

# CARB/TRSA Regulatory Presentation

August 14, 2018

Sacramento, California



# Today's Overview

- Background on the California Air Resources Board
- Existing regulations
- Upcoming regulations

# Background on CARB

- The California Air Resources Board (CARB) was formed in 1967 by then-governor Ronald Reagan to combat air pollution in California
- The Federal Clean Air Act grants California special authority to set stricter air pollution standards
- Over the past 50 years, California has fought air pollution through sound science and work with industry, academia, and federal, state, and local agencies



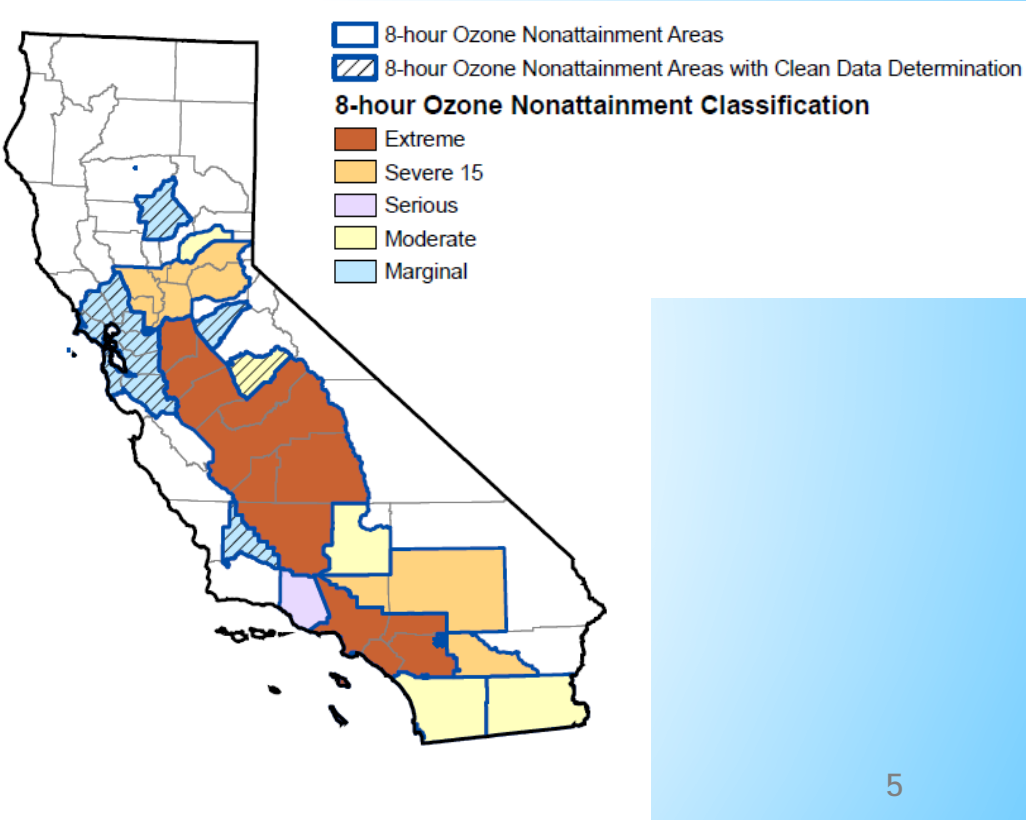
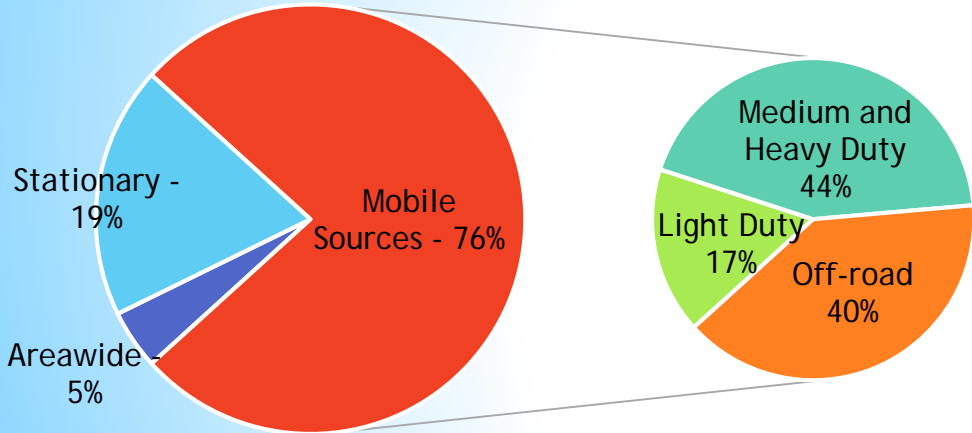
# California Emission Reduction Goals

- Nitrogen Oxides (NO<sub>x</sub>) cause ground level ozone and are a precursor to smog
  - Federal health-based ambient air quality standards (key milestones in 2023 and 2031)
  - Continued reductions in criteria pollutants and toxic air contaminants to protect public health
- Diesel Particulate Matter (PM) is a carcinogen - reduce as much as feasible
- Greenhouse Gases (GHG) reductions are necessary to avoid the worst impacts of climate change
  - Reduce emissions to 1990 levels by 2020 – achieved in 2016
  - 40 percent reduction from 1990 levels by 2030
  - 80 percent reduction from 1990 levels by 2050

# Need for NOx Reductions

- NOx emissions are predominantly caused by motor vehicles
- Most of the state remains in non-attainment despite significant efforts

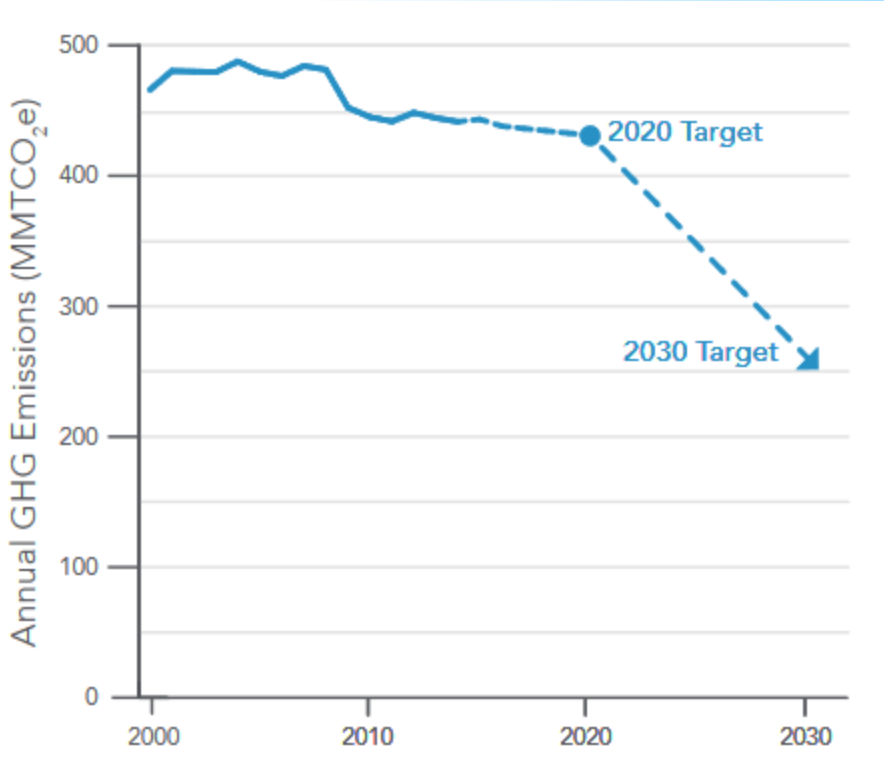
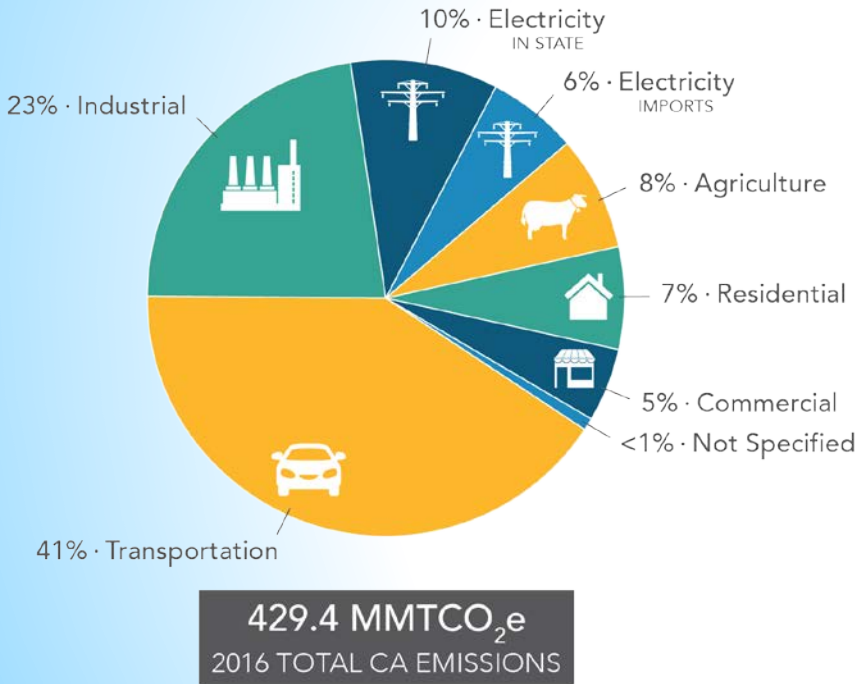
2017 CA NOx Emissions





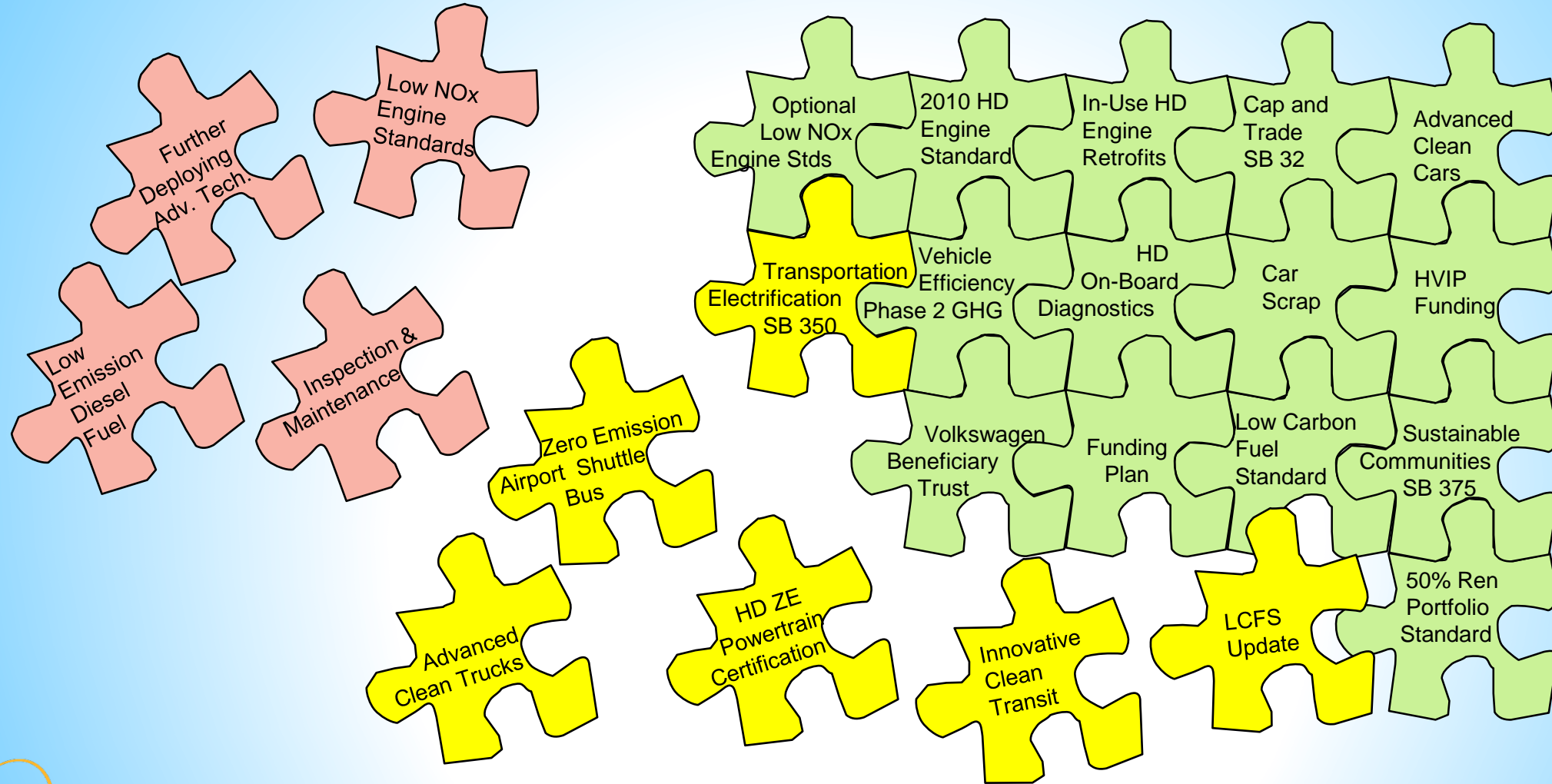
# California GHG Emissions and Goals

- Significant progress has been made but more is necessary
- Transportation remains the biggest contributor to California GHG emissions



CO2 Inventory: <https://www.arb.ca.gov/cc/inventory/data/data.htm>

# Mobile Source Strategies



# Existing Regulations

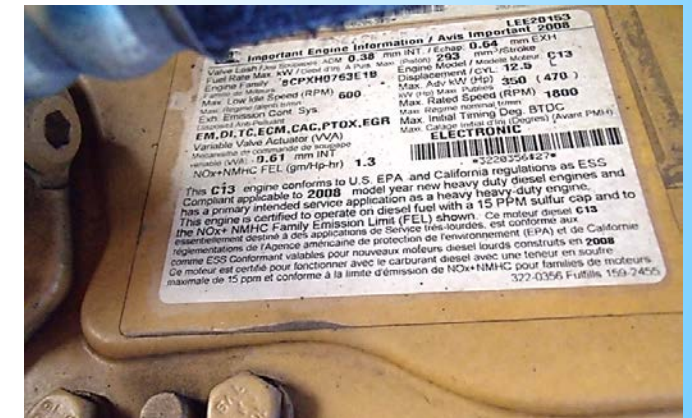


# CARB Regulations Affecting HD Fleets

- Current Engine Standards
- Idling Limits
- Emission Control Label
- Heavy-Duty Diesel Inspection Program and Periodic Smoke Inspection Program
- Legacy Fleet Regulations
- Truck and Bus Regulation
- Increased HD Emissions Warranties
- GHG Phase 1 and Phase 2
- Low Carbon Fuel Standard

# Idling Limit and Emission Control Labels

- Idling more than 5 minutes is prohibited in California
  - Affects Class 3 and above diesel motor vehicles
  - Some exceptions exist, listed in factsheet and webpage below
- All diesel and gasoline heavy-duty vehicles in California must have an Emission Control Label (ECL)
  - Contains information on engine family name, manufacturer, engine model year



Idling Factsheet: <https://www.arb.ca.gov/msprog/truck-idling/factsheet.pdf>  
Idling Webpage: <https://www.arb.ca.gov/msprog/truck-idling/truck-idling.htm>

# PSIP and HDVIP

- The Periodic Smoke Inspection Program (PSIP) and Heavy-Duty Diesel Inspection Program (HDVIP) monitor emissions of in-use vehicles
- PSIP - fleets of 2 or more vehicles must conduct annual smoke opacity testing
- HDVIP - on-road vehicles must meet smoke opacity limit in order to operate in California
  - Authorizes roadside inspections



# 2018 PSIP and HDVIP Amendments

- Proposed amendments will lower opacity limits and require reporting
- Lowered limits for emission opacity
  - Limit for new trucks: 5%
- Mandatory training for PSIP smoke testers
- Mandatory annual reporting for PSIP beginning 2023
  - Voluntary OBD reporting on 2013 MY or newer vehicles in lieu of opacity test

Vehicle	Opacity Limit
2007 MY and newer/ Vehicles with Level 3 VDECS	5%
Pre-1991 MY - No DPF	40%
1991-1996 MY - No DPF	30%
1997-2006 - No DPF	20%
Vehicles with Level 2 VDECS	20%
Two engine crane driven by a non-DPF off-road engine	40%

# Legacy Diesel Regulations

- Fleet Rule for Transit Agencies – Adopted 2000
- Solid Waste Collection Vehicle Rule – Adopted 2003
- Transport Refrigeration Unit Airborne Toxic Control Measure – Adopted 2004
- Public Agency and Utility Rule – Adopted 2005
- Drayage Truck Regulation – Adopted 2007
- In-Use Off-Road Diesel-Fueled Fleets Regulation – Adopted 2007



# Truck and Bus Regulation

- Affects nearly all trucks in California
- Light Trucks (Class 4-6)
  - No DPF requirement, upgrade to 2010 MY engine 2015-2023
- Heavy Trucks (Class 7-8)
  - DPF retrofits 2012-2014
  - Upgrade to 2010 MY engine in 2015-2023 (based on engine MY)
- Some flexibility options and extensions available, most have expired
- Lawson lawsuit sets aside 2014 amendments



# CTA/Lawson Lawsuit

- In 2014, to void the flexibility options provided in the 2014 amendments to the Truck and Bus regulation (regulation), John R. Lawson Rock and Oil of Fresno (Lawson) and the California Trucking Association (CTA) sued the California Air Resources Board (CARB) in Fresno County Superior Court.
- In 2016, that court ruled in favor of Lawson and CTA, ordering CARB to set aside the regulation's 2014 amendments. CARB appealed that decision to the 5th District court of Appeals. On January 31, 2018, the appellate court issued its decision upholding parts of the lower court's ruling, including the court's direction to set aside the regulation's 2014 amendments.
- If vehicles in your fleet are using one or more of the flexibility options that CARB added or amended in 2014, you will be affected by the court's decision.

# HD Emissions Warranty

- CARB mandates a minimum warranty on emissions control devices
- The warranty requirements are being amended this year, proposal would extend warranty limits
- The warranty covers all emission control devices including the EGR system, DPF system, SCR system, turbocharger, crankcase ventilation, and others

	Current Warranty	Proposed Warranty
Heavy Heavy-Duty Engine (Class 8)	100,000 mi./ 5 yrs./ 3,000 hours	350,000 mi./ 5 yrs.
Medium Heavy-Duty Engine (Class 6-7)	100,000 mi./ 5 yrs./ 3,000 hours	150,000 mi./ 5 yrs.
Light Heavy-Duty Engine (Class 4-5)	100,000 mi./ 5 yrs./ 3,000 hours	110,000 mi./ 5 yrs.

# GHG Phase 1 and 2

- The GHG Phase 1 and Phase 2 regulations require manufacturers to reduce GHG emissions
- Vehicle costs increases offset with fuel savings
- Regulates Class 2B-8 vehicles, engines, and trailers
- Harmonized with EPA





# Low Carbon Fuel Standard

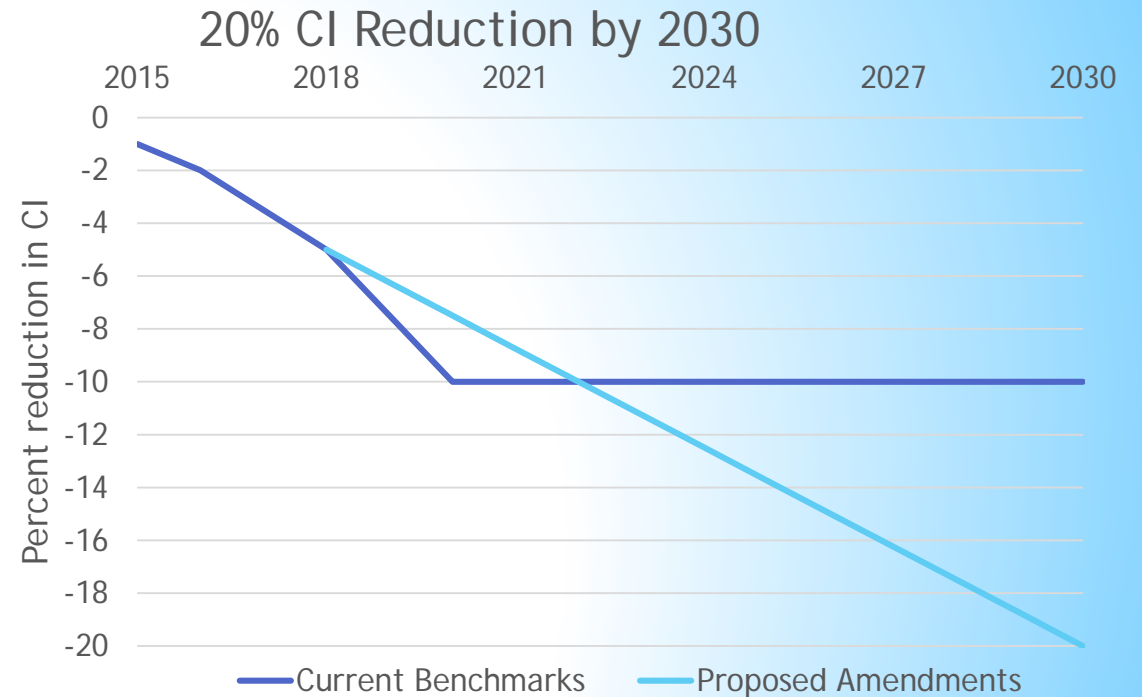
- The Low Carbon Fuel Standard (LCFS) program requires fuel producers to lower the carbon intensity (CI) of their fuels
- Producers of high CI fuels (fossil gasoline and diesel) must buy credits from low CI fuels (electricity, hydrogen, biofuels, natural gas, etc.)





# 2018 LCFS Amendments

- LCFS program currently being amended
  - First board hearing in April, second in September
- Carbon intensity to drop through 2030
- Energy Economy Ratio of HD BEV trucks and buses increased to 5.0
  - At \$100/credit, a BEV truck can generate \$0.13 per kWh used



# Upcoming Regulations

# Pending or Planned Actions

- Low-NOx Standard
- HD Inspection and Maintenance Program
- Advanced Clean Trucks
- Planned HD ZEV Fleet Rules
- Other ZE Truck Policies
- Future Zero-Emission Fleet Actions

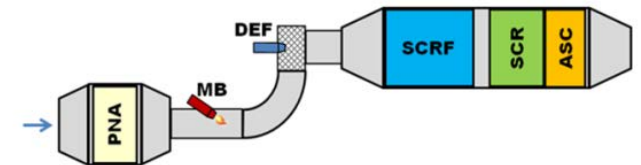
# Low-NOx Standard

- CARB working collaboratively with EPA and manufacturers to develop a Low-NOx standard that would be 90% cleaner than 2010 MY engines
  - Planned board date: 2019
  - Implementation: 2023-2027
- CARB will proceed with a California-only standard if no federal standard is enacted
- Low-NOx engines currently available with funding opportunities
  - Gasoline, propane, and natural gas

Diesel - 2014 Volvo MD13  
with cooled EGR, DPF, SCR,  
and Turbo-compound



With  
Advanced  
Cold-Start  
Strategies



Low-NOx Research: <https://www.arb.ca.gov/research/veh-emissions/low-nox/low-nox.htm>



# HD Inspection and Maintenance Program

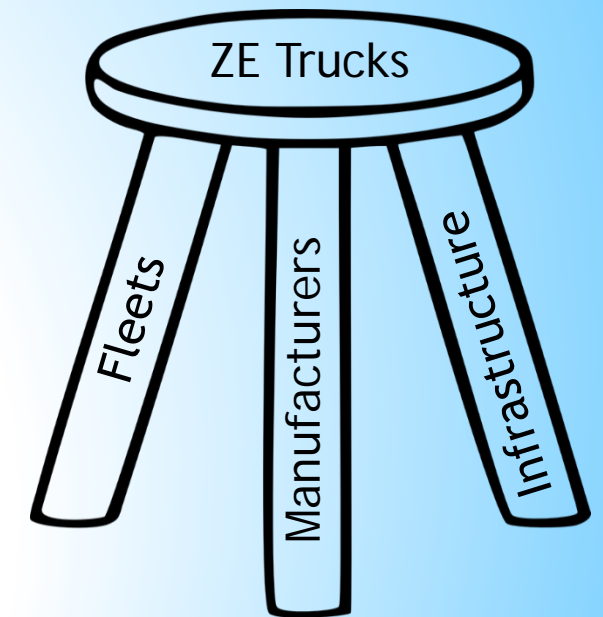
- Long-term vision to expand on HDVIP and PSIP to a comprehensive HD I&M program
  - Planned board date: 2020
  - Implementation: Post-2020
- “Heavy-duty smog check”
- May focus on OBD check for post-2013 MY trucks, emission testing for pre-2013 MY trucks





# Zero-Emission Truck Strategy

- Zero-emission trucks make sense in certain operations
  - Urban, stop-and-go driving, return to base, centrally-fueled
- Zero-emission trucks will require collaboration between manufacturers, fleets, and infrastructure providers
- We have held two meetings between fleets and manufacturers to start identifying barriers to electrification and potential commitments



# Advanced Clean Trucks

- Strategy to accelerate the first wave of zero emission trucks
  - Planned board date: 2019
  - Implementation: Post-2023
- Current proposal - Manufacturers would be required produce a portion of sales as zero-emission or zero-emission capable





# Wide Range of HD EV's on the Road Today

2B-3

4-5

6-7

8

Commercial

Demonstrations



\*Not all vehicles pictured, excludes transit buses

# Planned HD ZE Fleet Rules

- Innovative Clean Transit – board consideration September 2018
  - Transit fleet to transition to zero-emission by 2040
- Zero-Emission Airport Shuttle Bus – board consideration December 2018
  - Public and private fixed-route airport shuttle buses to zero-emission by 2036
- Zero-Emission Drayage Truck Rule
  - Planned for consideration 2022, implementation 2026+





# Zero-Emission Fleet Regulation Assessment

- Governor Jerry Brown has directed CARB to begin assessing the viability of new regulations to increase ZEV adoption in fleets
  - Assessment will include private and public fleets, rental car companies, large employers, transportation service fleets, zero-emission cars, and delivery vehicles
- Initial workshop on August 30 in Sacramento to begin discussions



# Other ZE Truck Policies

- AB 617 – CARB must begin targeting emissions at a local community level
- AB 739 – State fleet must purchase zero-emission vehicles in Class 6-8 starting 2025
- Port of Los Angeles and Long Beach Clean Air Action Plan
  - Plan to transition the San Pedro Bay ports to zero-emission
- South Coast Air Quality Management District (SCAQMD) Indirect Source Rule development
  - SCAQMD includes Orange County and the most populated regions of Los Angeles County, San Bernardino County, and Riverside County
  - Reduce emissions from warehouses and other freight facilities
- SB 350 – Transportation Electrification

# SB 350 – Transportation Electrification

- The California Public Utility Commission has approved 15 of the 16 priority review projects with a combined budget of \$42 million
- Southern California Edison and Pacific Gas and Electric will invest \$343 million and \$236 million, respectively, for MD, HD, and off-road infrastructure projects over the next 5 years
- In January, San Diego Gas and Electric proposed to invest \$151 million in MD/HD infrastructure projects over the next 5 years
  - Decision from CPUC projected Q1 2019

# Any Questions?

Craig Duehring, Manager

Transportation and Clean Technology Branch

[cduehring@arb.ca.gov](mailto:cduehring@arb.ca.gov) (916) 323-2927

Paul Arneja, Lead Staff

[paul.arneja@arb.ca.gov](mailto:paul.arneja@arb.ca.gov) (916) 322-5616