Rule 1110.2
Working Group Meeting No. 1

Emissions from Gaseous- and Liquid- fueled Engines
June 28, 2018

Agenda

- Background
- Overview of BARCT analysis
- Assessment of SCAQMD Regulatory Requirements
- Initial evaluation of RECLAIM facilities
- Next steps and proposed schedule
Background

– RECLAIM Transition
– Rule Development

Background – RECLAIM Transition

• In March 2017, the SCAQMD adopted the 2016 AQMP
  – Control measure CMB-05 requires the RECLAIM program to transition to a command-and-control structure
  – Requires a 5 ton per day NOx emission reduction to be achieved with Best Available Retrofit Control Technology (BARCT)
• In July 2017, Assembly Bill 617 was signed by the Governor
  – Requires expedited BARCT implementation by December 31, 2023
Background – RECLAIM Transition

• Purpose of PAR 1110.2
  – Reduce NOx, VOC, and CO emissions from all stationary and portable internal combustion engines (ICEs) above 50 brake horsepower (bhp)
  – For RECLAIM transition, focus will be on NOx while evaluating VOC and CO
Rule Development – Development of Staff Proposal

- Initial concepts are presented in Working Group Meetings
- Developing rule concepts and draft proposed rule language is an iterative process with stakeholder input
- Staff will release the Preliminary Draft Rule and Staff Report no later than 75 days before the Public Hearing
  - Staff will have the first draft of PAR 1110.2 more than 75 days before the Public Hearing
  - This will allow for several drafts of the rule for stakeholder input before the Public Hearing

Rule Development – Stakeholder Input

- Stakeholder input is a key element throughout the rule development process
- Staff encourages early input from all stakeholders – opportunities for input provided throughout the rulemaking process
- Goal is a proposal that all facilities can comply with and that meets the objectives of the proposed amended rule
- Staff encourages facilities to meet with staff to discuss any concerns – unique situations, clarification of provisions, etc.
Rule Development – Stakeholder Input Opportunities

Overview of BARCT Analysis
BARCT Requirements

• California Health and Safety Code Section 40406 defines BARCT as
  – “…an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source.”

• Health and Safety Code Section 40920.6:
  – Requires evaluation of BARCT prior to adopting rules or regulations

BARCT Assessment Guiding Principles

• BARCT analysis includes a technology assessment
  • Equipment-specific
  • Fuel-specific
  • Equipment size-specific: Range of equipment sizes, depending on control strategies
  • Application and usage of unit: capacity, types of uses, etc.

• Cost effectiveness will consider
  • Incremental cost effectiveness
  • Stranded assets
  • Outliers
  • Recent installation to meet prior NOx reduction commitments
Overview of Technology Assessment

- Assessment of SCAQMD Regulatory Requirements
- Assessment of Emission Limits of Existing Units
- Other Regulatory Requirements
- Assessment of Pollution Control Technologies

Assessment of SCAQMD Regulatory Requirements

- Objective: Identify existing regulatory requirements for that particular source category
- Rule 1110.2
  - Current requirements
  - Other rules or guidelines regulating the source category
  - Existing exemptions
  - Potential issues identified during previous rulemakings
Assessment of Emission Limits for Existing Units

- Objective: Evaluate existing units to understand what emission levels can be achieved based on permitted and actual levels
- Actual emission rate
  - Source test
  - Continuous Emissions Monitoring System (CEMS)
  - Relative Accuracy Test Audit (RATA)
- Pollution control technology

Information Needed for Evaluating Existing Units

Analysis of Permitted Emission Levels
- Emission limit
- Equipment type
- Fuel type
- Equipment size
- Air pollution control technology
- Age of equipment
- Retrofit or replacement

Analysis of Actual Emissions Data
- Emission limit (source tests or CEMS data)
- Throughput data (Annual Emission Reports)
Other Regulatory Requirements

- Objective: Evaluate other air districts with more stringent limits for same source categories
- Assess other rules and regulations outside of SCAQMD’s jurisdiction that regulate the same sources
- Consider
  - Implementation date
  - Applicability
  - Alternative compliance approach

Assessment of Pollution Control Technologies

- Objective: Identify pollution control technologies, approaches, and potential emission reductions
- Technology assessment should be all encompassing
- Identify known controls
- Consider emerging technology
Assessment of SCAQMD Regulatory Requirements
- Regulatory History of Rule 1110.2

Overview of Technology Assessment

- Assessment of SCAQMD Regulatory Requirements
- Assessment of Emission Limits of Existing Units
- Other Regulatory Requirements
- Assessment of Pollution Control Technologies
Assessment SCAQMD Regulatory Requirements

**Objective:** Identify existing SCAQMD regulatory requirements for that particular source category

- If there is an applicable SCAQMD rule?
- What are the current requirements?
- Are there other rules regulating the source category (other pollutants such as toxic air contaminants or other criteria pollutants)?
- Are there existing exemptions?
- Review the staff report to understand potential issues identified during previous rulemakings

Considerations

- Is the new BARCT analysis expanding the applicability – size, application of equipment, fuel types, etc.?
- Are there existing rules that do not affect the emission limit but have other requirements such as monitoring, reporting and recordkeeping requirements?
Regulatory History of Rule 1110.2

- Rule 1110.1 was adopted in October 1984 and required NOx and CO emission reductions from stationary, gaseous-fueled ICEs
- Rule 1110.2 was adopted in August 1990 and required additional reductions for NOx and also VOC from stationary, non-emergency gaseous- and liquid-fueled ICEs; extended regulation to liquid-fueled and portable ICEs
- June 2005 Amendment:
  - SB 700 eliminated statewide agricultural operations exemption
  - Required BARCT to be applied for agricultural engines

Regulatory History of Rule 1110.2 (continued)

- February 2008 Amendment:
  - Affected 859 ICEs at 405 facilities
  - Conducted BARCT assessment; lowered emissions limits for stationary, non-emergency engines:
    o 11 ppmvd NOx (@ 15% O2)
    o 30 ppmvd VOC (@ 15% O2)
    o 250 ppmvd CO (@ 15% O2)
  - Due to inadequate compliance found through inspection activities, amendment increased monitoring requirements to include more frequent emissions testing and development of facility Inspection and Monitoring (I&M) plans
Regulatory History of Rule 1110.2 (continued)

• September 2012 Amendment:
  − Affected 55 ICEs at 22 facilities
  − Re-established biogas engine emissions limits to meet those for natural gas engines
  − Included accompanying technology assessment
• December 2015 Amendment:
  − Extended the compliance deadline for biogas engines
  − Addressed USEPA concerns related to SIP approvability issues contained in the rule language regarding excess emissions from startup, shutdown, and malfunction (SSM)

• June 2016 Amendment:
  − Extended the compliance deadline for one facility due to economic concerns related to its power purchase agreement
Assessment of SCAQMD Regulatory Requirements  
- Approach for Proposed Amendments

Approach for Proposed Amendments

- Previous amendment lowered emissions limits for stationary, non-emergency engines:
  - 11 ppmvd NOx (@ 15% O2)
  - 30 ppmvd VOC (@ 15% O2)
  - 250 ppmvd CO (@ 15% O2)
- BARCT Evaluation Concepts
  - Establish current BARCT limit of 11 ppmvd NOx (@15% O2) for RECLAIM units
  - 2015 RECLAIM BARCT also at 11 ppmvd NOx (@15 % O2)
- Evaluation of specific engine types
  - 2-stroke lean-burn engines (gas compression)
  - Outer-continental shelf (OCS) engines
  - Others
Approach for Proposed Amendments (continued)

- Evaluation of pollution control strategies and equipment
  - Identify known controls
  - Review new technology
  - Consider unique circumstances
- Monitoring, reporting, and recordkeeping (MRR) requirements
  - Evaluate MRR in both R1110.2 and in RECLAIM
  - Evaluate CEMS requirements including overlaps and disparities between R1110.2 and RECLAIM

Approach for Proposed Amendments (continued)

- Rule amendment approach
  - BARCT limits will be established in Rule 1110.2
  - Implementation schedule for RECLAIM facilities will be contained in Rule 1100
  - This rule would also affect engines covered under industry specific rules (e.g., R1109.1 and R1135)
Initial Evaluation of RECLAIM Facilities

RECLAIM Facilities and Equipment Subject to PAR 1110.2

- Data collected from permit files has identified 24 RECLAIM facilities affected by this rule making process
- Data represents 98 engines

<table>
<thead>
<tr>
<th>Rule 1110.2 Potential Universe</th>
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</thead>
<tbody>
<tr>
<td>Affected facilities</td>
</tr>
<tr>
<td>No. of ICEs</td>
</tr>
<tr>
<td>Type of engines</td>
</tr>
<tr>
<td>Rich – 32</td>
</tr>
<tr>
<td>Lean (2 stroke) – 21</td>
</tr>
<tr>
<td>Lean (4 stroke) – 45</td>
</tr>
<tr>
<td>No. of ICEs at offshore oil production facilities</td>
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# Distribution of Engines by Size (bhp)

<table>
<thead>
<tr>
<th>No. of Engines per Size Distribution (bhp)</th>
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<tbody>
<tr>
<td>0 – &lt;50</td>
<td>1</td>
</tr>
<tr>
<td>50 – &lt;250</td>
<td>38</td>
</tr>
<tr>
<td>250 – &lt;1000</td>
<td>34</td>
</tr>
<tr>
<td>1000 – &lt;2000</td>
<td>2</td>
</tr>
<tr>
<td>2000 – &lt;3000</td>
<td>9</td>
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<tr>
<td>3000 – 5500</td>
<td>14</td>
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- Engine size data was collected from RECLAIM permits

![Bar chart showing distribution of engines by size (bhp)](chart)

# Distribution of Engines by Fuel Type

<table>
<thead>
<tr>
<th>No. of Engines per Fuel Type</th>
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<tbody>
<tr>
<td>Diesel</td>
<td>43</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>41</td>
</tr>
<tr>
<td>Field Gas</td>
<td>4</td>
</tr>
<tr>
<td>Propane</td>
<td>3</td>
</tr>
<tr>
<td>LPG</td>
<td>3</td>
</tr>
<tr>
<td>Digester Gas</td>
<td>2</td>
</tr>
<tr>
<td>Produced Gas</td>
<td>1</td>
</tr>
<tr>
<td>Gasoline</td>
<td>1</td>
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</tbody>
</table>

- Engine fuel type was collected from RECLAIM permits

![Bar chart showing distribution of engines by fuel type](chart)
Distribution of Engines per Emission Limit (ppm)

<table>
<thead>
<tr>
<th>No. of Engines per Emission Limit Distribution (ppm)</th>
<th>Count</th>
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<tbody>
<tr>
<td>0 - 11</td>
<td>18</td>
</tr>
<tr>
<td>12 - &lt;50</td>
<td>23</td>
</tr>
<tr>
<td>50 - &lt;100</td>
<td>15</td>
</tr>
<tr>
<td>100 - &lt;200</td>
<td>9</td>
</tr>
<tr>
<td>200 - &lt;500</td>
<td>13</td>
</tr>
<tr>
<td>500+</td>
<td>19</td>
</tr>
</tbody>
</table>

- Emission limit data was collected from RECLAIM permits
- For major sources without a permit limit, RATA test data was used

Next Steps and Proposed Rule Schedule
Next Steps

Staff will continue with rule development process, which will include:
• Further evaluation of equipment universe of engines by fuel type
• BARCT analysis for certain unique engine types
• Site visits of affected facilities
• Meetings with facility representatives

Proposed Rule Schedule

- Next working group meeting: 3rd Quarter 2018
- On-going working group meetings: 3rd/4th Quarter 2018
- Public Workshop: 4th Quarter 2018
- Public Hearing: 1st Quarter 2019
Staff Contacts

Please contact AQMD staff with any questions or comments

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