Public Workshop for District Rule 4311 (Flares)

November 13, 2019

webcast@valleyair.org
What is Flaring?

• Flaring is a high temperature oxidation process used to burn primarily hydrocarbons of waste gases from industrial operations
  – Flares typically have a destruction efficiency of 98% or higher
• Flares act as a safety device during unforeseeable and unpreventable situations, and as an emission control device for air toxics and VOCs
• Two general types of flares: elevated and ground flares
• Flares used as a safety device in case of emergency situations generally have large flaring capacities to allow them to handle large volumes of gas
  – Emergency situations include equipment failure, process malfunctions, and natural disasters
  – Operators avoid flaring due to high costs, and implement alternatives where feasible
Valley Flaring Operation Facility Types

• Oil and gas production facilities
• Petroleum refineries
• Landfills
• Natural gas processing facilities
• Wastewater treatment plants
• Miscellaneous facilities
Current District Flare Requirements

- District Rule 4311 (Flares) adopted June 2002, amended in 2006, again in 2009 to add new requirements, including annual reporting and flare minimization practices
  - Rule limits emissions of NOx, VOCs, and SOx from the operation of flares
- Current requirements for operations with flares include:
  - NOx limits as low as 0.068 lb-NOx/MMBtu (53 ppmv NOx)
  - Proper operation requirements (i.e., ignition system, heat sensors, etc.)
  - Flare minimization plans
  - Reporting of unplanned flaring event within 24 hours, annual reporting, and reporting of when monitoring system is not operating
  - Vent gas composition monitoring
  - Video monitoring
### Flaring Emissions Inventory Information
(tons per day)

<table>
<thead>
<tr>
<th>Year</th>
<th>2013</th>
<th>2017</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM2.5</td>
<td>0.16</td>
<td>0.16</td>
<td>0.16</td>
</tr>
<tr>
<td>NOx</td>
<td>0.56</td>
<td>0.54</td>
<td>0.54</td>
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## San Joaquin Valley Flare Inventory

<table>
<thead>
<tr>
<th>Category</th>
<th># Flares</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Production and/or Distribution</td>
<td>6</td>
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<tr>
<td>Gas Plants</td>
<td>11</td>
</tr>
<tr>
<td>Landfills (Open)</td>
<td>17</td>
</tr>
<tr>
<td>Landfills (Closed)</td>
<td>11</td>
</tr>
<tr>
<td>Oil and Gas Production</td>
<td>152</td>
</tr>
<tr>
<td>Other</td>
<td>17</td>
</tr>
<tr>
<td>Propane Backup System</td>
<td>6</td>
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<tr>
<td>Refinery</td>
<td>7</td>
</tr>
<tr>
<td>Wastewater Treatment</td>
<td>22</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>249</strong></td>
</tr>
</tbody>
</table>
Attainment Plan Commitments

• 2016 Ozone Plan commitments
  – Technical analysis to evaluate the feasibility of additional flare minimization requirements
  – Additional low NOx flare emission limitations for existing and new flaring activities at Valley facilities, where technologically achievable and economically feasible

• 2018 PM2.5 Plan commitments: 0.05 tpd NOx Emissions Reductions
  – Under Federal Clean Air Act, sources must meet “Most Stringent Measures”
  – Additional low NOx flare emission limitations for existing and new flaring activities at Valley facilities, to the extent that such controls are technologically achievable and economically feasible
  – Additional flare minimization requirements, to the extent that such controls are technologically achievable and economically feasible
  – Expand applicability of rule by removing the exemption for non-major sources
Public Process to Amend Rule 4311

• Scoping Meeting held August 17, 2017
• 2018 Plan for the 1997, 2006, and 2012 PM2.5 Standards
  – Adopted: November 15, 2018
  – Included updated commitments
• Flare Operator Workgroup Meetings
  – October 2017, April 2019, and July 2019
• Today’s public workshop outlines potential strategy concepts for public input
• Ongoing opportunities for public input throughout rule development process
Ultra-low NOx Flare Technology

- District has been conducting extensive evaluation of ultra-low NOx flare technologies for potential use in further reducing emissions under Rule 4311
- Technological considerations
  - Operation with low Btu oilfield gas not proven
  - May require the use of supplemental fuel
  - Emission control technology not as effective for emergency or short duration releases
  - Additional electrical/control infrastructure needed
  - Requires active monitoring of operating parameters
  - Requires additional flare maintenance
  - Regular replacement of burner media
  - Requires a startup/warmup period

Image Credit: Lfgtech, 2019
Estimated Costs of Ultra-low NOx Flare Technology

• Capital costs plus installation and engineering range based on size of flare
  – Smaller flares (up to 40 MMBtu/hr) from $250,000 – $600,000
  – Large flares (greater than 40 MMBtu/hr) significantly higher cost – up to $2.5 million

• Annual operation and maintenance expenses
  – $110,000 to $300,000

• Annualized cost/cost-effectiveness under evaluation
  – District looking for additional data
  – District to work closely with socioeconomic consultant
Proposed Rule Concepts

- Remove non-major source exemption
- Add performance standard to require ultra-low NOx technology for new and existing flares
  - For oil and gas flares with throughput greater than 20,000 MMBtu/yr
  - Proposed scenario would capture most highly used flares, and would control 85% of total gas flared by the oil and gas industry
- Ultra-low NOx proposal (consistent with South Coast Rule 1118.1)
  - 0.018 lb/MMBtu (15 ppmv) for oil and gas operations
  - 0.025 lb/MMBtu (20 ppmv) for waste water treatment and landfill gas
- Additional considerations needed for:
  - Low use backup flares (less than 200 hours per year)
  - Landfills (currently exempt under Rule 4311)
  - Wastewater treatment plants
Proposed Rule Concepts (cont’d)

• Additional proposed requirements would include:
  – Flare Minimization Plan requirement for operations flaring <20,000 MMBtu/yr
  – Requirements for proper operation
  – Monitoring, source testing, and reporting requirements

• Rule would include compliance schedule for:
  – Submission of permit application for installation of required ultra-low NOx flare or Flare Reduction Plan (to minimize flaring below applicability levels)
  – Compliance with applicable ultra-low NOx and other rule requirements (PM2.5 Plan includes implementation goal of 2023)
Socioeconomic Impact Analysis for Rule 4311

• Socioeconomic Impact Analysis will be conducted by independent consultant to analyze impacts of proposed regulation on Valley economy
• Request for Proposals (RFP) open to select consultant
  – Proposals due November 27, 2019
  – District staff expect to select a consultant by end of 2019
  – Analysis to begin Quarter 1, 2020
• Results of analysis to be publicly available and included with proposed rule amendment package
Key Questions and Considerations

• Appropriate applicability threshold for ultra-low NOx flare technology installation requirements
  – Should there be a different threshold between oil and gas flares, landfills, waste water treatment plants, etc.?

• What are the costs and technological feasibility issues associated with ultra-low NOx flares?

• What are the socioeconomic impacts associated with proposed requirements?
Next Steps: Public Engagement Process for Flare Rule Amendment Development

1. Public Workshop(s)
2. Publication of proposed rule package to the District web
3. Public comment period
4. Governing Board Public Hearing

Public Participation and Comment Invited throughout Process
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Open Discussion

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