Public Stakeholder Meetings on Advanced Clean Cars II

Massachusetts Department of Environmental Protection
September 13 and 14, 2022

Agenda

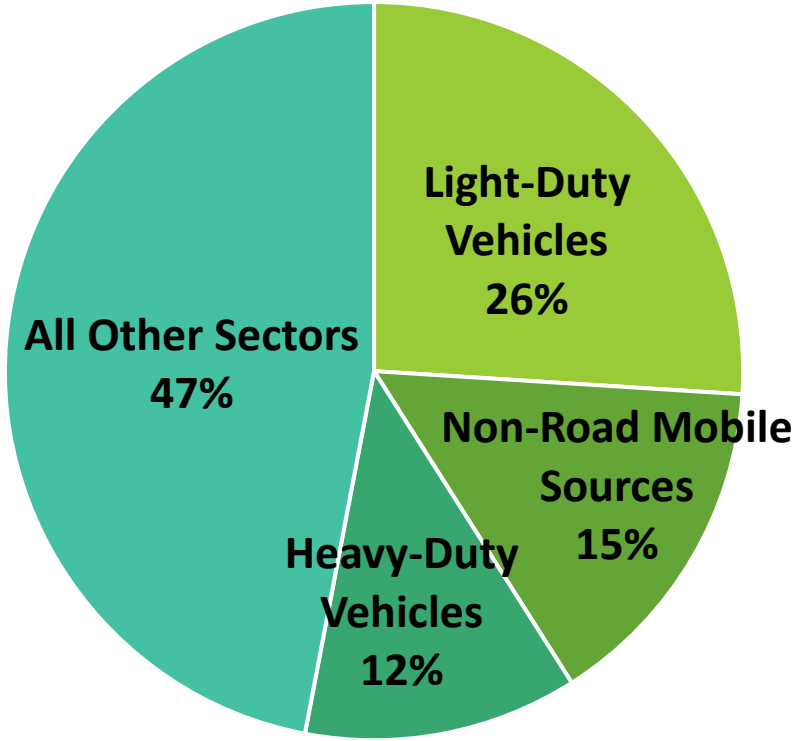
- Background
- Statutory Authority
- Multi-State Light-duty Zero Emission Vehicle (ZEV) Memorandum of Understanding (MOU) and Action Plan
- California Advanced Clean Cars II (ACC II) Regulations including:
  - ZEV Regulation
  - Low Emission Vehicle (LEV) Regulation
- Questions

Mobile Sources Health Impacts

- Mobile sources are the greatest contributor to emissions of criteria pollutants and greenhouse gases, which pose significant threats to public health and lead to climate change respectively
- Pollutants of concern that contribute to poor air quality relative to ACC II include nitrogen oxides (NOx) and particulate matter (PM)
- Public health impacts from on-road vehicle emissions disproportionately affect overburdened and underserved communities and environmental justice (EJ) populations
- Reducing pollutants through electrification can lead to better health outcomes for EJ populations

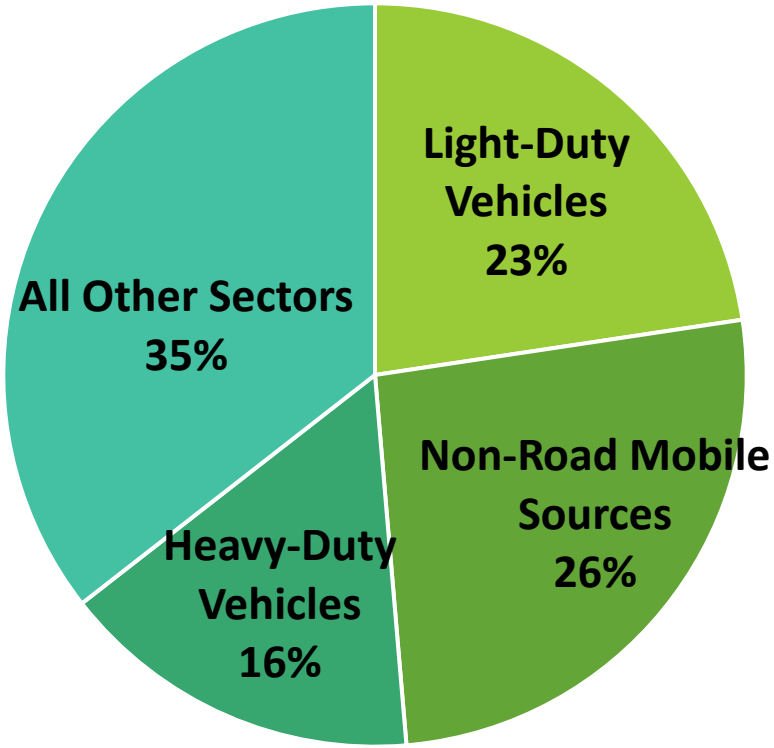
2018 Greenhouse Gas Emissions in NESCAUM Region

- 427.7 million metric tons of carbon dioxide equivalent were emitted in the Northeast States for Coordinated Air Use Management (NESCAUM) Region including CT, MA, ME, NH, NJ, NY, RI and VT



2017 Nitrogen Oxide Emissions in NESCAUM Region

- 648,225 tons of nitrogen oxides were emitted in the NESCAUM Region in 2017



Massachusetts Law and Plans

- Massachusetts General Law c. 111 §142K requires Massachusetts to adopt California motor vehicle emissions standards as long as those standards achieve greater motor vehicle emissions reductions than federal standards

- MassDEP incorporates California standards in regulation 310 CMR 7.40 *Low Emission Vehicle Program*

- Massachusetts Climate Plans include adoption of ACC II
  - *Massachusetts Clean Energy and Climate Plan for 2025 and 2030*
  - *Massachusetts 2050 Decarbonization Roadmap*

Federal Clean Air Act (CAA) Provisions

- § 202(a): Requires United States Environmental Protection Agency (EPA) to establish motor vehicle emissions standards
- § 209(b): Provides California with ability to set stricter motor vehicle emission standards than EPA
- § 177: Authorizes states to adopt California's motor vehicle emission standards in lieu of defaulting to EPA's standards: no state shall adopt a different set of standards, which would create a so-called "third vehicle"; states that adopt California standards must provide at least 2 model years (MYs) notice to manufacturers

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Multi-state ZEV MOU

- Governors of 8 states (CA, CT, MD, MA, NY, OR, RI and VT) signed the zero emission vehicle (ZEV) memorandum of understanding (MOU) released in May 2014 to coordinate action to ensure the successful implementation of state ZEV programs

2018 Multi-State ZEV Action Plan

- ZEV Action Plan first released in 2014 and then updated for 2018
  - Developed by 9 states (NJ joined in 2018)
  - Builds on the 2014 Plan to accelerate market growth during the next phase of market development
  - Identifies challenges and presents priority strategies and actions for Task Force states
  - Recommends actions for automakers, utilities, dealers and other key partners and stakeholders to support market acceleration and facilitate effective collaboration
  - https://www.nescaum.org/documents/2018-zev-action-plan.pdf

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Advanced Clean Cars II standards

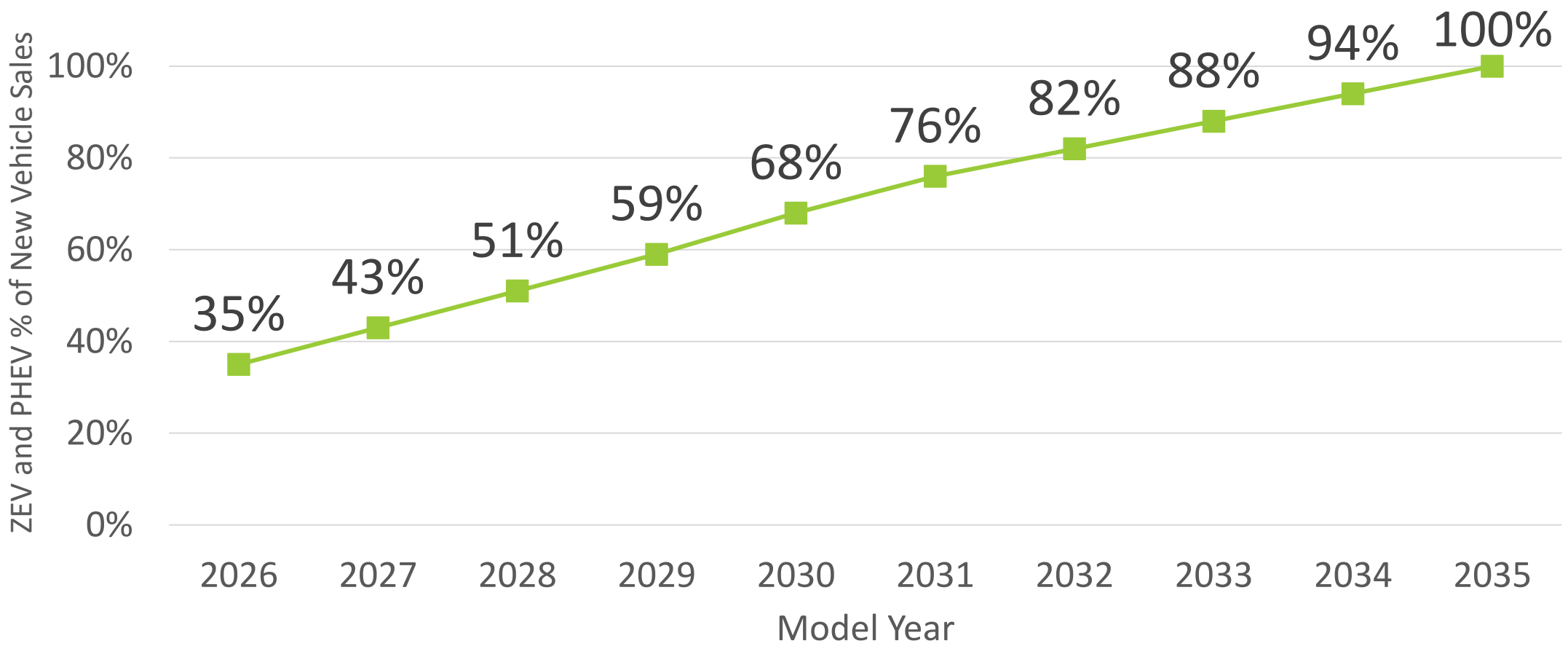
- Zero Emission Vehicle requirements: Passenger Cars and Light-Duty Trucks for MYs 2026+
  - ZEV and plug-in hybrid electric vehicle (PHEV) increasing percentage sales requirement; range, warranty; credit for making ZEVs and PHEVs more affordable to EJ communities
- Low Emission Vehicle IV: Passenger Cars, Light-Duty Trucks (LDTs), and Medium-Duty Vehicles for MYs 2026+
  - More stringent criteria pollutant standards for non-methane organic gases (NMOG) plus NOx (NMOG+NOx), PM, and evaporative emissions

Advanced Clean Cars II Timing

- California Air Resources Board (CARB) released initial proposal April 12, 2022
- First CARB hearing June 9, 2022
- Second CARB hearing August 25, 2022 at which ACC II was approved
- ACC II will be submitted to California Office of Administrative Law in Fall 2022 for review and approval
- MassDEP plans to adopt in 310 CMR 7.40 by end of CY 2022

13 CCR § 1962.4
Zero-Emission Vehicle Standards for 2026 and Subsequent MY Passenger Cars and Light-Duty Trucks

ACC II Annual ZEV Percentage Requirement



Annual ZEV Requirement

- Annual ZEV Requirement for Intermediate and Large Volume Manufacturers = Annual Percentage Requirement (from graph) x Production Volume of passenger cars and light-duty trucks

- Annual ZEV Requirement can be met with:
  - Battery Electric Vehicles (BEVs) and Fuel Cell Electric Vehicles (FCEVs) delivered for sale in Massachusetts starting in MY 2026
  - Plug-in Hybrid Electric Vehicle (PHEV) values earned starting in MY 2026 (maximum of 20% of Annual ZEV Requirement)
  - Environmental Justice (EJ) vehicle values earned in MYs 2024-2031 for use in MY 2026-2031 (maximum of 5% of Annual ZEV Requirement)
  - Early compliance vehicle values earned in MYs 2024 and 2025 for use in MYs 2026-2028 (maximum of 15% of Annual ZEV Requirement)

Requirements for BEVs

- Minimum 200 miles certification range (= 0.55 x urban all-electric range + 0.45 x highway all-electric range)
- MY 2026-2029 Durability requirement: maintain 70% of certification range for 70% of vehicles in test group for full useful life of 10 years/150,000 miles
- MY 2030+ Durability requirement: maintain average 80% of certification range for all vehicles in test group for full useful life of 10 years/150,000 miles
- MY 2026-2030 Battery warranty requirement: 70% state of health for 8 years/100,000 miles
- MY 2031+ Battery warranty requirement: 75% state of health for 8 years/100,000 miles
- Fast Charge Capable
- Supplied with dual-capable Level 1/Level 2 Charging Cord
- Standardized Data Parameters (e.g., battery charge level)

Requirements for PHEVs

- PHEV with minimum 70 miles certification range and minimum 40 miles all-electric range counts for 1 PHEV value
  - 2026-2028 partial PHEV value if minimum 43 to 70 miles of certification range; or if also minimum 10 miles all-electric range
- Durability requirement: 15 years/150,000 miles performance and defects warranty
- MY 2026-2030 Battery warranty requirement: 70% state of health for 8 years/100,000 miles
- MY 2031+ Battery warranty requirement: 75% state of health for 8 years/100,000 miles
- Fast Charge Capable
- Supplied with dual-capable Level 1/Level 2 Charging Cord
- Standardized Data Parameters (e.g., battery charge level)

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EJ Vehicle Value Opportunities

New ZEVs and PHEVs through Community-based Clean Mobility Programs

- 2024-2031 MY
- 0.50 value for ZEV
- 0.40 value for PHEV
- 25% Discount from MSRP

New ZEVs and PHEVs Offered below MSRP

- 2026-2028 MY
- 0.10 value for ZEVs or PHEVs
- ≤$20,275* MSRP passenger cars
- ≤$26,670* MSRP LDTs

ZEVs or PHEVs Sold at the End of Lease

- 2026-2031 MY
- 0.10 value if to dealership participating in a financial assistance program (FAP)
- +0.15 value if then sold to FAP participant
- ≤$40K* MSRP when new

EJ Vehicle Values may not be transferred to another CAA s.177 state

*Manufacturer's Suggested Retail Price (MSRP) shall be adjusted annually by multiplying the MSRP by a Consumer Price Index Adjustment

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Community-based Clean Mobility Program

California's requirements for a "Community-based Clean Mobility Program" that can earn one type of EJ vehicle value are:

1) Provides access to clean mobility solutions other than vehicle ownership including ZEV car sharing, ride-sharing, vanpools, ride-hailing, or on-demand first-mile/last-mile services;

2) Serves a community in which at least 75 percent of the census tracts in the project area (where community residents live and services operate) are: a disadvantaged community…, a low-income community…, or a tribal community regardless of federal recognition; and

3) Is implemented by a community-based organization; Native American Tribal government regardless of federal recognition; or a public agency or nonprofit organization that has received a letter of support from a project-related community-based organization or local community group that represents community members that will be impacted by the project or has a service background related to the type of project.

Fulfilling a Shortfall

- Subject to limitations specified in 13 CCR § 1962.4(g), manufacturer may fulfill a shortfall using any combination of:
  - excess ZEV, PHEV, or EJ vehicle values (up to the 5% allowed on slide 14)
  - early compliance ZEV and PHEV values (up to the 15% allowed on slide 14)
  - converted ZEV and PHEV values (15% or 10-25%, depending on manufacturer choice) converted from ACC I credits at the end of MY 2025
  - pooled ZEV and PHEV values (dropping 5% per year, from 25% in 2026 to 0% in 2031)
    excess values transferred from CA or another CAA s.177 state
  - proportional FCEV values (dependent on CA sales)

- In determining Compliance or Deficit with Annual ZEV Requirement, manufacturer must make up a MY deficit within 3 MYs

Reporting Requirements

- May 1st ZEV reporting
  - Due prior to May 1 of the calendar year following the close of the model year
  - Total number of light-duty vehicles produced and delivered for sale in MA
  - For each ZEV/PHEV/FCEV: Vehicle Identification Number (VIN), MY, Executive Order number, make, model, test group, and state
  - EJ vehicle values
  - Compliance or deficit report, including ZEV requirement and excess or deficit for the MY
- September 1st ZEV reporting
  - Due prior to September 1 of the calendar year following the close of the model year
  - Supplemental report calculations: banking, usage or transfer of ZEV, PHEV, EJ, early compliance, excess, converted ZEV and PHEV, pooled or traded vehicle values
  - Starting and ending balances of vehicle values for the MY

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LEV IV

13 CCR § 1961.4 *Exhaust Emission Standards and Test Procedures - 2026 and Subsequent MY Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles*

- NMOG+NOx emission standard
- Particulate Matter (PM) standards

13 CCR § 1976 *Standards and Test Procedures for Motor Vehicle Fuel Evaporative Emissions*

NMOG+NOx Exhaust Emission Standard

- Each vehicle delivered for sale is certified to a specific NMOG+NOx emission bin
- Manufacturers must meet NMOG+NOx fleet average
- ZEVs phased-out from the NMOG+NOx fleet average starting with MY 2026, while maintaining a fleet average of 0.030 grams per mile

MY	NMOG+NOx Fleet Average (grams/mile)	% of ZEVs Allowed
2025 and earlier	0.030	100
2026	0.030	60
2027	0.030	30
2028	0.030	15
2029+	0.030	0

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Particulate Matter Standards

- PM emission standards for aggressive driving will tighten on below phase-in schedules for:
  - light-duty vehicles (LDV) from 6 to 3 milligrams/mile
  - medium-duty vehicles (MDV) from old standards at top of next slide to new standards at bottom of next slide

MY	Maximum % of LDV certified to 6 milligrams/mile	Minimum % of LDV certified to 3 milligram/mile	Maximum % of MDV certified to old standards	Minimum % of MDV certified to new standards
2026	100	0	100	0
2027	75	25	70	30
2028	50	50	40	60
2029	25	75	0	100
2030+	0	100		

MY 2017-2028 MDV PM Standards 13 CCR 1961.2(a)(7)(D)

Vehicle Type	HP/GVWR	PM (mg/mi)
8,501-10,000 lbs. GVWR	≤ 0.024 > 0.024	7 10
10,001-14,000 lbs. GVWR	n/a	7

MY 2026+ MDV PM Standards 13 CCR 1961.4(e)(3)(A)1.

Vehicle Type	HP/GVWR (power to weight ratio)	PM (mg/mi)
8,501-10,000 lbs. GVWR	≤ 0.024 > 0.024	6 8
10,001-14,000 lbs. GVWR	n/a	5

Evaporative Emission Standard

- Evaporative emissions are fuel vapors escaping from the vehicle rather than tailpipe emissions from engine combustion; running loss emissions are a type of evaporative emissions that occur when fuel vapors escape from the vehicle during driving
- Running loss emissions will tighten from 0.05 to 0.01 grams of hydrocarbons/mile on below phase-in schedule:

MY	Minimum Percentage of Vehicle Fleet
2026	30
2027	60
2028+	100

Additional Resources and Information

- **MassDEP Regulations & Policies Webpage (regulation to be posted when proposed toward end of 2022)**
  - www.mass.gov/service-details/massdep-public-hearings-comment-opportunities
- **CA Air Resources Board Regulations Webpage**
  - https://ww2.arb.ca.gov/rulemaking/2022/advanced-clean-cars-ii
- **Contact**
  - Sharon Weber, MassDEP, Deputy Division Director of Bureau of Air and Waste, sharon.weber@mass.gov