



End User Perspective:
**Air Monitoring and the State
Implementation Plan (SIP)**

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Clean Air Act Amendments of 1990

- Requires U.S. EPA to set allowable levels of outdoor air pollution, National Ambient Air Quality Standards (NAAQS, standards)
- Established requirements for states exceeding a NAAQS to develop a **State Implementation Plan (SIP)**

<u>Criteria Pollutants</u>
Carbon Monoxide
Lead
Nitrogen Dioxide
Particulate Matter (PM)
Ozone
Sulfur Dioxide

State Implementation Plans (SIP)

- A SIP is a plan developed by CARB and local Air Districts demonstrating how the area will attain the NAAQS.
- The SIP must be approved through a public process by the local Air District and CARB before it is sent to U.S. EPA for final approval.
- Once approved by the U.S. EPA, the plan is enforceable by federal courts.

Air Agency Roles

FEDERAL



US EPA

Sets & enforces national air quality standards.
Regulates interstate transportation.



Trains



Planes



Ships

Approves State Implementation Plans.

STATE



Regulates mobile sources of air pollution,
greenhouse gases & consumer products.



Cars



Trucks



Buses

Develops State SIP Strategy,
and works with local air districts to
develop & adopt SIPs
for all nonattainment areas.

LOCAL



Local Air Districts

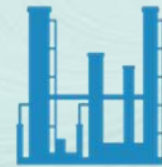
Regulates stationary & local
sources of air pollution.



Fireplaces



Factories



Refineries



Power plants

Develops & adopts State Implementation
Plans for nonattainment areas
within their District.

National Ambient Air Quality Standards

Pollutant		Year Promulgated	Averaging time	Level	Form (Design Value)
Ozone		2015	8 hour	70 ppb	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
		2008		75 ppb	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
		1997		80 ppb	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particulate Matter	PM2.5	2024	1 year	9.0 $\mu\text{g}/\text{m}^3$	Annual mean, averaged over 3 years
		2012	1 year	12.0 $\mu\text{g}/\text{m}^3$	Annual mean, averaged over 3 years
		1997	1 year	15.0 $\mu\text{g}/\text{m}^3$	Annual mean, averaged over 3 years
		2006	24 hours	35 $\mu\text{g}/\text{m}^3$	98th percentile, averaged over 3 years
	PM10	1987	24 hours	150 $\mu\text{g}/\text{m}^3$	Not to be exceeded more than once per year on average over 3 years



Designations



* Exceptional events are considered

Classifications

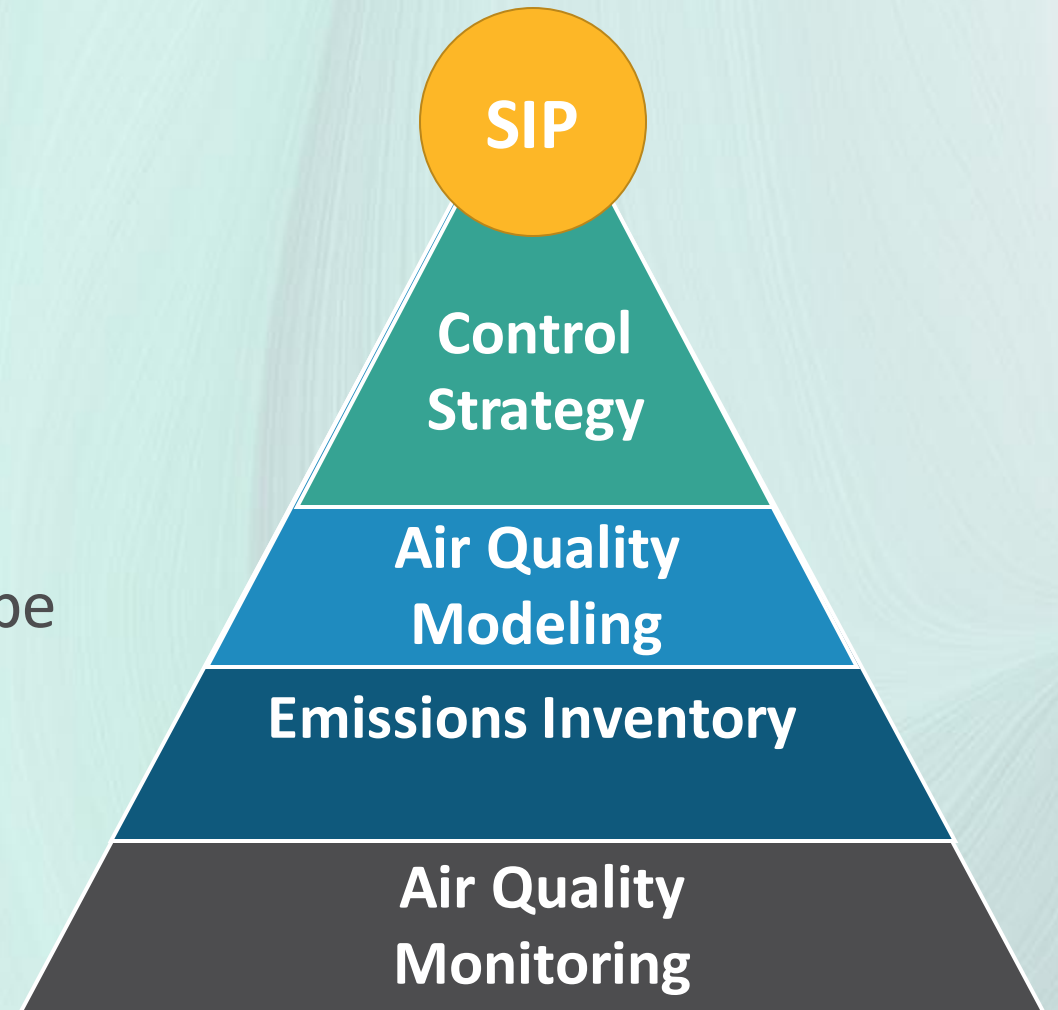
Areas with higher classifications have more stringent requirements and more years to attain the standard

Particulate Matter
Moderate
Serious *
Serious+ *

Ozone
Marginal
Moderate
Serious
Severe
Extreme

Basic Elements of a SIP

- I. **Monitoring**
How bad is the problem?
- II. **Emissions inventory**
What's causing the pollution?
- III. **Modeling**
How much do emissions need to be reduced?
- IV. **Control strategy**
How will we reduce emissions to achieve federal NAAQS?





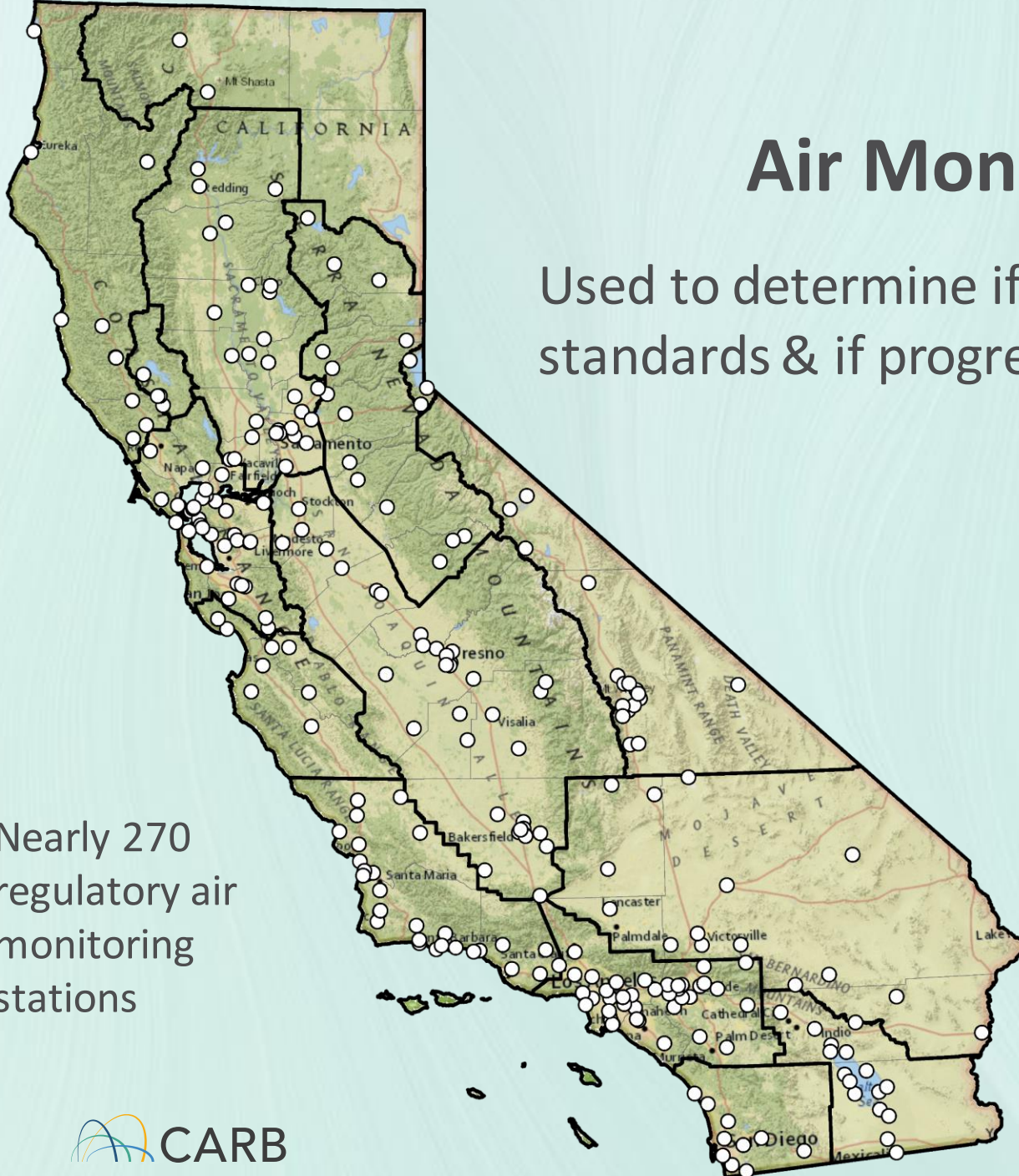
Air Monitoring

Used to determine if areas meet federal air quality standards & if progress is being made

Nearly 270
regulatory air
monitoring
stations



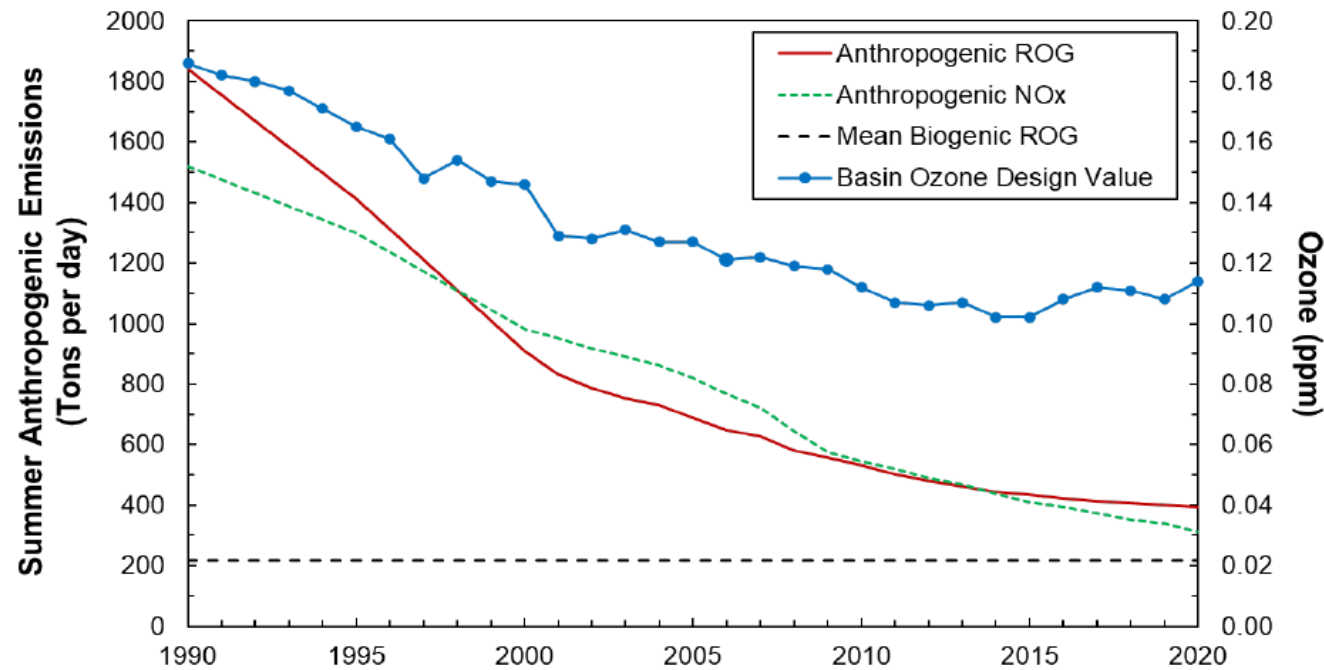
Used as the foundation for attainment
demonstrations in SIPs





Monitored Data in Attainment Demonstrations

South Coast Precursor Emissions and Ozone Design Values



1990-1999 Emissions data from CARB CEPAM Standard Emissions Tool for 2009 Almanac
2000-2020 Emissions data from CARB CEPAM 2022 SIP Planning Tool v1.01 with External Adjustment
Mean Biogenic ROG represents 2018 May-October average of Biogenic Emissions Provided by CARB Air Quality Modeling Group

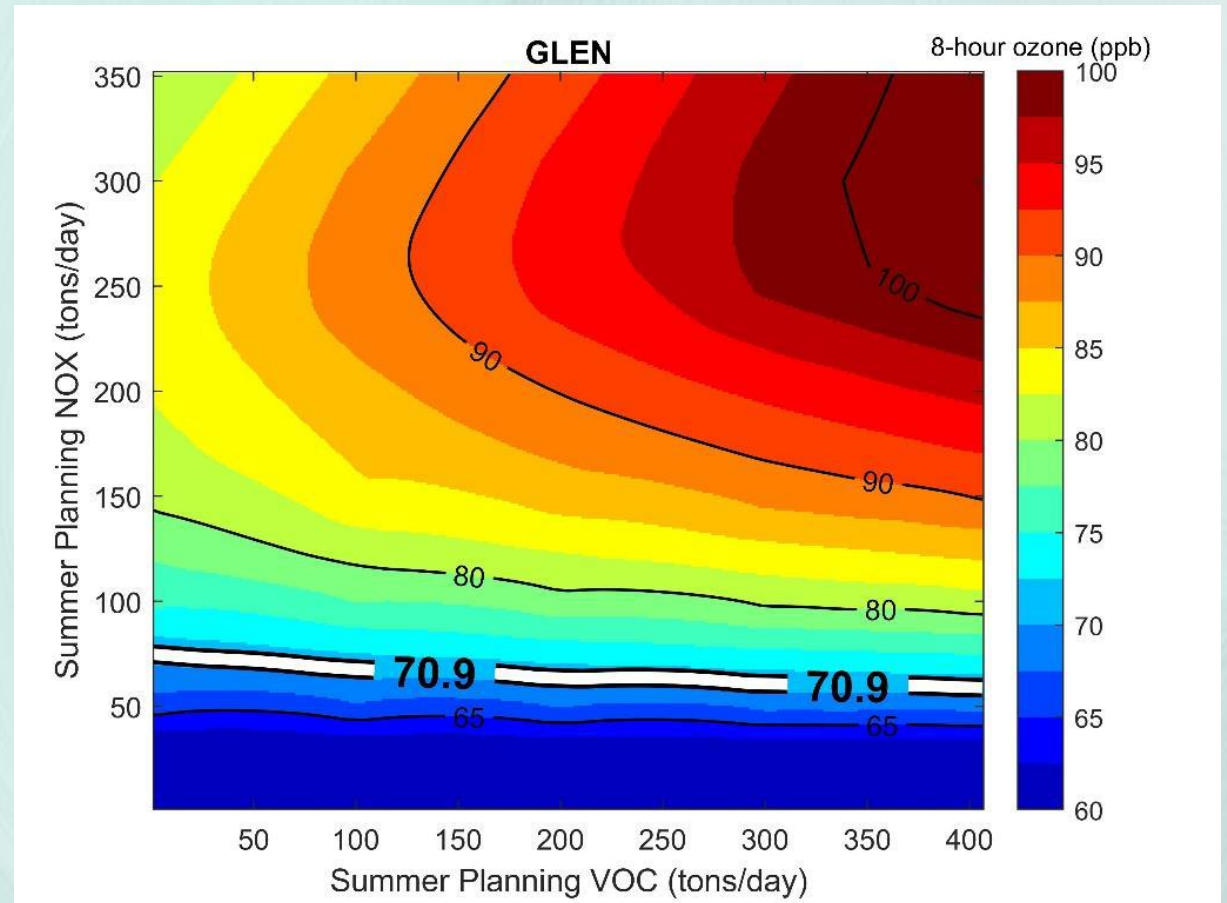
- Air quality data is used to calculate 5-year weighted design values for modeling
- Weight of evidence demonstrations analyze air quality trends to support modeled attainment dates

Emissions Inventory



Air Quality Modeling

The photochemical model calculates maximum levels of emissions able to be emitted in the region to meet the NAAQS in the attainment year (i.e. carrying capacity)



From the SCAQMD 2022 Air Quality Management Plan

Control Strategy to Reduce Emissions

- Strategy to reduce emissions to levels modeling predicts will meet the NAAQS
- Developed by CARB, State agency partners, and local Air Districts utilizing their specific authority
- Agencies must commit to pursue specified measures under their authority & to achieve the total aggregate emissions reductions needed for attainment



Regulations



Incentives



Voluntary Programs

2022 State SIP Strategy Measures

On-Road

- Clean Miles Standard*
- On-Road Motorcycle Emissions Standards
- Advanced Clean Fleets Regulation*
- Zero-Emission Trucks
- Enhanced Regional Emission Analysis in SIPs

Primarily Federally-Regulated

- In-Use Loco Regulation*
- Measures for Aviation Emissions
- Measures for OGV Emissions

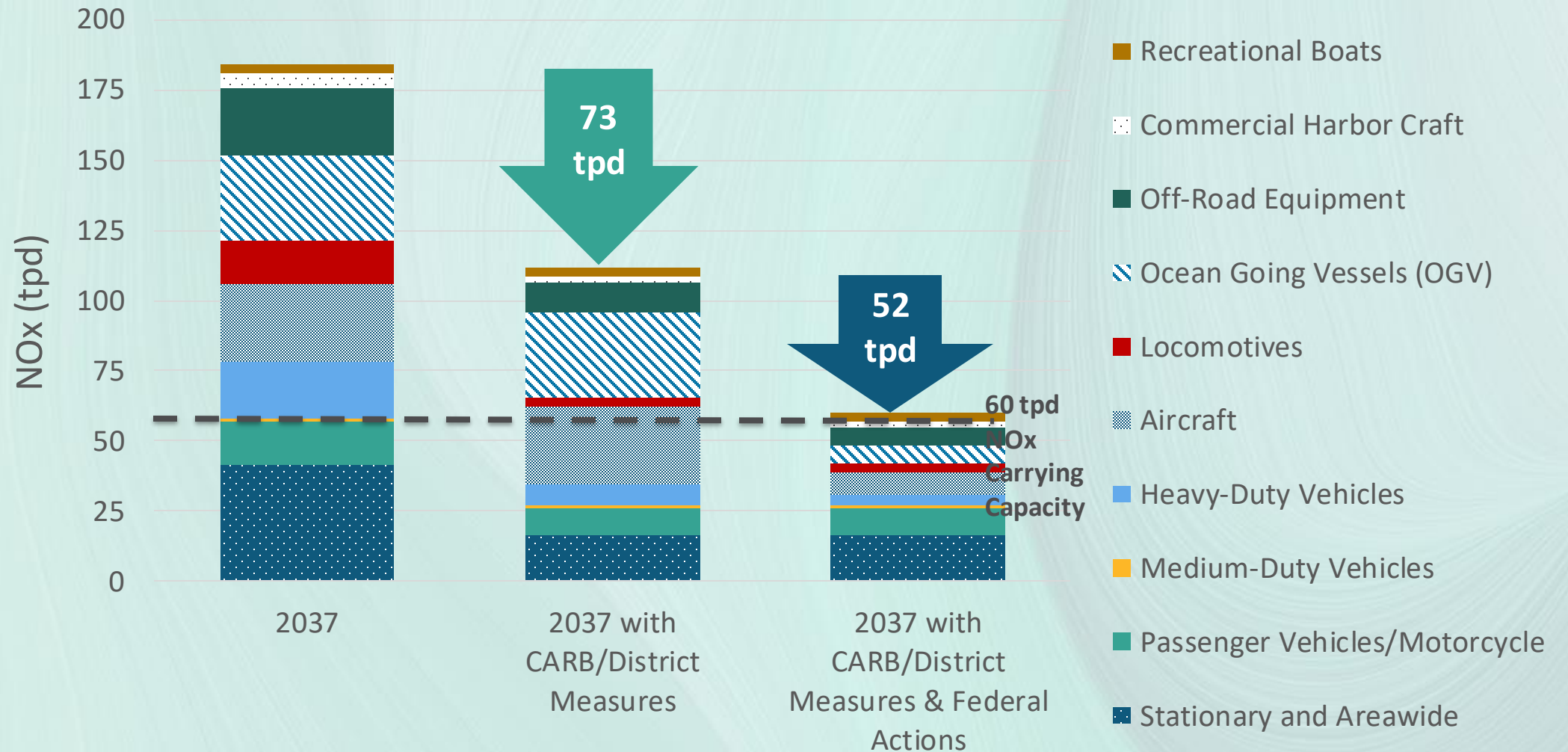
Area Sources

- Consumer Products
- Zero-Emission Space & Water Heaters
- Pesticides: 1, 3-Dichloropropene

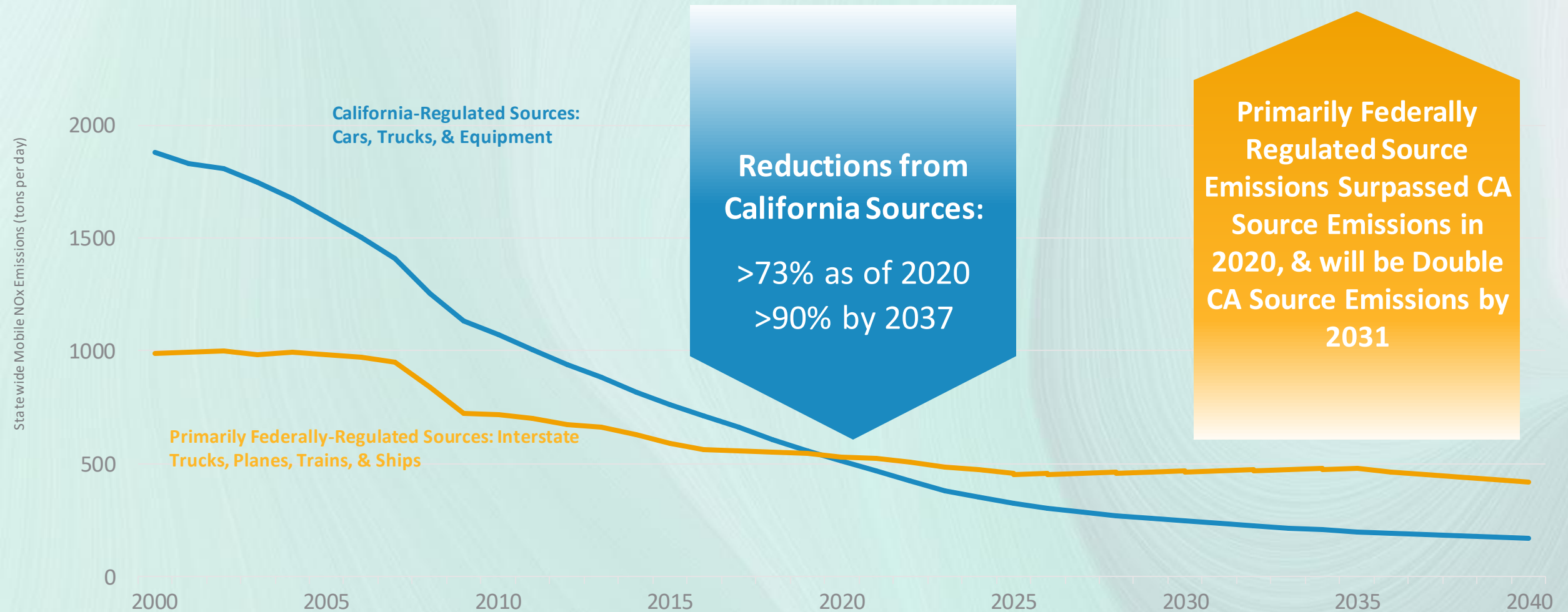
Off-Road Equipment

- Commercial Harborcraft*
- Tier 5 Off-Road Engine Standard
- Amendments to In-Use Diesel-Fueled Fleets Regulation*
- Zero-Emission TRU Part II
- Off-Road Zero-Emission Targeted Manufacturer Rule
- Clean Off-Road Fleet Recognition Program
- Spark-Ignition Marine Engine Standards
- Cargo Handling Equipment

South Coast Ozone Attainment in 2037



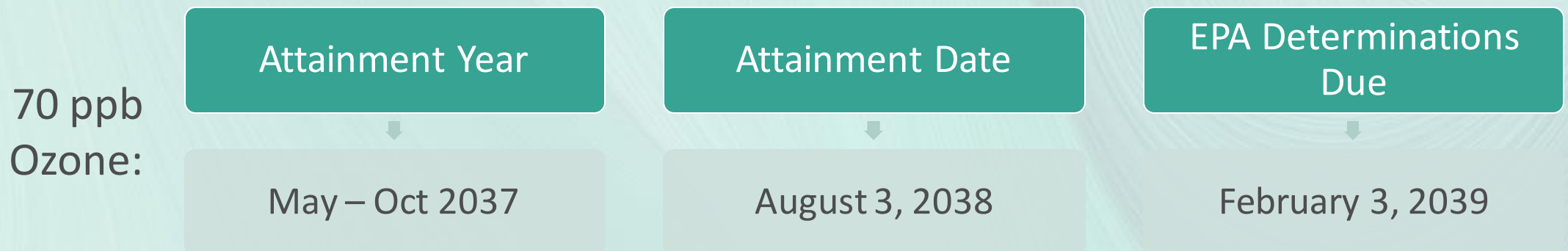
Federal Action Increasingly Critical





Determining Attainment

- EPA is required to determine whether areas attain within 6 months of the attainment date
 - EPA will do a “Determination of Attainment by the Attainment Date” for areas with design values meeting the standard
- Additional planning and submittal requirements exist for an area to be redesignated “attainment”



SIP Consequences

Failure to Attain a NAAQS

- Contingency measures
- Bump-up & develop/submit new attainment SIP
- Stationary source fees (Ozone)

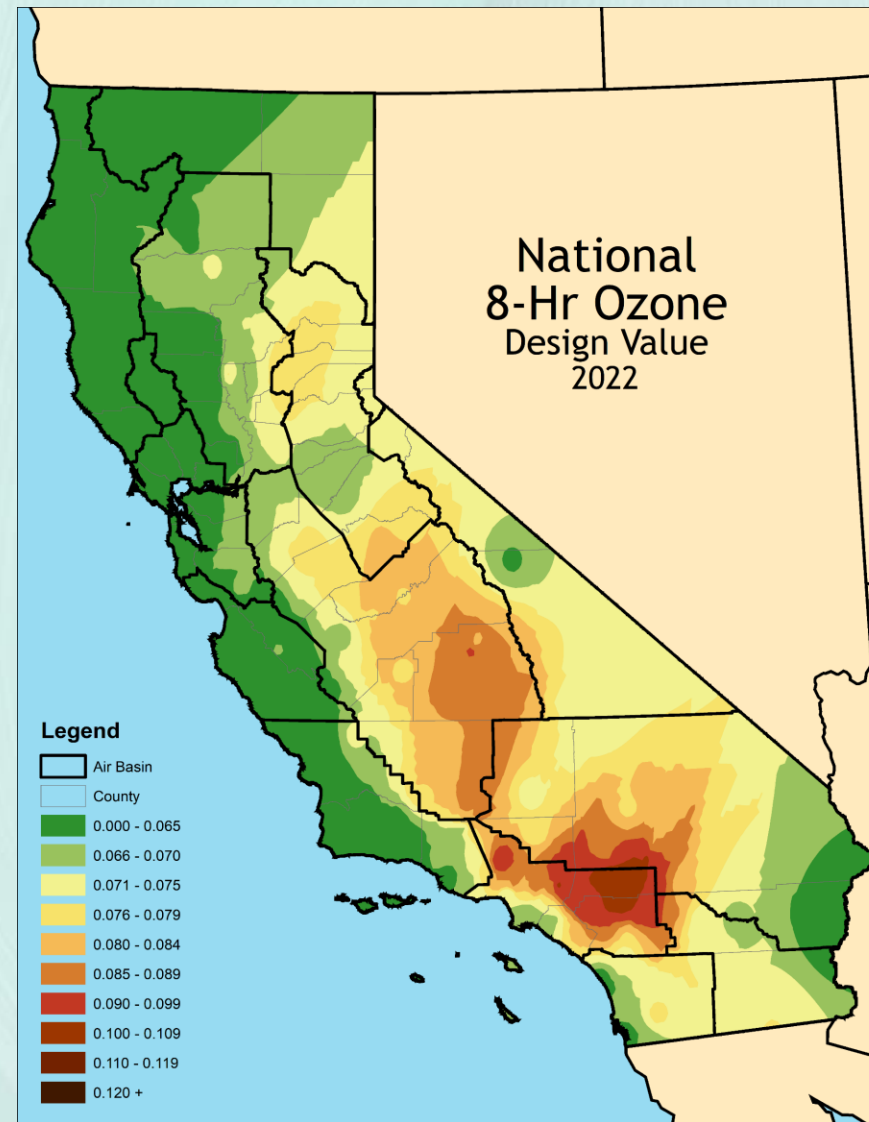
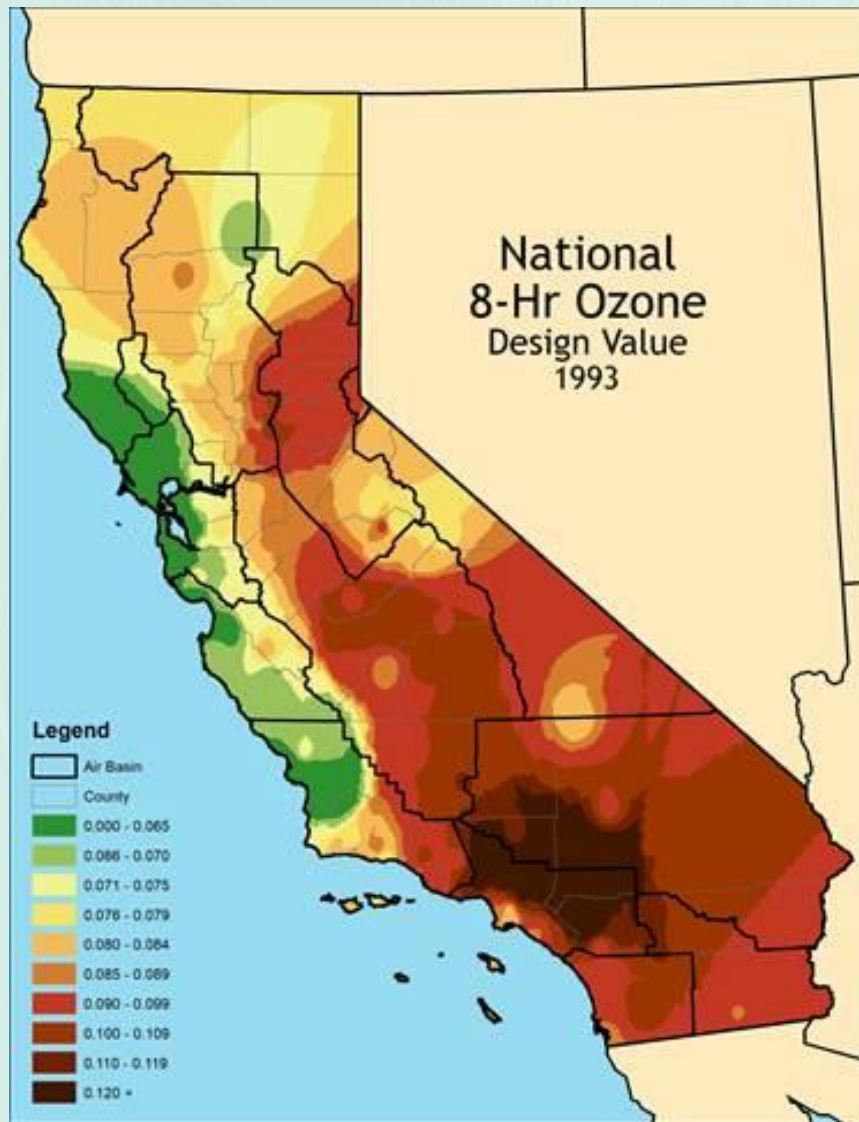


Disapproval or Failure to Submit / Implement a SIP

- 18 months - Stationary source offset Sanctions
- 24 months
 - Highway sanctions
 - Federal Implementation Plan (FIP)



Ozone Progress: Statewide



Thank you for your attention

Any Questions?