

Air Resources Board Symposium on California's Development
of its Phase 2 Greenhouse Gas Emission Standards
for
On-Road Heavy-Duty Vehicles

April 22, 2015

Heavy Duty Trucks: ARB's Goals and Technology Insights

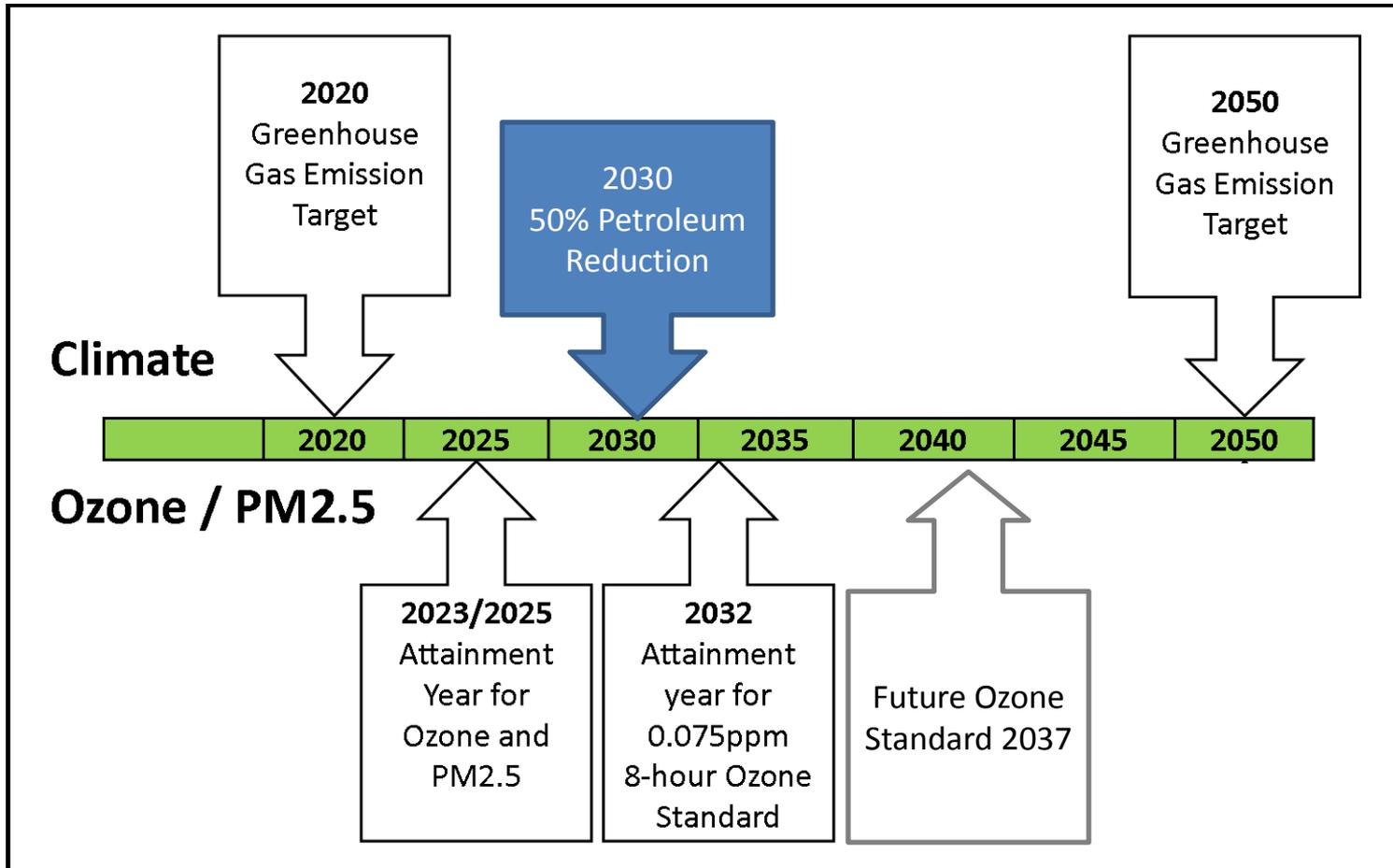
Overview

- What are California's emission reduction goals and timelines?
- How important are heavy duty trucks to these goals?
- How important are national versus California-only standards?

Emission Reduction Timeline

1990 Level

80% Below 1990



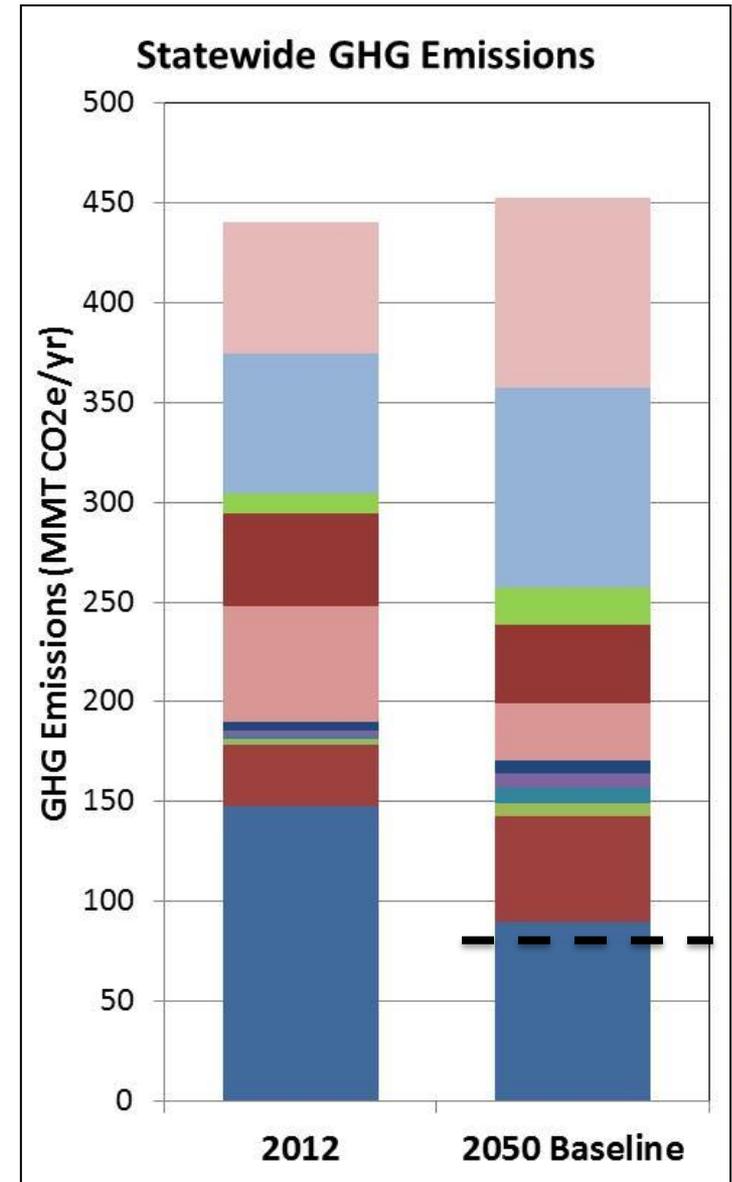
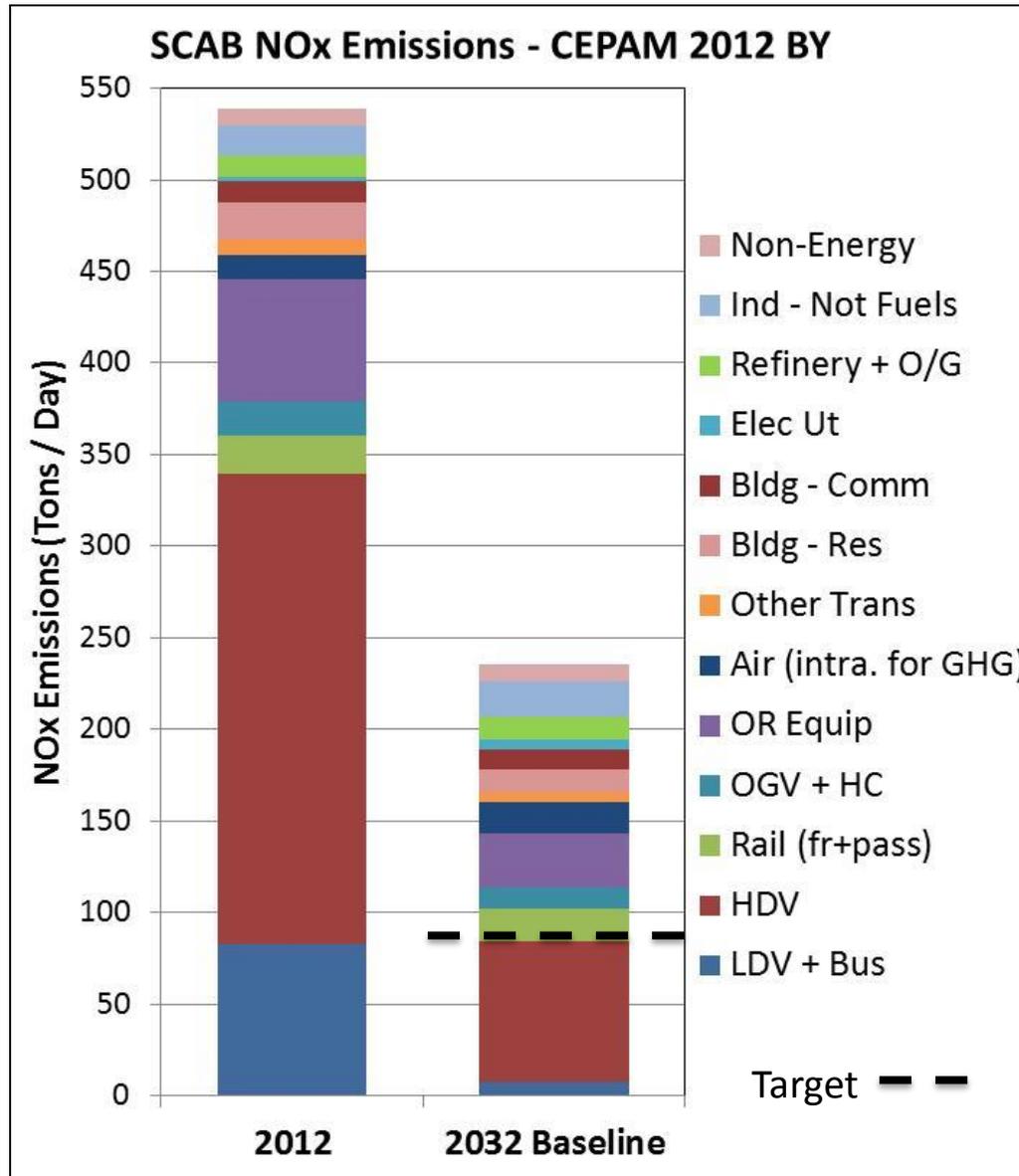
Preliminary NOX Target:

~65-70% Below 2031

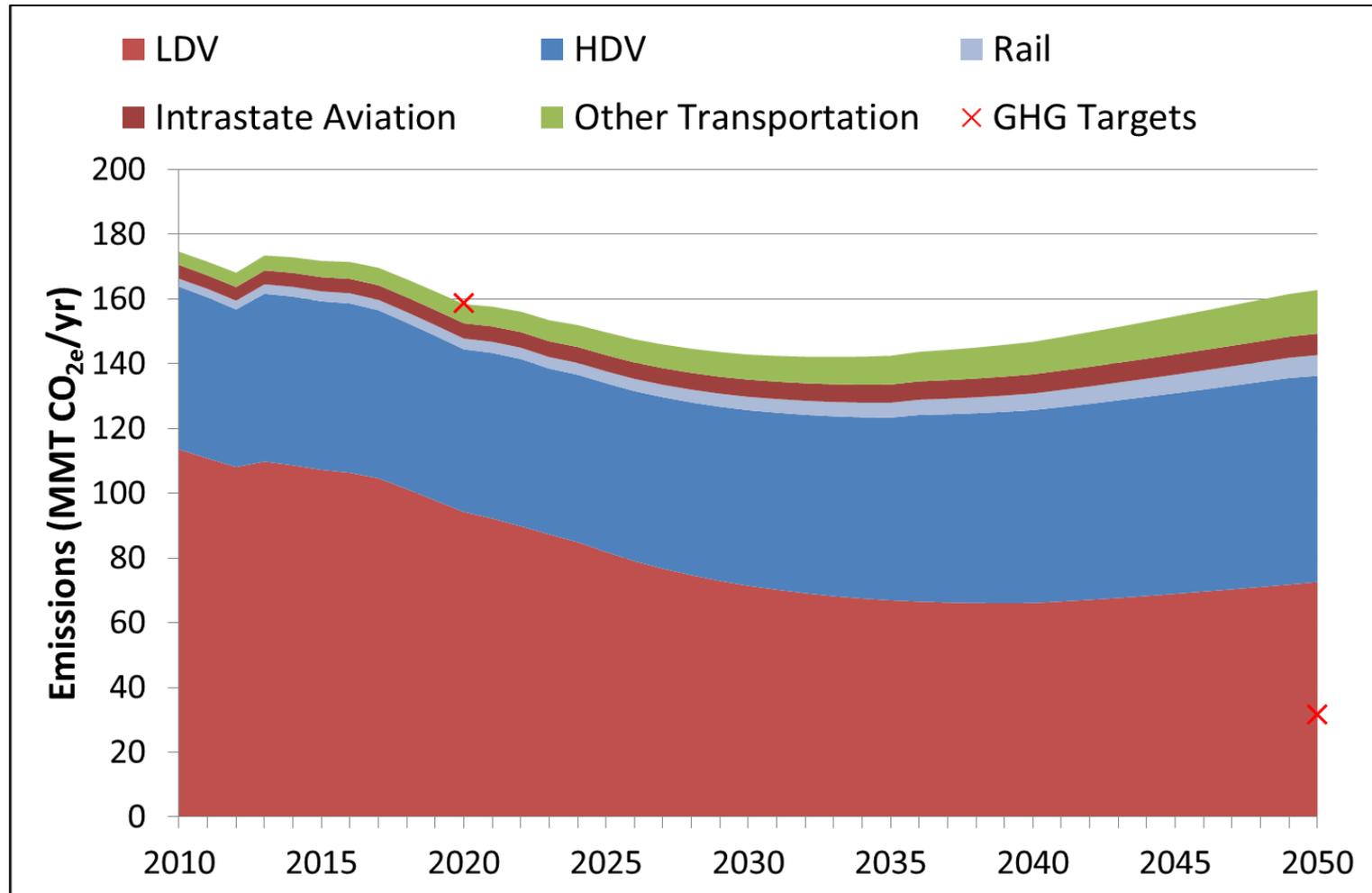
GHG Emission Goals

- AB 32 CA Global Warming Solutions Act 431 MMT CO₂e
 - Requires statewide GHG emissions to return to 1990 levels by 2020.
- Executive Order S-03-05 86 MMT CO₂e
 - Sets target of 80% below 1990 levels by 2050
- Executive Order B-16-12
 - Establishes the transportation sector shall meet it's "equal share" of the 2050 GHG target
- SB 350 (Proposed February 24, 2015)
 - 50% reduction in petroleum use by 2030

Sector Contribution and Needed Reductions



Statewide Baseline GHG Emissions by Transportation Sector

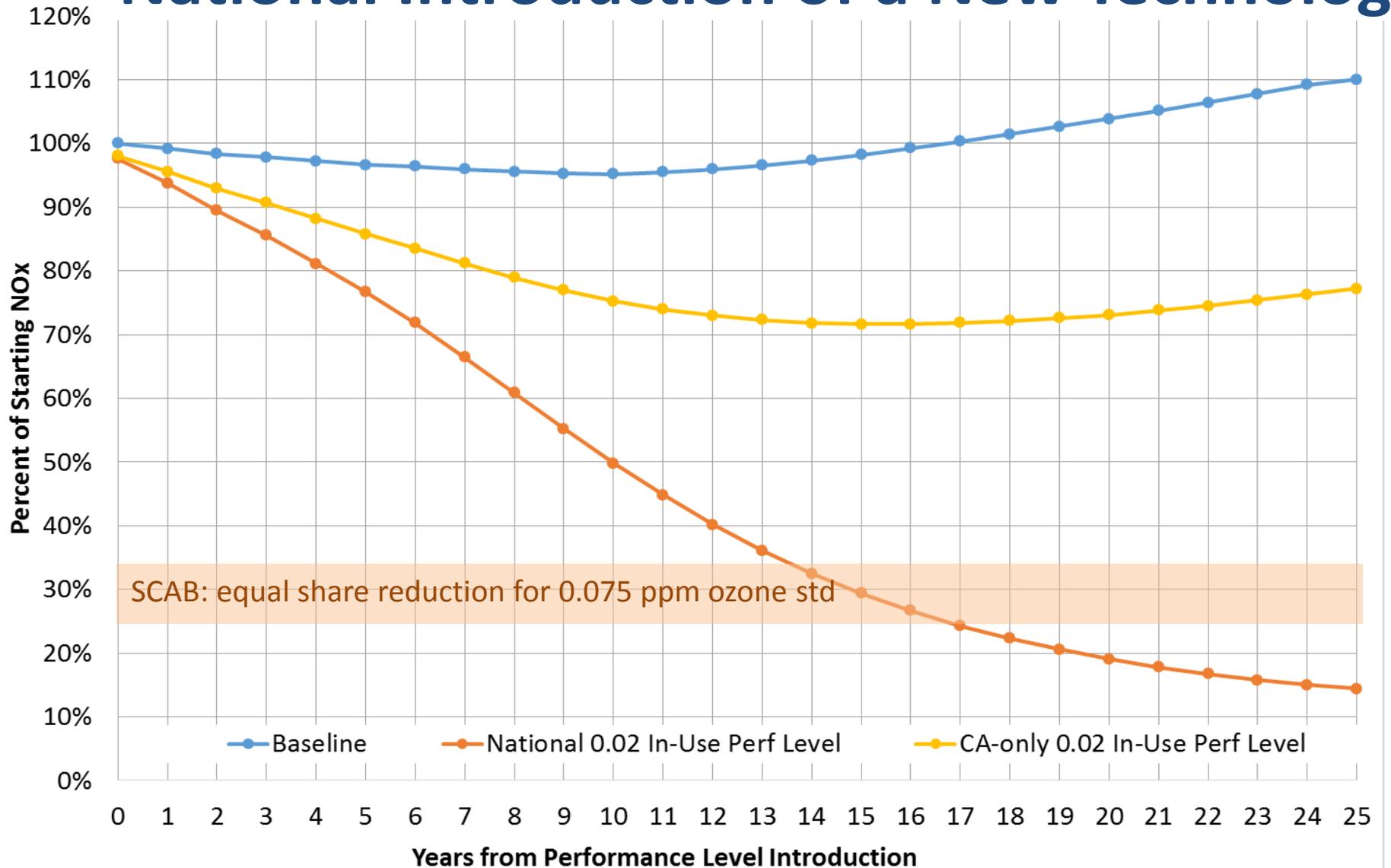


Role of HD Trucks in Emissions Reductions

- Heavy duty trucks:
 - Single largest contribution to NOx emissions in SC, both today and in 2031
 - Key to reducing GHG emissions from transportation sectors, achieving equal share reduction

Controlling emissions from Heavy Duty Trucks is key to both criteria pollutant reduction and GHG goals

Emissions Analysis of a Statewide vs National Introduction of a New Technology



Key Insights and Conclusions

- Trucks are central to GHG and criteria pollutant goals
- CA-only standards need to be coupled with national action.
 - National standards provide necessary technology for fleet transformation.
 - National investment in new technologies & fuel infrastructure necessary to support transformation.
- Key to reducing emissions is introducing technology early to allow the market to develop.