

# ***2023 PM2.5 Plan* for Attainment of the Federal 2012 Annual PM2.5 Standard**

## **Public Workshop**

March 23, 2023

[webcast@valleyair.org](mailto:webcast@valleyair.org)

# 2012 PM2.5 Standard

- EPA established 2012 PM2.5 standard January 15, 2013 ( $12 \mu\text{g}/\text{m}^3$ )
  - District initially designated as Moderate nonattainment in 2015 by EPA
  - District submitted 2016 PM2.5 Plan with request to be reclassified to Serious nonattainment
  - EPA approved Moderate Plan and reclassified District to Serious effective December 2021
  - Serious Plan was due to EPA December 31, 2023
- District addressed 2012 standard along with other PM2.5 standards as part of integrated *2018 PM2.5 Plan*, years earlier than required to achieve early emission reductions
  - EPA proposed full approval of Serious Plan for 2012 PM2.5 Standard in December 2021
  - However, EPA reversed decision and proposed disapproval in October 2022
  - In response to EPA reversal, CARB withdrew plan with District concurrence in October 2022
- District/CARB updating Plan for 2012 standard, by due date of December 2023
  - Updated Plan will rely on 2018 PM2.5 Plan, and include revisions as necessary incorporating latest guidance, feedback from EPA in latest proposals, and meet federal Clean Air Act requirements
  - Plan may also include additional analyses for 2006 PM2.5 standard to address EPA comments
- Today's workshop initiates public process for the 2023 PM2.5 Plan

# What is PM2.5?

Particles with a diameter of 2.5 microns and smaller

A mixture of solid particles and liquid droplets in the air

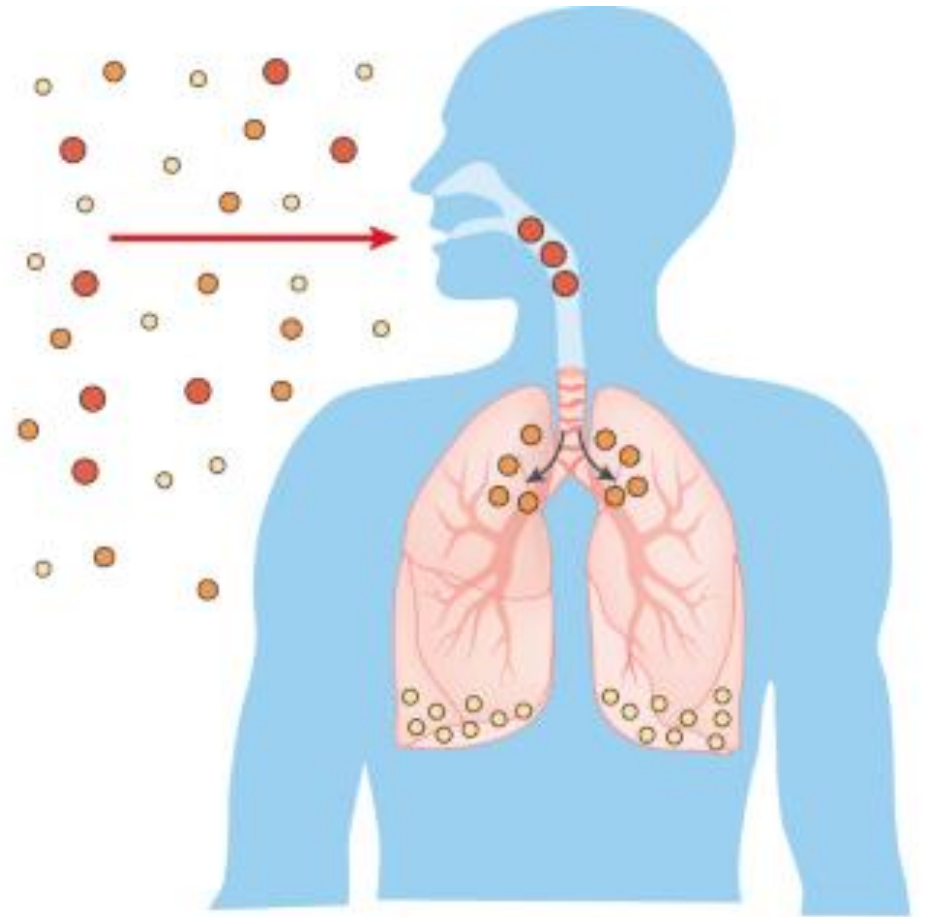
Emitted directly or formed indirectly through chemical reactions between gases



Image courtesy of the U.S. EPA

# Health Effects of PM2.5

- Premature death in people with heart or lung disease
- Aggravated asthma
- Increased respiratory symptoms – irritation of the airways, coughing, difficulty breathing
- Decreased lung function in children
- Irregular heartbeat and nonfatal heart attacks
- Increased respiratory and cardiovascular hospitalizations
- Chronic bronchitis
- Lung cancer



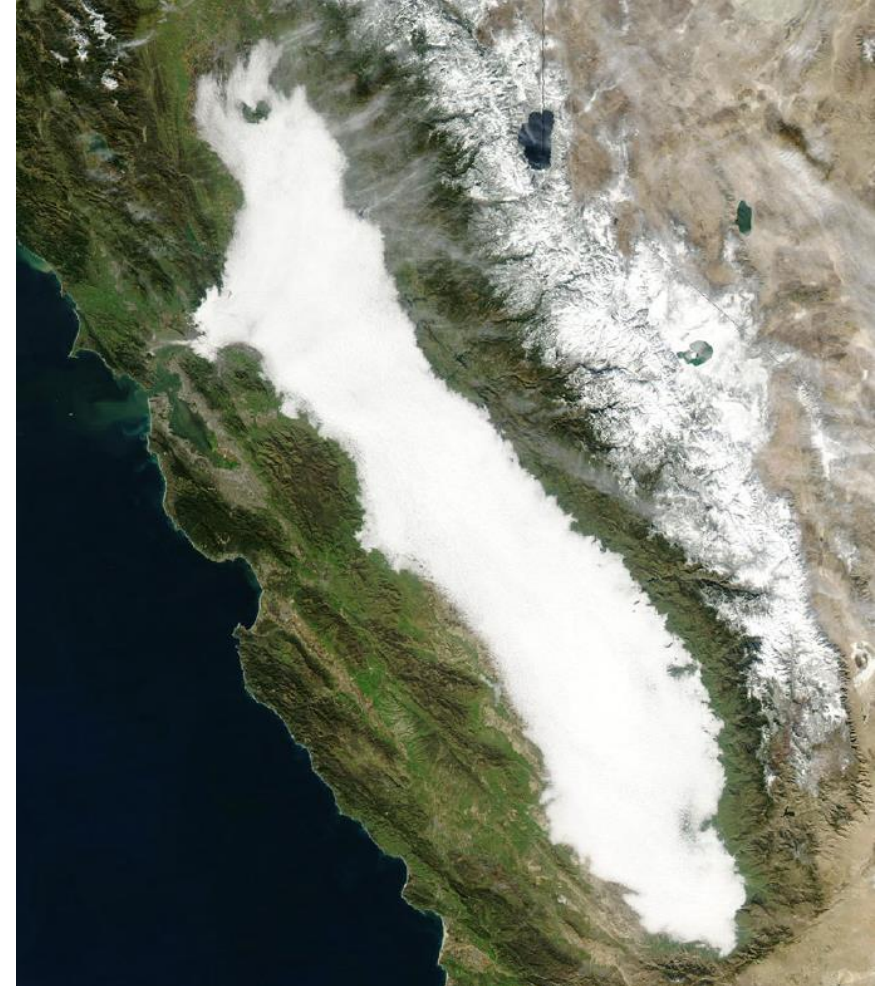
# Protecting Public Health

*The District's mission is to improve health and quality of life for all Valley residents through efficient, effective and entrepreneurial air quality management strategies*

- District shall continue to strive to protect health of Valley residents through efforts to meet health-based state and federal ambient air-quality standards, based on science and prioritized where possible using health-risk reduction strategies
- *2023 PM2.5 Plan* will demonstrate District/CARB's ongoing efforts to improve air quality in Valley through a comprehensive strategy
- Through this public process, District and CARB will work to identify opportunities to quantify health benefits of Plan strategy

# Valley's Air Quality Challenges

- Valley's challenges in meeting federal air quality standards unmatched due to unique combination of topography and meteorology
- Valley faced with variety of challenges including role as major goods movement corridor, high population growth, pollution transport from other areas, wildfires, drought
- Conditions require substantially greater emissions reductions in Valley to meet clean air targets than other regions

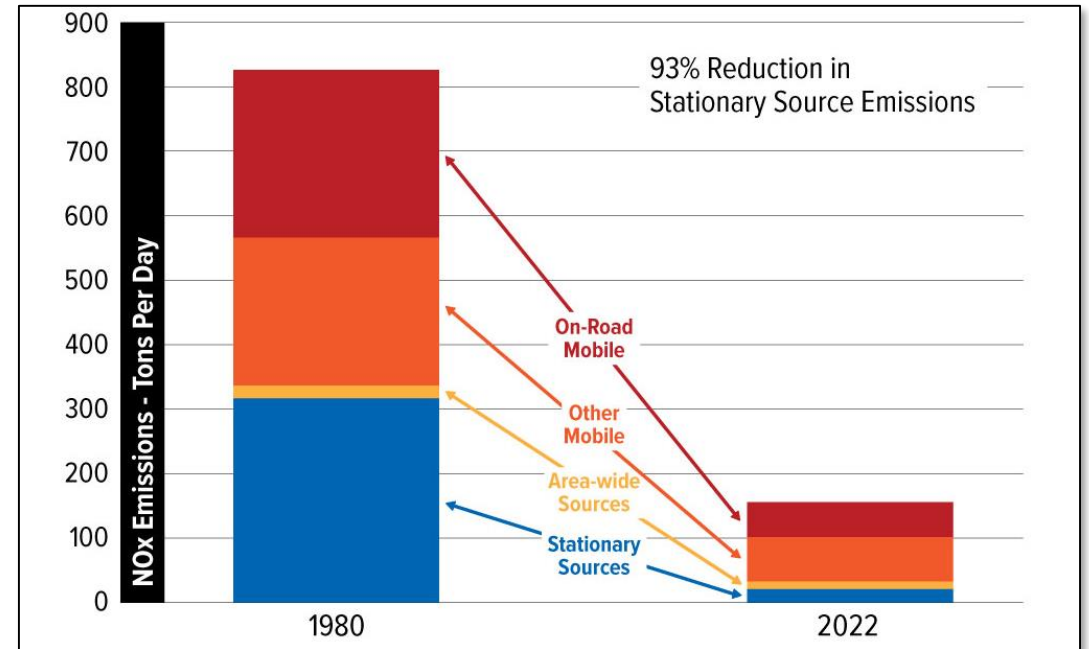


# Foundation for 2023 PM2.5 Plan to Build On Strategies Already in Place

- *2007 PM10 Maintenance Plan (1987 PM10 standard)*
- *2007 Ozone Plan (1997 8-hour Ozone Standard)*
- *2008 PM2.5 Plan (1997 PM2.5 Standard)*
- *2012 PM2.5 Plan (2006 PM2.5 Standard)*
- *2013 Plan for the Revoked 1-hour Ozone Standard (1979 1-hour Ozone Standard)*
- *2015 PM2.5 Plan (1997 PM2.5 Standard)*
- *2016 Ozone Plan (2008 8-hour Ozone Standard)*
- *2016 PM2.5 Plan (2012 PM2.5 Standard)*
- *2018 Plan for the 1997, 2006, and 2012 PM2.5 Standards*
- *2022 Ozone Plan (2015 8-hour Ozone Standard)*

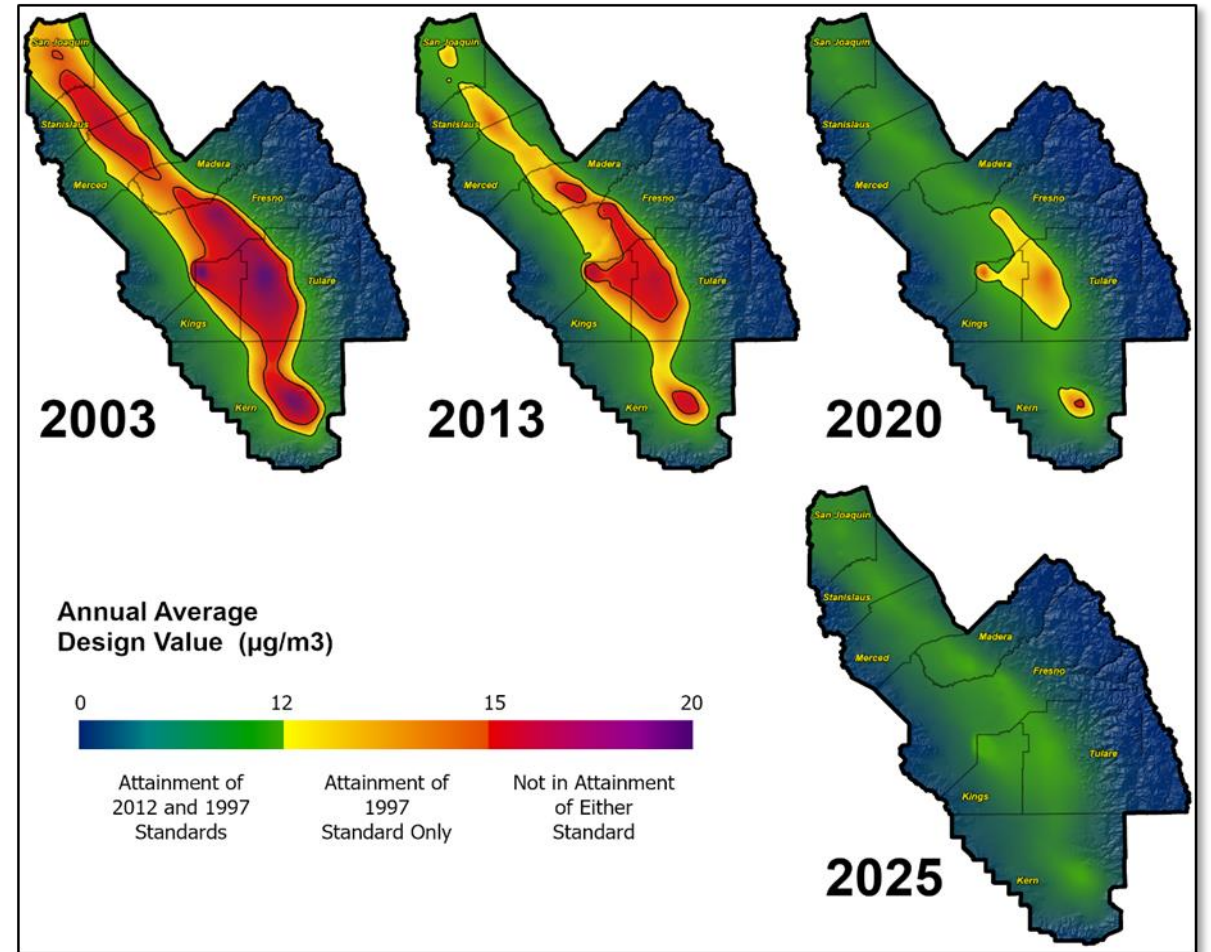
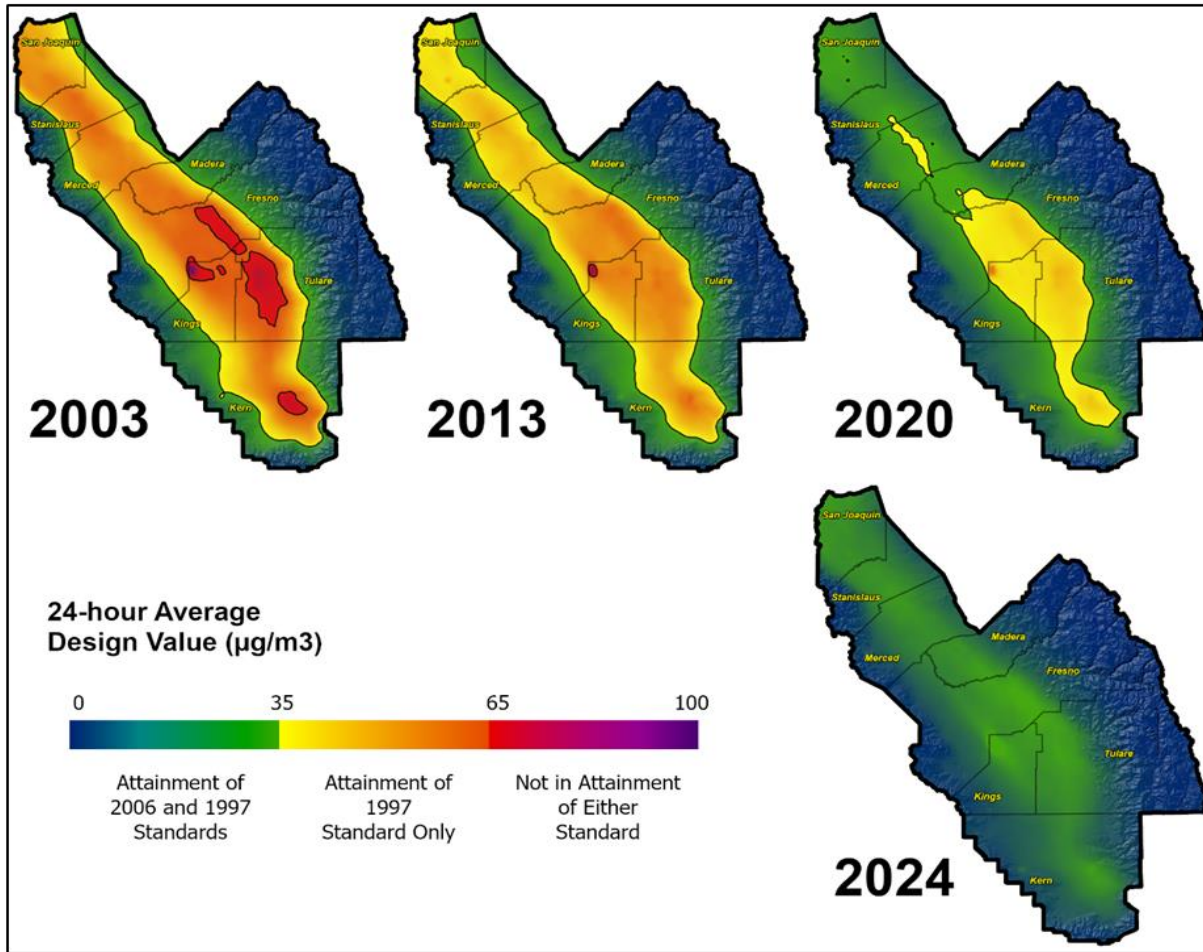
# Adopted Controls Are Improving Air Quality

- District has adopted numerous attainment plans and air quality control strategies to address federal standards
  - Stationary source ozone and PM-forming NO<sub>x</sub> emissions reduced by over 90% through hundreds of regulatory actions
- CARB has adopted numerous mobile source emissions controls
- District/CARB combined efforts represent nation's toughest emissions control program
- Strong incentive programs (\$5 billion in public/private investment)
- Through significant clean air investments, Valley continues to make major improvements with respect to air quality
- While significant improvements have been made, more reductions needed



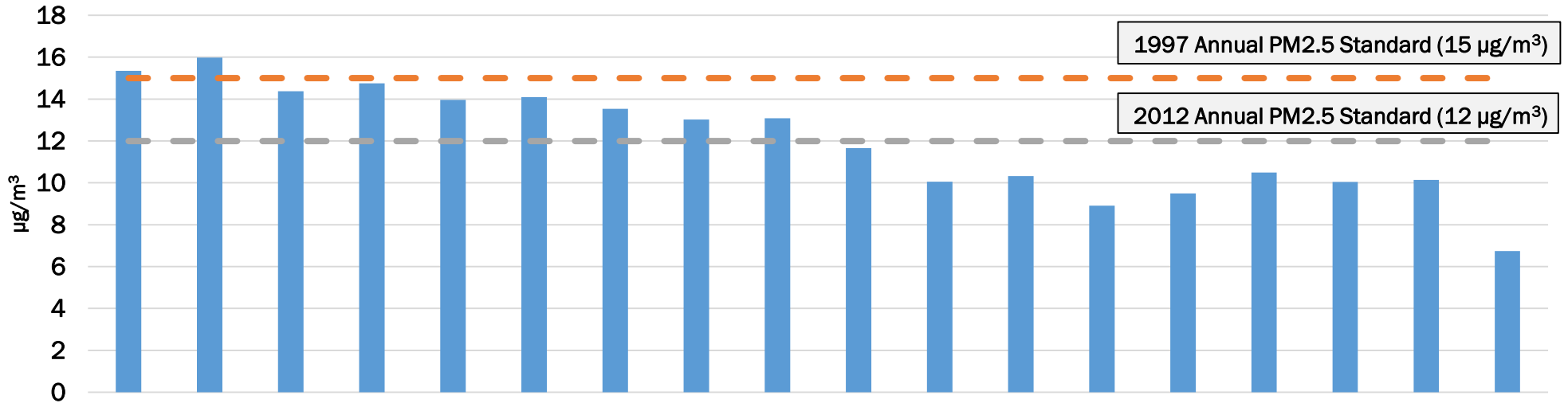


# Progress in Improving Valley PM2.5

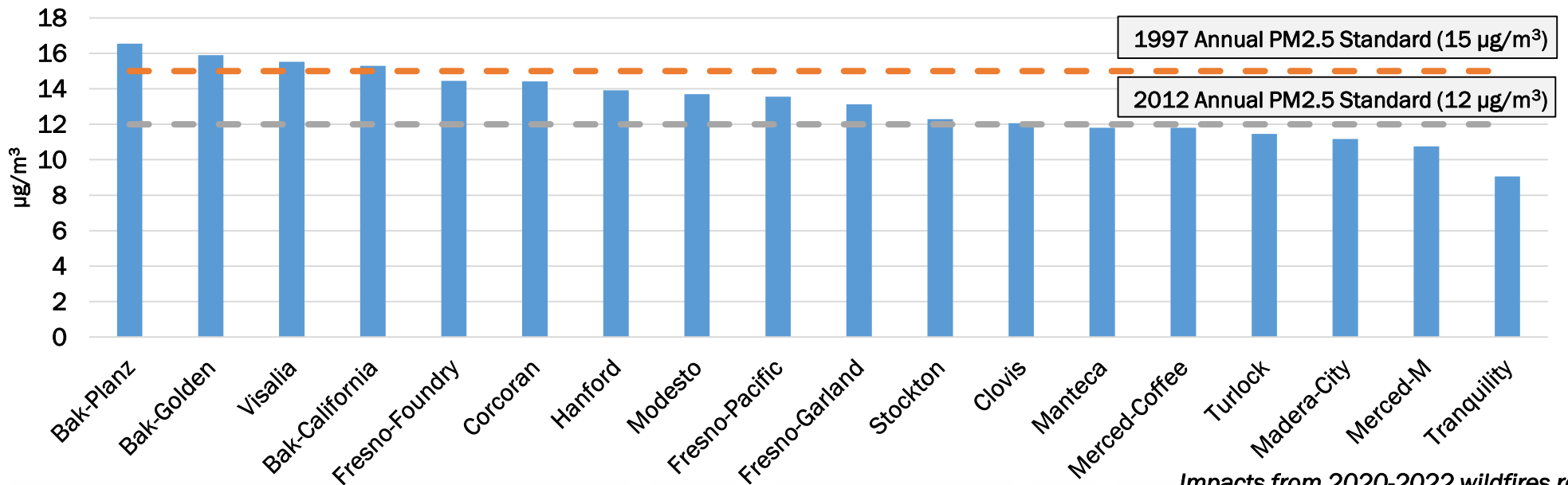


# Progress Toward Attainment of 2012 Standard

2022 PM2.5 Annual Average by Site



2020-22 PM2.5 Design Value by Site

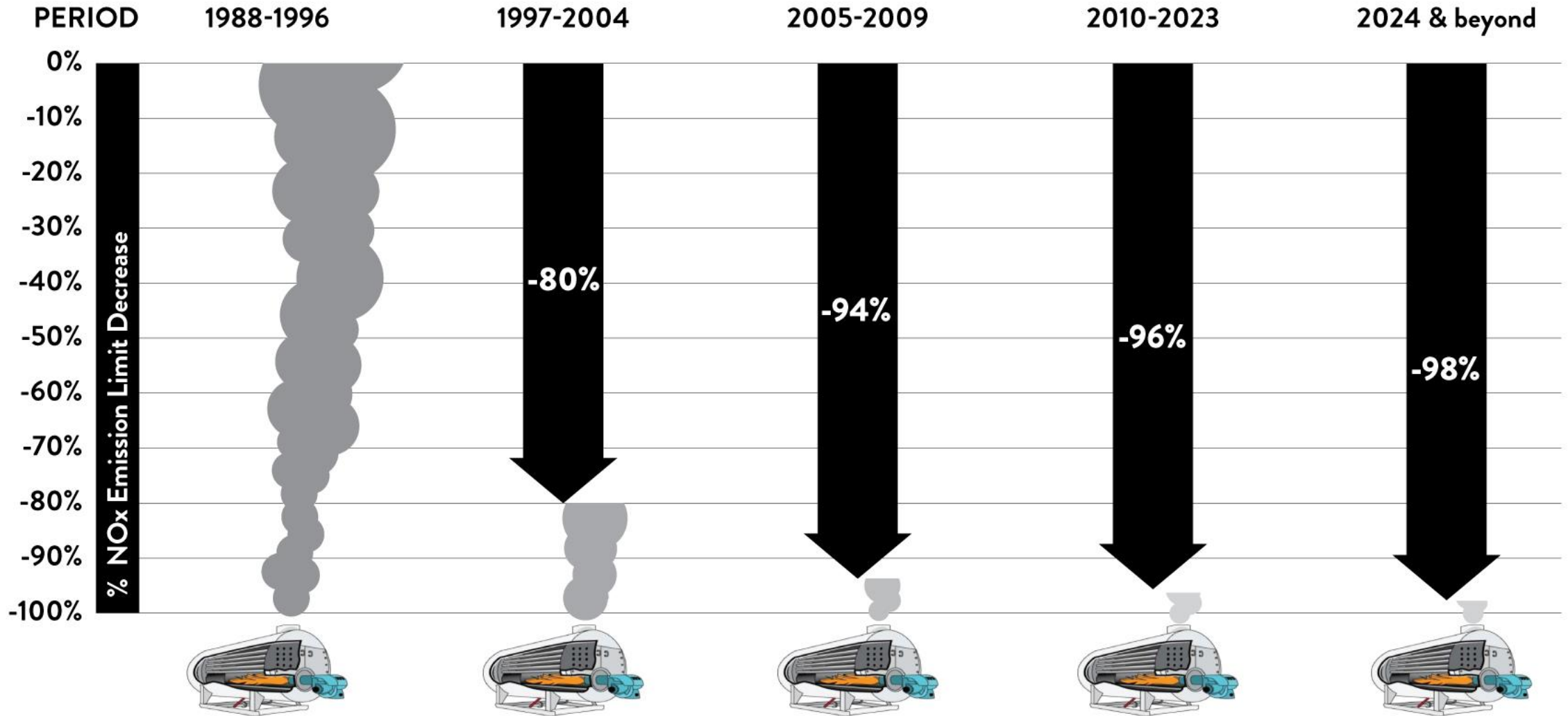


Impacts from 2020-2022 wildfires removed

# Recent Regulatory Actions Under Plan Commitments

Measure	Status
Rule 4901 (Wood Burning Fireplaces and Wood Burning Heaters)	Adopted Jun. 2019
Rule 4311 (Flares)	Adopted Dec. 2020
Rules 4306/4320 (Boilers, Steam Generators, Process Heaters)	Adopted Dec. 2020
Rule 4692 (Commercial Underfired Charbroiling)	Strategy Adopted Dec. 2020
Rule 4103 (Ag Burn Phase-out)	Adopted Jun. 2021
Rule 4702 (Internal Combustion Engines)	Adopted Aug. 2021
Burn Cleaner Incentive SIP Measure	Adopted Nov. 2021
Rule 4354 (Glass Melting Furnaces)	Adopted Dec. 2021
Rule 4352 (Solid Fuel Boilers, Steam Generators, Process Heaters)	Adopted Dec. 2021
Rule 4550 (Conservation Management Practices)	Rule development ongoing
Rule 4401 (Steam-Enhanced Crude Oil Production Wells)	Rule development ongoing
Rule 4409 (Components at Light Crude Oil Production Facilities, Natural Gas Production Facilities, and Natural Gas Processing Facilities)	Rule development ongoing
Rule 4455 (Components at Petroleum Refineries, Gas Liquids, Processing Facilities, and Chemical Plants)	Rule development ongoing
Rule 4623 (Storage of Organic Liquids)	Rule development ongoing
Rule 4624 (Transfer of Organic Liquid)	Rule development ongoing
Rule 4402 (Crude Oil Production Sumps)	Rule development ongoing

# Example: Significant Emissions Reductions from Industrial Boilers



# Federal Clean Air Act Requirements

Attainment  
Demonstration

Reasonable Further  
Progress (RFP)

Quantitative  
milestones

Contingency  
Measures

Precursor  
Demonstration

Requirements for  
Major Sources

Emissions Inventory

Best Available  
Control Measures  
(BACM)/Most  
Stringent Measures  
(MSM)

# Public Process and Engagement

- District and CARB are committed to conducting robust public process for development of updated Plan
- Strategy for public engagement will include multiple opportunities for public participation to guide plan development
  - Public workshops and technical workgroup meetings to allow for more interaction and engagement
  - Multiple opportunities to provide input/feedback during workshops/commenting periods
  - Opportunities to request specific subjects to be discussed at future workshops/meetings
  - Regular updates to be provided at District Governing Board, Citizens Advisory Committee, and Environmental Justice Advisory Group meetings, other public engagement opportunities

## CHECKPOINT & DISCUSSION

*The District and CARB are seeking input and suggestions on meaningful public engagement process for plan development*

# Timeline of Public Process for 2023 PM2.5 Plan

## June Requirements

- BACM/MSM
- Emissions Inventory
- Precursor Demonstration
- New Source Review (NSR)

**Mar**

Workshop #1  
(March 23<sup>rd</sup>)

**Apr-May**

Additional  
Workshops

**May**

30-Day Publication  
of Proposed Initial  
SIP Requirements

**Jun**

District/CARB  
Public Hearings for  
Adoption of Initial  
SIP Requirements  
And submittal to  
EPA

## December Requirements

- Emission control strategy
- Modeling analysis
- Attainment demonstration
- Other plan elements

**Jul-Sept**

Additional  
Workshops

**Oct-Nov**

Publication of  
*2023 PM2.5 Plan*  
for Public Review  
and Comment

**Nov-Dec**

District Public  
Hearing for  
Adoption of *2023  
PM2.5 Plan*

**Dec-Jan**

CARB Public  
Hearing for  
Adoption of *2023  
PM2.5 Plan* and  
submittal to EPA

# Potential Workshop Subjects

Proposed Topic(s)
Plan Requirements
Emissions Inventory
BACM/MSM Analyses
Control Measure Opportunities
Precursor Demonstration
Contingency Measures
Updated Modeling
Attainment Demonstration/Target
Reasonable Further Progress

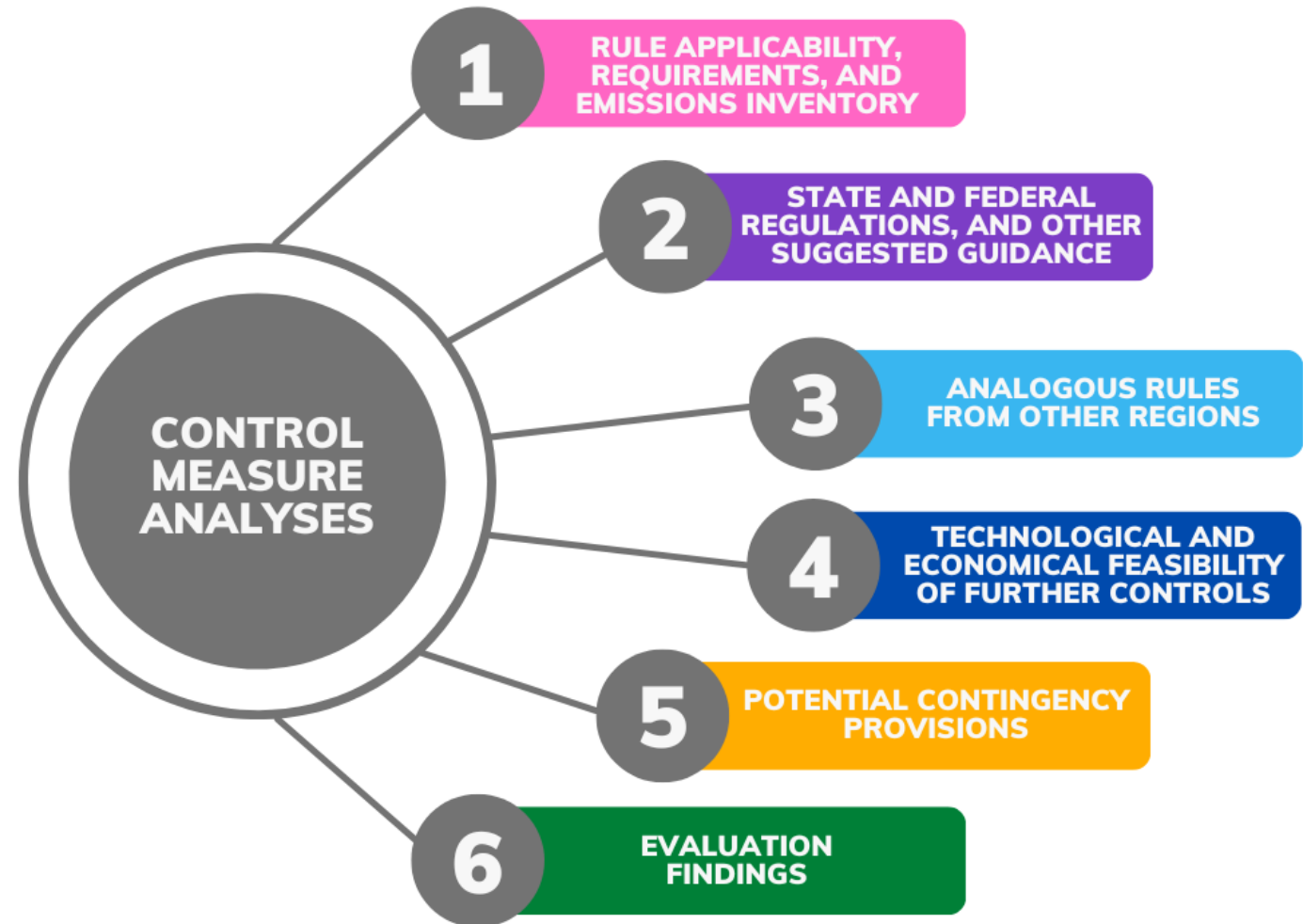
## **CHECKPOINT & DISCUSSION**

*The District and CARB are seeking input and suggestions on other subjects for discussion*



# District BACM/MSM Control Measure Analyses

- Plan must provide for implementation of all BACM, including best available control technologies (BACT), plus MSM included in attainment plan of any state that can be feasibly implemented in the area
- District conducting robust control measure analyses for all PM2.5 and NOx rules
- Ensures implementation of maximum degree of emissions reductions achievable, considering technological and economic feasibility



# CARB SIP Elements

1. Emissions Inventory
2. Precursor Analysis
3. State Control Measure Analysis

# Emissions Inventory Updates

2022  
Ozone  
Plan

1. EMFAC 2017 → EMFAC 2021
2. Actual pesticide emissions 2017-2020
3. Prescribed fire emissions correction

2023  
PM2.5  
Plan

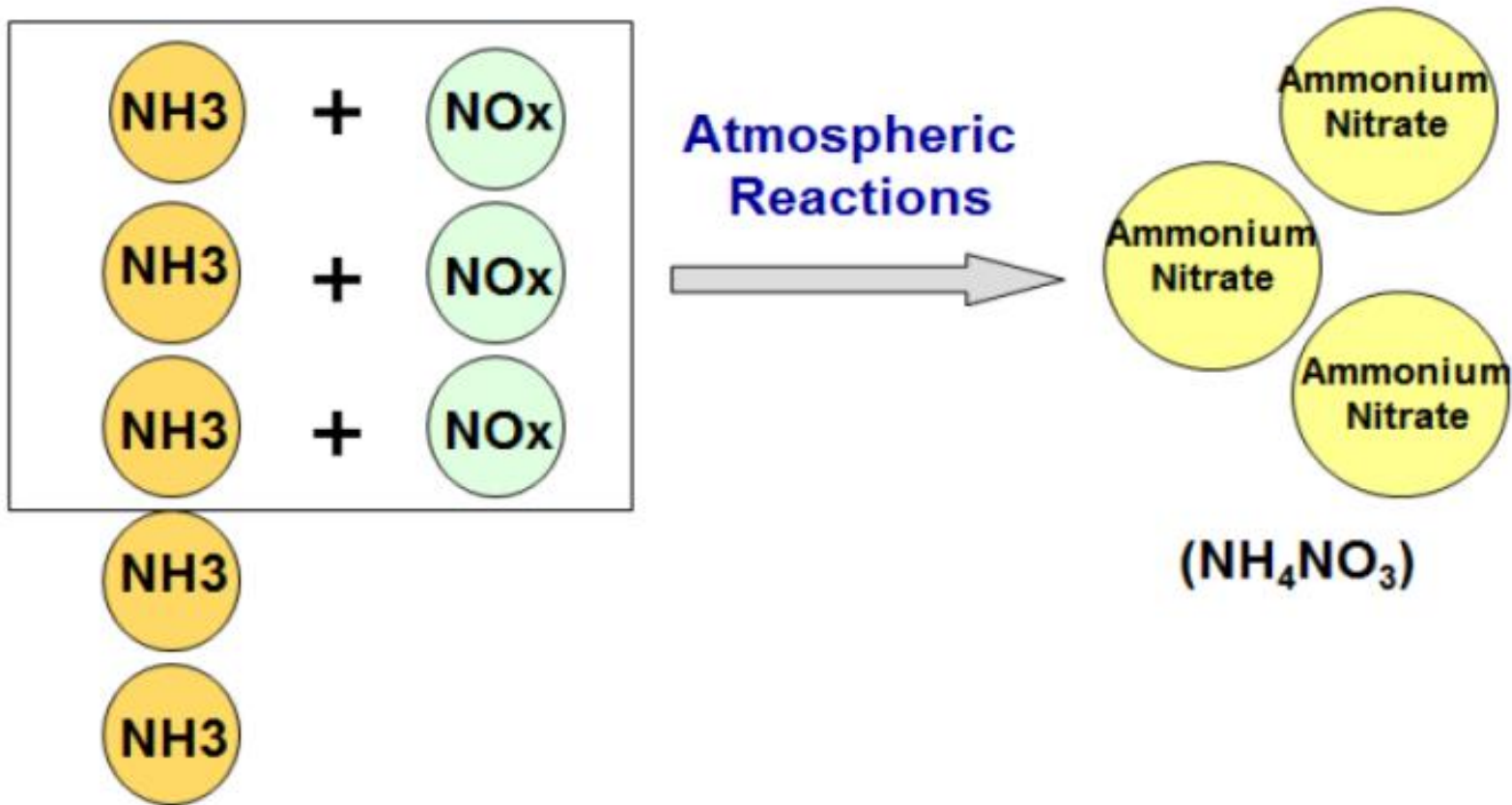
# Soil NOx Public Process

- Estimated as natural in current modeling platform
- Numerous public comments and papers
- Updated inventory will be included in next SIPs
- Robust public process critical to developing updated manmade soil NOx inventory

# Precursor Analysis

- PM2.5 precursors: directly emitted PM2.5, NO<sub>x</sub>, ammonia, SO<sub>x</sub>, VOCs
- Model changes in precursor emissions to assess the impact on PM2.5 air quality
- EPA provides guidance on analysis

# Role of Ammonia in PM2.5 Formation



# Precursors Analyzed

Not Included in  
Analysis

Directly emitted PM2.5

NOx

SIP will include PM2.5 and  
NOx controls

Included in Analysis

Ammonia

SOx

VOCs

Analysis will determine if  
ammonia, SOx, and VOC  
controls are needed in the SIP

# Other Considerations Allowed by EPA Guidance

- Emissions trends
- Anticipated growth or loss of emissions sources
- Severity of nonattainment at relevant monitors
- Available emissions controls



# State Control Measure Analysis

- Analysis of CARB's measures for the Most Stringent Measure (MSM) requirements
  - Currently being implemented in other States
  - Assesses stringency and feasibility of control measures
  - Includes measure suggestions during public process
- CARB has previously demonstrated MSM
- Complements District MSM Analysis

# CARB Contact

- Please provide your comments on the State's control measure analysis or other issues to: [SIPPlanning@arb.ca.gov](mailto:SIPPlanning@arb.ca.gov)
- CARB looks forward to your feedback

# Contact

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Visit <https://ww2.valleyair.org/about/sign-up/>  
to sign up for the District's PM Plans Listserv

# Comments/Questions

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