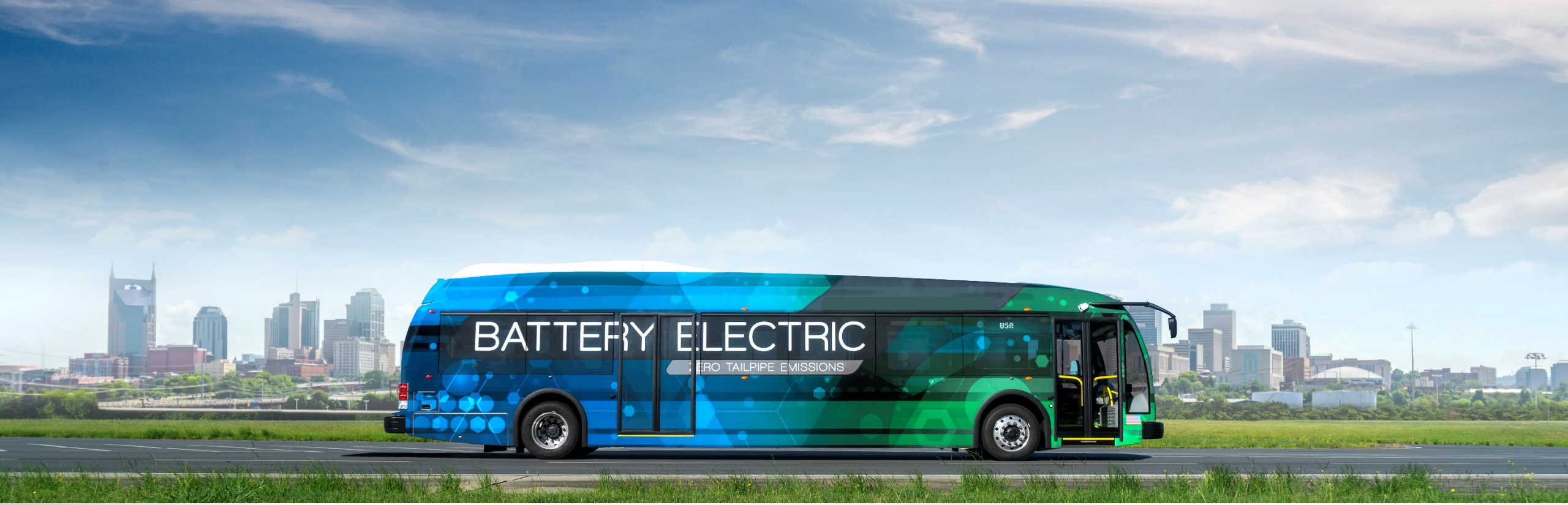

2020 Mobile Source Strategy: A Vision for Clean Air

CALIFORNIA
AIR RESOURCES BOARD

Transportation DAWG Meeting

July 22nd, 2020

2020 Mobile Source Strategy: A Vision for Clean Air

- Builds on 2016 Mobile Source Strategy
- Conceptual scenario approach
- Identifies potential technology mixes needed to meet air quality and climate targets
- Meets SB 44 requirements
- Informs policy development

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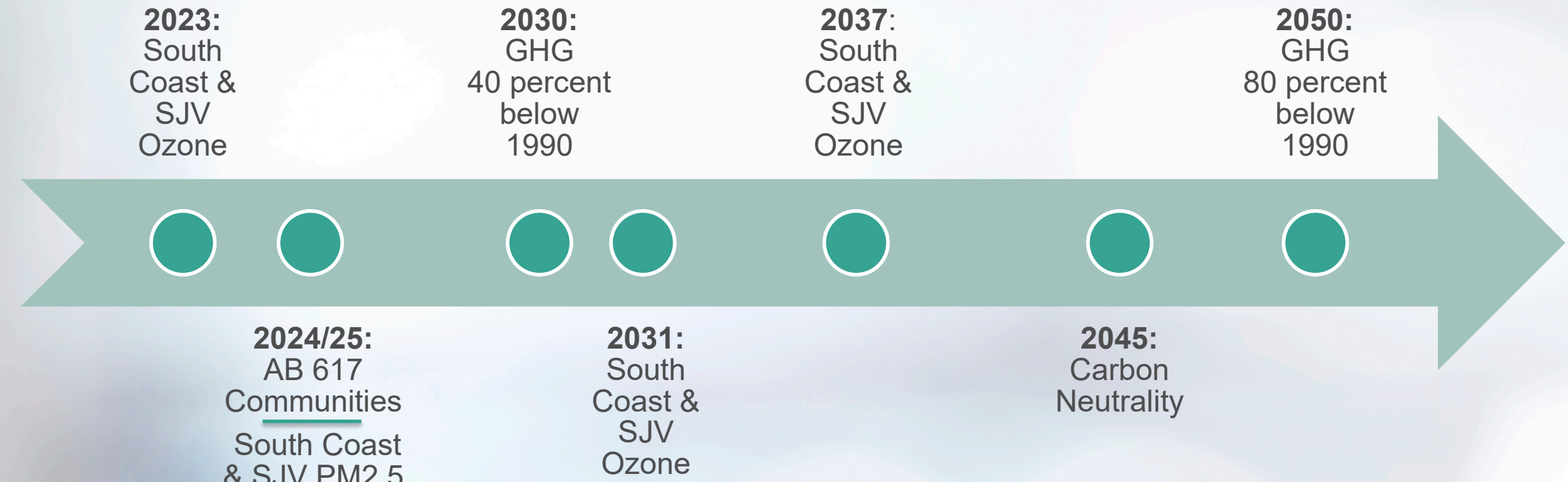
California's Goals



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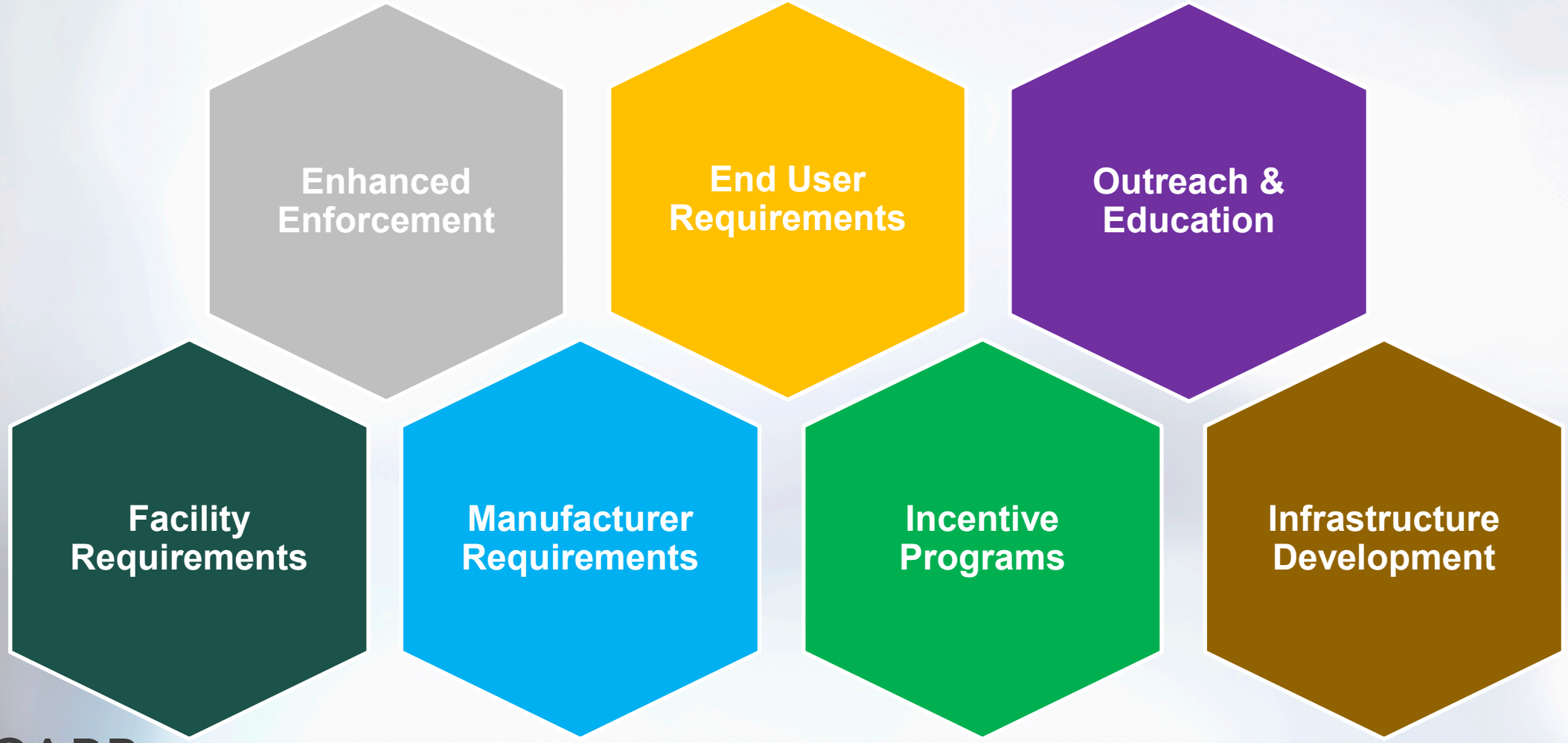
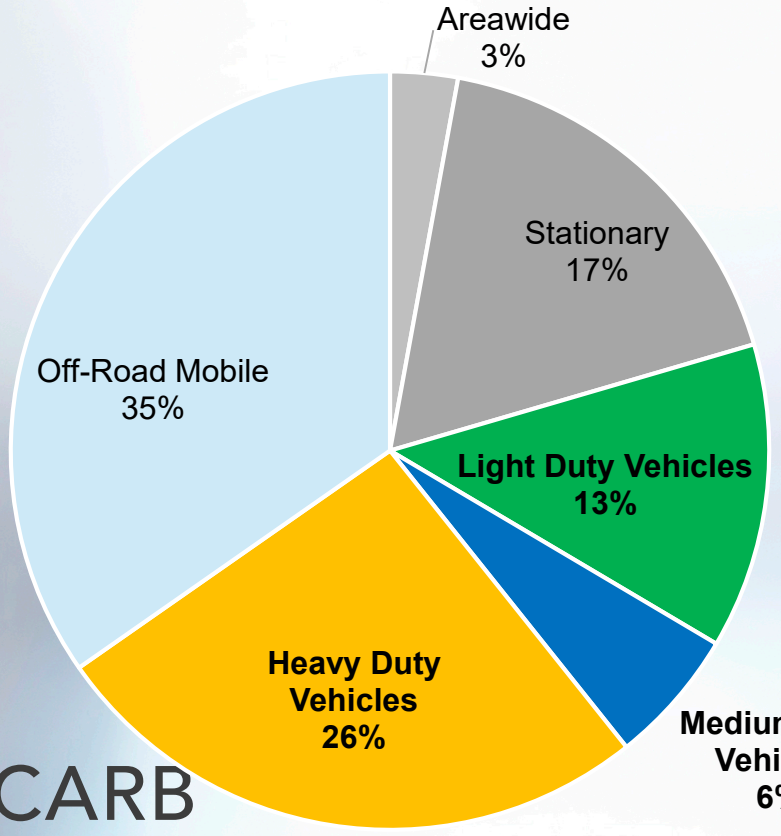
Achieving Air Quality and Climate Goals Requires Multiple Tools



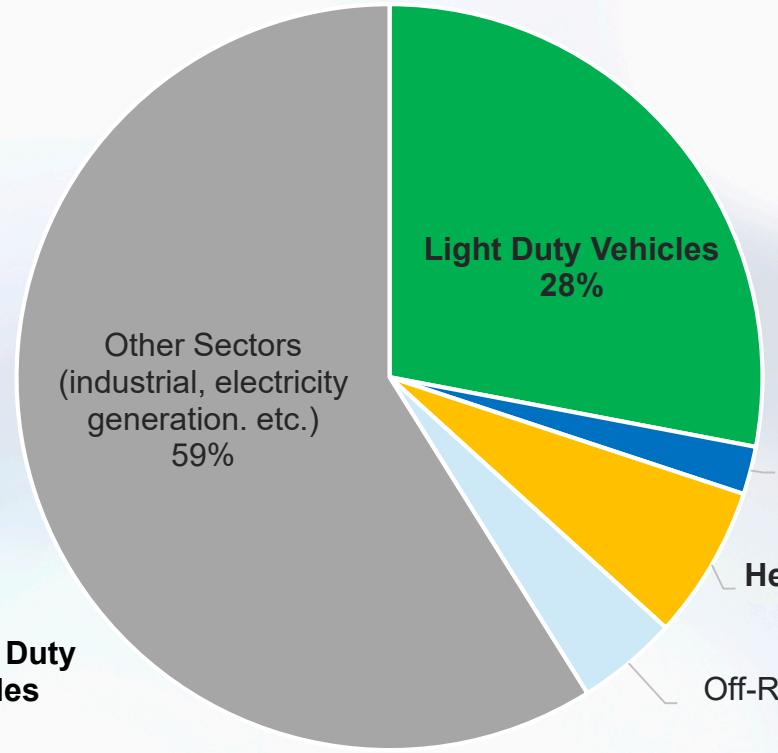
On-Road Sector

- In 2017, on-road mobile sources contributed to 45% of statewide NOx emissions and 37% of statewide GHG emissions

Statewide NOx Emissions



Statewide GHG Emissions



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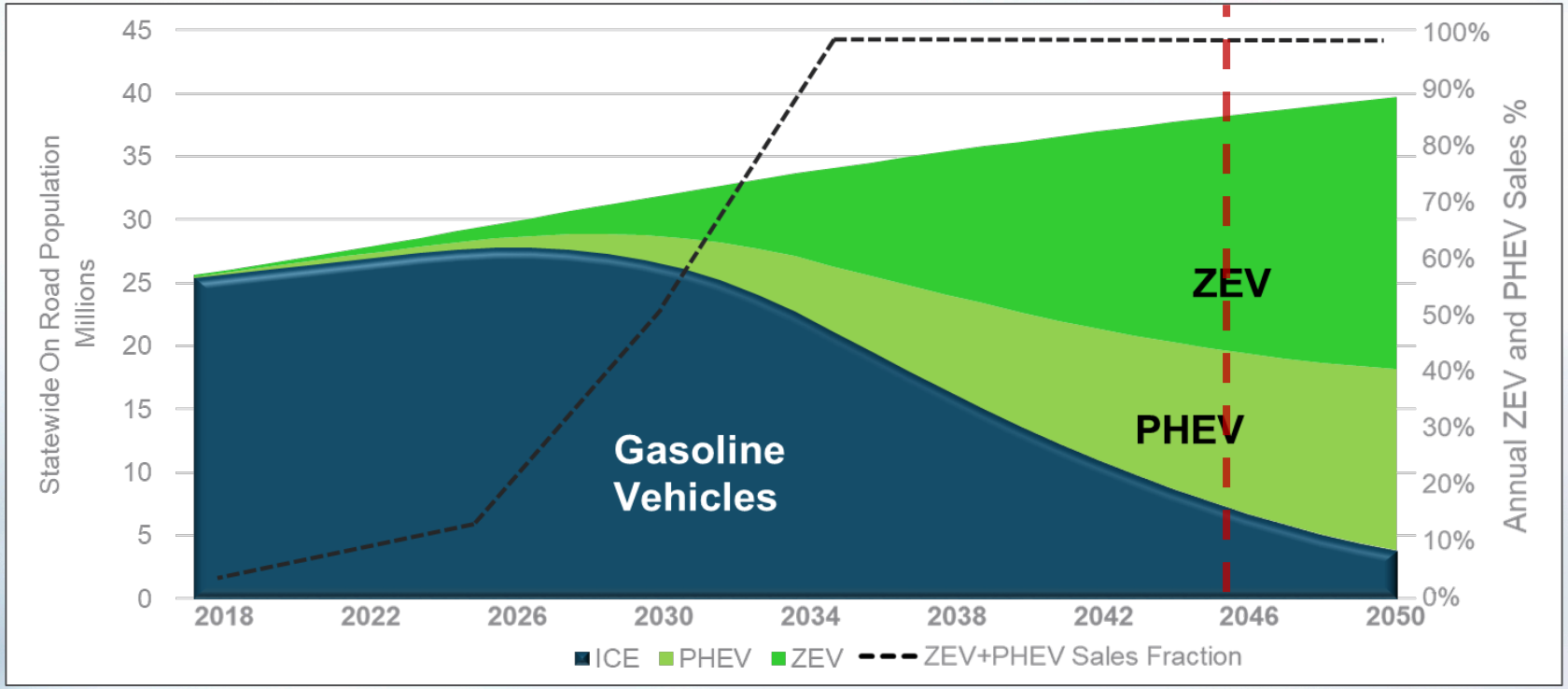
2020 Mobile Source Scenario for LDV

- 100% sales ZEVs & PHEVs by 2035; Does not go far enough
- Half of fleet in 2045 still has combustion engine



Fuel Demand in 2045
(bil. gal. per year)
gasoline – 2.22

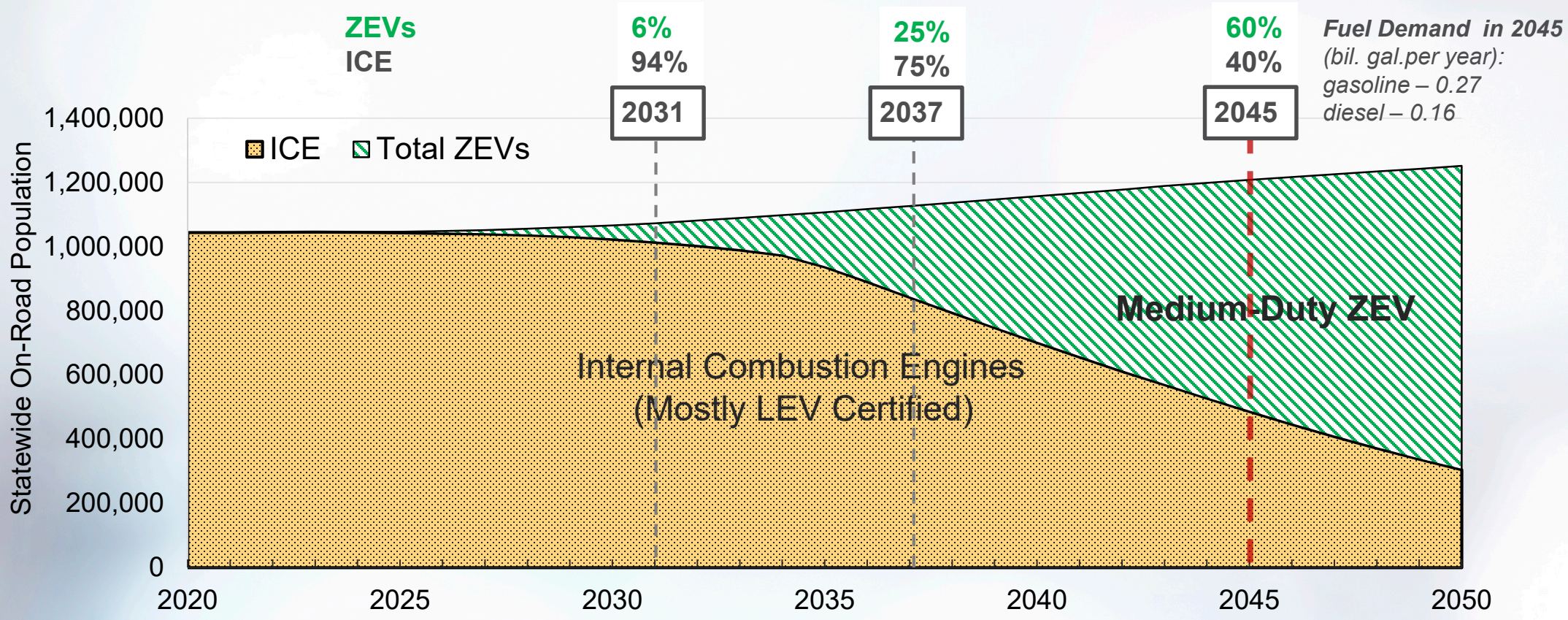
Staff continue to evaluate more ambitious ZEV sales scenarios and the impact of high mileage vehicles

On-Road Medium-Duty Sector

- Medium-duty vehicles (8,501 – 14,000 lbs. GVWR) are responsible for 7% of statewide mobile source NOx and 5% of statewide mobile source GHG emissions
- **Strategies** for on-road medium-duty vehicles (MDVs) include:
  - ✓ Zero-emission technology transformation starting in 2024
  - ✓ Enhanced LEV regulations through Advanced Clean Cars 2.0
  - ✓ Continued energy efficiency improvements
    - ➢ Phase 3 Greenhouse Gas Standards for Medium/Heavy-Duty Vehicles

2020 Mobile Source Scenario for MDV

- Considered a scenario to achieve long-term climate goals
- Strategy: Ambitious ZEV penetration for newer vehicles



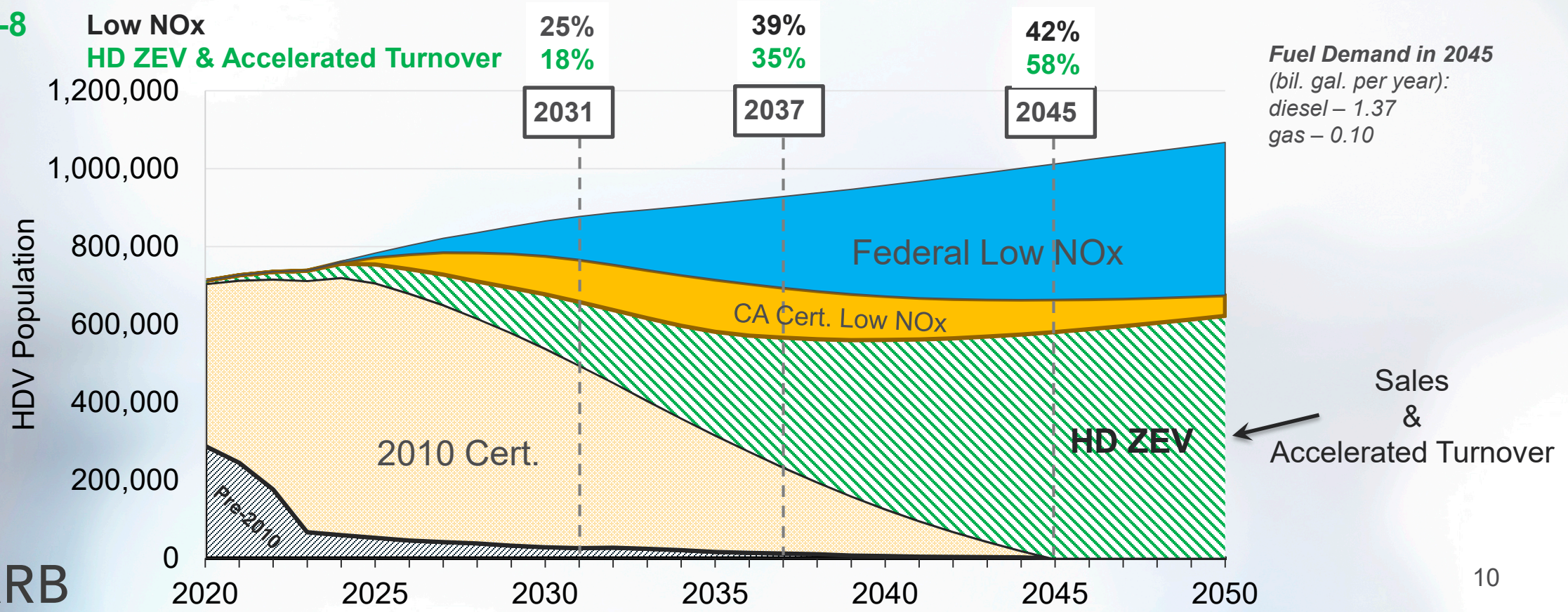
On-Road Heavy-Duty Sector

- Heavy-duty vehicles (above 14,000 lbs. GVWR) are responsible for 33% of statewide mobile source NOx and 16% of statewide mobile source GHG emissions
- **Strategies** for on-road heavy-duty vehicles (HDVs) include:
  - ✓ Zero-emission technology penetration starting in 2024
  - ✓ Cleaner diesel technology (i.e., Low NOx diesel) starting in 2024
  - ✓ Use of renewable fuels where electrification is not feasible
  - ✓ Continued energy efficiency improvements
    - ➢ Tractor-Trailer Greenhouse Gas (TTGHG)
    - ➢ Phase 3 Greenhouse Gas Standards for Medium/Heavy-Duty Vehicles
  - ✓ In-use performance measures
    - ➢ Heavy-duty inspection and maintenance (HD I/M) program starting in 2023
    - ➢ More Stringent in-use performance standards
    - ➢ Lengthening engine useful life, warranty, and durability requirements

Meeting Midterm Goals

- To achieve NOx reduction needed to meet the air quality goals over the next two decades while also charting a course to achieve longer-term climate change goals
- Ambitious ZEV penetration for newer vehicles combined with accelerated turnover of older vehicles (e.g., 2010-certified)

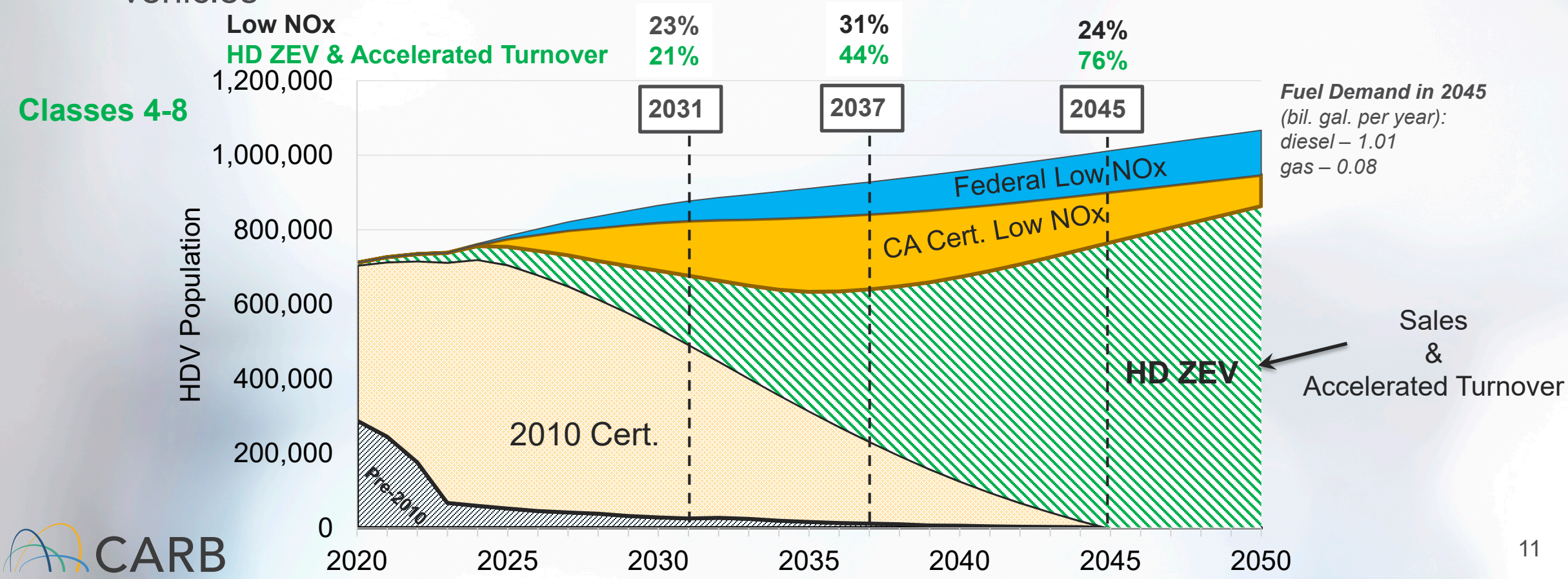
Classes 4-8



Fuel Demand in 2045
(bil. gal. per year):
diesel – 1.37
gas – 0.10

Meeting Long Term Goals

- To achieve NOx reduction needed to meet near term air quality goals, and also maximize the number zero-emission trucks for longer term climate goals
- A hyper ambitious ZEV penetration combined with accelerated turnover of older vehicles



Energy and Infrastructure Needs

- Zero-emission technology for both on- and off-road sectors requires streamlined infrastructure build-out
- AB 2127: CEC preparing infrastructure assessment for meeting 2030 ZEV and GHG goals
- Significant investments being made in infrastructure
- Staff is coordinating with CEC and CPUC on assessment of infrastructure needs

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Timeline for Completing 2020 MSS

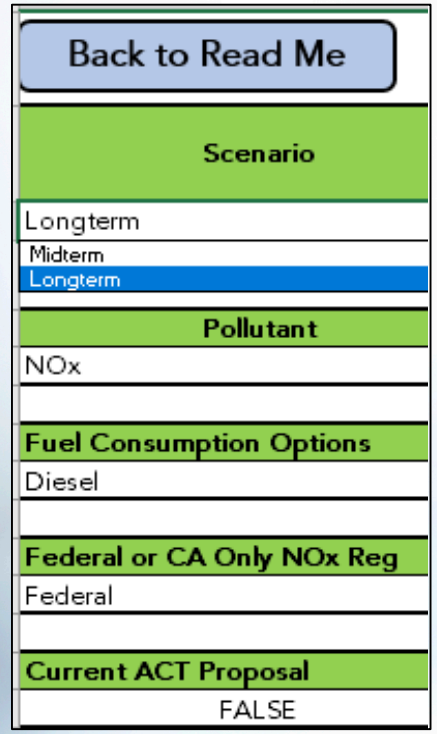
Scenario Modeling	Ongoing
Public Webinar	March 2020 ✓
Informational Update to the Board	April 2020 ✓
Release Draft Document and Workshop	Late Summer or Early Fall 2020
Board Consideration	Late 2020

Mobile Emissions Toolkit and Analysis (META)

- Building a process to share technical details of the MSS scenarios with external stakeholders through the META tool for heavy-duty on-road and off-road sectors
- META is a simple, user-friendly spreadsheet tool
- Provides a visualization of scenario results and more information on the major assumptions
- META beta version release – mid-August

META: On-Road Heavy-Duty

The user may select different scenarios and pollutants



Scenario visualization