AGENDA: 4

Bay Area Air District

# Refinery Flaring Minimization Efforts

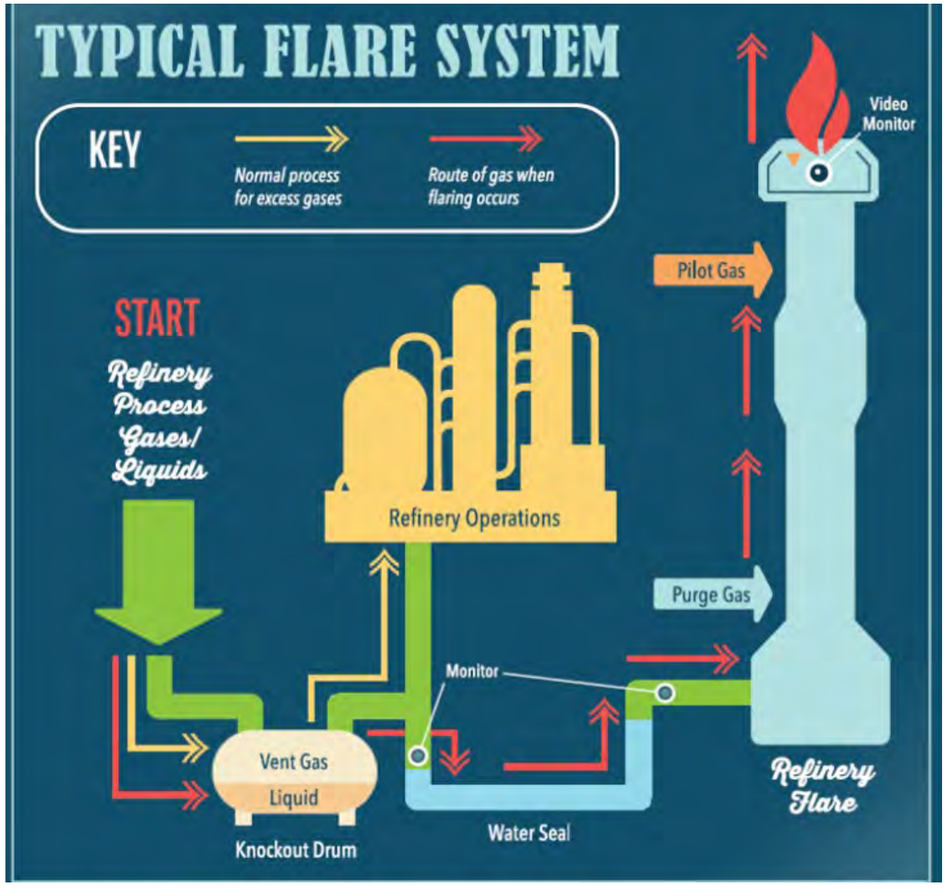
## Stationary Source Committee

April 9, 2025

Robert Cave
Senior Air Quality Engineer
Rules and Strategic Policy

# Introduction – What is a flare system?

- Flare systems are safety devices that burn hydrocarbon gases that would otherwise be released
- Flares prevent the buildup of pressure and may prevent a more catastrophic event
- Flaring may occur from startup and shutdown of refinery processes



# Introduction – When do flares occur?

- Emergency – To combust gas released due to a process malfunction. Must maintain a water seal and cannot occur more than 4 times per year
- Routine – Any flaring that does not meet the definition of Emergency
- Startup or Shutdown – To conduct periodic maintenance, replacement or repair of process units

# Introduction – Current Rule Requirements

## Regulation 12, Rule 11: Flare Monitoring at Refineries

Monthly reporting:

1. Vent, pilot and purge gas flow
2. Vent gas composition

## Regulation 12, Rule 12: Flares at Refineries

1. Requires an Air District approved flare minimization plan updated annually
2. Causal reports for reportable flaring events

# Introduction – Other Jurisdictions

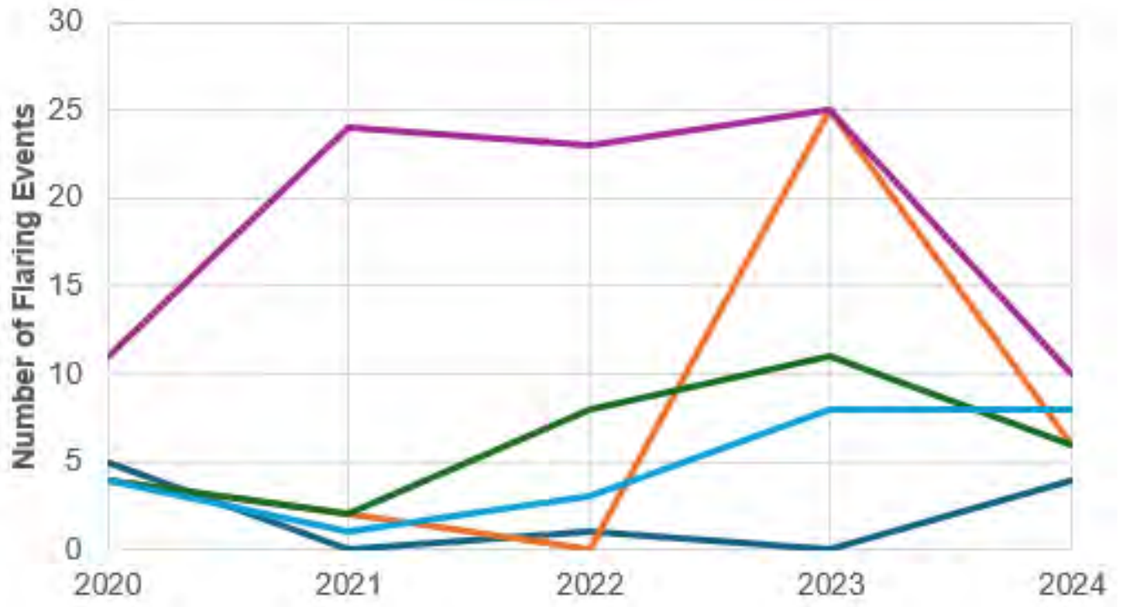
## United States Environmental Protection Agency

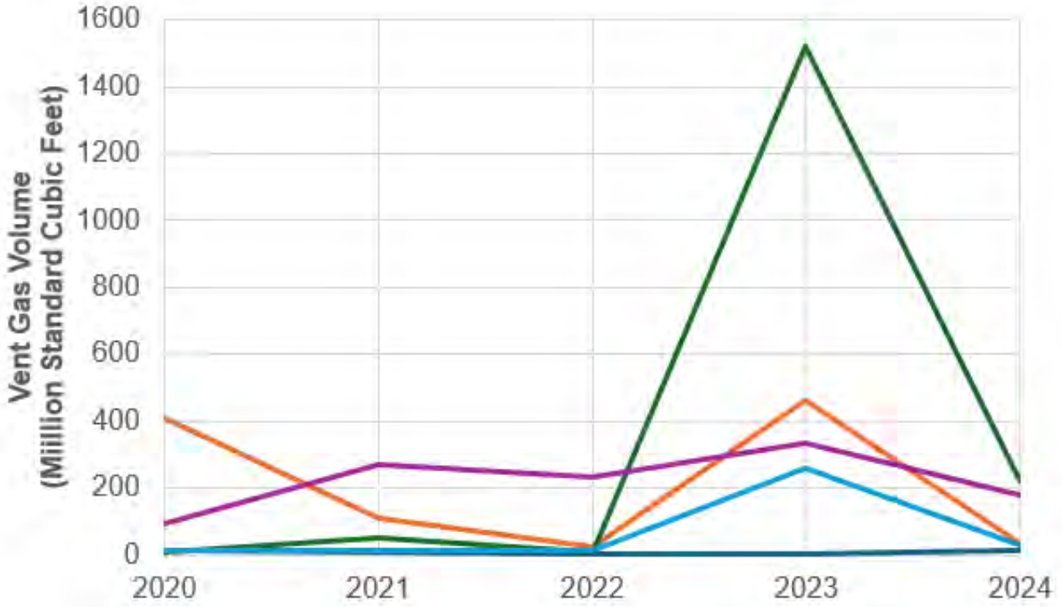
- New Source Performance Standards
- National Emissions Standards for Hazardous Air Pollutants

## South Coast Air Quality Management District

- Rule 1118: Control of Emissions from Refinery Flares
- Rule 1118.1: Control of Emissions from Non-Refinery Flares

# Bay Area Flaring Trends




Valero Marathon MRC (Shell) Phillips 66 Chevron

*Updated 4/9/25

# Impetus

**Strategic Plan**
**Strategy 1.3 Minimize Flaring**

- Explore ways to minimize flaring
- Increase public engagement on flaring
- Share timely, accessible information
- Increase inspections and air pollution monitoring

**Richmond-North Richmond-San Pablo Community Path to Clean Air Strategy FR 2.6**

Evaluate potential updates to Rules 12-11 and 12-12 incorporating health impact analyses, enhanced enforceability, and more stringent limits

*FR = Fuel Refining*

# Potential Rule Concepts

- Sulfur Dioxide limits tied to processing capacity
- Nitrogen Oxides limits for hydrogen plant flares
- Progressive compliance requirements
- Improved flare monitoring
- Improved notification and reporting
- Categorization of types of flaring events
- More detailed causal reports

# Current Status of Rule Development Efforts

- Analysis of last 10 years of flare emissions and causal reports
- Refinery Technical Working Group composed of Industry, Labor, Community, local Government, and Air District
- Public Outreach efforts
  - Board Committee Presentations
  - Community Steering Committee Briefings
  - Updates to community groups (e.g., Refinery Communities Workgroup)

# Next Steps

- Richmond-North Richmond-San Pablo Community Steering Committee April Meeting
- Public Workshop Kickoff this Summer
- Concept Paper on potential rule amendments Quarter (Q)3 2025
- Completion of educational materials (“Flaring 101”) Q3 2025

# Questions?

**For more information:**

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Bay Area Air District

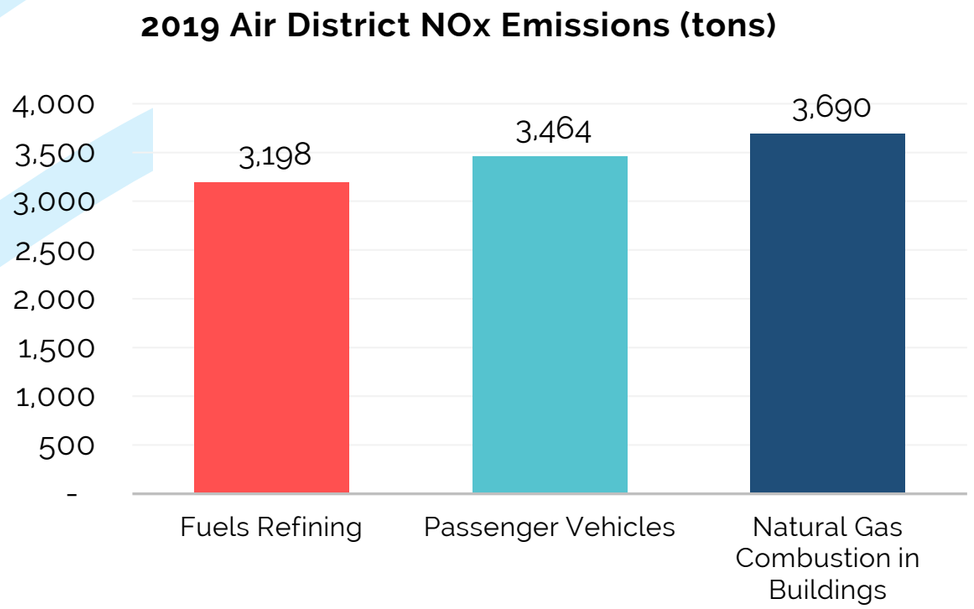
# Potential Amendments to Rule 9-6

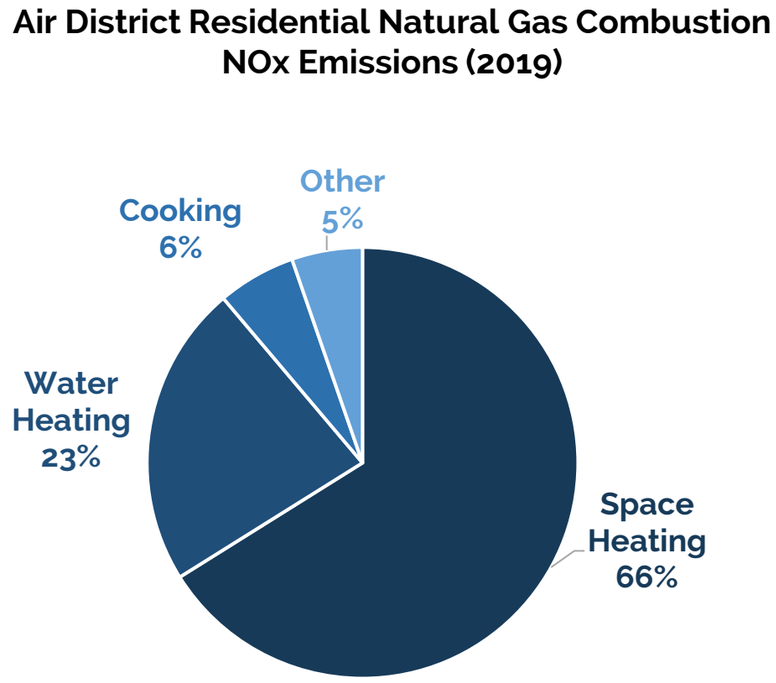
## Stationary Source Committee

**April 9, 2025**

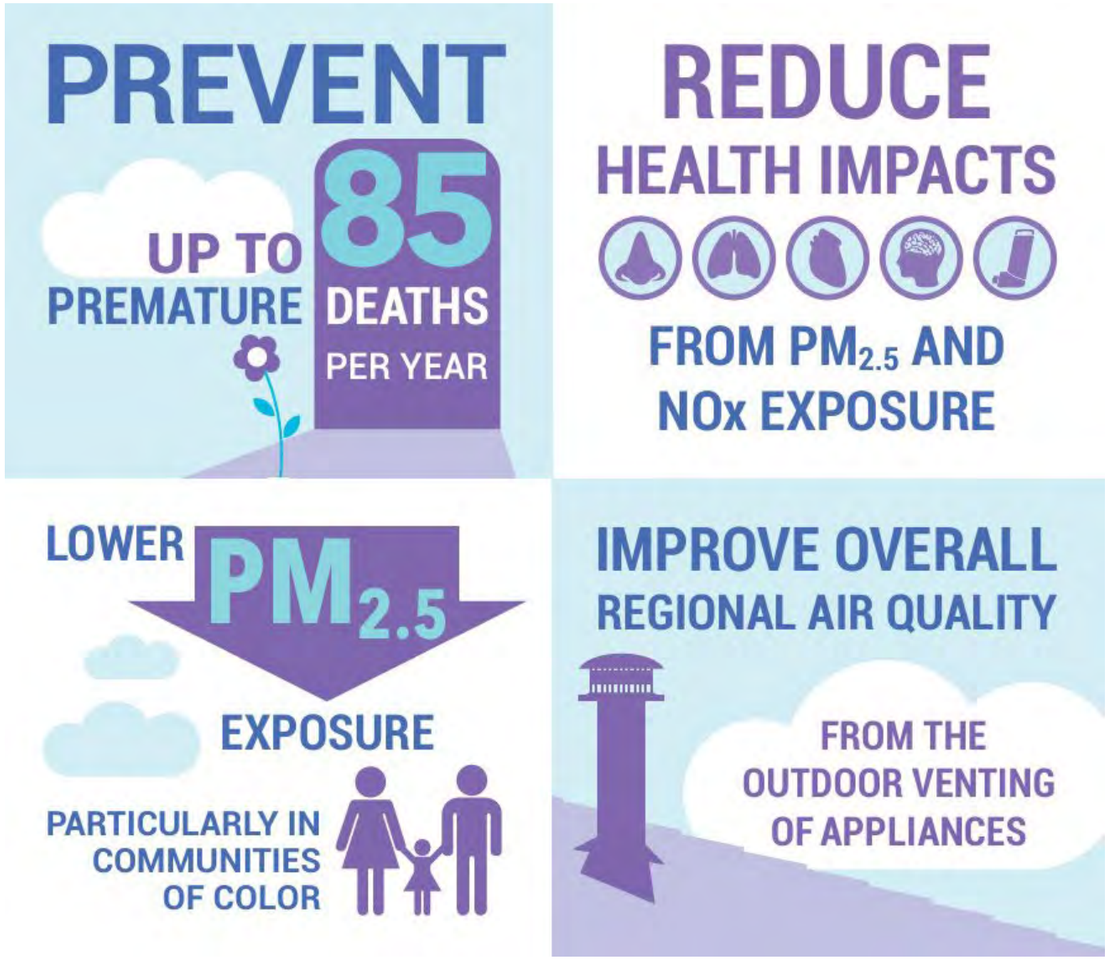
**Jennifer Lam**
**Assistant Manager**
**Rules and Strategic Policy Division**

# Building Nitrogen Oxides (NOx) Emissions Overview



# Health Benefits Overview




PM: Particulate Matter

# Upcoming Implementation Timelines

- **Regulation 9, Rule 4:** NOx from Fan Type Residential Central Furnaces
- **Regulation 9, Rule 6:** NOx from Natural Gas-Fired Boilers and Water Heaters
- **Zero NOx amendments** adopted on March 15, 2023, with future implementation dates

| | |
|---|---|
| **1/1/2027** | Water heaters less than 75,000 BTU/hr* |
| **1/1/2029** | All applicable natural gas-fired furnaces (e.g., residential and commercial; including direct-vent units) |
| **1/1/2031** | Water heaters 75,000 to 2 million BTU/hr |

**BTU/hr = British thermal units per hour*

# Interim Board Requirements

**Section 9-6-404: Interim Report:**

- Required two years before the compliance deadline
- Delivered to Board of Directors in December 2024

**Key Components:**

- Technology Options: Available and upcoming compliant technologies
- Cost Analysis: Projected purchase, installation, and ancillary costs
- Market readiness: Feasibility and necessary infrastructure upgrades
- Incentives: Available programs to reduce costs and support adoption
- Workforce & Installation: Labor needs, training requirements, and barriers

# Remaining Challenges to be Addressed

- **Challenging installations** due to space constraints and/or building configurations that may result in increased installation costs
- Limited options for **specific equipment types** or applications
- Need to ensure **equity for low-income** residents
- Uncertainty of sustainable **incentive solutions**
- Work to align with **upcoming rules from other agencies**

# Potential Amendments to Address Remaining Challenges

# Alternative Compliance Plans by Installation

Option 1:

***Example Concepts:***

- Allowance for implementation delays on a project-by-project basis to account for compliance concerns such as:
  - Utility upsizing delay
  - Additional construction requirements
  - Emergency replacement
  - Significant cost burden
- Original South Coast Air Quality Management District (SCAQMD) Proposal
  - Rules 1111 and 1121
  - Recently changed, no longer proposed direction

# Alternative Compliance Plans by Installation (cont.)

Option 1:

*Benefits*

- Allows project by project consideration of impact
- Protect some renters from rent pass-through due to expensive upgrades
- Provides relief to property owners with buildings that cannot be easily transitioned to zero NOx units

# Alternative Compliance Plans by Installation (cont.)

Option 1:

*Considerations*

- Significant resource/staffing increase might be needed for the Air District
- Difficult to enforce at point of sale of equipment
- Could result in delays which effect consumers
- Burden of proof on building/project owner
- Air District determining what is significant/burdensome might be difficult
- Delays increase demand for equipment rentals
- Slower transition to zero NOx emissions and delayed health and equity improvements
- Not aligned with other agencies

# Outlining Specific Installation Types

Option 2:

***Example Concepts:***

- Rule 9-6 currently has two equipment categories distinguished only by size
  - Less than 75,000 BTU/hr, and between 75,000 and 2 million BTU/hr

- Changes to requirements for categories such as:
  - Smallest units (typically used in multifamily or space constrained situations)
  - Hydronic systems (typically used in multifamily or space constrained situations)
  - Food service/high heat applications
  - Temporary emergency replacements

# Outlining Specific Installation Types (cont.)

Option 2:

*Benefits*

- Protect some renters from rent pass-throughs due to expensive upgrades
- Provides relief to property owners with buildings that cannot be easily transitioned to zero NOx units
- Allows diverse technology options
- May protect some small businesses
- Potential allowance for temporary emergency replacement installations

# Outlining Specific Installation Types (cont.)

Option 2:

*Considerations*

- Slower transition to zero NOx emissions and delayed health and equity improvements, particularly in commercial and multifamily buildings
- Potential for allowed natural gas units to be chosen over previous size/unit type further slowing transition to zero NOx and associated health and equity improvements

# Fee Structure for Manufacturer Sales

Option 3:

***Example Concepts:***

- Allow manufacturers to sell a certain percentage of NOx-emitting units instead of zero NOx units for a "mitigation fee"
- Require manufacturers to achieve certain market share of zero NOx units, increasing over time
  - SCAQMD proposal: Manufacturer Sales Target of 30% zero NOx unit by 2027; ramping up to 90% zero NOx units by 2036
  - California Energy Commission considering state-wide reporting rule

# Fee Structure for Manufacturer Sales (cont.)

Option 3:

*Benefits*

- Provides flexibility with market and technology transformation
- Compliance requirements are not enforced on individual consumers
- Creates potential funding opportunity due to mitigation fee
- Facilitates alignment and coordination with other California government agencies

# Fee Structure for Manufacturer Sales (cont.)

Option 3:

*Considerations*

- Slower transition to zero NOx emissions and delayed health and equity improvements
- Setting mitigation fee at level that drives the market but does not unduly burden consumers
- Difficult for manufacturers to control sales levels of zero NOx units

# Discussion and Next Steps

# Combination of Solutions

**Example:**

- Retain existing dates and requirements for traditional units between 30,000-75,000 BTU/hr
- Introduce ramping sales requirements and mitigation fee structure for units under 30,000 BTU and hydronic units with 100% sales target in future year
- Allow for registered contractors to participate in temporary emergency replacement program

# Additional Considerations

Communicating intended path as soon as possible

Alignment with other agencies

Ease of compliance for reporting requirements

# Next Steps

- Consider Board feedback and direction on staff's potential flexibility options
- Conduct Public Workshop(s) to discuss potential amendments with stakeholders to better inform staff on strategy development
- Report back to the Board with updates and recommendations

# Questions/Feedback

**For more information:**
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