



Department of
Environmental
Conservation

Stakeholder Outreach

Consideration to Revise 6 NYCRR Part 218 to Incorporate California's Advanced Clean Trucks, Heavy-Duty Low NOx Omnibus, and Phase 2 Greenhouse Gas Standards

February 17, 2021

DEC Panelists:

- Jeff Marshall
- James Symon
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Agenda

- Background
- On-going Medium- and Heavy-Duty (M/HD) Vehicle Electrification Efforts
- California's (CA) Advanced Clean Truck Standards
- Q/A Period
- CA HD Low NOx Omnibus Standards
- CA Phase II Greenhouse Gas Standards
- Q/A Period



Background

- Ozone National Ambient Air Quality Standards (NAAQS)
 - Oxides of Nitrogen (NOx) contribute to ground-level ozone;
 - State Implementation Plan (SIP) commitments
- Climate Leadership & Community Protection Act (CLCPA)
 - 40% greenhouse gas emissions reductions from 1990 levels by 2030
 - 85% greenhouse gas emissions reductions by 2050

Ongoing NYS Medium- and Heavy-Duty Activities

NEW YORK STATE Department of Environmental Conservation

NEW YORK STATE

Clean Transportation NY

Using the Volkswagen Settlement to Drive Clean Transportation in New York

BENEFICIARY MITIGATION PLAN | Revised August 1, 2019

NYC Clean Trucks Program

Expanding the Success of NYC DOT Hunts Point Clean Trucks Program

[Apply For Funding >>](#)

NY Truck Voucher Incentive Program

A PROGRAM OF NYSDOT

Truck Voucher Incentive Program

Governor Cuomo Announces Nation-Leading Initiatives to Expand Electric Vehicle Use to Combat Climate Change

ENVIRONMENT

TRANSPORTATION

TECHNOLOGY

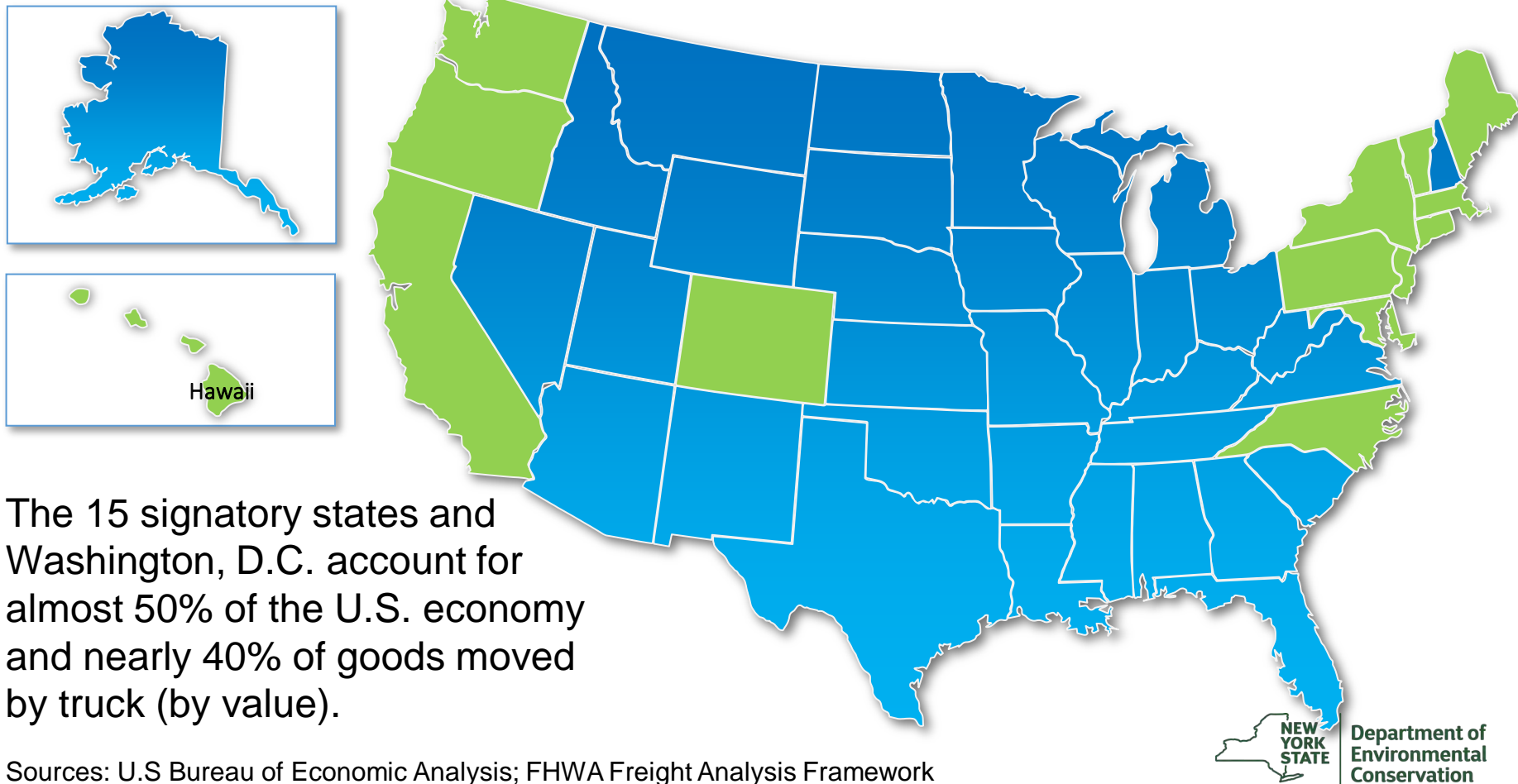
- \$701M Total Budget
- \$206M for Equitable Access in DACs
- \$20M Clean M/HD Innovation Prize
- \$15M in M/HD Fleet Make Ready
- \$10M in SOTS Transit Bus Make Ready
- Fleet Assessment Services



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Medium- and Heavy-Duty (M/HD) Zero Emission Vehicle (ZEV) Memorandum of Understanding

- Commits signatories to work together to foster a self-sustaining market for zero emission medium- and heavy-duty vehicles.
- Calls for 30% of new truck and bus sales to be zero-emission by 2030 and 100% by 2050.
- Emphasizes need to accelerate deployment of zero-emission trucks and buses in disadvantaged communities.
- Directs development and implementation of a M/HD ZEV Action Plan ... Give consideration for leveraging the environmental and air quality benefits associated with adoption of California's **Advanced Clean Trucks** rule.



Clean Transportation Roadmap

- Chart a course to 2030/2050 GHG emissions targets for transportation sector
- Help align and inform policies of NYS agencies working on clean transportation initiatives

Transportation Advisory Panel (TAP)

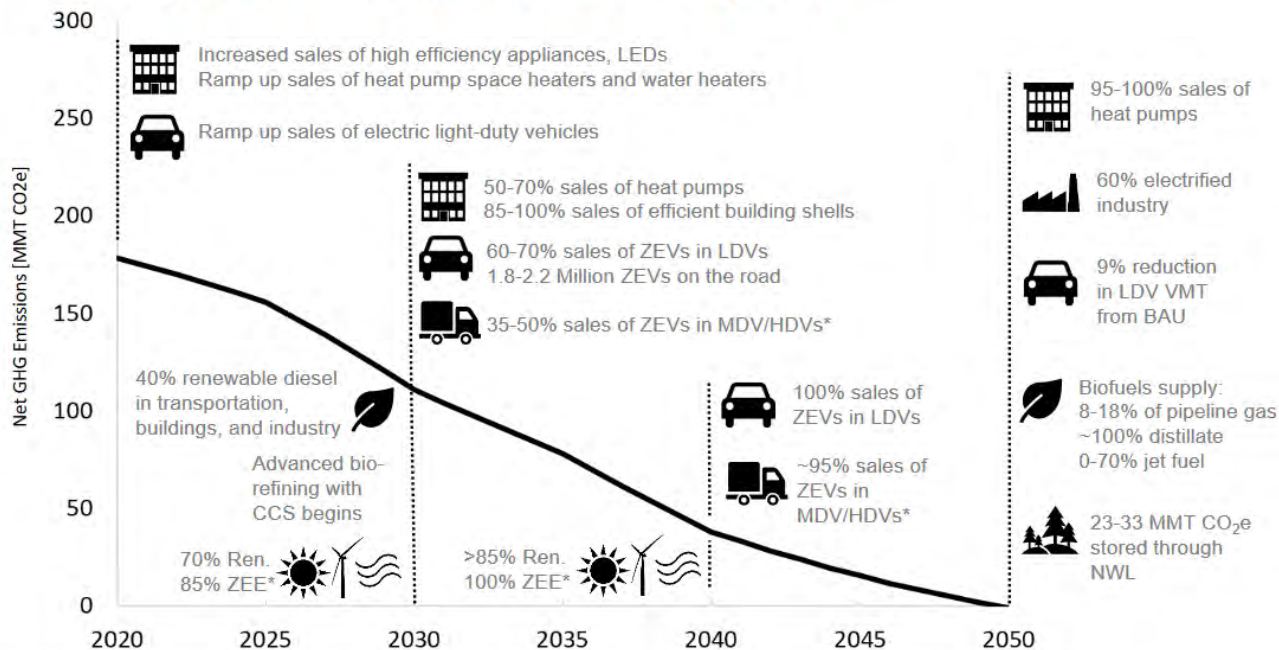
- The Climate Action Council will prepare a Scoping Plan to achieve NY's clean energy and climate agenda.
- TAP will make recommendations for the Council's Scoping Plan in April.
- TAP subgroups: electrification/fuels, public transportation, smart growth, and market-based mechanisms



Key Takeaways

+ Achievement of emissions reductions to meet state law requires action in all sectors

+ A 30-year transition demands that action begin now

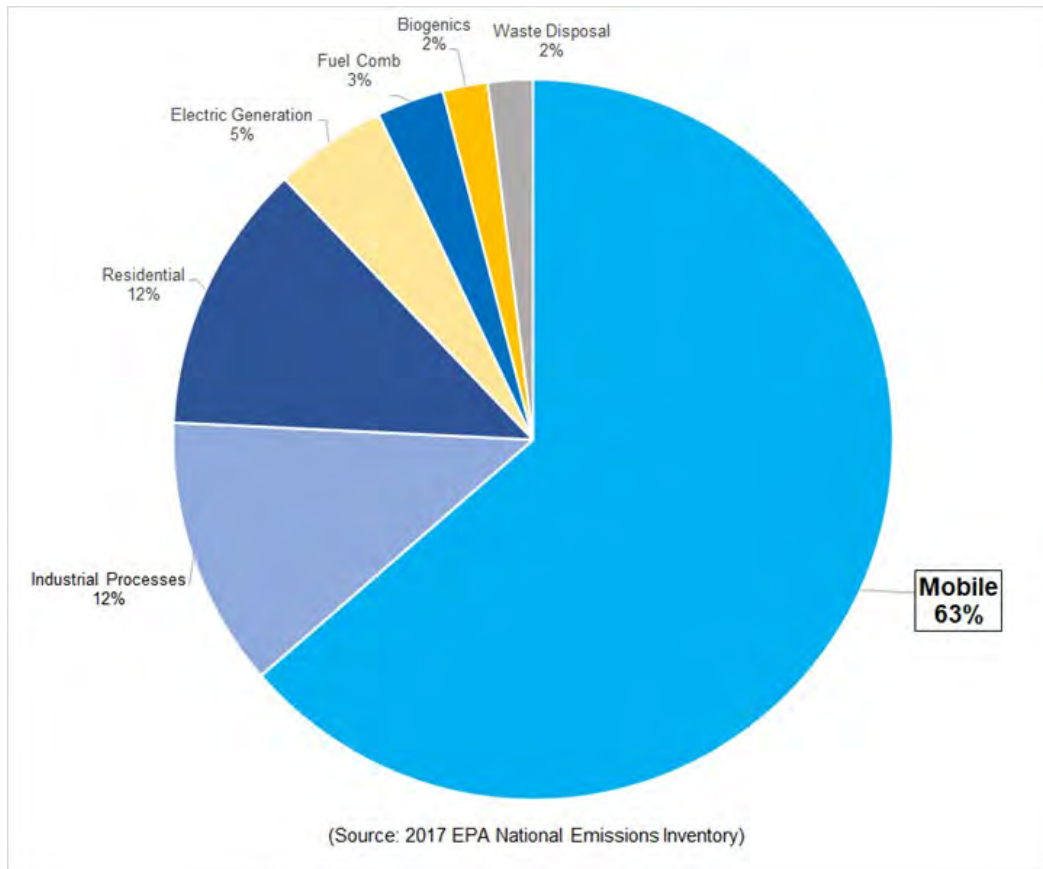


*Zero-Emissions Electricity (ZEE) includes wind, solar, large hydro, nuclear, CCS, and bioenergy; MDV includes buses

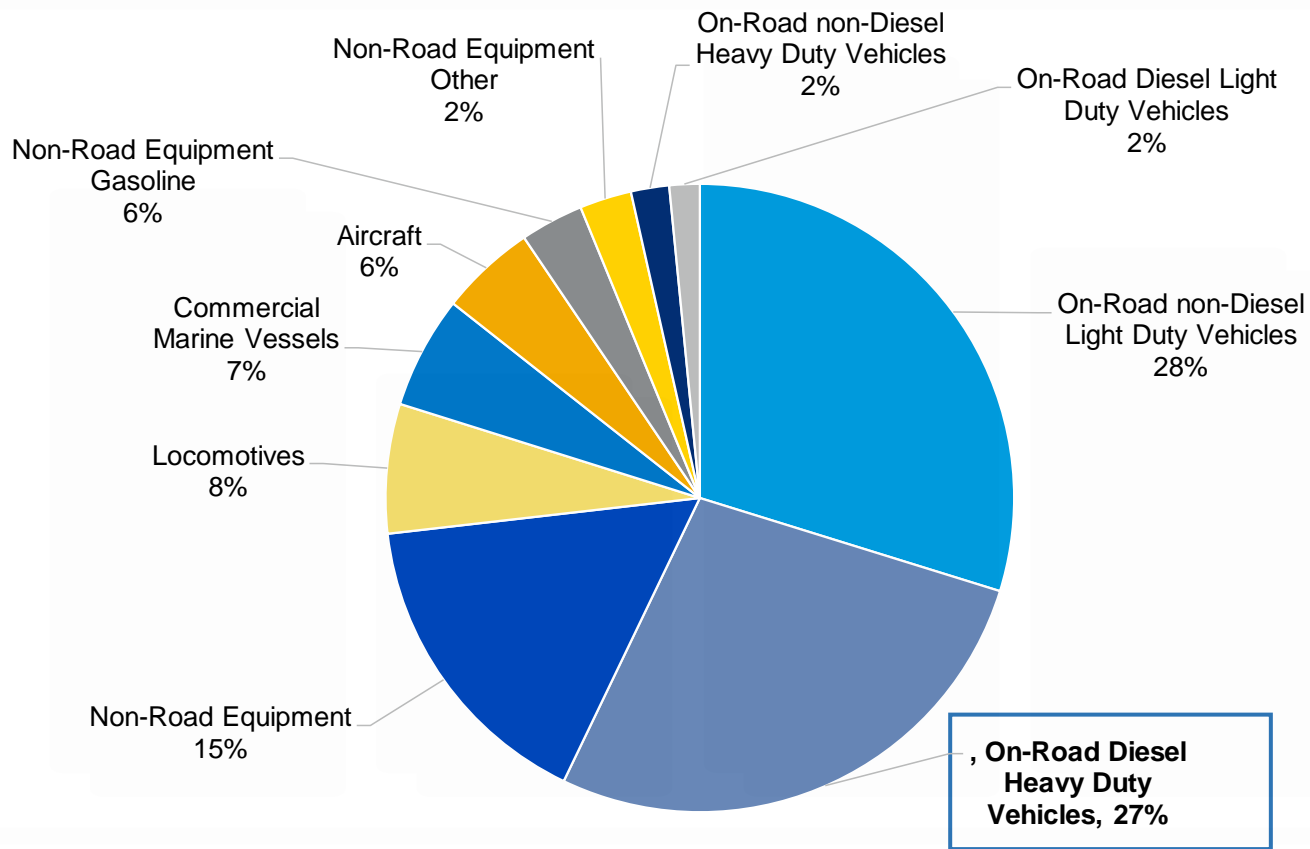


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NYS NOx Emissions Inventory

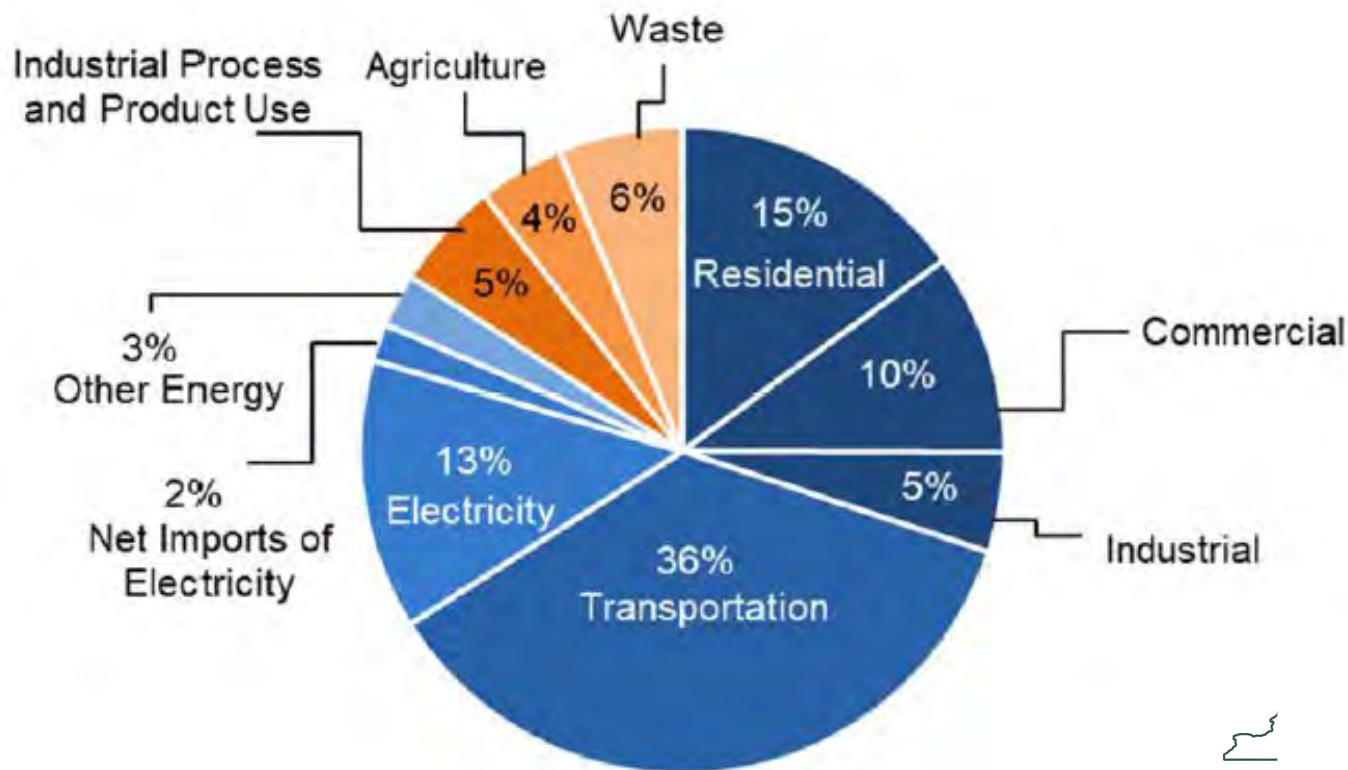


NYS NOx Emissions by Transportation Sector

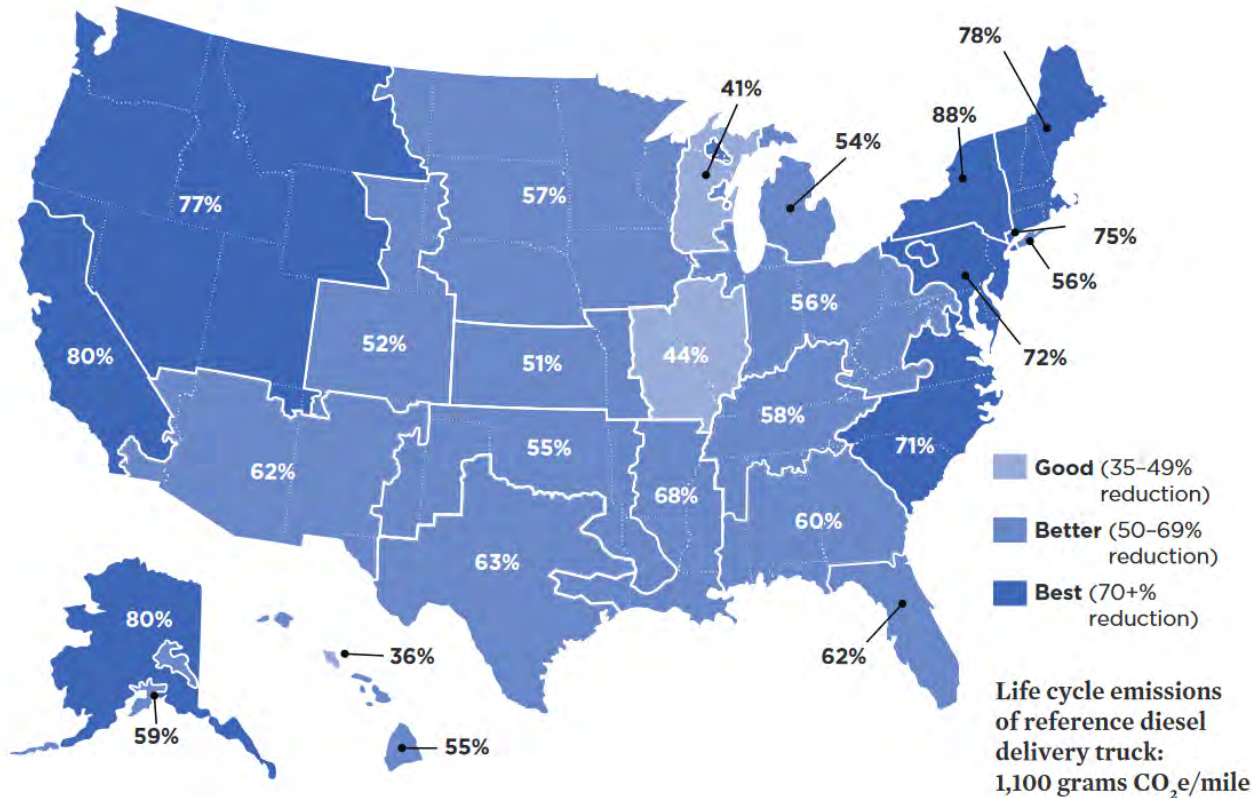


Source: 2017 EPA
National Emissions
Inventory

NYS GHG Emissions by Sector



in All Grid Regions of the United States



This map shows life cycle global warming emissions as a function of different sources of electricity for a common type of delivery truck (Class 5 stepvan). Percentages represent emissions reductions for the electric delivery truck compared with a similar diesel delivery truck.

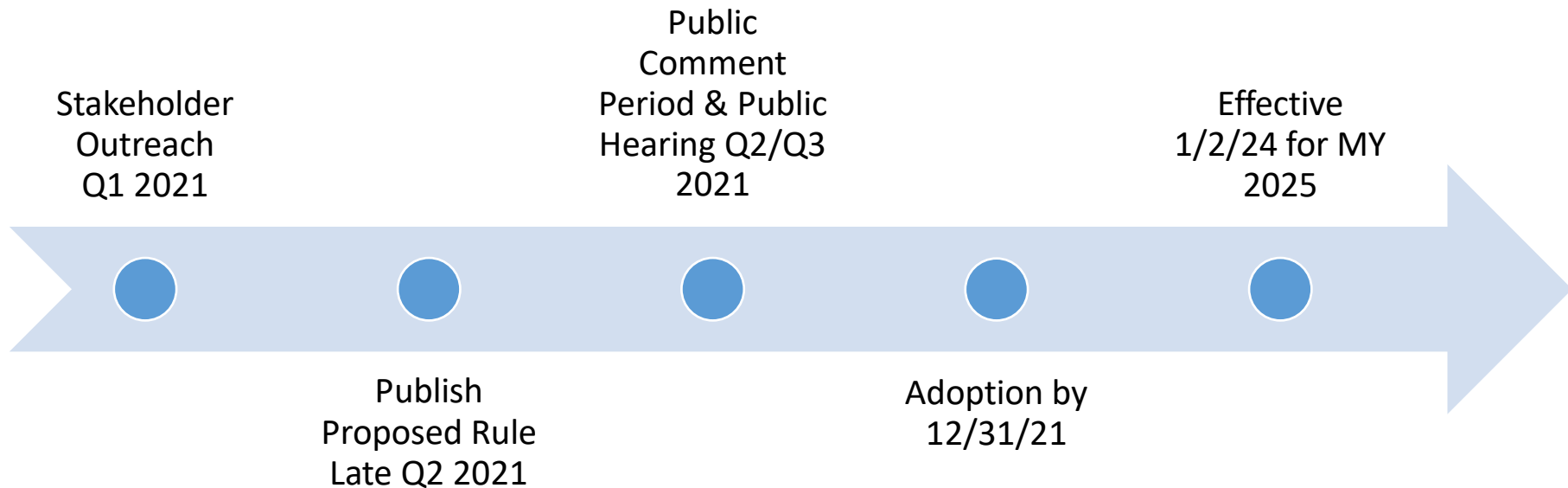
SOURCES: CARB 2018B; EPA 2018B; SANDHU ET AL. 2014; BARNITT AND GONDER 2011.

Part 218 History

- Section 177 of the Clean Air Act
- Identity requirement
- NY adopted CA LEV & ZEV programs 1992
- Adopted CA medium-duty standards 2004 Model Year (MY)
- Adopted CA heavy-duty standards 2005 MY, but reverted to federal heavy-duty diesel standards with 2008 MY
- Revised periodically, most recent revision 2020



Potential 218 Adoption Schedule



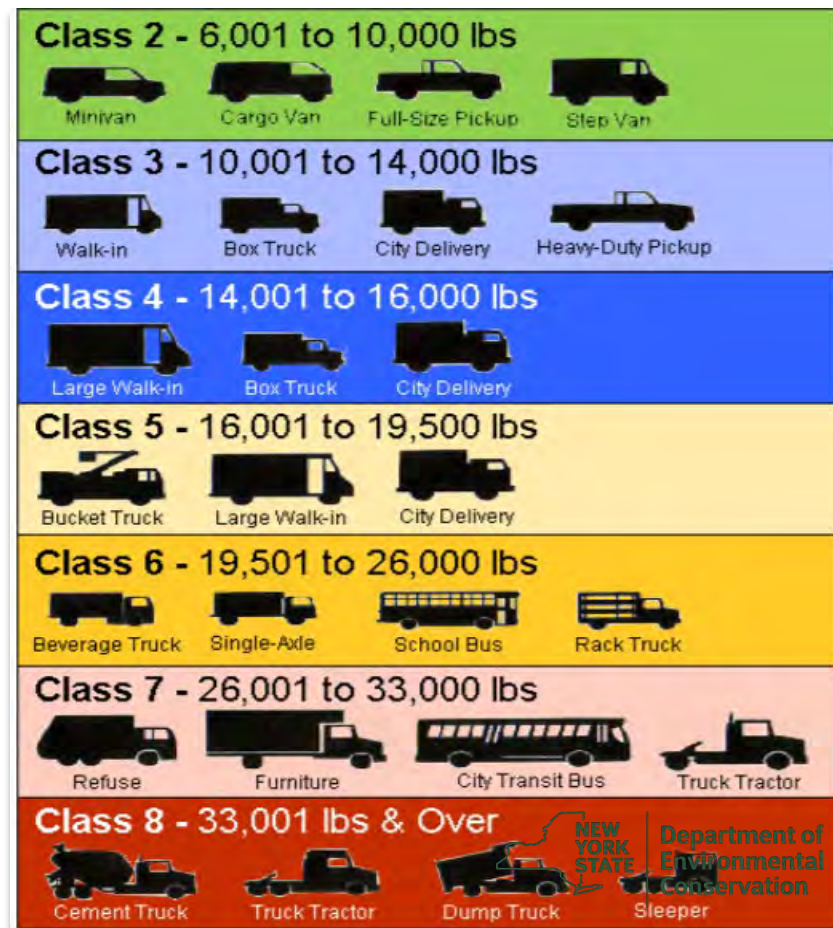
Advanced Clean Truck Standards

- Zero emission vehicle standards for medium & heavy-duty vehicles
- CA ACT has two main components:
 - Original Equipment Manufacturers (OEM) annual sales requirements
 - A one-time large entity reporting requirement

Source: U.S. Department of Energy

Truck Classifications

- Vehicle classes are based on gross vehicle weight rating (GVWR)
- Medium-duty 8,501 lbs to 14,000 lbs GVWR
- Heavy-duty 14,001 lbs and greater GVWR



Medium & Heavy-Duty Zero Emission Vehicle Sales Requirement

- OEM annual sales requirement by vehicle class
- Could start with MY 2025 in NY
- ZEV sales increase annually
- 100% ZEV by MY 2045 where feasible
- ZEV & NZEV credits
- Credit averaging, banking, trading
- Percentage requirements identical to CA; Use NY sales numbers



Annual M/HD ZEV Sales Requirements

ACT ZEV Sales Percentage Schedule			
Model Year	Class 2b-3 Group	Class 4-8 Group	Class 7-8 Tractors Group
2024	5%	9%	5%
2025	7%	11%	7%
2026	10%	13%	10%
2027	15%	20%	15%
2028	20%	30%	20%
2029	25%	40%	25%
2030	30%	50%	30%
2031	35%	55%	35%
2032	40%	60%	40%
2033	45%	65%	40%
2034	50%	70%	40%
2035 and beyond	55%	75%	40%



Medium & Heavy-Duty Vehicle Classes & Credits

- Class 2b-3; Class 4-8; Class 7-8 tractors
- Similar to existing light-duty ZEV program
- Credit obligation applies only to OEMs
- Credit/deficit program
 - Deficit for selling vehicles in NY
 - Credit for selling ZEV & NZEV
 - Heavier vehicles generate more deficits & credits
- Credit banking & trading
 - 5-year credit lifetime
 - Oldest credits used first
 - Can trade between classes & credit types
 - Class 7-8 tractor deficits only met with class 7-8 tractor credits

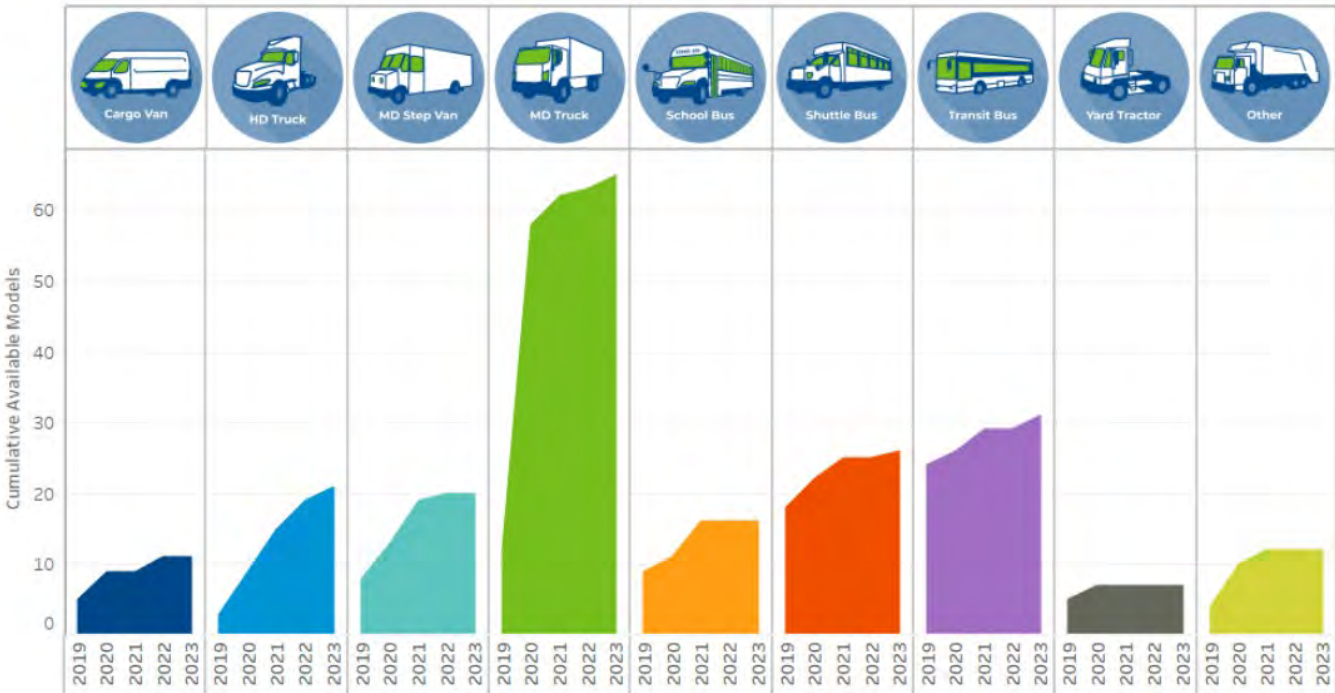


Zero Emission Truck Availability

- Growing number of models across various weight classes currently available from several manufacturers.
- Several manufacturers have announced plans to introduce zero emission trucks in coming model years.
- Most trucks operate less than 100 miles per day and dispatch from central location. Ideal operating conditions for zero emission trucks.
- Technology advances are making zero emission trucks suitable for more applications.



Total cumulative vehicle models by vehicle type and year, U.S. & Canada

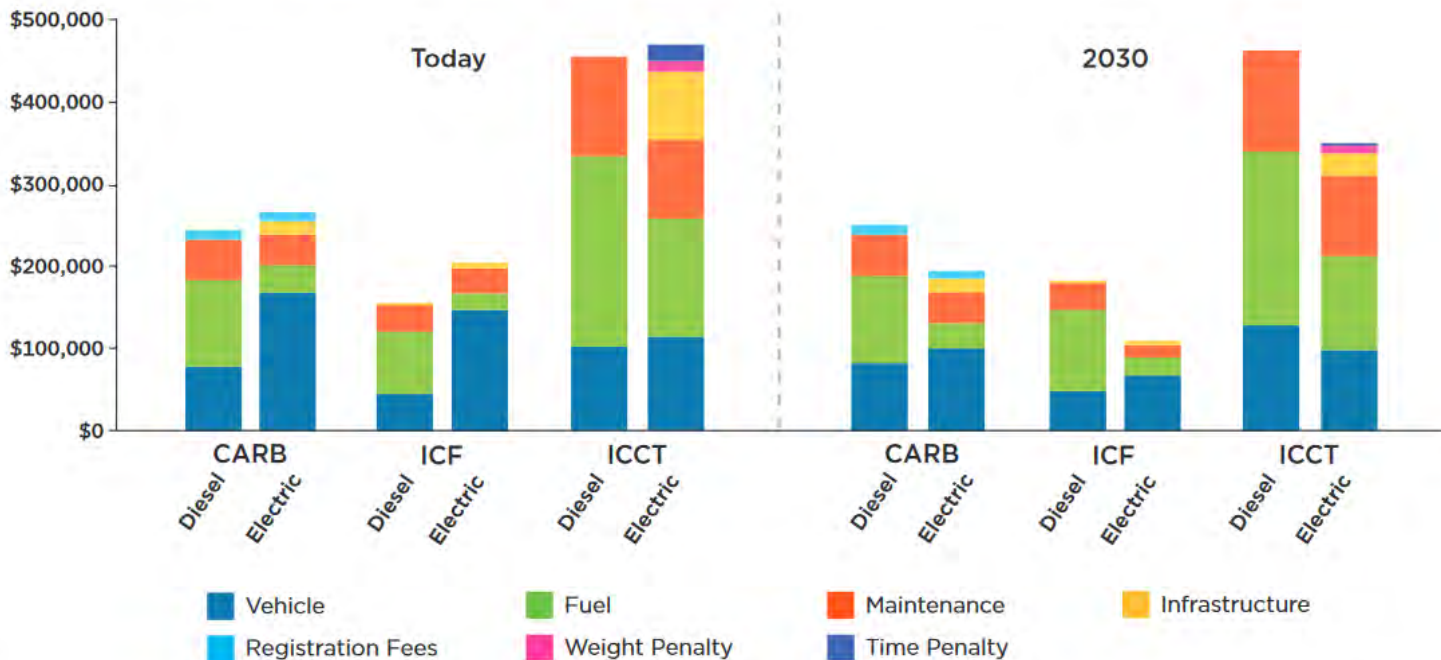


Zero Emission Truck Economic Feasibility

- Higher upfront purchase cost compared to conventional trucks.
- Lower operation & maintenance costs compared to conventional trucks.
- Total cost of ownership (TCO) for some classes/applications achievable now or within next 5 years without incentives. As technology costs decrease, TCO parity expected for all classes.
- Vehicle and charging infrastructure incentives available to offset initial increased costs of transitioning to zero emission trucks.



FIGURE 8. Total Cost Comparisons, Class 6 Delivery Trucks

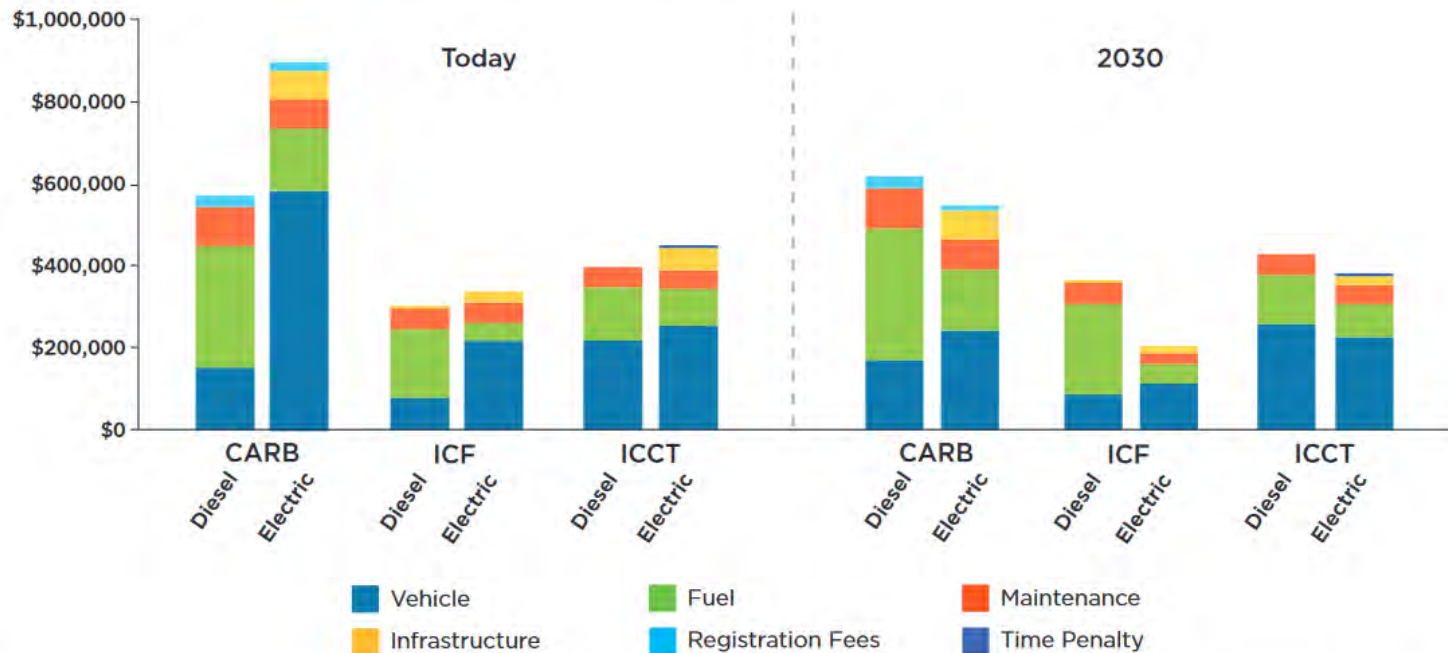


The total cost of ownership for Class 6 electric delivery trucks is competitive with diesel vehicles today and estimated to be significantly lower within the next decade.

Notes: In the ICCT study, "today" corresponds to 2020; in the CARB and ICF studies, 2018. Vehicle costs in the ICF and CARB analyses account for the value of the vehicle at the end of its assumed period of ownership.

SOURCES: HALL AND LUTSEY 2019; ICF N.D.A, CARB 2019A.

FIGURE 9. Total Cost Comparisons, Class 8 Short-Haul/Drayage Trucks



The total cost of ownership for Class 8 electric short-haul/drayage trucks can be lower than diesel today with financial incentives, and is estimated to be lower for diesel trucks within the next decade without such incentives.

Notes: In the ICCT study, "today" corresponds to 2020; in the CARB and ICF studies, 2018. Vehicle costs in the ICF and CARB analyses account for the value of the vehicle at the end of its assumed period of ownership.

SOURCES: HALL AND LUTSEY 2019; ICF N.D.A, CARB 2019A.

Large Entity Reporting

- One-time reporting (NY: 2022/2025MY)
 - Any business with more than \$50M annual revenue with at least 1 M/HD vehicle and in-state facility
 - Fleets with 50+ M/HD vehicles with an in-state facility
 - Brokers with 50+ M/HD vehicles with an in-state facility
 - State, local, government entities with at least 1 M/HD vehicle
- School districts, transit agencies, emergency vehicles, military tactical vehicles, and vehicles awaiting sale are exempt



Reasons for a Large Entity Reporting Requirement

- Information will be used to support regulatory rulemaking activities
- Provide insight into existing use cases
- Ensure level playing field for all vehicle owners/operators
- Assess EV infrastructure needs



Requested Reporting Information

- Company & facility information
 - Company name, contact person, identification & permit numbers
 - How many contracted trucks & companies under contract
 - Address of each location with M/HD vehicles & what fueling infrastructure is present
- Vehicle information
 - Number of vehicles (grouped by fuel type, body type, weight class)
 - VMT (daily & annual), usage patterns, returns to base/operates near base, used to support emergencies, replacement cycle

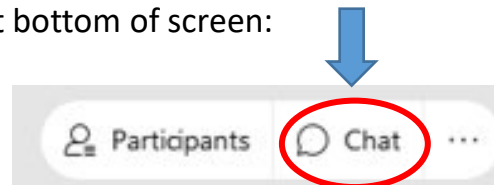


ACT Questions and Comments

- To type in a question or comment, or if you're having technical difficulties, you can use the Chat feature.
- For technical difficulties you can also call, 518-402-9710.

From a PC/Desktop Computer

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From the Webex mobile app

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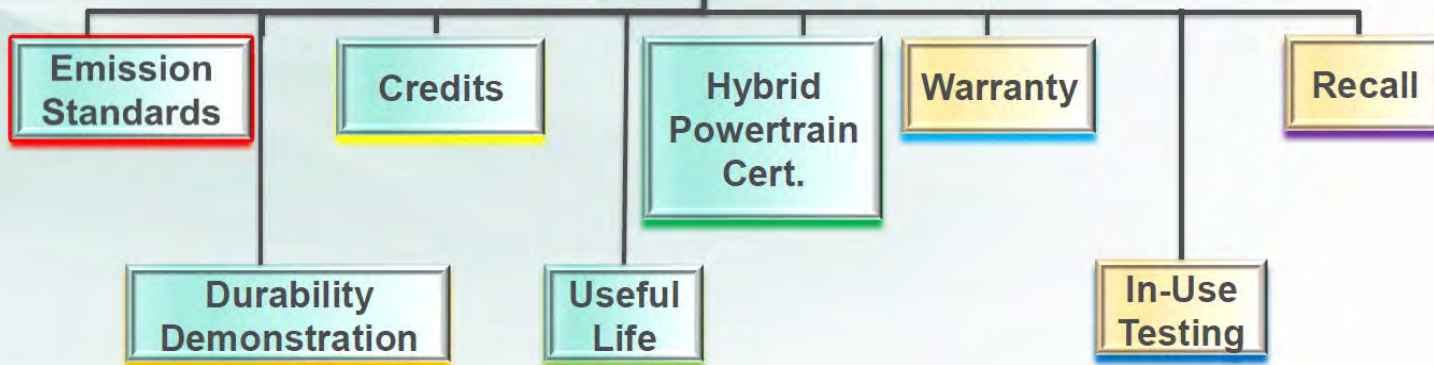


Omnibus Heavy-Duty Low NOx Standards

- Proposed NOx standards 90% lower than current standards
- In-use compliance standards
- Low Load Cycle (LLC) standards
- Useful life & warranty
- OBD, durability demonstration, credits
- Powertrain certification testing

Major Program Elements

Heavy-Duty Omnibus Regulation



Certification



In-use



Proposed Exhaust Emission Standards

- Applies to medium & heavy-duty vehicles >10,000 lbs GVWR
- Heavy-Duty Diesel (HDDE) & Otto-cycle (HDOE) engines
- Could start with MY 2025 in NY (CA MY2024)
- Additional Optional Low NOx standards



Proposed Exhaust Emission Standards

Model Year	Proposed NOx Exhaust Emissions Standards			
	HDDE			HDOE
	FTP/RMC (g/bhp-hr)	LLC (g/bhp-hr)	Idling (g/hour)	FTP (g/bhp-hr)
2024*-2026	0.05	0.20	10	0.05
2027 +	0.015-0.030	(1-3) x FTP	<= 10	0.015-0.030
Model Year	Proposed PM Exhaust Emissions Standards			
2025 +	0.005	---	---	0.005

Heavy-Duty In-Use Compliance Testing

- Moving Average Window method (MAW)
- Considering Exponentially Weighted Moving Average Window
- 25% of engine families per year
- OEM submits test plan for CARB approval
- Real world driver and route for full day or OEM testing with prior CARB approval
- 3 Bin MAW approach groups related activity



Low Load Cycle (LLC)

- Supplemental certification cycle to control emissions during low load operation
- Significant NOx reductions using advanced engine hardware, improved engine calibrations and advanced aftertreatment system
- Cycle lasts approximately 90 minutes
- Challenge scenarios: Low Load Transient, Idle, Motoring, and return to High Load events



Heavy-Duty Useful Life & Warranty

- Useful Life
 - Period during which engine must demonstrate compliance with emission certification standards
 - Estimate of typical time to rebuild or retire engine family
 - Applies to engine & emission control systems
- Warranty
 - Assurance that vehicles, engine, control systems free from defects
 - Ensures that emission control systems will be effective & durable throughout useful life
 - Encourages vehicle owner to maintain/repair malfunctioning emissions control systems during warranty coverage period since manufacturer pays for repair/replacement

Heavy-Duty Useful Life & Warranty Periods

Vehicle/Engine Category Gross Vehicle Weight Rating (GVWR)	Useful Life Phase-In Effective MY 2027 (Miles)	Useful Life Phase-In Effective MY 2031 (Miles)	Warranty Period Effective MY 2027 (Miles)	Warranty Period Effective MY 2031 (Miles)
Heavy Heavy-Duty Diesel Class 8 GVWR > 33,000 lbs.	600,000 11 years/30,000 hours	800,000 12 years/40,000 hours	450,000 7 years/22,000 hours	600,000 10 years/30,000 hours
Medium Heavy-Duty Diesel Class 6-7 19,500 < GVWR ≤ 33,000 lbs.	360,000 11 years	450,000 12 years	270,000 7 years/13,000 hours	360,000 10 years/18,000 hours
Light Heavy-Duty Diesel Class 4-5 14,000 < GVWR ≤ 19,500 lbs.	240,000 12 years	320,000 15 years	180,000 7 years/9,000 hours	240,000 10 years/12,000 hours
Heavy-Duty Otto GVWR > 14,000 lbs.	190,000 12 years	250,000 15 years	150,000 7 years/7,000 hours	200,000 10 years/10,000 hours



Heavy-Duty Useful Life & Warranty Periods

- Phase-In starting MY 2027, completed MY 2031
- Applies to Class 4+ engines used in Class 4-8 vehicles
- Applies to engines certified to Diesel-cycle & Otto-cycle standards
- Also applies to applicable diesel-fueled engines used in HEVs
- Does NOT apply to ZEV
- Warranty follows engines used in CA certified vehicles sold & used outside CA
- Applies to vehicle & engine parts that affect regulated criteria pollutant emissions, including any parts that illuminate the OBD MIL

Phase 2 Greenhouse Gas Standards

- CA and federal Phase 2 GHG standards are harmonized
- Applies to GVWR > 8,500 lbs.
- CA specific requirements beyond federal Phase 2
 - Certification documentation
 - Warranty
 - End-of-year reporting
 - Environmental performance label specifications
 - Air conditioning leakage requirements

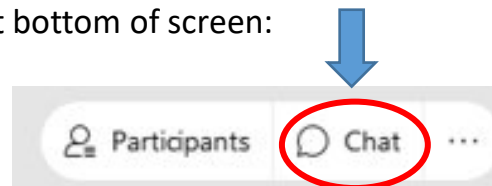


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Thank You

For more information and updates, go to the DEC Website:

- M/HD ZEV MOU: <https://www.dec.ny.gov/chemical/121209.html>
- NYS VW App D: <https://www.dec.ny.gov/chemical/109784.html>

Stakeholder Comments for possible NY adoption of California's ACT, Omnibus Heavy-Duty Low NOx Standards, Phase 2 GHG can be submitted to: <mailto:MHDZEVPlan.Air@dec.ny.gov>

DEC Panelists: Jeff Marshall, James Symon, James Clyne

Contact us at: air.regs@dec.ny.gov