

Mobile Source Strategy

Informational Update

October 22, 2015

California Environmental Protection Agency

 **Air Resources Board**

Presentation Outline

- Integrated Strategy for Multiple Goals
- Strategy Development
- Strategic Vision for Mobile Sources
- SIP Measure Concepts

California's Air Quality and Climate Goals



Mobile Source Reductions Key to Meeting Goals

- Largest contributor to smog-forming, greenhouse gas, and diesel PM emissions
 - 80 percent of ozone-forming NO_x
 - 50 percent of greenhouse gases
 - 95 percent of diesel PM
- Will require combination of cleaner technologies, fuels, and energy sources

Importance of Integrated Planning

- Consider how actions can best meet multiple goals
- Assess scope and timing of needed change
- Identify interactions between measures
- Maximize program effectiveness

Supports Multiple Planning Efforts

- Strategy provides framework for ongoing planning efforts:
 - State Implementation Plans
 - Scoping Plan Update
 - California Sustainable Freight Action Plan
 - Short Lived Climate Pollutant Plan

Meets Multiple Goals



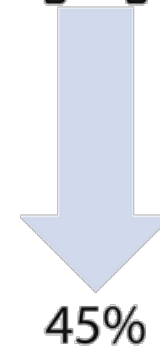
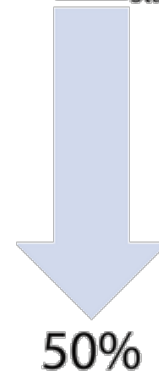
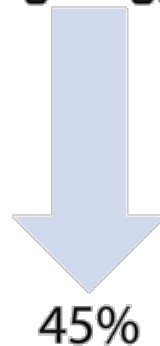
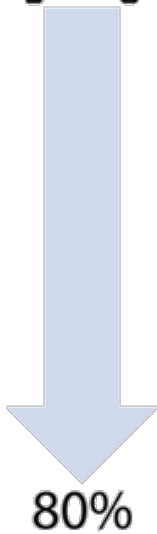
Benefits of Mobile Source Strategy

Smog Forming Emissions

GHG Emissions

Petroleum Usage

Diesel PM Emissions



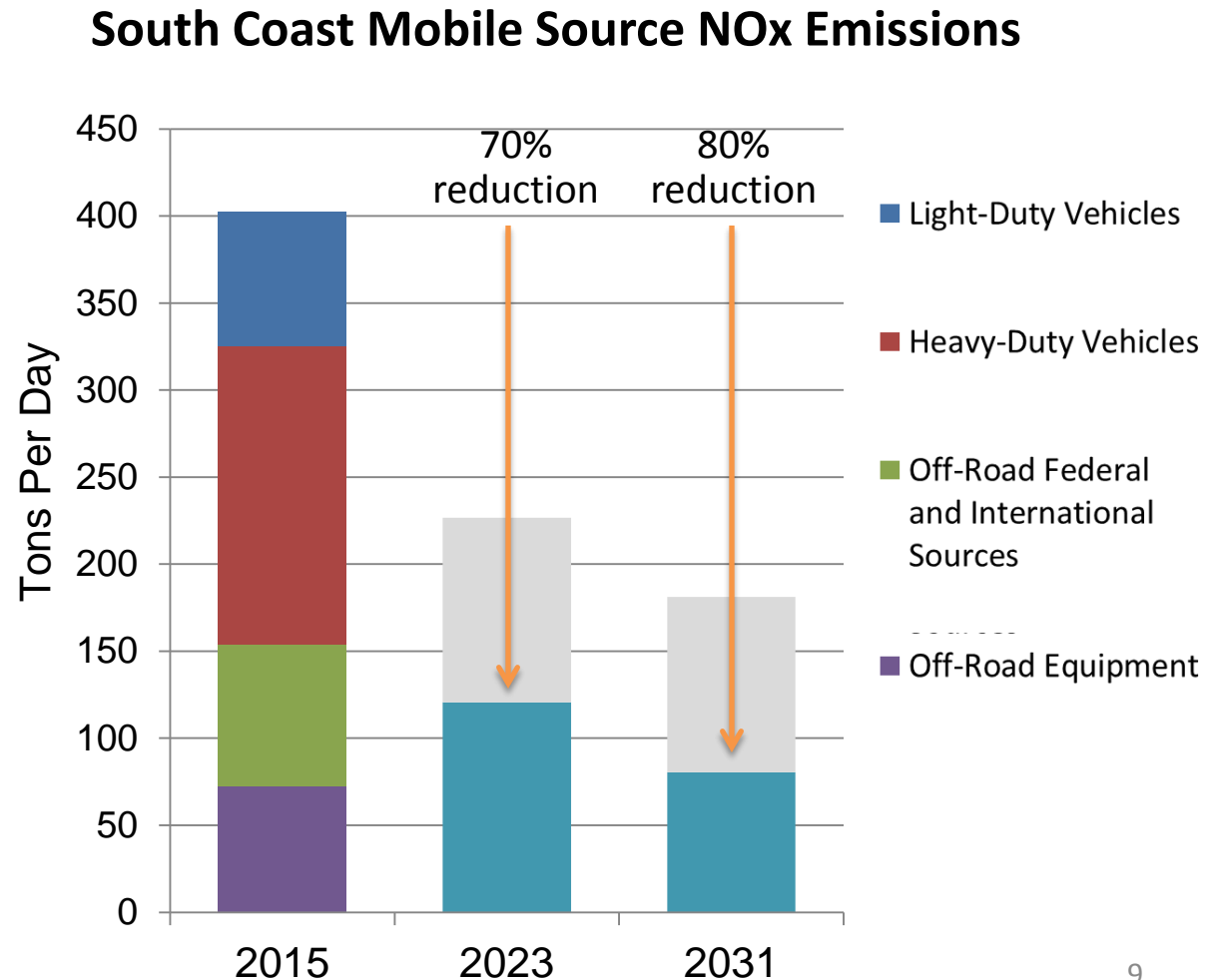
Percent reduction by 2030/2031 from today

State Implementation Plan Development

- SIP development is next planning effort: regional attainment plans due in 2016
- South Coast ozone defines emission reduction needs for attainment deadlines - 2023 & 2031
- Coordination with South Coast on development of mobile source SIP measures
- Meeting PM2.5 standards in the San Joaquin Valley also a key challenge

South Coast Attainment Needs

- Current programs achieve two thirds of needed NOx reductions
- Further efforts will need to address all mobile sectors
- Reduction targets represent equal share from mobile sector



Strategy Development

Building Blocks of Planning Process

- Current programs provide blueprint for successful strategies
- Technology assessments identify status of advanced technologies and fuels
- Scenario analysis provides framework for coordinated air quality and climate assessment

Blueprint for Successful Strategies

- Portfolio approach includes:
 - Engine standards for new vehicles
 - Durability and inspection requirements
 - Sales requirements for advanced technologies
 - Pilot and demonstration projects
 - Incentive programs
- Requires action at State, local, and federal level

Technology Assessments

- Comprehensive review conducted by ARB, South Coast, US EPA
- Assessments identify:
 - Technology performance
 - Necessary fuels
 - Market readiness
 - Cost
 - Current deployment challenges






Scenario Analysis

- Uses ARB's Vision model built from official inventories
- Assesses interplay between pollutants and strategies
- Identifies scope and timing of needed deployment of technologies, fuels, and efficiency measures
- Vision 2.0 Model available online

Strategic Vision for Mobile Sources

Transformation of Passenger Fleet

	Today	2030
 ZEV / PHEV Population	100,000	4,300,000
 Renewable Energy Generation	27%	50%
 Fuel Efficiency	24 mpg	52 mpg

Transformation of Truck Fleet



Low-NOx Truck Population



Renewable Fuels



Fuel Efficiency*

Today	2030
demos	1 million
8%	50%
7 mpg	10 mpg

17
*Fuel efficiency for Class 8 Trucks

Key Actions to Achieve Transformation

Passenger Fleet:

- Increase PHEV/ZEV sales fraction to 40 percent
- Ensure 50 percent of electricity generated from renewable sources
- Increase stringency of fleet wide emission standards

Truck Fleet:

- Establish low-NOx performance standard 90 percent cleaner than today
- Expand share of renewable fuels to 50 percent
- Introduce ZEVs into targeted applications

Enhanced Efficiency

- Reduced growth rates in vehicle miles travelled



Passenger vehicle fleet

Today

2030

13%

8%



Heavy duty vehicle fleet

16%

7%

- Increased freight system efficiencies and intelligent transportation systems

Transformation of Off-Road Sector

- Similar scope of transformation is needed
- Technology is not as far along
- Success in on-road technologies will transfer to the off-road sector

SIP Measure Concepts

Measure Concept Development

- Clean Air Act requires specific actions and identified emission reductions
- ARB staff worked closely with South Coast on initial measure concepts
- South Coast will identify local mechanisms to achieve further mobile source reductions
- Measure concepts outline actions to achieve all needed reductions

Proposed Measure Concepts: Passenger Vehicles

- Expand Advanced Clean Cars requirements
- Assessments to ensure durability of passenger vehicle technologies
- Incentivize deployment of cleanest technology



Proposed Measure Concepts: Heavy Duty Trucks

- Establish low-NOx engine standard and ensure durability
- Need for US EPA action in parallel with California; implementation no later than 2024
- Establish requirements for introduction of ZEVs in targeted applications such as transit and shuttle buses
- Incentivize deployment of cleanest technology

Proposed Measure Concepts: Off-Road Equipment

- Establish requirements for ZEV technologies in:
 - Forklifts
 - Transport refrigeration units
 - Airport ground support equipment
- Develop new engine standards and increase penetration of electric lawn and garden equipment
- Incentivize deployment of cleanest technology



Proposed Measure Concepts: Federal and International Sources

- Develop more stringent standards for ships, locomotives, and aircraft
- Federal authority required for ARB to regulate non-new locomotives
- Federal and international action is critical



Proposed Measure Concepts: Efficiencies and Fuels

- Account for benefits of passenger and freight system efficiencies
- Assess worksite efficiency technologies and automation
- Expand requirements for alternative diesel fuels



2023 Attainment

- Current programs provide over 60 percent of needed reductions
- Measure concepts map pathway for remaining reductions
- Incentives critical to accelerate penetration of cleanest technologies
- Ensure 2023 investments and technologies benefit 2031

Keys to Effective Implementation

- Identify funding needs and mechanisms
- Develop partnerships
- Increase consumer acceptance
- Establish necessary infrastructure
- Ensure availability of renewable fuels and energy sources

Next Steps for SIP Development

- Solicit Board and public input
- Continue work with South Coast and San Joaquin Valley
- Develop concepts into SIP measures
 - Implementation mechanisms
 - Inventory growth assumptions
 - Funding needs and sources
- Conduct environmental and economic analyses

Looking Forward

- Consider regional SIPs in 2016 along with final SIP measures
- Expand on elements of mobile source strategy in related planning efforts
 - Scoping Plan Update
 - Sustainable Freight Action Plan
 - Short-Lived Climate Plan

