Bay Area Air District

Public Workshop

Concept Paper for Amendments to Rules 12-11 and 12-12: Refinery Flares

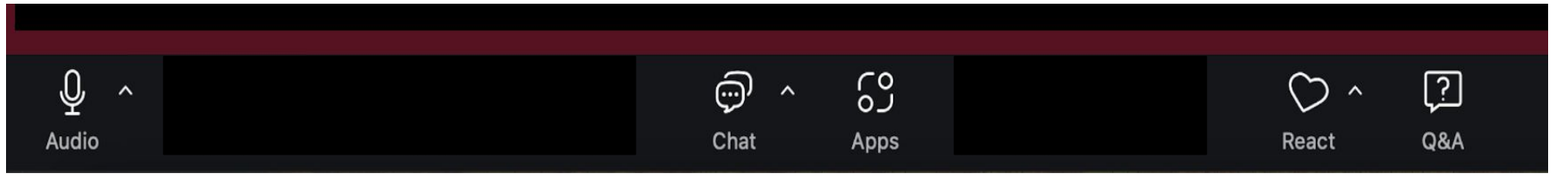
Presented by Katie Gong, Senior Air Quality Engineer, Regulatory Development Division

September 16 and 24, 2026

Zoom Information

How to Use zoom Video Conferencing

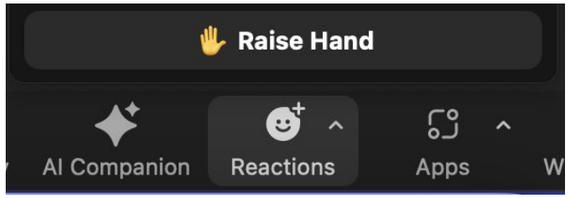
Black menu bar at top or bottom of screen



Audio:
During Q&A, raise your hand and we will invite you to unmute and share. Please mute yourself when not speaking

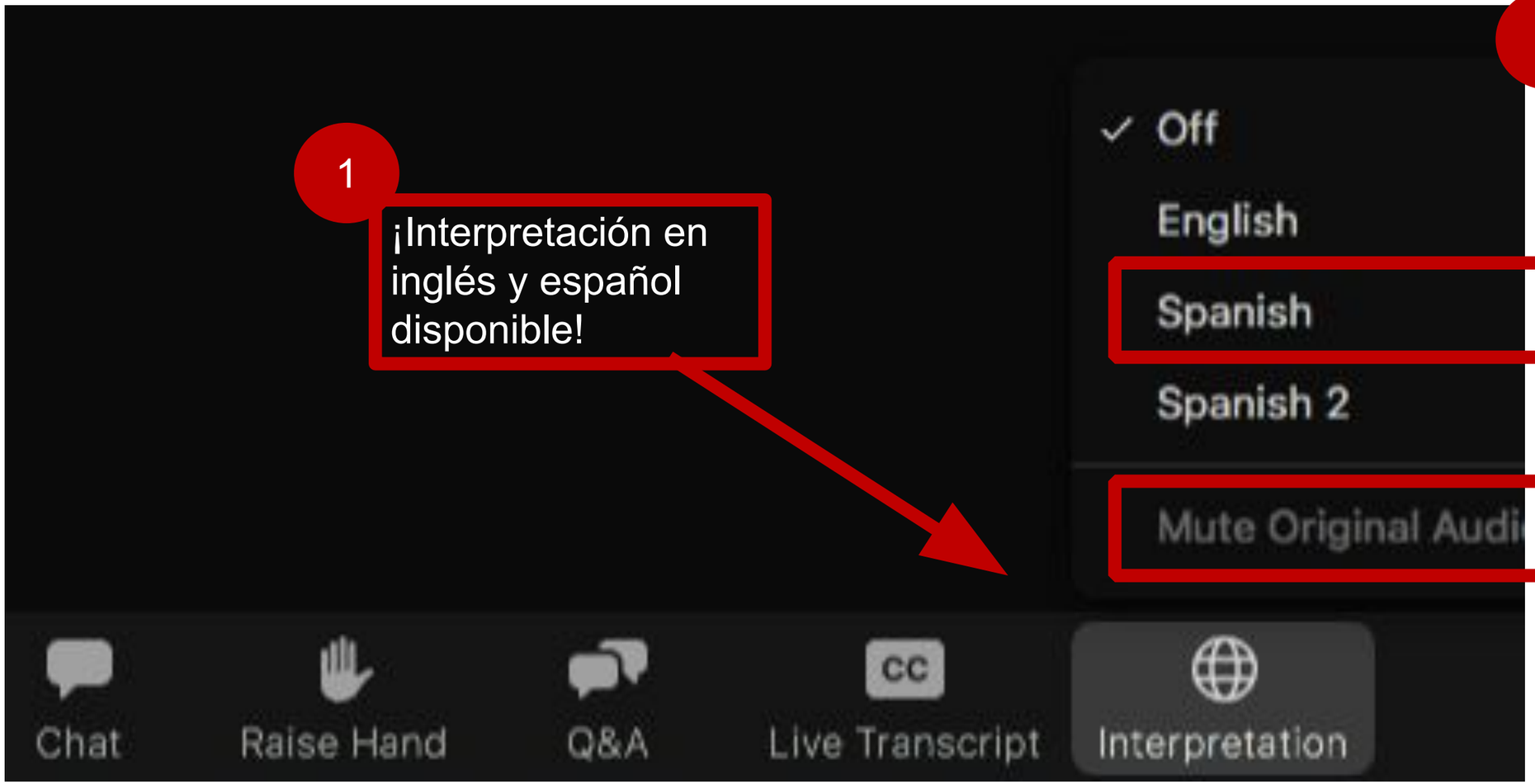
Chat Feature:
The chat box will not be monitored during this session

Q&A Box:
Submit your questions, uplike any questions in the the queue



Raise Hand Feature:
If you have questions during the Q&A session, use the raise hand feature (remember to lower after)

¿Cómo utilizar la herramienta de interpretación Zoom?



Agenda

1	Welcome & Housekeeping	6:00pm
2	Background & Context on Flaring	6:20pm
3	Regulatory Concepts	6:40 pm
4	Questions	7:00 pm

Meeting Guidelines

Hybrid Meeting

1. In-person and online participants are in the same workshop
2. We will take questions from both groups
3. Please use microphone & speak one at a time

Participation Norms

1. Share the floor, making space for others
2. Listen kindly, even when perspectives differ
3. Comments focused on tonight's topic are the most helpful

Technology happens, thank you for your patience.

Opening Remarks

Greg Nudd
Deputy Executive Officer of Policy

Opening Remarks

John Gioia
Board of Directors

Mentimeter Poll:
Who's in the room?

Accessing the polls:

We'll use Mentimeter a few times today to hear from you. To access mentimeter:

Scan the QR code with your phone's camera **OR** go to menti.com and enter **code: 3534 9455**

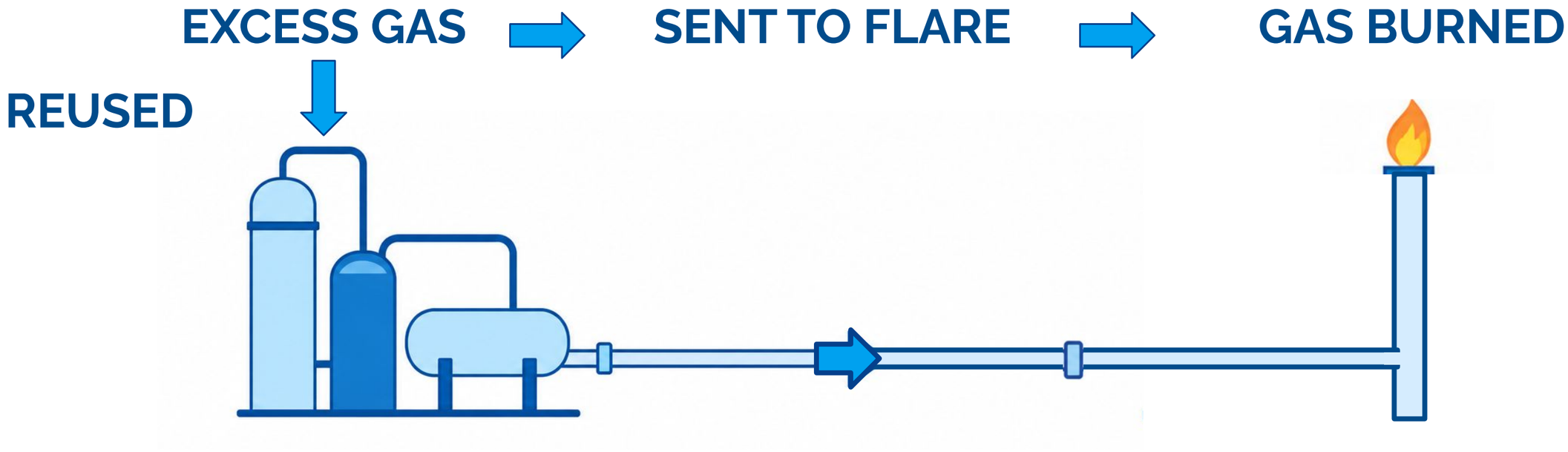
Flaring Background

What is a flare?

What is a flare?

A flare is a device used at refineries and hydrogen plants.

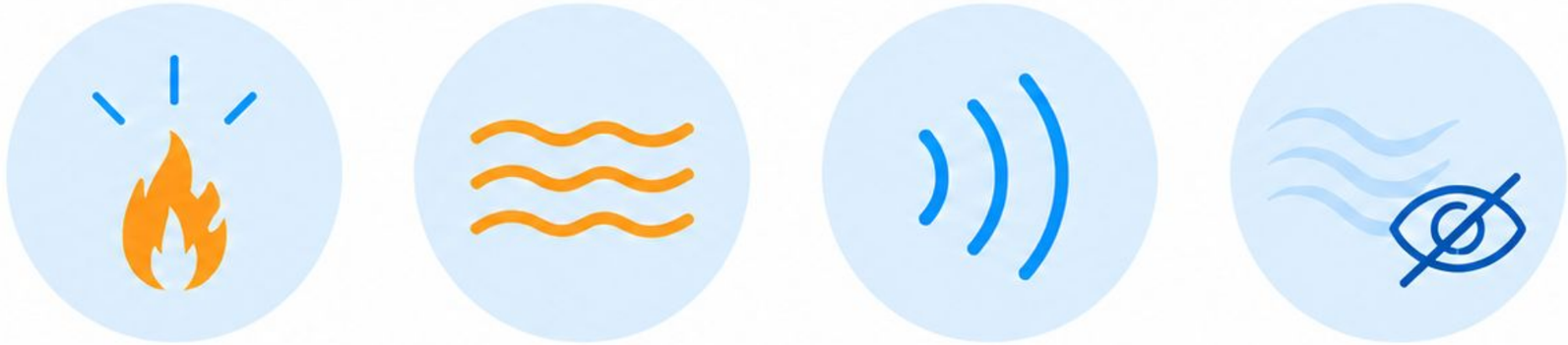
When excess gas cannot be safely used or stored, it is sent to a flare and burned. Flares burn excess gases instead of releasing them directly into the atmosphere; mitigating impacts on health and the environment.



What comes from a flare?

Flaring can affect nearby communities.

Depending on what is being burned and how the flare is operating, flaring can release dark smoke, sulfur dioxide, nitrogen oxides and other pollutants.



Visible Flame, Smoke & Light

Heat

Sound

Air Pollutants *(not always visible)*

Why does flaring happen?

Planned: Due to condition from scheduled operational activities, such as scheduled startup, shutdown, maintenance, and turnarounds.

Unplanned: Due to condition that is not planned, such as due to process upsets, unplanned shutdown, and unforeseen maintenance.

Not preventable: Due to condition beyond reasonable control of the refinery management. Always **unplanned**.

Preventable: Due to condition within reasonable control of the refinery management. Can be **planned** or **unplanned**.

Refinery Flare Rule Amendments Background

Current Air District Refinery Flare Rules

Rule 12-11 Flare Monitoring at Refineries	Rule 12-12 Flares at Refineries
Tracks flaring	**Reduces & explains causes of flaring**
Requires monitoring and recordkeeping	Requires *Flare Minimization Plans*
Requires monthly flare data reports *(Monthly Flare Data Reports)*	Requires reports explaining causes of flaring events *(Causal Reports)*
Provides information about gas flared and emissions	Establishes requirements intended to reduce the frequency, magnitude, and duration of flaring

Why is the Air District considering updates now?

Minimizing flaring is an Air District commitment.

Air District's Strategic Plan
Richmond, North Richmond & San Pablo Community Emissions Reduction Plan.

20 Years of Rules

The Air District has identified ways to strengthen the rules and improve the requirements.

Changing Requirements

Federal requirements and flare rules in other regions have changed.

Who has the Air District heard from?

Bay Area Air District

Board of Directors
Stationary Source Committee
Community Advisory Council

Stakeholder Groups

Refinery Technical Working Group
Community and labor groups

Rule Development and Public Engagement

Identified Air Quality Issue ✓
- CERPs
- Community Concerns
- New Health Information
- Legal Mandates
- New Technology

Stakeholder Meetings ✓
- CSCs
- Community Advisory Council (CAC)
- Community Groups
- Industry

Public Workshops ✓
- Community Members
- Industry
- NGOs, CBOs, Industry Associations

Technical Assessment ✓
- White Paper
- Rule Concepts
- Air Quality Plans

Draft Proposal
- Draft Rule Language
- Preliminary Staff Report

Rule Proposal
- Proposed Rule Language
- Staff Report
- Socioeconomic Analysis
- Environmental Analysis

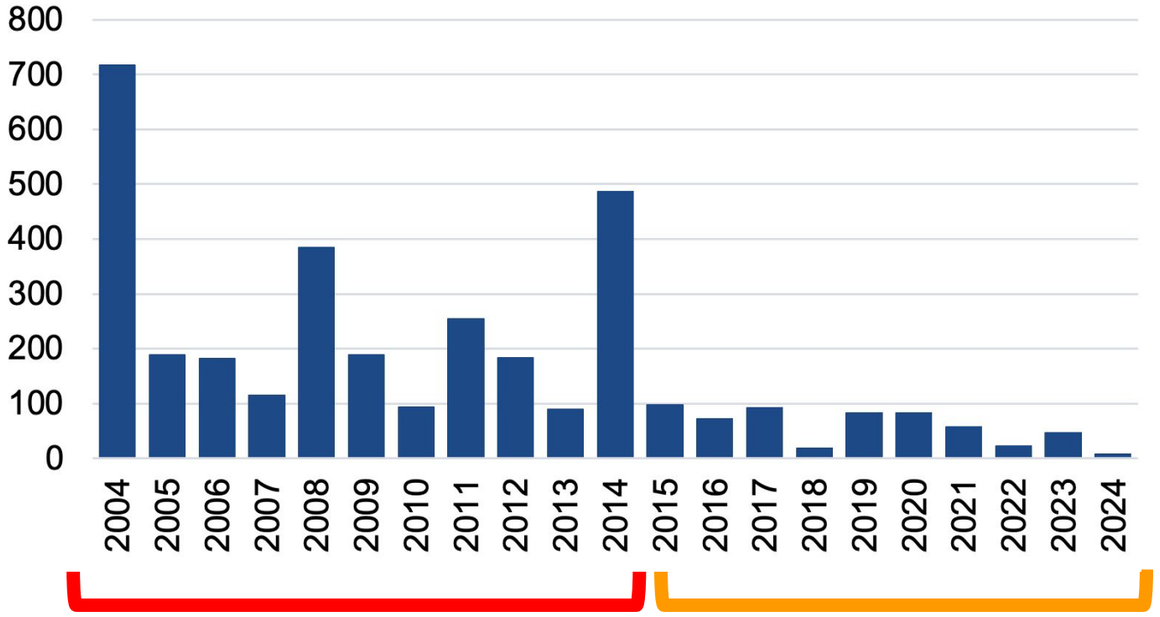
Note:
CBO: Community-Based Organization
CSC: Community Steering Committees
CERP: Community Emission Reduction Plans
NGO: Non-Governmental Organization

Flaring Data

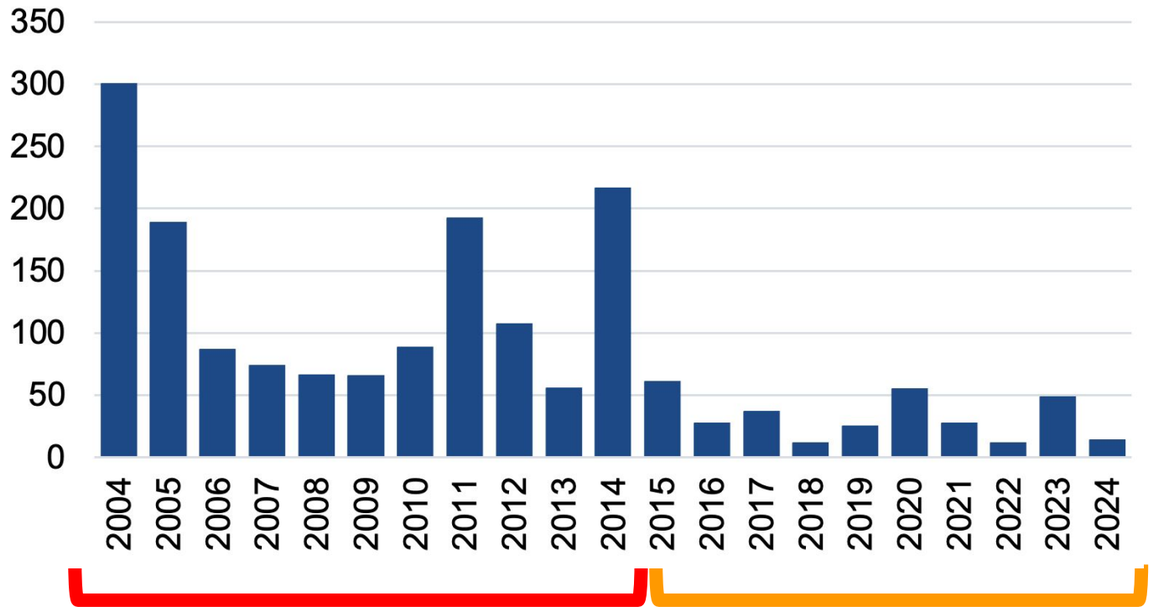
What does refinery flare data show?

Emissions decreased significantly through 2015 but have since leveled off, highlighting the need for renewed action to achieve further reductions.

Sulfur Dioxide Emissions (tons)



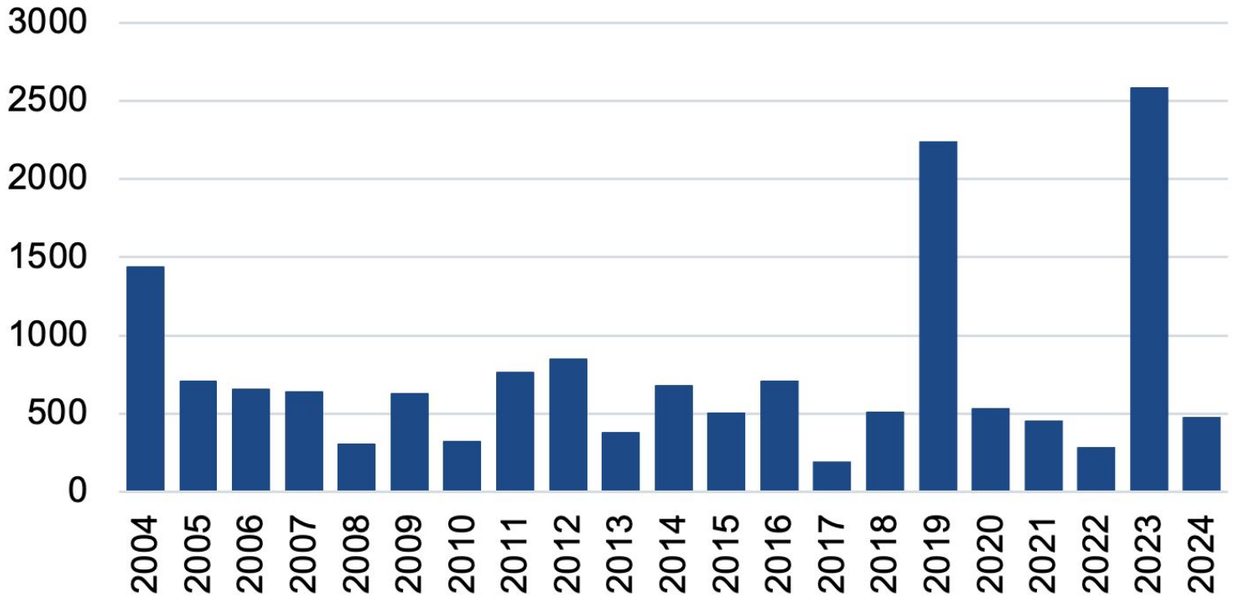
Non-methane Hydrocarbon Emissions (tons)



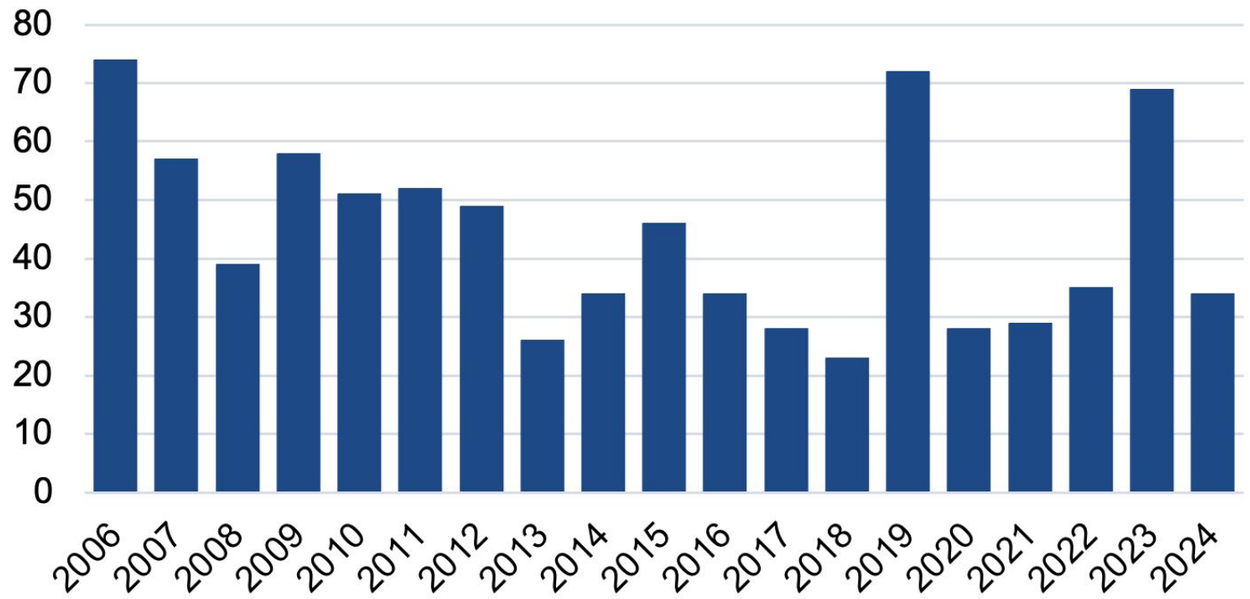
What does refinery flare data show?

No clear decrease in vent gas volume or reportable flaring events.

Vent Gas Volume
(Million Standard Cubic Feet)



Number of Reportable Flaring Events



What is a reportable flaring event?

Under Rule 12-12, a reportable flaring event is flaring in a day where more than 500,000 standard cubic feet of vent gas is flared or where sulfur dioxide emissions are greater than 500 pounds.

Poll

Accessing the polls:

Already joined?

Return to Mentimeter on your device. The next question will appear automatically

Need to join?

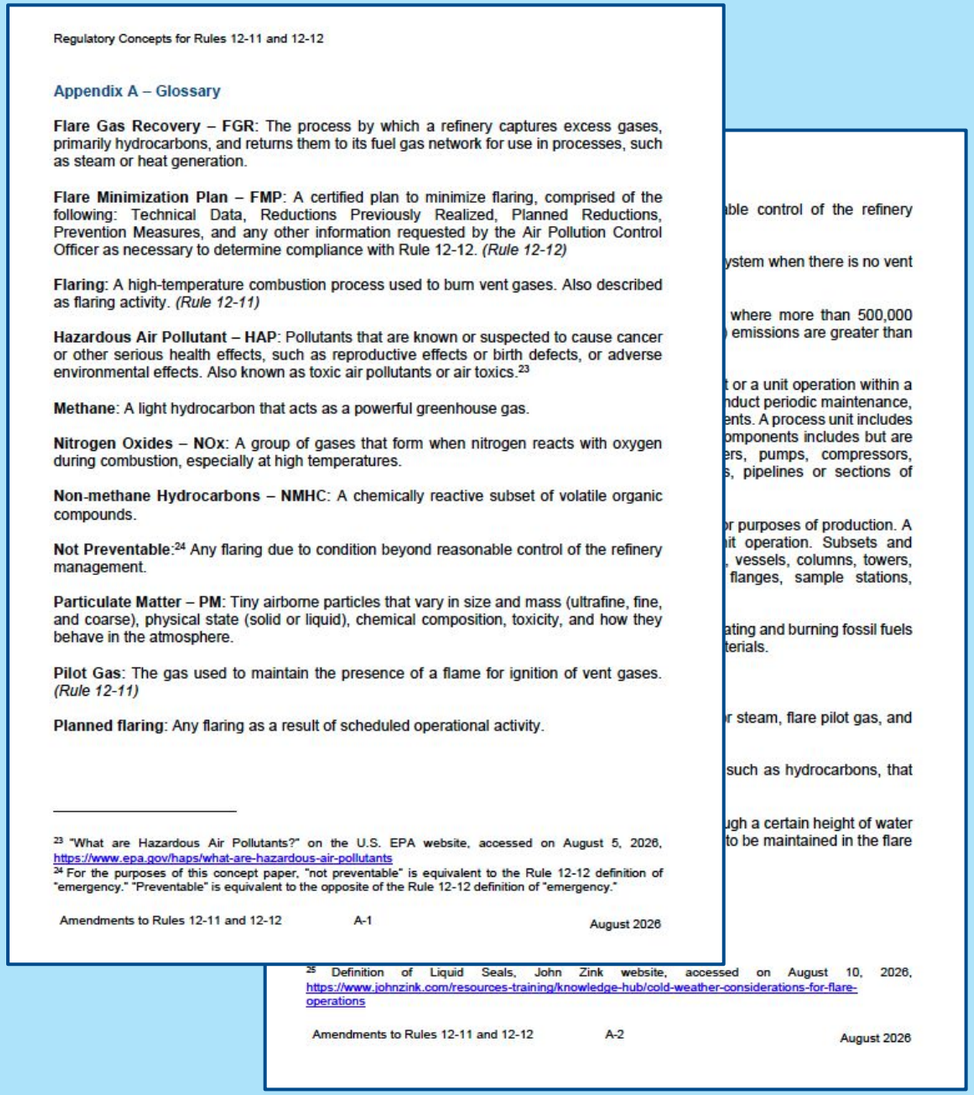
Scan the QR code with your phone's camera **OR** go to menti.com and enter **code: 3534 9455**

Rules 12-11 and 12-12 Amendment Concepts

Appendix A of the concept paper includes a 2-page glossary of terms.

Printed copies in person

Link in chat:
https://www.baaqmd.gov/~/media/dotgov/files/rules/refinery-flares/20260819-flare-rule-amendments-concept-paper-pdf.pdf?rev=bd074a6bce2641b6831ebacf7c83f03c&sc_lang=en



Regulatory Concepts for Rules 12-11 and 12-12

Appendix A – Glossary

Flare Gas Recovery – FGR: The process by which a refinery captures excess gases, primarily hydrocarbons, and returns them to its fuel gas network for use in processes, such as steam or heat generation.

Flare Minimization Plan – FMP: A certified plan to minimize flaring, comprised of the following: Technical Data, Reductions Previously Realized, Planned Reductions, Prevention Measures, and any other information requested by the Air Pollution Control Officer as necessary to determine compliance with Rule 12-12. *(Rule 12-12)*

Flaring: A high-temperature combustion process used to burn vent gases. Also described as flaring activity. *(Rule 12-11)*

Hazardous Air Pollutant – HAP: Pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. Also known as toxic air pollutants or air toxics.[23]

Methane: A light hydrocarbon that acts as a powerful greenhouse gas.

Nitrogen Oxides – NOx: A group of gases that form when nitrogen reacts with oxygen during combustion, especially at high temperatures.

Non-methane Hydrocarbons – NMHC: A chemically reactive subset of volatile organic compounds.

Not Preventable:[24] Any flaring due to condition beyond reasonable control of the refinery management.

Particulate Matter – PM: Tiny airborne particles that vary in size and mass (ultrafine, fine, and coarse), physical state (solid or liquid), chemical composition, toxicity, and how they behave in the atmosphere.

Pilot Gas: The gas used to maintain the presence of a flame for ignition of vent gases. *(Rule 12-11)*

Planned flaring: Any flaring as a result of scheduled operational activity.

[23] "What are Hazardous Air Pollutants?" on the U.S. EPA website, accessed on August 5, 2026, https://www.epa.gov/haps/what-are-hazardous-air-pollutants

[24] For the purposes of this concept paper, "not preventable" is equivalent to the Rule 12-12 definition of "emergency." "Preventable" is equivalent to the opposite of the Rule 12-12 definition of "emergency."

Amendments to Rules 12-11 and 12-12 A-1 August 2026

ible control of the refinery

ystem when there is no vent

where more than 500,000 emissions are greater than

t or a unit operation within a nduct periodic maintenance, ents. A process unit includes omponents includes but are ers, pumps, compressors, s, pipelines or sections of

r purposes of production. A it operation. Subsets and , vessels, columns, towers, flanges, sample stations,

ating and burning fossil fuels terials.

r steam, flare pilot gas, and

such as hydrocarbons, that

ugh a certain height of water to be maintained in the flare

[25] Definition of Liquid Seals, John Zink website, accessed on August 10, 2026, https://www.johnzink.com/resources-training/knowledge-hub/cold-weather-considerations-for-flare-operations

Amendments to Rules 12-11 and 12-12 A-2 August 2026

As you listen to the amendment concepts, consider the following . . .

1. **What questions do you have about the concepts?**

2. **What should the Air District consider in the next phase of rule development?**

Goals of Regulatory Concepts

1. **Minimize overall flaring** through investments and operational improvements.

2. Ensure **good combustion and destruction of most harmful pollutants** when there is flaring.

3. Differentiate flaring that has a **higher potential for public health risk** versus a lower potential.

4. Improve **availability of flaring information** for public accessibility and transparency, resource efficiency, and improved enforceability.

Alignment of Regulatory Concepts with Goals

Concept	Minimize Overall Flaring	Good Combustion	Identify Public Health Risk	Availability of Information
1.1 Efficient Combustion - US EPA RSR		✓	✓	✓
1.2 Establish Flare Limits	✓			
1.3 Require Mitigation Measures	✓	✓		✓
1.4 Require Submittal of Causal Reports	✓	✓	✓	✓
1.5 Require Third-Party Audits for Facilities	✓		✓	✓
2.1 Strengthen Flare Minimization Plan Updates	✓	✓		✓
2.2 Standardize Reporting Requirements			✓	✓
2.3 Expand Definitions	✓		✓	✓
2.4 Strengthen Monitoring and Reporting Requirements	✓	✓	✓	✓

Section #1 - Reduce Flaring Emissions and Frequency

- 1.1 Incorporate Key Flare Combustion Efficiency Requirements from the US EPA Refinery Sector Rule*
- 1.2 Establish New Flare Limits*
- 1.3 Require Mitigation Measures Based on Triggering Criteria*
- 1.4 Require Submittal of Causal Reports Based on Additional Triggering Criteria *
- 1.5 Require Third-Party Audits for Facilities Based on Triggering Criteria*

**South Coast AQMD Rule 1118*

**US EPA Consent Decree*

Flare flame appearance provides visual cues about combustion efficiency

Non-hydrogen flares

Poor Efficiency

Good Efficiency

Source: https://kvia.com/news/abc-7-alert-center/2025/07/08/refinery-stacks-spewing-black-smoke-in-south-central-el-paso/

Concept 1.1 Incorporate Key Flare Combustion Efficiency Requirements from US EPA Refinery Sector Rule

Current Requirements: Refineries are subject to visible emissions limit per Rule 6-1; Petroleum refineries are subject to Refinery Sector Rule

Concept Description

- Key operating requirements: net heating value of the combustion zone standard, flare tip velocity limit, visible emissions limit
- Data in monthly flare data reports and causal reports

Refineries

Petroleum:

- Chevron Richmond
- Martinez Refining Company
- Valero Benicia

Alternative feedstocks:

- Marathon Martinez
- Phillips 66 Rodeo

Anticipated Benefits:

1. Reduced emissions at refineries that process alternative feedstocks
2. Increased enforceability of the federal regulation by requiring data to be regularly reported

Concept 1.2 – Establish New Flare Limits

Current Rules: Flaring is prohibited unless it is (1) not preventable or (2) approved in the FMP; otherwise there are no limits on flaring.

Concept Description

- Establish limits on emissions and vent gas volume for hydrogen and non-hydrogen flares that become more stringent over time
- Further evaluation is needed to determine how the limits would apply to flaring that is preventable versus not preventable

Anticipated Benefits:

1. Reduced emissions and decreased frequency of flaring through investments and operational improvements

What are measures to minimize flaring?

Source Control Management	Flaring Monitoring and Control	Corrective Actions
1. Maintenance and reliability 2. Operations and procedures 3. Flare gas recovery systems	1. Monitoring systems 2. Automated technology to optimize flare combustion	1. Implementation of prevention measures after flaring

Concept 1.3 Require Mitigation Measures Based on Triggering Criteria

Current Rules: FMPs include measures to prevent flaring during select anticipated planned and unplanned events

Concept Description

- Emission reduction measures based on triggering criteria
- Choice to pay mitigation fee in lieu of emissions reduction measures
- More stringent measures for repeated exceedances or deviations of standards

Anticipated Benefits:

1. Reduced emissions and decreased frequency of flaring through emission reduction measures
2. Fund projects to minimize community health impacts from flaring

Concept 1.4 Require Submittal of Causal Reports based on Additional Triggering Criteria

Current Rules: Causal reports are required when vent gas volume or sulfur dioxide emissions exceed thresholds (reportable flaring event)

Concept Description

Require causal reports for:

- Exceeding or deviating from key operating parameters from the Refinery Sector Rule
- Exceeding a new non-methane hydrocarbon threshold

Anticipated Benefits:

1. Decreased frequency of flaring due to repeated causes
2. Expanded reporting requirements for accessibility, transparency, and enforceability

Concept 1.5 Require Third-Party Audits for Facilities Based on Triggering Criteria

Current Rules: Refineries conduct their own audits after reportable flaring events and report the causes and prevention measures in causal reports

Concept Description

Retain independent auditors to verify compliance with flare requirements and their FMPs.

Third party audits may be required when:

- Flaring repeatedly comes from the same source or process area within a specified timeframe
- Flaring that is not preventable exceeding an emissions or vent gas threshold
- Air District determines that internal audits are insufficient

Anticipated Benefits:

1. Reduced emissions and decreased frequency of flaring from targeted causes of flaring

Poll

Accessing the polls:

Already joined?

Return to Mentimeter on your device. The next question will appear automatically

Need to join?

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Section #2 - Flare Minimization Plans and Reporting and Monitoring Requirements

2.1 Strengthen Flare Minimization Plan Updates

2.2 Standardize Reporting Requirements*

2.3 Expand Definitions and Categories for Reporting Causes of Flaring*

2.4 Strengthen Monitoring and Reporting Requirements*

South Coast AQMD Rule 1118

Concept 2.1 Strengthen FMP Updates

Current Rules: Refineries submit Flare Minimization Plans (FMPs) that describe their equipment, processes, flaring reductions, and prevention measures. FMPs are updated annually and before equipment is installed or modified

Concept Description

Require additional information in FMPs, including:

- Technology review and updated cost analyses that could reduce flaring
- A summary of mitigation measures that have been implemented

Frequency of updates to FMPs could be impacted

Anticipated Benefits:

1. Increased enforceability of rule requirements
2. Resource savings for the Air District and regulated facilities

Concept 2.2 Standardize Reporting Requirements

Current Rules: Refineries report required flaring information, but the reports are not standardized.

Concept Description

Standardize:

- Templates used to report flaring information
- Categories used to identify the causes of flaring
- Methods used to calculate emissions

Anticipated Benefits:

1. Increased data consistency and accessibility
2. Resource savings for the Air District and regulated facilities

Concept 2.3 Expand Definitions and Categories for Reporting Causes of Flaring

Current Rules: Flaring is classified as preventable and not preventable.

Concept Description

Update and add definitions for reporting the cause of flaring, including:

- Clarifying the definition of “Emergency,” including whether to rename it “Not Preventable” and align it with the federal “Malfunction” definition
- Adding definitions for “Planned” and “Unplanned” flaring

Anticipated Benefits:

1. Improved clarity and consistency in defining the causes of flaring
2. Stronger enforceability with clearer interpretation of requirements

Concept 2.4 Strengthen the Monitoring and Reporting Requirements

Current Rules: Refineries are required to monitor vent gas composition if certain thresholds are exceeded, and video monitoring information is reported monthly.

Concept Description

Strengthen monitoring and reporting by requiring:

- Continuous monitoring for vent gas: total sulfur and hydrocarbon composition; and flow downstream of the water seal
- Data acquisition and handling system (DAHS) to collect and manage monitoring data
- Video monitoring data: real-time Air District access; and online submission of information

Anticipated Benefits:

1. Increased accuracy and integrity of emissions data
2. Stronger compliance assurance and enforcement
3. More information on flaring to supplement the Community Warning System

Concept 2.4 Strengthen the Monitoring and Reporting Requirements (cont.)

Current Rules: Refineries are required to monitor vent gas composition if certain thresholds are exceeded, and video monitoring information is reported monthly.

Concept Description

Strengthen monitoring and reporting by requiring:

- Infrared camera monitoring that may detect certain emissions
- Notification system to alert the community of planned and unplanned flaring
- Review and approval process for causal reports and flare monitoring systems

Anticipated Benefits:

1. Increased accuracy and integrity of emissions data
2. Stronger compliance assurance and enforcement
3. More information on flaring to supplement the Community Warning System

Poll

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Rule Development and Public Engagement

Identified Air Quality Issue ✓
- CERPs
- Community Concerns
- New Health Information
- Legal Mandates
- New Technology

Stakeholder Meetings ✓
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Public Workshops ✓
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Discussion & Q&A

1. *What questions do you have about the concepts?*

---

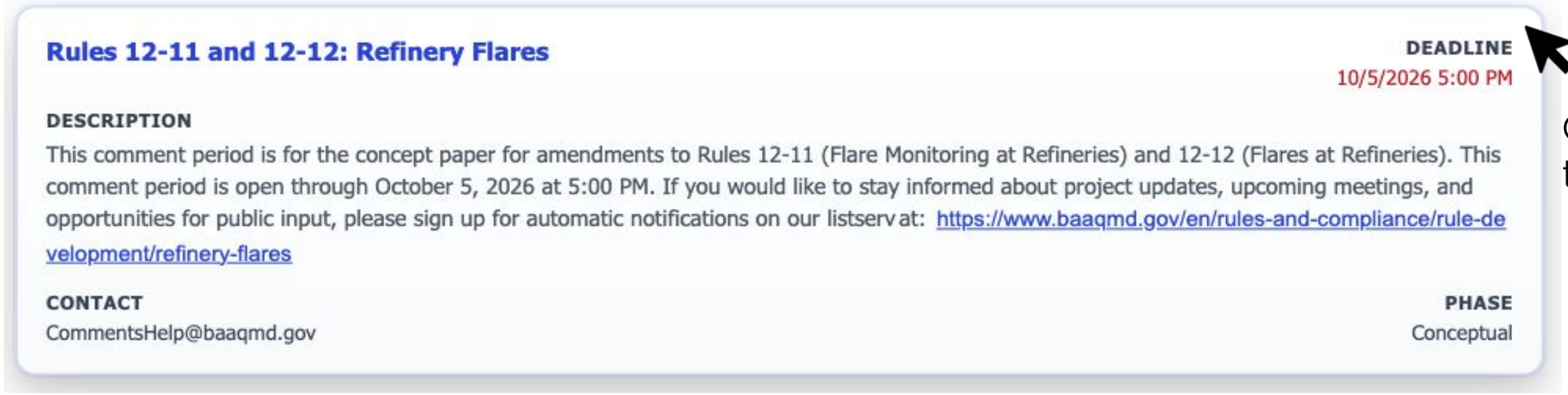
1. *What should the Air District consider in the next phase of rule development?*

How to Submit a Public Comment

1 Open the Public Comment Tool:

https://comments.baaqmd.gov

2 Scroll to Rules 12-11 and 12-12: Refinery Flares



Click anywhere on this box.

3 Submit your comment before the 10/5/26 5pm deadline

Thank you

Staff Contact:

- ruledevelopment@baaqmd.gov

Submit comments by October 5th at 5:00 PM:

- https://comments.baaqmd.gov/

Supporting Information

Differences Between Non-hydrogen and Hydrogen Flares

Flare Type	Typical Process Units Served	Gas Routed to Flare	Primary Pollutants	Typical Visual Cues
Non-hydrogen	Refinery process units	Hydrocarbons, including heavier and more complex ones	SO2, PM, VOC/NMHC	Proper operation: large and bright flame Improper operation: flame with black smoke
Hydrogen	Hydrogen production units	Hydrogen with a small amount of methane	NOx, VOC/NMHC	Blue or translucent flame

Concepts to Minimize Preventable Emissions and Frequency

Concepts

Establishing limits and performance standards:

1.1. Incorporate Key Flare Combustion Efficiency Requirements from US EPA Refinery Sector Rule

1.2. Establish New Flare Limits

Requiring measures to minimize emissions and frequency based on causes of reportable flaring events and other triggers:

1.3. Require Mitigation Measures based on Triggering Criteria

1.4. Require Submittal of Causal Reports based on Additional Triggering Criteria

1.5. Require Third-Party Audits for Facilities based on Triggering Criteria