists the definitions that have been removed or added in PR 218.3, as compared to the list definitions in Rule 218.1. Definitions were removed because they either were no longer used in the rule or are now integrated into the provision. Definitions were added because it is a new terminology used in the rule or to provide additional clarification. There are also several definitions (e.g., DILUENT GAS and RELATIVE ACCURACY TEST AUDIT) that are being revised. The revisions are to provide clarity, but the meaning is the same. Equations that were incorporated in certain definitions have been moved to Table 3 of PR 218.3 which includes a list of equations used in PR 218.3.

Table 3-1: Comparison of PR 218.3 and Rule 218.1 Definitions that are Removed or Added

	Definitions
Definitions Removed	• CALIBRATION CHECK • CEMS AVAILABILITY PERCENTAGE • CERTIFIED GAS MIXTURE • CONTINUOUS MONITORING • FULL SPAN RANGE • MODIFICATION REQUIRING RECERTIFICATION • OPERATIONAL PERIOD • RELATIVE ACCURACY AUDIT (RAA) • ROUTINE MAINTENANCE • SYSTEM FAILURE • ZERO CHECK • ZERO DRIFT (ZD)
Definitions Added	• ACEMS • CEMS MODIFICATION • LOWEST VENDOR • GUARANTEED SPAN RANGE

	Definitions
	• MAINTENANCE • RECLAIM • RECLAIM FACILITY • FORMER RECLAIM FACILITY • SPAN RANGE • UPPER SPAN VALUE • UNIT • UNIT OPERATING HOUR

PR 218.3 (d) - IMPLEMENTATION SCHEDULE

PR 218.3 subdivision (d) is identical to PR 218.2 subdivision (d) for implementation schedule. A detailed description of the implementation schedule is provided under the discussion for PR 218.2 subdivision (d).

PR 218.3 (e) - PRE-CERTIFICATION REQUIREMENTS

Prior to the certification testing, the owner or operator of a CEMS must comply with the pre-certification requirements for CEMS location, sampling location, analyzer span range setting, and data acquisition and handling system configuration. The same requirements are specified in Rule 218.1 with regards to CEMS location and sampling location. However, PR 218.3 has new requirements proposed for the analyzer span range setting and data acquisition and handling system configuration.

CEMS Location and Sample Location – Paragraphs (e)(1) and (e)(2)

PR 218.3 paragraphs (e)(1) and (e)(2) address CEMS location and sample location. These requirements are based on Rule 218.1 subparagraphs (b)(1)(A) and (b)(1)(B). There are not any proposed changes to the requirements. However, the rule language has been rearranged to streamline the provisions to improve the clarity.

Span Range – Paragraph (e)(3)

Rules 218 and 218.1 use the term "full span range" defining it as "the full range of values or data display output that a monitor component is certified to measure". PR 218.2 and 218.3 replace the term "full span range" with "span range" and "upper span value" to avoid confusion between the range and value, without changing the meaning. "Span range" is defined as "the full range that is 0 to 100% of the data display output that a monitor component has been calibrated to measure", and "upper span value" is defined as "the upper range value of a span range that is 100% of the data display output that a monitor component has been calibrated to measure".

Span Ranges - Subparagraphs (e)(3)(A) and (e)(3)(B)

Similar to both Rule 218.1 and Rule 2012, PR 218.3 subparagraph (e)(3)(A) requires a span range to be set such that all data points fall within 10 to 95 percent of the upper span value for the measurement to be valid. Emissions falling below 10% of the upper span value is quantified with a specific procedure or reported at 10% of the upper span value.

Also similar to Rule 218.1, PR 218.3 subparagraph (e)(3)(B) requires the upper span value for contaminant monitors to be set between 150 to 200 percent of the allowed concentration limit, or at a value approved by the Executive Officer. Rule 2012 does not have this requirement, in that

RECLAIM CEMS are not used to demonstrate compliance with concentration limits as in a command-and-control regulatory structure.

Alternative Span Range - Subparagraph (e)(3)(C)

There are situations in which PR 218.3 requirements under subparagraphs (e)(3)(A) and (e)(3)(B) cannot be satisfied simultaneously. This situation will occur when the normal concentration of the air contaminant emitted is significantly less than the allowable concentration limit. For example, for a boiler with a Rule 1146 CO emission limit at 400 ppm could have CO emissions monitored between 10 to 20 ppm. For this situation, a multiple span range CO analyzer would be required.

When PR 218.3 (e)(3)(A) and (e)(3)(B) cannot be satisfied simultaneously, PR 218.3 subparagraph (e)(3)(C) exempts the owner or operator of the CEMS from subparagraph (e)(3)(A) and requires that the analyzer shall be set at a span range approved by the Executive Officer. That is, an additional span range would not be established and the monitored data would be allowed to fall at or below 10 percent of the upper span value. It is not critical to quantify data below 10% of the upper span value to show compliance status. The owner or operator of the CEMS can either quantify the data with a PR 218.3 Appendix A procedure or report the measurements at 10% of the span range.

Span Range for Low Concentration Limits - Subparagraph (e)(3)(D)

Stakeholders have expressed concerns on the current span range requirements when measuring very low concentration limit. For example, the most recent amendments to Rules 1135 and 1134 require 2 ppm or 2.5 ppm NOx limits for turbines. Setting a span range with this low concentration limit would require calibration gas at a value less than 4 ppm. These concerns include the availability of low concentration calibration gas, and the challenge to meet performance standards for an extremely low span range. To address the impacts resulting from low concentration emissions, PR 218.3 subparagraph (e)(3)(D) will allow an alternative span range to be set upon Executive Officer's approval. This approval will be based on: (1) unit concentration limit at or below 5 ppm; and (2) new span range not higher than 10 ppm.

For a CEMS air pollutant analyzer with multiple span ranges, the higher span range for a dual range analyzer or the highest span would capture spiking emissions. Spiking emissions most likely occur during startup, shutdown, or during other uncontrolled periods such as a unit malfunction. PR 218.3 subparagraph (e)(3)(E) will exempt the higher span range (if it is a dual range analyzer) or the highest span from span range requirements specified under subparagraphs (e)(3)(A) through (e)(3)(D), if the other analyzer span range(s) are set pursuant to subparagraphs (e)(3)(A) through (e)(3)(D).

Data Acquisition and Handling System – Paragraph (e)(4)

There are currently two major types of Data Acquisition and Handling System (DAHS) software: (1) DAHS software for complying with Rule 2011 and 2012 RECLAIM CEMS requirements, and (2) DAHS software for complying with R218 and 218.1 non-RECLAIM CEMS requirements.

Currently Rules 218 and 218.1 do not specify data handling but provide an option for the CEMS to reference Part 60 Appendix B and F for certification and QA/QC requirements. As a result, owners or operators of the non-RECLAIM CEMS utilize Part 60 for DAHS software.

Non-RECLAIM and former RECLAIM CEMS will be required to comply with PR 218.2 and 218.3 DAHS software requirements, according to the implementation schedule specified in paragraph (d). Subdivision (i) of PR 218.3 specifies the data handling requirements, addressing

data points below 10% or above 95% of the upper span value, emission data averaging, CEMS data availability, and CEMS out-of-control period.

The following PR 218.3 data handling requirements have already been incorporated in the existing DAHS software:

- ✓ Identifying and handling data points below 10% of span range by RECLAIM and non-RECLAIM CEMS DAHS;
- ✓ Identifying Data points above 95% of the upper span value by RECLAIM CEMS DAHS;
- ✓ Conducting emission data averaging as proposed by non-RECLAIM CEMS DAHS; and
- ✓ Specifying CEMS out-of-control period by RECLAIM CEMS DAHS

There are data handling requirements in PR 218.3 that are unique and not currently implemented by the South Coast AQMD or other regulatory agencies. These data handling requirements may require additional DAHS software reprogramming:

- ✓ For data points above 95% of the span range (spiking data), calculating the percent of spiking data on a quarterly basis, recording those data points as 95% of the span range, and identifying them as valid data; and
- ✓ Calculating CEMS data availability on a quarterly basis instead of an annual basis (as currently required) and excluding the newly defined exemption hours from the calculation.

The following data handling requirements in PR 218.3 may cause changes to existing CEMS DAHS software, however the change would be minimal as they have been implemented by other CEMS:

- ✓ Identifying Data points above 95% of span range by certain non-RECLAIM CEMS DAHS;
- ✓ Conducting emission data averaging as proposed for RECLAIM CEMS;
- ✓ Adjusting CEMS data availability calculation equation as proposed for RECLAIM CEMS. It should be noted that the misinterpretation at the previous equation has resulted in a data availability over 100 percent; and
- ✓ Embedding semi-annual report required by paragraph (h)(1) of PR 218.2 to be generated automatically. The permit holders and operators also have the option to prepare the report outside of DAHS without further change to the software.

Staff relied upon input from several CEMS and DAHS vendors in assessing feasibility and costs associated with the previous mentioned software changes.

These vendors support the emission data averaging method proposal in aligning with Part 60 and Part 75 and have informed staff that the data handling module ready to be incorporated into a CEMS DAHS. Vendors have accounted for spiking data and CEMS data availability and although the proposed requirements have not been previously implemented, the DAHS software can address these revisions. In addition, while most of the changes are general to all types of CEMS, the software change to incorporate the startup and shut down exempted hours in data availability calculation will be facility specific, requiring customization of the DAHS software. This additional work is due to the uniqueness of the startup and shut down exemption by the facility's permit condition. It is understood that the startup and shut down exemption from CEMS data availability calculation is desired by the owners and operators of the CEMS in maintaining the data availability under the 95% threshold.

CEMS data availability should not be significantly impacted by the new DAHS integration. However, as an extra precaution, facilities generally choose to conduct the integration during offline time when the unit is not generating emissions. Alternatively, the owner or operator of the CEMS may conduct the integration towards the end of the data availability calculation period (calendar quarter by PR 218.2/218.3) when the owner or operator of the CEMS is confident that the CEMS data availability would be maintained well above 95 percent.

Vendors have not expressed any concerns regarding their capability of implementing PR 218.2 and 218.3. They normally handle a large number of projects simultaneously and feel comfortable that they will be able to meet the demands that will occur due to the requirements specified in PR 218.2 and 218.3.

Operational Period – Paragraph (e)(5)
Similar to Rule 218.1 subparagraph (b)(1)(F), this provision requires that the CEMS operational period prior to any certification tests shall be minimum of 168 continuous hours.

PR 218.3 (f) - CERTIFICATION REQUIREMENTS AND PERFORMANCE SPECIFICATIONS FOR NEW OR MODIFIED CEMS
PR 218.3 subdivision (f) specifies the certification test requirements. Most of the revisions are designed to codify current practices for certification and performance specifications for new or modified CEMS to ensure quality performance of the CEMS. For each CEMS application, the South Coast AQMD staff works closely with the owner or operator of the CEMS to provide guidance to maximize the CEMS performance. It should be noted that PR 218.2 and 218.3 do not provide specifications on mass emission monitoring. Therefore, the CEMS in need of a bias test for adjusting mass emission calculation will continue to be subject to the applicable requirements specified in Rules 2011 and 2012.

PR 218.3 does not change current test procedures, but there are revisions to the performance specifications which were established several decades ago. With the progression of emission control technologies, substantially lower emission rates are being achieved as compared to the past two decades.

During the Working Group Meetings, stakeholders expressed concerns in achieving the existing specifications for the 7-day calibration drift and linearity error tests for CEMS monitoring units with low emission limits. With these lower unit emission limits the NOx and CO *de minimis* standards should be revised. The proposed rule language also harmonizes requirements with Part 75 and provides more clarification for existing requirements.

Seven-day Calibration Drift Test – Paragraph (f)(1)
The seven-day calibration drift test under paragraph (f)(1) is based on Rule 218.1 subparagraph (b)(2)(A). This test is comprised of a series of eight calibration error tests during seven consecutive CEMS operating days, with the test performed once each day, and at the beginning and end of this period. No manual or automatic adjustment is allowed during each calibration error test before the high scale calibration is completed or during any part of this seven-day calibration drift test.

The calibration error for any of the calibration error tests, must not exceed 2.5 percent of the upper span value for pollutant and dilution gas analyzers and 3.0 percent of the upper span value for flow monitors. The equation for the calibration error test is specified as Equation 1 in Table 3.

Several stakeholders have commented that it is challenging to meet the 2.5 percent standard with an upper span value at or below 10 ppm. Stakeholders commented that the 2.5 percent standard is more stringent than the 5.0 percent standard for the calibration error test conducted as part of the ongoing QA/QC, which is also known as daily calibration.

Staff reviewed 7-day calibration drift test reports for NOx emission levels ranging from 2 ppm to 50 ppm, and did not find any difficulty in the CEMS to measure lower emissions to meet the 2.5 percent standard. Staff requested but did not receive reports from stakeholders showing failing results. Stakeholders recommended, and staff agreed, that the cutoff level for determining the alternative (*de minimis*) standard should be 10 ppm of upper span value for NOx analyzers.

At the August 1, 2019 Working Group Meeting staff recommended 0.3 ppm as an alternative standard for 7-day calibration drift test. This is the difference between the CEMS response to a calibration gas and its known value. The recommendation was based on the stakeholders' suggested 10 ppm NOx upper span value as the cutoff level. The calculated difference of calibration gas value and CEMS response at this level with the existing standard of 2.5 percent of the upper span value is $|C - A| = SR \times CE = 10 \times 2.5\% = 0.25\ ppm$. The alternative standard is the difference of 0.25 ppm, rounded to 0.3 ppm. However, stakeholders commented that it is still difficult to meet the recommended 0.3 ppm alternative standard, and some other stakeholders commented that there should be data to support the recommendation.

At the September 12, 2019 Working Group meeting staff withdrew the previously recommended alternative standard (0.3 ppm). If stakeholders had provided supporting data showing the inability to comply with the standard, then staff would have considered an alternative proposal. However, no such data was provided. In the absence of such data and subsequent discussions among staff, it was concluded that such claims of compliance difficulties lacked credibility and that the existing standard would be maintained. It should be noted that the existing 7-day calibration drift standard (2.5% of the span range) is universally referenced by the US EPA and other regulatory agencies.

Analyzer Enclosure – Paragraph (f)(2)
PR 218.3 paragraph (f)(2) specifies the requirements for the analyzer enclosure. These requirements are based on Rule 218.1 subparagraph (b)(2)(B). The rule language was reorganized to improve the clarity and streamline provisions. A requirement was added that requires the owner or operator of the CEMS to provide corrective actions within 8 hours of receiving the audible alert when temperature drift exceeds the manufacturer's recommended specifications for the analyzer enclosure.

Performance Standards for Relative Accuracy Test Audit (RATA) – Paragraph (f)(3)
PR 218.3 subparagraph (f)(3) will maintain the following relative accuracy standards that are based on Rule 218.1 subparagraph (b)(2)(C):

- Ten (10) percent for O2/CO2 concentration;
- Twenty (20) percent for pollutant concentration or mass emission; and
- Fifteen (15) percent for stack flow.

In addition, the following changes are incorporated in PR 218.3 paragraph (f)(3):

- Specifies the calculations for *de minimis* standards by Equations 5, 6, and 7 in Table 3 of PR 218.3;

- Maintains Rule 218.1 *de minimis* standards, but adds a *de minimis* standard of 1.0 percent for CO2 and reduces the current *de minimis* standard from 1.0 ppm to 0.5 ppm for NOx concentration;
- If the measured O2/CO2 concentration is at or below 15 percent, allow a relative accuracy standard of 20 percent for O2/CO2 concentration with Executive Officer's approval; and
- If the CO emission limit is lower than 2.0 ppm, allow the *de minimi*s standard for CO concentration as the unit's CO emission limit.

The *de minimis* for the NOx concentration is calculated as |d|+|cc|[1]. Under Rule 218.1, the standard is 1.0 ppm. This standard is no longer appropriate when the NOx emission limit is very low (e.g., 2 ppm for a combined cycle turbine). A review of 189 RATA sets of results that the South Coast AQMD received over the past two years for turbines, found that 171 sets of RATA tests have *de minimis* at or below 0.5 ppm. For the remaining 18 RATA tests, 11 tests were for CEMS measuring NOx emissions above 22 ppm which are not considered low emitters that are in need of a *de minimis* standard. The remaining 7 tests were failed tests. Based on this analysis, it is recommended to lower the NOx *de minimis* standard from 1.0 ppm to 0.5 for units with NOx emission limit at or below 5 ppm.

The relative accuracy standard in Rule 218.1 is 10 percent for O2/CO2 concentration, as compared to 20 percent in both Rule 2012 and Part 60 Appendices B and F. The majority of the CEMS that will be subject to PR 218.2 and 218.3 currently reference Rule 2012 and Part 60 Appendices B and F for performance standards. Relative accuracy testing becomes more challenging when the measured diluent gas concentration is low. Therefore, it is proposed to maintain the 10 percent relative accuracy standard for O2/CO2 at higher concentrations. However, when the diluent gas concentration is at or below 15 percent, the owner or operator of the CEMS would be allowed to use a 20 percent relative accuracy standard for O2/CO2 concentration.

Currently, the *de minimis* standard in Rule 218.1 is 2.0 ppm for CO. As previously mentioned, the South Coast AQMD has recently permitted several units with a CO emission limit at 1.5 ppm. PR 218.3 sets the *de minimis* for CO concentrations as the unit's emission limit when the limit is lower than 2.0 ppm. For example, if the CO emission limit of a unit is 1.5 ppm, a *de minimis* standard of 1.5 ppm for CO concentration would apply.

Other Tests Required for the Relative Accuracy Test Audits – Paragraph (f)(4)

PR 218.3 paragraph (f)(4) is based on Rule 218.1 paragraph (b)(3), but no longer requires an interference check that is not generally implemented in practice. Paragraph (f)(4) has added a requirement for a NOx converter efficiency test and sampling system bias check. Although a NOx converter efficiency test is required by Rule 218.1 (d)(5) there is no specification on when this test should be conducted. In practice, the owners or operators of the CEMS have being instructed to conduct these tests along with each relative accuracy test audit as they are considered essential to ensure CEMS performance.

There are no changes to concentration stratification requirements. The technical details provided under Rule 218.1 subparagraph (b)(3)(C) are now presented in Attachment B to PR 218.3.

[1] d = average of differences between the NOx concentration measurement system reading and the corresponding reference method in ppmv; cc = confidence coefficient as determined by the equations in Section 8 of 40 CFR Part 60, Appendix B, Performance Specification

Linearity Error Test – Subparagraph (f)(4)(F)

With the advancement of some technologies, not only NOx emissions are lowering, but CO emissions are also approaching lower levels for certain types of equipment. Based on existing permits for turbines, CO emission limits for several new installations are at 1.5 ppm. During the CEMS certification testing for these units, operators have found it difficult to pass the linearity test.

Passing the linearity check for low emitting sources is more challenging for CO as compared to other pollutants. The detection sensitivity for CO analyzers are not as robust as NOx analyzers. Moreover, Rule 218.1 linearity check standard is more stringent than the standards for some of the other tests. In comparing the linearity check with calibration error and RATA test, CEMS subject to Rule 218.1 is more likely to fail the linearity check than the calibration error and RATA test. The reason for this high failure rate is that the calculation equation for calibration error test use the upper span value (vs. calibration gas reference value for linearity check) as the denominator, which is a (higher value as a denominator than using calibration gas reference value. For the RATA test, there is an additional option for low emitters to refer to the *de minimis* standards.

The current requirement in Rule 218.1 (a)(15) defines linearity as a percentage, by calculating the difference between the mean response and reference value with respect to the reference value. For an analyzer with a 5 ppm upper span value, the reference value would be 1 to 1.5 ppm for the low level check (20-30% of the span). This value is so low that a minor variation can result in a highly qualified analyzer to fail.

Based on this information, subparagraph (f)(4)(F) proposes to incorporate a new calculation equation (i.e., Equation 3a in Table 3 of PR 218.3) for the linearity error test. For an air pollutant analyzer with the upper span value at or below 5 ppm, the linearity error standard should be defined as 5.0 percent of the upper span value as calculated by Equation 3a in Table 3. For an air pollutant analyzer with the upper span value higher than 5 ppm, the linearity error standard remains unchanged as 5.0 percent of the calibration gas concentration reference value as calculated by Equation 3 in Table 3.

Alternative Continuous Emission Monitoring System (ACEMS) – Paragraph (f)(5)

ACEMS is an emissions monitoring system that does not directly monitor emissions like a CEMS. Instead, an ACEMS utilizes process operating parameters and sensor inputs to calculate emissions via modeling.

ACEMS is also known as a predictive emissions monitoring system (PEMS) based on U.S. EPA guidelines on testing requirements for assessing the acceptability of PEMS. PEMS specifications can be found in U.S. EPA 40 CFR Part 60 Performance Specification 16 and Part 75 Subpart E. With regards to South Coast AQMD rules, Rules 218 and 218.1 do not regulate ACEMS. Rule 2012 Chapter 2 requires the ACEMS to be certified according to the criteria specified in 40 CFR Part 75 Subpart E.

Currently, in the South Coast AQMD there are eight ACEMS certified through Rule 2012. When the facilities with these ACEMS exit from RECLAIM, these ACEMS would be subject to PR 218.2 and 218.3. On this basis, staff proposes to incorporate the same requirements specified in Rule 2012 Chapter 2 for ACEMS into PR 218.2 and 218.3.

For the ongoing QA/QC, an ACEMS differs from a CEMS with regards to the daily assessment requirement. The daily assessment for an ACEMS is a check on the modeling software to verify

that the emission values generated by the ACEMS modeling software are consistent as certified. This assessment is generated on the software level, and do not require calibration gas injection. Additionally, the owner or operator of an ACEMS would need to conduct periodical calibration to the ACEMS sensors according to the schedules and procedures recommended by the manufacturers.

PR 218.3 (g) - QUALITY ASSURANCE TESTING REQUIREMENTS AND SPECIFICATIONS

Calibration Error Paragraph – (g)(1)

During the Working Group Meetings, there was a discussion on the frequency in which the calibration error should be conducted as part of ongoing QA/QC, as well as requested clarifications on the required time intervals between subsequent calibration error tests.

With regards to calibration error for pollutant and diluent analyzers, Rule 218.1 clause (b)(4)(A) requires one test each day "as close to 24-hour intervals as practicable", while Rule 2012 requires two adjacent tests "to the extent practicable, approximately 24 hours apart". On the other hand, Part 75 specifies the test to be conducted every 24 hours with a 2-hour grace period, which means the adjacent two tests should not be more than 26 hours apart. Stakeholders had commented that the existing provisions in Rule 218.1 and Rule 2012 are vague and asked if there could be consideration for a grace period.

Staff agreed that the existing rule language, "as close to 24-hour intervals as practicable" or "approximately 24 hours apart", is vague. Therefore, PR 218.3 includes a 2-hour grace period which will allow up to 26 hours for the owner or operator of the CEMS to pass a calibration error test. Staff also proposes a 4-hour grace period at unit restart after one or more unit non-operation days.

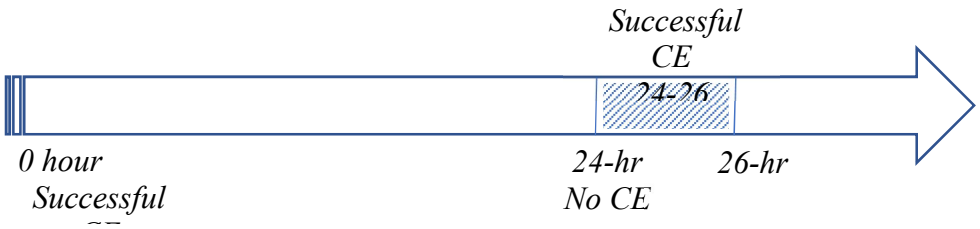
With regards to monitoring data validity as related to this test, it is proposed that each successful 24-hour calibration error test validates up to 26 hours. However, any failed test within the 26-hour window would invalidate the subsequent data until the next successful test.

To clarify the concept, staff is providing the following two examples in Figure 3-1 to help explain the scenarios under this new proposal:

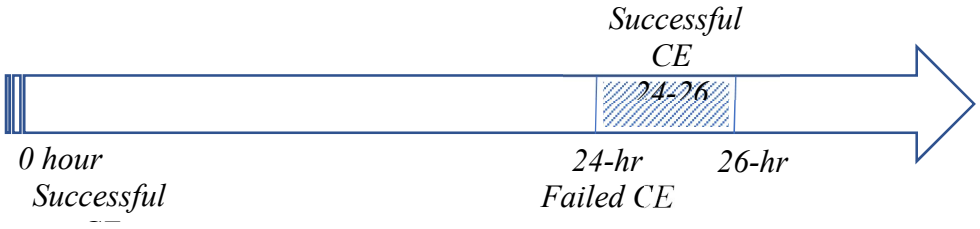
Figure 3-1: Examples for Calibration Error Test Grace Period and Data Validity

- Example 1

Scenario	A calibration error test, set in the software to be conducted automatically every 24 hours at a defined time, failed to be conducted at the defined time of a day due to an unknown reason. Subsequently, the owner or operator of the CEMS conducted and passed a calibration error which was within the 26-hour window since last successful calibration.

Pictorial Depiction of the Scenario	
Compliance Determination	The 24-hour calibration error test requirement was satisfied and there was no CEMS out-of-control period.

- Example 2:

Scenario	A calibration error test was conducted at the defined time of the day but failed because it was not meeting the calibration error standard. The owner or operator of the CEMS recognized the failed test and then conducted another test with passing result. This successful test was within the 26-hour window since the last successful calibration.
Pictorial Depiction of the Scenario	
Compliance Determination	The calibration error test requirement was satisfied. However, there was a CEMS out-of-control period, which began at the hour of the failed test and ends at the hour of the subsequent successful test.

With regards to calibration error for a stack flow monitor, Rule 218.1 specifies the calibration error standard, but does not specify how the test should be conducted. PR 218.3 clause (g)(1)(A)(ii) provides the manner in which the test is to be conducted in applying existing test specifications in Rule 2012 for RECLAIM CEMS stack flow monitors. The calibration error test for a stack flow monitor would be conducted by introducing a zero-reference value to the transducer or transmitter for every 14-day period.

Relative Accuracy Testing Audit (RATA) – Paragraph (g)(2)

As part of the ongoing QA/QC requirements, Rule 218.1 subparagraph (b)(4)(C) requires a RATA to be conducted once every 12 months, and no later than the end of the calendar quarter in which the date of the original certification test was performed. A concern was raised that it is not practical to refer to the original certification test date. To address this concern, PR 218.3 (g)(2) requires this test to be performed annually and no later than the end of the calendar quarter of the previous relative accuracy test. This proposed rule language no longer references the original certification test date. In addition, the RATA will be conducted in the as-found unit operating condition.

Stakeholders also requested to align PR 218.3 with the Rule 2012 for scheduling a RATA after a unit restart. As a result, PR 218.3 includes a provision that if the unit for which the CEMS is certified to monitor is not operating or generating emissions when a RATA is due, then the RATA would be allowed be performed within 14 days after the unit is restarted.

Cylinder Gas Audit (CGA) for Pollutant and Diluent Gas Analyzers – Paragraph (g)(3)
Currently, Rule 218.1 (b)(4)(D) requires a Cylinder Gas Audit (CGA), a provision that is not required in Rule 2012 for RECLAIM CEMS. However, Rule 2011 and 2012 requires a more frequent RATA and a RATA is considered more stringent than a CGA. It is not suggested to change the CGA test method and frequency required under Rule 218.1. PR 218.3 includes language to clarify that the linearity error check in compliance with 40 CFR Part 75 will be allowed in lieu of a CGA. PR 218.3 will not require a CGA for the quarter when the accumulative unit operating hours are no more than 168 hours.

Daily Check and Periodic Calibration for ACEMS – Paragraph (g)(4)
Daily checks and periodic calibration of ACEMS are currently not required under Rule 218.1 or Rules 2011 or 2012, but are conducted in practice. Unlike a regular CEMS that directly measures emissions, an ACEMS calculates emissions by a modeled equation using measured equipment operating parameters. As a result, instead of requiring a daily calibration specified in paragraph (g)(1), daily check and periodic calibration to the sensors are recommended by the ACEMS vendor and approved as part of the QA/QC plan by the Executive Officer.

Calibration and Checks for Stack Flow Monitor – Paragraph (g)(5)
Currently Rule 218.1 does not specify calibration error and other checks for the stack flow monitor. The proposed requirements under PR 218.3 paragraph (g)(5) are based on the existing requirements in Rules 2011 and 2012 for RECLAIM CEMS stack flow monitor.

Maintenance for Fuel Flow Meter – Paragraph (g)(6)
Within the context of this rule, a fuel flow measuring device is utilized for calculating stack flow in conjunction with a F-factor. Paragraph (g)(6) of PR 218.3 are not specified in Rule 218.1 or Rules 2011 and 2012, but are currently written in the CEMS QA/QC plan and conducted in practice.

PR 218.3 (h) - CALIBRATION GAS AND ZERO GAS

Calibration Gas – Paragraph (h)(1)
PR 218.2 and 218.3 requires that calibration gas will be utilized for various tests and procedures, such as system bias, linearity error check, calibration error test, and cylinder gas audit. The required pollutant concentration of the calibration gas corresponds to the CEMS analyzer span range (e.g., 0-20, and 80-100 percent of the upper span value for calibration error test). Since the emission limit of the unit is a determining factor for the CEMS span range, a lower emission limit means a lower concentration calibration gas would be required.

Stakeholders expressed a concern on the availability of very low concentration calibration gas. This concern has been raised because of the lower emission limits required by the South Coast AQMD rules, regulations, or permit conditions. For example, a turbine with a recently regulated NOx emission limit of 2 or 2.5 ppm would have its CEMS NOx analyzer's span range set at 5.0 ppm. For the calibration error test performed at the low range (0-20 percent of span range), calibration gas with NOx at 1.0 ppm or lower would be needed (i.e., 5.0 x 20% = 1.0 ppm). Calibration gas with NOx at 1.0 ppm is available but more commonly in a lower grade (e.g., a

research gas mix instead of a standard reference material) that is not permitted under Rules 218 and 218.1.

This concern is resolved in the application of two approaches. The first approach is to allow a higher span range for the CEMS monitoring a unit with low emission limit (e.g., at or below 5 ppm) upon Executive Officer's approval. This approach is addressed under the provision for span range. For a turbine with NOx emission limit at 2 or 2.5 ppm, the span range would be allowed to be set up to 10 ppm upon approval.

The second approach provides more certification testing options for calibration gas. This approach was based on staff's review of certification programs provided in other rules and regulations. The list of options for calibration gases under the specific rule or regulation is presented in Table 3-2.

Table 3-2: Required Certification Programs for Calibration Gas

Required Certification Programs for Calibration Gas			
Rule 2012	**40 CFR Part 60**	**40 CFR Part 75**	**Rule 218.1 (d)(1)**
• EPA Protocol gas • National Institute of Standards and Technology (NIST)/EPA approved standard reference materials (SRM) • Certified reference materials (CRM)	• EPA protocol gas	• A standard reference material (SRM); • A standard reference material-equivalent compressed gas primary reference material; • A NIST traceable reference material; • NIST/EPA-approved certified reference materials (CRM); • A gas manufacturer's intermediate standard; • An EPA protocol gas; • Zero air material; or • A research gas mixture	• EPA protocol gas • If not covered by the EPA protocol, submit the gas vendors alternative certification protocol for the specific compound or compounds upon the approval of EO • Compressed and/or filtered air, such as instrument air, may also be used in lieu of oxygen span gas under certain conditions

Under the PR 218.3 paragraph (h)(1) for calibration gas requirements, several options from 40 CFR Part 75 have been added. The owner or operator of the CEMS would be able to utilize the calibration gas identified in the following:

- ✓ EPA protocol gas
- ✓ A standard reference material;
- ✓ A standard reference material-equivalent compressed gas primary reference material;
- ✓ NIST traceable reference material;
- ✓ NIST/EPA-approved certified reference materials;
- ✓ If not covered by any of above programs, upon the approval of EO, facility may use NIST research gas mixture, gas manufacturer's intermediate standard, or gas manufacturer's alternative certification protocol for the specific compound or compounds

- ✓ Compressed and/or filtered air, such as instrument air, may also be used in lieu of oxygen span gas under certain conditions

Zero Gas – Paragraph (h)(2)
PR 218.3 paragraph (h)(2) addresses zero gas based on the requirements set forth in Rule 218.1 paragraph (d)(2). Zero gas can be used for the quality assurance test when the low range 0-20% span calibration gas is required. Normally, owners or operators of the CEMS use nitrogen gas as zero gas, which meets the zero gas definition and requirements for both gaseous air contaminant analyzers and diluent analyzers. There are no issues identified with the zero gas definition and requirement, and thus there are no proposed changes from the Rule 218.1 (d)(2) paragraph (d)(2) requirements.

PR 218.3 (i) - DATA HANDLING

Data Points Below 10 percent of the Upper Span Value – Paragraph (i)(1)
Requirements under paragraph (i)(1) remain unchanged from the existing requirements under Rule 218.1 clause (b)(1)(C)(v). Data below 10 percent of the upper span value can be reported at the 10 percent of the upper span value. An exception would be a multiple span range analyzer when the data is above the 95 percent, or within 10 to 95 percent of the upper span value of another span range.

Data Points Above 95 percent of the Span Range – Paragraph (i)(2)
During normal operation conditions, CEMS monitored data are expected to be within 10 to 95 percent of the upper span value. Rule 218.1(b)(1)(C)(vi) specifies that:

> "*Should any data points fall above 95 percent of FSR, the value shall be invalid for quantification and the CEMS shall be considered unavailable for the purposes of determining CEMS availability percentage. All excursions above 95 percent of FSR and the duration of these excursions shall be reported in the CEMS summary report as prescribed under Rule 218(f).*"

This requirement is consistent with the requirement in Rule 2012 for NOx CEMS of RECLAIM facilities.

In complying with this requirement under Rule 218.1(b)(1)(C)(vi), one-minute data points that are above 95% of the upper span value cannot be used during the calculation of data averaging to 15-minute, hourly, or any other intervals. Likewise, 15-minute or hourly data above 95% of the upper span value cannot be used for any subsequent calculation or compliance demonstration.

Concerns have been raised whenever spiking data points are discarded for emission calculation or compliance demonstration. This not only leads to data loss, but also underestimating averaged emissions. Additionally, it is difficult to estimate excess emissions, especially for longer periods of data spiking.

With respect to data analysis, staff reached out to stakeholders and collected one-minute data for CEMS monitoring various emission sources. Staff analyzed: (1) one-minute data for seven heaters using refinery gas for a one week period, (2) one-minute data for four engines using landfill gas for seven individual days when excess emissions were reported, and (3) three years of 1-minute spiking data summary for three engines that have frequent startups (100 to 200 startups a year). Most of the emission spiking incidents occurred at the time of startup and shutdown. There is a possibility of data spiking at load change, fuel change, or abnormal operating conditions. However,

these conditions were more likely to result in high emissions but were less likely to create spikes over 95% of the upper span value. With regards to data spiking frequency, less than 1 percent of one-minute data spiked over 95% of the upper span value for all the days being analyzed except for two days. For most operations, it is unlikely the one-minute spiking percentage over a calendar quarter basis would be over 1 percent. Given that 1 percent of operation equates to only 14.4 minute-periods, it is reasonably certain that 1 percent spiking emissions would not have a significant effect on the overall NOx emissions.

Based on the above mentioned findings, PR 218.3 paragraph (i)(2) proposes to report the one-minute spiking data at 95% of the upper span value, and consider this data as valid for calculations leading to quantification for compliance purposes and for CEMS data availability.

PR 218.3 paragraph (i)(2) also proposes to incorporate a backstop measure to prevent frequent occurrence of data spiking over 95% of the upper span value. It is also recommended that the CEMS data acquisition and handling system be set such that it flags all spiking data points (one-minute, 15-minute, or hourly), and calculates a spiking data percentage for each calendar quarter using the following equation:

Spiking Data Percentage = F/T x 100%

Where:

F is the amount of flagged one-minute data points recorded pursuant to clause (i)(2)(C)(i) for the calendar quarter during unit operation, excluding CEMS out-of-control period and the period when the unit is not subject to any emission limit; and

T is the total amount of one-minute data points recorded for the calendar quarter during unit operation, excluding CEMS out-of-control period and the period when the unit is not subject to any emission limit.

When the percentage exceeds 1% for any two calendar quarters (not necessarily sequential) in a consecutive four calendar quarter period, another span range (a higher span) would be needed. The owner or operator of a CEMS would be required to maintain 1-minute emission data for at least two years to demonstrate compliance with this proposal, according to the recordkeeping requirement specified under PR 218.2 subdivision (h).

Data Validity for Measurements Below 10 Percent or Above 95 Percent of the Upper Span Value – Paragraph (i)(3)

Paragraph (i)(3) specifies data validity for measurements below 10 percent or above 95 percent of the upper span value. Data below 10 percent of the upper span value have been considered valid under Rule 218.1 and Rule 2012 and will continue to be considered valid under paragraph (i)(3). Data above 95 percent of the upper span value (spiking data) have been considered invalid under Rule 2012 (not specified in Rule 218.1). However, as discussed above for PR 218.3 (i)(2), those spiking data would be defined as valid data under paragraph (i)(3) if all quality assurance requirements are met.

Emission Data Averaging – Paragraph (i)(4)

For the hourly average calculation, the owners or operators of CEMS in the South Coast AQMD primarily adhere to one of the two methods. For SOx and NOx RECLAIM CEMS, the method is specified in Rule 2011 or Rule 2012, respectively. Non-RECLAIM CEMS are currently subject to

the requirements specified in Rules 218 and 218.1. Because Rules 218 and 218.1 do not have a provision specifying an emission data averaging method, the owners and operators of non-RECLAIM CEMS utilize the emission data averaging method specified in Part 60. Since Part 60 is aligned with Part 75 for EPA's Acid Rain Program on emission data averaging method, a CEMS that references Part 60 method essentially adhere to Part 75 method.

Staff compared the hourly average calculation methods by Part 60/Part 75 and Rule 2012 and have identified the differences as shown in Table 3-3:

Table 3-3: Comparing the hourly average calculation methods by Part 60 and Rule 2012

Requirement	Part 60/Part 75	Rule 2012
Hourly Average	Directly calculated from all valid one-minute data of the hour	• Each quadrant hour average is generated from all valid one-minute data of the quadrant hour; • The hourly average is calculated from all valid quadrant hour averages of the hour
Unit Operating Hour	• Including both full operating hours and partial operating hours; • In a partial operating hour, CEMS monitoring and recording is not required for the quadrant hour when the unit is not operating	• No concept of unit operating hour; • Requiring CEMS monitoring and recording at all time disregarding the unit operation status
Maintenance or QAQC Hours	• Requiring a minimum of one or two valid data points separated by more than 15 minutes depending on whether it is one or more than one quadrant hour with unit operation; • No limit on how many this type of hours allowed	• Requiring two valid quadrant hours which means at a minimum of two valid data points separated by more than 15 minutes; • Limiting a maximum of four maintenance or QAQC hours

PR 218.3 (i)(4) proposes to apply the Part 60/Part 75 emission data averaging method. This data handling method is widely used by other regulatory agencies. Based on discussions with the stakeholders, it is understood that the CEMS or Data Acquisition and Handling System (DAHS) vendors can readily make the modification to the RECLAIM CEMS that have applied a different data averaging method.

The Part 60/Part 75 emission data averaging method specifies how an hourly emission average should be determined. The emission limit for a source is typically based on the hourly emission average. There are some source specific rules that require demonstrating compliance for a different emission average time interval (e.g., 15-minutes in R1146).

Regarding emission averaging for a time interval other than 1-hour, PR218.3 (i)(4) proposes:

- A 15-minute interval, when emission data could be averaged for each 15-minute quadrant of the hour in which the unit operates, utilizing all valid data points; and
- An interval greater than 1-hour, when emission data could be averaged for the required interval utilizing hourly averages computed in accordance with PR 218.3 (i)(3).

Due to the uniqueness of various regulated sources and their operations, the emission averaging intervals and methods of other South Coast AQMD rules and permit conditions may differ from PR218.3 (i)(4) requirements. For these situations, with the Executive Officer's approval, the comparable requirement in the other rule or the permit condition would supersede the equivalent requirement of PR218.3 (i)(3), pursuant to the exemption provision under PR 218.3 (l).

CEMS Data Availability – Paragraph (i)(5)

CEMS data availability has been discussed in several Working Group meetings. Several aspects of this key topic include the calculation equation, hours to exclude, period covered for the calculation, and the 95 percent data availability threshold.

Rule 218.1 provides specifications on CEMS data availability in paragraph (a)(6) and subparagraph (b)(4)(E). Paragraph (a)(6) defines CEMS data availability as a percentage calculated as the ratio of the total unit operating hours for which the CEMS provided quality-assured data, to the source total unit operating hours during a specified period. These hours exclude periods of calibration, maintenance, repair, or audit, up to a maximum of 40 hours per month. Subparagraph (b)(4)(E) specifies that the Executive Officer may require recertification of the CEMS if the annual availability percentage falls below 95 percent. Annual CEMS availability percentage calculations will be based on the year ending on the last day of the calendar quarter in which the CEMS was originally certified.

With regards to the period covered for the calculation, both Rule 218.1 and Rule 2012 are based on an annual period with a difference on how often the annual data availability is calculated. Rule 218.1 specifies a block annual period with the data availability calculated once every year. Rule 2012 requires a rolling annual period with the data availability calculated every day. Stakeholders commented that the rolling annual data availability could penalize the owner or operator of the CEMS beyond the data loss period.

Based on these stakeholder comments and follow-up staff analysis, it is proposed that CEMS data availability be computed for each calendar quarter. This approach aligns with the accompanying proposed requirements when the data availability falls below 95 percent for one or two consecutive quarters. In addition, this proposal addresses stakeholders' concern that low data availability of the previous calendar quarter would not affect data availability of any subsequent calendar quarter. It is also recognized that there are existing requirements by other regulatory agencies requiring various time periods (e.g., monthly or quarterly) covered for the CEMS data availability computation.[2]

[2] For example:

- ❖ Continuous Emission Monitoring System (CEMS) Code. Alberta Environmental Protection, May 1998.
- ❖ Technical Manual 1005: Guidelines for Continuous Emissions Monitoring Systems (CEMS) and Continuous Opacity Monitoring Systems (COMS). Air Quality Permitting Program Bureau of Technical Services, July 2001.

For the CEMS data availability calculation, Rule 2012 specifies the following equation:

W = Y/Z x 100%, where:

- W means the percent annual monitor availability;
- Y means the total operating hours for which the monitor provided quality-assured data during the period from the date the NOx pollutant concentration monitoring analyzer was provisionally certified or 365 days prior to the current date (not counting the current day), whichever date is later, to the day previous to the current date; and
- Z means the total operating hours of the affected piece of equipment during the period from the date the NOx pollutant concentration monitoring analyzer was provisionally certified or 365 days prior to the current date (not counting the current day), whichever date is later, to the day previous to the current date.

The concern in applying this calculation is that some RECLAIM facility owners and operators of CEMS interpret the variable "Y" as operating hours of the CEMS instead of the unit (emission source). In doing so they count in "Y" the hours when the unit does not operate but the CEMS is monitoring zero emissions. As a result, RECLAIM facilities may have calculated data availability greater than 100 percent. Some CEMS are also in the EPA Acid Rain Program and subject to 40 CFR Part 75, which provides a detailed procedure in determining CEMS data availability. In the Part 75 calculation, the parameter equivalent to "Y" is defined as total unit (emission source) operating hours for which quality-assured data were recorded. Staff agrees that this is the correct interpretation of this parameter. Consequently, the "Y" value should be the operation hours of the emission source, instead of the CEMS. With this interpretation the CEMS data availability cannot be greater than 100 percent.

On this basis, PR 218.3 paragraph (5) proposes to specify a modified equation for PR 218.3 CEMS data availability calculation. That is, the same equation (W = Y/Z x 100%) will be utilized, except that "Y" means the total unit operating hours for which the monitor provided quality-assured data during the calendar quarter.

It is also proposed to exclude certain hours from the CEMS data availability calculation. The proposed hours are (1) startup and shutdown hours that are not subject to any emission limit according to the permit condition or source specific rule; (2) CEMS maintenance, repair, or audit for up to 30 hours for each calendar quarter, and; (3) a unit Breakdown that meets all Breakdown provisions of Rule 430 and is deemed as a valid Breakdown when the emission limit is inapplicable. Rule 218.1 provides up to 40 hours per month for calibration, maintenance, repair, or audit. The proposed 30 hours for each calendar quarter is equivalent to the number of hours exempted under Rule 218.1. A daily calibration hour would be a valid maintenance hour under the proposal for the hourly emission average method.

In Rule 218.1 a CEMS recertification would be required if the annual availability percentage falls below 95 percent. A CEMS data availability threshold is a critical safeguard for CEMS performance in complying with concentration limits in a command and control regulatory structure. Although Rule 2012 does not define a data availability threshold the rule does require the penalizing Missing Data Procedures be applied to mass emission determinations. A lower CEMS data availability would entail a penalty of reporting an overestimated mass emission according to these procedures, encouraging the owner or operator of the CEMS to maintain a high CEMS data availability.

Rule 218.1 specifies a 95% data availability threshold on an annual basis. On this basis, it is proposed to maintain the 95 percent data availability threshold, on a calendar quarter basis. If CEMS data availability of any analyzer falls below this 95 percent threshold for one calendar quarter or two consecutive calendar quarters, a Relatively Accuracy Test Audit (RATA), or temporary alternative monitoring and CEMS recertification would be required. It is also proposed that the QA/QC plan would need to be revised whenever the data availability falls below 95 percent. Under PR 218.3, the CEMS data availability is determined and assessed for meeting the threshold on a calendar quarter basis, instead of a block annual or rolling annual basis under Rule 218.1 or Rule 2012. This proposed rule requirements will encourage the owner or operator of the CEMS to evaluate the system more frequently and take corrective action promptly for any CEMS deviation. Moreover, the CEMS data availability within a quarter would not be impacted by a poor CEMS performance with low data availability of any previous quarter.

CEMS Out-of-Control Period and Alternative Data acquisition – Paragraph (i)(6)
A CEMS out-of-control period occurs when the owner or operator of the CEMS fails to meet any QA/QC test standard or fails to conduct the test as scheduled. The required QA/QC tests, including the test frequency and standards, are specified in PR 218.3 subdivision (g). The CEMS out-of-control period begins with the hour of completion of the failed test, or the hour when it becomes overdue, and ends with the hour of completion of a passing test.

CEMS data generated during the CEMS out-of-control period are not quality assured data, and thus deemed invalid data. This data cannot be utilized in any compliance demonstration or subsequent emission calculation. In addition, the hour(s) during the CEMS out-of-control period would be considered unavailable. As a result, the CEMS data availability would be adversely impacted, unless the unit is not operating or generating any emissions during the entire CEMS out-of-control period.

Various options of alternative data acquisition have been identified. These options minimize data loss or an impact on the CEMS data availability. While Rule 218.1 does not provide no options of any alternative data acquisition options, Rule 2012 Chapter 2 (2005 amendment) and some other rules (e.g., previous revision of Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities (1991 amendment)) have provided several data acquisition options. These options include:

- Load or process curves that the owner or operator of the CEMS developed and approved by the Executive Officer;
- Collecting twelve South Coast AQMD Method 7.1 samples over a 1-hour period;
- South Coast AQMD Method 100.1 -Instrumental Analyzer Procedures for Continuous Gaseous Emission Sampling; or
- A certified standby CEMS

Based on discussions with stakeholders and follow-up internal discussions, two options are proposed for alternative data acquisition during the CEMS out-of-control period, (1) the South Coast AQMD Method 100.1 and (2) a certified standby CEMS. Other options noted above were never utilized and are deemed impractical, and thus are not recommended for PR 218.2/218.3.

In addition to the proposed two options, the owner or operator of the CEMS will be provided the opportunity to recommend a different alternative data acquisition method for the Executive

Officer's approval. This approval would be based on the method deemed equivalent to the South Coast AQMD certified CEMS on relative accuracy, reliability, reproducibility, and data dandling.

Data generated by the alternative data acquisition methods listed in PR 218.3 or a method approved by the Executive Officer as specified in PR 218.3, would be considered quality assured data, provided all applicable requirements are also met. They are valid data for compliance demonstration or any subsequent emission calculation. The hour(s) being covered should be considered available with regards to CEMS data availability and could be used to maintain data availability of the primary CEMS.

Automatic Calibration Data – Paragraph (i)(7)
Requirements under paragraph (i)(7) for automatic calibration data have not been changed from the existing requirements under Rule 218.1 paragraph (d)(3). If automatic adjustments to the monitor settings are made, the owner or operator shall conduct the calibration tests in a way that the magnitude of the adjustments can be determined and recorded.

F-Factors – Paragraph (i)(8)
Requirements under paragraph (i)(8) for F-Factors have not been changed from the existing requirements under Rule 218.1 paragraph (d)(4). The owner or operator of the CEMS shall use in the CEMS calculations the F-factors listed in 40 CFR Part 60, Appendix A, Method 19, Table 19-2, as applicable. Alternatively, the owner or operator of the CEMS may submit a plan for Executive Officer's approval to develop F-factors for fuels not listed in Method 19, Table 19-2.

PR 218.3 (j) - SCEMS REQUIREMENTS

Requirements for SCEMS – Paragraph (j)(1)
SCEMS is an existing provision in Rules 218 and 218.1. A SCEMS is a continuous emission monitoring system that is different from a CEMS only on response time and data acquisition frequency, that is:

- Data acquisition for SCEMS is required every 15 minutes, while it is required every minute for CEMS; and
- Response time for SCEMS must not exceed 15 minutes, while it is limited to 1.5 minutes for CEMS CO analyzers and 5 minutes for other CEMS analyzers or monitors.

Response time is defined as the time interval from a step change in the air pollutant or gas diluent concentration to the time when 95 percent of the corresponding final value is reached as displayed on the CEMS data recorder or acquisition system. The response time is determined by introducing a certified gas mixture into the CEMS upstream of the sampling interface and as close to the probe inlet as practicable. A demonstration of response time for each unit is made during certification testing.

SCEMS operating in the South Coast AQMD, not including time-shared CEMS, typically include such technologies as gas chromatography (GC) analysis for sulfur compound composition, F-Factors and higher heating value (HHV). There is no preferable CEMS technology commercially available for these types of measurements. On this basis, certification for a SCEMS would be granted pursuant to PR 218.2 clause (f)(12)(A)(i). Certification is contingent on the commercial availability of SCEMS instrumentation capable of accurately and precisely measuring the particular air contaminant concentration or other parameters used to calculate the emission concentration.

Due to the difference in data acquisition frequency for SCEMS as compared to CEMS, a 15-minute data acquisition frequency will be utilized for an SCEMS, instead of a one-minute data acquisition frequency when calculating spiking data percentage pursuant to PR 218.3 subparagraph (i)(2)(C).

PR 218.3 paragraph (j)(1) clarifies pre-certification, certification, quality assurance and data handling requirements. This paragraph also identifies the different requirements for a SCEMS as compared to a regular CEMS.

Time-shared CEMS – Paragraph (j)(2)
Time-shared CEMS is categorized as a type of SCEMS. A time-shared CEMS is a regular CEMS in which the analyzer, and possibly the associated sample conditioning system, is used to measure emissions from more than one unit (emission source). PR 218.2 clause (f)(12)(A)(ii) provides criteria for certifying a time-shared CEMS. This requirement defines that a time-shared CEMS would be allowed when the units to be monitored by the time-shared CEMS are:

- Physically close to one another, and the proposed time-shared CEMS is approximately equidistant from all monitored units;
- Similarly sized and configured, and their gaseous emissions are of approximately the same compositions and concentrations; and
- Subject to a similar concentration limit.

Similar to an SCEMS, a time-shared CEMS would provide at least one valid data point for each monitored source per 15-minute sampling period. All performance tests would be conducted in the time-shared mode at all times. That is, the tests would need to accurately reflect the emission information associated with this CEMS monitored sources, just as if there were individually dedicated CEMS providing the same emission information.

PR 218.3 paragraph (j)(2) provides additional requirements on the measurements, with no changes from the time-sharing requirements specified in Rule 218.1 subdivision (e).

PR 218.3 (k) - MOISTURE CORRECTION
Except for a clarification, PR 218.3 subdivision (k) for moisture correction provides the same requirements as specified in Rule 218.1 subparagraph (b)(4)(F). If a moisture correction in reporting flow and concentration is required, the owner or operator of a CEMS shall measure and monitor moisture in the stack gas used for emission data calculations in accordance with the South Coast AQMD Technical Guidance Document R-001(TGD-R-001). The Executive Officer's approval is required for an alternative method.

PR 218.3 (l) - EXEMPTION
PR 218.3 subdivision (l) is identical with PR 218.2 subdivision (k) for the provision of exemption. A detailed discussion is provided under the discussion for PR 218.2 subdivision (k).

CHAPTER 4: PROPOSED AMENDED RULES 218

PROPOSED AMENDED RULE REQUIREMENTS

PAR 218

Non-RECLAIM CEMS will transition to PR 218.2 and 218.3 according to the implementation schedule specified under PR 218.2 and 218.3 subdivision (d). Prior to the transition, non-RECLAIM CEMS will continue to be subject to Rules 218 and 218.1. It is proposed to incorporate a phase out provision paragraph (b)(3) under Rule 218 as follows:

(3) *The owner or operator of any CEMS subject to Rules 218 and 218.1 shall continue to comply with the requirements specified in these rules until the date specified in Rule 218.2 (d)(2) or Rule 218.3 (d)(2).*

CHAPTER 5: IMPACT ASSESSMENT

INTRODUCTION

PR 218.2 and 218.3, and PAR 218 are applicable to owners or operators of CEMS for units operated within about 80 RECLAIM facilities and 120 non-RECLAIM facilities. Those units include refinery FCCU, refinery tail gas unit, kiln or calciner, industrial boilers and heaters, internal combustion engine, gas turbines, furnace, oven, dryer, heater, incinerator, and any solid, liquid or gaseous fueled equipment required by source-specific rules for continuous emission monitoring.

EMISSION REDUCTIONS

PR 218.2 and 218.3, and PAR 218 are administrative rules and provide technical guidelines for installation and operation of CEMS required by the South Coast AQMD rules or permit conditions. PR 218.2, 218.3, and PAR 218 do not directly regulate sources for emissions control, therefore there is not emission reductions entailed by this rule development.

COST-EFFECTIVENESS

While a source-specific rule determines when a CEMS would be required to for emission monitoring, PR 218.2 and 218.3, and PAR 218 provide administrative and technical guidelines for how to properly operate the CEMS. The cost-effectiveness of operating any CEMS is included in the related source-specific rule development.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) ANALYSIS

Pursuant to the California Environmental Quality Act (CEQA) and South Coast AQMD's certified regulatory program (Public Resources Code Section 21080.5, CEQA Guidelines Section 15251(l) and South Coast AQMD Rule 110), the South Coast AQMD, as lead agency, is reviewing the proposed project to determine if it will result in any potential adverse environmental impacts. Appropriate CEQA documentation will be prepared based on the analysis.

SOCIOECONOMIC IMPACT ASSESSMENT

A socioeconomic impact assessment will be conducted and released for public review and comment at least 30 days prior to the South Coast AQMD Governing Board Hearing which is anticipated to be heard on March 5, 2021.

DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE SECTION 40727

California Health and Safety Code Section 40727 requires that prior to adopting, amending, or repealing a rule or regulation, the South Coast AQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing and in the staff report. In order to determine compliance with section 40727, 40727.2 requires a written analysis comparing the proposed amended rule with existing regulations, if the rule meets certain requirements. The following provides the draft findings.

Necessity: A need exists to propose Rules 218.2 and 218.3 and amend Rule 218 to provide administrative and technical specifications to continuous emission monitoring systems.

Authority: The South Coast AQMD obtains its authority to adopt, amend, or repeal rules and regulations from California Health and Safety Code Sections 39002, 40000, 40001, 40440, 40702, 40725 through 40728, 41508, and 41700.

Clarity: PR 218.2 and 218.3, and PAR 218 have been written or displayed so that their meaning can be easily understood by the persons affected by the rule.

Consistency: PR 218.2 and 218.3, and PAR 218 are in harmony with, and not in conflict with or contradictory to, existing federal or state statutes, court decisions, or federal regulations.

Non-Duplication: PR 218.2 and 218.3, and PAR 218 do not impose the same requirement as any existing state or federal regulation and is necessary and proper to execute the powers and duties granted to, and imposed upon, the South Coast AQMD.

Reference: In amending this rule, the South Coast AQMD hereby implements, interprets, or makes specific reference to the following statues: Health and Safety Code sections 39002, 40001, 40702, 40440(a), and 40725 through 40728.5.

INCREMENTAL COST-EFFECTIVENESS

Health and Safety Code section 40920.6 requires an incremental cost-effectiveness analysis for Best Available Retrofit Control Technology (BARCT) rules or emission reduction strategies when there is more than one control option that would achieve the emission reduction objective of the proposed amendments, relative to ozone, CO, SOx, NOx, and their precursors. PR 218.2 and 218.3, and PAR 218 are not Best Available Retrofit Control Technology (BARCT) rules or emission reduction strategies; therefore, this provision is applicable.

COMPARATIVE ANALYSIS

Health & Safety Code section 40727.2(g) for comparative analysis is applicable when the proposed amended rules or regulations impose, or have the potential to impose, a new emissions limit or standard, or increased monitoring, recordkeeping, or reporting requirements. In this case, a comparative analysis is not required because the amendments do not impose such requirements.

CHAPTER 6: APPENDICES

ATTACHMENT 1: AN OVERVIEW COMPARING RULE 218 AND PROPOSED RULE 218.2 REQUIREMENTS

Requirements	Rule 218	PR 218.2	Changes under PR 218.2 as compared with Rule 218
Purpose	None	(a)	Same purpose as for Rule 218, although it is not specified in Rule 218
Applicability	(b)	(b)	PR 218.2 retains the concept of the applicability under Rule 218 and provides further clarification
Definitions	(a)	(c)	The following new definitions added to PR 218.2: • ACEMS • CALIBRATION ERROR TEST • CEMS FAILURE • CEMS FINAL CERTIFICATION LETTER • CEMS MODIFICATION • RECLAIM • RECLAIM FACILITY • FORMER RECLAIM FACILITY • UNIT Other changes: • Removed a list of existing definitions that are no longer used in Rule 218.2 or have been integrated in the rule language • Revised a list of existing definitions for clarity
Implementation schedule	None	(d)	This new subdivision in PR 218.2 defines the timeline to transition facilities from complying with Rules 218 and 218.1 or Rule 2012 to PR 218.2 and 218.3
Monitoring Requirements			
Continuous measurement	None	(e)(1)	Same concept as Rule 218, although it is not clearly specified in Rule 218
CEMS failure (for up to 96 hours)	(f)(3)(B)	(e)(2)	Revision • Allowing an additional 96 hours if the emission source is not operating • No longer requiring an interim variance for the additional hours
CEMS shutdown at a unit long term shutdown	None	(e)(3)	New provisions • Conditionally allowing CEMS shutdown at a unit shutdown that lasts for a minimum 168 consecutive hours

Requirements	Rule 218	PR 218.2	Changes under PR 218.2 as compared with Rule 218
Demonstrating unit non-operation	None	(e)(4)	New provisions • Options to demonstrate unit non-operation • Referenced by (e)(2) and (e)(3)
Certification Requirements			
Application and approval requirements	(c)(1)(A)	(f)(1) (f)(2) (f)(3) (f)(4) (f)(5) (f)(6) (f)(7)	• No change in concept with Rule 218 application process - (f)(2) • Provided an application process for CEMS modification required within 30 days due to CEMS failure – (f)(3) • Reorganized the rule language for clarity ✓ Establishing the "roadmap" - (f)(2) and (f)(3) ✓ Providing details - (f)(4) through (f)(7)
Alternative process for modification of CEMS Component Listed in Guidance Document R-002	None	(f)(8)	• Alternative process for a CEMS modification on a component that is: ✓ Not identified on the CEMS final certification letter ✓ Listed on the South Coast AQMD Technical Guidance Document R-002 • Incorporated current practices into the rule
If an alternative CEMS recertification submitted pursuant to subparagraph PR218.2 (f)(7) is disapproved	None	(f)(9)	
Alternative process for modification of CEMS Component Listed in Quality Assurance/Quality Control Plan	None	(f)(10)	• Alternative process for a CEMS modification on a component that is: ✓ Not identified on the CEMS final certification letter ✓ Not listed in the South Coast AQMD Technical Guidance Document R-002 ✓ Listed in the Quality Assurance/Quality Control Plan • Incorporated current practices into the rule
Emission Data During CEMS Certification or Recertification	None	(f)(11)	New provision • Provisionally validating the data recorded during the certification or recertification process
Operation of CEMS During	(c)(3)	(f)(12)	No change

Requirements	Rule 218	PR 218.2	Changes under PR 218.2 as compared with Rule 218
Certification Testing			
SCEMS and ACEMS Certification and Recertification	(c)(2)	(f)(13)	• Clarified the criteria for certifying a SCEMS • Added the criteria for certifying a time-shared CEMS (a type of SCEMS) and an ACEMS • Moved the specification for different data acquisition and averaging interval to PR 218.3 (j)
Requirements for Existing CEMS and SCEMS			
Requirements for existing CEMS and SCEMS	(d)	None	Deleted provisions • Under Rule 218, a CEMS or SCEMS is considered as an existing CEMS or SCEMS if its certification application for initial approval was submitted before May 14, 1999, otherwise it is a new CEMS or SCEMS • PR 218.2 does not differentiate between "new" or "existing" CEMS (or SCEMS) by application date for the requirements
Quality Assurance/Quality Control (QA/QC) Plan			
What to include for a QA/QC plan	(a)(12)	(g)(1)	• No change to the approach • Rule language revised for clarity • Added the reference "Guidelines for Continuous Emission Monitoring System Quality Assurance and Quality Control Plan"
Submittal timeline for a new QA/QC plan	(c)(4)(A)	(g)(2)	No change
Submittal timeline for a revised QA/QC plan	None	(g)(3)	New provision • Submit required revision for approval within 30 days
Alternative quality assurance practices	(c)(4)(B)	(g)(4)	No change
Recordkeeping Requirements			
Records for CEMS data measured and calculated	(e)(2)	(h)(1)	• No change to the approach • Rule language revised for clarity

Requirements	Rule 218	PR 218.2	Changes under PR 218.2 as compared with Rule 218
Records for the specified files	(e)(2)	(h)(2)	
The approach to maintain the records	(e)(1)	(h)(3)	
Reporting Requirements			
Semi-annual emission summary	(f)(1)	(i)(1)	• No change to the approach • Rule language revised for clarity ✓ Reorganized the rule structure for clarification ✓ Specified the reporting period ✓ Moved the rule language related to recordkeeping to PR 218.2 subdivision (h)
Excess emission	(f)(2)	(i)(2)	• No change to the approach • Minor word changes for clarity
CEMS non-operation due to maintenance or damage	(f)(3)	(i)(3)	• No change to the approach • Added specification for the required information for the report
Scheduled CEMS shutdown	None	(i)(4)	New provision • Contingent on PR 218.2 (e)(3) which allows a CEMS shutdown during a scheduled unit shutdown that lasts for a minimum 168 consecutive hours • Requires the owner or operator of the CEMS to notify the Executive Officer and submit a written report for the incident
Relative Accuracy Test Audit (RATA)	None	(i)(5)	New provision • Requires submitting the RATA report within 60 days upon completion of the test • Aligns with Rule 2012 requirement
Posting CEMS Certification			
Posting of written approval of CEMS certification	(g)	(j)	No change
Exemption	None	(k)	Implemented in practice

ATTACHMENT 2: AN OVERVIEW COMPARING RULE 218.1 AND PROPOSED RULE 218.3 REQUIREMENTS

Requirements	Rule 218.1	PR 218.3	Changes under PR 218.3 as compared with Rule 218.1
Purpose	None	(a)	• Same purpose as for Rule 218.1, although it is not specified in Rule 218.1
Applicability	None	(b)	• The applicability provision in Rule 218 is intended to cover Rule 218.1 • PR 218.3 retains the concept of the applicability under Rule 218 and provides further clarification
Definitions	(a)	(c)	The following new definitions added to PR 218.3: • ACEMS • CEMS MODIFICATION • FORMER RECLAIM FACILITY • LOWEST VENDOR GUARANTEED SPAN RANGE • MAINTENANCE • RECLAIM • RECLAIM FACILITY • SPAN RANGE • UPPER SPAN VALUE • UNIT Other changes: • Removed a list of existing definitions that are no longer used in Rule 218.3 or have been integrated in the rule language • Revised a list of existing definitions for clarity (equations from certain definitions are incorporated in Table 3)
Implementation schedule	None	(d)	This new subdivision in PR 218.3 defines the timeline to transition facilities from complying with Rules 218 and 218.1 or Rule 2012 to PR 218.2 and 218.3
Pre-certification requirements			
CEMS location	(b)(1)(A)	(e)(1)	Minor change on wording
Sampling location	(b)(1)(B)	(e)(2)	Restructured the rule language

Requirements	Rule 218.1	PR 218.3	Changes under PR 218.3 as compared with Rule 218.1
Span Range	(b)(1)(C)	(e)(3)	New provisions • Approving a span range if (e)(3)(A) and (e)(3)(B) cannot be concurrently satisfied - (e)(3)(C) • Approving a span range with the upper span value at up to 10 ppm for a unit with emission limit less than 5 ppm - (e)(3)(D) • Exempting the top span range of multiple span range analyzer - (e)(3)(E)
Data Acquisition and Handling System (DAHS)	(b)(1)(E)	(e)(4)	New provisions • Recording all status code specified in Table 2 - (e)(4)(E) • Incorporating all applicable data handling requirements specified in subdivision (i) - (e)(4)(G)
Operational Period	(b)(1)(F)	(e)(5)	Minor change on wording
Certification requirements			
Seven-day calibration drift testing	(b)(2)(A)	(f)(1)	Clarification provided • Specified that calibration testing is performed for each span range for the same seven-day testing period • Added 2-hour grace period for each test • Specified calibration error test for stack flow monitors • Referenced calculation equation in Table 3
Analyzer enclosure	(b)(2)(B)	(f)(2)	Minor structure changes and revisions • Specified when corrective actions should be made
Relative accuracy test audit (RATA)	(b)(2)(C)	(f)(3)	New provisions • Specified the guidance document to determine an outlier - (f)(3)(B): • Added the reference to calculation equation (no change to the equation) - (f)(3)(C) • Provided equations to clarify how to calculate a de minimis value - (f)(3)(D) Revision • Standards for RA and *De Minimis* of a RATA - (f)(4)(E): ✓ Reduced NOx *de minimis* from 1.0 ppm to 0.5 ppm

Requirements	Rule 218.1	PR 218.3	Changes under PR 218.3 as compared with Rule 218.1
			✓ Provided a standard for units with CO emission limit < 2.0 ppm ✓ Added *de minimis* 1.0% for CO2 (only for O2 previously) ✓ Allowed 20.0% for O2/CO2 when its measured value is low
Other checks required along with RATA	(b)(3)	(f)(4)	New provisions • Re-structured the rule language with no requirement changes: ✓ Response time (f)(4)(A) ✓ Cyclonic flow (f)(4)(E) ✓ Linearity error (f)(4)(F) • Added: ✓ NOx converter efficiency (f)(4)(B) ✓ Sampling system bias check (f)(4)(C) (Both tests are conducted in practice and included in certification guidance document) • Relocated technical details to Attachment B for: ✓ Concentration stratification (f)(4)(D) • Removed ✓ Interference check 218.1 (b)(3)(A) (Not conducted in practice) ✓ Calibration error 218.1 (b)(3)(B) (Already required for 7-day drift and ongoing QAQC)
Alternative Emission Monitoring System (ACEMS)	None	(f)(5)	This is a new provision • Not specified in Rules 218 and 218.1 • Referencing the ACEMS specification under Rule 2012
Laboratory approval program	Part of 218 (c)(1)(A)	(f)(6)	No change
Quality Assurance Testing Requirements			
Calibration Error	(b)(4)(A)	(g)(1)	Revision • Revised previous language for test frequency in Rule 218.1 (b)(2)(A) “as close to 24-hour intervals as practicable” to “for every 24 hours with a 2-hour grace period” - (g)(1)(A)(i) New provisions

Requirements	Rule 218.1	PR 218.3	Changes under PR 218.3 as compared with Rule 218.1
			• Specification for stack flow monitor test requirements are based on Rule 2012 for RECLAIM CEMS - (g)(1)(A)(ii) • 4-hour grace period for unit restart after one or more unit non-operation days - (g)(1)(B) • CEMS data validation – (g)(1)(E) &(F)
Relative Accuracy Testing Audit (RATA)	(b)(4)(C)	(g)(2)	Revision • Revised previous language for test frequency in Rule 218.1 "once every 12 months, no later than the end of the calendar quarter in which the date of the original certification test was performed" to "within 12 months of the end of the month of the previous relative accuracy test" - (g)(2)(A) New provisions • Specification for stack flow monitor test requirements are based on Rule 2012 for RECLAIM CEMS - (g)(2)(D) • RATA at a unit restart (aligning with Rule 2012) – (g)(2)(D) • Paragraphs PR 218.3 (g)(2)(B) & (C) are referencing (f)(3) and (f)(4) for specifications where new provisions are included
Cylinder Gas Audit (CGA)	(b)(4)(D)	(g)(3)	New provisions • Allowing linearity error check to substitute cylinder gas audit • Exempting the test for a quarter with minimal operation
Daily check and periodic calibration for ACEMS	None	(g)(4)	This is a new provision • Not specified in Rules 218 and 218.1 or Rule 2012 • Addressed in the ACEMS QAQC plan and conducted in practice
Other checks for stack flow monitor	None	(g)(5)	This is a new provision • Not specified in Rules 218 and 218.1 • Based on the existing requirements in Rule 2012 for RECLAIM CEMS stack flow monitor
Maintenance for fuel flow meter (utilized for determining	None	(g)(6)	This is a new provision • Not specified in Rules 218 and 218.1 or Rule 2012 • Currently addressed in the CEMS QAQC plan and implemented in practice

Requirements	Rule 218.1	PR 218.3	Changes under PR 218.3 as compared with Rule 218.1
stack flow with F factor)			
Calibration Gas and Zero Gas			
Calibration Gas	(d)(1)	(h)(1)	New provisions • Additional certification programs for calibration gas – (h)(1)(B) through (E) • Additional alternative options - (h)(1)(F)(i) & (ii)
Zero Gas	(d)(2)	(h)(2)	No change
Data handling			
Data points below 10 percent of the upper span value	(b)(1)(C)(v)	(i)(1)	No change
Data point above 95% of the upper span value	(b)(1)(C)(vi)	(i)(2)	New provisions • Spiking data recording (at 95% of the upper span value vs. being discarded as invalid data according to Rule 218.1 and Rule 2012) -(i)(2)(A) & (i)(2)(B)(ii) • The quarterly spiking data percentage calculation - (i)(2)(C) • Threshold for the quarterly spiking data percentage and subsequent requirement – (i)(2)(D) • Data validity for measurements below 10 percent or above 95 percent of the upper span value
Validity for (i)(1) and (i)(2) data	None	(i)(3)	New provision • Data validity for measurements below 10 percent or above 95 percent of the upper span value
Emission data averaging	None	(i)(4)	New provisions • Hourly average calculation for full and partial unit operating hours and during maintenance and quality assurance activities – (i)(4)(A) • Emissions averaging for a 15-minute interval – (i)(4)(B) • Emission averaging for intervals greater than one-hour – (i)(4)(C) • Pollutant concentration correction by diluent gas – (i)(4)(D)

Requirements	Rule 218.1	PR 218.3	Changes under PR 218.3 as compared with Rule 218.1
			• Comparable data average requirements by landing rules or permits superseding requirements under this paragraph – (i)(4)(E)
CEMS data availability	(b)(4)(E)	(i)(5)	New provisions • Quarterly data availability calculation equation – (i)(5)(A) • Operating hours to exclude for the calculation – (i)(5)(B) • Data availability threshold and subsequent requirements – (i)(5)(C)
CEMS out-of-control period and alternative data acquisition	Part of (b)(4)(A)	(i)(6)	New provisions • What is CEMS out-of-control period (not specified in Rules 218 and 218.1, but specified in Rule 2012) – (i)(6)(A) • Data generated during the CEMS Out-of-Control period – (i)(6)(B) • Data availability calculation during the CEMS Out-of-Control period – (i)(6)(C) • Options for alternative data acquisition during the CEMS out-of-control period– (i)(6)(D) ✓ Existing options under Rule 2012 : South Coast AQMD Method 100.1 - (i)(6)(D)(i) and A certified standby CEMS - (i)(6)(D)(ii) ✓ New option: Alternative data acquisition method upon Executive Officer approval -(i)(6)(D)(iii)
SCEMS Requirements			
SCEMS	(a)(16) & (b)(1)(E)	(j)(1)	PR 218.3 (j)(1) has combined the existing rule language and the actual implementation
Time-shared CEMS	(e)	(j)(2)	New provisions • Added (j)(2)(F) and (j)(2)(H) for clarification
Moisture Correction	(b)(4)(F)	(k)	No change to requirements with only clarifications • Minor rule structural change • Specified the South Coast AQMD guidance document
Exemption	None	(l)	Implemented in practice

Requirements	Rule 218.1	PR 218.3	Changes under PR 218.3 as compared with Rule 218.1
Tables and Attachments			
Table 1:Reference Methods	Table 1	Table 1	No change
Table 2: DAHS Status Codes	None	Table 2	New table • Referenced by 218.3 (e)(4)(E)
Table 3: Equations	None	Table 3	New table • Previously included under various definitions in Rule 218.1
Table 4: t-Values	None	Table 4	New table • Included under definition (a)(9) in Rule 218.1
Attachment A: Supplemental and alternative CEMS performance requirements	Attachment A	Attachment A	No change
Attachment B: Concentration stratification and CEMS probe location	None	Attachment B	New attachment • Included under rule 218.1 (b)(3)(C) • Referenced by PR 218.3 (f)(4)(D)