Workshop on Mobile Source Strategy Discussion Draft

October 16, 2015

California Environmental Protection Agency
Air Resources Board

Outline

- Overview of Strategy Development
- Proposed Measure Concepts
  - On-Road Sources
  - Fuels and Off-Road Sources
- Environmental Analysis
- Next Steps

California's Air Quality and Climate Goals

- Federal air quality standards
  - 2023 and 2031 ozone attainment
  - 2021 to 2025 PM2.5 attainment
- Greenhouse gas reduction target
  - 40% below 1990 levels by 2030
- Petroleum reduction target
  - 50% reduction by 2030
- Minimize health risk
  - Reduce exposure to toxic air contaminants
- Renewable energy targets
  - Increase energy efficiency
  - 50% electricity from renewable sources by 2030

Mobile Source Reductions Key to Meeting Multiple Goals

- Largest contributor to smog-forming, greenhouse gas, and diesel PM emissions
  - 80 percent of ozone-forming NOx
  - 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

Supporting Multiple Planning Efforts

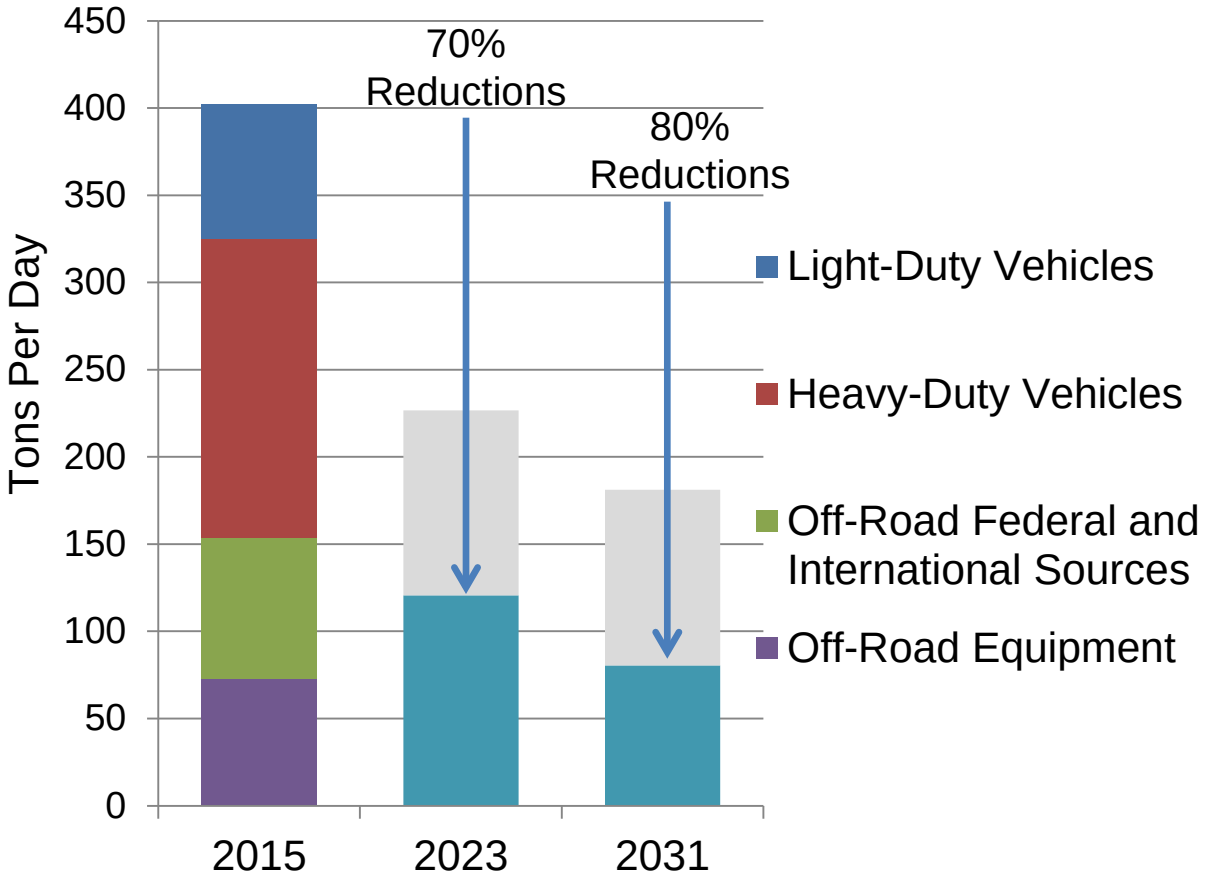
- Strategy provides framework for ongoing planning efforts:
  - State Implementation Plans
  - Scoping Plan Update
  - California Sustainable Freight Action Plan
  - Short Lived Climate Pollutant Plan

SIP 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

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



Building Blocks of Planning Process

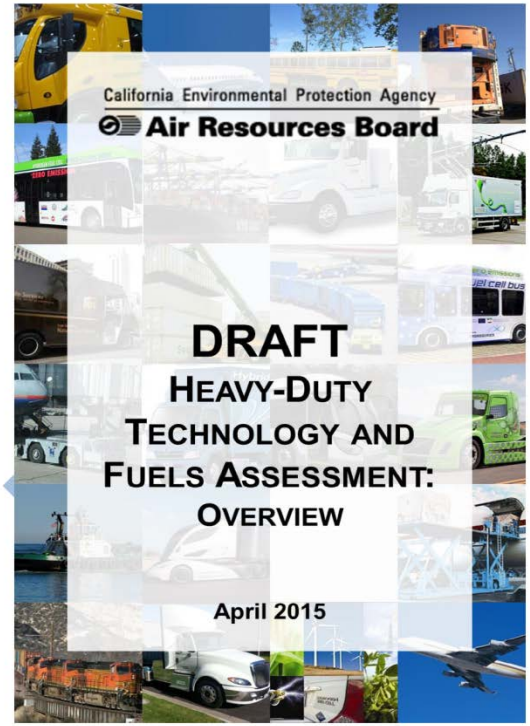
- Current programs provide blueprint for successful strategies
- Technology assessments identify status of advanced technologies and fuels
- Scenario analysis provides framework for coordinated air quality and climate assessment

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, U.S. EPA
- Assessments identify:
  - Technology performance
  - Necessary fuels
  - Market readiness
  - Cost
  - Current deployment challenges



Technology and Fuels Assessment Reports :

Draft Reports available online*

- Heavy-Duty Technology and Fuels Assessment: Overview
- Engine/Powerplant and Drivetrain Optimization and Vehicle Efficiency
- Transport Refrigerators
- Commercial Harbor Craft
- Lower NOx Heavy-Duty Diesel Engines
- Low Emission Natural Gas and Other Alternative Fuel Heavy-Duty Engines
- Heavy-Duty Battery Electric Vehicles

* Draft assessments at: http://www.arb.ca.gov/msprog/tech/report.htm







SCENARIO ANALYSIS

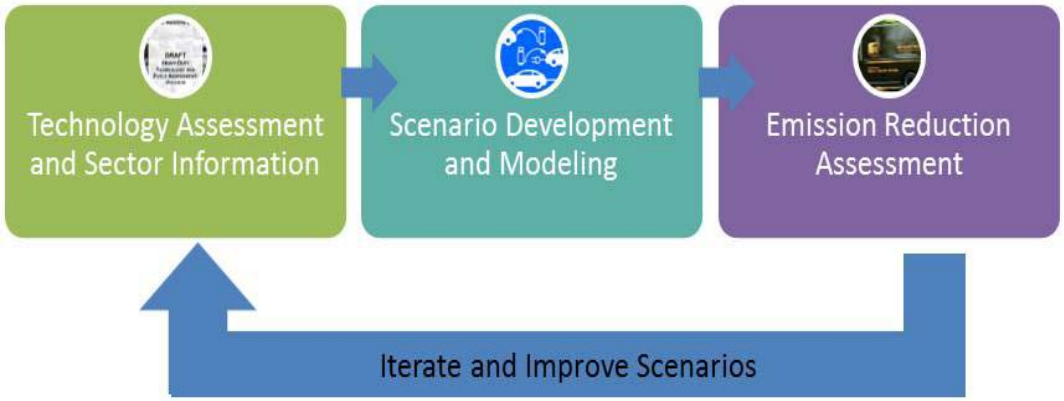
Scenario Analysis

- 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 energy sources
- Vision 2.0 now available online*

* Vision 2.0 at http://www.arb.ca.gov/planning/vision/downloads.htm#vision2

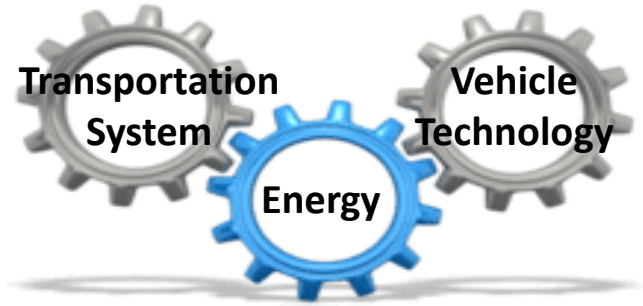
Scenario Development

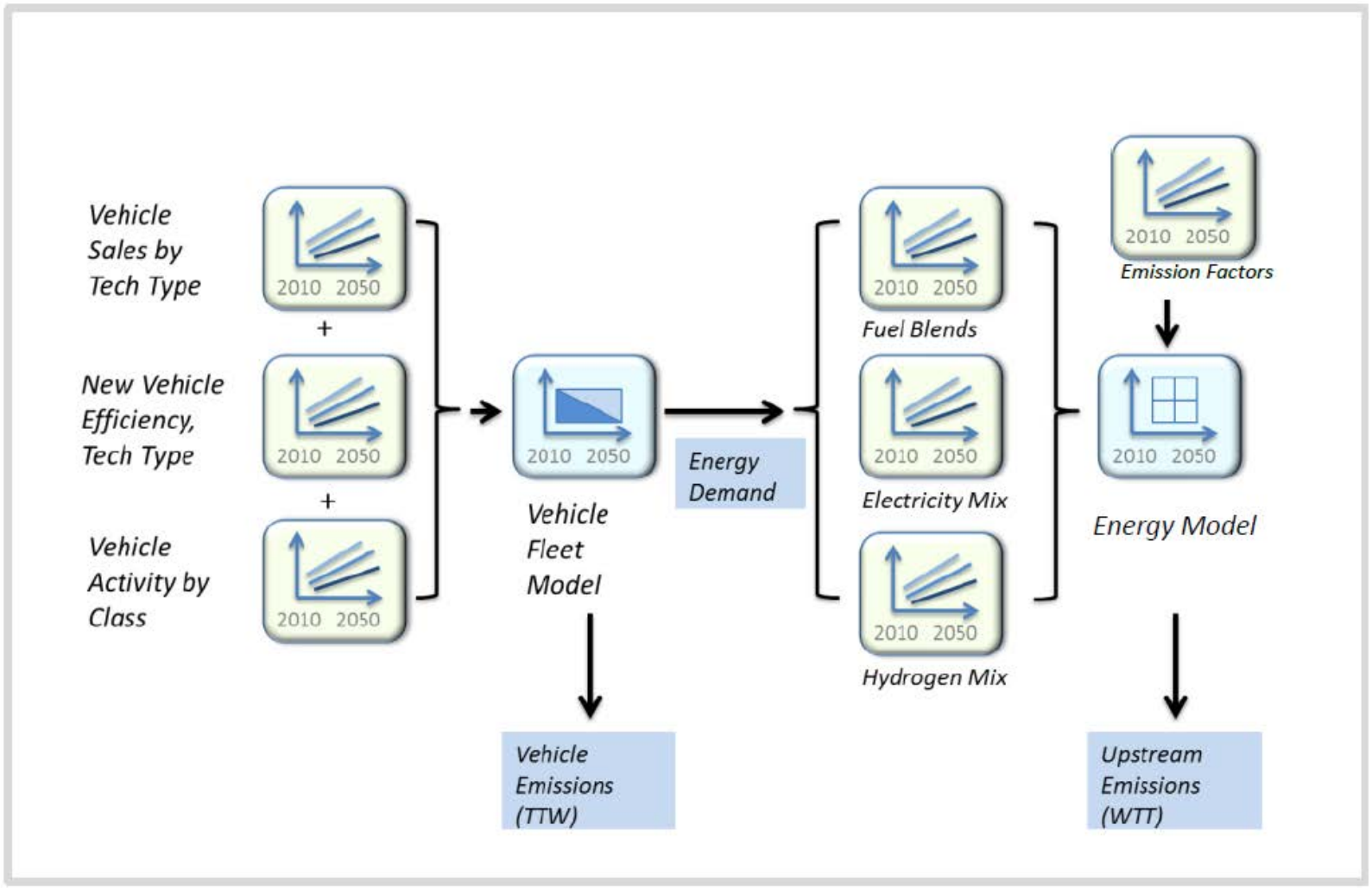
- Scenario development informed by foundational technical work and technology assessments.
- Initial scenario results provide feedback to understand the interplay between strategies and their impact on emissions.



- Through this iterative process, the Vision Tool provides a unique opportunity to understand the intertwined nature of different policies.

Vision Model Framework



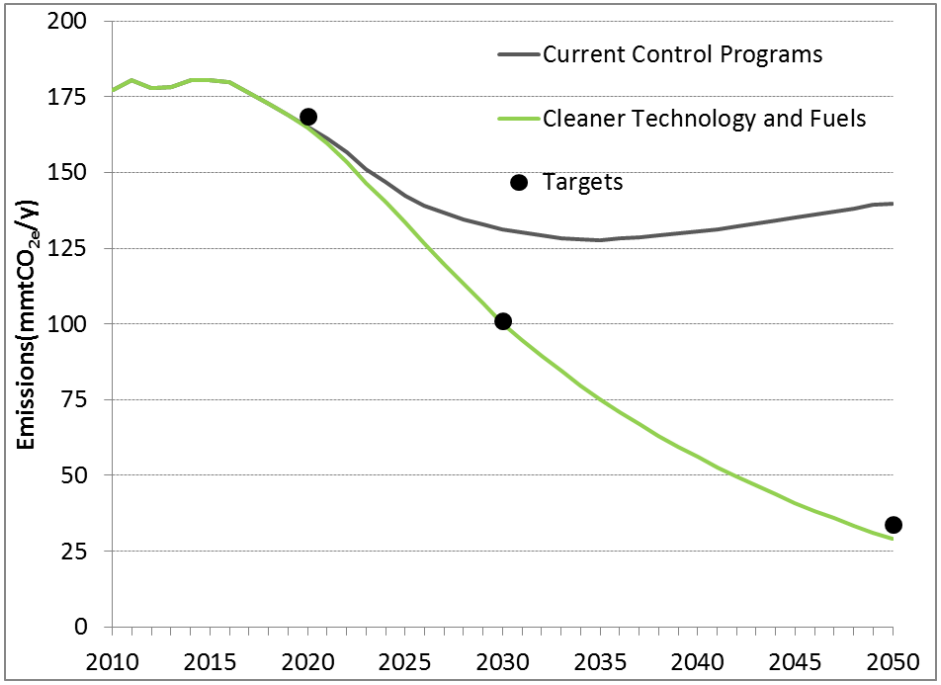


Developing Scenarios

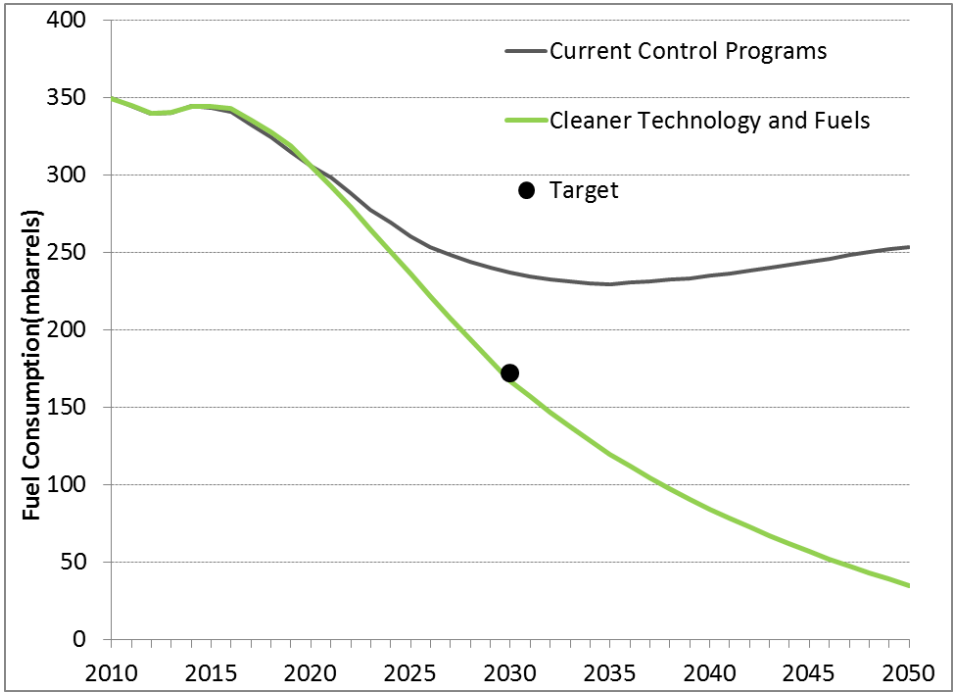
- Scenario developed to address climate, petroleum reduction and air quality targets by 2030 / 2031.
- Focused on deployment of advanced technologies identified from the technology assessment.
- Primary mechanism for technology penetration is natural turnover, coupled with increasing renewables.

Scenario Analysis Results for On-Road Cars and Trucks

WTW GHG Emissions

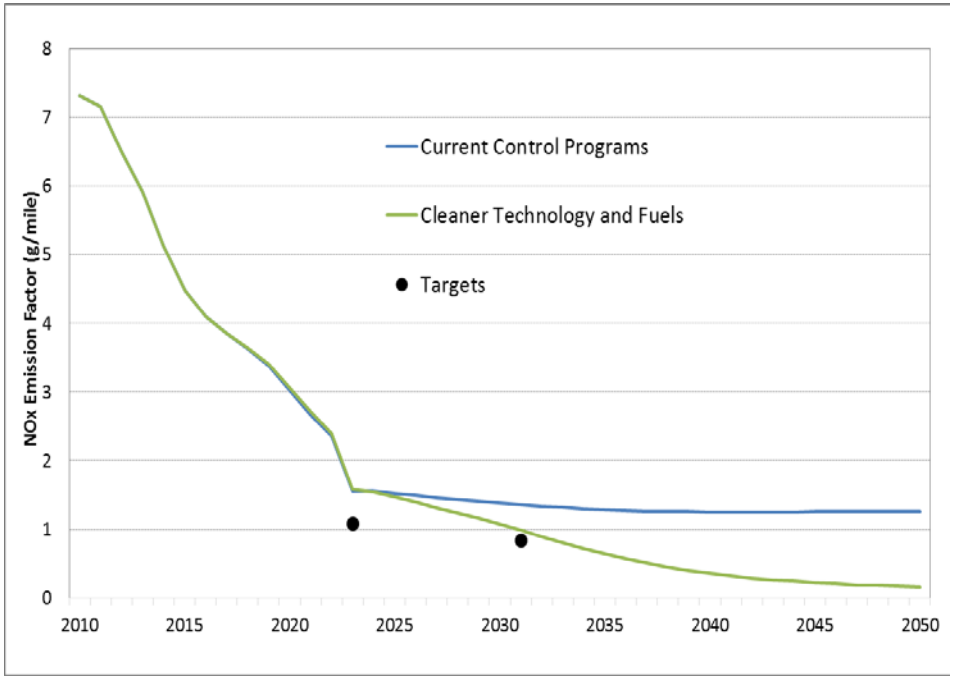


Petroleum Consumption

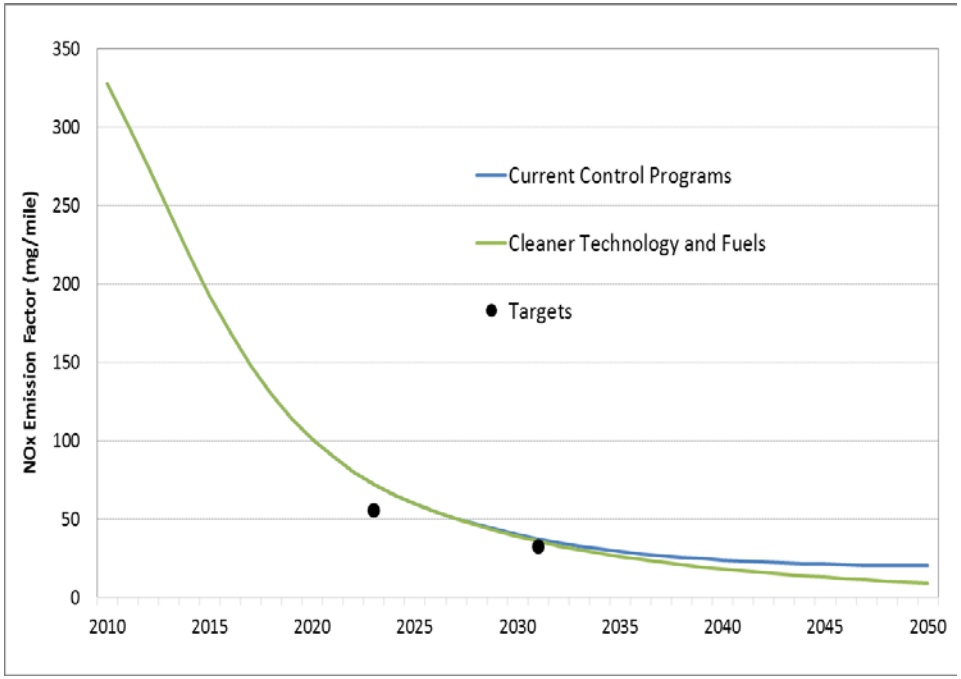


Scenario Analysis Results for On-Road Cars and Trucks

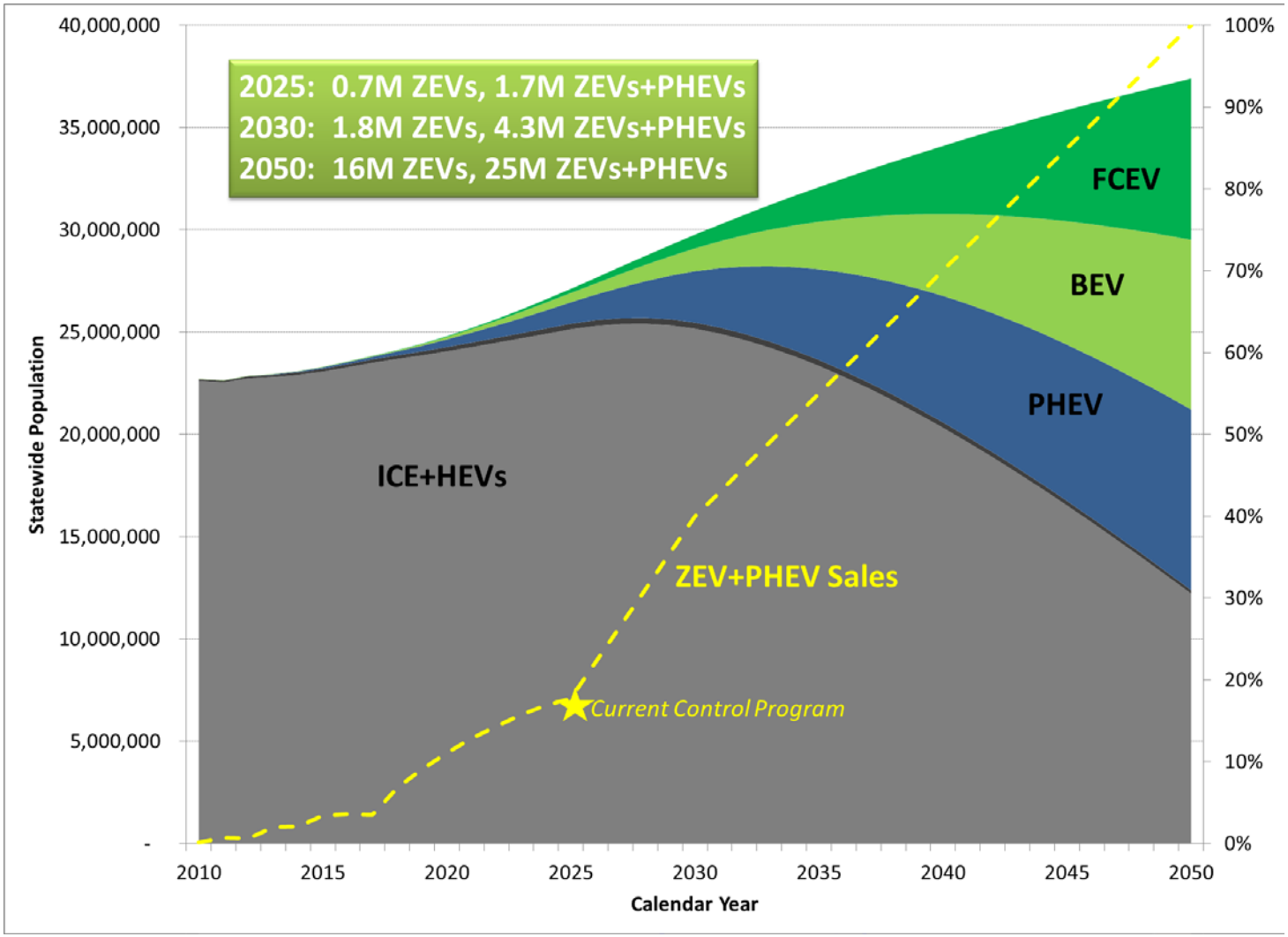
HDV In-Use NOx Emission Rates



LDV In-Use NOx Emission Rates



Transformation of Passenger Vehicle Fleet Technology Mix



Transformation of Passenger Vehicle Fleet

Technology/Fuel/System	Today	2030
Population of ZEVs/PHEVs	100k	4.3 million
Fuel Economy	24 mpg	52 mpg
Renewable Energy Generation	27%	50%

Transformation of Truck Fleet

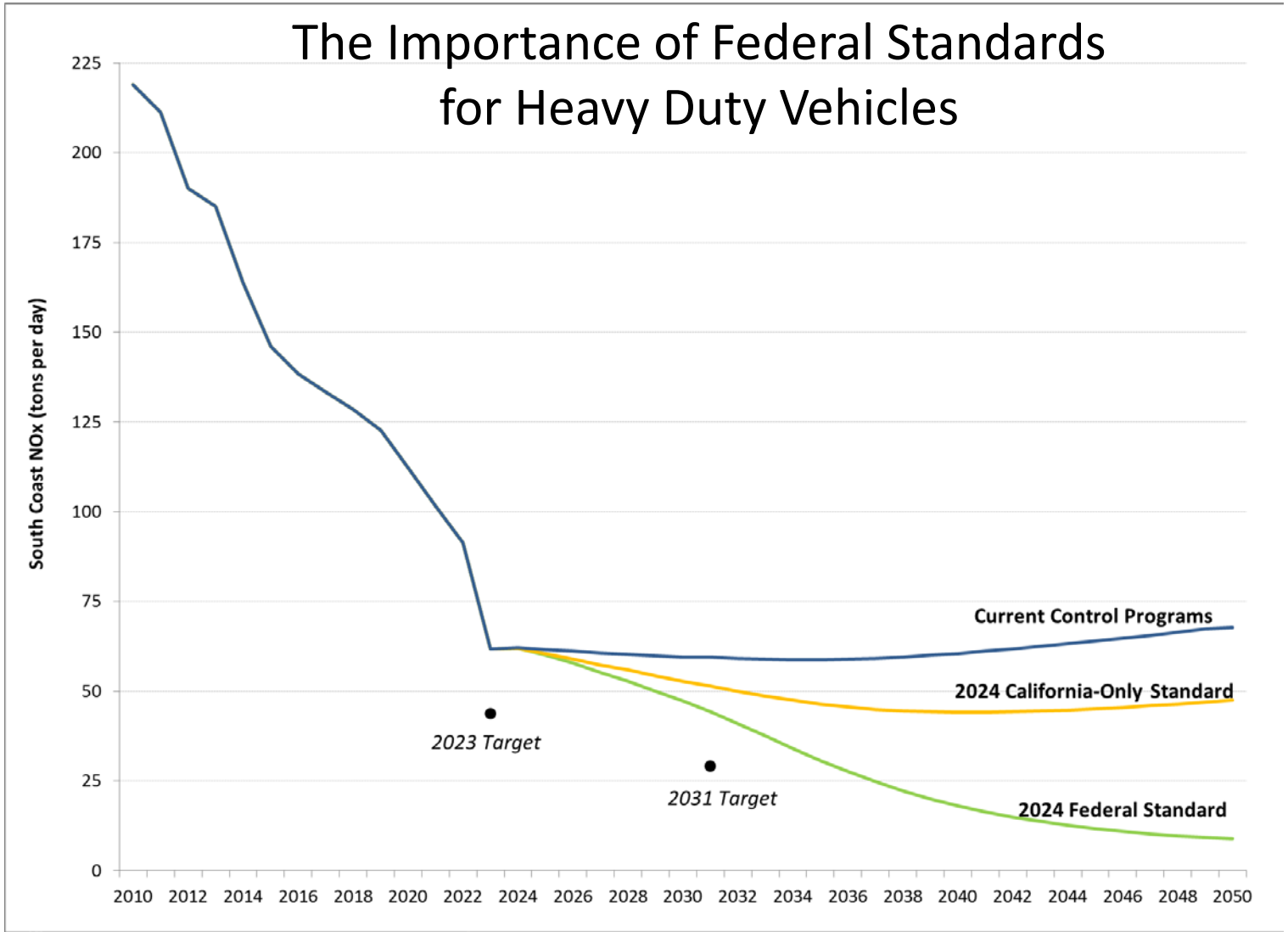
Technology/Fuel/System	Today	2030
Population of Low-NOx Trucks	demos	1 million
Fuel Economy	7 mpg	9-10 mpg
Renewable Fuels	8%	50%

KEY FINDINGS FROM SCENARIO ANALYSIS

Key Findings: Essential Elements of Meeting Air Quality and Climate Goals

- Transformation of fleet to advanced technologies
  - Increase penetration of pure ZEVs in LDVs
- Concurrent transformation in energy towards renewables
- Lower emission performance standards
  - Federal and international standards for heavy duty trucks, off-road, aviation, locomotives, and marine

Key Findings (continued)



Key Findings: Essential Elements of Meeting Air Quality and Climate Goals

- Increased system efficiencies in the passenger and freight sectors.
- Limited renewable fuels should be targeted where advanced technologies like ZEVs need more time to develop.
  - trucks, rail, off-road, marine, and aviation
- Natural turnover alone, is not sufficient to meet air quality goals.







SIP MEASURE DEVELOPMENT

Measure Concept Development

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

Key Actions in SIP Measure Concepts

- Establish more stringent engine performance standards for cleaner combustion technologies
- Ensure durability of emission control systems
- Increase penetration of ZEV technology
- Expand cleaner low carbon diesel fuel requirements
- Conduct pilot studies to demonstrate new technologies
- Further deployment of cleaner technologies

Key Actions to Achieve Transformation for Cars and Trucks

Passenger Fleet:

- Increase PHEV / ZEV sales fraction to 40 percent via fleet standards, ZEV regulation, and/or incentives by 2030.
- Increase stringency of fleet wide emission standards

Truck Fleet:

- Establish low-NOx performance standard 90 percent cleaner than today by 2024.
- Expand share of renewable fuels to nearly half of diesel fuel.
- Introduce ZEVs into targeted applications.

Further Deployment of Cleaner Technologies

- Measure concepts map pathway for remaining reductions.
- Scope of technology deployment identified in analysis.
- Mechanisms for further reductions
  - Incentive programs for accelerated deployment
  - Increased efficiency in the freight sector
  - Advanced transportation technologies
  - Further Federal actions







OVERVIEW OF STRATEGY DEVELOPMENT

QUESTIONS AND ANSWERS

Email: auditorium@calepa.ca.gov

PROPOSED MEASURE CONCEPTS:

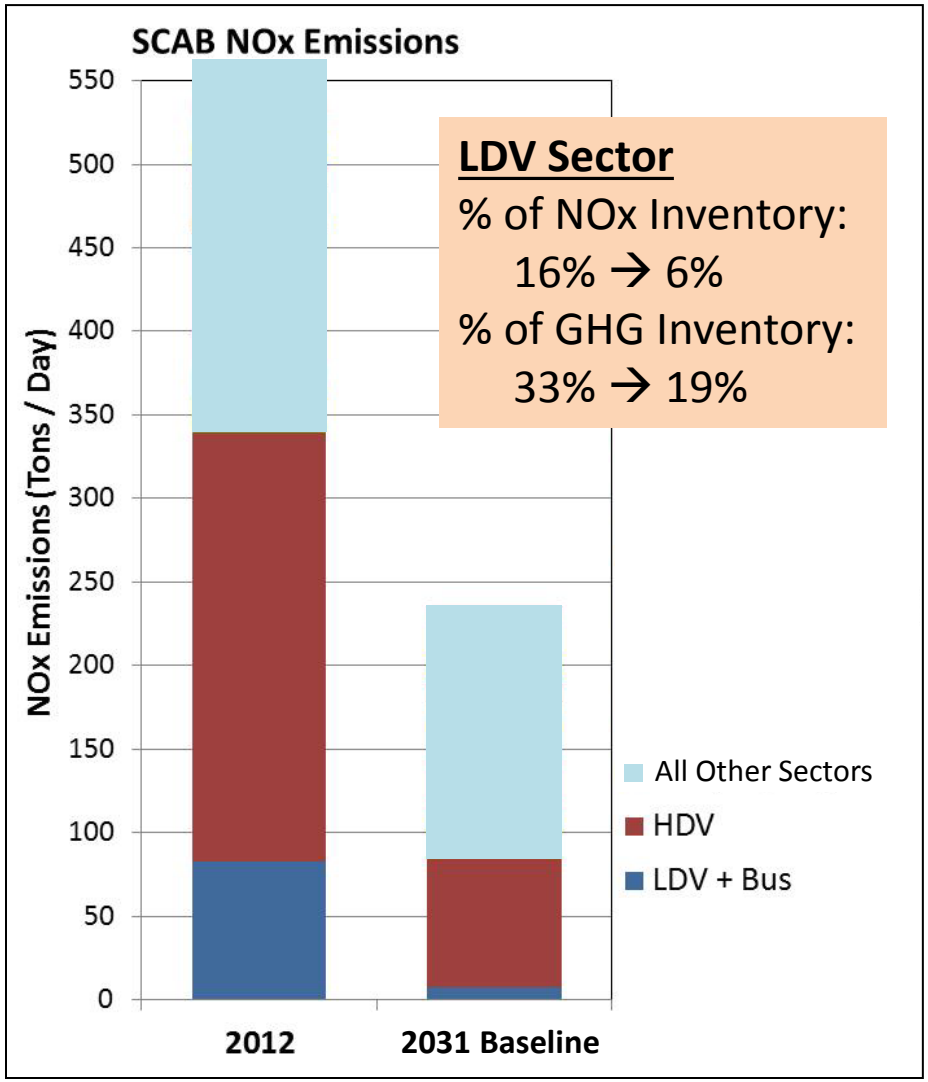
ON-ROAD SOURCES

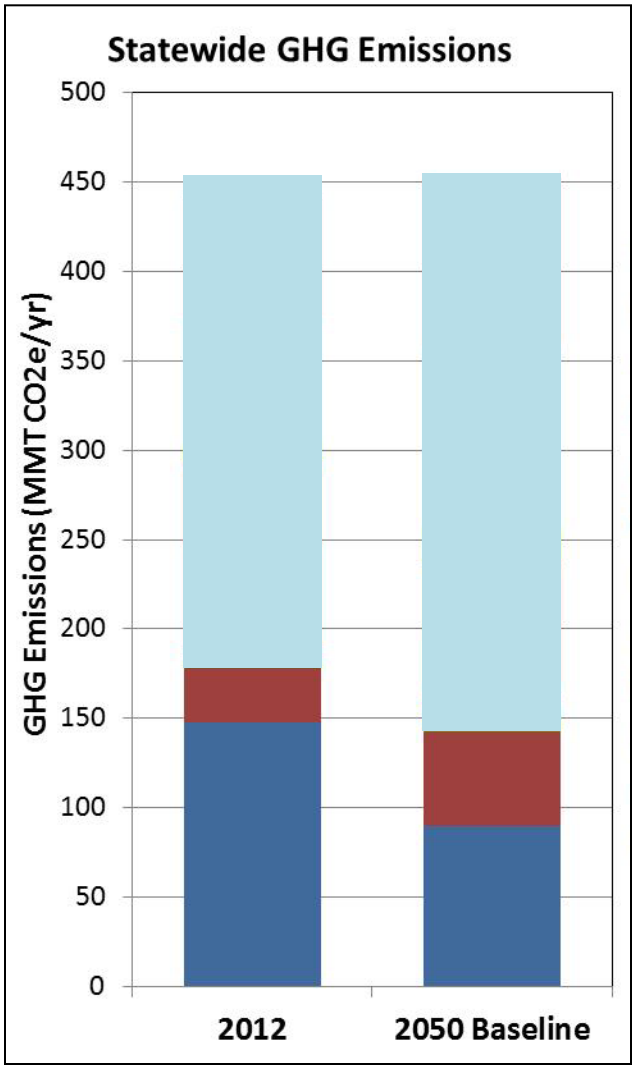
Proposed Measure Concepts: On-Road Light-Duty Vehicles

Existing Light Duty Vehicle Programs

- **Regulations**: *Advanced Clean Cars rules to 2025*
  - LEV III Criteria Emission Fleet Standards
  - LEV III GHG Emission Fleet Standards
  - ZEV Mandate
- **Incentives**: *Low Carbon Transportation Funds*
- **Regional Planning**: *Streamlining ZEV markets*
  - H2/EV station siting; Consumer awareness
- **Partnerships**: *Collaboratively addressing barriers*
  - CA Fuel Cell Partnership (CaFCP); CA Plug-in Electric Vehicle Collaborative (PEVC)
  - GO ZEV Action Plan (multi-agency partnerships)

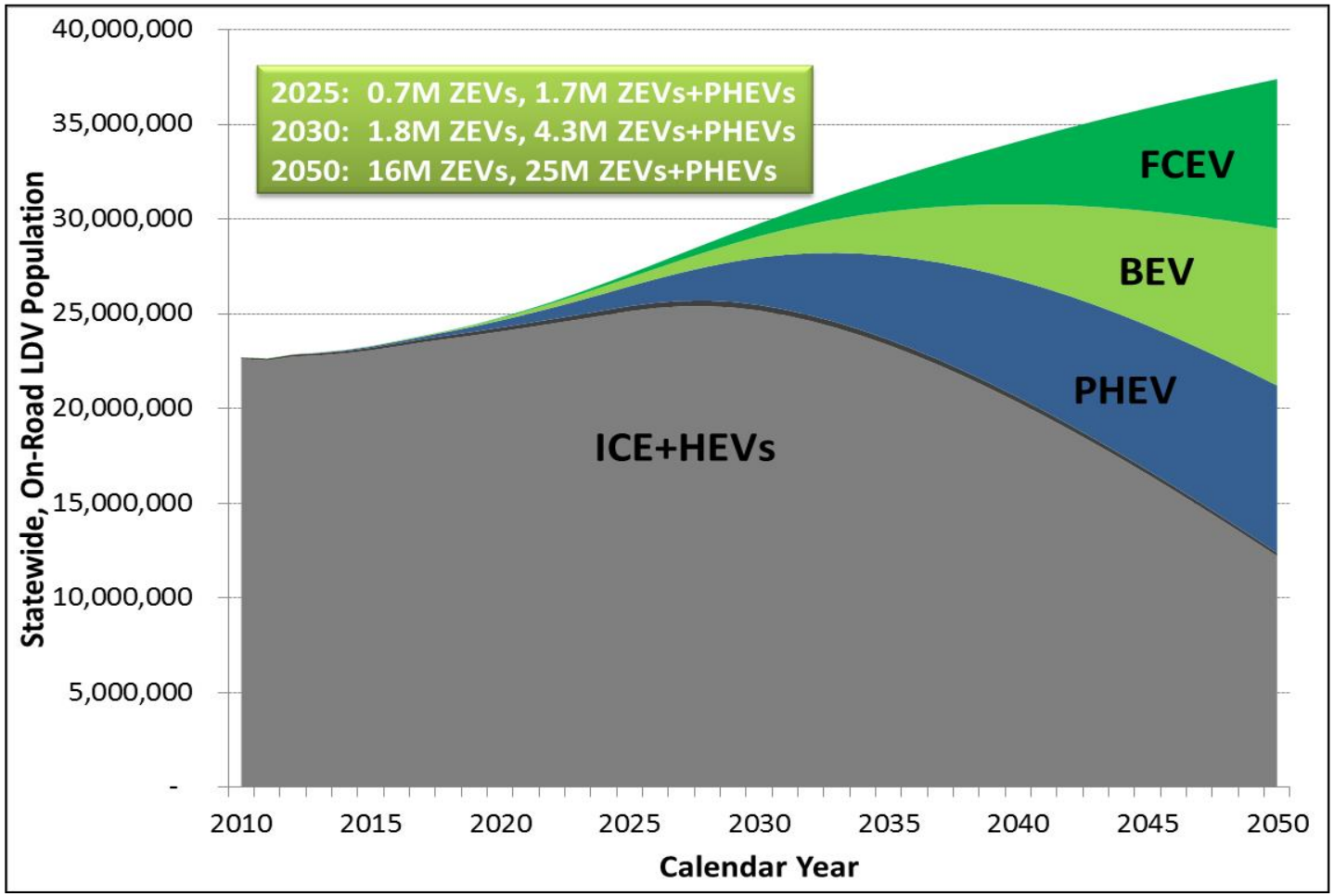
Progress Towards Emission Targets
Baseline Projected Emissions Inventory





Scenario analysis: *Exploring strategies to achieve emissions targets*

Advanced technology fleet penetration is an essential strategy



Scenario analysis: *Exploring strategies to achieve emissions targets*

- **SULEV+ Scenario shows NOx reductions increase beyond 2031**
- **ZEV+LEV Scenario shows substantial GHG & petroleum reductions**

Figure 3-4: Projected In-Use Fleet Average NOx Emission Rate* Trends
under *Cleaner Technologies and Fuels* Scenario

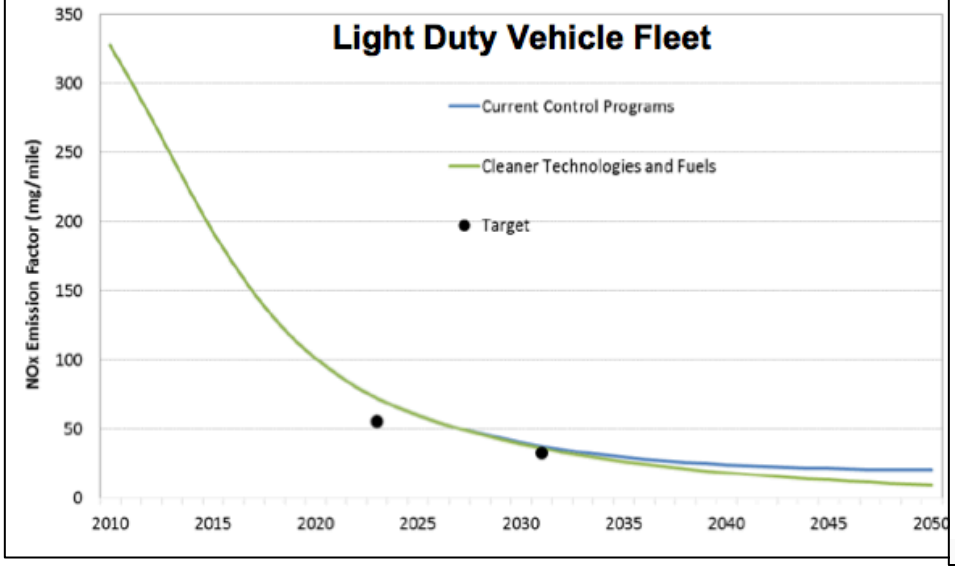
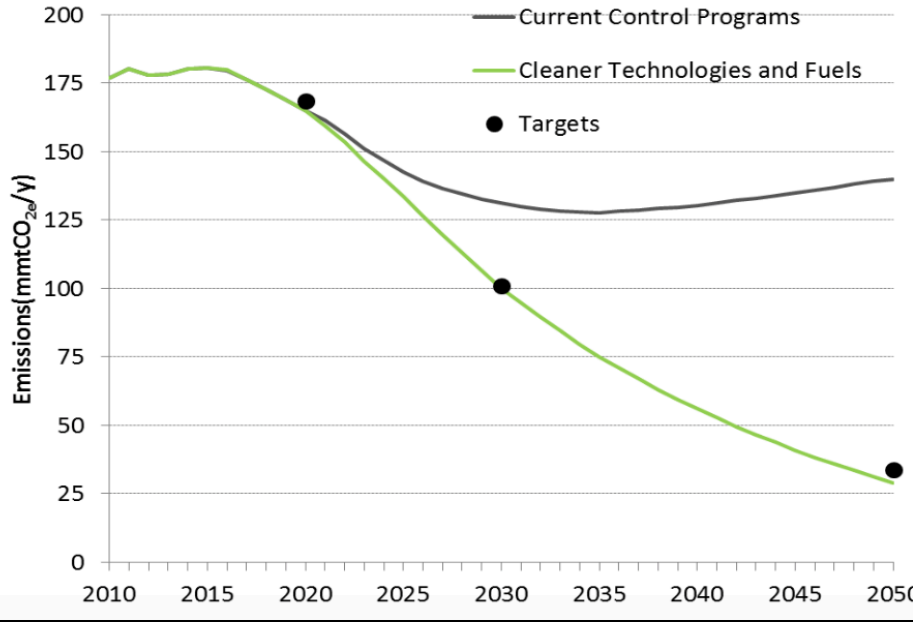


Figure 3-5: On-Road GHG Emission Reductions



LDV Measure Concept #1: Advanced Clean Cars 2

- **Measure Overview** (regulatory)
  - Increase stringency of fleet-wide emission standards
  - Ensure ZEVs continue to expand in the market
- **Description**
  - Regulation may include further reductions below current SULEV criteria emission standard, and GHG standard
  - Evaluate appropriate policy mechanism (ZEV mandate and fleet standards) to ensure ZEV market continues to expand
- **Timeframe**: Board adoption by 2020
  - Implementation 2026 – 2035 (preliminary)

LDV Measure Concept #2: Lower In-Use Emission Performance Assessment

- **Measure Overview**
  - Ensure in-use vehicles continue to operate at their cleanest possible level
  - On-going study of inspection and maintenance program performance and on board diagnostic (OBD) system based inspections
- **Description**
  - Evaluate in-use performance focused inspection procedures; make improvements if necessary
  - Analysis of Smog-Check database; vehicle sampling via BAR's Random Roadside Inspection Program; laboratory investigation as needed
- **Timeframe**: N/A, on-going

Proposed Measure Concepts: On-Road Heavy-Duty Vehicles

Results of Heavy-Duty Sector Technology Assessment

- Near-zero combustion technologies entering the market.
  - Low-NOx natural gas engines (0.02 g/bhp-hr) could be available within the next year
  - Low-NOx diesel engines (0.05-0.1 g/bhp-hr) available shortly thereafter.
- Renewable fuels can provide significant GHG and petroleum reductions
- Heavy-duty zero emission technologies are currently being developed.
  - Airport ground support equipment available now
  - Battery electric and fuel cell buses are in the early commercialization phase
  - Zero-emission drayage and delivery truck demonstrations

On-Road Heavy-Duty Sector Strategy

- Establish more stringent criteria and greenhouse gas emission standards
- Establish requirements to ensure durability of HDVs
- Deployment of ZEV technologies into focused heavy-duty applications
- Create incentive funding for the cleanest engine technologies
- Increase use of renewable fuels
- Increase freight transport system efficiencies and use of intelligent transportation systems

Low-NOx Engine Standard

- **Goal**: Introduce near-zero emission engine technologies that will substantially lower NOx emissions
  - Develop a heavy-duty low- NOx engine standard
  - Petition U.S. EPA to establish new federal low-NOx engine standard
- **Type of Action**: ARB Regulation/ARB Petition/U.S. EPA Regulation
- **Timeframe**:
  - ARB Board adoption date: 2019
  - U.S. EPA Rulemaking: 2019
  - Implementation schedule: 2023 - 2027

Heavy-Duty GHG Phase 2

- **Goal**: Establish next generation of Heavy-Duty Truck GHG standards building upon Phase 1 standards
  - 32 % reduction in CO2 (tractor-trailers) compared to Phase 1
  - Federal Phase 2 scheduled to be adopted Spring 2016
  - California Phase 2 scheduled for adoption in late 2016 or early 2017 (may include more stringent requirements)
- **Type of Action**: U.S. EPA Regulation/ARB Regulation
- **Timeframe**:
  - U.S. EPA adoption date (Federal Phase 2): Spring 2016
  - ARB Board adoption date (CA Phase 2): 2016 - 2017
  - Implementation schedule: 2018-2027

Lower In-Use Emission Level Performance Level

- **Goal**: Ensure in-use vehicles continue to operate at their cleanest levels
  - Revise Warranty and Useful Life Period
  - Revise Periodic Smoke Inspection Program (opacity limit, smog check for trucks)
  - Revise Certification Requirements (e.g., test cycles)
  - Revise NTE Protocol
- **Type of Action**: ARB Regulation
- **Timeframe**:
  - ARB Board adoption date: 2018
  - Implementation schedule: 2021 - 2026

Advanced Clean Transit (ACT)

- **Goal**: Increase penetration of clean engine technologies and zero emission buses into transit bus fleets by developing ACT rule amendments
  - Phase-in zero-emission bus purchases from 2018 through 2040 (100% transition by 2040)
  - Require renewable fuel/cleanest engines for conventional buses
  - Develop flexibility provisions
  - Promote innovative transit technologies

- **Type of Action**: ARB Regulation
- **Timeframe**:
  - ARB Board adoption date: 2016
  - Implementation schedule: 2018 - 2040

Last Mile Delivery

- **Goal**: Increase the penetration of zero-emission class 3-6 trucks used for last mile delivery
  - Similar to ACT regulation
  - Phase in zero-emission last mile delivery trucks from 2020 through 2030 (75% of new purchases in 2030= ZEV)
- **Type of Action**: ARB Regulation
- **Timeframe**:
  - ARB Board adoption date: 2017
  - Implementation schedule: 2020 - 2050

Innovative Technology Certification Flexibility

- **Goal**: Provide regulatory flexibility for innovative technologies that expand zero emission technologies in heavy-duty truck applications
  - Provide near-term engine and vehicle certification flexibility for medium- and heavy-duty trucks
  - Greatest flexibility for transformational technologies (robust hybrids and low-NOx engines and vehicles)
- **Type of Action**: ARB Regulation
- **Timeframe**:
  - ARB Board adoption date: 2016
  - Implementation schedule: 2016 - 2031

Zero Emission Airport Shuttle Buses

- **Goal**: Promote deployment of zero emission airport shuttle buses
  - Encourage early introduction of zero emission buses
  - Establish future phase-in requirements
- **Type of Action**: ARB Regulation/Incentives/MOU
- **Timeframe**:
  - ARB Board adoption date: 2017-2018
  - Implementation schedule: 2020+

Incentive Funding to Achieve Further Emission reductions from On-Road Heavy-Duty Vehicles

- **Goal**: Provide incentive funding to accelerate the penetration of zero and near-zero equipment beyond the rate of turnover achieved through implementation of other measures
  - ARB's Low Carbon Transportation funds and AQIP (~$7 million per year for low-NOx trucks using renewable fuels (2015- 2020))
  - District's AB 923 and Carl Moyer (~$28 million per year for cleaner trucks (2015-2020))
  - ARB's Proposition 1B: Goods Movement Emission Reduction Program funds (~$165 million for cleaner trucks (2016-2018))
- **Type of Action**: Funding programs
- **Timeframe**:
  - ARB Board adoption date: 2016 and annually thereafter
  - Implementation schedule: 2016 - 2023

PROPOSED ON-ROAD MEASURE CONCEPTS

QUESTIONS AND ANSWERS

Email: auditorium@calepa.ca.gov

PROPOSED MEASURE CONCEPTS:

FUELS AND OFF-ROAD SOURCES

Proposed Measure Concept: Fuels

Fuels Strategy – Purpose

- Low NOx & PM fuels
- Reduce petroleum use in transportation
  - Consistent with Governor's climate change pillars
- Works w/LCFS but different objectives
  - CI maximum consistent with LCFS

Fuels Strategy – Low Emissions Diesel

- **Goal**: Replace 50 percent of diesel demand with Low Emissions Diesel (LED) by 2031

- LED specifications overview:
  - <1 percent aromatics hydrocarbon content
  - Virtually sulfur free
  - Carbon Intensity Maximum 30-60 gCO2e/MJ

- South Coast regional targets implement before Statewide, target off-road, legacy

- **Type of Action/Timeframe**: ARB to adopt measure by 2020

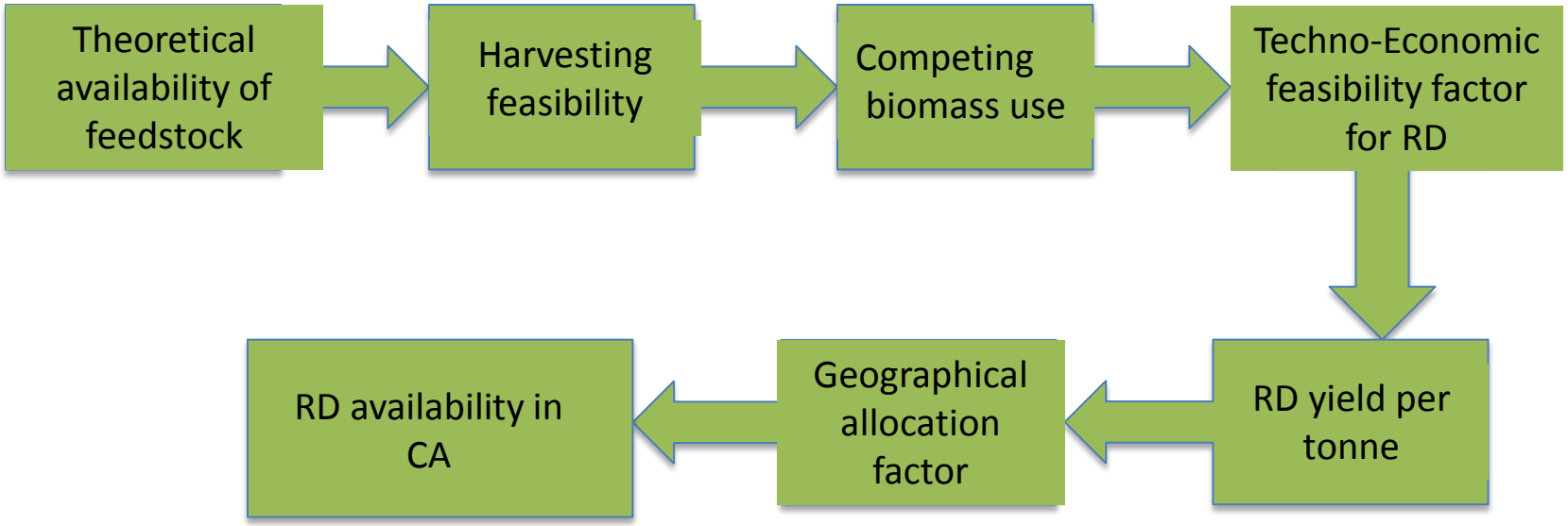
Fuels Under Consideration as Potential LED Fuels

- Renewable Hydrocarbon Diesel (RD)
  - Dedicated biorefinery or co-processed
  - RD from gasified biomass
  - RD from pyrolysis oil
  - Potentially most readily available LED in 2030
- Renewable Natural Gas
- NOx-reducing biodiesel
- Future LED fuels

Renewable Diesel Availability

- Potential RD availability analysis conducted
- 2020 availability analysis contained in 2014 LCFS staff report, Appendix B
  - Bottom up analysis; ~900-1500 MGPY in U.S.
  - 400 MGPY to California; ~15% of diesel demand
- 2030 availability analysis conducted by staff
  - Top down analysis
  - Uses conservative assumptions

RD 2030 Availability Methodology



RD 2030 Availability (cont.)

- RD feedstock use assumptions
  - 100% of CA feeds
  - 20% of rest of US
  - 1% of rest of world
- More than 50 percent of CA diesel demand available as RD in 2030
  - Utilizing various technology types (hydro-treatment, pyrolysis, FT): about 2,400 MGPY available in 2030

Emissions benefits of RD

- NOx and PM emission reductions
  - NOx – 6-25 percent
    - SCR equipped engines may not see NOx reductions
    - Older on-road, and current off-road engines have no SCR, will see NOx reductions
  - PM – 28-46 percent
- GHG emission reductions
  - For sustainably sourced renewable diesel 30% to 60% GHG reductions achievable
- Benefits of LED fuels vary

Proposed Measure Concepts: Off-Road Federal and International Sources

Locomotives

Freight and Passenger Locomotives in the South Coast Air Basin (2014)

- Two major operators: UP and BNSF
  - Interstate Line Haul Locomotives (~4,400 hp)
    - Represent up to 10,000 locomotives that primarily operate across the North American rail system
    - Up to ~80 primarily operating within/around the South Coast
  - Medium Horsepower Locomotives (2,301-4,000 hp) and Switchers (<2,301 hp)
    - Up to 225 operating within/around the South Coast
- Passenger Locomotives
  - ~65 operating within/around the South Coast
- Shortline/Industrial Railroads
  - ~40 operating within/around the South Coast

Locomotive Technology Assessment

- Engine and aftertreatment technologies
- Alternative fuels (e.g., CNG/LNG)
- Fuel cells
- Batteries (hybrid and tenders)
- Freight railroad electrification
- Advanced freight locomotive propulsion systems (e.g., magnetic levitation)

Petition U.S. EPA for Tier 5 Emission Standards

- **Goal:** U.S. EPA rulemaking for new Tier 5 Emission Standards
- NOx and PM Control Levels: 50 percent lower than Tier 4
- **Proposed Timeframe**:
  - U.S. EPA rulemaking: 2018
  - Implementation: 2025-2031

Regulation of Non-New Locomotives

- **Goal:** Provide for upgrades to in-use locomotives to achieve lower NOx, PM, and GHG emissions
  - Regulation for most non-new locomotives in California
  - Requirement to meet Tier 4 levels
- **Proposed Timeframe:**
  - U.S. EPA rulemaking: 2018
  - ARB adoption: 2018
  - Implementation: 2022-2030

Proposed Measure Concepts: Off-Road Federal and International Sources

Ocean-going Vessels (OGV)

Ocean-going Vessels (OGVs)

- Large vessels designed for deep water navigation
  - Containerships, tankers, bulk carriers, car carriers, passenger cruise ships
  - Travel internationally and may be registered by the US Coast Guard or by another country
- Mostly powered by unique large, slow-speed engines up to 100,000 horsepower
- Also have auxiliary engines for generating electricity and boilers for steam/heating

OGV Technology Assessment

- Evaluated a range of different technologies
  - Alternative fuels, engine technologies, exhaust after-treatment, at-berth technologies, alternative supplemental power, vessel efficiency, technologies specific to marine boilers
- Long-term goal of 90% NOx, 50% GHG reductions through technology and efficiency improvements

Tier 4 International Vessel Standards

- **Goal:** Advocate with international partners to the International Maritime Organization (IMO) for stricter marine vessel standards
  - Tier 4 NOx standards 50% lower than the existing 2016 tier 3 standards
  - PM standards (currently no international standards)
  - Vessel efficiency standards for vessels not covered by existing international regulations
- **Proposed Timeframe:**
  - ARB action: 2015-2018
  - IMO action, ratification, implementation: 2020-2025

Incentivize Super Low Emission Efficient Ship Visits

- **Goal:** Develop programs in cooperation with ports and other stakeholders to incentivize cleaner vessels to visit California ports
  - Define criteria for "Super Low Emission Efficient Ships"
  - Identify funding and implementation mechanisms
  - Evaluate existing incentive programs
- **Proposed timeframe**:
  - ARB action: 2016
  - Implementation: 2018

At-Berth Regulation Amendments

- **Goal:** Investigate the feasibility and cost effectiveness of expanding ARB's At-Berth Regulation
  - targeting additional NOx and PM reductions
- Looking at smaller fleets and/or additional vessel types
  - Roll-on/roll-off vehicle carriers
  - Bulk cargo carriers
  - Tankers
- **Proposed timeframe:**
  - ARB action: 2016
  - Implementation: 2020-2030

Proposed Measure Concepts: Off-Road Equipment Category

Off-Road Equipment Category Strategy

- Focus deployment of zero emission technologies where commercially available
- Demonstrate ZE technology in heavier equipment and duty-cycles
- Integrate worksite efficiencies, vehicle automation, and fleet management technologies
- Continue to assess the expansion of zero emission technologies throughout the off-road equipment sector
- Investigate need even cleaner new off-road compression ignition engine standards and related requirements

Small Off-Road Engines (SORE)

- **Goal**: Reduce emissions from small off-road engines
  - Tighten exhaust and evaporative emission standards
  - Increase penetration of zero emission technology
  - Enhance enforcement of current emission standards
- Incentivize production and deployment of zero emission technology
- 25 percent replacement of spark-ignited equipment with zero-emission equipment by 2030
- **Timeframe**:
  - Board Date: 2018
  - Implementation schedule: 2022 - 2030

Transportation Refrigeration Units for Cold Storage

- **Goal**: Advance zero and near-zero emission technology and support the needed infrastructure developments
  - TRU engine run-time limitation
  - Run-time limits get shorter over time
  - Zero emissions after time limit exceeded
    - Potential compliance option: plug-in to electric power grid while stationary
  - Phase-in affected location and fleet types

- **Timeframe**:
  - Board Date: 2017
  - Implementation: 2020 - 2030

Cold Storage Infrastructure Needs

- Electric power plug infrastructure is needed to support TRU cold storage limited operation
- Currently available $10.4 million for TRU infrastructure incentives through Prop 1B: Goods Movement Emission Reduction Program

Parking Space Plugs

Loading Dock Plugs

Zero Emission Off-Road Forklift

- **Goal**: Accelerate deployment of zero emission forklifts with a lift capacity ≤ 8,000 lbs
  - Forklifts are primed for increased ZE technology deployment
  - Provide pathway for technology to transfer to heavier equipment and other applications
  - Encourage growth of ZE infrastructure at work sites
- **Type of Action:** ARB Regulation
- **Timeframe**:
  - ARB Hearing Date: 2020
  - Implementation: 2023-2035

Zero Emission Airport Ground Support Equipment

- **Goal**: Accelerate deployment of ZE technology in Ground Support Equipment
- GSE already moving towards electric
- Possible Strategies
  - Incentives for Demonstrations
  - Conservative Approach: Natural turnover + incentives
  - Aggressive Approach: MOU or regulatory program
- Pathway to transition ZE to heavier applications
- **Timeframe**:
  - ARB Hearing Date: TBD
  - Implementation: 2020+

Emission Reduction Assessment: Zero Emission Off-Road

- **Goal**: Evaluate the state of advanced technologies
  - Identify opportunities to expand use of zero and near-zero emission technologies to larger, higher power-demand applications
  - Inform Phase 2 Regulation
- Follows Zero Emission Forklift and Airport Ground Support Regulations
- **Type of Action:** Technology Review
- **Timeframe**: Board Date: 2025+

Emission Reduction Assessment: Off-Road Worksite Efficiency

- **Goal**: Evaluate worksite efficiency technologies
  - Review includes autonomous equipment and connected worksite technologies
  - Evaluate current status of worksite efficiency technologies
  - Develop metric for quantifying benefits
  - Determine emission reductions and cost effectiveness
- Recommend ways to encourage deployment through financial incentives or regulatory credits
- **Type of Action**: Technology Review
- **Timeframe**: ARB Hearing Date: TBD







PROPOSED FUELS AND OFF-ROAD MEASURE CONCEPTS

QUESTIONS AND ANSWERS

Email: auditorium@calepa.ca.gov

ENVIRONMENTAL ANALYSIS

Environmental Analysis

- ARB prepares an Environmental Analysis (EA) for proposed actions that may result in significant impacts on the environment.
- Prepared according to the requirements of ARB's certified program under the California Environmental Quality Act (CEQA)
- The EA will be an Appendix to the Draft Statewide SIP Strategy

Environmental Analysis

- The CEQA Environmental Checklist (Appendix G) is used to identify and evaluate potential impacts to the environment.

- The EA will include:
  - Beneficial Impacts
  - Foreseeable Methods of Compliance
  - Potential for Adverse Impacts
  - Feasible Alternatives and Mitigation Measures to reduce/avoid significant impacts

Environmental Analysis

- We welcome your input on the appropriate scope and content of the EA, as it's developed:
  - Foreseeable Methods of Compliance
  - Potential for Adverse Impacts
  - Feasible Mitigation Measures and Alternatives

- Formal comment period for the Draft EA







NEXT STEPS

Next Steps

- Board and public input
- Continued work with Districts
- Development of concepts into SIP measures
  - Implementation mechanisms
  - Inventory growth assumptions
  - Funding sources and mechanisms
- Expand elements of mobile source strategy in related planning efforts