

2016 STATE STRATEGY FOR THE STATE IMPLEMENTATION PLAN

AIR RESOURCES BOARD

**September 22, 2016
Sacramento, CA**

Today's Presentation

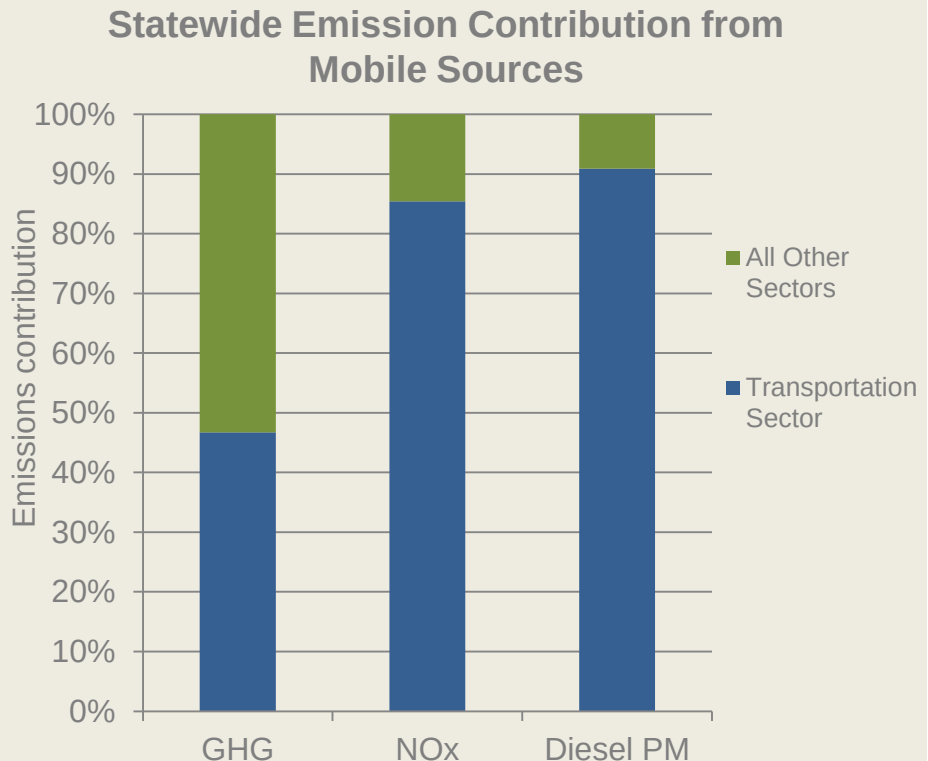
- Discussion of proposed State SIP Strategy released in May
- Key element of SIPs for South Coast and San Joaquin Valley
- Opportunity for stakeholder input and Board direction
- Final consideration in January

Mobile Source Reductions are Key

- Largest contributor to smog-forming, greenhouse gas, and diesel PM emissions

- 80 percent of smog-forming NO_x
- 50 percent of greenhouse gases
- 90 percent of toxic diesel PM

- Requires integrated planning to meet multiple goals



Mobile Source Strategy Framework for Multiple Plans



SIP DEVELOPMENT

What is the SIP?

- **Required by Clean Air Act**
- **Framework for meeting air quality standards**
- **Technical foundation for control strategy**
- **Legal commitment to achieve reductions**

South Coast SIP Development Process

- District's Air Quality Management Plan addresses stationary and area source measures
- State SIP Strategy addresses mobile sources, fuels, and consumer products
- District Board considers AQMP in December 2016
- ARB Board considers State SIP Strategy and District plan in January 2017

San Joaquin Valley

SIP Development Process

- ARB Board approved District's ozone plan in July
- State SIP Strategy provides additional reductions to accelerate progress
- Work ongoing to define PM2.5 attainment strategy
- Strategic use of incentives for mobile sources along with local District actions will be needed

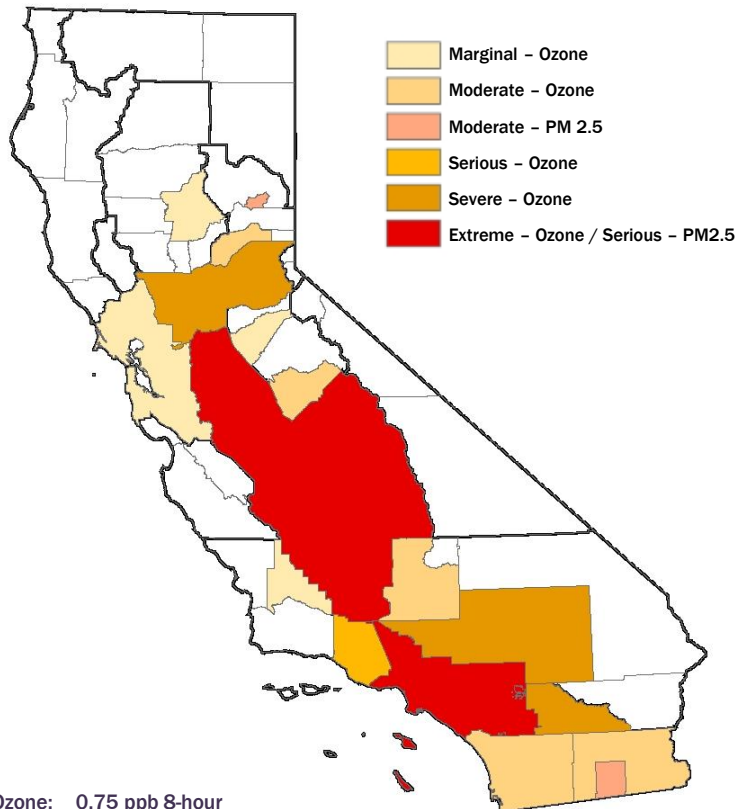
Components of the SIP



Defining the Challenge

Air Quality Data

Nonattainment Areas in California Ozone and PM2.5



Ozone: 0.75 ppb 8-hour
Standard (2008)
PM2.5: 12.0 μm^3 Annual
Standard (2012)

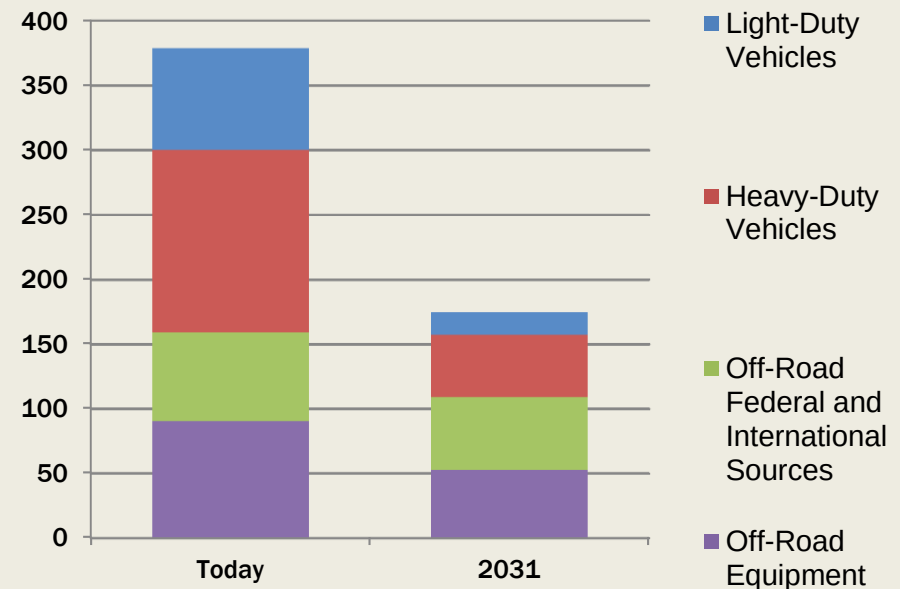
- Over 12 million Californians still breathing unhealthy air
- Most areas expected to attain standards by 2026
- Key challenges:
 - South Coast ozone
 - San Joaquin Valley PM2.5

Identifying Key Sources

Emissions Inventory

- Comprehensive accounting of emissions
- Current programs reduce NOx over 50 percent by 2031
- Heavy-duty trucks and federal sources remain largest contributors

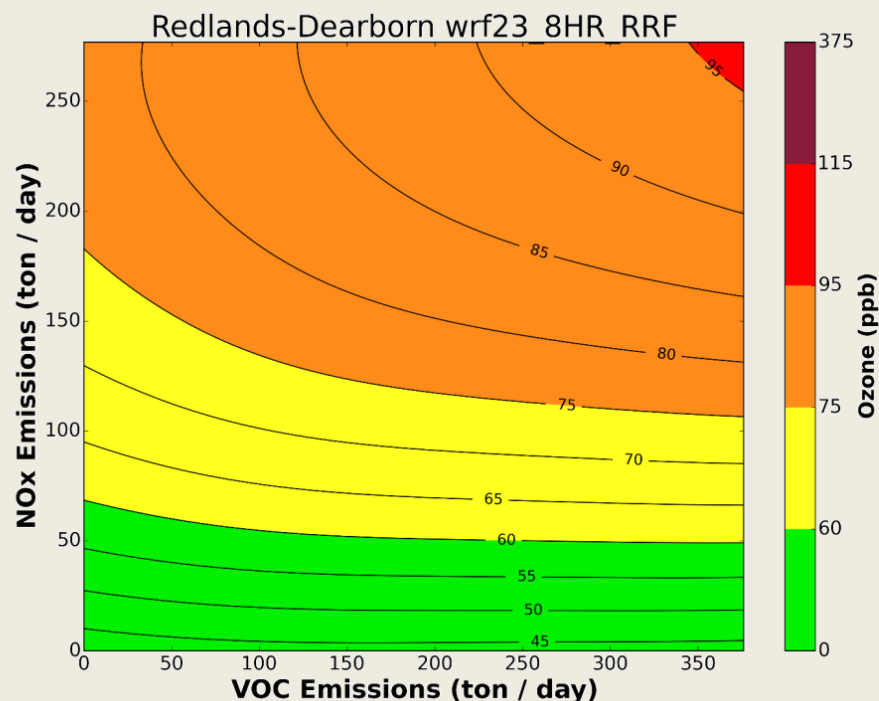
South Coast Mobile Source NOx Emissions
(tons per day)



Incorporates Latest Science

Air Quality
Modeling

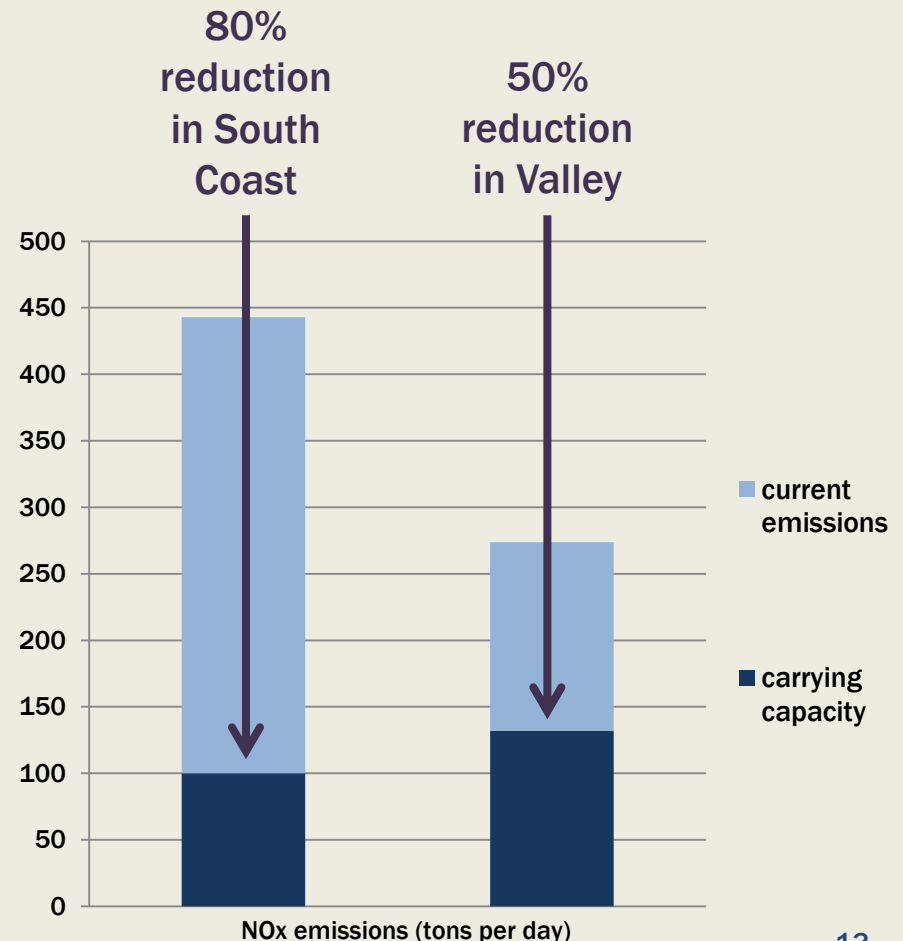
- Based on decades of research and field studies
- Determines magnitude of reductions needed for attainment
- Evaluates benefits of precursors controls
- Demonstrates need for deep NO_x reductions



Defines Attainment Needs

Air Quality
Modeling

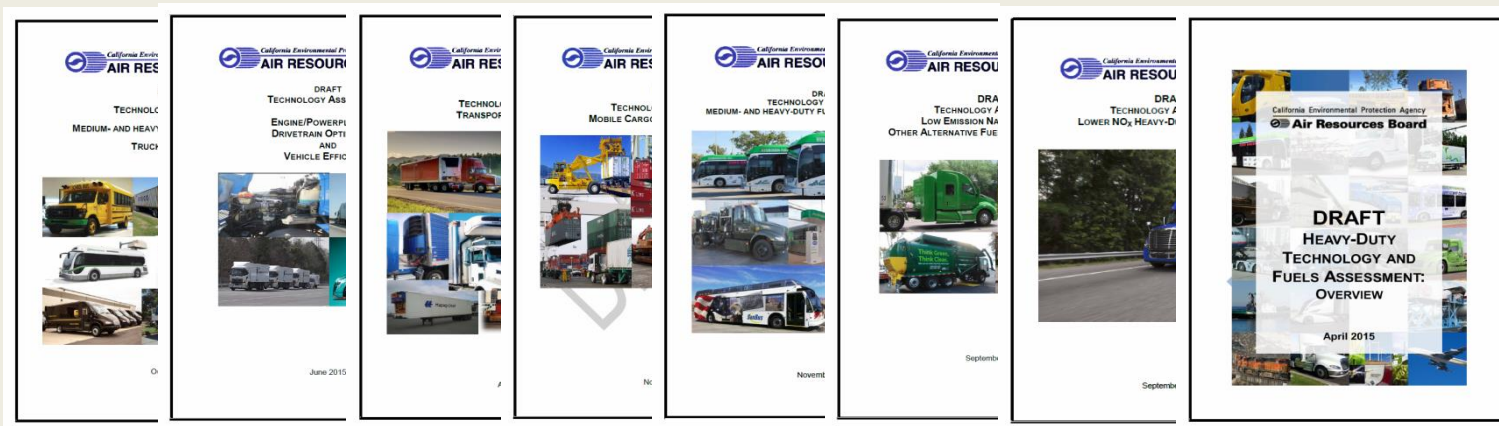
- 80 percent reduction in NOx emissions needed by 2031 to meet ozone standard in South Coast
- Current control program provides for ozone attainment in the San Joaquin Valley



Identifying Today's Technologies

Technology Assessments

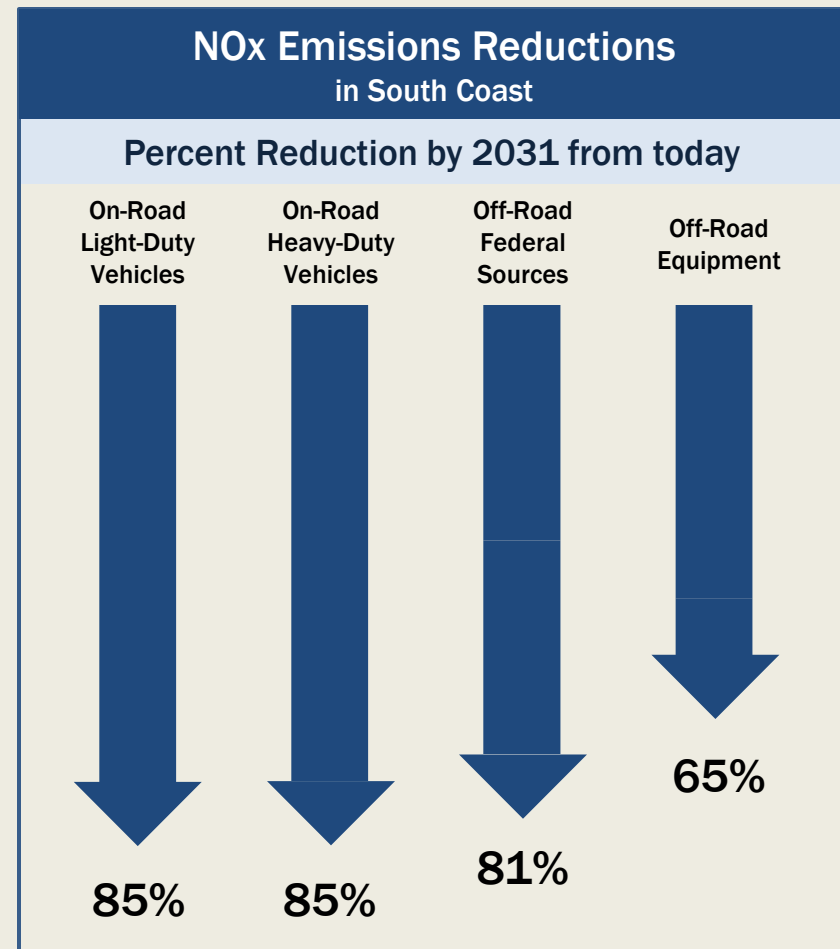
- Comprehensive review of technology status and feasibility
- Next generation of advanced technologies and fuels is here
 - Light-Duty ZEV commercialization well underway
 - Low-NOx truck engine has been certified
 - Heavy-duty zero emission technologies being demonstrated



Proposed Strategy

Control
Strategy

- Comprehensive set of actions for mobile sources and consumer products
- ARB's commitment to achieve reductions needed for attainment



Structure of Commitment

Legal
Commitment

- **Commitment to achieve emission levels needed for attainment**
 - Action on new measures according to implementation schedule
 - Aggregate emission reductions by specific dates
- **Becomes enforceable upon EPA approval**

Implementation Schedule

Legal
Commitment

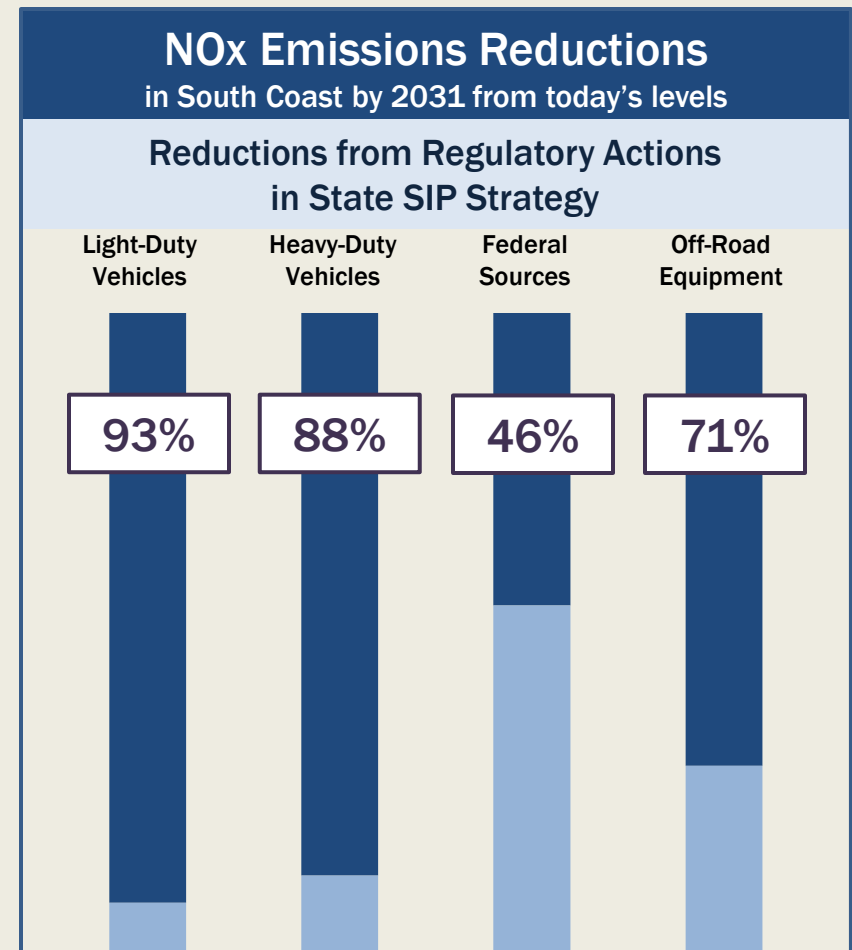
- Identifies timing of Board action and implementation dates for each measure
- Actions include:
 - Adopting regulations
 - Petitions for federal action
 - International advocacy

Measures	Agency	Action	Implementation Begins
On-Road Light-Duty			
Advanced Clean Cars 2	ARB	2020	2026
Lower In-Use Emission Performance Assessment	ARB / BAR	n/a	ongoing
Further Deployment of Cleaner Technologies	ARB / SCAQMD / U.S. EPA	ongoing	2016
On-Road Heavy-Duty			
Lower In-Use Emission Performance Level	ARB	2016	2017
Low-NOx Engine Standard—California Action	ARB	2017-2019	2023
Low-NOx Engine Standard—Federal Action	U.S. EPA	2017-2019	2024
Medium and Heavy-Duty GHG Phase 2	ARB / U.S. EPA	2016-2019	2018
Advanced Clean Transit	ARB	2017	2018
Last Mile Delivery	ARB	2018	2020
Innovative Technology Certification Flexibility	ARB	2016	2016
Zero-Emission Airport Shuttle Buses	ARB	2018	2023
Incentive Funding to Achieve Further Emission Reductions from On-Road Heavy-Duty Vehicles	ARB / SCAQMD	ongoing	2016
Further Deployment of Cleaner Technologies	ARB / SCAQMD / U.S. EPA	ongoing	2016
Off-Road Federal and International Sources			
More Stringent National Locomotive Emission Standards	U.S. EPA	2016	2023
Tier 4 Vessel Standards	ARB / IMO	2015-2018	2025
Incentivize Low Emission Efficient Ship Visits	ARB	2017-2018	2018
At-Berth Regulation Amendments	ARB	2017-2018	2022
Further Deployment of Cleaner Technologies	ARB / SCAQMD / U.S. EPA	ongoing	2016
Off-Road Equipment			
Zero-Emission Off-Road Forklift Regulation Phase 1	ARB	2020	2023
Zero-Emission Off-Road Emission Reduction Assessment	ARB	2025	--
Zero-Emission Off-Road Worksite Emission Reduction Assessment	ARB	tbd	--
Zero-Emission Airport Ground Support Equipment	ARB	2018	2023
Small Off-Road Engines	ARB	2018	2022
Transport Refrigeration Units Used for Cold Storage	ARB	2017-2018	2020
Low-Emission Diesel Requirement	ARB	by 2020	2023
Further Deployment of Cleaner Technologies	ARB / SCAQMD / U.S. EPA	ongoing	2016
Consumer Products			
Consumer Products Program	ARB	2019-2021	2020

Emission Reductions

Legal
Commitment

- Reductions from current control program and new measures
- Regulatory actions establish requirements for cleaner technologies
- Incentive programs ensure sufficient market penetration



OVERVIEW OF PROPOSED MEASURES

Mobile Source Actions

- ✓ Establish cleaner engine standards
- ✓ Increase penetration of zero emission technologies
- ✓ Ensure emission control durability
- ✓ Expand use of cleaner fuels
- ✓ Conduct pilot studies to demonstrate new technologies
- ✓ Incentivize deployment of cleanest technologies

Heavy-Duty Trucks

Establish Cleaner Engine Standards

- Establish new engine standards effectively 90 percent cleaner than today's standards
- Provide certification flexibility and ensure in-use performance
- Federal action essential to address interstate trucks operating in California

Federal Action on Truck Standards

- Ongoing work with EPA to support development of standards
- South Coast and San Joaquin Valley petitions for federal action
- Recent EPA announcement on importance of pursuing harmonized national strategy



Federal and International Sources

Establish Cleaner Engine Standards

More Stringent Locomotive Emission Standards

- **Petition for national Tier 5 engine standards for new locomotives**
- **Stricter standards for remanufactured locomotives**

Tier 4 Vessel Standards

- **Advocate with international partners for stricter marine vessel standards**

Passenger Vehicles

Increase Penetration of ZEVs

- Build on current Advanced Clean Cars program
- Continue expansion of ZEV market beyond 2026
- Increase stringency of fleet-wide emission standards
- Ensure in-use performance



Heavy-Duty Trucks

Introduce ZEVs in Targeted Applications

Advanced Clean Transit

- Continue transition to advanced technologies
- Ensure benefits in disadvantaged communities and maintain transit service

Last Mile Delivery

- Increase penetration of zero emission technologies
- Consider purchase and manufacturer requirements along with incentive and credit programs

Off-Road Equipment

Increase Use of Zero Emission Technologies

- Set requirements for key sectors:

- Lawn and garden equipment
- Transport refrigeration units
- Forklifts
- Airport ground support equipment

- Technology assessments to identify opportunities for additional reductions



Incentivize Deployment of Cleanest Technologies

- Ensure sufficient penetration of cleanest technologies to meet attainment needs
 - Incentive programs
 - Further regulatory strategies
 - Increased system efficiencies
 - Intelligent transportation systems, autonomous and connected vehicles

Cleaner Fuels

Establish Low Emission Diesel Fuel Standard

- Replace 50 percent of conventional diesel with low emission diesel by 2031
- Meet primarily through renewable diesel
- Phased implementation would begin in South Coast



Consumer Products

Maintain Reductions from Current Program

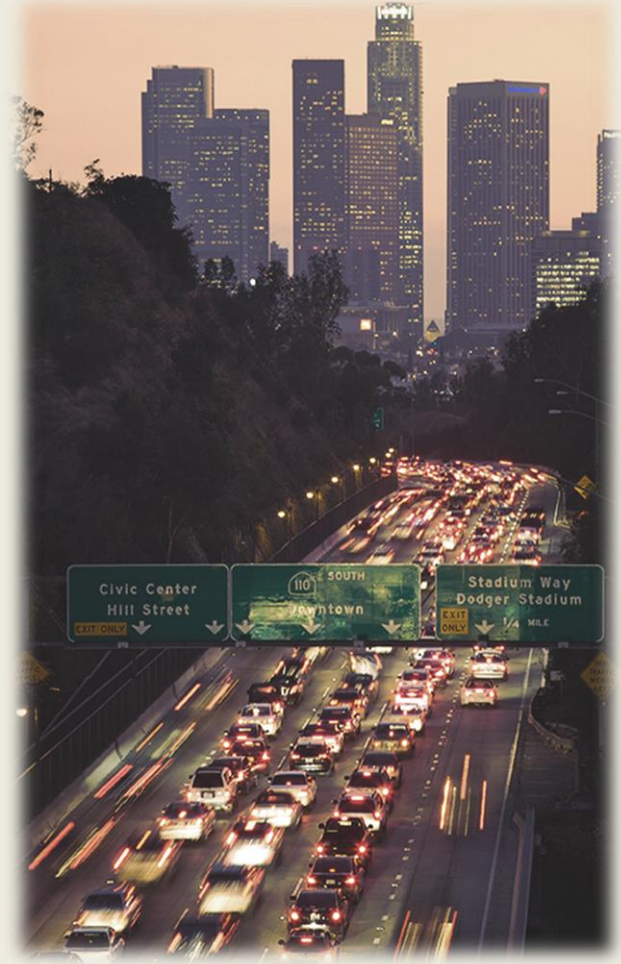
- Evaluate categories with higher mass and reactivity
- Investigate expanding compliance options
- Review existing exemptions



NEXT STEPS

Implementing the Strategy

- Collaboration with Districts on comprehensive action plan
 - Identify funding needs and mechanisms
 - Maximize criteria pollutant and GHG co-benefits
- Discussion with EPA on incentive-based measures
- Coordination with other State agencies on infrastructure



Economic Analysis

- Assessed Statewide costs and benefits on affected industries and the overall economy
- Total direct cost of proposed measures is approximately \$60 billion over lifetime of strategy
- Strategy provides broad environmental and health benefits
 - Ozone and PM2.5 attainment
 - GHG emission reductions
 - Reduced toxics exposure

Environmental Analysis

- **Draft Environmental Analysis (EA) released for public comment**
 - Potentially significant impacts found for some resource areas
- **Staff will prepare responses to relevant comments received on Draft EA**
 - Posted prior to January Board Hearing

Moving Forward

- Board will consider SIP Strategy in January
- Staff will initiate actions for proposed measures
- After Board approval, SIPs submitted to EPA