



# South Coast Air Basin Attainment Plan for 2006 24-hour PM<sub>2.5</sub> Standard

**Regional Public Hearing**

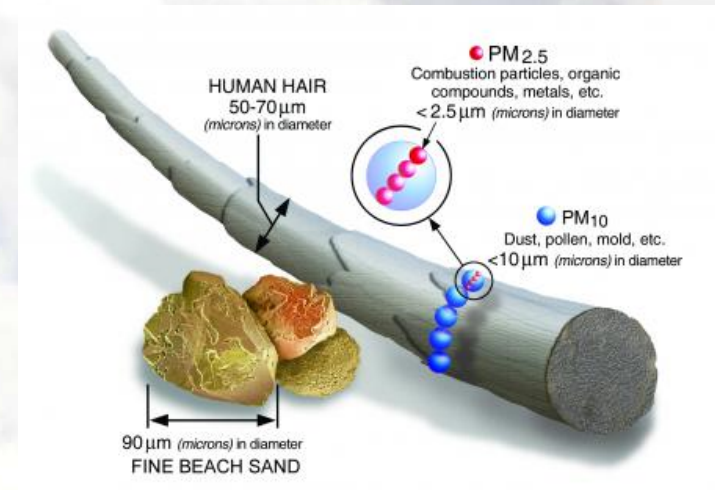
October 7, 2020

*Cleaning The Air That We Breathe...*



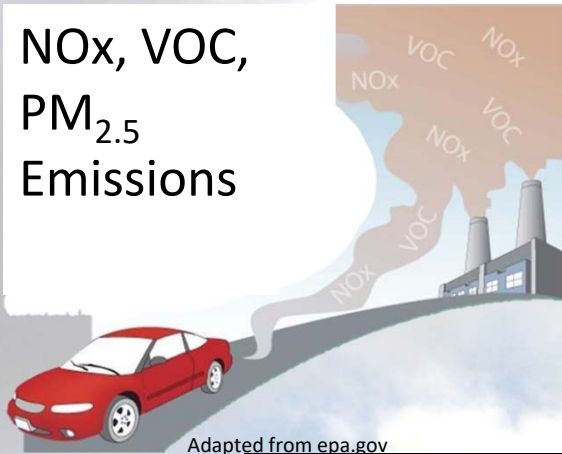
# PM<sub>2.5</sub> Background

- PM<sub>2.5</sub> are particles less than 2.5  $\mu\text{m}$  in diameter
- Linked to adverse cardiovascular and respiratory health effects (e.g., asthma, lung cancer, premature death)
- Exposure to PM<sub>2.5</sub> drives majority of adverse health effects due to air pollution in our region

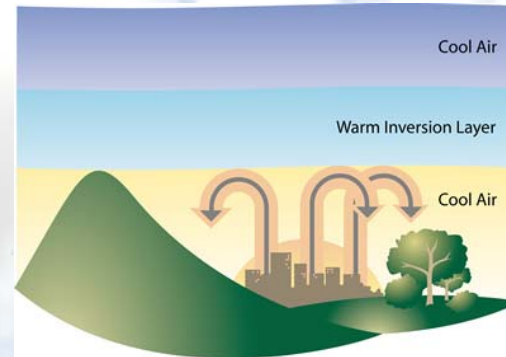


# Factors Influencing PM<sub>2.5</sub> Levels

NO<sub>x</sub>, VOC,  
PM<sub>2.5</sub>  
Emissions



Mixing and Ventilation



<https://sparetheairofs.weebly.com/inversions.html>

Sunlight



Storms

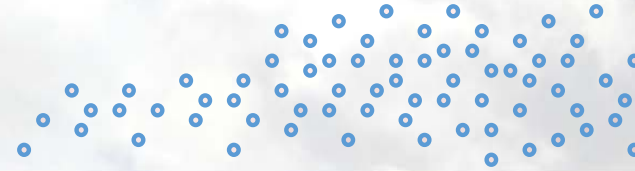


Fog and Humidity



# How Does PM<sub>2.5</sub> Form?

Primary PM<sub>2.5</sub>  
(Directly Emitted)



Secondary PM<sub>2.5</sub>  
(Formed in the Atmosphere)

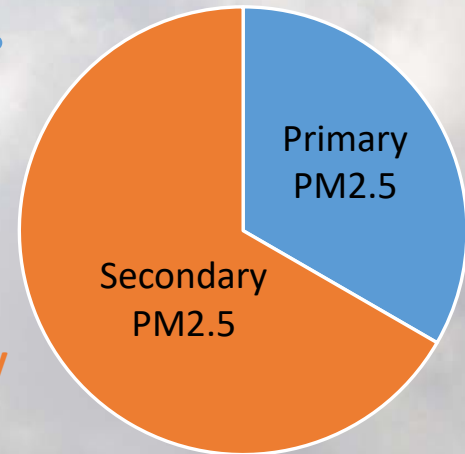
Gas phase  
emissions



(VOCs, NO<sub>x</sub>,  
NH<sub>3</sub>)

Atmospheric  
Oxidation

Secondary  
PM<sub>2.5</sub>





# National Ambient Air Quality Standards

- The U. S. Environmental Protection Agency (EPA) sets National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment.
- The EPA has set NAAQS for six criteria air pollutants
  - Ozone, Lead, Nitrogen Dioxide, Sulfur Dioxide, Carbon Monoxide, and PM (PM<sub>2.5</sub> and PM<sub>10</sub>)
- Periodically, the standards are reviewed and may be revised





# PM<sub>2.5</sub> National Ambient Air Quality Standards

## National Ambient Air Quality Standards

Standard	Level	Attainment Deadline	South Coast Attainment Status
1997 Annual PM <sub>2.5</sub>	15 µg/m <sup>3</sup>	2015	Attained in 2013
1997 24-hour PM <sub>2.5</sub>	65 µg/m <sup>3</sup>	2015	Attained in 2013
<b>2006 24-hour PM<sub>2.5</sub></b>	<b>35 µg/m<sup>3</sup></b>	<b>2019</b>	<b>Serious Nonattainment</b>
2012 Annual PM <sub>2.5</sub>	12 µg/m <sup>3</sup>	2025	Serious Nonattainment



# 24-hour PM<sub>2.5</sub> Attainment Determination

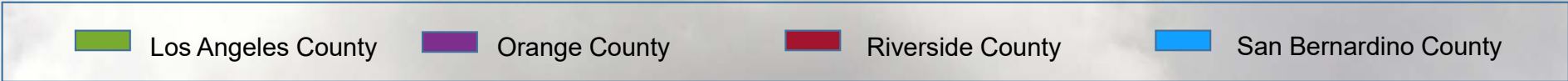
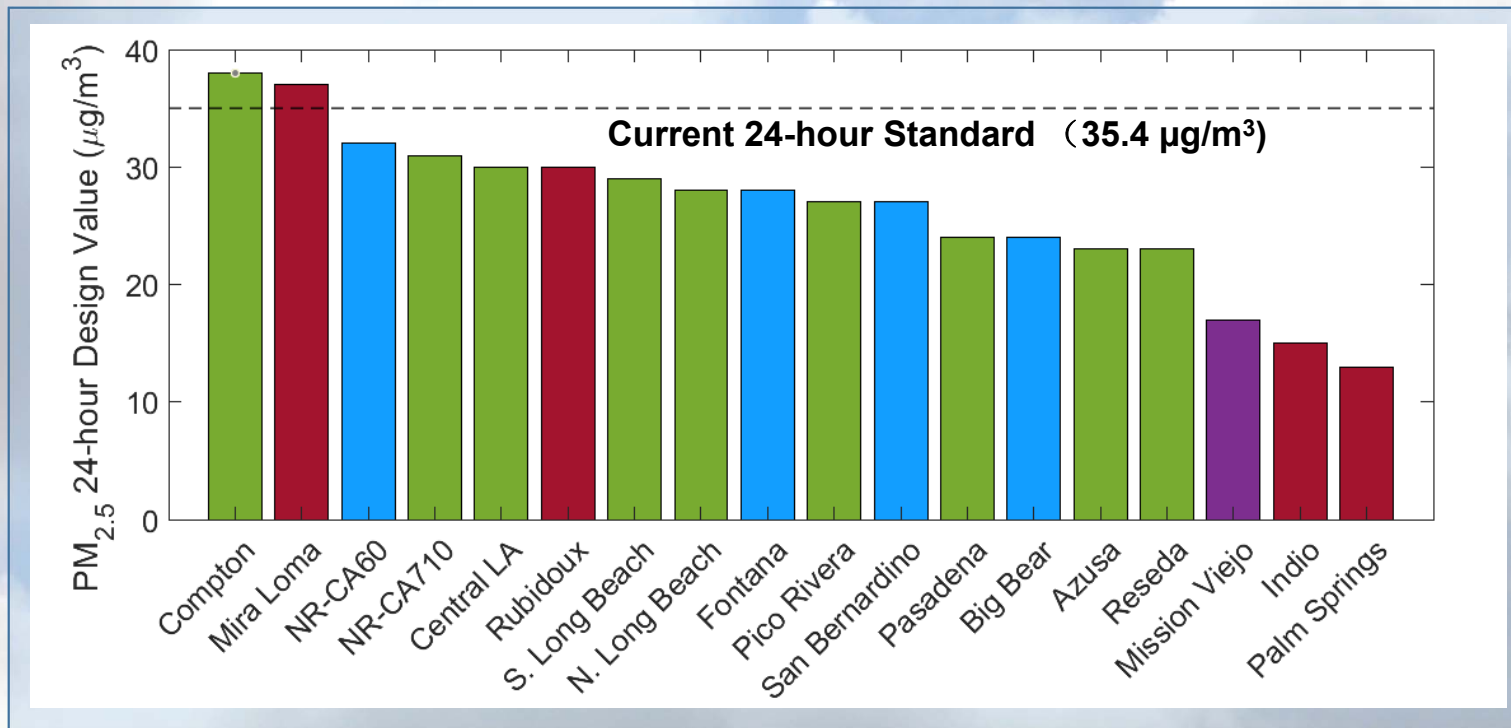
- Whether an area meets the standard is determined by the “Design Value” at the highest site
- The design value is the 3-year average of the annual 98th percentile of daily concentrations at each monitoring location

Year 1	Year 2	Year 3
2017	2018	2019
98 <sup>th</sup> percentile of 24-hr concentrations	98 <sup>th</sup> percentile of 24-hr concentrations	98 <sup>th</sup> percentile of 24-hr concentrations
3-Year Average = Design Value		

- **98th percentile depends on sampling frequency**
  - every day sampling - 8th highest reading
  - every third day sampling - 3rd highest reading



# 2017-2019 3-year Design Values\*

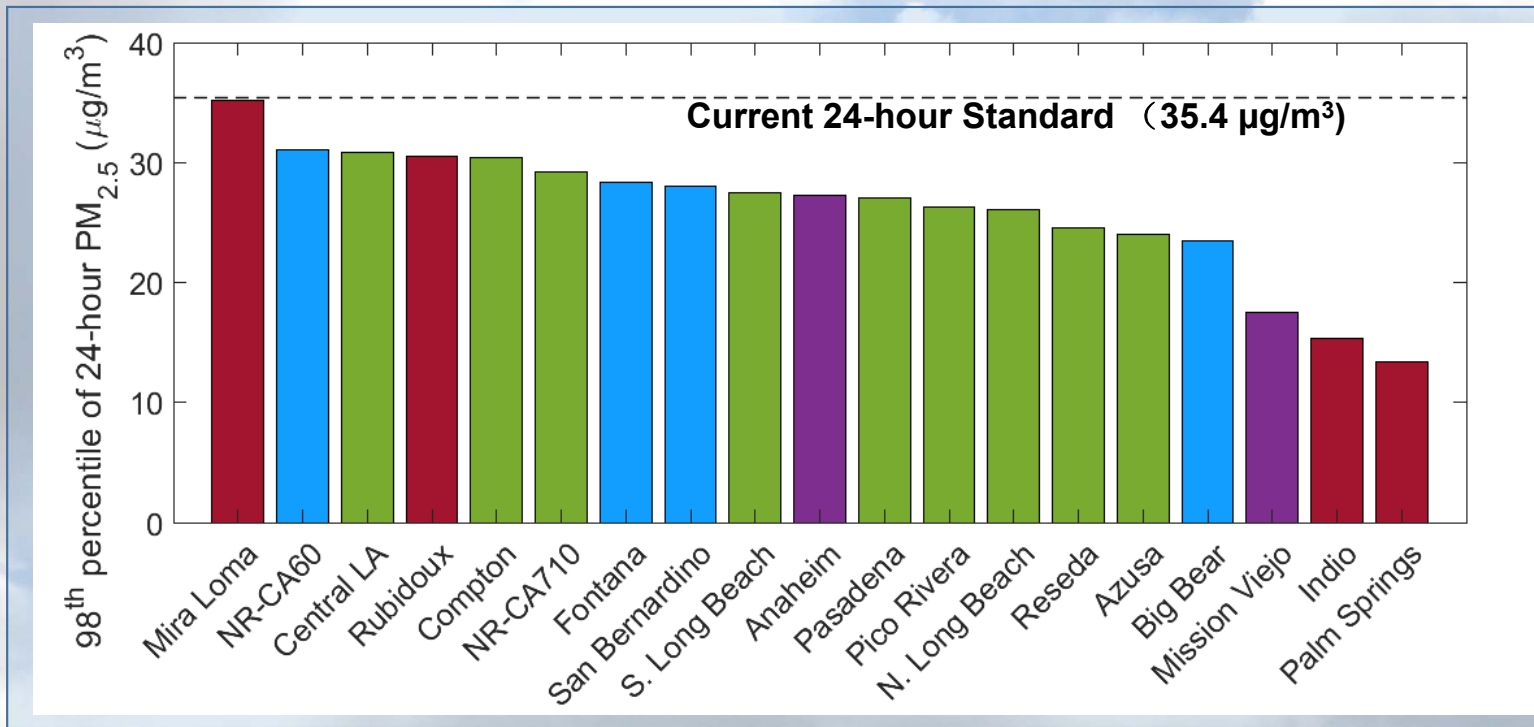


\* Data likely to be approved as exceptional events by U.S. EPA removed from analysis

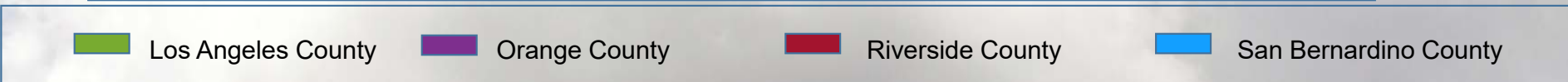




# Progress towards Attainment based on 2018-2019 Data (2-year average)\*



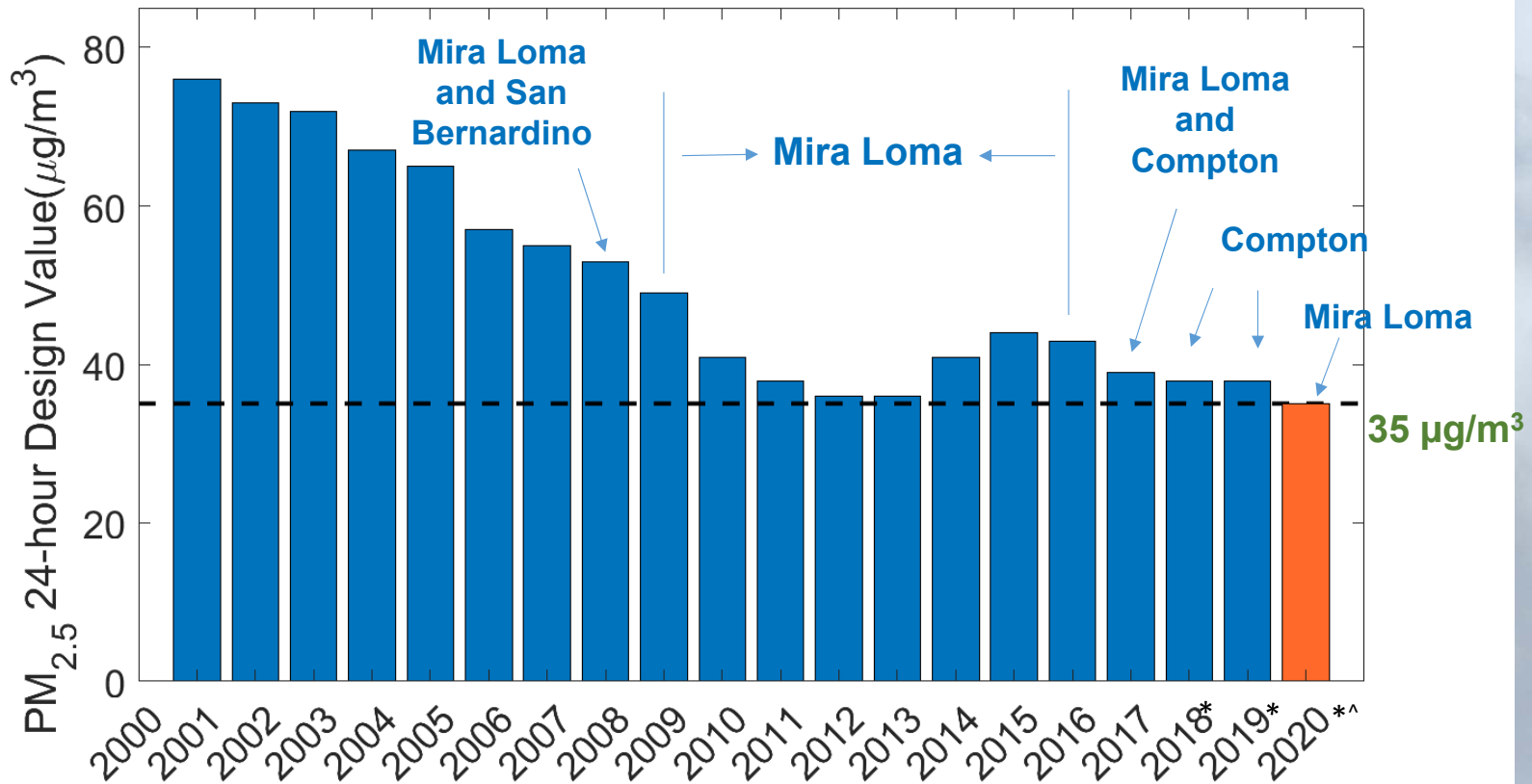
Removing 2017 data, 2-year average of 98<sup>th</sup> percentiles is below standard at all stations



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



# Overall Progress towards Attainment



\* Likely exceptional events are removed ^ Preliminary 2020 Jan-Jun Data



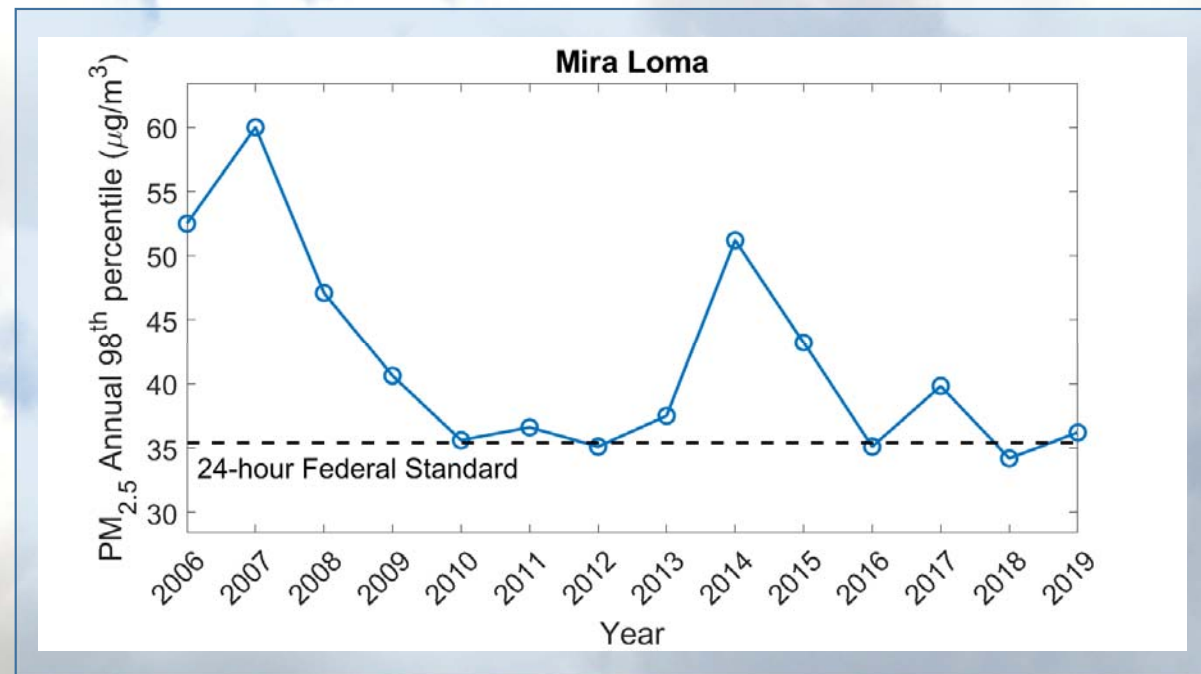
# Attainment Status

- **Since 2001, Basin maximum 98th percentile concentrations decreased by 51%**
- **Based on the design value for 2017-2019, South Coast Air Basin failed to attain the 2006 24-hour PM<sub>2.5</sub> standard by December 31, 2019**
  - Both the Mira Loma and Compton sites exceeded the standard
- **Mira Loma has had the highest PM<sub>2.5</sub> concentration since 2008**
- **For 2017-2019, Compton became the highest site, due to three abnormally high PM<sub>2.5</sub> episodes measured on January 1st and late December 2017**
  - **Likely causes are anomalous human activities such as wood burning and fireworks, adverse meteorology and other local sources**
  - **High levels at Compton were not observed before and after 2017**



# Progress at Mira Loma

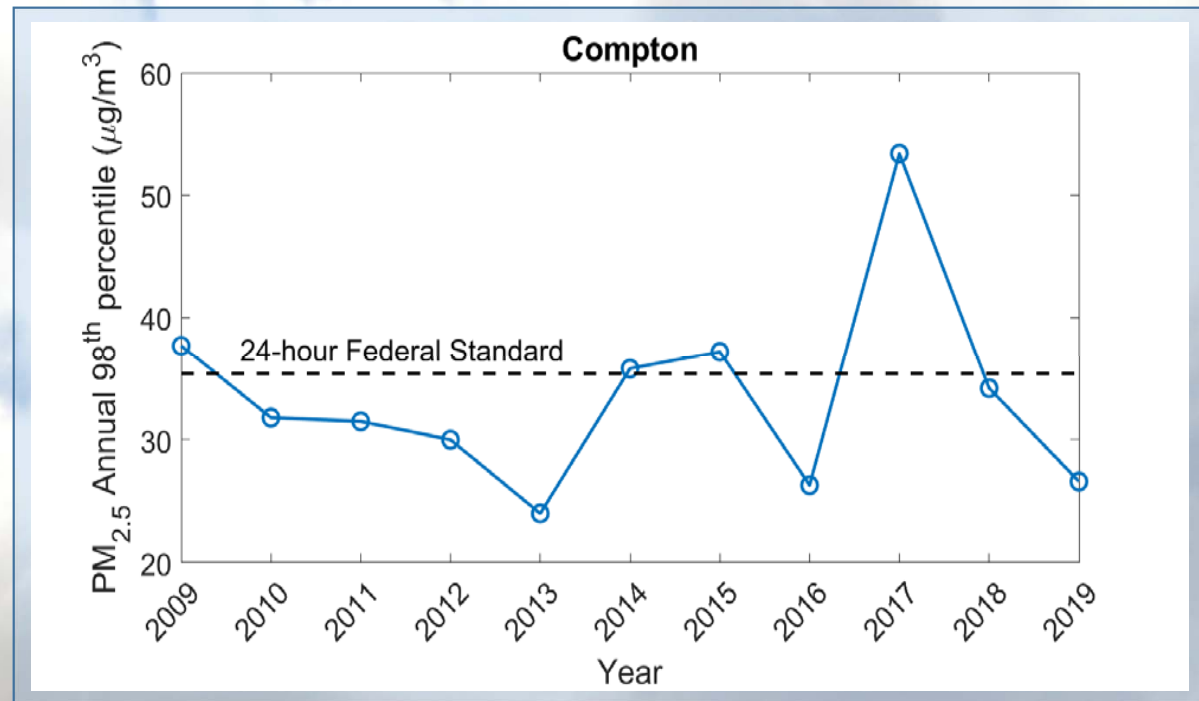
- Mira Loma, the highest site since 2008, is impacted by secondary PM formation as well as local sources
- Mira Loma is very close to attainment
- Preliminary 2020 design value (years 2018-2020) to date shows that Mira Loma will attain by the end of 2020, if there are no more than 4 days above the standard for rest of year





# Progress at Compton

- Monitoring data in Compton shows lower PM<sub>2.5</sub> levels prior to 2017 and a sharp increase in 2017 only
- Preliminary 2020 design value (years 2018-2020) to date is well below the standard, indicating Compton will attain the standard by the end of 2020
- Compton could have up to 7 days above 45 ug/m<sup>3</sup> for rest of year and still meet the standard





# Implications of Nonattainment

## EPA Notice of Failure to Attain

- Final rule published in Federal Register on September 16, 2020

## Contingency Measures

- Contingency provisions triggered in Rule 445-Wood Burning Devices
  - Curtailment threshold lowered from 30 to 29  $\mu\text{g}/\text{m}^3$

## State Implementation Plan (SIP) Revision

- Due to EPA on December 31, 2020



# PM<sub>2.5</sub> Plan Revision – Key Requirements

## 5% Reduction of PM<sub>2.5</sub> or One of Its Precursors (NO<sub>x</sub>, NH<sub>3</sub>, SO<sub>x</sub>, and VOC)

- ✓ NO<sub>x</sub> emissions reduced by more than 5% per year from existing regulations

## Emission Inventory and Attainment Demonstration

- ✓ Updated emissions inventory; expeditious attainment expected in 2023 based on emission reductions from existing regulations

## Control Strategy Analysis

- ✓ Continued implementation of Serious area plan control strategy included in 2016 AQMP
- ✓ Analysis of other feasible measures

## Reasonable Further Progress (RFP) and Quantitative Milestone

- ✓ Demonstrated based on reductions from existing regulations and recently adopted PM regulations

## Contingency Measures

- ✓ Contingency provisions already included in Rule 445 – Wood Burning Devices



# Attainment Demonstration – Compton

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- **Supplemental weight of evidence and air quality trend analysis based on monitoring data**
  - **Traditional attainment demonstration using air quality modeling is not appropriate for Compton**
    - **High PM<sub>2.5</sub> episodes observed in 2017 were likely driven by anomalous human activities which are not reflected in the emissions inventory**
    - **If local emissions causing non-attainment are unknown, difficult to develop an effective control strategy**
    - **Traditional control strategy for Compton would require unrealistic levels of emissions reductions in the entire Basin and may not be effective**
  - **Compton will very likely be in attainment before U.S. EPA considers plan**





# Attainment Demonstration – Mira Loma and All Other Locations

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- **Traditional Approach - Updated emissions inventory/regional air quality modeling**
  - **Modeling analysis indicates attainment with emission reductions from existing regulations with recently adopted regulations providing further assurances**
    - **Driven mostly by NOx reductions needed to attain federal ozone standards**
    - **Additional regulations not required to meet the PM2.5 standard**



# Paths Forward

## Develop Required Plan



- Attainment strategy based on Mira Loma, with alternate approach for Compton
- Ongoing emission reductions from adopted rules and regulations
- Demonstrate annual reduction of 5% until attainment
- Plan may be moot if all sites attain by end of 2020 (roughly 50/50 chance)

## Clean Data Determination



- Closely monitor PM<sub>2.5</sub> levels in 2020 (Oct/Nov/Dec)
- Possible exceptional events such as wildfire and fireworks to be addressed promptly working with CARB and EPA; these exceedances are excluded in design value calculations
- Potential Clean Data Determination by U.S. EPA if 2020 design values are below standard, attainment plan not needed



# Public Process





# Supporting Documents Available

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- Notice of Regional Public Hearing
- Draft South Coast Air Basin Attainment Plan for 2006 24-hour PM<sub>2.5</sub> Standard
- Fact Sheet for South Coast Air Basin Attainment Plan for 2006 24-hour PM<sub>2.5</sub> Standard

[http://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/other-state-implementation-plan-\(sip\)-revisions](http://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/other-state-implementation-plan-(sip)-revisions)



# Submission of Documents or Comments

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**Please address questions, comments, documents or other relevant information to:**

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**Program Supervisor**

**Planning, Rule Development, and Area Sources**

**South Coast Air Quality Management District**

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**Phone: (909) 396-3281**

**Written comments should be submitted no later than Monday,  
October 19, 2020**