



**United States Environmental Protection Agency
Heavy-Duty Phase 3 Greenhouse Gas**

National Association of Clean Air Agencies

June 25, 2024

Outline

- Heavy-Duty (HD) Greenhouse Gas Timeline
- Phase 3 Greenhouse Gas Scope
- California Air Resources Board's (CARB) Advanced Clean Trucks (ACT) vs. U.S. Environmental Protection Agency (U.S. EPA) Phase 3
- Union of Concerned Scientists (UCS): Three scenarios on how manufacturers would comply with Phase 3

HD GHG Standards Timeline



Phase 1 Model Year's (MY) 2014-2018*

- U.S. EPA's Final Rule in 2011
- CARB's adoption in 2013

Phase 2

MYs 2018 (trailers),** 2021-2027

- U.S. EPA's Final Rule in 2016
- CARB's adoption in 2018

Phase 3

MYs 2027-2032

- U.S. EPA's Final Rule in 2024
- CARB's planned adoption in ~2026/2027 timeframe

*MY: MY 2015 in California

** MY 2020 in California (trailers)

Phase 3 GHG Scope MYs 2027-2032

Short- (Day Cabs) and Long-Haul (Sleeper Cabs) Tractors (class 7-8)



Vocational Vehicles (class 2b-8)



Light- and Medium-Duty Multi-Pollutant Emission Standards

Large Pickups and Vans (class 2b-3)



Removed Phase 2 Trailer Standards

Trailers Pulled by Combination Tractors



CARB's ACT vs. U.S. EPA's Phase 3

	ACT	Phase 3
HD market	California *	Nationwide
Requirements	Must sell zero-emission vehicles (ZEV) as a percentage of annual sales	Performance-based carbon dioxide emission standards
Affected MYs	Increase in manufacturer ZEV sales: 2024 through 2035 MYs	Increase in stringency from 2027 through 2032 MYs
Vehicle Categories	<ul style="list-style-type: none"> • Class 2b-3 • Class 4-8 Vocational Vehicles • Class 7-8 Tractors 	<ul style="list-style-type: none"> • Class 2b-8 Vocational Vehicles • Class 7-8 Tractors
Technology	ZEV, near zero-emission vehicles (NZEV) (plug-in hybrid electric vehicles (HEV) with a minimum all-electric range)	ZEV, more efficient internal combustion engine (ICE) vehicle, vehicle using low carbon fuels (compressed natural gas (NG), liquified NG), HEV, plug-in HEV, vehicles with hydrogen ICE

*Roughly 25% of the HD market have adopted CARB's ACT: CA, CO, MD, MA, NJ, NM, NY, OR, RI, VT, and WA.

CARB's ACT vs. U.S. EPA's Phase 3 (continued)

	ACT	Phase 3
Other provisions	Zero-Emission Powertrain Certification required starting in 2024 MY for Class 4-8 ZEVs	Optional custom chassis standards for certain vocational vehicles
Warranty	3 years or 50,000 miles	<ul style="list-style-type: none"> • 5 years or 50,000 miles for Light HD vehicle (HDV) (except tires) • 5 years or 100,000 miles for Medium HDV and Heavy HDV (except tires) • 2 years or 24,000 miles for tires <p>Components covered include batteries and other components of ZEVs</p>
Additional requirements	<ul style="list-style-type: none"> • Usable battery capacity visible to fleet • Standardized battery capacity test • Allow use of standard scan tool 	Battery durability monitoring requirement beginning 2030 (Battery Electric Vehicle & Plug-in HEV)

CARB's ACT vs. U.S. EPA's Phase 3 (continued)

	ACT	Phase 3
GHG emissions reductions (million metric tons)	~ 11.2 (2020-2040 in California)	~ 1,000 (2027-2055 nationwide)
Emissions	Lowers criteria and GHG emissions	GHG focused
Payback period for purchasers	2-5 years	2-5 years
Periodic Reports	Annually publish ZEV sales information	MY 2024 HD vehicle certification data and ZEV infrastructure development

CARB's ACT vs. U.S. EPA's Phase 3 (continued)

Vocational Vehicles

MY	ACT ZEV Sales Mandate		Phase 3 <i>Projected % ZEV Adoption Rate</i>		
	Class 2b-3	Class 4-8 Vocational	Light HD Vocational	Medium HD Vocational	Heavy HD Vocational
2024	5%	9%	-	-	-
2025	7%	11%	-	-	-
2026	10%	13%	-	-	-
2027	15%	20%	17%	13%	0%
2028	20%	30%	22%	16%	0%
2029	25%	40%	27%	19%	13%
2030	30%	50%	32%	22%	15%
2031	35%	55%	46%	31%	23%
2032	40%	60%	60%	40%	30%
2033	45%	65%	-	-	-
2034	50%	70%	-	-	-
2035+	55%	75%	-	-	-

CARB's ACT vs. U.S. EPA's Phase 3 (continued)

Tractors

MY	ACT ZEV Sales Mandate	Phase 3 Projected % ZEV Adoption Rate	
	Class 7-8 Tractors	Medium HD All Cab & Heavy HD Day Cab Tractors	Sleeper Cab Tractors
2024	5%	-	-
2025	7%	-	-
2026	10%	-	-
2027	15%	0%	0%
2028	20%	8%	0%
2029	25%	12%	0%
2030	30%	16%	6%
2031	35%	28%	12%
2032	40%	40%	25%
2033	40%	-	-
2034	40%	-	-
2035+	40%	-	-

Phase 3: Averaging, Banking, and Trading (ABT)

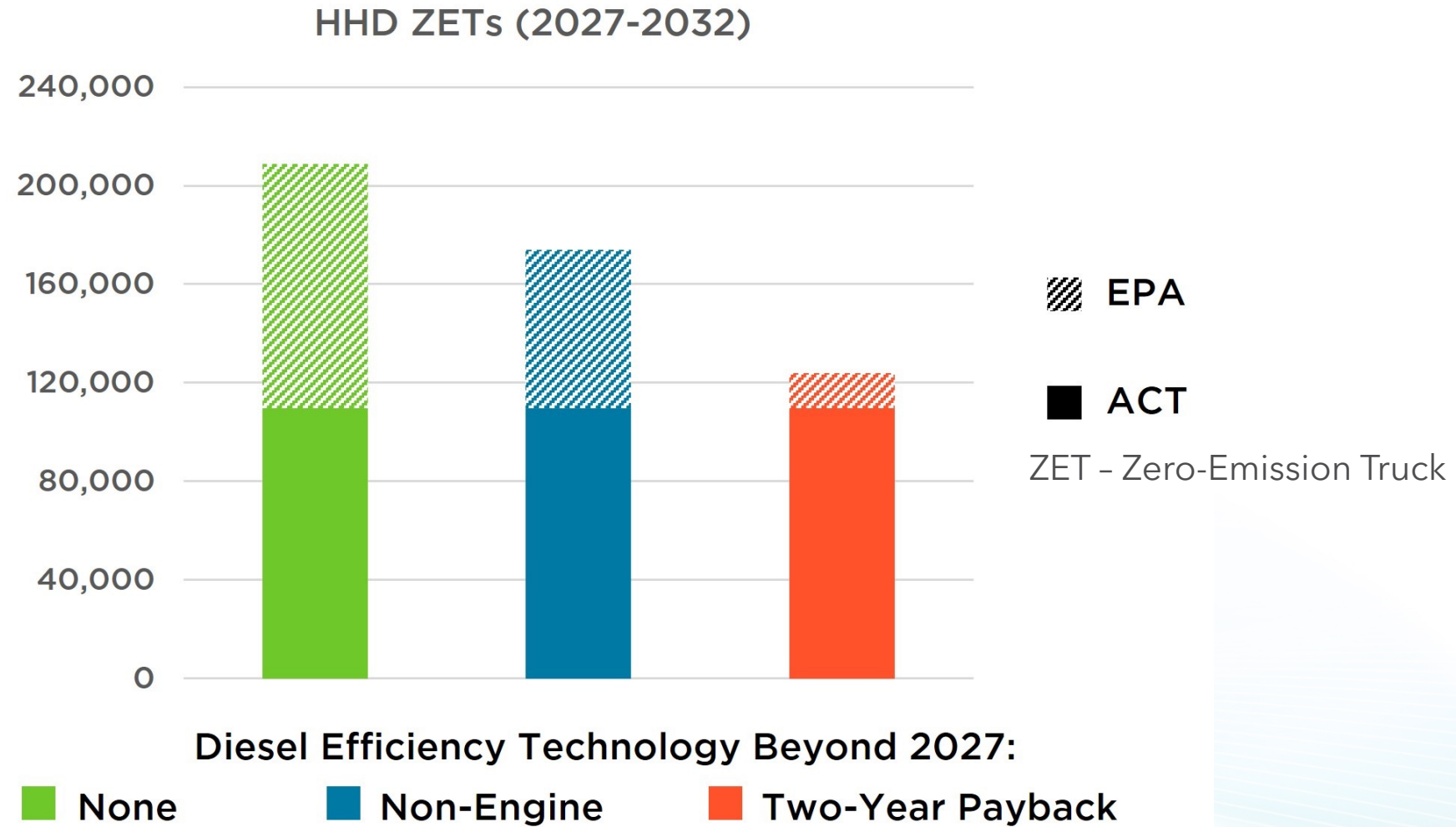
- Production volume includes volumes certified to different state standards
- Retaining advanced technology vehicle credit multipliers for plug-in hybrid, battery, and fuel cell electric vehicle through MY 2027, with restrictions
 - Credits from multipliers may be used in MYs 2027 through 2029 and eliminates the availability of credit multipliers for use in MYs 2030 and later
 - Use base credits, then multiplier credits
- Transitional Flexibility: Credit exchanges across averaging sets
 - Transfer credits between all HD averaging sets in MYs 2027-2032
 - One-way transfer from averaging sets medium-duty vehicles to HD vehicles
- Correct credit calculations in ABT reports

ACT: Flexibilities

- Early credit starting 2021
- Partial credit for NZEVs - plug-in hybrids with minimum all electric range
- Credits can be banked and traded between manufacturers
- Flexibility to shift sales between classes
 - Weighting factors - more credits and deficits for heavier vehicles
 - Exception: tractor deficits must be met with tractor credits

UCS: Three scenarios on how manufacturers would comply with Phase 3

Manufacturers may comply with Phase 3 2027 standards without producing HD ZEVs outside California and Section 177 states



Source: [EPA's Final 2027-2032 Truck Rule Risks Leaving Communities Behind - UCS, March 2024](#)