

2021 PM10 Maintenance Plan for the South Coast Air Basin

Public Consultation Meeting

April 15, 2021

SOUTH COAST AQMD

Regional air pollution control agency

- 17 million residents
- 12+ million vehicles



- Air quality regulations
 - Industrial facilities
 - Other sources (e.g. paint, fireplaces, etc)
- Enforcement
 - Inspections
 - Responding to air quality complaints
- Technology to reduce air pollution
- Air monitoring
- Public outreach

South Coast Air Basin



1987 24-Hour PM10 National Ambient Air Quality Standard (NAAQS)

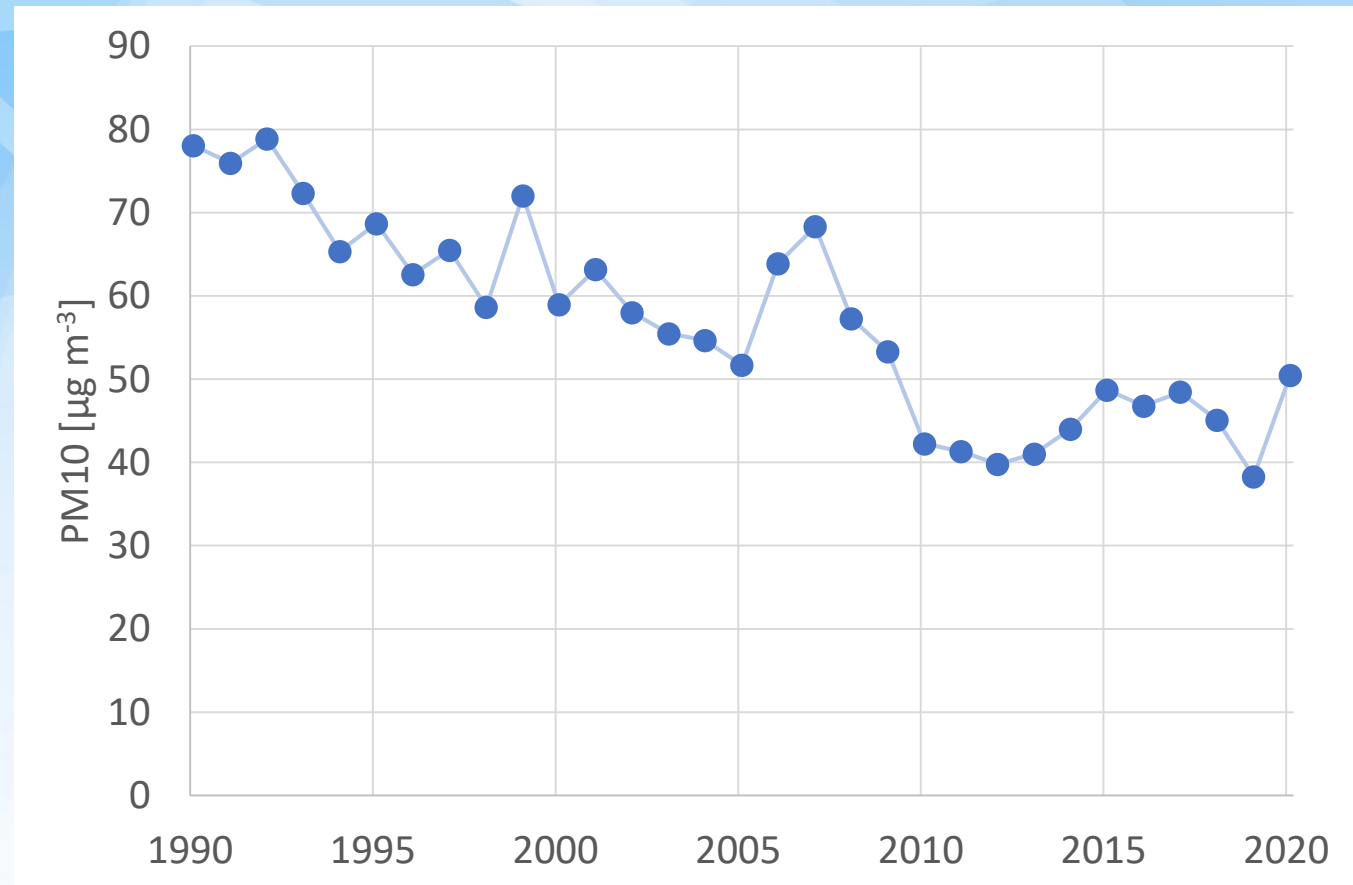
Year	Level of Standard	Calculation	Criteria for Attainment
1987	$150 \mu\text{g m}^{-3}$	Number of exceedances for 24-Hour average PM10	Not to be exceeded more than once per year (on average over 3 years)

South Coast Air Basin Attainment Status for PM10

- South Coast Air Basin was previously classified as moderate nonattainment
- In February 1993 South Coast Air Basin was reclassified from moderate to serious nonattainment
- South Coast AQMD developed control strategies for PM10 in the 1997, 2003, and 2007 Air Quality Management Plans (AQMPs)
- In July 2013 South Coast Air Basin was designated as attainment for PM10

Decreasing PM10 in the South Coast Air Basin

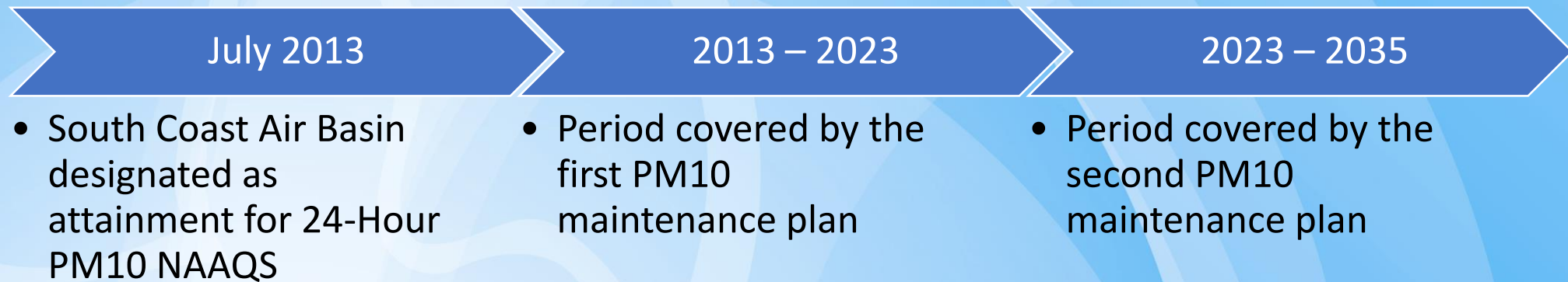
Maximum of Annual Average PM10 Concentration



The South Coast Air Basin has not violated PM10 standard since 2008

Maintenance Plan

- **Maintenance plan** is a requirement for designation as attainment¹
- State must submit a second maintenance plan 8 years after designation as attainment²



¹ Section 107(d)(3)(E) of the Clean Air Act (CAA)

² Section 175A of the CAA

Maintenance Plan Requirements

1. Analysis of the first maintenance plan period (2013-present) to show that:
 - South Coast Air Basin has continued to attain NAAQS
 - Continued attainment was not solely a result of favorable meteorology
2. Maintenance demonstration to show that we will continue to attain the standard
3. Commitment to maintain a future monitoring network
4. Commitment to verify continued attainment
5. Establish contingency plan

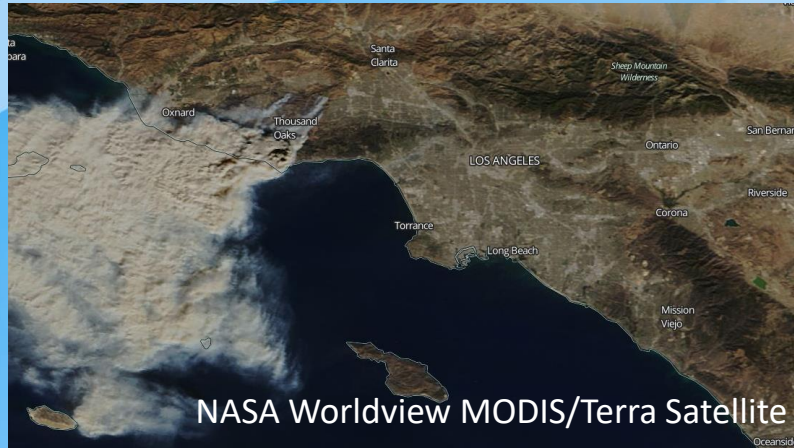
Exceptional Events

Exceptional events are not counted as exceedances if:

1. Event clearly caused the exceedance
2. Event is not reasonably controllable or preventable
3. It is a natural event or an event caused by human activity that is unlikely to recur at a particular location

PM10 Exceptional Event Types

Wildfires



Evidence must show that the wildfire caused the measured exceedance

High Winds



- High wind speeds are present
- The dust entrained by high winds is transported to the monitoring site
- Wind speeds in the source region must be high enough to entrain natural soils or overwhelm reasonable controls on anthropogenic sources
- Sustained wind speed of at least **25 miles per hour** (U.S. EPA guidance)

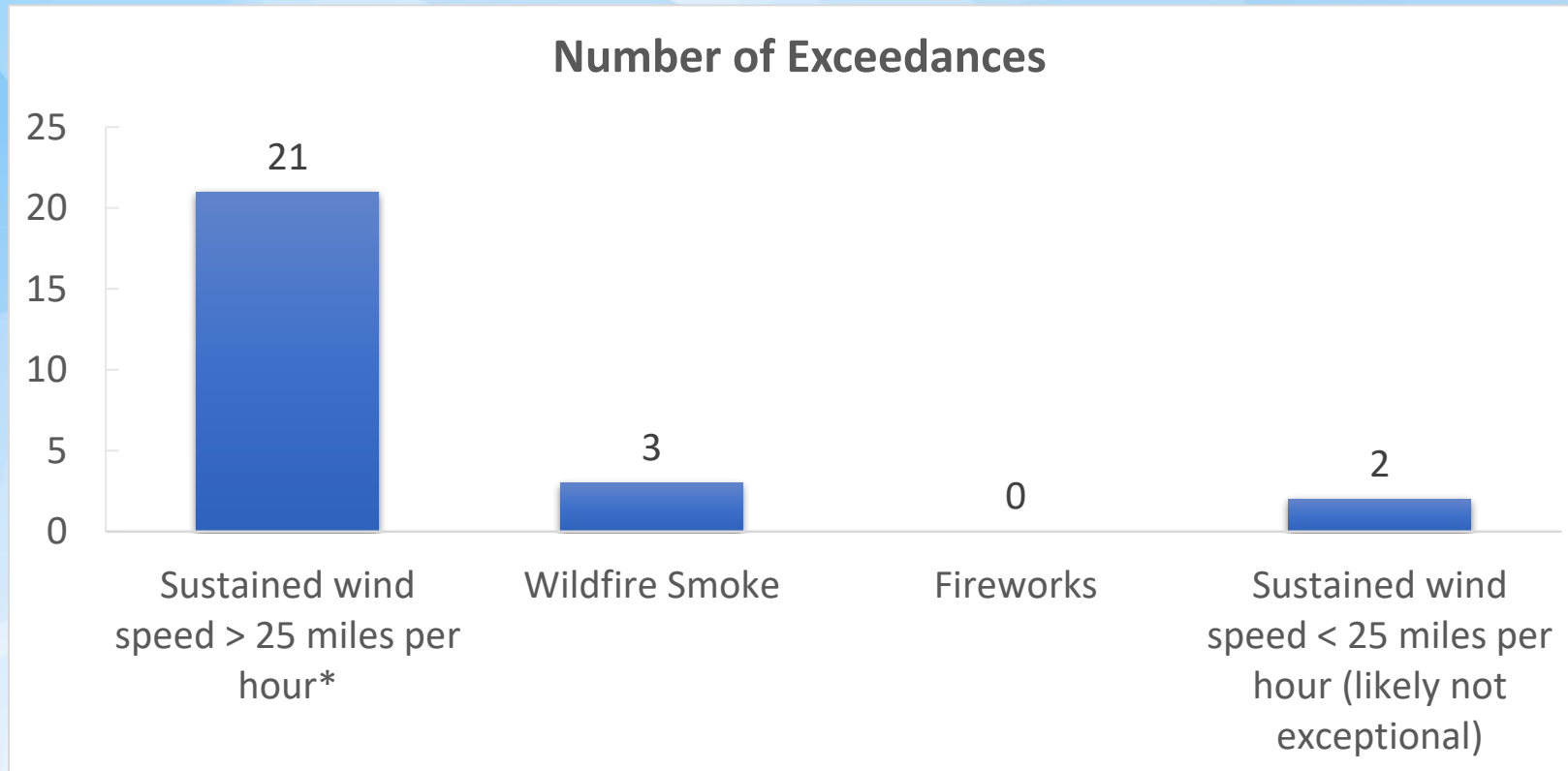
Fireworks



Such use of fireworks is significantly integral to traditional national, ethnic, or other cultural events including, but not limited to, July Fourth celebrations

Exceedances Between 2010 - 2020

Nearly all PM10 exceedances in the South Coast Air Basin were caused by suspected high-wind or wildfire smoke exceptional events



*Wind speeds at the air quality station, within 5 miles, or upwind along the route of dust transport were higher than 25 mph

Calculation of PM10 Design Value

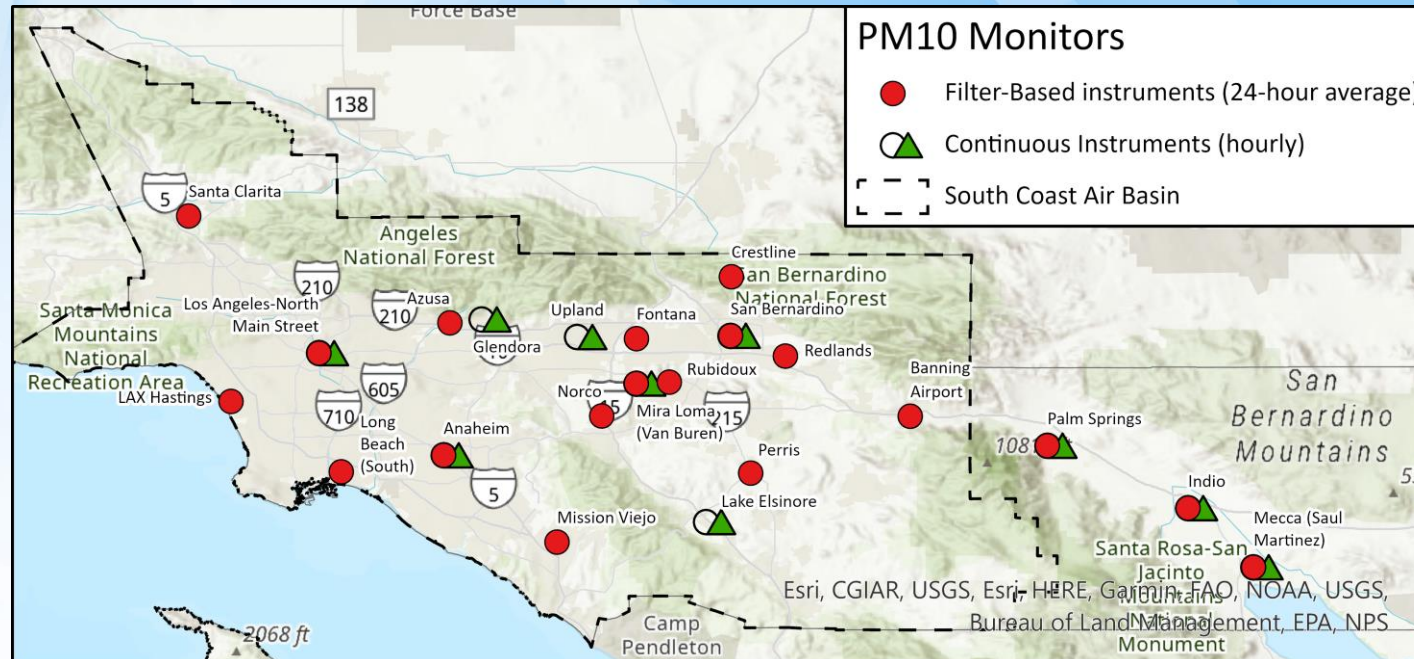
Measure 24-Hour average PM10 concentration (or calculate from hourly measurements)

Calculate number of exceedances of $150 \mu\text{g}/\text{m}^3$ in a year.

Calculate average number of exceedances over consecutive 3-year period

PM10 NAAQS is attained if average number of exceedances is less than 1

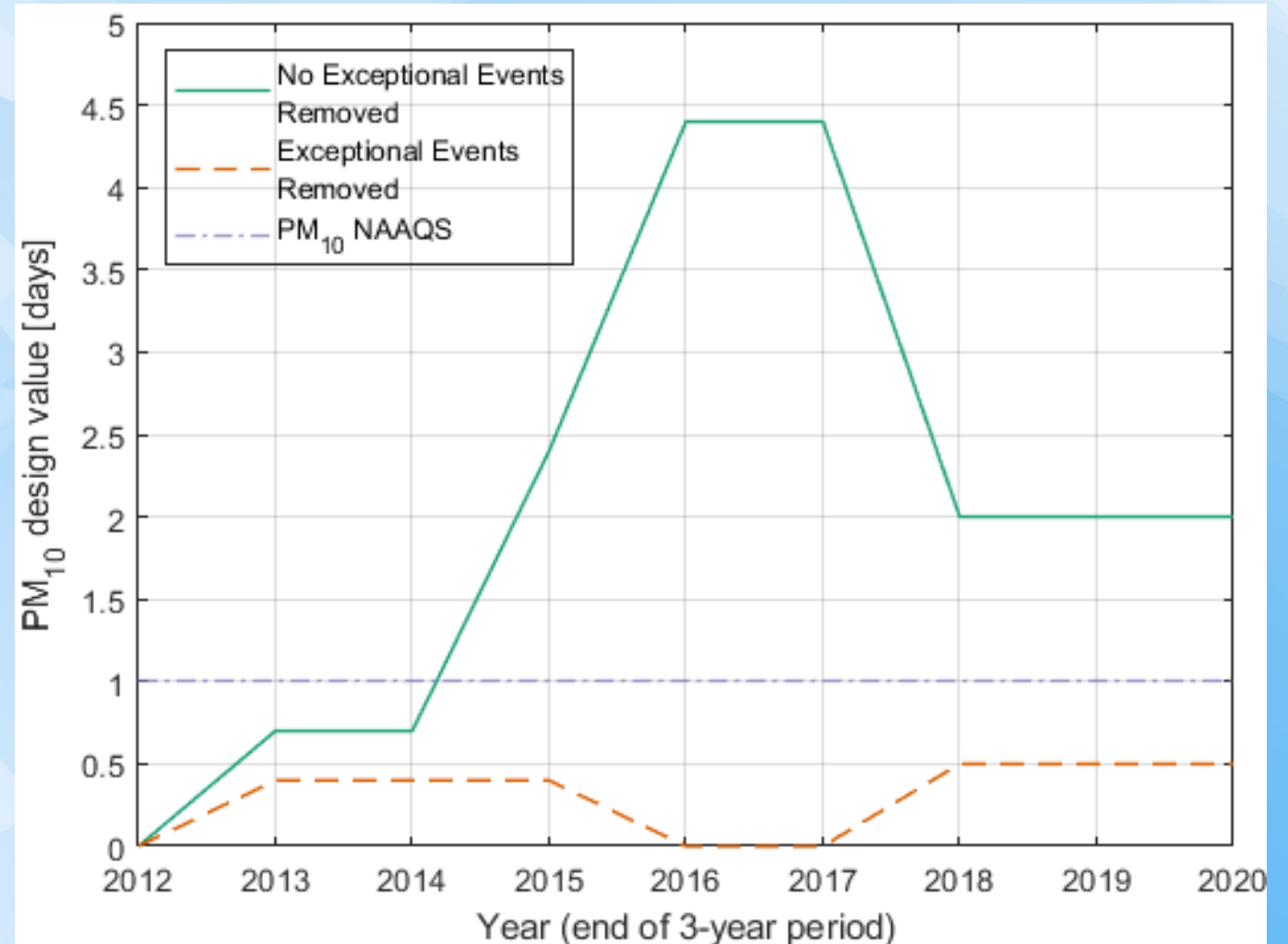
Locations where PM10 is measured



Trend of Design Value

- After removing suspected exceptional events there were two exceedances of the 24-hour PM10 NAAQS over the first maintenance period
- Three-year 24-hour PM10 design value did not exceed the NAAQS

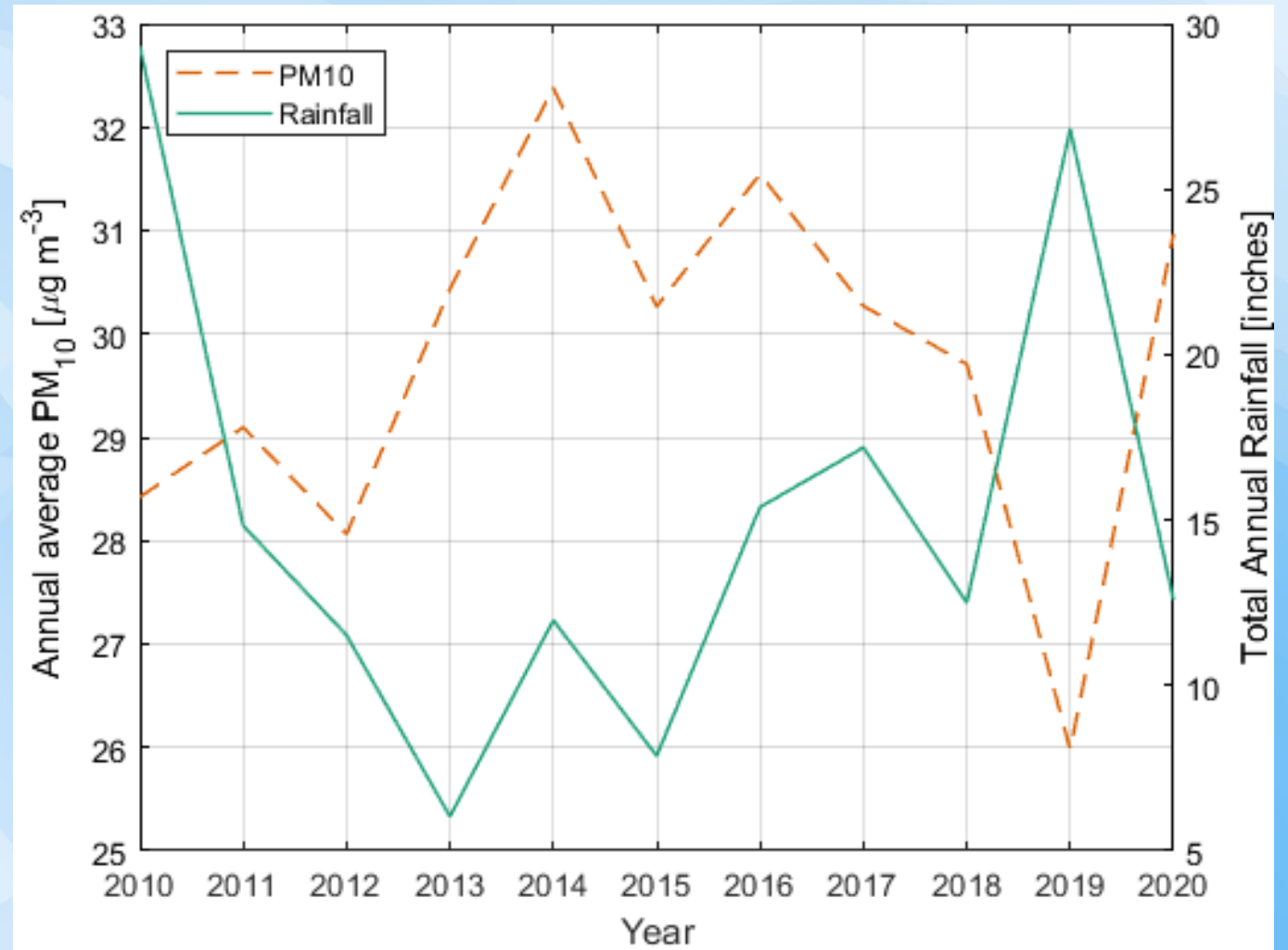
PM10 design value before and after removing suspected exceptional events



Trends of Meteorological Factors that Influence PM10

- Analyzed rainfall in detail because it reduces PM10 concentrations
- Rainfall tended to be lower than average during 2010 - 2020
 - 15.1 inches compared with 18.1 inches during 1990 – 2009
 - Rainfall conditions were not particularly conducive to lower PM10 concentrations
- Unlikely that systematic trends in other meteorological factors were conducive to lower PM10 concentrations

Average annual rainfall and PM10 concentrations



PM10 is the average across all stations.

Method to Demonstrate Maintenance

Emissions Inventory Method

- Future emissions of a pollutant or its precursors will not exceed the level of the attainment year inventory
 - Attainment inventory is the emissions inventory for the year for which corresponding measured PM10 design value shows attainment

Modeling Method

- Modeling results show that future anticipated mix of sources and emissions will not cause a violation of the NAAQS

Timeframe included in Maintenance Demonstration

2018

- Base Year
- Attainment Inventory

2035

- New maintenance horizon

2023

- Interim year

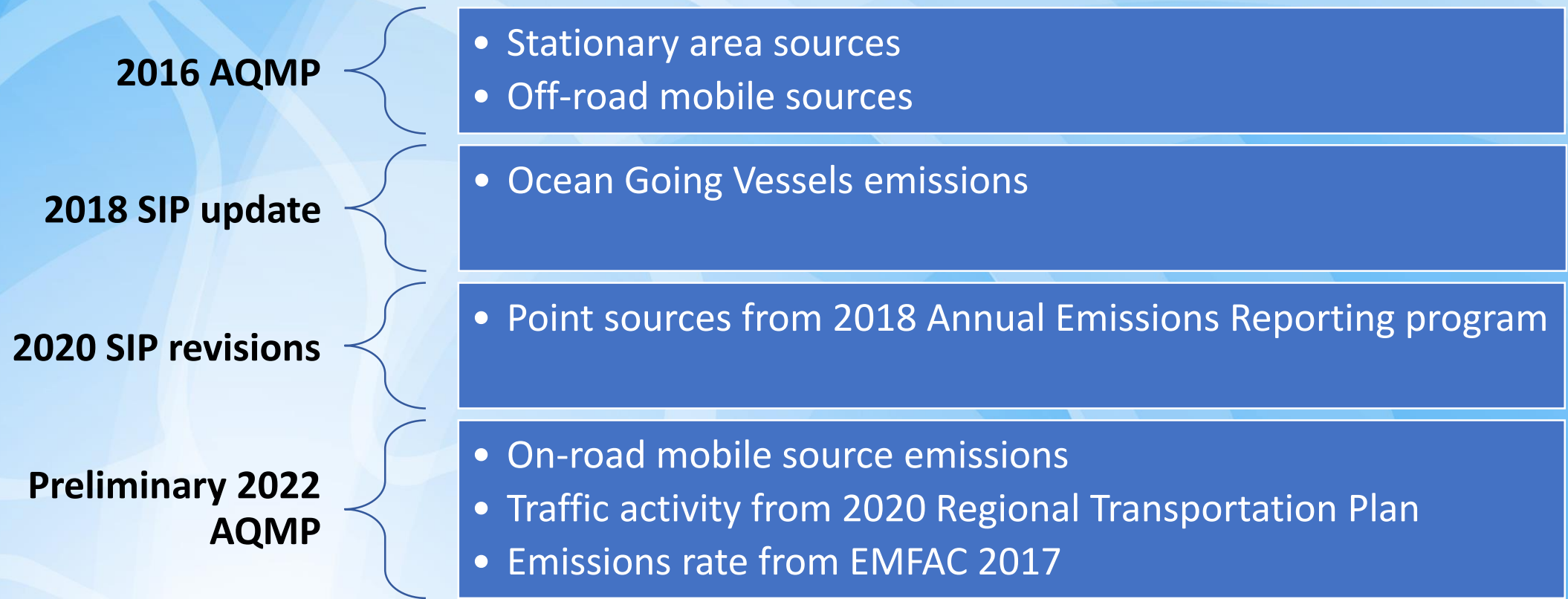
2031

- Interim year

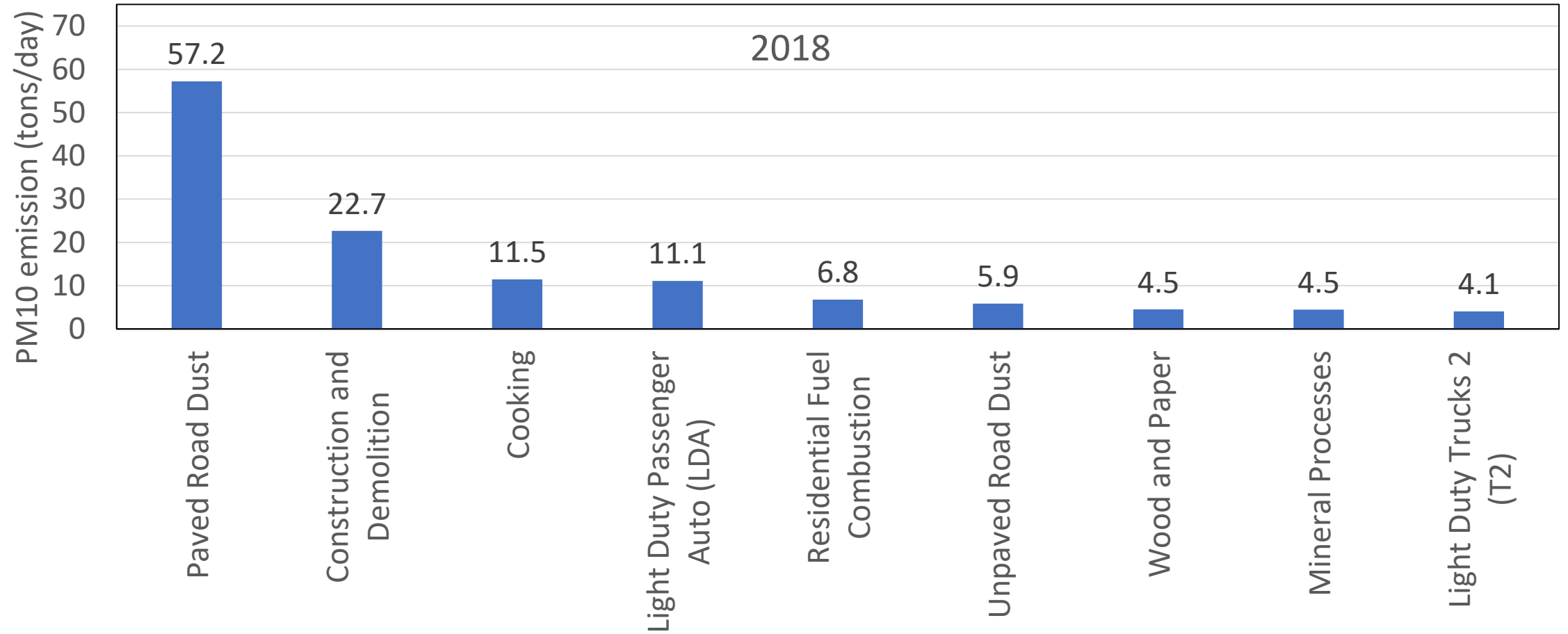
2033

- 10-year earmark from the approval of 1st plan

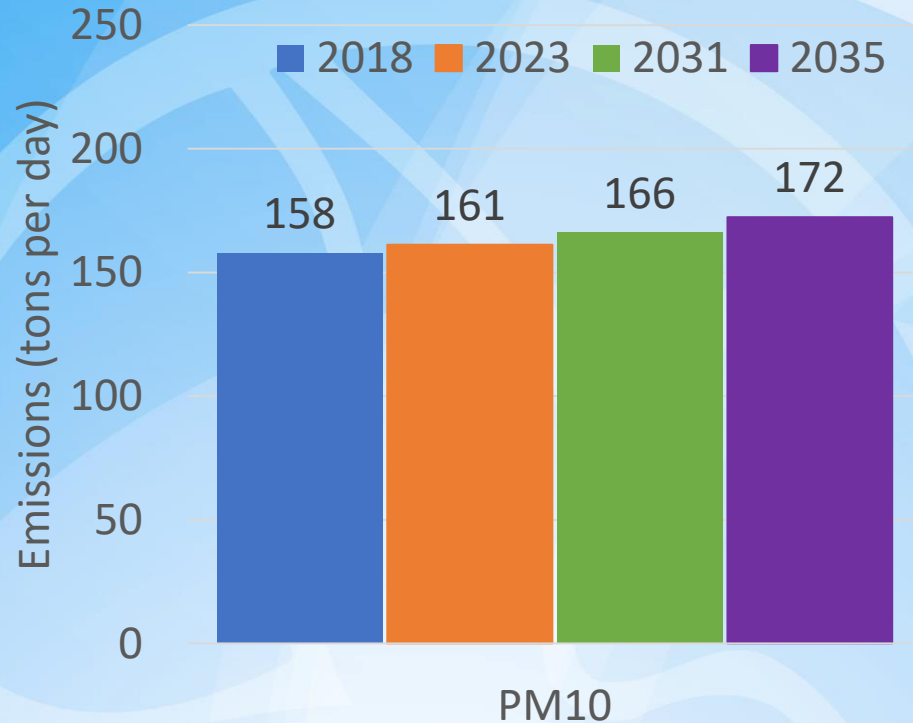
Emissions Inventory for Maintenance Demonstration



Major Sources of PM10 Emissions

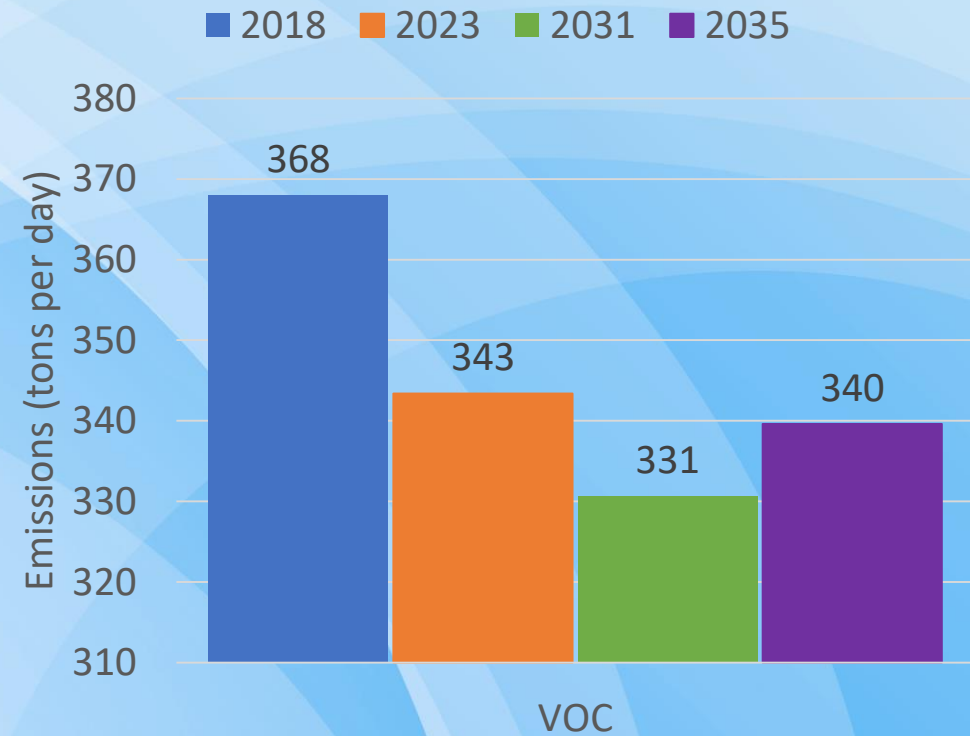
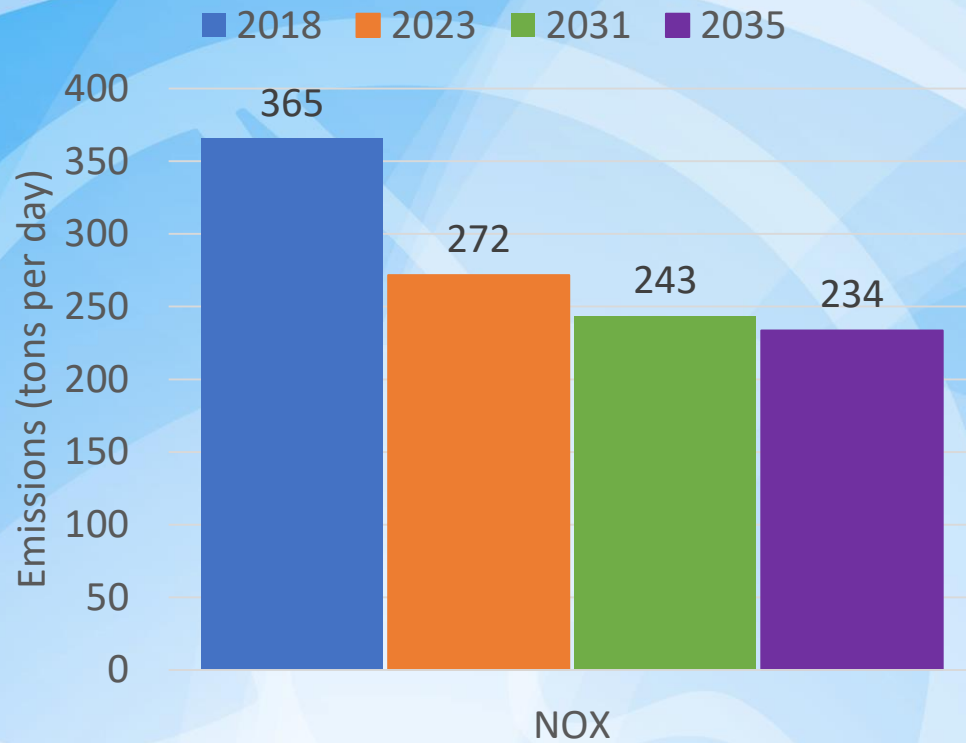


PM10 Emissions Trend



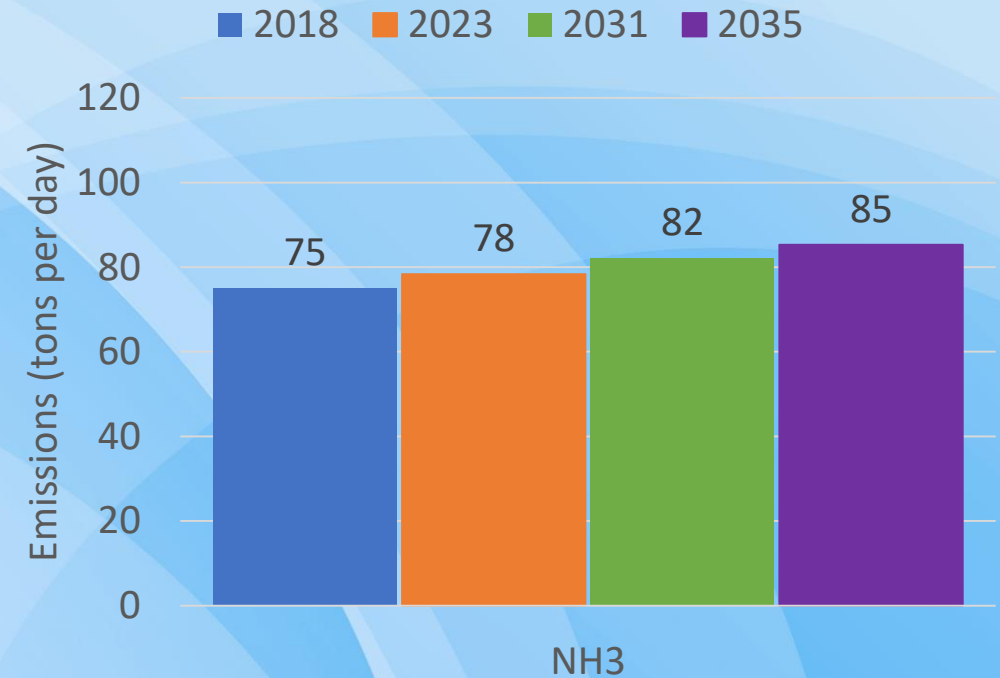
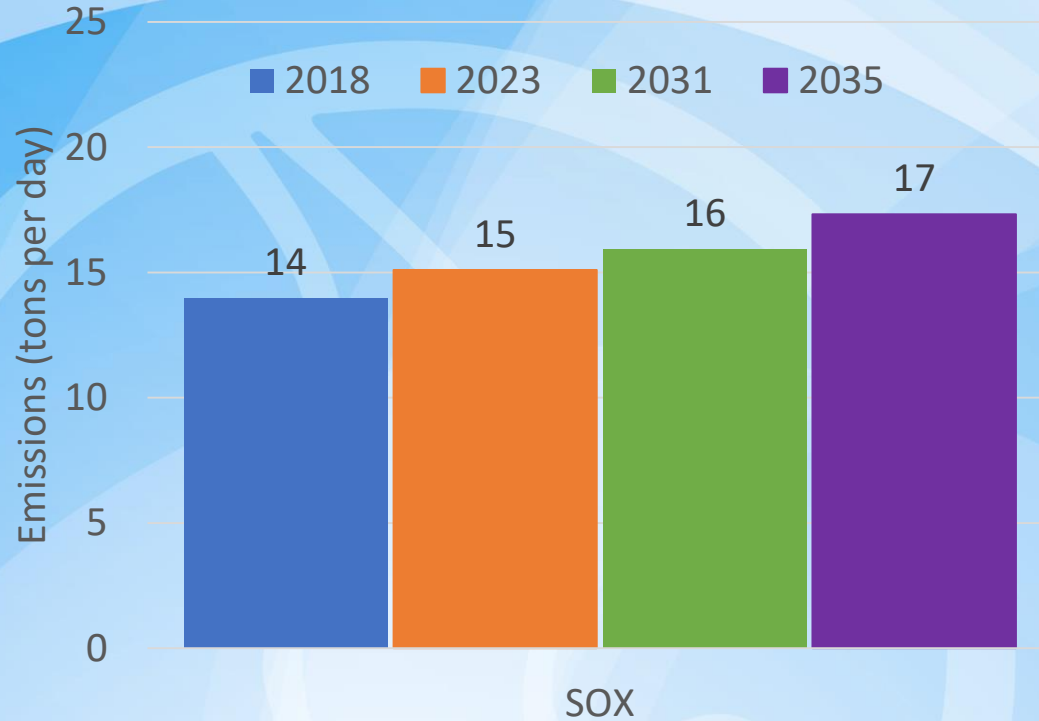
- PM10 emissions increase marginally due to population and economic growth
- Because PM10 design value is approximately 50% of the NAAQS, this marginal increase is not expected to affect attainment status

NOx and VOC Emissions Trends



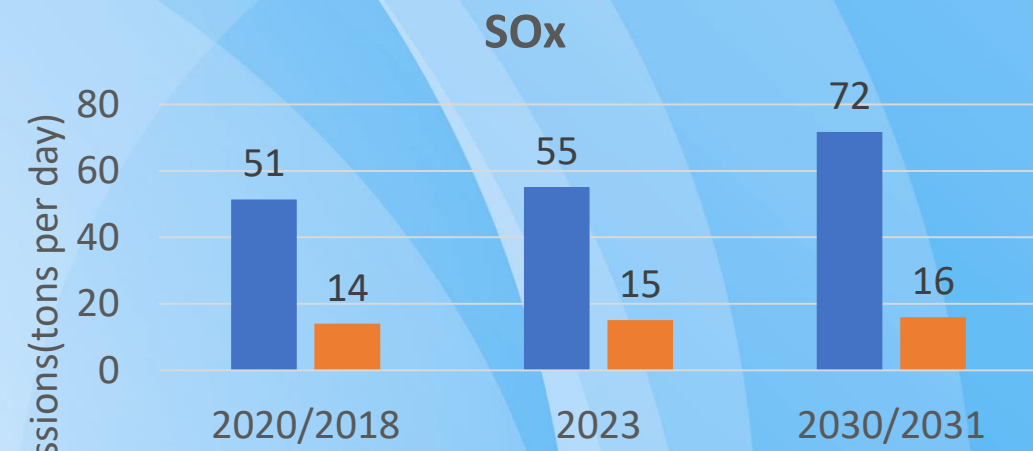
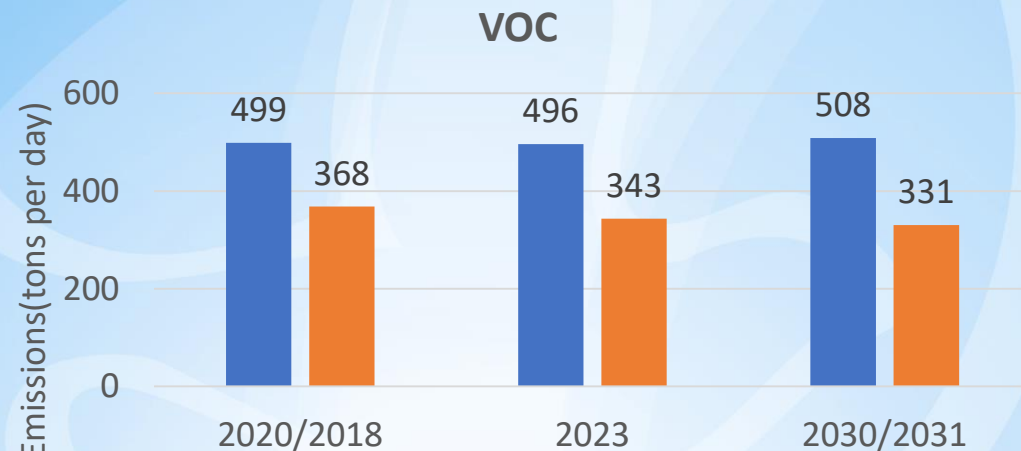
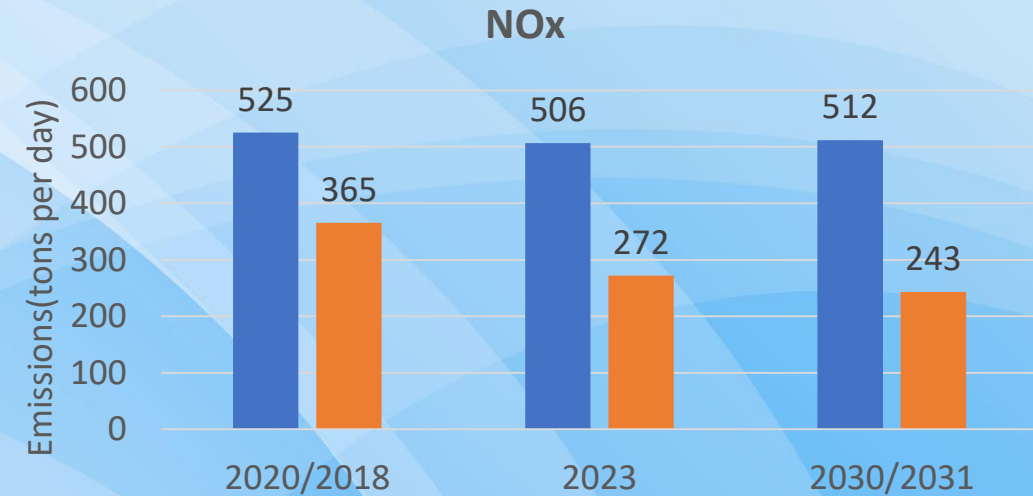
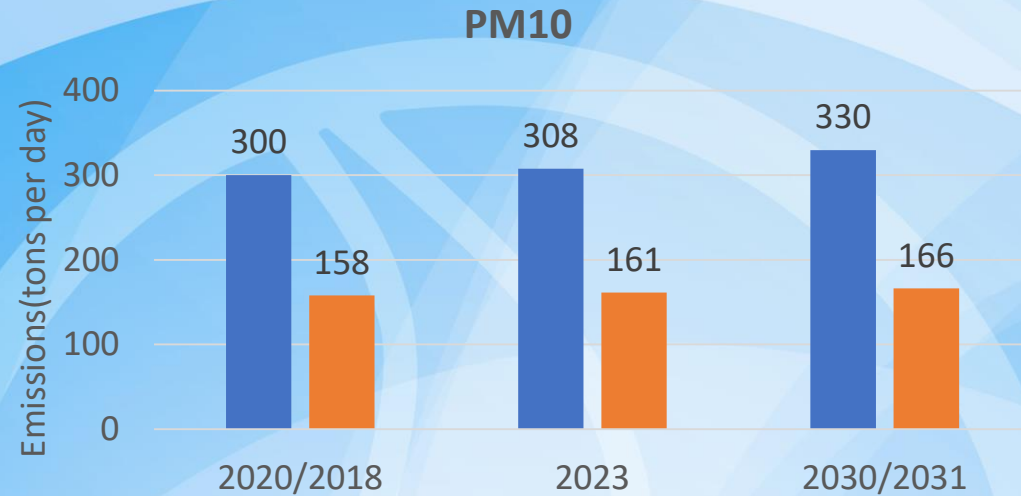
- NOx emissions decrease substantially in the future
- VOC emissions in 2035 are lower than 2018

SOx and NH3 Emissions Trends



SOx and NH3 emissions increase marginally, however, their contributions to ambient PM10 concentration are de minimis, therefore, the marginal increases are not expected to interfere with continued attainment status

Emissions in 2010 Plan vs 2021 Plan



■ 2010 MP ■ 2021 MP

■ 2010 MP ■ 2021 MP

Maintain the PM10 Attainment Status through 2035

- The PM10 and its precursor emissions trends and the recent PM10 design values indicate that the South Coast Air Basin will maintain the attainment status at least through 2035
- The PM10 and its precursors emissions in this Plan are much lower than those estimated in the 2010 Plan, due to implementation of various regulations targeting PM and its precursors. This provides additional assurance that the South Coast Air Basin will maintain the attainment status in the future

Future Monitoring Network

- South Coast AQMD currently exceeds all minimum monitoring requirements for PM10 network design and operation
- South Coast AQMD is committed to refinement of the PM10 monitoring network*
- In consultation with U.S. EPA Region 9, the PM10 FRM monitoring network will selectively transition to PM10 FEM continuous analyzers
- This modification will provide better resolution of PM10 data, continue to exceed all minimum monitoring network requirements, and verify attainment status
- Continuous instruments are also used for air quality forecasting, advisories, and real-time air quality index values

*As described in the July 1, 2020 Five Year Air Monitoring Network Assessment

Available at: <http://www.aqmd.gov/home/air-quality/clean-air-plans/monitoring-network-plan>

Verification of Continued Attainment

U.S. EPA guidance requires air districts to track progress of maintenance plans over time through either:

- Periodic updates to the emissions inventory
- Periodic review of the inputs and assumptions used for the emission inventory and subsequent updates to the inventory if those inputs or assumptions have significantly changed

South Coast AQMD is committing to verify continued attainment based on review of the inputs and assumptions used for the emission inventory

- When new information becomes available
- If this periodic review indicates that inputs and assumptions have changed significantly, South Coast AQMD will:
 - Work with CARB to update the existing inventory
 - Evaluate the revised inventory against the inventories presented in the maintenance plan
 - Evaluate the potential impacts

Contingency Plan

- Maintenance plan should*
 1. Identify control measures that may be implemented as a contingency in the event of emission increase
 2. Identify the indicators or triggers that will determine when contingency measures should be implemented

*Clean Air Act Section 175A(d)

Contingency Plan Trigger

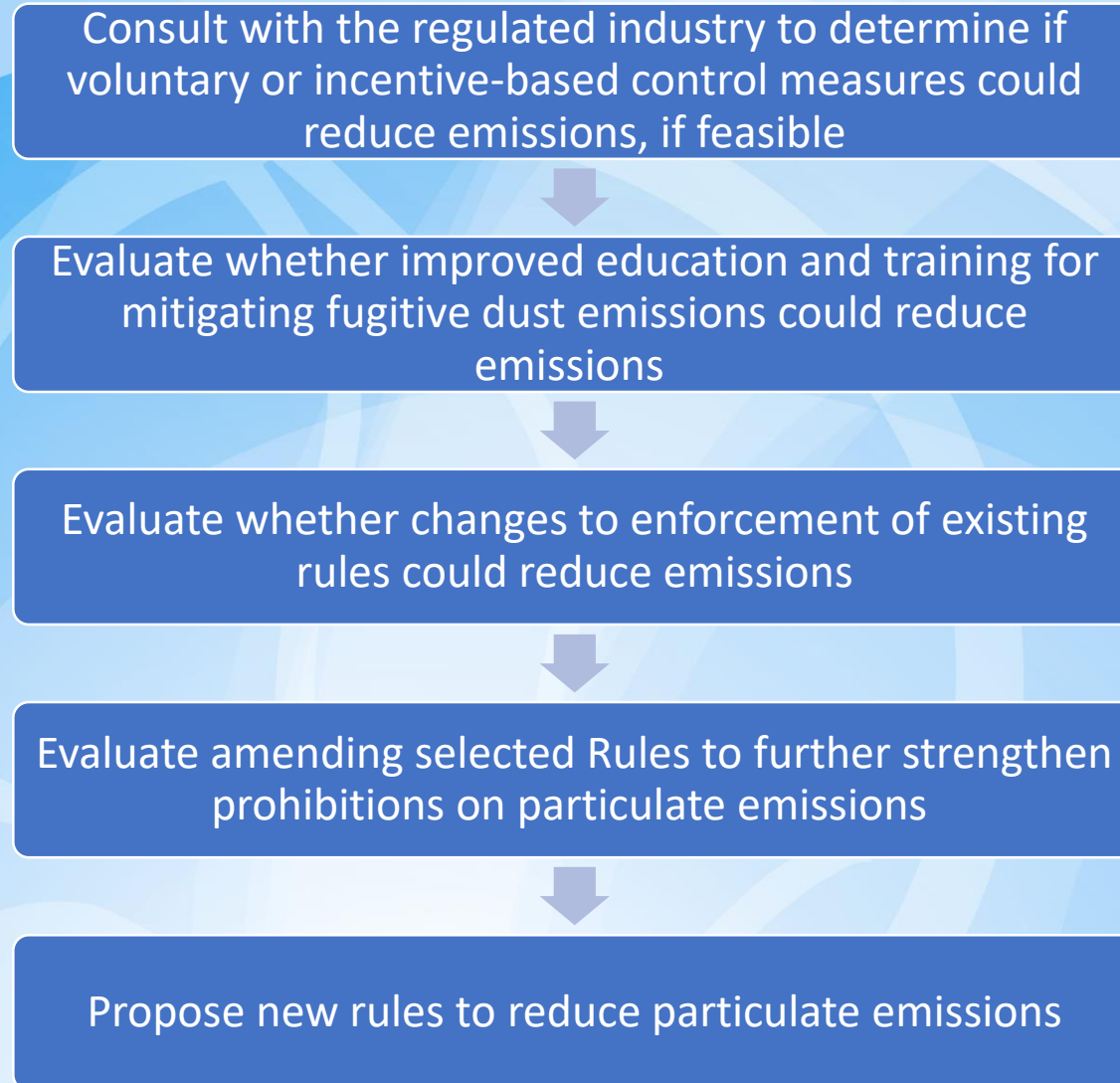
- Contingency plan is triggered if number of PM10 exceedances, excluding exceptional events, exceeds the National Ambient Air Quality Standard
- Weight-of-evidence method will be used by South Coast AQMD to exclude exceptional events

Considerations for exclusion of exceptional events

Wind-Blown Dust	Wildfires	Fireworks
<ul style="list-style-type: none">• Source of dust that caused exceedance is identified• Various criteria and data sources*	<ul style="list-style-type: none">• Wildfire that caused the exceedance is identified• Various criteria and data sources*	<ul style="list-style-type: none">• Exceedance occurs on July 4th or 5th or January 1st• Simultaneous increase of PM2.5 with the PM10 exceedance• Fireworks that clearly caused the measured PM10 exceedance are identified

*Including warnings, advisories, wind measurements, satellite imagery, webcams, back trajectory analysis, forecasts, social media

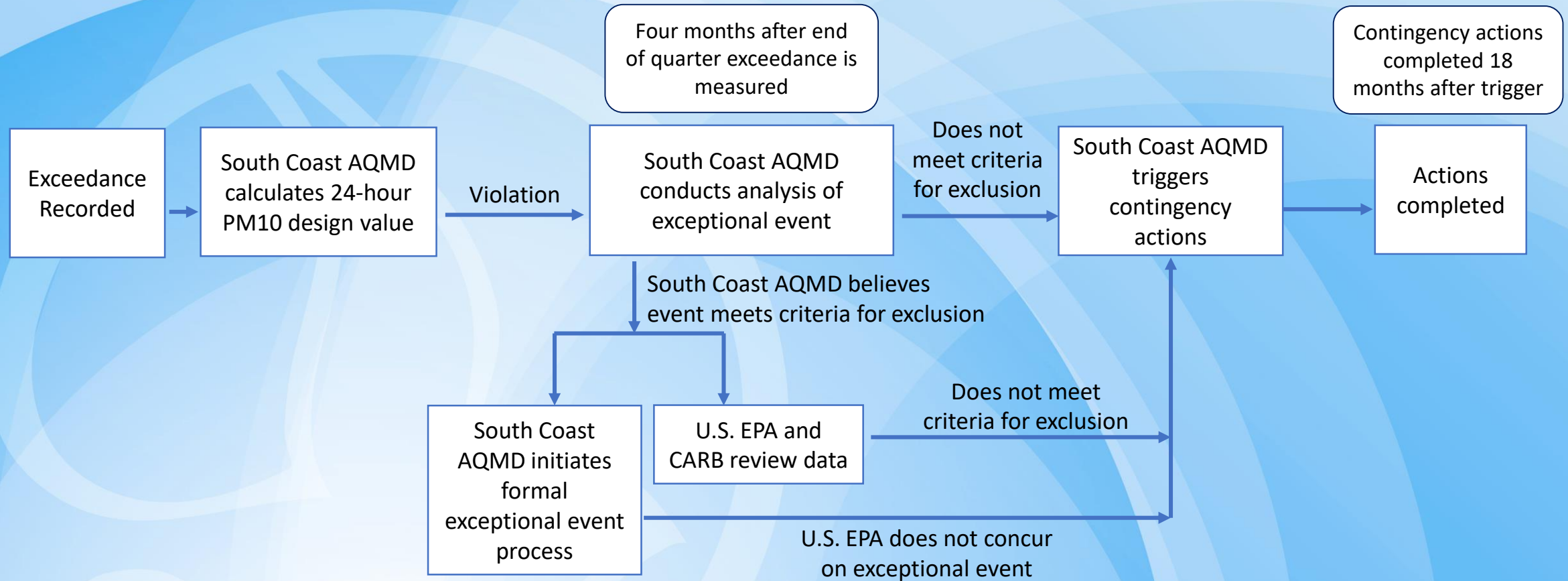
Contingency Plan Actions (Only If Triggered)



Selected rules that may be evaluated to strengthen prohibitions on particulate emissions

Rule Name	South Coast AQMD Rule
Fugitive Dust	403
Open Burning	444
PM10 Emission Reductions from Aggregate and Related Operations	1157
Storage, Handling, and Transport of Coke, Coal, and Sulfur	1158
PM10 Emissions from Paved and Unpaved Roads and Livestock Operations	1186

Contingency Plan Schedule



If U.S. EPA concurs on exceptional event: Contingency actions are not triggered and pending contingency actions for the specific violation are abandoned

Public Process (2021)



Supporting Documentation

Draft 2021 PM10 Maintenance Plan for the South Coast Air Basin

[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)

Contact Information

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- Written comments should be submitted no later than Monday, April 26, 2021