



CALIFORNIA
AIR RESOURCES BOARD

**Advanced Clean Trucks
Zero-Emission Vehicle Credit Pooling
Workshop**

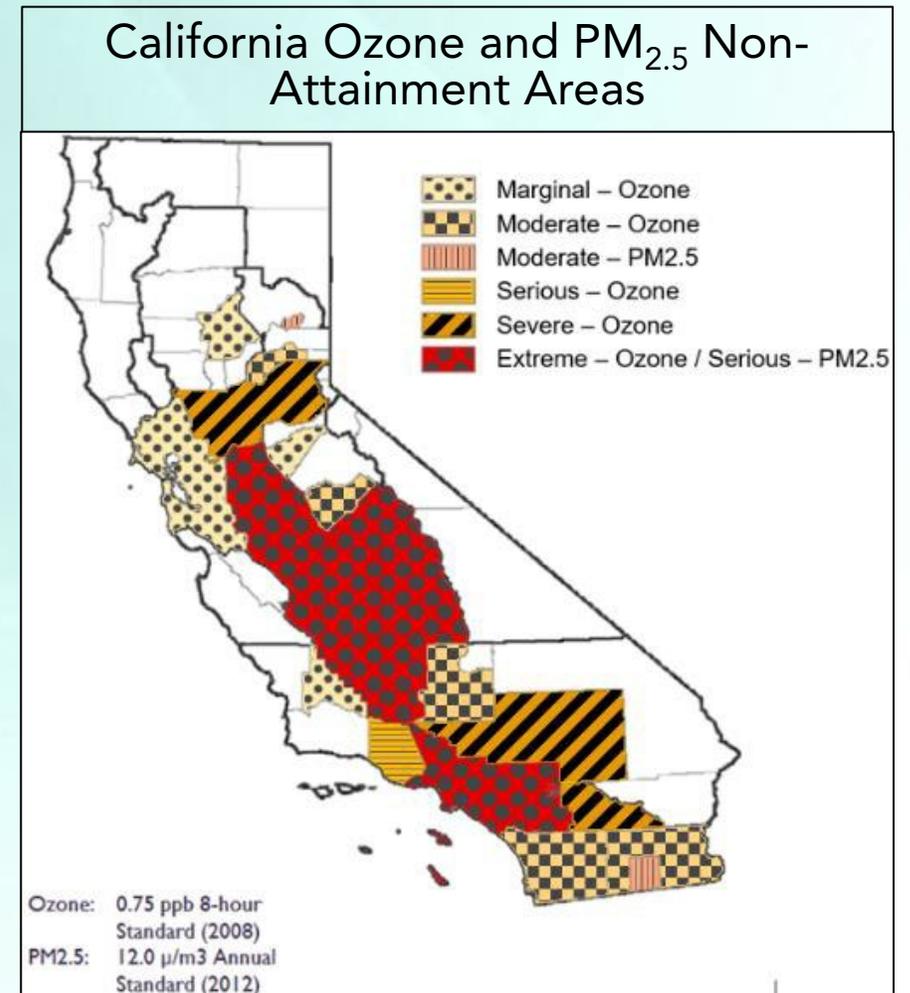
November 28, 2023

Today's Outline

- Background on California Air Resources Board (CARB) regulations
- Overview of Zero-Emission Vehicle (ZEV) credit pooling
- Guest presentations
- Next steps

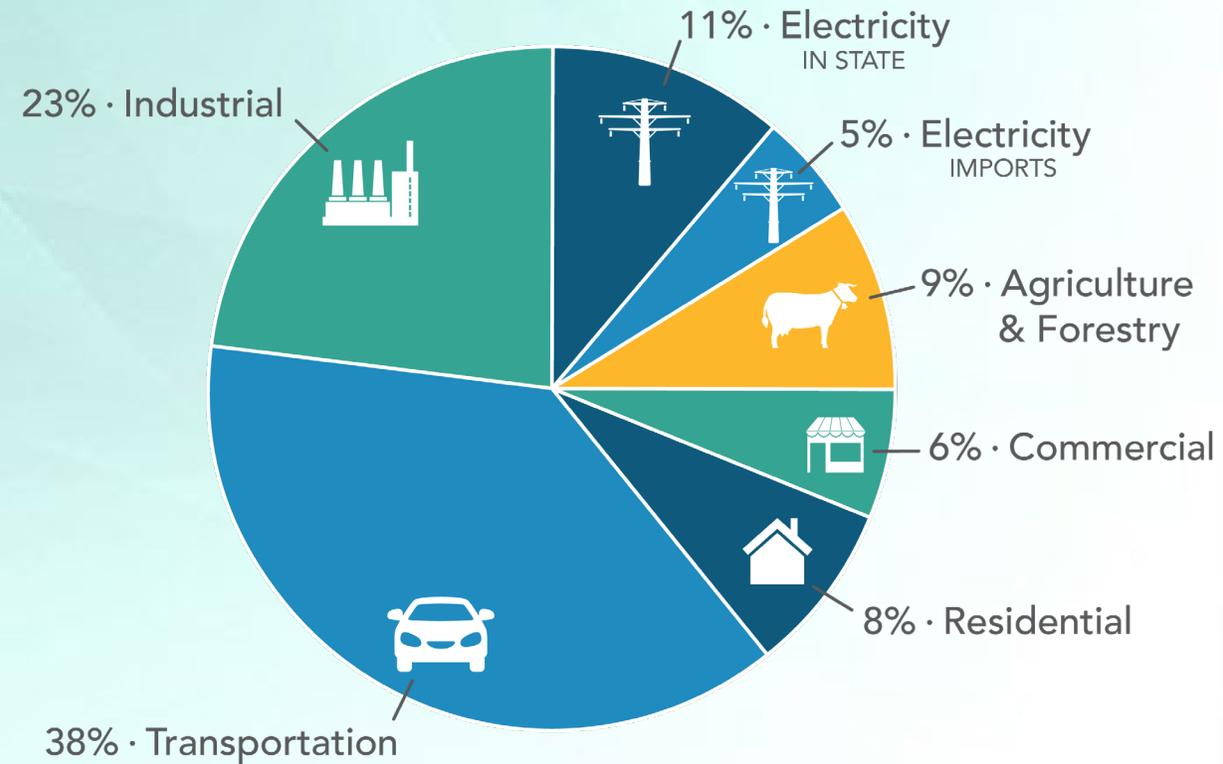
Major Oxides of Nitrogen (NO_x) and Fine Particulate Matter (PM_{2.5}) Emissions Reductions Needed

- California has areas of extreme non-attainment
- Unique challenges in San Joaquin Valley and South Coast
- Heavy-duty trucks and federal sources* remain largest contributors
- More reductions needed to meet 2031 and 2037 attainment
- Regions across US experience severe non-attainment or on edge of non-attainment



California's Climate Targets

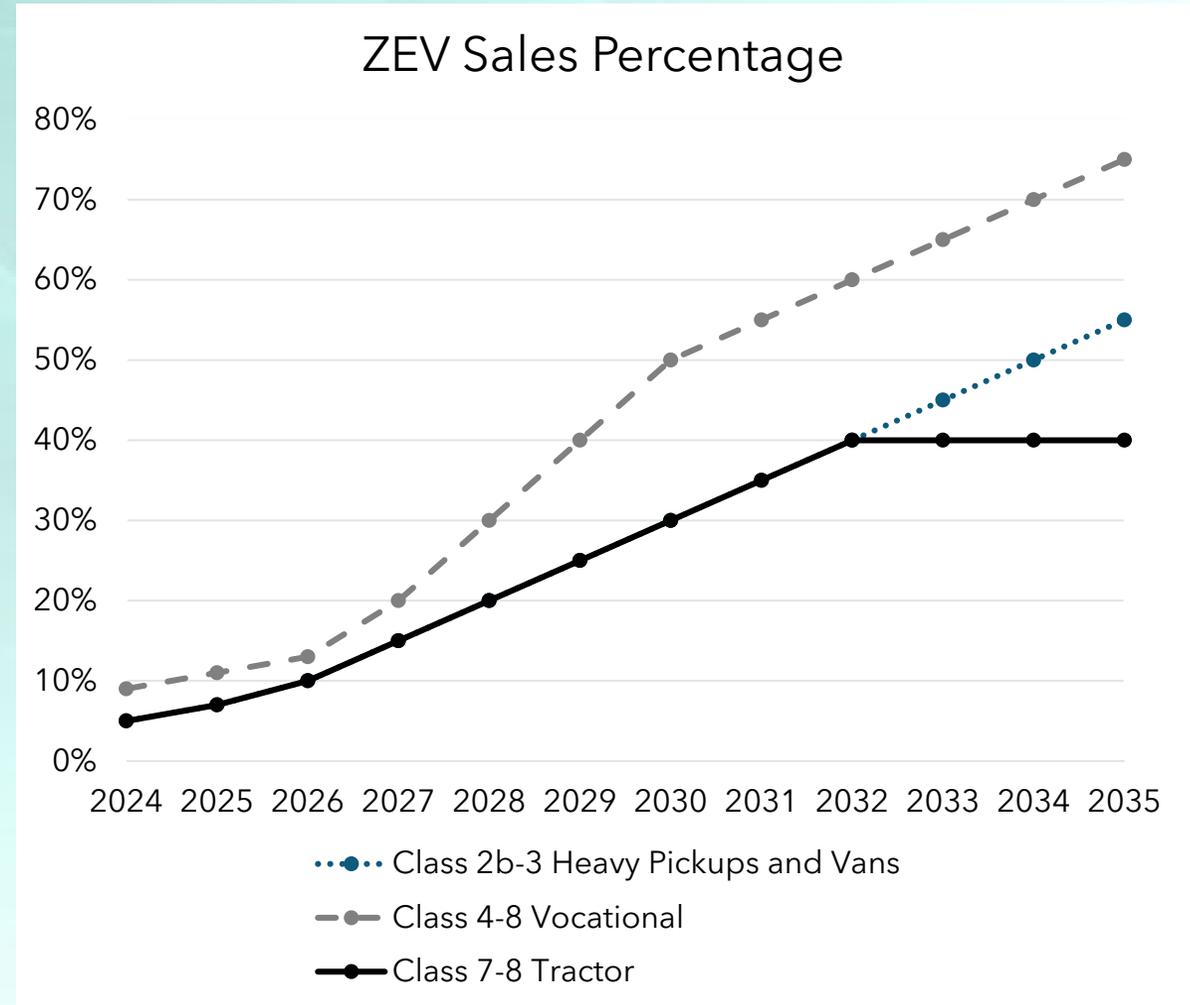
- Greenhouse gas goals
 - 40% reduction by 2030
 - 85% reduction by 2045
 - Carbon neutrality by 2045
- Clean electricity
 - 60% renewable by 2030
 - Carbon-free by 2045



369.2 MMT CO₂e
2020 TOTAL CA EMISSIONS

Advanced Clean Trucks Regulation

- Board approved in 2020
- Manufacturers to sell ZEVs in all vehicle classes as a percentage of total sales
 - Partial credit for near-zero emissions vehicles (NZEVs) with minimum all electric range

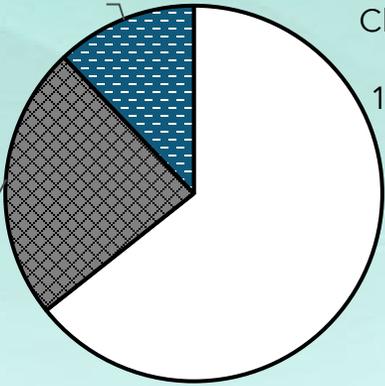


Biggest Trucks Have Highest Emissions

Daily Truck Population



Class 7-8 Tractors
219,000 (12%)



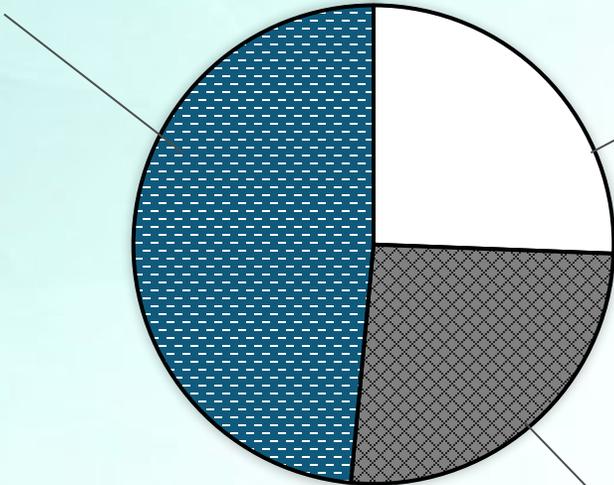
Class 4-8 Straight Trucks and Buses
427,000 (24%)

Class 2b-3 Trucks and Vans
1,164,000 (64%)



Daily NOx Emission

Class 7-8 Tractors
129.7 tpd (48%)



Class 2b-3 Trucks and Vans
68.5 tpd (26%)

Class 4-8 Straight Trucks and Buses
69.3 tpd (26%)

Source: California Air Resources Board (CARB) Emissions Inventory EMFAC2021, (<https://arb.ca.gov/emfac/>) Calendar Year 2021, including California International Registration Plan (IRP) and out-of-state IRP trucks; excludes motor homes, transit buses, and school buses.

Current Status of ACT Regulation

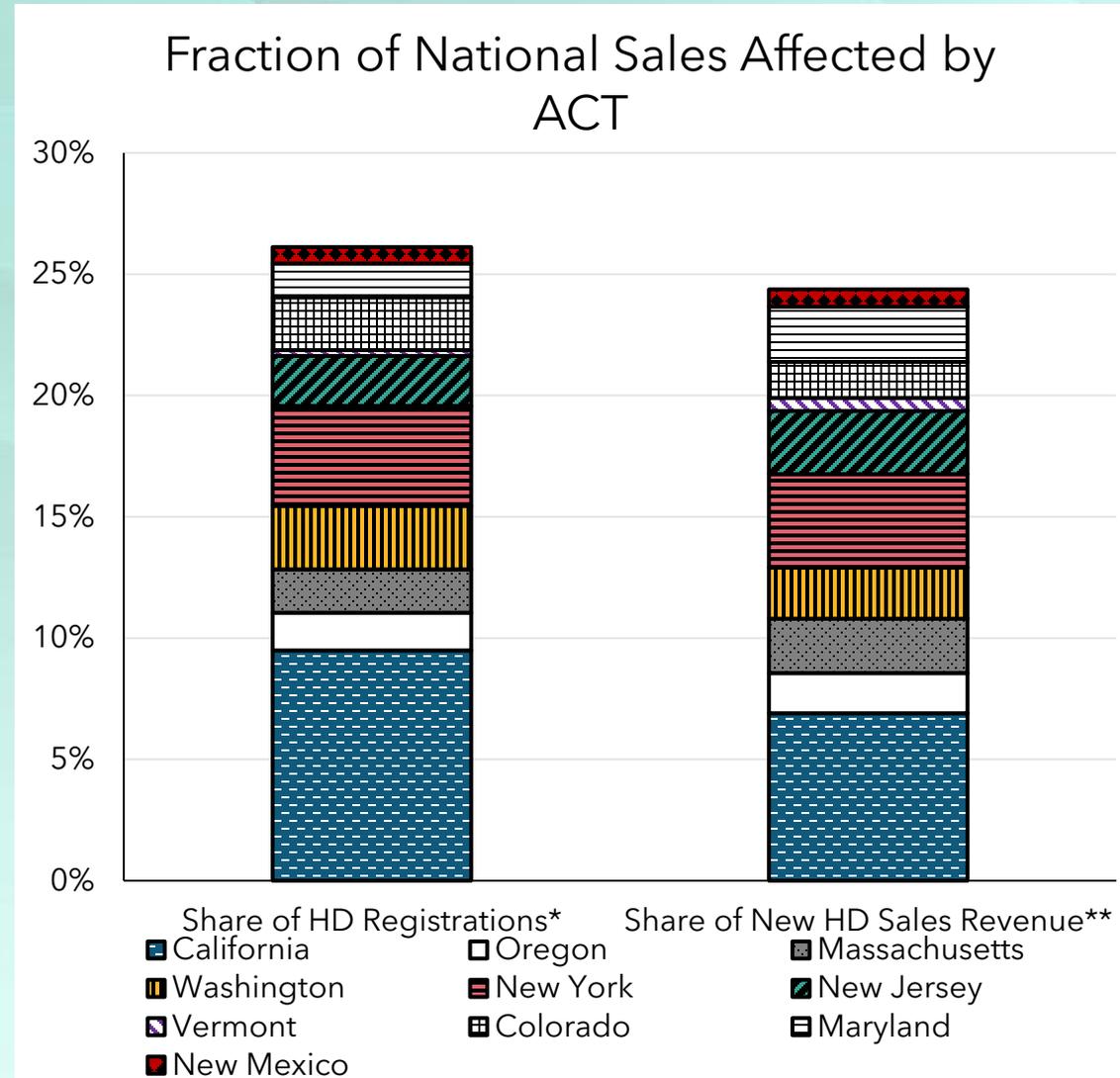
- Met 2024 requirement in 2022 – two years ahead of schedule
 - Abundance of credits expected for 2024 model year
- Numerous flexibility provisions
 - Early credit provisions
 - Banking and trading credits
 - Deficit carryback
- Expanding flexibility in proposed ACT Amendments – expected adoption in 2024

California Is Not Alone

- Advanced Clean Trucks +MHD ZEV MOU
- MHD ZEV MOU



ACT States Currently Represent 25% of Market



Clean Truck Partnership

- CARB agrees to align with 2027 EPA NOx standards, provide flexibility and lead time
- Manufacturers agree to comply with all CARB regulations regardless of litigation outcomes
- Means full commitment to cleaner combustion and ZEVs including 100% ZE sales by 2036
- "In calendar year 2023, CARB will introduce the concept of pooling across states via a public workshop."



DAIMLER TRUCK



general motors



ISUZU

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PACCAR Inc

STELLANTIS





Overview of ZEV Credit Pooling

What Is ZEV Credit Pooling?

- Allows manufacturers to use overcompliance in one state to assist with compliance in another state
- ZEV credit pooling has been used in the light-duty ZEV regulations
 - Provides some flexibility on ZEV deployments
- Results in more ZEVs in certain states and less ZEVs in others, corresponding change in emission benefits

History of Pooling in Light-Duty ZEV

- Advanced Clean Cars - Adopted 2012
 - Separate East and West Region pools, California excluded
 - Credits transfer within pools freely, 30% premium for transfers between East and West Region pools
- Advanced Clean Cars II - Adopted 2022
 - Excess ZEV and Plug-in Hybrid Electric Vehicle credits can be pooled and used towards meeting a portion of other state's compliance
 - Credits can only be transferred to meet an immediate deficit

Model Year	2026	2027	2028	2029	2030
Percentage Allowance	25%	20%	15%	10%	5%

Considerations

- What are manufacturers seeking through pooling to support a successful rollout of the ACT regulation in multiple states?
- How can this program be designed so California and each Section 177 state maintains their criteria and greenhouse gas benefits?
- How to ensure each state's ZEV market grows steadily to support complementary policies (e.g., infrastructure support, workforce training, etc.?)
- How to limit complexity and streamline implementation?

Guest Presentations

- Tim French, Truck and Engine Manufacturers Association
- Rachel Sakata, Transportation Strategies Section Manager, Oregon Department of Environmental Quality
- James Clyne, P.E., Bureau of Mobile Sources and Technology Development Director, New York State Department of Environmental Conservation

Timeline and Next Steps

- Introducing pooling into the ACT regulation requires regulatory amendments
- Staff to determine economic and environmental impacts to California
- Aiming to finalize rulemaking package by 2025
- Submit comments to actreporting@arb.ca.gov