PROPOSED RULE 1147.1
WORKING GROUP MEETING #4

February 24, 2021
South Coast AQMD
Diamond Bar, CA

Zoom Meeting: https://scaqmd.zoom.us/j/99818986721
Meeting ID: 998 1898 6721
Passcode: 968433
Conference Call: (669) 900-6833
Recap of Previous Working Group
Stakeholder Comments and Response
Proposed Rule 1147 Carbon Monoxide (CO) Limit Discussion
Proposed Rule Implementation Schedule
Continuous Emissions Monitoring System (CEMS)
Proposed Rule 1147.1 Monitoring, Recordkeeping and Reporting
Next Steps
Recap of Working Group Meeting #3

- Proposed renaming equipment category from “asphalt manufacturing operations” to “aggregate dryers”
- Presented results of BARCT assessment and cost-effectiveness analysis for the aggregate dryers category
- Proposed initial BARCT limit:

<table>
<thead>
<tr>
<th>Equipment Category</th>
<th>Existing Limit in Rule 1147</th>
<th>Proposed BARCT Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggregate Dryers</td>
<td>40 ppm</td>
<td>25 ppm</td>
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</tbody>
</table>
Comment:
- BARCT limits should not be set by manufacturer guarantee
- Inconsistencies with throughput aggregate might cause source test results to show higher NOx emissions depending on aggregate type

Response:
- Proposed BARCT emission limit was determined by source test results and not solely on manufacturer guarantees
- Staff is evaluating provisions for “standard gravel” during source testing to address inconsistencies of emissions from aggregate quality similar to provisions in other air districts
Comment:
- Rotary Dryers and fluidized bed dryers should be separately evaluated due to differences in process and general equipment size

Response:
- Burners used in fluidized bed dryers are identified to be smaller than that of rotary dryers
- Staff is continuing to work with stakeholders on this topic
Comment:
- Costs used in cost-effective analysis should be based off of actual vendor quotes

Response:
- Staff has reviewed one additional equipment cost provided by a stakeholder
- Comparison with estimates presented during Working Group #3 showed staff estimates were more conservative than what the stakeholder provided for equipment cost and installation of the same size unit
PROPOSED CARBON MONOXIDE (CO) LIMIT
Rule 1147 does not currently have limit for carbon monoxide (CO)

CO Limits for equipment subject to Rule 1147 are set at the time of permitting based off of BACT or Rule 407

South Coast AQMD Rule 1146/1146.1 includes CO limit of 400 ppm for industrial boilers, steam generators and process heaters

Other air agencies such as San Joaquin Valley APCD and Ventura County APCD have CO limits of 400 ppm for similar equipment

- San Joaquin APCD Rule 4309 was adopted on December 15, 2005
- Ventura County APCD Rule 74.34 was adopted on December 13, 2016
Source Test Analysis of NOx and CO Limits for PR 1147.1

Not all permits for Proposed Rule 1147.1 applicable equipment included a limit for CO

Evaluated source test results from 26 out of 43 units in the PR 1147.1 universe

15 out of the 26 results demonstrated <40 ppm NOx and <400 ppm CO

➢ three of which demonstrated results <25 ppm NOx and <400 ppm CO

Staff proposes to include CO limit of 400 ppm corrected to 3% O2 in Proposed Rule 1147.1

Implementation schedule for CO limit to be in parallel with NOx limit implementation schedule

### Table 1 - Source Test Results for Equipment <40 ppm NOx and <400 ppm CO

<table>
<thead>
<tr>
<th>Test Date</th>
<th>Heat Input (MMBtu/hr)</th>
<th>NOx Results (@ 3% O2)</th>
<th>CO Results (@ 3% O2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>09/20/2018</td>
<td>50.0</td>
<td>24.0</td>
<td>151.0</td>
</tr>
<tr>
<td>09/19/2018</td>
<td>100.0</td>
<td>26.9</td>
<td>251.0</td>
</tr>
<tr>
<td>06/29/2010</td>
<td>66.0</td>
<td>35.0</td>
<td>321.0</td>
</tr>
<tr>
<td>01/21/2013</td>
<td>100.0</td>
<td>28.3</td>
<td>41.6</td>
</tr>
<tr>
<td>09/19/2018</td>
<td>100.0</td>
<td>26.9</td>
<td>251.0</td>
</tr>
<tr>
<td>04/06/2017</td>
<td>100.0</td>
<td>26.5</td>
<td>328.1</td>
</tr>
<tr>
<td>06/25/2010</td>
<td>109.9</td>
<td>33.3</td>
<td>116.0</td>
</tr>
<tr>
<td>02/27/2013</td>
<td>125.0</td>
<td>26.8</td>
<td>11.9</td>
</tr>
<tr>
<td>07/31/2007</td>
<td>125.0</td>
<td>28.7</td>
<td>204.0</td>
</tr>
<tr>
<td>03/18/2018</td>
<td>35.0</td>
<td>7.6</td>
<td>204.8</td>
</tr>
<tr>
<td>06/20/2017</td>
<td>25.0</td>
<td>26.3</td>
<td>285.0</td>
</tr>
<tr>
<td>06/16/2006</td>
<td>95.0</td>
<td>18.5</td>
<td>199.5</td>
</tr>
<tr>
<td>02/24/2014</td>
<td>100</td>
<td>29.6</td>
<td>119.3</td>
</tr>
<tr>
<td>08/16/2017</td>
<td>94.0</td>
<td>34.2</td>
<td>232.7</td>
</tr>
<tr>
<td>12/15/2005</td>
<td>125</td>
<td>30.9</td>
<td>255.0</td>
</tr>
</tbody>
</table>
IMPLEMENTATION SCHEDULE
Implementation Approach

- Staff is proposing an implementation approach for RECLAIM and non-RECLAIM facilities, that is generally modeled after Rule 1147.

- Two implementation schedules:
  - All units, except low-emitting or near-limit units, must submit permit applications to meet the proposed NOx and CO limits when the burner reaches 12 years.
  - Low-emitting or near-limit units must submit permit applications to meet the proposed NOx and CO limits when the burner reaches 32 years.

- Regardless of the implementation schedule, the proposed NOx and CO limits must be met if there is a combustion system modification, combustion system or burner replacement, unit relocation, or unit replacement.

- Units that meet the proposed NOx and CO limits through a source test will not be required to replace their burner; however, operators may need to modify their permit to reflect the proposed BARCT limit.
Proposed Compliance for Units Subject to 12 Year Provisions

- Currently Rule 1147 requires that operators meet NOx emission limits when the “unit” reaches 15 years.
- When the burner reaches 12 years, the operator must:
  1. By the following January 1st, submit a permit application to meet the proposed NOx and CO limits.
  2. Meet proposed NOx and CO limits 12 months after the permit to construct is issued.
- Assuming an 18-month permit approval process, operators must meet the proposed NOx and CO limits when the burner is about 15 years old – similar to the 15 years allowed under Rule 1147.
- Basing this provision on burner age instead of unit age ensures that all units meet the proposed NOx and CO limits.
- The “two-step” implementation ensures that the operator has the full 12 months to meet the proposed NOx and CO limits once permit to construct is issued.
Proposed Compliance for Units Subject to 32 Year Provisions

- Currently Rule 1147 requires that operators with units < 1 lb/day meet NOx emission limits when the “unit” reaches 35 years.
- PR 1147.1 expands this concept for low-emitting units to also include units that are near the proposed NOx limit referred to as “near-limit units”.
- For low-emitting and near-limit units, when the burner reaches 32 years the operator must:
  - First: Submit a permit application to meet the proposed NOx and CO limits (6 months to submit permit application)
  - Second: Meet proposed NOx and CO limits 12 months after the permit to construct is issued
- Operators to meet the proposed NOx and CO limits when the burner is about 35 years old
  - Similar to the 35 years allowed under Rule 1147
- The “two-step” implementation ensures that the operator has the full 12 months to meet the proposed NOx and CO limits once permit to construct is issued.
Defining Low-Emitting and Near-Limit Units Subject to 32 Year Provision

- PR 1147.1 will use the same threshold as Rule 1147 for defining low-emitting units at < 1 lb/day
  - Units that qualify as low-emitting to meet proposed NOx and CO limits when the burner reaches 35 years

- Propose near-limit units with a permit limit at or below 36 ppm NOx AND <100 MMSCF natural gas usage per year
  - Units that meet this criteria had an average cost-effectiveness of $478,000 per ton of NOx reduced and consistent with findings presented during Working Group #3
  - This approach will address units with high cost-effectiveness values, but still requires that operators to meet the proposed NOx limit when the burner reaches 35 years
Implementation Timelines

Original Rule 1147 Timeline

Original Unit MFG Date

Submit Permit Application

14 Years and 5 Months

18 Months**

7 Months

Proposed Rule 1147.1 Timeline

Original Unit MFG Date

Submit Permit Application (January 1, 2021)*

Permit to Construct Issued

Comply with Proposed Limit at 15 years

12 Years

12 Months

6 Months

18 Months**

12 Months

* Failure to submit permit application by appropriate deadline will require that unit to meet BARCT limit when the burner turns 15 or 35 years, as applicable for units < 40 MMBtu/hr

** Permitting timeline subject to vary, assume permit to construct to be issued after 6 months of application submittal
## Summary of Implementation Approach for RECLAIM and Non-RECLAIM

<table>
<thead>
<tr>
<th>Applicability</th>
<th>Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All Units</strong> (Except Low-Emitting and Near Limit Units)</td>
<td>• Beginning July 1, 2021 and every July thereafter, when a burner reaches 12 years submit a permit application by January 1&lt;sup&gt;st&lt;/sup&gt; of the following calendar year that the burner reaches 12 years</td>
</tr>
<tr>
<td></td>
<td>• Must meet proposed NOx and CO limit 12 months after Permit to Construct is issued</td>
</tr>
<tr>
<td><strong>Low-Emitting Units</strong></td>
<td>• Beginning July 1, 2021 and every July thereafter, when a burner reaches 32 years submit a permit application by January 1&lt;sup&gt;st&lt;/sup&gt; of the following calendar year that the burner reaches 32 years</td>
</tr>
<tr>
<td>Units with NOx emissions below 1 lb/day</td>
<td>• Must meet proposed NOx and CO limit 12 months after Permit to Construct is issued</td>
</tr>
<tr>
<td><strong>Near-Limit Units</strong></td>
<td>• Regardless of the implementation schedule above, operators must meet proposed NOx limit if there is a combustion system modification, combustion system or burner replacement, unit relocation, or unit replacement</td>
</tr>
<tr>
<td>Units with permit limit at or below 36 ppm and &lt; 100 MMScf/yr gas usage</td>
<td>• Regardless of the implementation schedule above, operators must meet proposed CO limit at the time of meeting proposed NOx limit</td>
</tr>
<tr>
<td><strong>All Units</strong></td>
<td></td>
</tr>
</tbody>
</table>

- **Applicability**
  - **RECLAIM Units**
    - All Units (Except Low-Emitting and Near Limit Units)
    - Low-Emitting Units (Units with NOx emissions below 1 lb/day)
    - Near-Limit Units (Units with permit limit at or below 36 ppm and < 100 MMScf/yr gas usage)
  
- **Implementation**
  - Beginning July 1, 2021 and every July thereafter, when a burner reaches 12 years submit a permit application by January 1<sup>st</sup> of the following calendar year that the burner reaches 12 years.
  - Must meet proposed NOx and CO limit 12 months after Permit to Construct is issued.
  - Regardless of the implementation schedule above, operators must meet proposed NOx limit if there is a combustion system modification, combustion system or burner replacement, unit relocation, or unit replacement.
  - Regardless of the implementation schedule above, operators must meet proposed CO limit at the time of meeting proposed NOx limit.
CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS)
CEMS Requirements in RECLAIM

❖ RECLAIM sources are categorized as Major, “Super Compliant” Major, Large and Process units
❖ Equipment under the Major Source categorization are required to be equipped with Continuous Emissions Monitoring Systems (CEMS)
❖ Some aggregate facilities operating equipment applicable to the Major Source requirements were given the designation of “Super Compliant” and were not subject to CEMS requirements
❖ Additional assessment of existing monitoring requirements were conducted for Major and “Super Compliant” Major sources under RECLAIM to avoid backsliding on existing CEMS provisions
Existing CEMS Requirements

RECLAIM Major Source

- Units with ≥40 MMBtu/hr with annual heat input of ≥90 Billion BTU/year or ≥500 Million BTU/hr
- Required to install, maintain and operate CEMS or equivalent
- Required to conduct relative accuracy test audit (RATA) every 6 months to demonstrate 20% relative accuracy
  - Facilities meeting more stringent 7.5% relative accuracy to conduct RATA annually
Facilities with a major source at or below their adjusted 2003 allocation as of their 1994 compliance year may choose to reclassify into large source
• Referred to as super compliant major source

Must accept equipment specific concentration limit on equipment permit at the time of reclassification
• Initial source test conducted to demonstrate compliance with concentration limit

Periodic source testing requirements:
• Initial source test interval of every 6 months
• Extend interval to every four quarters after two years of consistent compliant source test results
Proposed Rule 1147.1 CEMS Provision

- CEMS provision for Proposed Rule 1147.1 will mirror qualifications for Major Sources under Rule 2012
- RECLAIM major sources or units with existing CEMS units will be required to retain their systems and comply with requirements of Rule 218 series
  - Staff has identified two units with existing CEMS within RECLAIM
- Existing units, including “super compliant” major sources, that meet the CEMS threshold under PR 1147.1 will be required to install CEMS and comply with requirements of Rule 218 series

<table>
<thead>
<tr>
<th>Criteria</th>
<th>RECLAIM Rule 2012</th>
<th>Proposed Rule 1147.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>40 MMBtu/hr</td>
<td>40 MMBtu/hr</td>
</tr>
<tr>
<td>Heat Input</td>
<td>90 Billion Btu per year</td>
<td>90 Billion Btu per year</td>
</tr>
</tbody>
</table>
Proposed Rule 1147.1 CEMS Provisions Overview

Equipment with CEMS

Retain CEMS and comply with applicable requirements of Rule 218 series

Equipment without CEMS

\text{Yes}

\text{Install CEMS and comply with applicable requirements of Rule 218 series}

\text{No}

\text{Conduct initial source tests every 6 months then annually after 2 years of consistent passing source tests}

\text{Equipment} \geq 40 \ \text{MMBtu/hr}

\text{And} \geq 90 \ \text{Billion BTU/yr}?

Based off of facilities with AER and RECLAIM reporting, 5 additional units (3 in RECLAIM and 2 in non-RECLAIM) are expected to install CEMS
### Proposed Rule 1147.1 Source Testing Provision

<table>
<thead>
<tr>
<th>Equipment Size</th>
<th>RECLAIM Rule 2012</th>
<th>Proposed Rule 1147.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥40 MMBtu/hr</td>
<td>Initially every 6 months then annually after 2 years of consistent passing source tests</td>
<td><strong>Conduct</strong> initial source tests every 6 months then annually after 2 years of consistent passing source tests</td>
</tr>
<tr>
<td>(RECLAIM &quot;Super Compliant&quot; Major Sources that do not meet CEMS applicability)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40 MMBtu/hr; and</td>
<td>Every 3 years</td>
<td>Every 3 years</td>
</tr>
<tr>
<td>≥10 MMBtu/hr</td>
<td>Every 3 years</td>
<td>Every 3 years</td>
</tr>
<tr>
<td>(RECLAIM Large Sources)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;10 MMBtu/hr</td>
<td>Every 5 years</td>
<td>Every 5 years</td>
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<tr>
<td>(RECLAIM Process Sources)</td>
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</tbody>
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- Source testing provisions for Proposed Rule 1147.1 will mirror requirements of RECLAIM.
- Non-RECLAIM units subject to PR 1147.1 will be required to conduct initial source tests within 12 months of rule adoption.
Next Steps

- Present draft rule language during next working group meeting scheduled for early March 2021
- Release Draft Rule Language and Draft Staff Report
- Public workshop in late March/early April 2021
- Stationary Source Committee Meeting on April 16, 2021
- Public Hearing on June 4, 2021
# CONTACTS

<table>
<thead>
<tr>
<th>General RECLAIM Questions</th>
<th>Proposed Amended Rules 1147 and 1100</th>
<th>Proposed Rule 1147.1</th>
<th>Proposed Amended Rules 1147, 1100 and Proposed Rule 1147.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gary Quinn, P.E.</td>
<td>Shawn Wang</td>
<td>Yanrong Zhu</td>
<td>James McCreary</td>
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<tr>
<td>Program Supervisor</td>
<td>Air Quality Specialist</td>
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<td>Assistant Air Quality Specialist (W.O.C)</td>
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