

# South Coast Air Basin Attainment Plan for the 2012 Annual PM2.5 Standard

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Regional Public Hearings



# South Coast AQMD

- Local air pollution control agency
  - Oversees South Coast Air Basin and Coachella Valley
  - Largest of the 35 local air agencies in CA and in the U.S.
  - 10,743 square miles
  - 17 million residents
- Responsibilities
  - Regulate emissions primarily from stationary sources
  - Develop and implement plans to meet national air quality standards
  - Permit and inspect 28,400 affected businesses
  - Administer over \$100 million of incentive funding annually



# Our Challenge



Los Angeles c. 1950

Our region has historically suffered from some of the worst air quality in the United States



Los Angeles in 2018

We have made significant progress, but still suffer from poor air quality

- Worst ozone (smog) in the nation
- Among the worst fine particulate matter (PM2.5)

# Outline



Background and PM2.5 Air Quality in the South Coast Air Basin

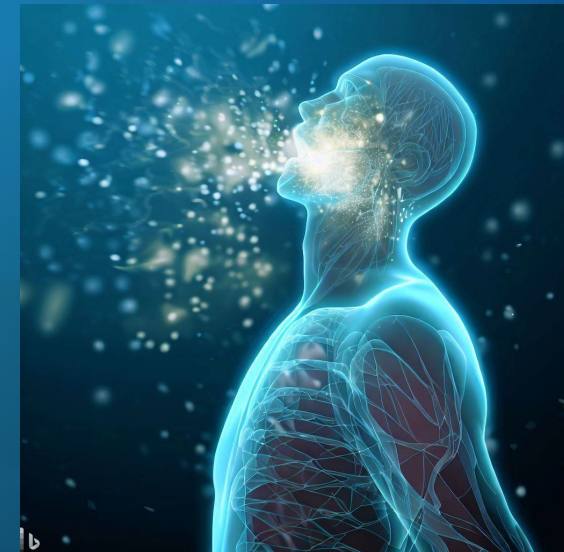
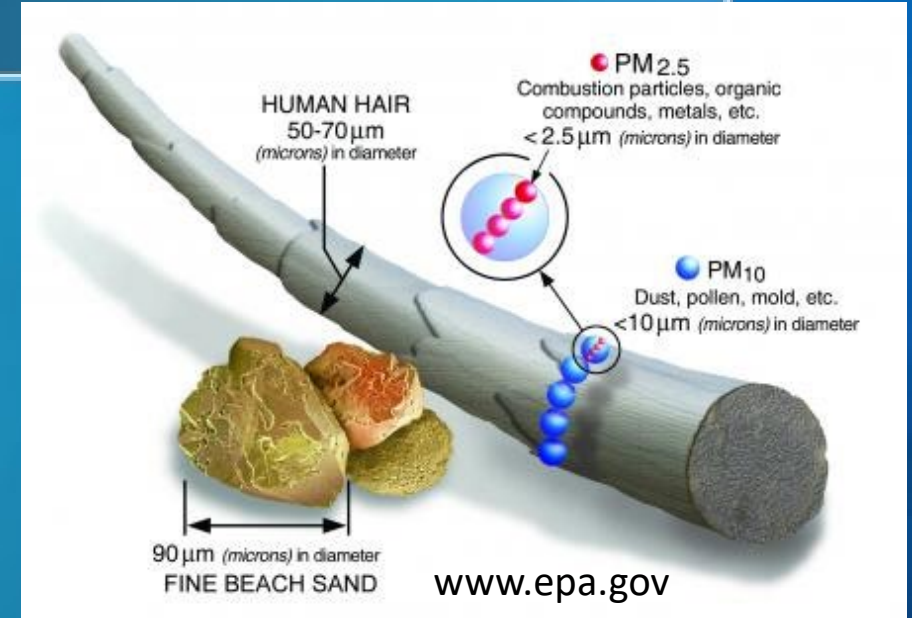
Control Strategy

Attainment Demonstration

Next Steps and Public Process

# PM2.5 Background

- PM2.5 is particulate matter less than 2.5  $\mu\text{m}$  in diameter
- Linked to adverse cardiovascular and respiratory health effects including premature death, asthma, and lung cancer
- Evidence suggests link to metabolic system, nervous system, cognition, and reproductive and developmental effects
- Exposure to PM2.5 drives majority of public health costs due to air pollution in our region

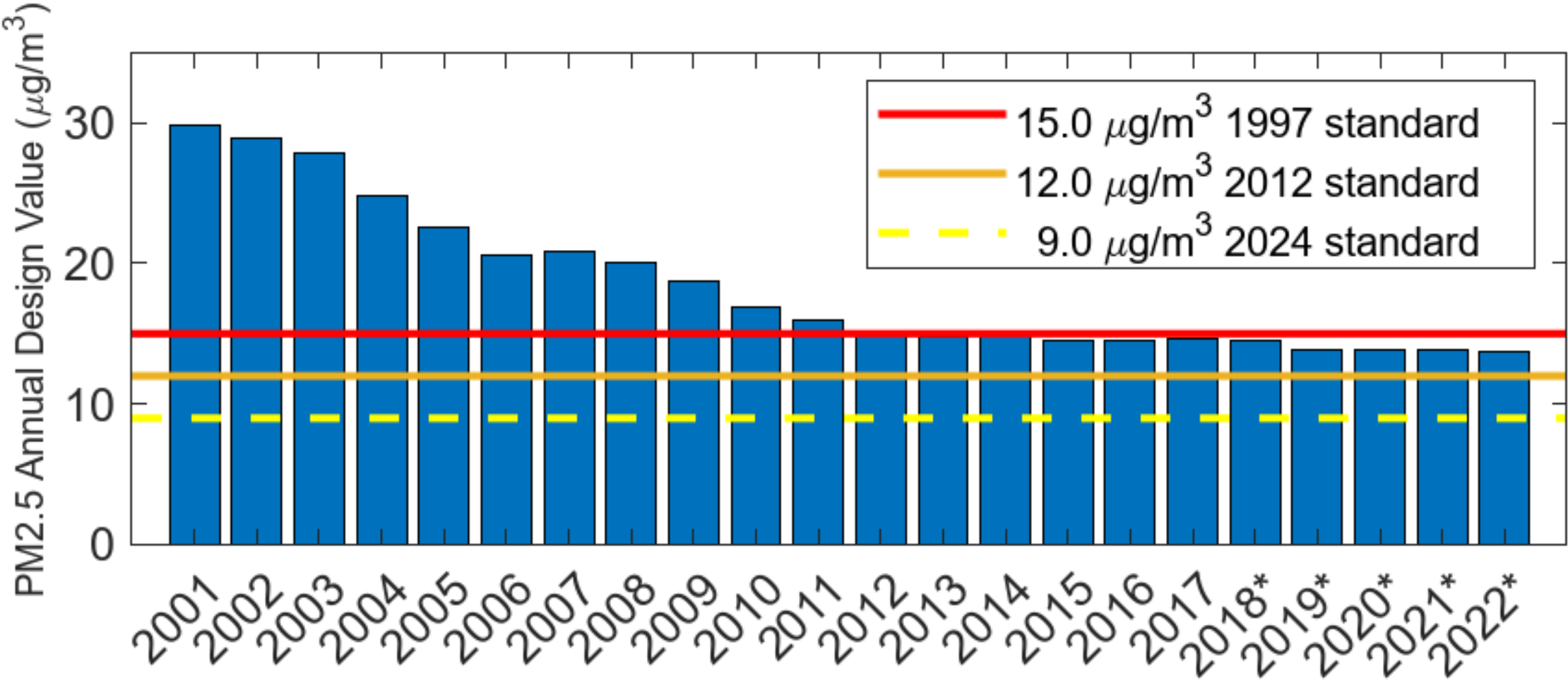


# PM2.5 Attainment Status

PM2.5 Standard	Level	South Coast Air Basin Classification	Attainment Date	Notes
1997 Annual	15 µg/m <sup>3</sup>	Attainment	-	-
2006 24-hour	35 µg/m <sup>3</sup>	Serious*	December 31, 2023	Met the standard in 2023
2012 Annual	12 µg/m <sup>3</sup>	Serious	December 31, 2025	Current Plan
2024 Annual	9 µg/m <sup>3</sup>	Designations expected in 2026	Likely December 31, 2036	A new plan to be submitted in 2027

\*Attainment expected based on preliminary data for 2023

# Annual PM2.5 Trend in the South Coast Air Basin

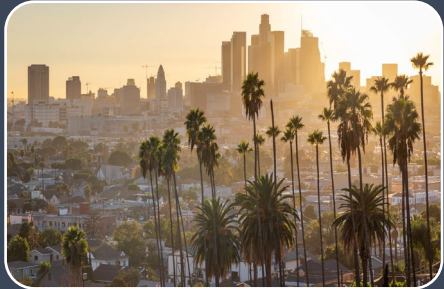


\*Data likely to be approved as exceptional events by U.S. EPA were removed.

# Annual PM2.5 Standard



This Plan addresses the 2012 annual PM2.5 standard, set at  $12 \mu\text{g}/\text{m}^3$



South Coast Air Basin is in “serious” nonattainment, which is the highest classification for PM2.5 standards<sup>1</sup>



Coachella Valley is in attainment of this standard

<sup>1</sup> Reclassification from “moderate” to “serious” approved by U.S. EPA effective December 9, 2020 (85 FR 71264)



# Overview of SIP Actions for the 2012 Annual PM2.5 Standard

Attainment plan was included in the 2016 AQMP and submitted to U.S. EPA in 2017

Near roadway data became available for SIP in 2020 and U.S. EPA requested a supplemental attainment demonstration

The submitted plan was withdrawn in 2023 to avoid potential disapproval\*

A revised attainment plan is due to U.S. EPA by December 23, 2024 to avoid sanctions

# Strategy to Attain Annual PM2.5 Standard



Previously adopted control measures to reduce ozone from the 2022 Air Quality Management Plan



Limited new controls needed to address PM2.5



# Measures from the 2022 Air Quality Management Plan/ State Implementation Plan that can be Implemented by 2030

South Coast AQMD  
stationary source  
measures transition to  
zero emission where  
feasible, lowest emissions  
possible everywhere else



South Coast AQMD  
mobile source measures  
include incentives and  
facility-based measures



CARB will continue to  
implement the 2022  
State SIP Strategy



# Control Measures Identified as 'Most Stringent Measures' (MSM)

- MSM requires all South Coast AQMD rules to be at least as stringent as those in any other air district or state
- Four measures identified that need to be implemented by December 2029



Remove low-income exemption in Rule 445 (Check Before You Burn)



Lower permitting thresholds for confined animal facilities in Rule 223



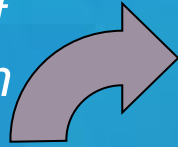
Lower threshold to require catalytic oxidizers for chain-driven charbroilers in Rule 1138



Require composting of chipped and ground greenwaste prior to land application

# Process to Conduct Attainment Demonstration

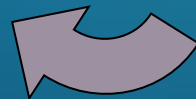
*Evaluate impact of emission reduction*



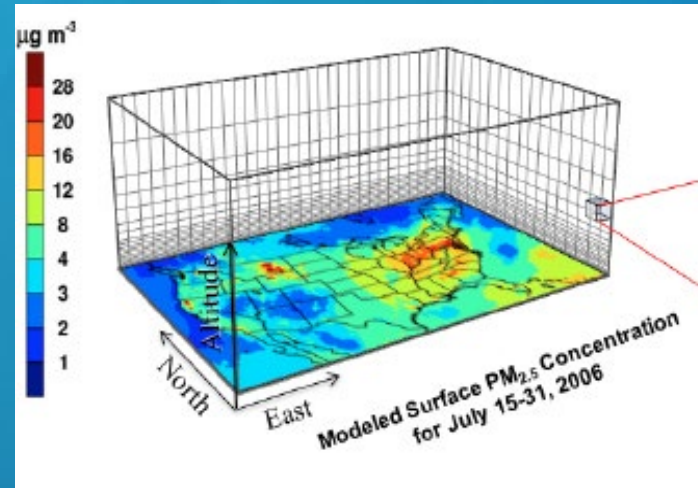
## Emissions Inventory



*Develop control strategy and apply the reductions to the inventory*



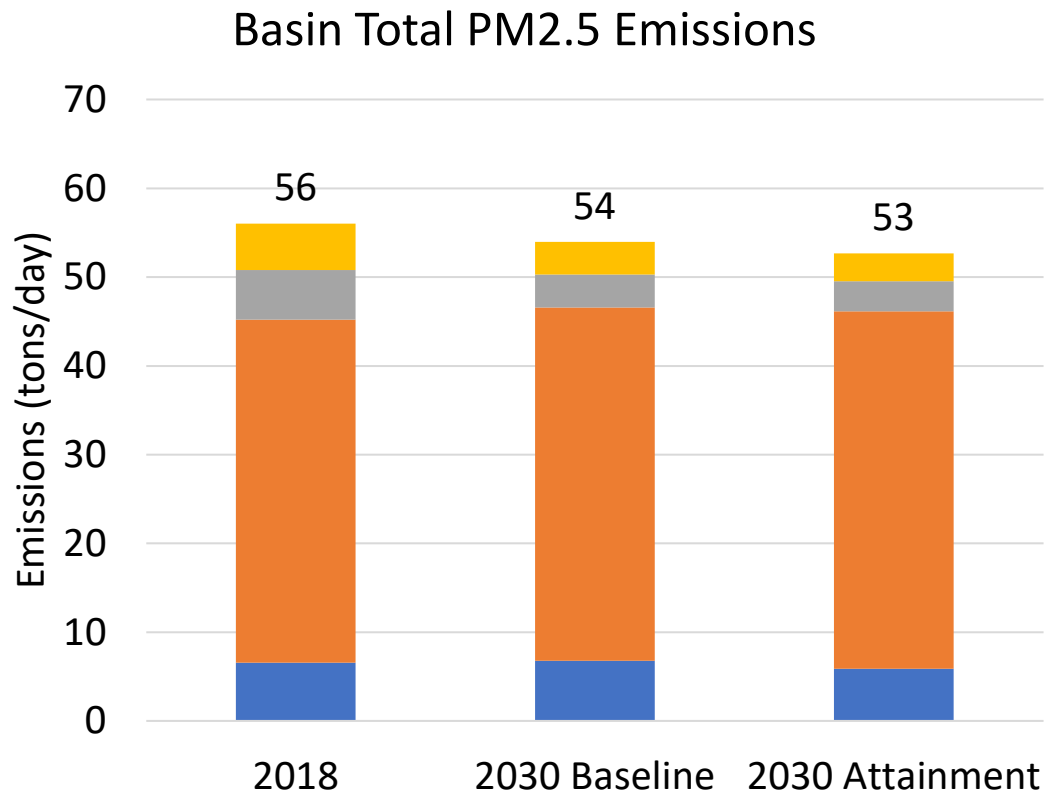
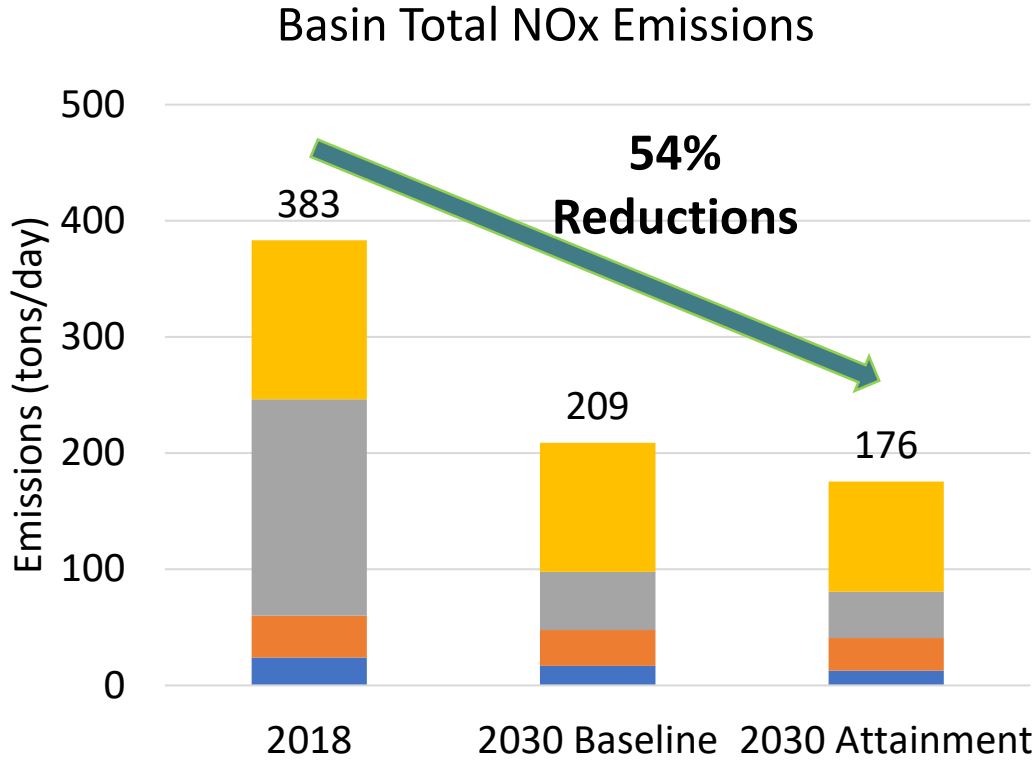
## Photochemical Air Quality Model



*Determine spatial/temporal air quality*



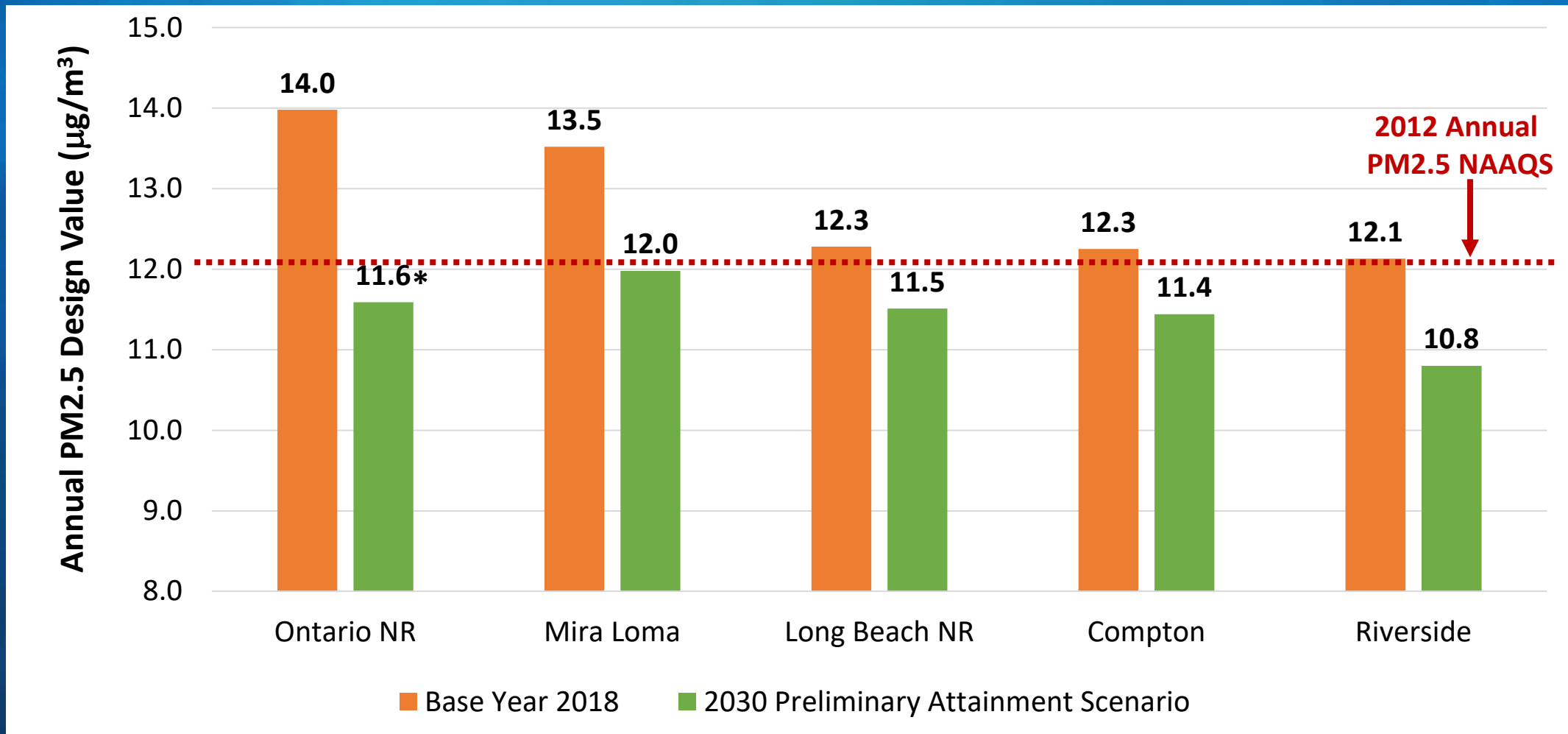
# Emission Changes from 2018 to Attainment Scenario



■ Point Sources   
 ■ Area Sources   
 ■ On-Road Mobile Sources   
 ■ Off-Road Mobile Sources

*'Baseline' includes all previously adopted rules. 'Attainment' includes projections from upcoming rules. NOx contributes to PM2.5 formation*

# Future Annual PM2.5 Concentrations



\* Design value calculated using a hybrid modeling approach

# SIP Development Public Process

Spring - Fall 2023

- Advisory Group Meetings

March 2024

- Released Draft Plan for Public Review and Comments

April - May 2024

- Regional Public Hearings

May 2024

- Release of Draft Socioeconomic Impact Assessment

June 7, 2024

- Public Hearing for Board consideration

Summer 2024

- CARB adoption and submittal to EPA



# Looking Forward – U.S. EPA's New Annual PM<sub>2.5</sub> NAAQS

- On February 7, 2024, U.S. EPA strengthened the annual PM<sub>2.5</sub> standard from 12 to 9  $\mu\text{g}/\text{m}^3$
- South Coast Air Basin is expected to be designated as nonattainment
- Attainment in 2036 or potential extension to 2041
- South Coast AQMD will need to adopt a new PM<sub>2.5</sub> plan by Aug. 2027
- The 2022 AQMP strategy alone will not be sufficient. Achieving the new standard will require additional controls.

# Regional Public Hearings

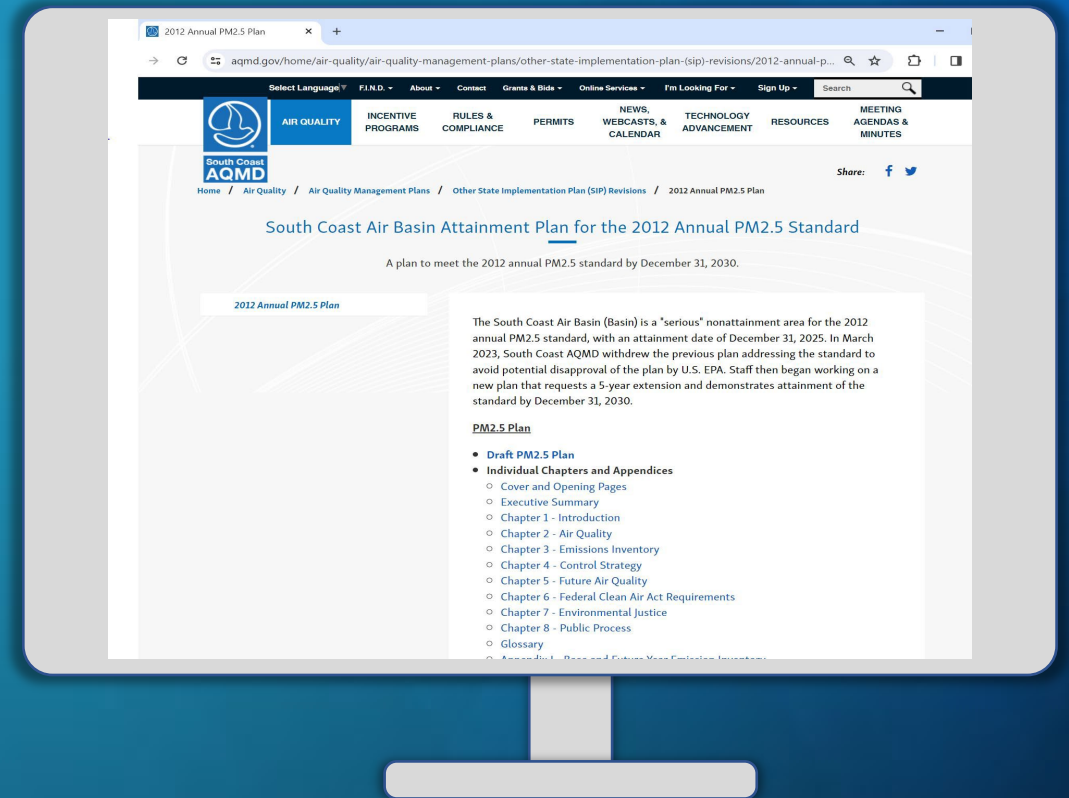
2012 PM2.5 Plan Regional Public Hearings	Date	Time	Format	Location
<b>Regional Public Hearing for San Bernardino County</b>	Tuesday April 23, 2024	10:00 a.m. – 12:00 p.m.	Virtual	<a href="https://scaqmd.zoom.us/j/91090511540">https://scaqmd.zoom.us/j/91090511540</a> Zoom Webinar ID: 910 9051 1540 Spanish Language Audience Zoom Webinar ID: 932 0955 9643 Teleconference Dial In: +1 669 900 6833
<b>Regional Public Hearing for Riverside County</b>	Wednesday April 24, 2024	6:00 p.m. – 8:00 p.m.	In-Person	CARB Headquarters 4001 Iowa Avenue Riverside, CA 92507
<b>Regional Public Hearing for Orange County</b>	Thursday April 25, 2024	4:00 p.m. – 6:00 p.m.	Virtual	<a href="https://scaqmd.zoom.us/j/91090511540">https://scaqmd.zoom.us/j/91090511540</a> Zoom Webinar ID: 910 9051 1540 Spanish Language Audience Zoom Webinar ID: 932 0955 9643 Teleconference Dial In: +1 669 900 6833
<b>Regional Public Hearing for Los Angeles County</b>	Wednesday May 1, 2024	6:00 p.m. – 8:00 p.m.	In-Person	Douglas F. Dollarhide Community Center 301 N. Tamarind Avenue Compton, CA 90220

# Supporting Documents

All supporting documents  
are available on the  
2012 Annual PM2.5 Plan website:

[https://www.aqmd.gov/home/air-quality/air-quality-management-plans/other-state-implementation-plan-\(sip\)-revisions/2012-annual-pm2-5-plan](https://www.aqmd.gov/home/air-quality/air-quality-management-plans/other-state-implementation-plan-(sip)-revisions/2012-annual-pm2-5-plan)

Point your smartphone  
camera here to be directed  
to the website



# Submission of Comments

Please submit all written comments by **Tuesday, May 7, 2024** to:



Email: [AQMPteam@aqmd.gov](mailto:AQMPteam@aqmd.gov)

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**For more information, please contact:**

## **PM2.5 Plan**

Sang-Mi Lee, Ph.D., Planning and Rules Manager at [slee@aqmd.gov](mailto:slee@aqmd.gov)

## **CEQA and Socioeconomic Impacts**

Barbara Radlein, Planning and Rules Manager at [bradlein@aqmd.gov](mailto:bradlein@aqmd.gov)

# Conclusion



Staff developed the Draft Plan to attain the 2012 annual PM<sub>2.5</sub> standard, 12  $\mu\text{g}/\text{m}^3$  in the South Coast Air Basin by 2030



Plan includes continued implementation of 2022 AQMP NO<sub>x</sub> strategy and limited additional controls mandated by U.S. EPA



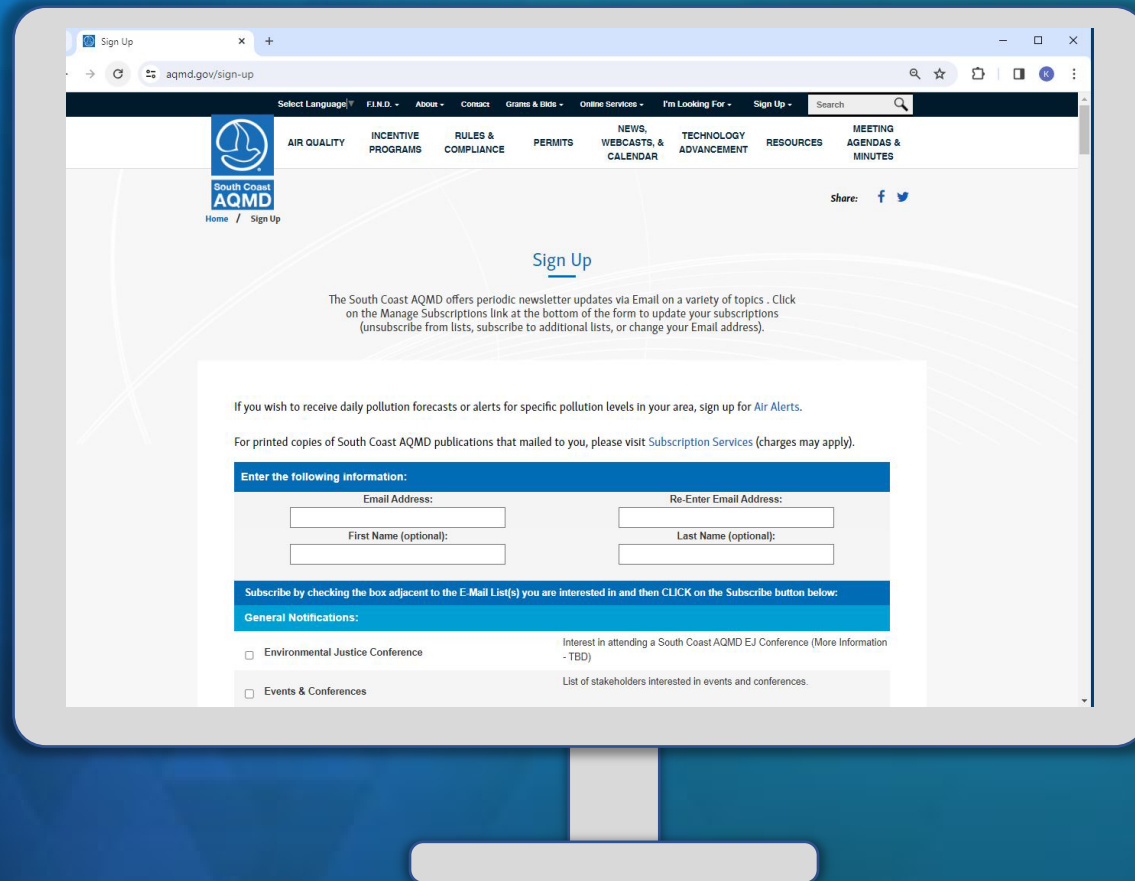
Public Hearing: June 7, 2024



A new plan with additional controls will be required to attain the new 2024 annual PM<sub>2.5</sub> standard, 9  $\mu\text{g}/\text{m}^3$

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For comments or questions,  
please email:

**AQMPteam@aqmd.gov**



# **CARB Control Strategy and MSM Analysis for the South Coast $12 \mu\text{g}/\text{m}^3$ PM<sub>2.5</sub> SIP**

South Coast AQMD Regional Hearing

# 2022 State SIP Strategy

- Adopted on September 22, 2022
- Includes new State measures to reduce emissions using all mechanisms available
- Identifies the level of action needed to meet air quality standards and protect public health
- Drives pace and scale of CARB rulemakings
- Identifies measures for annual PM2.5 standard attainment applicable in the South Coast

2022 State Strategy for the State Implementation Plan

Adopted  
September 22, 2022





# 2022 State SIP Strategy

## Measures for PM2.5 SIP

### On-Road

Advanced Clean Fleets Regulation\*

Zero-Emissions Trucks Measure

Clean Miles Standard\*

### Off-Road

Tier 5 Off-Road Engine Standard

Amendments to In-Use Off-Road Diesel-Fueled Fleets Regulation\*

Zero-Emission TRU (Part II)

Commercial Harbor Craft Amendments\*

Cargo Handling Equipment Amendments

### Primarily Federally-Regulated

In-Use Locomotive Regulation\*

### Other

Zero-Emission Standard for Space and Water Heaters

# Measure Schedule

Measures	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Clean Miles Standard	★									
Commercial Harbor Craft Amendments		★								
Amendments to the In-Use Off-Road Diesel Fueled Fleets Regulation		★								
Advanced Clean Fleets			★							
In-Use Locomotive Regulation			★							
Tier 5 Off-Road Vehicles and Equipment					★					
Zero-Emission Standard for Space and Water Heaters					★					
Transport Refrigeration Unit Regulation Part 2						★				
Cargo Handling Equipment Amendments							★			
Zero-Emissions Trucks Measure								★		

★	Adoption Year
★	Planned Adoption Year
	Implementation Year

# Recently Adopted CARB Measures

## 2030 Emissions Reductions Estimates

Adopted 2016 and 2022 State SIP Strategy Measures	2030 NOx (tpd)	2030 PM2.5 (tpd)	2030 NH3 (tpd)
<b>On-Road Heavy-Duty</b>			
Advanced Clean Fleets Regulation	4.7	<0.1	0.8
<b>Total On-Road Heavy-Duty Reductions</b>	<b>4.7</b>	<b>&lt;0.1</b>	<b>0.8</b>
<b>On-Road Light-Duty</b>			
Advanced Clean Cars II	1.4	0.1	2.1
Clean Miles Standard	<0.1	<0.1	<0.1
<b>Total On-Road Light-Duty Reductions</b>	<b>1.5</b>	<b>0.1</b>	<b>2.1</b>
<b>Off-Road Equipment</b>			
Amendments to the In-Use Off-Road Diesel-Fueled Fleets Regulation	1.9	0.1	NYQ
Commercial Harbor Craft Amendments	2.0	<0.1	NYQ
Transport Refrigeration Unit Part I	0.3	<0.1	NYQ
<b>Total Off-Road Equipment Reductions</b>	<b>4.3</b>	<b>0.3</b>	<b>NYQ</b>
<b>Primarily-Federally and Internationally Regulated Sources - CARB Measures</b>			
In-Use Locomotive Regulation	9.9	0.2	NYQ
<b>Total Primarily-Federally and Internationally Regulated Sources - CARB Measures Reductions</b>	<b>9.9</b>	<b>0.2</b>	<b>NYQ</b>
<b>Emissions Reductions</b>	<b>20.5</b>	<b>0.8</b>	<b>2.9</b>

May not add up due to rounding.

# Remaining CARB Commitments

## 2030 Emissions Reductions Estimates

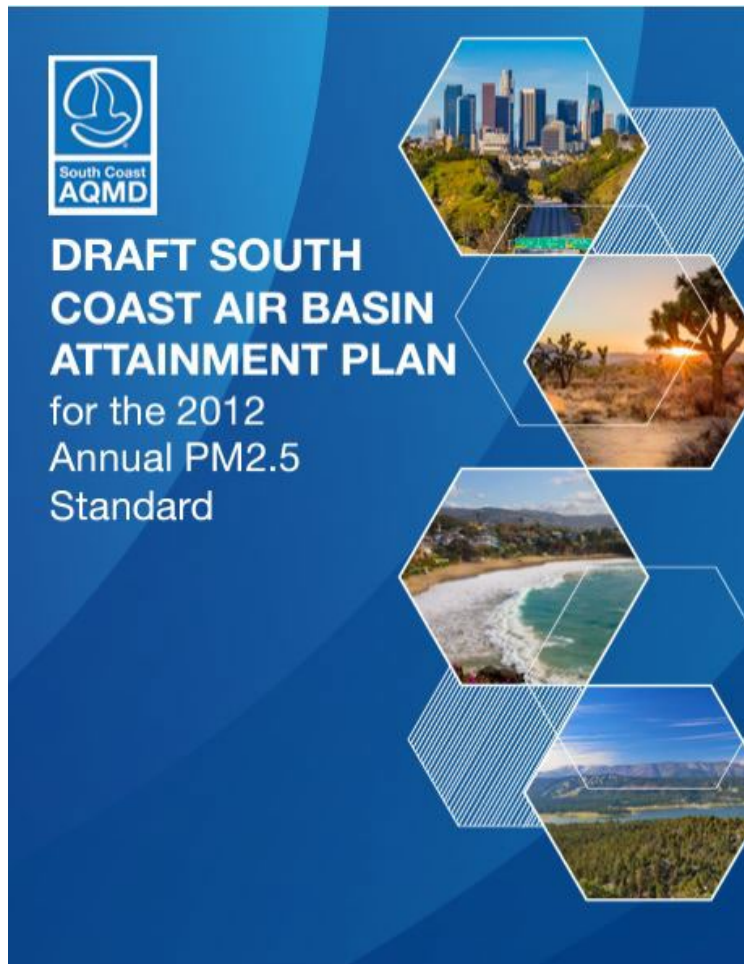
Remaining 2016 State SIP Strategy Measure	2030 NOx (tpd)	2030 PM2.5 (tpd)	2030 NH3 (tpd)
Zero-Emission Forklift	0.8	<0.1	NYQ
Remaining 2022 State SIP Strategy Measures	2030 NOx (tpd)	2030 PM2.5 (tpd)	2030 NH3 (tpd)
On-Road Heavy-Duty			
Zero-Emissions Trucks Measure	2.9	<0.1	0.2
<b>Total On-Road Heavy-Duty Reductions</b>	<b>2.9</b>	<b>&lt;0.1</b>	<b>0.2</b>
Off-Road Equipment			
Tier 5 Off-Road Vehicles and Equipment	0.2	<0.1	NYQ
Transport Refrigeration Unit Regulation Part 2	1.7	<0.1	NYQ
Cargo Handling Equipment Amendments	0.7	<0.1	NYQ
<b>Total Off-Road Equipment Reductions</b>	<b>2.7</b>	<b>&lt;0.1</b>	<b>NYQ</b>
Other			
Zero-Emission Standard for Space and Water Heaters	2.5	0.4	<0.1
<b>Total Other Reductions</b>	<b>2.5</b>	<b>0.4</b>	<b>&lt;0.1</b>
<b>Emissions Reductions</b>	<b>8.2</b>	<b>0.5</b>	<b>0.2</b>
<b>Potential CARB Aggregate Emissions Reductions Commitment</b>	<b>9.1</b>	<b>0.5</b>	<b>0.2</b>

May not add up due to rounding.

# CARB Most Stringent Measures Analysis

CARB control program meets MSM requirements for the South Coast

Category	Type of Controls	Conclusion
On-road Light-Duty	New Vehicle/Engine Standard	MSM
	In-use Emissions Control (fleet/testing/idling)	MSM
	Fuels	MSM
On-road Medium & Heavy-Duty	New Vehicle/Engine Standard	MSM
	In-use Emissions Control (fleet/testing/idling)	MSM
	Fuels	MSM
Off-Road	New Vehicle/Engine Standard	MSM
	In-use Emissions Control (fleet/testing/idling)	MSM
	Fuels	MSM
Space/Water Heaters	Emissions Standard	MSM



# South Coast Air Basin Attainment Plan for the 2012 Annual PM2.5 Standard

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Regional Public Hearings



# Agenda



Introduction



Costs, Macroeconomic Impacts, and Health Benefits



Methodology for Quantifying Health Benefits



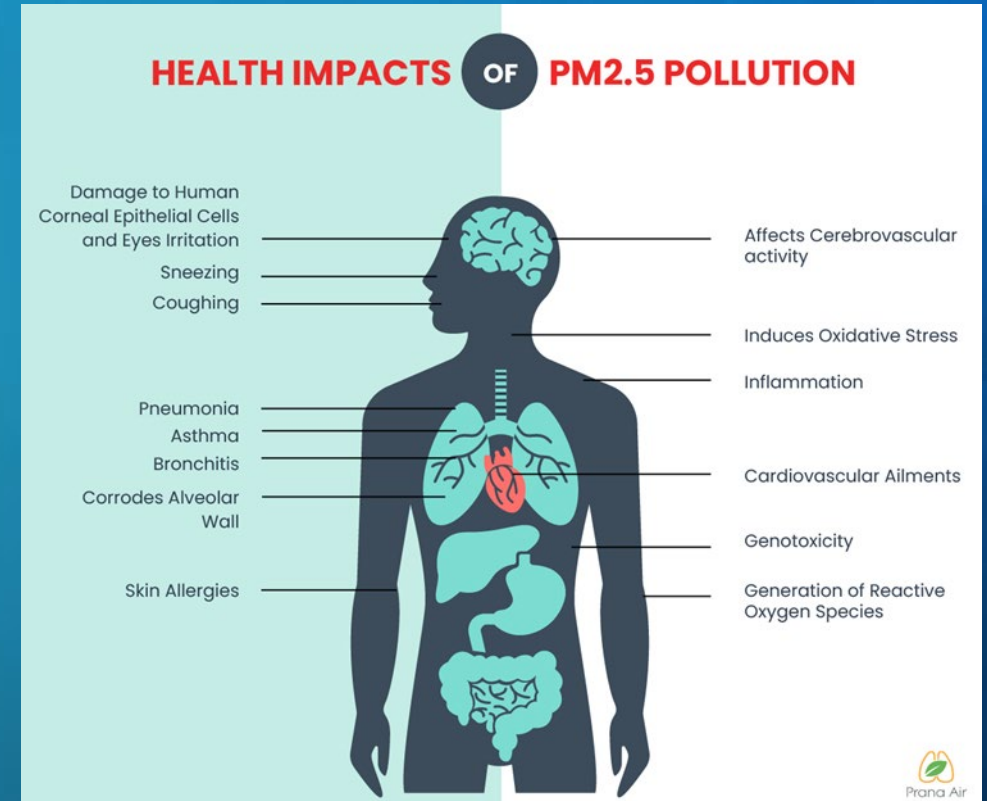
Health Impacts to be Considered



Next Steps and Staff Contacts

# Introduction

- PM2.5 poses severe health risks
  - Respiratory and cardiovascular diseases
  - Asthma exacerbation
  - Premature death
- PM2.5 Plan aims to achieve 2012 annual PM2.5 National Ambient Air Quality Standards (NAAQS) by December 31, 2030
- Control measures and attainment strategies are expected to produce substantial public health benefits which can be quantified





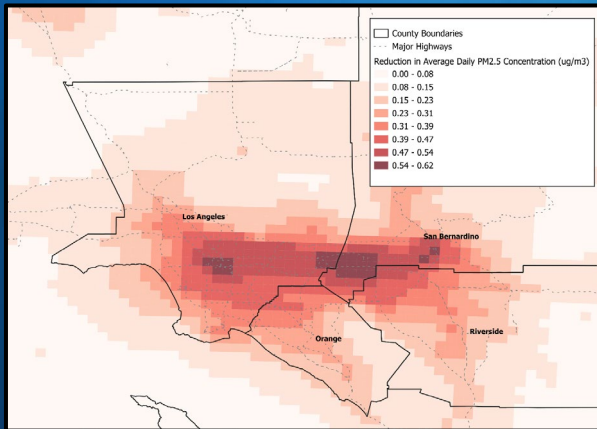
# Costs, Macroeconomic Impacts and Health Benefits

- Costs, macroeconomic impacts, and health benefits for PM2.5 Plan control measures have previously been assessed in 2016 and 2022 AQMPs
- No additional costs or macroeconomic impacts are anticipated for the PM2.5 Plan
  - No new or modified Socioeconomic Impact Assessment will be prepared
- The health benefits of the PM 2.5 reductions in the PM2.5 Plan will be refined from previous estimates
  - Analysis will be presented in an appendix to the PM2.5 Plan

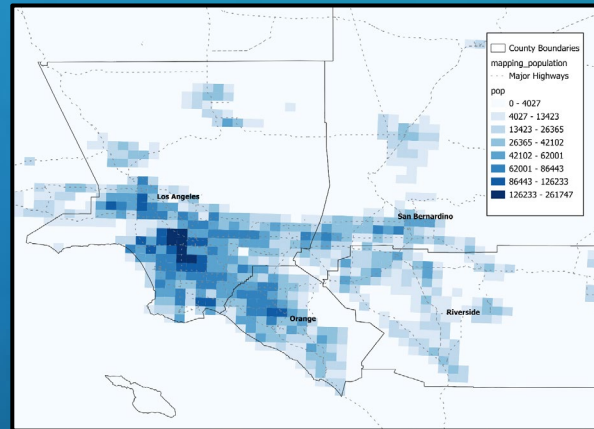
# Methodology for Quantifying Health Benefits

- How to quantify health benefits of PM2.5 Plan
  - Environmental Benefits Mapping and Analysis Program (BenMAP) software, developed by U.S. EPA
  - Input modules in BenMAP

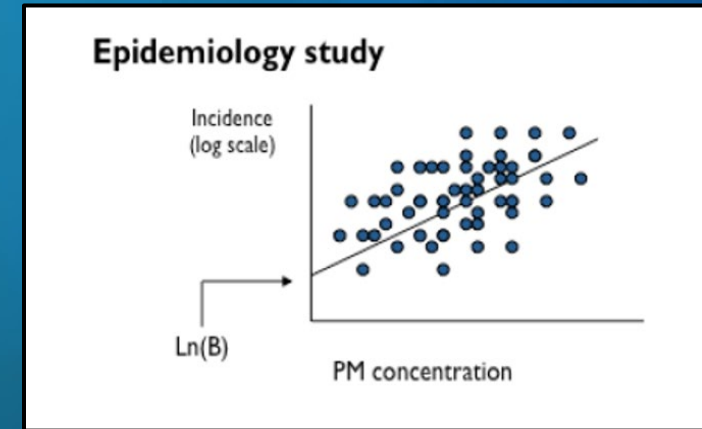
## Air Quality Change



## Population and Incidences



## Concentration-Response Functions



**Estimated Health Benefits**

# Health Impacts to be Considered

## Long-Term PM2.5 Exposure

Premature deaths avoided, all causes

Asthma, New Onset

Incidence, Hay Fever/Rhinitis

Incidence, Lung Cancer (non-fatal)

## Short-Term PM2.5 Exposure

Asthma Symptoms, Albuterol use

Emergency Department (ED) Visits, Asthma

ED Visits All Cardiac Outcomes

ED Visits, All Respiratory Minus Asthma

Hospital Admission (HA), All Cardiac Outcomes

HA, All Respiratory

Incidence, Ischemic Stroke

Minor Restricted Activity Days

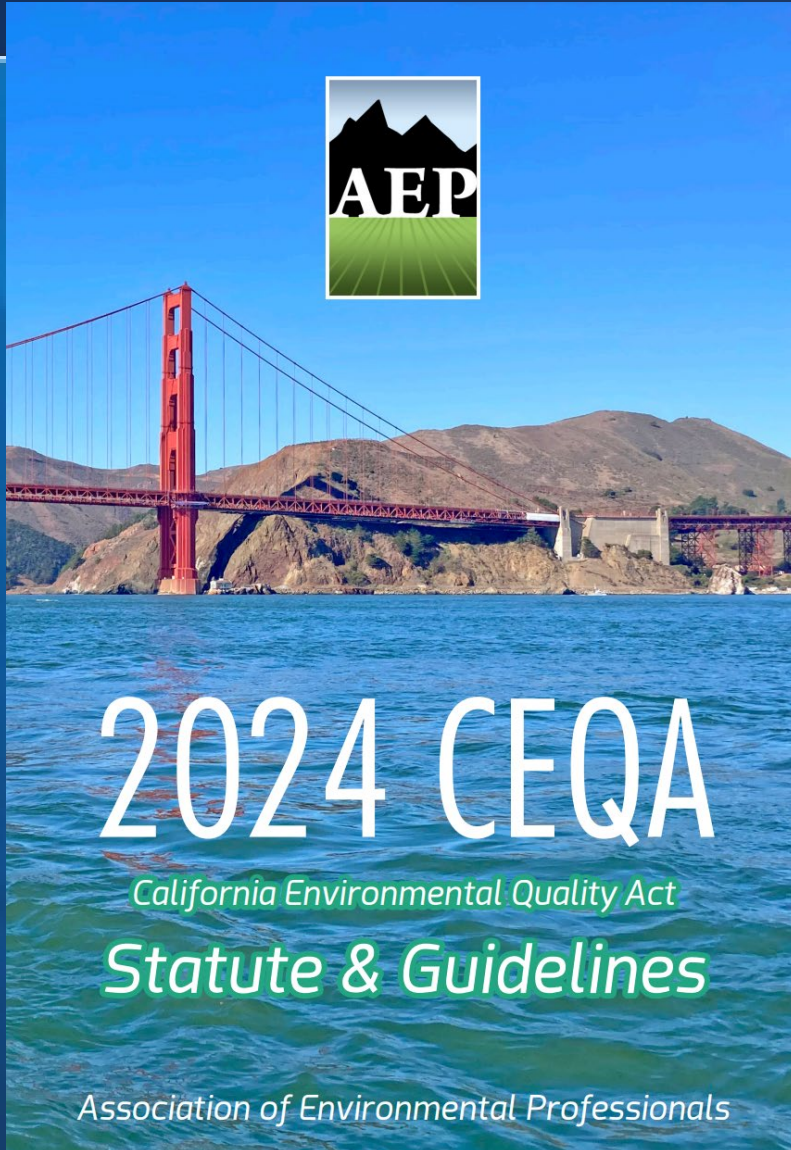
Work Loss Days

# Next Steps and Staff Contacts

- Health Benefit Assessment will be released on or before May 7, 2024 as an Appendix VII to the PM2.5 Plan

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Tony Tian, Ph.D.	Program Supervisor, Socio	ttian@aqmd.gov	909.396.2323
Dan Penoyer	AQ Specialist, Socio	dpenoyer@aqmd.gov	909.396.2205

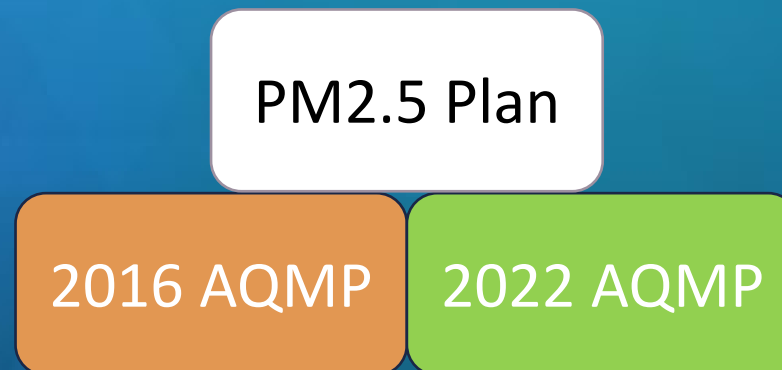
# California Environmental Quality Act (CEQA)



- Comprised of Public Resources Code Section 21000 et seq. and CEQA Guidelines
- Informs decision-makers, agencies, and stakeholders about environmental impacts of projects through document such as Environmental Impact Report (EIR)
- Identifies methods to reduce adverse impacts if feasible.

# PM2.5 Plan and Prior AQMPs

- Majority of PM2.5 Plan control measures rely on previously adopted control measures in the 2022 AQMP and 2016 AQMP
- Environmental Impacts of 2022 AQMP and 2016 AQMP were evaluated in Final Program Environmental Impact Reports (EIRs) certified on December 2, 2022 and March 3, 2017, respectively



# PM2.5 Plan Control Measures

PM2.5 Plan is comprised of 38 Control Measures

9 Control Measures from 2016 AQMP\*

## 2 New Control Measures

- Chain-driven Charbroilers
  - Potential retrofit with catalytic oxidizers
  - Commits to Future Amendment of Rule 1138 –Control of Emissions From Restaurant Operations
- Unpaved Road Dust
  - Administrative exercise, no physical changes

27 Control Measures from 2022 AQMP\*

\* Refer to Appendix VIII, Table VIII-1 of PM2.5 Plan for Detailed List of Previously Adopted AQMP Control Measures

# Purpose of CEQA Analysis

- Examine what changes were made to the control measures, if any
- Identify new or modified environmental impacts, if any
- Determine whether a new CEQA document needs to be prepared



# Further Emission Reductions from Commercial Cooking

- Expands upon previous control measure in 2016 AQMP which focused on under-fired charbroilers with multiple control options
- PM2.5 Plan focuses on chain-driven charbroilers with catalytic oxidizers
  - Catalytic oxidizers can be installed with hand tools and require minimal maintenance (rinsing catalyst bed with water)
  - Rule 1138 (adopted in 1997) applies to chain-driven charboilers
- Impacts
  - Additional benefit to operational air quality (additional PM2.5 emission reductions)
  - Identical or less severe impacts than what was previously analyzed for under-fired charbroilers in the Final Program EIR for the 2016 AQMP
  - Catalytic oxidizers were previously analyzed in the Final Subsequent Environmental Assessment for Rule 1138
  - Conclusions remain unchanged

# Emission Reductions from Unpaved Road Dust Sources

- Newly proposes to inventory unpaved roads and parking lots
- Implementation is an administrative exercise with no environmental impacts
- No changes to environmental benefits or impacts in the Final Program EIRs for the 2022 AQMP and 2016 AQMP, respectively
- Conclusions remain unchanged

# What Remains the Same?

- All other PM2.5 Control Measures
  - Identical to those adopted in the 2022 AQMP and 2016 AQMP, respectively
  - No additional changes to operational air quality benefits
  - No changes to environmental impacts in the Final Program EIRs for the 2022 AQMP and 2016 AQMP, respectively
  - Conclusions remain unchanged

# Results of CEQA Analysis for PM2.5 Plan

- Additional overall benefit to operational air quality (more PM2.5 emission reductions)
- 2 new control measures plus all other control measures from previous AQMPs do not change environmental impacts
- No new information requiring preparation of a new CEQA document
- PM2.5 Plan is a later activity within the scope of previously approved 2022 AQMPs and 2016 AQMP per CEQA Guidelines Section 15168(c) - Use with Later Activities
- Final Program EIRs for the 2022 AQMP and 2016 AQMP adequately describe the effects of the PM2.5 Plan for the purposes of CEQA
- Detailed CEQA analysis available in Appendix VIII of PM2.5 Plan