



Proposed Amended Rule 1118

Control of Emissions from Refinery Flares

THIRD WORKING GROUP

APRIL 27, 2017



Agenda

- Introduction and Background
- Overview of Proposed Rule Concepts
- Detailed walkthrough of Proposed Rule Concepts
- Proposed Optical Remote Sensing Pilot Program
- Next Steps
- Comments/Questions

SCAQMD

- Multi-County Air Pollution Control Agency
 - Governed by 13-member Board of local elected and appointed officials
 - 16+ million people
 - ~28,000 permitted sources

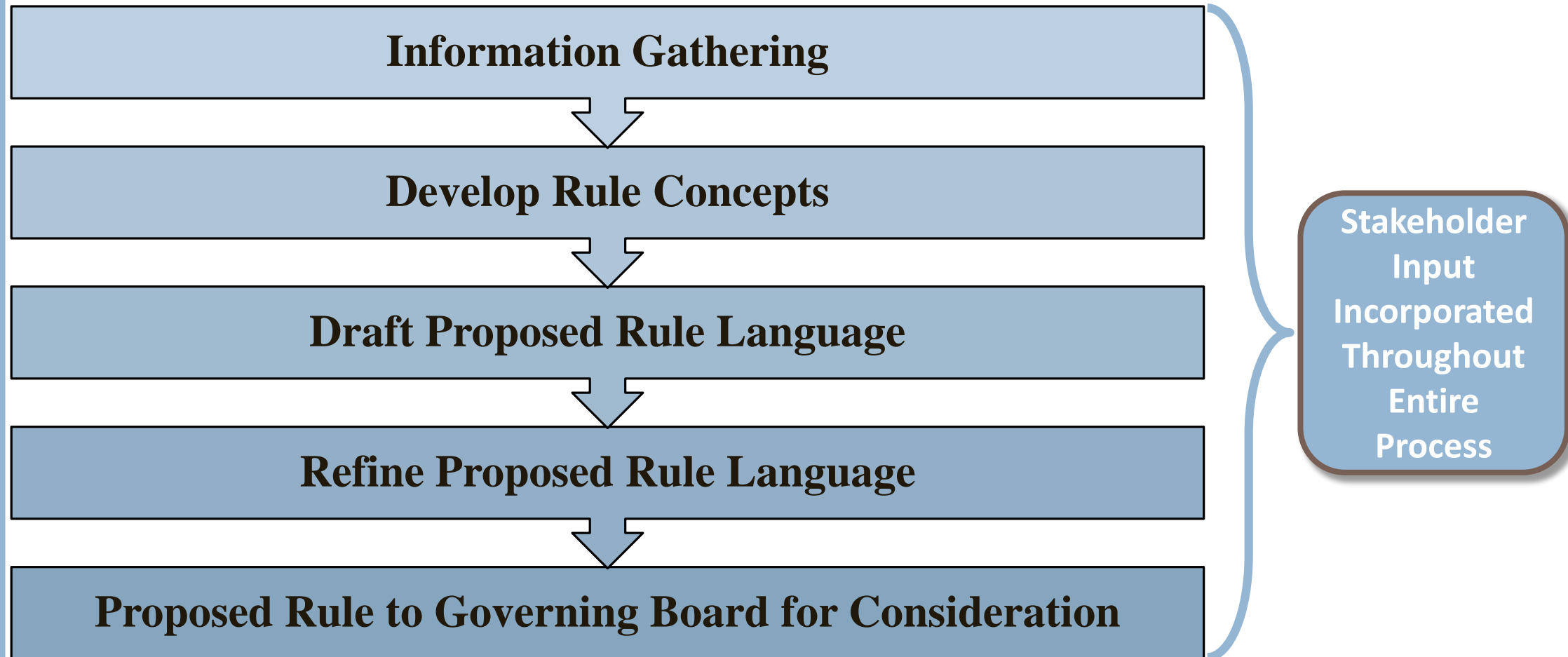


A vertical industrial smokestack or chimney is visible on the left side of the slide, extending from the bottom to the top. It is dark in color and has some structural details visible. The background of the slide is a light blue gradient.

Background

- 1st Working Group – February 2017
 - Summarized current regulations and recent flaring emissions trends
 - Presented initial draft rule concepts
- 2nd Working Group – March 2017
 - Discussed Planned vs. Unplanned Flaring
 - Compared EPA Refinery Sector Rule update with current Rule 1118
- Slides available online:
<http://www.aqmd.gov/home/regulations/rules/proposed-rules#1118>

General Overview of Rule Development Process



A vertical industrial tower, likely a distillation column, is visible on the left side of the slide. It is dark in color and has several horizontal pipes or ladders attached to it. The background is a light blue sky with some clouds.

Key Rule Amendments

- Incorporation of key EPA Refinery Sector Rule updates (e.g., Three Strikes)
- Requirement that facilities prepare Scoping Document
 - Evaluate feasibility of eliminating Planned Flaring
 - Evaluate alternatives to avoid Unplanned Flaring
- Remove \$4 million annual cap on Mitigation Fees
- Update Volatile Organic Compound emission factor
- Update Notification requirements
- Information collected from this rule amendment including Scoping Document would lead to second phase of rulemaking beginning in 2018

A vertical industrial flare stack with a ladder and platform, set against a clear sky. The stack is dark and metallic, with various pipes and structural elements visible.

Draft Rule Language

- (a) Purpose and Applicability
- (b) Definitions
- (c) Requirements
- (d) Performance Targets
- (e) Flare Minimization Plan
- (f) Flare Monitoring and Recording Plan
- (g) Operation, Monitoring, and Recording Requirements
- (h) Recordkeeping
- (i) Notification and Reporting Requirements
- (j) Testing and Monitoring Methods
- (k) Exemptions
- Attachment A – Flare Monitoring System Requirements
- Attachment B – Guidelines for Calculating Flare Emissions

Draft Rule Language

(a) Purpose and Applicability

(b) Definitions

➤ (a) Purpose and Applicability

➤ No Changes

➤ (b) Definitions

➤ Removed

➤ Clean Service Flares, Emergency Service Flares, General Service Flare

➤ Added

➤ Clean Service Streams, Flare Tip Velocity, Planned Flare Event, Smokeless Capacity

➤ Amended

➤ Essential Operational Need, Flare, Flare Event, Sampling Flare Event



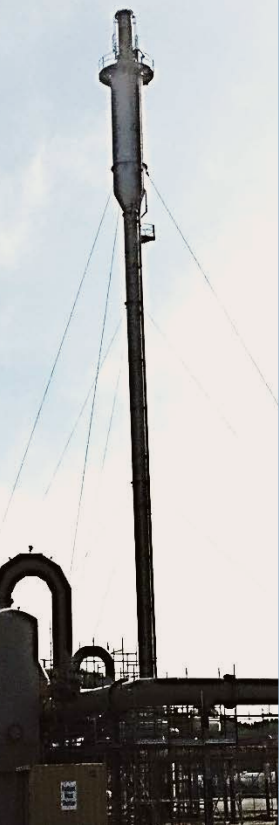
Draft Rule Language

(c) Requirements

- Removed – Deadlines that have already occurred
- **New** – Maintain Net Heating Value in combustion zone (NHV_{CZ}) >270 BTU
 - Consistent with EPA Refinery Sector Rule (RSR), but earlier compliance possible if Revised Flare Monitoring Plan is approved by July 30, 2018
- **New** – If operating flare below smokeless capacity, Flare Tip Velocity must be below 60 feet/second, or lesser of 400 feet/second or

$$\text{Log}_{10}(V_{Max}) = \frac{\text{Net Heating Value}_{Vent Gas} + 1,212}{850}$$

- Consistent with EPA RSR
- Amended – Specific Cause Analyses now required for flare events above thresholds during start-up/shut-down/turnarounds that result from non-standard operating procedure



A tall, dark industrial flare stack with a complex network of pipes and structural supports, set against a clear sky.

Draft Rule Language

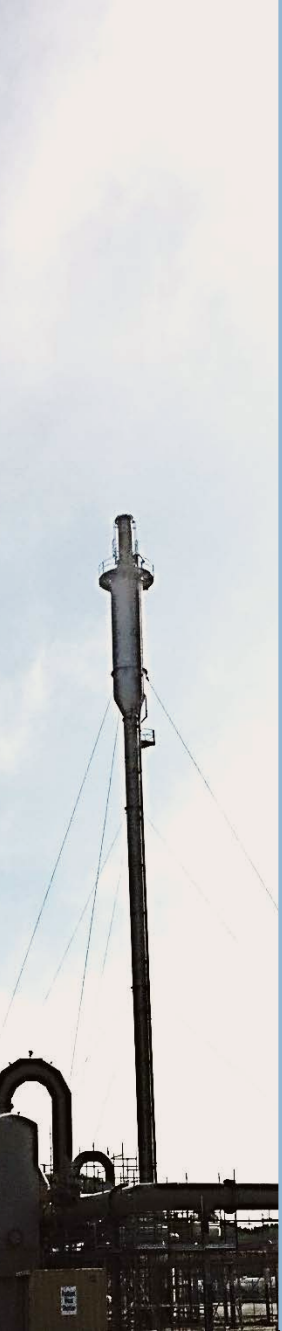
(c) Requirements – cont'd

- **New** – Specific Cause Analysis now required if flare events above smokeless capacity and either above flare tip velocity or visible emission limits
- Amended – Extensions for Specific Cause Analyses reduced from 30 to 15 days
 - Consistent with EPA RSR 45 day requirement
- **New** – Corrective actions identified in Specific Cause Analysis must be implemented within 45 days or as soon as practicable
 - Consistent with EPA RSR

Draft Rule Language

(c) Requirements – cont'd

- **New** – EPA 'Three Strikes' violations
 - One flare event above smokeless capacity and above either visible emission or flare tip velocity limits if caused by operator error
 - Two flare events above smokeless capacity and either visible emission or flare tip velocity limits with same specific cause in any three year period
 - Three flare events above smokeless capacity and either visible emission or flare tip velocity limits with any cause in any three year period
 - Effective date of January 30, 2019
 - Consistent with EPA RSR
 - Time needed to install flare monitoring instrumentation
 - Visible emission limits refer to existing Rule 401 and Rule 1118 methods
 - EPA RSR uses same method as used in Rule 1118



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(c) Requirements – cont'd

- **New** – Facilities must submit by February 1, 2018 a Scoping Document to minimize flaring which must include:
 - Planned Flare Events
 - Evaluation of feasibility of reducing emissions from Planned Flare Events to Performance Targets of 0.1, 0.05, and 0.0 tons SO_x/mmbbl
 - Current Performance Target for all flaring events is 0.5 tons SO_x/mmbbl
 - Evaluate cost, technical feasibility, and time constraints to meeting target by January 1, 2021
 - Scoping Document must evaluate two alternatives to achieve each Performance Target




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(c) Requirements – cont'd

- Scoping Document – continued
 - Emergency Flare Events
 - Evaluation of feasibility of reducing emissions from emergency flare events
 - Acts of war/terrorism and natural disasters excluded
 - Analyze three alternatives to emergency flaring by January 1, 2021
 - Examples: flare gas recovery system, cogeneration units that can provide backup power, cogeneration units that can utilize all flare gases, steam power backup for power loss, etc.
 - Description of technical design of flares
 - Scoping Documents expected to contain technical, proprietary information
 - Potential role for third party consultant with expertise to review





Draft Rule Language


(d) Performance Targets and (e) Flare Minimization Plan

➤ (d) Performance Target

- Removed – Deadlines that have already occurred
- Removed – \$4 million annual cap
 - Only two periods when cap was exceeded (ExxonMobil)
 - Bypass around flow meter led to under-reporting of flaring emissions
 - Bypass removed from service in 2013
 - February 2015 explosion of Electro-Static Precipitator (ESP) led to substantially modified operations through rest of year

➤ (e) Flare Minimization Plan

- Some details of flare system description removed from (e) and placed into section (c) [Requirements]

A tall, dark industrial flare stack with a small platform at the top, set against a clear sky. The stack is supported by cables and has various pipes and valves visible at its base.

Draft Rule Language

(f) Flare Monitoring and Recording Plan Requirements

- Removed – Deadlines that have already occurred
- Removed – Outdated provision regarding alternative sampling QA/QC
- **New** – Added requirement to monitor steam and/or air assist to flare tip
 - Consistent with EPA RSR
- **New** – Facilities must submit a Revised Flare Monitoring Plan by February 1, 2018
 - Plan must incorporate new monitoring requirements from EPA RSR
 - Plan must be submitted one year before EPA RSR deadline

A tall, dark industrial flare stack with a small platform at the top, set against a clear sky. The stack is supported by cables and is part of a larger industrial facility.

Review of Flare System Monitoring

➤ Current Monitoring

- Continuously measure and record flare gases inside flare gas system for:
 - Flow rate
 - Heating value
 - Sulfur content
 - Pilot Flame indicator

➤ Proposed Monitoring

- Flow rate of steam/air assist, pilot gas, and purge gas

Draft Rule Language

(g) Operation, Monitoring, and Recording Requirements

- Removed – Deadlines that have already occurred
- Removed – Alternative sampling methods no longer used because continuous monitors now installed
- **New** – Net Heating Value of Combustion Zone (NHV_{CZ}) requirements by January 30, 2019
 - Monitor flare gas with calorimeter ($NHV_{Vent\ Gas}$)
 - Monitor flare gas, pilot gas, purge gas, and steam/air assist flow rate
 - Equation must be used to calculate NHV_{CZ} using flow rates and $NHV_{Vent\ Gas}$
- **New** – Increased video refresh rate from once/minute to once/second
 - Added language to ensure video is suitable for visible emissions monitoring





Draft Rule Language

(h) Recordkeeping Requirements and

(i) Notification and Reporting Requirements

➤ (h) Recordkeeping

- Changed – Video recordkeeping increased from 90 days to 5 years

➤ (i) Notification and Reporting

- Removed – Deadlines that have already occurred
- **New** – Facilities required to use web-tool to notify SCAQMD instead of phone
- **New** – Facilities required to notify SCAQMD of all flare events from emergencies and essential operational needs (except clean service)
 - Notification must indicate if emissions over existing thresholds
 - Existing thresholds will still be used for public notification
- **New** – Facilities must notify SCAQMD at least 4 hours before planned flare events from a start-up within 48 hours of an unplanned shut-down of that unit
- **New** – Data collected from new monitors must be reported as soon as available, and no later than January 30, 2019

Draft Rule Language

(j) Testing and Monitoring Methods and (k) Exemptions

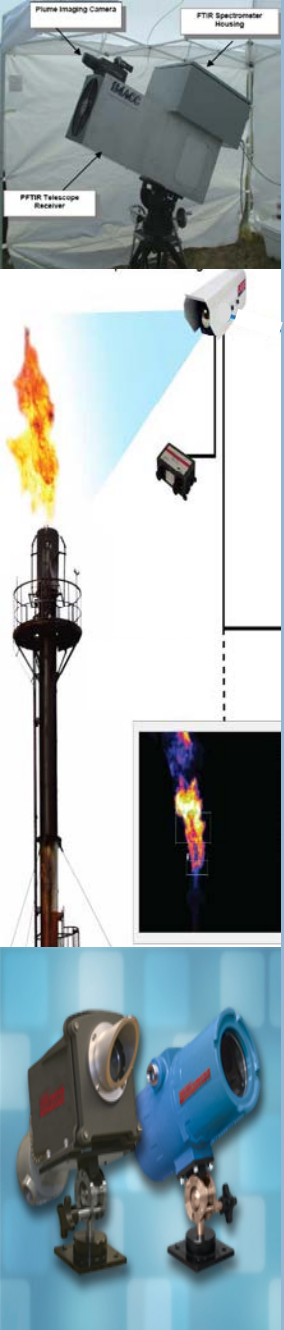
➤ (j) Testing and Monitoring Methods

- Removed – Deadlines that have already occurred
- Removed – Outdated alternative sampling of flare gas before current continuous monitoring systems were installed
- Updated – Outdated test methods for alternative sampling for clean service flares

➤ (k) Exemptions

- New – Added exemption from ‘three strikes’ provision in (c) for external causes including power disruptions, natural disasters, and acts of war or terrorism
 - Consistent with EPA RSR





Flare Optical Remote Sensing Pilot Program

- Goal of Pilot Program is to evaluate ability of ORS technologies to:
 - Provide more accurate quantification of emissions
 - Provide real-time feedback to operator and potential ability to reduce flaring emissions
- Potential approach
 - Release Request-For-Information regarding commercially available technologies that have already conducted validation studies
 - If ORS technologies available that meet criteria, then release RFP and work with facilities to conduct Pilot Study
 - If ORS technologies do not have sufficient validation, then develop validation study to test multiple technologies before conducting Pilot Study

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Next Steps

- Develop final Staff Report and Final PAR 1118 rule language
- Hold Additional Working Group Meetings if necessary
- Public Workshop:
 - Thursday, May 11, 2017**
 - SCAQMD Headquarters**
 - 21865 Copley Drive**
 - Diamond Bar, CA 91765**
 - Auditorium 2:00 p.m.**
- Stationary Source Committee Meeting – May 19, 2017
- Governing Board Meeting (set hearing) – June 2, 2017
- Governing Board Meeting (consider for adoption) – July 7, 2017

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Staff Contacts and Rulemaking Materials

➤ Staff Contacts

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➤ PAR 1118 Materials available online:

<http://www.aqmd.gov/home/regulations/rules/proposed-rules#1118>

Questions / Comments
