



Update on Implementation of: Regulation 11, Rule 18 Reduction Of Risk From Air Toxic Emissions at Existing Facilities

**Stationary Source Committee
Meeting
March 18, 2019**

**Carol Allen
Assistant Manager, Engineering Div.**

OUTLINE

Regulation 11, Rule 18: Reduction of Risk from Air Toxic Emissions at Existing Facilities

- **Overview of Rule and Requirements**
- **Implementation Process and Schedule**
- **Actions to Date**
- **Next Steps**

REGULATION 11, RULE 18 OVERVIEW

- **Adopted November 15, 2017**
 - Established the most health protective risk management thresholds for existing stationary sources.
- **Requires facilities to:**
 - Reduce their health risks below stringent risk action levels; or
 - Implement best available retrofit control technologies, or “TBARCT” on all significant risk sources.

REGULATION 11, RULE 18 OVERVIEW

- **Key health risk measures are:**
 - **Cancer Risk** – Probability of contracting cancer during one’s lifetime due to long term exposure to air toxics.
 - **Chronic Hazard Index** - Potential for non-cancer health impacts resulting from long term exposure to air toxics.
 - **Acute Hazard Index** - Potential for non-cancer health impacts resulting from one-hour exposure to air toxics.

REGULATION 11, RULE 18 OVERVIEW

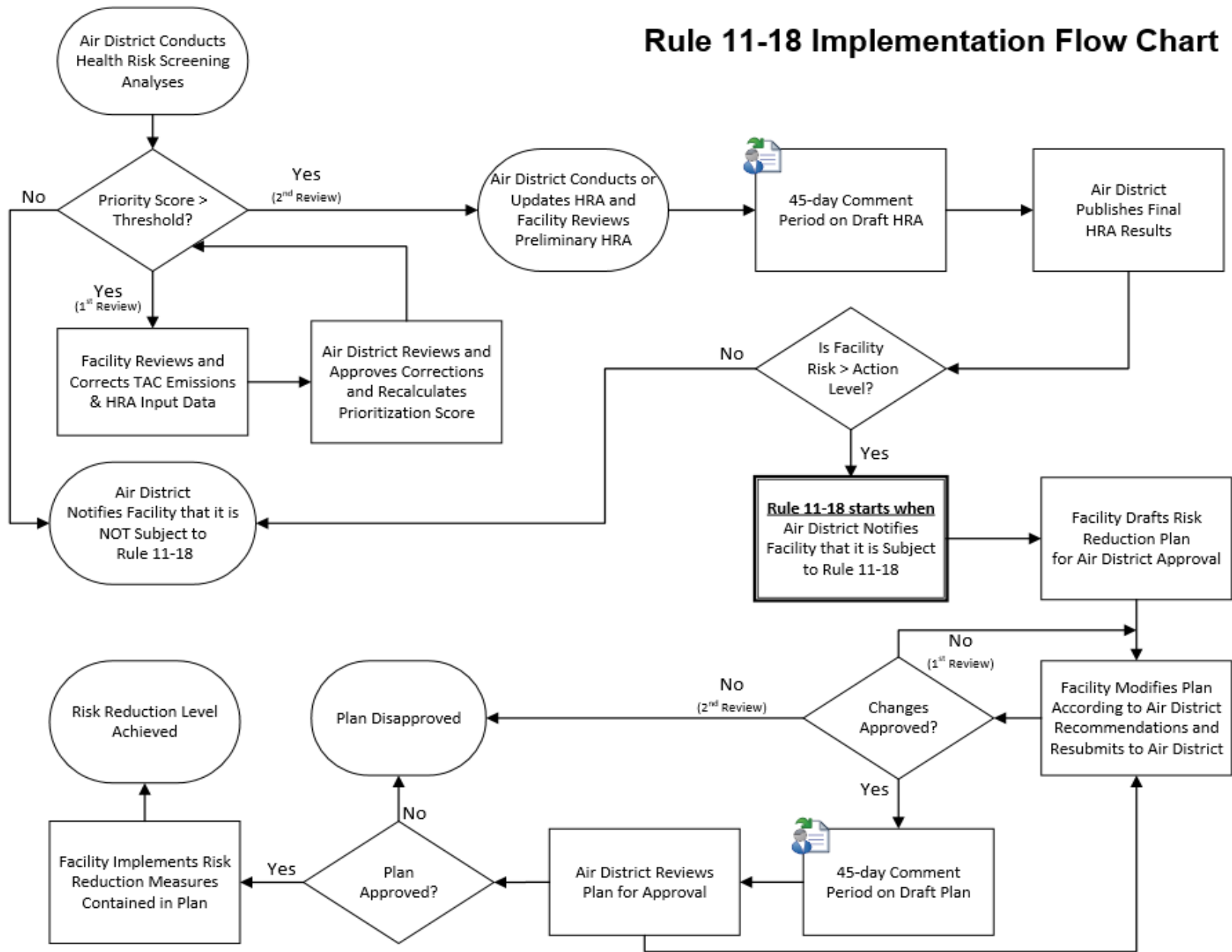
- **Air District determines health risks using:**
 - Improved toxic emission inventories,
 - Updated air dispersion modeling procedures, and;
 - Latest health impact science from the Office of Environmental Health Hazard Assessment (OEHHA).

REGULATION 11, RULE 18 REQUIREMENTS

- **Facilities with HRA (Health Risk Assessment) results above a Risk Action Level (RAL) must have an approved Risk Reduction Plan (RRP) and must implement this RRP within 5 years.**

Risk Action Levels	2018	2020
Cancer Risk	25 per million	10 per million
Non-Cancer Hazard Index (Chronic HI or Acute HI)	2.5	1.0

Rule 11-18 Implementation Flow Chart



REGULATION 11, RULE 18 IMPLEMENTATION PROCESS

1. Screen and Classify Facilities

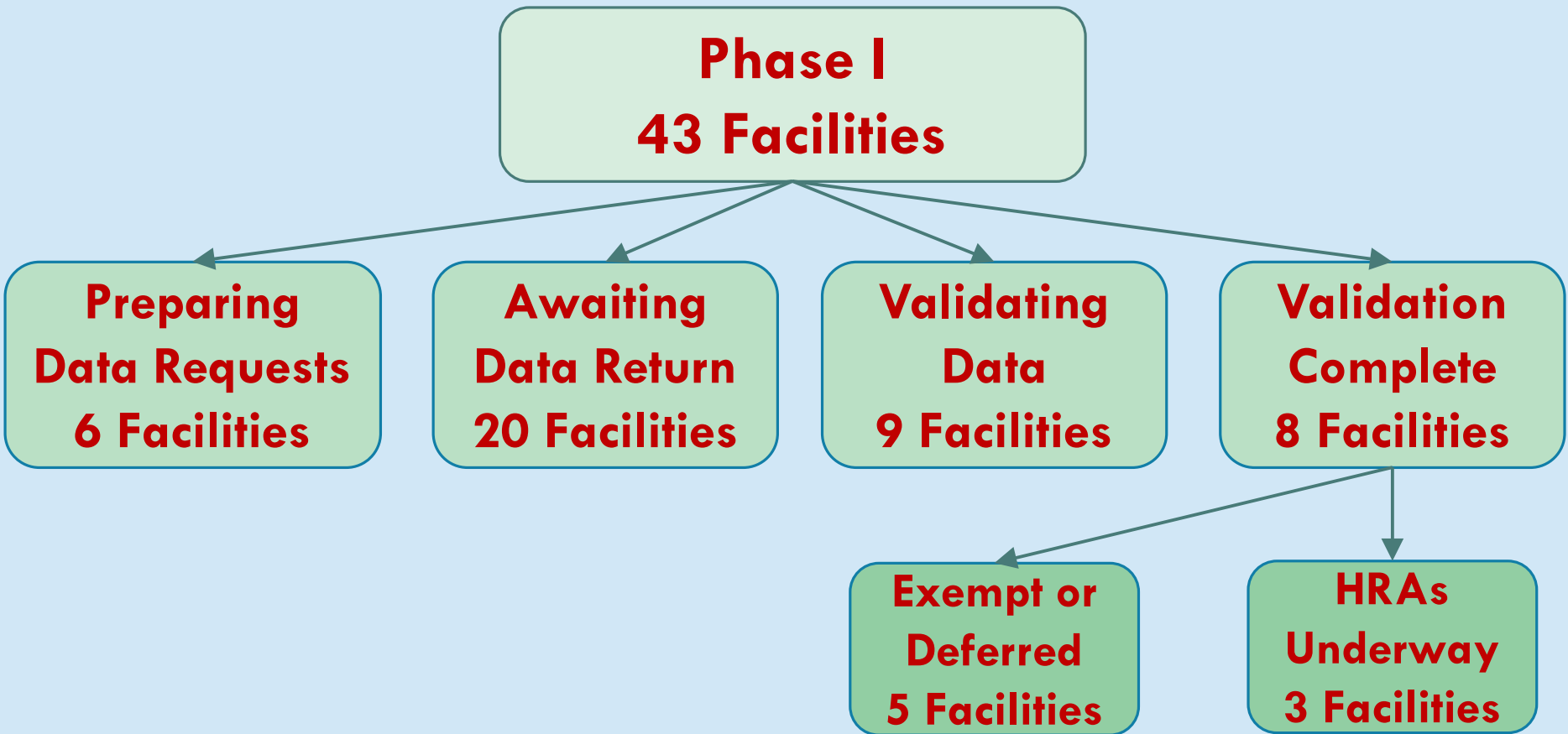
2. Validate Inventories and HRA Input Data

3. Conduct Health Risk Assessments

4. Approve Risk Reduction Plans

5. Implement Risk Reduction Measures

REGULATION 11, RULE 18 IMPLEMENTATION STATUS



RULE 11-18 SCHEDULE FOR PHASE I SITES

Implementation Steps:	2018				2019				2020				2021				2022				2023 - 2027					
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Y1	Y2	Y3	Y4	Y5	
Build Additional Infrastructure																										
Step 1. Classify Facilities	*																									
Step 2. Validate Data																										
Step 3. Conduct Preliminary HRAs																										
Facility Review of Preliminary HRAs																										
Public Review of draft HRAs																										
Respond, Correct, Post Final HRA																										
Step 4. Approve Risk Reduction Plans																										
Step 5. Implement Risk Reduction Measures																										

* As of June 2018, Phase I had 43 Facilities.

3/18/2019

RULE 11-18: ACTIONS TO DATE

- **Rule 11-18 Implementation Work Group**
 - **Held 3 Meetings**
 - **Discussed Plans, Schedules, and Review Processes**
 - **Reviewing Guidance Documents**
- **New Data Collection and Management Process**
 - **Update Annual Inventories**
 - **Add 1-Hour Emissions Data**
 - **Collect and Verify HRA Inputs**
- **Enhanced Web Site**
- **Updated Fee Structure**

RULE 11-18: NEXT STEPS

- **Complete Guidance Documents (emission factors, 1-hour inventories, and modeling protocols)**
- **Complete Data Validation for Phase I Facilities**
- **Complete HRAs for Phase I Facilities**
- **Update Web Site (add guidance documents and public notice area)**
- **Organize the Dispute Resolution Panel (as needed)**



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

Refinery and Flare Overview

Stationary Source Committee Meeting
March 18, 2019

Jeff Gove
Director of Enforcement

Overview

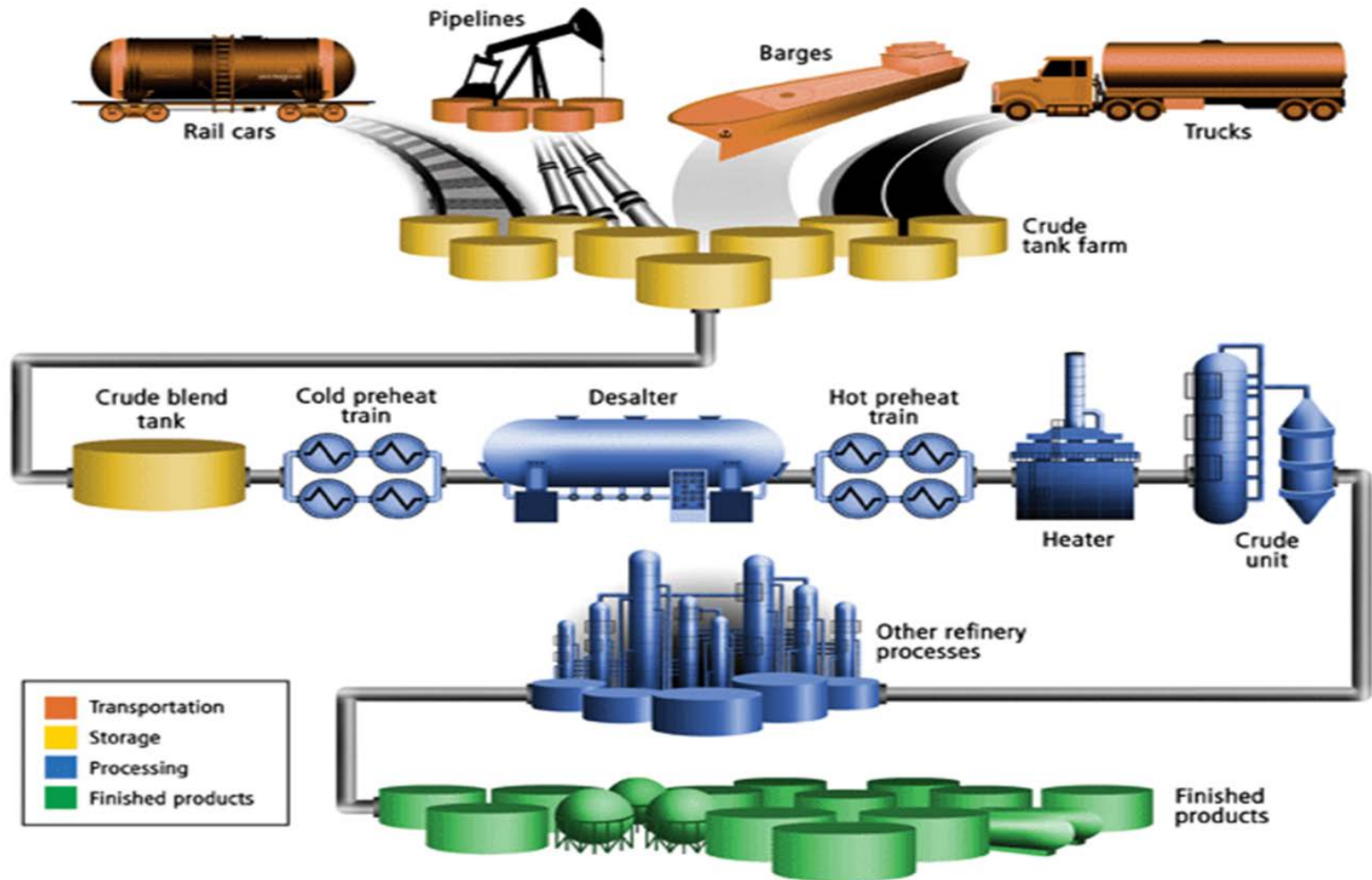
- **Refinery Process**
- **Refinery Flares**
- **Refinery Flare Monitoring**
- **Refinery Flare Minimization**



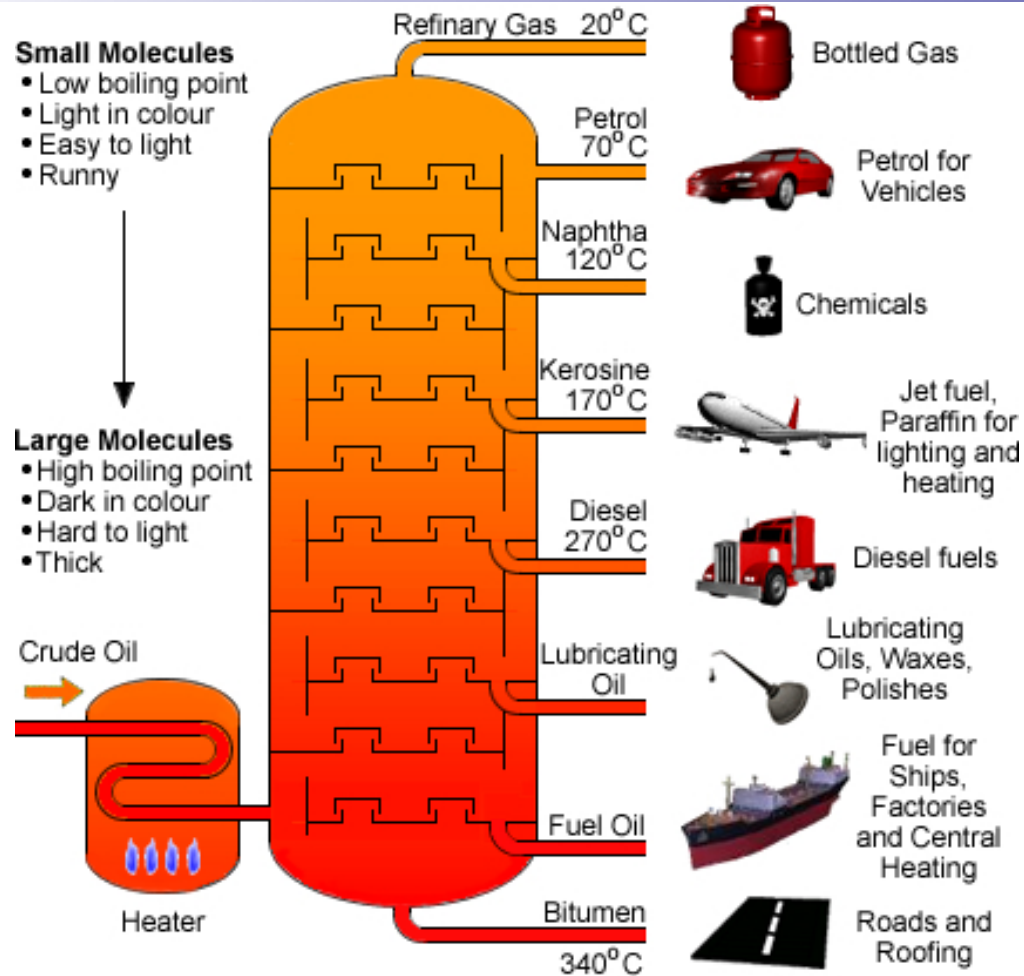
District Refineries



Refinery Overview



Products of Petroleum Refining



Fractionating Column
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A lighthouse stands on a rocky cliff overlooking the ocean under a clear sky. The title 'Refinery Sources of Emissions' is overlaid on the right side of the image in a large, bold, blue font with a white outline.

Refinery Sources of Emissions

- **Storage and Transfer of Organic Liquids**
 - Organic Liquid Storage Tanks
 - Piping and Equipment
 - Marine Vessel Loading Terminals
- **Processing Equipment**
 - Products of Combustion
 - Crude Unit
 - Fluid Catalytic Cracker (FCC) / Coker Unit
 - Sulfur Removal / Sulfur Recovery
 - Reformers / Treatment
- **Waste Streams**
 - Wastewater Collection and Separation Systems
 - Waste product (i.e, Coke, Catalyst)
- **Operational Upsets & Emergency Conditions**
 - Flares



Refinery Emissions

- **Carbon Dioxide (a greenhouse gas)**
- **Volatile Organic Carbon (VOC)**
- **Hydrogen Sulfide (H₂S)**
- **Sulfur Dioxide (SO₂)**
- **Nitrogen Oxide (NO_x)**
- **Benzene**
- **PM_{2.5}**



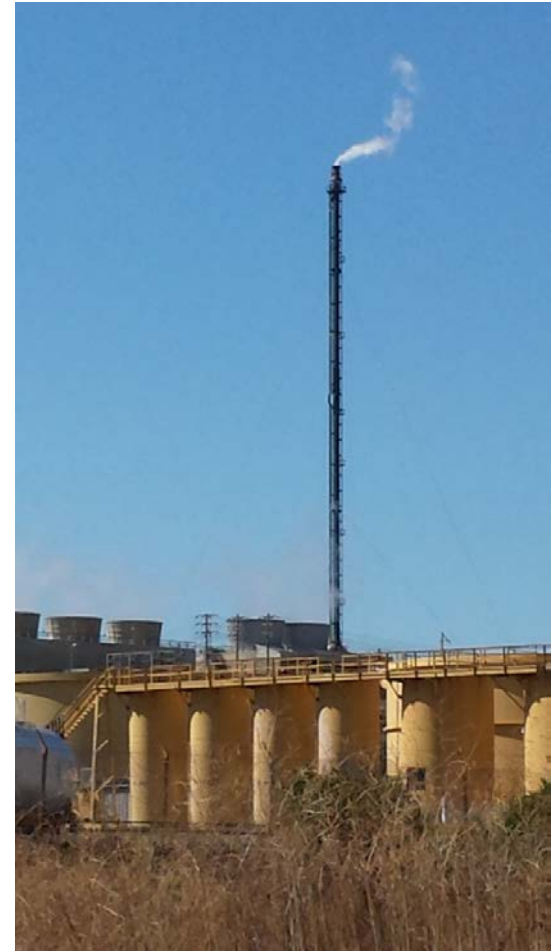
Air District Refinery Regulations

<i>Reg 8, Rule 5</i>	<i>Storage Tanks of Organic Liquids</i>
<i>Reg 8, Rule 8</i> <i>Reg 8, Rule 10</i>	<i>Wastewater Collection and Separation Systems</i> <i>Process Vessel Depressurization</i>
<i>Reg 8, Rule 18</i> <i>Reg 8, Rule 28</i>	<i>Equipment Leaks</i> <i>Episodic Releases from Pressure Relief Devices</i>
<i>Reg 8, Rule 33</i> <i>Reg 8, Rule 44</i>	<i>Gasoline Bulk Terminals & Gasoline Cargo Tanks</i> <i>Marine Vessel Loading Terminals</i>
<i>Reg 12, Rule 11</i> <i>Reg 12, Rule 12</i>	<i>Flare Monitoring at Petroleum Refineries</i> <i>Flaring & Flare Minimization Plan</i>

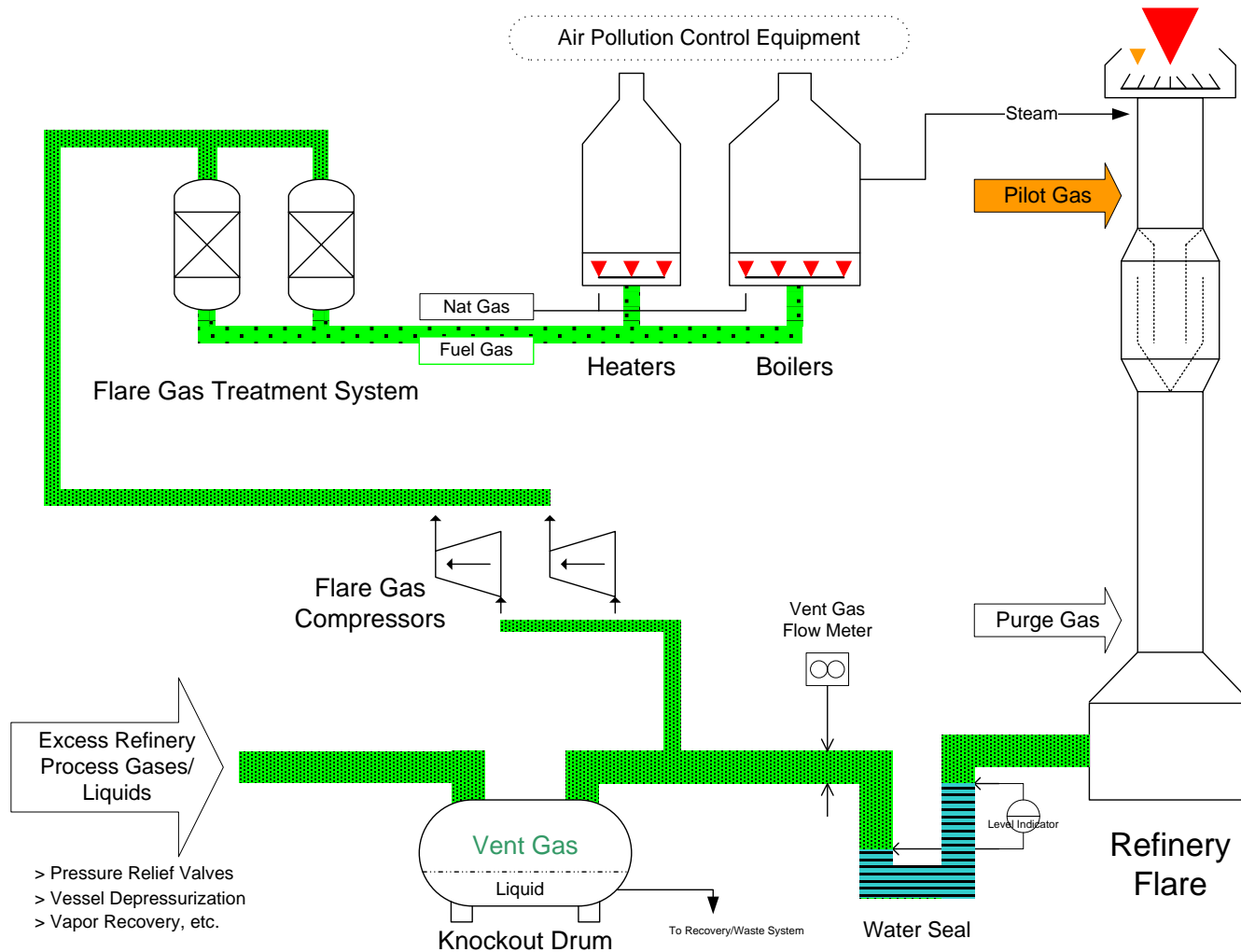
Refinery Flare Systems

Flares are safety devices used to combust process gasses produced in petroleum refining from the following activities:

- Emergency/Process Upsets
- Start-up and Shutdown
- Turnaround and maintenance activities



Refinery Flare Systems



Refinery Maintenance

Turnaround

A planned activity for the purpose of performing periodic maintenance, repair or replacement, or installation of new equipment.



Regulation 12, Rule 11

Flare Monitoring Rule

Requires:

➤ Monitoring

- flow, vent gas composition

➤ Sampling

- during flaring events
- hydrocarbon and sulfur content

➤ Video surveillance

➤ Monthly reporting of emissions data

- <http://www.baaqmd.gov/about-air-quality/research-and-data/flare-data>





Regulation 12, Rule 12

Flares at Petroleum Refineries

Flare Minimization

- Flaring is prohibited unless due to emergency or consistent with the Flare Minimization Plan

Notification

- Required when greater than 500,000 standard cubic feet per day is flared
- As soon as possible, consistent with safe operation of the refinery



Regulation 12, Rule 12

Flares at Petroleum Refineries

Causal Analysis Reports

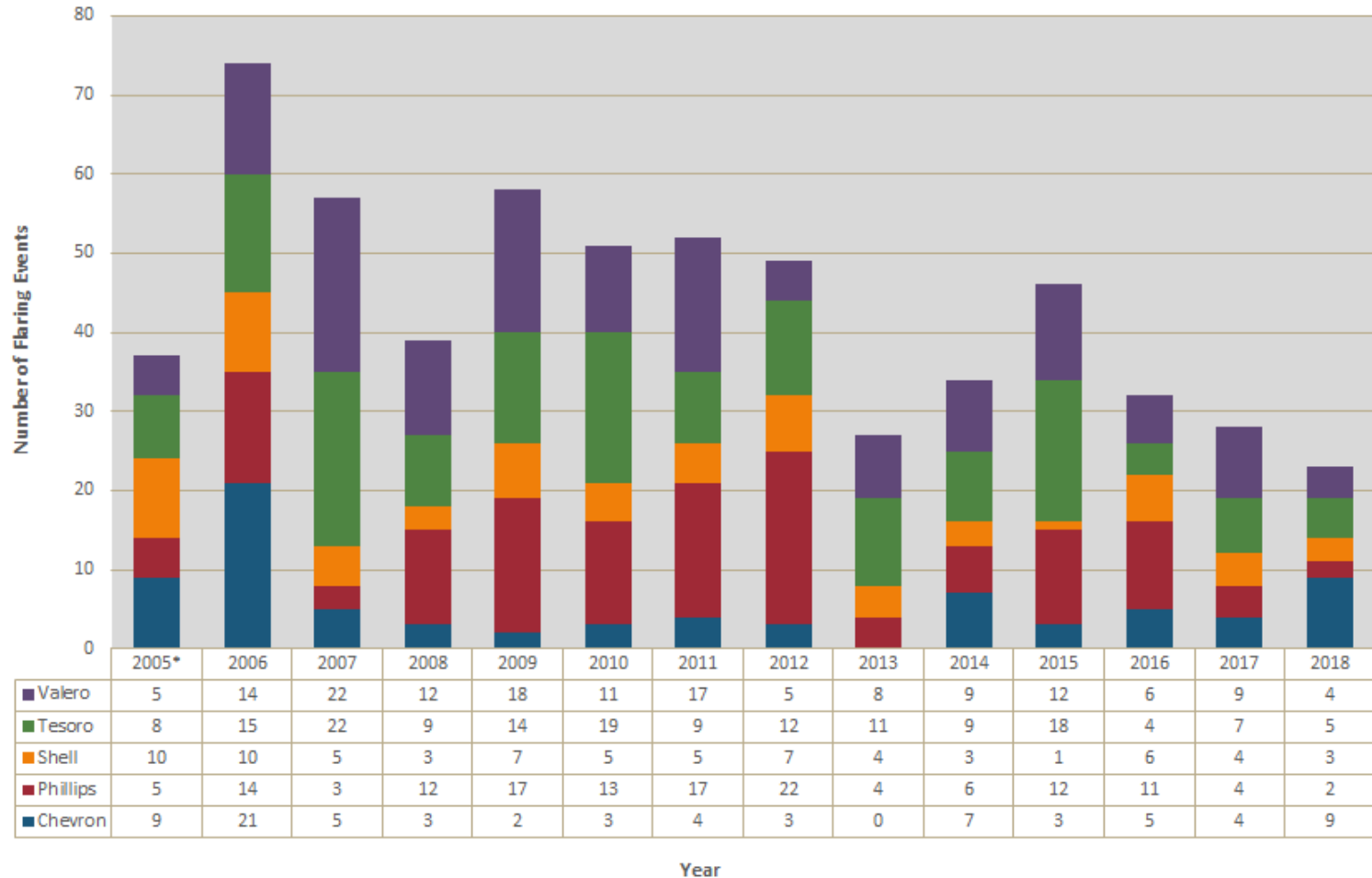
- Investigation of cause of flaring
- Requires prevention measures to be implemented

Flare Management Plan Updates

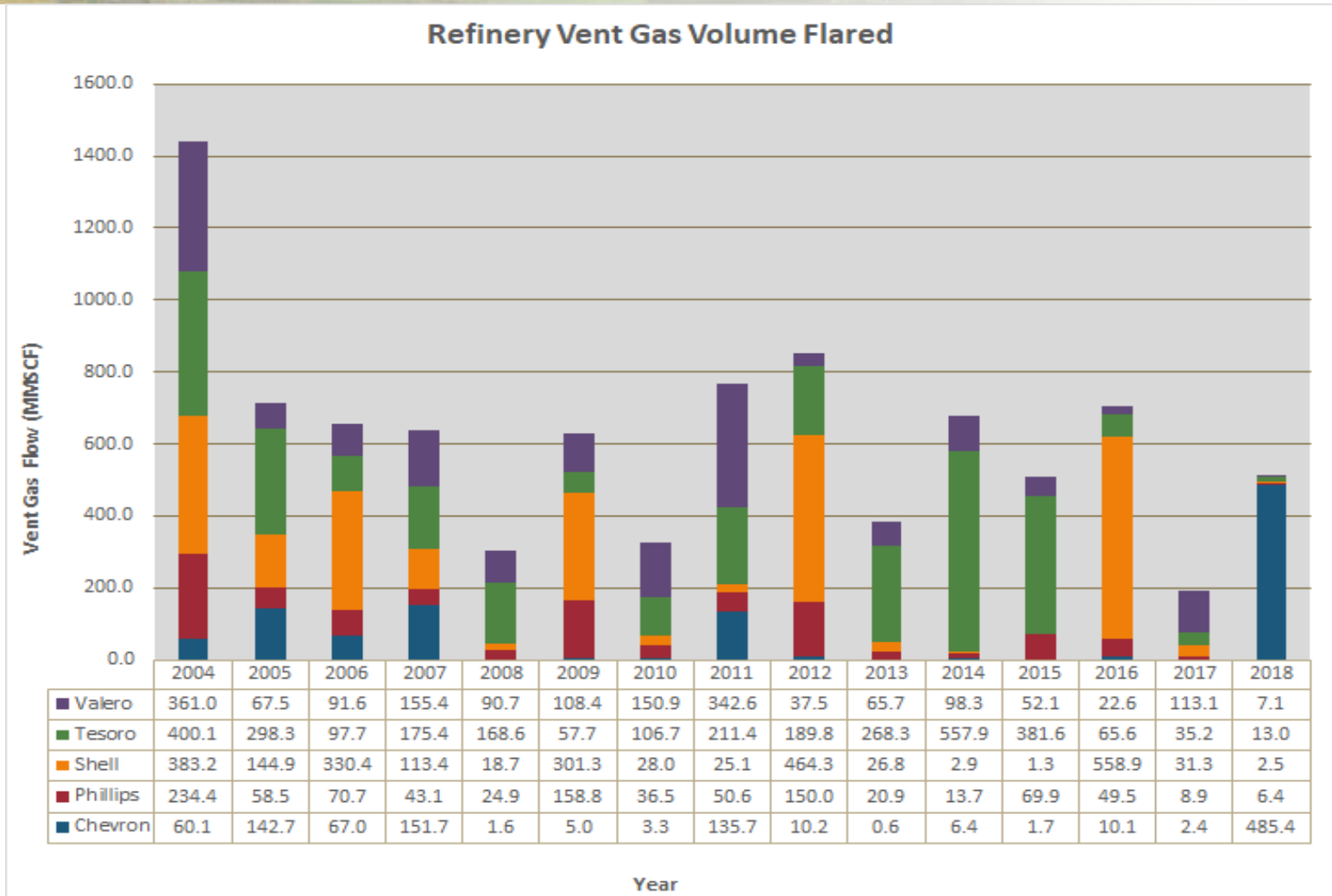
- Annual update and review to ensure continuous improvement in minimizing the frequency and magnitude of flaring

Frequency of Flaring Events

Refinery Flaring Events 2005 through 2018



Amount of Gas Flared



Questions?