Public Workshop for District Rule 4311 (Flares)

November 13, 2019

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What is Flaring?

Image credit: Getty Images, 2018

- 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)

Year	2013	2017	2019
PM2.5	0.16	0.16	0.16
NOx	0.56	0.54	0.54

San Joaquin Valley Flare Inventory

Category	# Flares
Chemical Production and/or Distribution	6
Gas Plants	11
Landfills (Open)	17
Landfills (Closed)	11
Oil and Gas Production	152
Other	17
Propane Backup System	6
Refinery	7
Wastewater Treatment	22
Total	**249**

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)

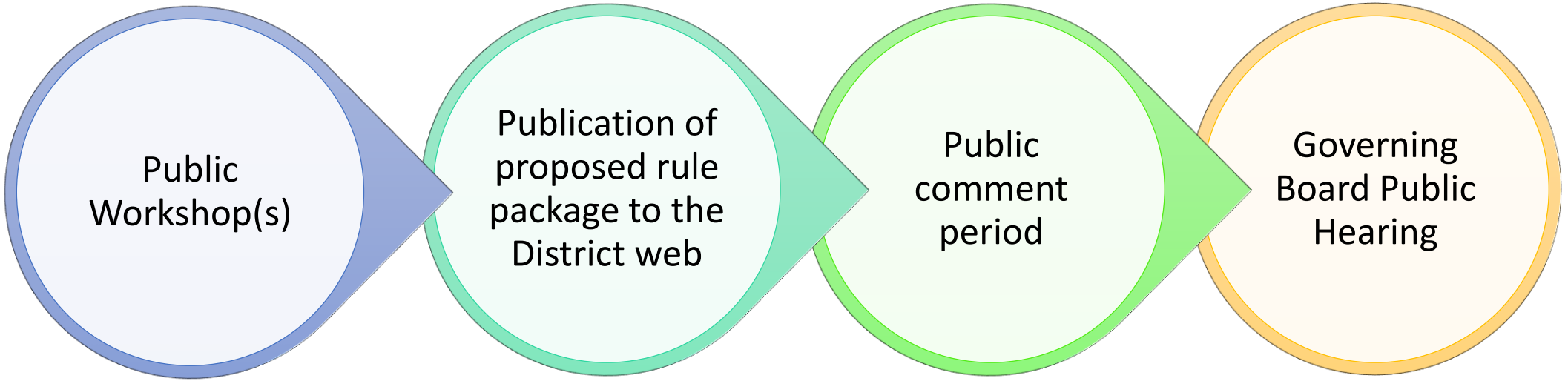
Socioeconomic Impact Analysis for Rule 4311

- 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



Public Participation and Comment Invited throughout Process

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Open Discussion

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