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

Public Workshop January 6, 2021 9:30 am

Join Zoom Meeting - from PC or Laptop https://scaqmd.zoom.us/j/93028038966 Webinar ID: 930 2803 8966 (applies to all) Teleconference Dial In +1 669 900 6833

Background

- South Coast AQMD has various rules and permits that require continuous emission monitoring system (CEMS) to monitor pollutant concentrations or emissions on a continuous basis
- There are two general sets of rules for that establish requirements for the installation and operation of CEMS
 - Non-RECLAIM facilities: Rule 218 Continuous Emission Monitoring and 218.1 Continuous Emission Monitoring Performance Specification
 - RECLAIM facilities: Rule 2011- Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Sulfur (SOx) Emissions and Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions
- Control Measure CMB-05 in the 2016 AQMP seeks to transition facilities from the NOx RECLAIM program into a command-and-control regulatory structure
- Objective of rulemaking is to:
 - Align CEMS requirements for RECLAIM facilities as they transition to command and control
 - Streamline and provide more clarity to existing CEMS provisions
 - Codify existing practices to provide more transparency
- Staff has held 11 Working Group Meetings throughout the development of PR 218.2 and 218.3 and PAR 218

Regulatory History

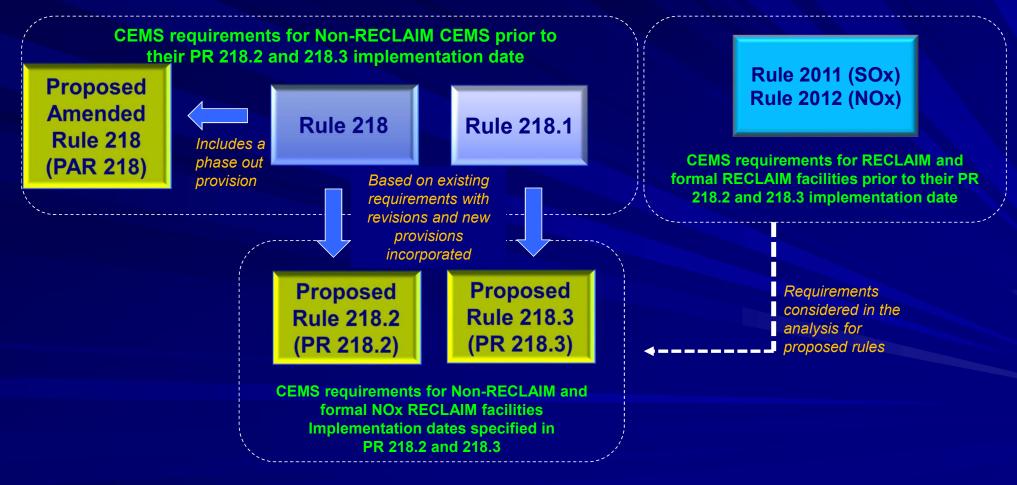
Rule 2012

- Adopted with the RECLAIM program in 1993 and amended several times
- Existing monitoring rule for NOx RECLAIM CEMS for mass emission determination
- Last approved for the California State Implementation Plan (SIP) in 2017

Rule 218 and Rule 218.1

- Rule 218 was adopted in 1976
- Certain requirements from Rule 218 were separated to the new Rule 218.1 in 1999, so that:
 - Rule 218 would focus on administrative requirements; and
 - Rule 218.1 would focus on performance specifications
- Existing monitoring rules for non-RECLAIM CEMS for concentration limit compliance demonstration
- Last approved for the California SIP in 2010

Rule Approach



Proposed Rule 218.2

Proposed Rule 218.2

Based on Rule 218

- Key modifications on certification process for CEMS modification and requirements for reporting
- New provision for Monitoring Requirements (e) that requires CEMS to be in a continuous operation except during:
 - Defined CEMS maintenance and repair; or
 - Unit long term shutdown (≥168 hours)

PR 218.2 Structure

(a) Purpose

- (b) Applicability
- (c) Definitions
- (d) Implementation Schedule
- (e) Monitoring Requirements
- (f) Certification Requirements
- (g) Quality Assurance/Quality Control Plan
- (h) Recordkeeping Requirements
- (i) Reporting Requirements
- (j) Certification Posting
- (k) Exemption

PR 218.2 subdivisions (a), (b), and (c)

(a) Purpose

States purpose of rule which is to specify CEMS requirements*

(b) Applicability

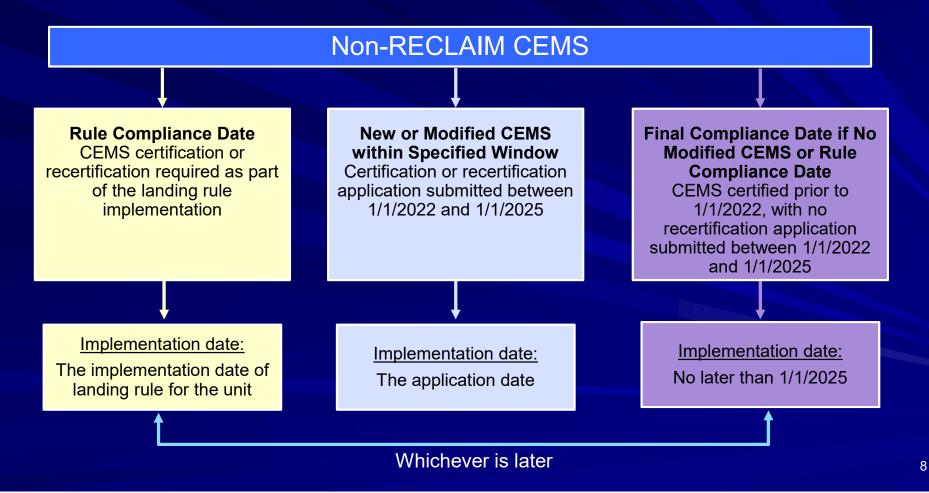
- Applies to the owner or operator of a CEMS required by a South Coast AQMD rule or permit
- Does not apply to CEMS for performance evaluation or a CEMS subject to RECLAIM

(c) Definitions

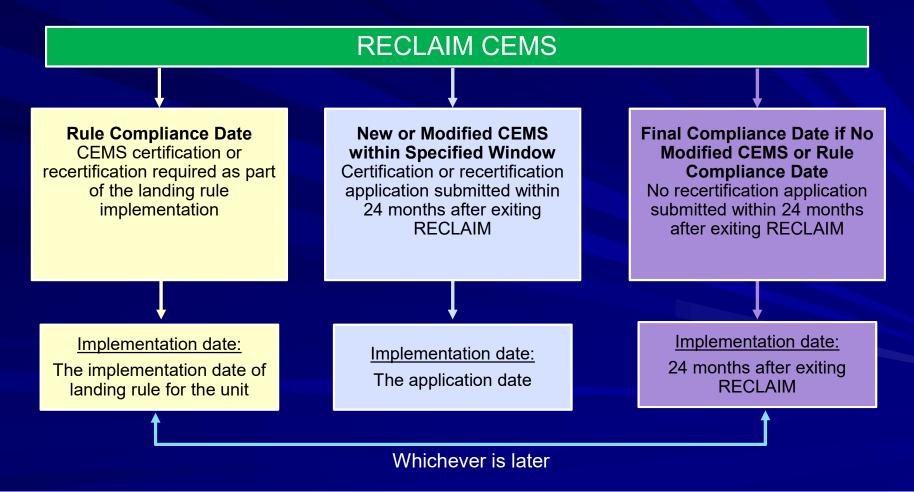
- New definitions were added for new terms and to provide additional clarifications
- Definitions no longer used were removed or integrated in the rule language

* Unless otherwise specified, including Alternative Continuous Emission Monitoring System (ACEMS) and Semi-Continuous Emission Monitoring System (SCEMS) throughout the rule

Non-RECLAIM CEMS Implementation Schedule



RECLAIM CEMS Implementation Schedule



PR 218.2 (e): Monitoring Requirements

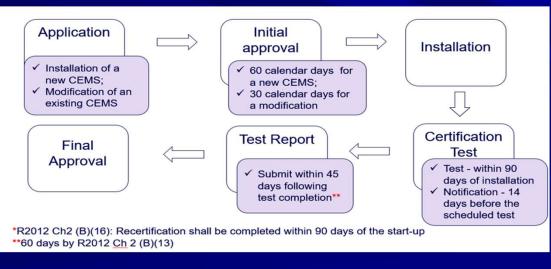
Overview: Provides requirements for CEMS operation for various situations

PR 218.2(e)(1):	General requirements	Requires operator to install, maintain, and operate CEMS for continuous emissions measurements
PR 218.2(e)(2):	Provisions for when there is a CEMS failure	CEMS non-operation is allowed for up to 96 hours for each occurrence, and additional 96 hours if the unit is offline
PR 218.2(e)(3)	Provisions for when a unit is offline for 168 consecutive hours (7 days) or longer	CEMS non-operation is allowed with conditions such as notification, reporting, and timeline for CEMS shut down and restart, etc.
PR 218. 2 (e)(4)	Provisions for how to demonstrate a unit offline required under paragraphs (e)(2) and (e)(3)	Disconnected fuel line, fuel meter, gas bill, stack flow monitor or other approved systems

PR 218.2 (f): Certification Requirements

Defines when a CEMS must be certified or recertified - (f)(1)

- New CEMS installation;
- CEMS modification; or
- Determined by the Executive Officer that a CEMS recertification is required by the CEMS performance
- Retains the existing requirements for certification or recertification application and approval process (as depicted below) - (f)(2), & (f)(4) - (f)(7)



Alternative Recertification Processes for Qualified CEMS Modifications

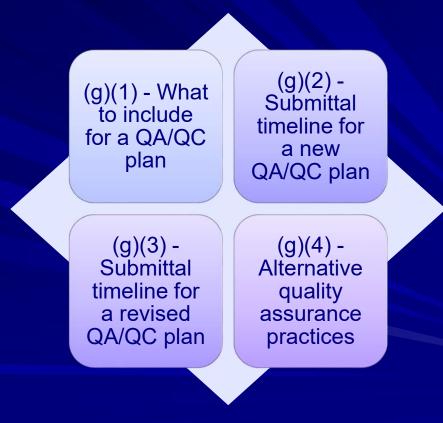
- Provides an application process for a CEMS modification required within 30 days due to CEMS failure – (f)(3)
 - Submit a written nonfiction
 - Start CEMS modification
 - Submit a CEMS application to start the normal application process within 30 days of the CEMS modification (except the CEMS modification can be performed prior to the initial approval)
- Incorporates alternative processes for modification on CEMS components that are not listed on the CEMS final certification letter (f)(8) through (f)(10)
 - Simplified process for modification for CEMS component that is identified in the technical Guidance Document R-002
 - Even more simplified process for modification for CEMS component that is identified in the Quality assurance/Quality Control Plan, but not in the technical Guidance Document R-002

CEMS Data Validity During the Certification or Recertification Period

- Provisionally validate the CEMS data recorded during the certification or recertification period (f)(11)
 - CEMS data would be considered as valid quality assured data, beginning at the hour of passing the calibration error test, which is:
 - Before any other certification test is commenced; and
 - No more than 14 days of completion of all the required certification tests
 - If the Executive Officer disapproves the final CEMS certification or recertification:
 - The aforementioned valid data would be retroactively considered invalid data, until the hour of the next time completing all the required certification tests

PR 218.2 (g): Quality Assurance/Quality Control (QA/QC) Plan

- Develop the QA/QC plan in accordance with "Guidelines for Continuous Emission Monitoring System Quality Assurance and Quality Control Plan"
- For a new plan, submit the plan within 45 days of CEMS installation and no later than 30 days before the certification tests
- For a revised plan, submit the plan within 30 days
- Alternative QA/QA procedures may be included and submitted with QA/QC plan



PR 218.2 (h): Recordkeeping Requirements

PR 218.2 (h)(1): Recording measured and calculated CEMS data

- Data recorded and processed by Data Acquisition and Handling System (DAHS)
- Any measurement or calculation utilized for compliance demonstration

PR 218.2 (h)(2): Other records that must be maintained

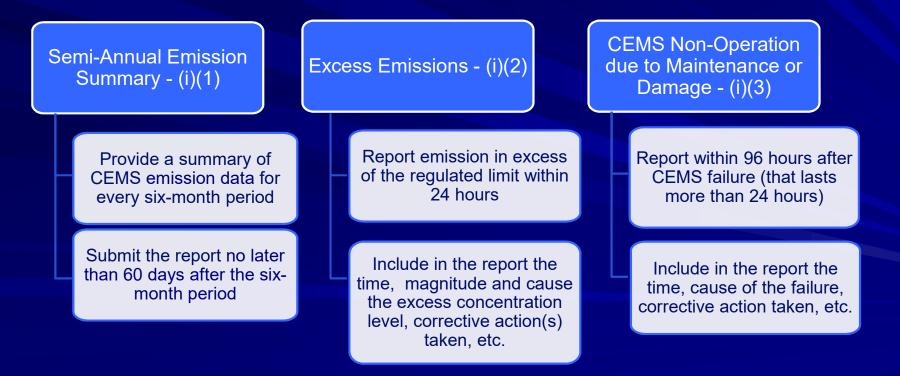
- CEMS non-operation
- Reports required by PR 218.2 (i)
- Out-of-Control period
- Repair, adjustment, or maintenance to the CEMS
- Certification tests
- QA/QC activities

PR 218.2 (h)(3): How long to maintain the records

- Maintain the records for a minimum two years or specified otherwise
- Make the records available upon request

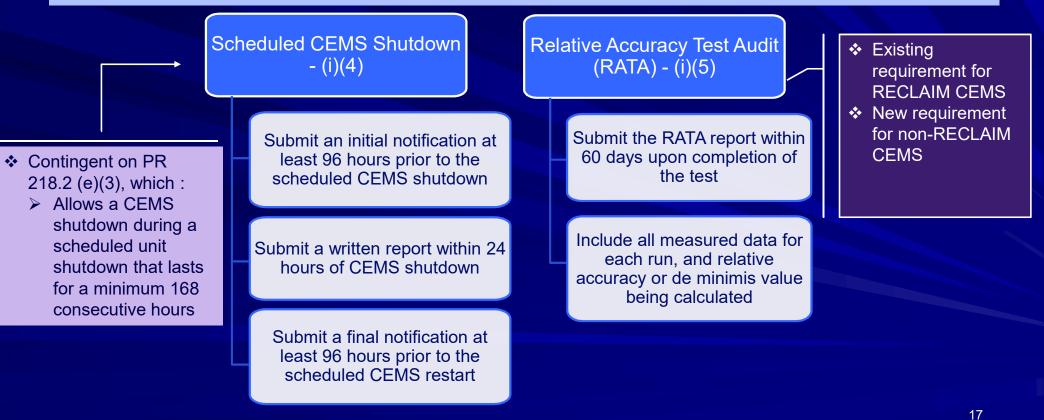
PR 218.2 (i): Reporting Requirements

- Reporting requirements based on Rule 218
- Minor changes to rule structure, improved clarity, and streamlined provisions for paragraphs (i)(1), (i)(2), and (i)(3)



PR 218.2 (i): Reporting Requirements

 Two new reporting provisions for Scheduled CEMS Shutdown (i)(4) and Relative Accuracy Test Audit (i)(5)



PR 218.2 Subdivisions (j) and (k)

(j) Posting CEMS Certification

Post the written approval of CEMS Certification as prescribed in Rule 206 or as approved by the Executive Officer

(k) Exemption

Source-specific rules or permits will supersede the PR 218.2 CEMS provisions when the CEMS provisions overlap For example: If a source-specific rule specifies a different CEMS certification process timeline (e.g. Rule 1110.2), the source-specific rule timeline must be followed

Proposed Rule 218.3

Proposed Rule 218.3

- Based on Rule 218.1, with a focus on CEMS performance specifications
- Key modifications on span range, data acquisition and handling system, relative accuracy test audit, and calibration gas requirements in subdivisions (e), (f), (g), and (h)
- New data handling provisions in subdivision(i):
 - 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

PR 218.3 Structure

(a) Purpose

(b) Applicability

- (c) Definitions
- (d) Implementation Schedule
- (e) Pre-Certification Requirements
- (f) Certification Test Requirements
- (g) Quality Assurance Testing
- (h) Calibration Gas and Zero Gas
- (i) Data Handling
- (j) SCEMS Requirements
- (k) Moisture Correction
- (I) Exemption

Tables and Attachments

PR 218.3 subdivisions (a), (b), and (c)

(a) Purpose

 Establish performance specifications on certification and quality assurance and quality control program for CEMS

(b) Applicability*

- Applies to the owner or operator of a CEMS required by a South Coast AQMD rule or permit
- Does not apply to CEMS for performance evaluation or a CEMS subject to RECLAIM

(c) Definitions

- New definitions were added for new terms and to provide additional clarifications
- Definitions no longer used were removed or integrated in the rule language

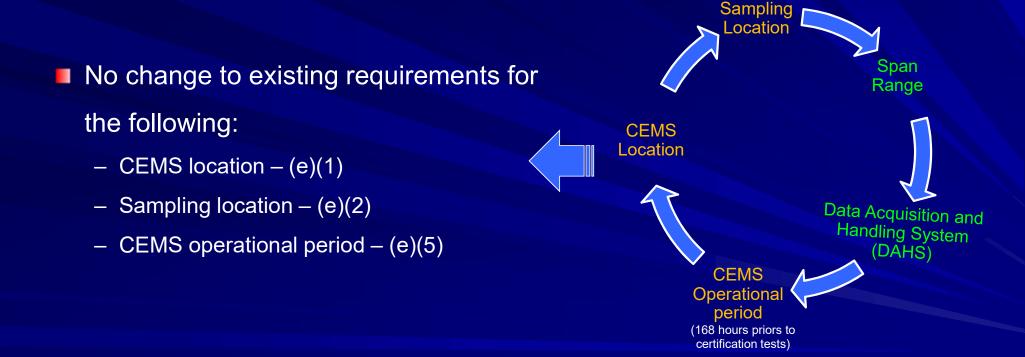
Identical with PR 218.2 applicability

PR 218.3 (e): Pre-certification Requirements

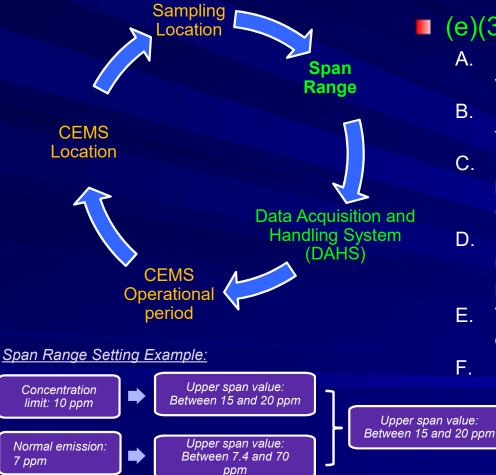
Pre-certification requirements define CEMS setting prior to any certification, recertification, or relative accuracy test, which include:

- CEMS location;
- Sampling location;
- Span Range;
- Data acquisition and handling system; and
- CEMS operational period (prior to any test)

PR 218.3 (e): Pre-Certification Requirements



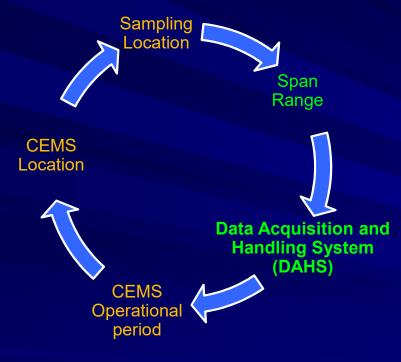
PR 218.3 (e): Pre-Certification Requirements



(e)(3): Span Range Requirements

- A. Data points within 10 to 95 percent of the upper span value
- B. Upper span value set between 150 and 200 percent of the concentration limit
- May approve a span range such that data points fall at or below 10 percent of the upper span value when above (A) and (B) cannot be concurrently satisfied
- D. May approve a span range with the upper span value at up to 10 ppm for a unit with emission limit less than 5 ppm
- E. The top span range of a multiple span range analyzer is exempted from span range requirements
- F. Diluent monitor span range requirements

PR 218.3 (e): Pre-Certification Requirements



- Status codes in Table 2 are generally incorporated into the software and existing software can be updated
- Data handling requirements will be address in the upcoming slides

(e)(4): DAHS

- A. Record data at least once every minute
- B. For SCEMS, record data at least once every 15 minutes
- C. Constant data acquisition rate
- D. Same sample acquisition rate during certification, RATA(s), and normal operation
- E. Record all status codes specified in Table 2
- F. Use all valid data points for compliance determination
- G. Incorporate all applicable data handing requirements specified in subdivision (i)

- A series of certification tests are required to demonstrate the acceptability of CEMS performance for a CEMS certification or recertification, at a minimum, include:
 - Seven-Day Calibration Drift Testing;
 - Analyzer Enclosure (or 2-hour calibration error tests in meeting the analyzer enclosure requirement);
 - Relative Accuracy Test Audit (RATA); and
 - Other checks required along with RATA
- Requirements of certifying an Alternative Emission Monitoring System (ACEMS) are aligned with RECLAIM
- Testing firms/laboratories for certification tests are specified

Seven Day Calibration Drift

Required for each span range for pollutant analyzers, diluent analyzers, and stack flow monitors

- Eight calibration error tests during a seven-day period when the CEMS is in continuous operation
- Calibration error test each day with an interval of 24 hours plus a 2-hour grace period, conducted:
 At 0 to 20, and 80 to 100 percent of the upper span value for pollutant and diluent analyzers
 By introducing a zero-reference value to the transducer or transmitter for stack flow monitors
- Calibration error for each calibration error shall not exceed:
 2.5 mensent of the unique property value for pallutent and dilucent as
 - ✤ 2.5 percent of the upper span value for pollutant and diluent analyzers
 - ✤ 3.0 percent of the upper span value for stack flow monitors

Analyzer Enclosure Specifies how the analyzer should be contained

- Analyzer to be contained in an environmentally controlled enclosure and equipped with an alarm and temperature recording device
 - Make corrective actions within 8 hours of receiving the audible alert
- Alternatively, perform thirteen consecutive 2-hour calibration error tests in meeting the analyzer enclosure requirement
- · Exemption provided for qualified the situations

Relative Accuracy Test Audit (RATA)

For the applicable pollutant concentration (not corrected by diluent gas), stack flow, and mass emission rate in the as-found unit operating condition

- A minimum of nine sets of test data
- Data may be discarded if it is identified as an outlier according to the South Coast AQMD Technical Guidance Document R-004 (TGD R-004) or approved
- Shall meet the Relative Accuracy (RA) or *de minimis* standards
 - RA: pollutant 20%; diluent 10% (or 20% when measured diluent gas is ≤ 15 percent); Stack flow 15%; mass emission 20.0%
 - de minimis : NOx 0.5 ppm; SO2 2.0 ppm; CO 2.0 ppm (or concentration limit that is lowered than 2.0 ppm); diluent gas 1.0%; stack flow and mass emission meet the equations with specified stack velocity (and concentration for mass emission)

Other checks required along with RATA

Conducted within fourteen days of a RATA

 Response time, NOx converter efficiency, sampling system bias check, concentration stratification, cyclonic flow, and linearity error

Alternative Continuous Emission Monitoring System (ACEMS)

Process to certify ACEMS

- May request to certify an ACEMS that is at a minimum equivalent in relative accuracy, precision, reliability, and timeliness to a CEMS
- Certify the ACEMS according to the criteria specified in 40 CFR Part 75 Subpart E
- Substitute criteria is acceptable upon approval

Laboratory
Approval ProgramRequirements for firms and laboratories allowed to perform
testing

 All certification tests should be performed by testing firms/laboratories who have received approval through the South Coast AQMD's laboratory approval program

PR 218.3 (g): Quality Assurance Testing Requirements and Specifications

Calibration Error

- <u>Test frequency</u>:
- Every 24 hours
- 2-hour grace period at normal operation
- ✤ 4 hours grace period at the unit restart
- <u>Standards:</u>
 - Not to exceed: 2 x 2.5 percent for pollutant and diluent analyzers; or 2 x 3.0 percent of for stack flow monitors
- Revise QAQC plan if exceeding: 2.5 percent for pollutant and diluent analyzers; or 3.0 percent for stack flow monitors

Relative Accuracy Testing Audit (RATA)

- <u>Test frequency</u>: Annually no later than the end of the calendar quarter of the previous test, in the as-found unit operating condition
- <u>Associated checks</u>: Within 14 days of RATA, demonstrate compliance with response time, NOx converter efficiency and sampling system bias
- <u>Standards</u>: Meet the relative accuracy or *de minimis* standards specified in paragraph (f)(3) (same standards as for RATA conducted at certification)
- Test at unit restart: If the unit is not operating when the test is due, conduct it within 14 days at unit restart

Cylinder Gas Audit (CGA) for pollutant and diluent gas analyzers

- <u>Test frequency</u>: Every quarter when a RATA is not conducted
- Exemption: Test exempted for the quarter when a linearity error check is conducted or the accumulative unit operating hours are no more than 168 hours

PR 218.3 (g): Quality Assurance Testing Requirements and Specifications

Checks for an ACEMS

- Daily checks with the ACEMS modeling software:
 - verify that the emission values generated by the modeling software are consistent as certified
 - Perform the check pursuant to the same schedule and validate the same time period as for daily calibration error test
- Periodic calibration of the sensors:
 - Pursuant to manufacturer's specifications for each component

Checks for a stack flow monitor

- Daily interference checks:
 - * Conduct the check with the same schedule and validate the same time period as for daily calibration error test
- Leak detection check:
 - Applicable to a differential pressure flow monitor
 - For each calendar quarter

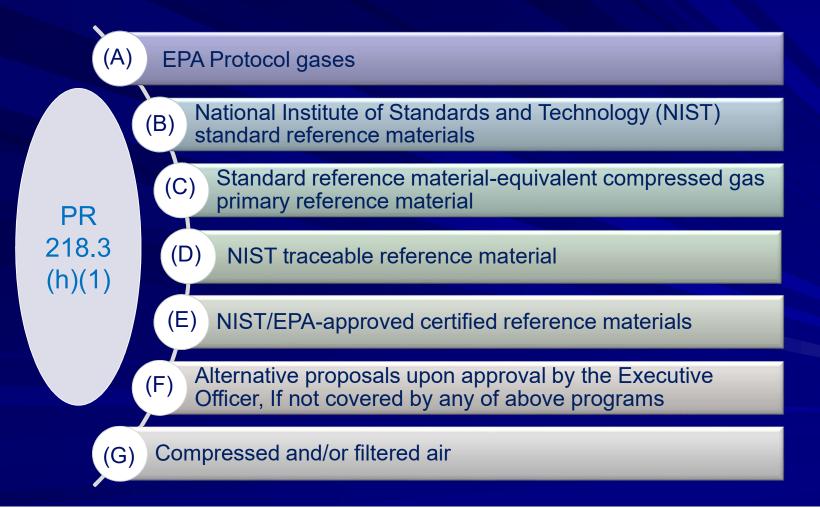
For a fuel flow measuring device in conjunction with F-factors in determining stack flow

- · Maintain the fuel flow measuring device in accordance with the manufacturer's recommendation
- Include the maintenance schedule and activities in the CEMS QA/QC plan

PR 218.3 (h): Calibration Gas and Zero Gas

- Calibration Gas is utilized for various tests and procedures, such as system bias, linearity error check, calibration error test, and cylinder gas audit
- Lower concentration calibration gas would be required for lower emission limit
- More certification program options are provided for calibration gas which would address the supply for lower concentration calibration gas
- Zero gas can be used for the quality assurance test when the low range 0-20% span calibration gas (no changes to existing requirements)

PR 218.3 (h)(1) Options for Calibration Gas



PR 218.3 (h)(2) Qualified Zero Gas

 Certified by the manufacturer to contain no more than 0.1 ppm of the air pollutant; or 1.0 percent of the applicable standard, whichever is less 	
 Certified by the manufacturer to contain less than 0.5 ppm carbon monoxide; or 1.0 percent of the applicable standard, whichever is less 	
 Certified by the manufacturer to contain less than \$ 1.0 ppm carbon dioxide or oxygen 	
 May be used instead of zero gas if it is: Demonstrated to be equivalent quality to the above zero gas standards; and Included in their QA/QC plan 	

PR 218.3 (i): Data Handling

- Both Rule 218.1 and PR 218.3 address:
 - Data handling for data falling below 10 percent of the upper span value; and
 - Data validity of data below 10 percent or above 95% of the upper span value
- In addition, PR 218.3 specifies emission data averaging method, CEMS data availability, CEMS out-of-control period as in other regulations for CEMS
- PR 218.3 also addresses the concern on data above 95% of the upper span value, when the data is considered invalid and discarded for emission calculation or compliance demonstration

PR 218.3 (i): Data Handling

(i)(1): Data Points Below 10 Percent of the Upper Span Value (10 percent)

For an analyzer with a single span range, report: • The 10 percent value

For an analyzer with multiple span ranges, report:

- The 10 percent value, if the data is not within 10 to 95 percent of the upper span value of any other span range; or
- The monitored value if the data is within 10 to 95 percent of any other span range

For the lowest vendor guaranteed span range, report:

- The 10 percent value; or
- The actual measured value if attachment A requirements are met

The reported 10 percent value shall be flagged for CEMS status code

(i)(2): Data Points Above 95 Percent of the Upper Span Value (95 percent)

For an analyzer with a single span range, report: • The 95 percent value

For an analyzer with multiple span ranges, report:

- The 10 percent value, if the data is also below 10 percent of another span range;
- The 95 percent, if the date is above 95 percent of the highest span range (or higher span range for a dual range analyzer); or
- The monitored value if the data is within 10 to 95 percent of any other span range

Calculate "spiking data percentage" for each quarter

If the spiking data percentage is over 1.0 percent for any two quarter in a four quarter period:
An additional span range should be certified within 30 days

Spiking Data Percentage = (amount of one-minute spiking data points *)/(total amount of one-minute data points *) x 100%

* Excluding CEMS out-of-control period and the period when the unit is not subject to any emission limit

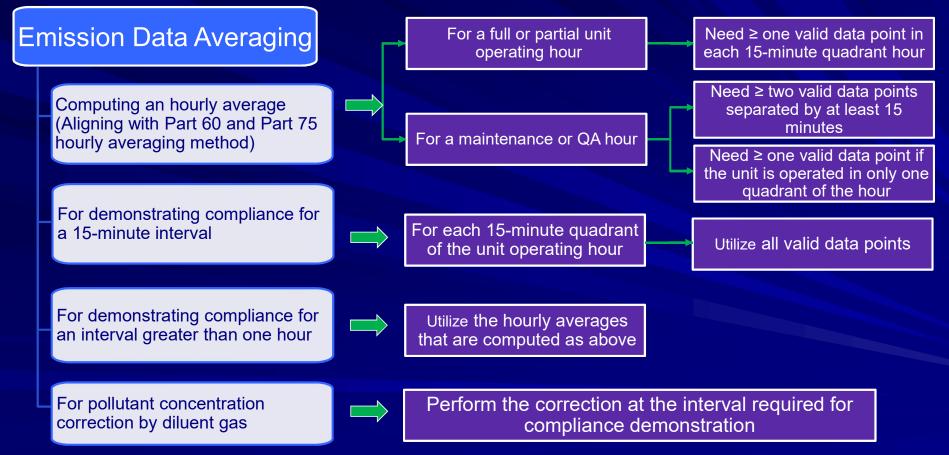
Valid for quantification, and available for the purpose of determining CEMS data availability, if all QA/QC are met

(i)(3): If the reported "10 percent"

and "95 percent" valid data

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PR 218.3 (i)(4): Emission Data Averaging



PR 218.3 (i)(5): CEMS Data Availability

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CEMS Data Availability

For each calendar quarter, calculate "date availability" for each analyzer (equation in rule)

The hours to be excluded from the "data availability" calculation

CEMS data availability threshold and subsequent requirements



Startup and shutdown period not subject to any emission limit CEMS maintenance, repair, or audit for up to 30 hours/quarter ٠

Valid breakdown

Requirements if:

- Below 95 percent for one quarter •
- Below 95 percent for two quarters

PR 218.3 (i)(6): CEMS Out-of-Control Period and **Alternative Data Acquisition**

Out-of-Control Period and Alternative Data Acquisition

Defines CEMS out-of-control period

CEMS data generated during the CEMS outof-control period:

Deemed invalid for emission guantification in any compliance demonstration

CEMS during the CEMS out-of-control period:

Considered unavailable for the data availability calculation

Options for alternative data acquisition

Defines what an out-of-control period is and when the out-of-control period begins and ends

- South Coast AQMD Method 100.1 ٠
- A certified standby CEMS ٠
- An alternative data acquisition method with the **Executive Officer's approval**

PR 218.3 (j): SCEMS Requirements

A SCEMS is a continuous emission monitoring system that is different from a regular CEMS on response time and data acquisition frequency

SCEMS that operate in the South Coast AQMD include:

- Time shared CEMS; and
- Technologies such as gas chromatography (GC) analysis for sulfur compound composition, F-factors and higher heating value
- Subdivision (j) for SCEMS:
 - Clarifies pre-certification, certification, quality assurance and data handling requirements; and
 - Identifies the different requirements for a SCEMS as compared to a regular CEMS

PR 218.3 (j): SCEMS Requirements

PR 218.3 (j)					
PR 218.3 (j)(1): SCEMS Requirements	PR 218.3 (j)(2): Additional Requirements for Time-shared CEMS				
 Compared with a CEMS, a SCEMS is subject to: The same pre-certification, certification, quality assurance, and data handling requirements, except for the response time and certain data point interval for calculation Response time for a SCEMS: Not exceed 15 minutes Use 15-minute data points for a SCEMS: When one-minute data points is required a CEMS in the calculation (i.e., spiking percentage) 	 Compatible span ranges for all units For each unit, data reading period should be: At least three times the response time of the system For each unit, data should be recorded : After a period of time equal to one response, following a switch of sample unit; and Every 15 minutes thereafter 				

PR 218.3 (k) - Moisture Correction

- PR 218.3 subdivision (k) provides provisions for moisture correction
- PR 218.3 provisions are the same requirements as in Rule 218.1 subparagraph (b)(4)(F)

PR 218.3 provides clarifications

- Specifies the guidance document "South Coast AQMD Technical Guidance Document R-001(TGD-R-001)"; and
- Rearranges the proposed rule language to a more structured manner

PR 218.3 (I) - Exemption

Source-specific rules or permits will supersede the PR 218.3 CEMS provisions when the CEMS provisions overlap

 For example: If a source-specific rule also specifies data averaging, the source-specific data averaging requirements should be followed

PR 218.3 Appendices

The appendices include four tables and two attachments that are comprise of:

- Existing appendices in Rule 218.1: Table 1 and Attachment A
- New appendices:

PR 218.3 Appendices:	Table 1:Reference Methods				
	Table 2: DAHS Status Codes	<u>Table 2</u> : Referenced by 218.3 (e)(4)(E) Tables 3 & 4: Information included in definition			
	Table 3: Equations	under Rule 218.1 <u>Attachment B</u> : Information included under Rule			
	Table 4: t-Values	218.1 (b)(3)(C)			
	Attachment A: Supplemental and alternative CEMS performance requirements				
	Attachment B: Concentration stratification and CEMS probe location				

Proposed Amended Rule 218

PAR 218 (b)(3) – Applicability and Monitoring Requirements

Staff proposes to incorporate a phase out provision under Rule 218 subdivision (b) for applicability 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 applicable date of compliance specified in Rule 218.2 (d)(2) or Rule 218.3 (d)(2).

Other Analysis/Assessment

California Environmental Quality Act (CEQA) Analysis

- The South Coast AQMD, as lead agency, is reviewing the proposed project
- 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

Next Steps – Rulemaking Process

Written Comments – By January 20, 2021
 Set Hearing – February 5, 2021
 Public Hearing – March 5, 2021

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