



Bureau of Air Quality



Amendments to the Pennsylvania Clean Vehicles Program Zero Emission Vehicle Program

Environmental Justice Advisory Board

November 16, 2021

Tom Wolf, Governor

Patrick McDonnell, Secretary

Rulemaking Outcomes

- Reduce emissions of air pollution in Pennsylvania from the Pennsylvania light-duty vehicle fleet
- Help ensure Pennsylvania automobile dealers and consumers, including in EJ areas, can get Zero Emission Vehicles (ZEVs)
- Help keep Pennsylvania competitive in regional electric vehicle (EV) sales market

Low Emission Vehicles: LEV

- The LEV standard is applicable to criteria air pollutants and precursors (NO_x, VOC, PM_{2.5}, CO) for the entire fleet of vehicles in a state.
- Manufacturers can produce vehicles that perform better than the LEV fleet standard to generate credits.
- Pennsylvania currently has a LEV program. LEV requirements in Pennsylvania are set forth in the regulations implementing our Pennsylvania Clean Vehicles Program.
- Pennsylvania's LEV requirements are updated to clarify reporting requirements for the existing standard.

Zero Emission Vehicles: ZEV

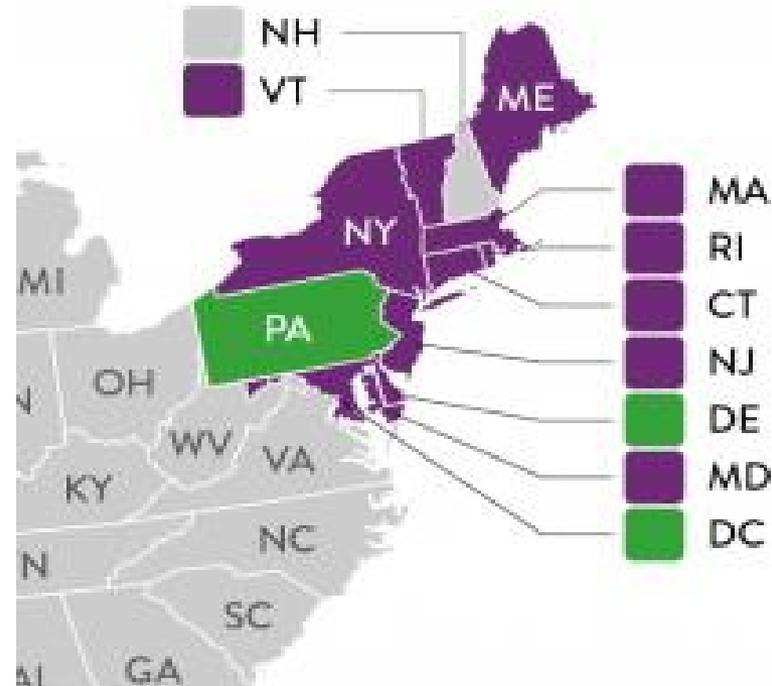
- The ZEV standard applies to criteria pollutants for the entire fleet of vehicles in a state or region. Operation of ZEVs reduces both - greenhouse gases (GHGs) and criteria pollutants. Manufacturers can produce and offer for sale more vehicles than required under the program to generate credits. Pennsylvania does not currently have a ZEV program.
- This rulemaking would incorporate the current California ZEV requirements into the Pennsylvania Clean Vehicles Program.
- If and when California modifies its ZEV Program, a new rulemaking by Pennsylvania would be necessary to incorporate those changes.

Rulemaking Summary

- Proposed Amendments to Pennsylvania Clean Vehicles Program:
 - Adopt the requirements for the California Air Resources Board (CARB) ZEV program beginning model year (MY) 2026.
 - Require automakers to demonstrate compliance with the currently adopted CARB GHG fleet average emissions standard based on sales in Pennsylvania and not California as currently allowed.
 - More specifics about the rulemaking can be found on DEP's Air Quality Technical Advisory Committee Webpage:
<https://www.dep.pa.gov/Business/Air/BAQ/AdvisoryGroups/Air-Quality-Technical-Advisory-Committee/Pages/default.aspx>

LEV and ZEV States

- States that have adopted both LEV and ZEV standards
- States that have adopted LEV
- States currently working to adopt both standards
- States that follow federal standards



The Virginia Legislature voted in February 2021 for VA to also implement the CARB LEV/ZEV Program.

Source: www.pca.state.mn.us/air/about-clean-cars-minnesota (accessed 3/9/21)

Background on CARB Standards

- California is allowed to set its own automobile emission standards.
- Such California standards must be granted a waiver by the EPA.
- EPA is in the process of re-instating California's Waiver for GHG and ZEV Programs.
- Allows states to adopt and enforce standards for new motor vehicle/engine emissions control if such standards are identical to California.

Background on PCV Program

- The Pennsylvania Clean Vehicles Program was last revised December 2006 to implement the CARB LEV program in PA.
 - Applied starting MY 2008 to new passenger cars and light-duty trucks *“sold, leased, offered for sale or lease, imported, delivered, purchased, rented, acquired, received, titled or registered in this Commonwealth.”*
- The CARB ZEV percentage program was not adopted by PA.

* 36 Pa.B. 7424, December 9, 2006

Proposed Amendments

- Incorporate by reference only the current version of CARB ZEV program requirements beginning in MY 2026.
 - Automakers must generate or obtain ZEV credits equal to or greater to their required credit obligation for Pennsylvania.
 - The annual CARB credit obligation percentage is 22% for MY 2025 and beyond.
 - Full or partial ZEV credits are generated by any vehicle manufacturer who delivered for sale/lease in PA a credit-eligible ZEV vehicle.
 - Automakers can buy/sell ZEV credits between each other.
 - Proposing a three-year early action ZEV credit period for automakers to generate ZEV credits for model years 2023, 2024 and 2025.

Proposed Amendments

- EVs eligible for ZEV credit generation include:
 - Full Battery EVs (BEV) – up to 4 ZEV credits maximum per vehicle depending on electric range.
 - Plug-in Hybrid Electric Vehicles (PHEV) -maximum 1.1 ZEV credit.
 - Hydrogen Internal Combustion Engine (HICE) vehicles – maximum 1.25 ZEV credit.
 - Range Extended Battery Electric Vehicles (BEVx) – same formula as full EV with minimum 75-mile electric range.
 - Neighborhood Electric Vehicles (NEV) – maximum 0.15 ZEV credit

Summary of Environmental Benefits

- Estimated environmental benefits trends:
 - Overall decrease of criteria pollutants (NO_x, VOC, PM_{2.5}, CO, SO₂) and air toxics (e.g. benzene)
 - Contributes towards attainment and maintenance of compliance with National Ambient Air Quality Standards (NAAQS)
 - Decrease greenhouse gases (GHGs)
 - Cleaner air means improved health, welfare and environment in this Commonwealth

NO_x — Oxides of Nitrogen

VOC – Volatile Organic Compounds

PM_{2.5} – Particulate Matter <2.5µm

CO – Carbon Monoxide

SO₂ – Sulfur Dioxide

ZEV Trends and Economic Benefits

- ZEV Trends:
 - Plug-in EV and full-EV demand is increasing nationwide and in PA.
 - EV battery and manufacturing costs are decreasing globally.
 - Major automakers are making commitments to manufacture affordable EVs.
 - Charging infrastructure is being built out to accommodate demand.
- Automobile manufacturers direct ZEV's to dealers in states with ZEV programs.
- Adopting ZEV standards in Pennsylvania will:
 - Expand ability of Pennsylvania auto dealers to acquire and sell ZEVs.
 - Provide additional consumer choice in their vehicle purchases.
 - Help keep Pennsylvania competitive in regional EV sales market with neighboring states already with existing Section 177 ZEV programs.

Social/Economic Effects of Rule

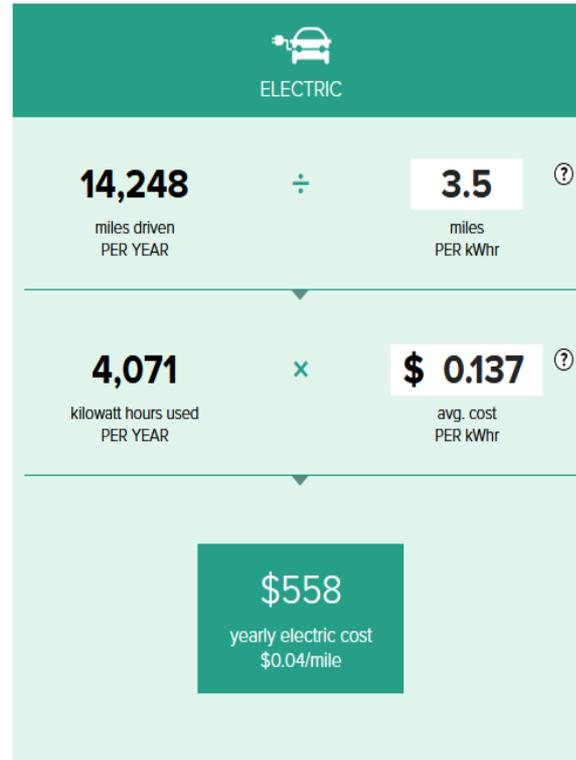
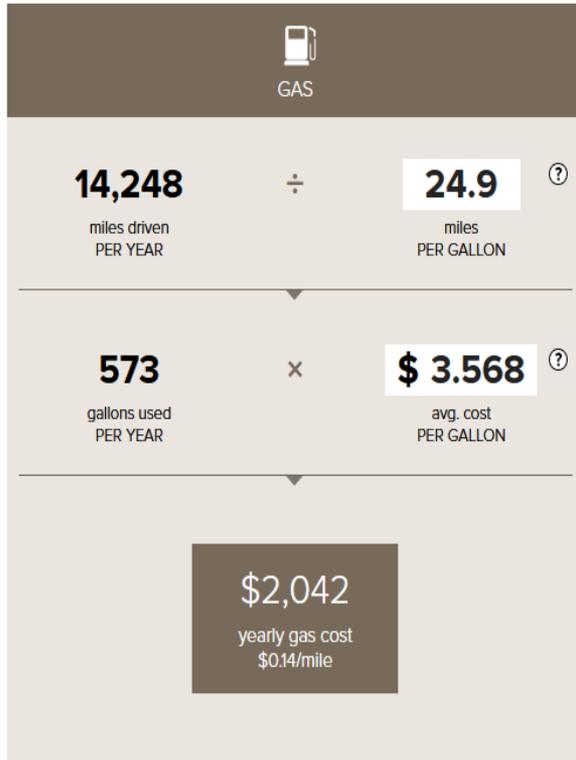
- Would make PA the 3rd largest ZEV state
- Reduced operating/maintenance costs for all owners
- Improved vehicle and battery warranties for hybrid vehicles
- Accelerate introduction of EVs into used vehicle market
- Enhance sales to help reduce EV manufacturing costs sooner
- Accelerate net PA job growth in electric transportation supply chain industries
- Proportional environmental/health benefit in urban and Environmental Justice areas
 - Urban areas in PA have higher rates of automobile pollution.

Considerations for EJ Areas

- EV adoption price differential is larger barrier
 - Studies suggest cost parity between conventional and battery EVs in 2025 to 2029 timeframe.
 - Low-income households must delay EV purchase to save for higher upfront cost.
- Used EV market very important for availability and affordability
 - Used EV cost parity for low-income households in 2025 to 2030 timeframe.
 - Higher depreciation for first owners will lead to larger benefits to low-income second owners due to technology improvements and rapidly dropping new vehicle prices.

Source: [ICCT Working Paper 2021-06](#), International Council on Clean Transportation, February 2021

Electric Vehicle Affordability



- Higher up-front cost, but...
- Lower fuel and maintenance costs can negate a higher car payment

Fuel Savings of \$125 per month!

Assumes PA average gas cost per gallon and cost per kWh and national average miles driven, MPG, and miles per kWh

Source: [ChargEVC.org](https://www.chargevc.org) – [Electric Vehicles Savings Calculator](#)

Considerations for EJ Areas (cont.)

- Charging and charging infrastructure
 - Owning home vs rental
 - Multi-unit buildings vs single-family
 - Urban vs rural
- EV costs savings have higher impact as percent of income
- Proposed rulemaking itself will have reduced impacts because it is limited to the existing ZEV program.
- Department will evaluate future proposed CARB ZEV rule
 - CARB ZEV EJ credit mechanism

DEP EV Rebate

Alternative Fuel Vehicle

Rebate for Individuals:

- \$750 for new or used electric vehicle
- \$500 for new or used plug-in hybrid or electric motorcycle
- Additional \$1,000 for applicants with low income

Alternative Fuels Incentive Grant Program



Proposed Rulemaking Schedule

- Proposed Rule to EQB – 1st Quarter 2022
- Public Comment Period – 60 days
- 3 public hearings/information meetings - TBD
- Final Rule to EQB – 4th quarter 2022
- State Implementation Plan Submittal – 4th quarter 2022



Questions?

Brian Trowbridge

Air Quality Program Specialist

Mobile Sources Section

717-787-9492

britrowbri@pa.gov

Colton Brown

Energy Program Specialist

Energy Programs Office

717-705-4156

coltbrown@pa.gov