Advanced Clean Cars II in Maryland: The Zero-Emission Vehicle Requirement

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The Clean Air Act and the California Exception

Background

Emissions from mobile sources (vehicles and other motorized equipment) contribute to air quality degradation and can threaten public health and the environment. In 2020 the transportation sector accounted for approximately 45% of nitrogen oxide (NO_x) emissions in the country, and in 2022 it accounted for approximately 28% of direct greenhouse gas (GHG) emissions in the country, making it the largest contributor of nationwide GHG emissions. In Maryland the transportation sector accounts for approximately 41.3% of NO_x emissions and 36% of GHG emissions. Gas- and diesel-powered vehicles and equipment are also significant sources of volatile organic compound (VOC) emissions and fine inhalable particulate matter ($PM_{2.5}$).

The Environmental Protection Agency (EPA) regulates emissions from mobile sources and sets National Ambient Air Quality Standards (NAAQS) for the six commonly found criteria air pollutants[1] under the federal Clean Air Act (CAA). Among other things, CAA establishes federal standards for emissions from new vehicles and preempts states from adopting or enforcing their own vehicle emissions standards.

California and § 177 of the Clean Air Act

Due to California's efforts to regulate air pollution within the state and its unique geography, weather, and growing population, the federal government granted California the authority to set its own more stringent air quality standards under the Air Quality Act of 1967, subsequently amended to be the Clean Air Act. Under § 209 of CAA, California may request a waiver from EPA to implement its own state standards in lieu of federal standards. The EPA Administrator must grant a waiver unless the Administrator finds that (1) California was arbitrary and capricious in its finding that its standards are, in the aggregate, at least as protective of public health and welfare as applicable federal standards; (2) California does not need separate state standards to meet compelling and extraordinary conditions; or (3) California's standards and accompanying enforcement procedures are not consistent with § 202(a) of CAA. This waiver authorization has allowed California to develop and implement many emissions control strategies, including (1) tailpipe emissions standards; (2) the development of the catalytic converter; (3) the development of on-board diagnostic systems; (4) zero-emission vehicle (ZEV) regulations; (5) GHG emissions standards for vehicles; and (6) the Advanced Clean Cars (ACC) Program.

[1] "Criteria air pollutants" or "criteria pollutants" are air pollutants (1) that are common in outdoor air; (2) that are considered harmful to public health and the environment; and (3) for which EPA has set ambient air quality standards. EPA has identified six criteria pollutants: carbon monoxide; particulate matter; nitrogen dioxide; lead; ozone; and sulfur dioxide.

While California is the only state with the ability to create its own air quality standards,[2] § 177 of CAA authorizes any state[3] to adopt and enforce vehicle emissions standards for any model year if (1) the emissions standards are identical to the California standards for which a waiver has been granted for that model year and (2) California and the adopting state adopt those standards at least two years before the beginning of that model year. States are not required to seek EPA approval before adopting California's vehicle emissions standards but must follow either federal or California emissions standards.

California Vehicle Emissions Regulations, Standards, and Programs

As discussed above, California has developed and implemented numerous regulations, standards, and programs for vehicle emissions since receiving the authority to do so in 1967. Through the authority granted under § 177 of CAA, states may adopt a single aspect of California's regulations, adopt California's regulations in full, or modify California's regulations as long as the stringency of the state's emissions standards are identical to those adopted by California. The main vehicle emissions standards for which states use § 177 are the Low-Emission Vehicle (LEV) standards and the ZEV standards. States may also choose to adopt the ACC Program in its entirety, which combines the LEV standards, the ZEV standards, and other emissions requirements and standards into one program. Each of these standards and programs are discussed in more detail below. As of September 2024, 17 jurisdictions, including Maryland, and Washington DC (§ 177 states) use § 177 for one or more of these emissions standards.[4]

Low-Emission Vehicle Standards

California first adopted its LEV standards by regulation in 1990. The regulations established vehicle emissions controls for model years 1994 through 2003 and had three primary elements: (1) tiers of exhaust emissions standards for increasingly more stringent categories of LEVs; (2) a mechanism requiring each auto manufacturer to phase-in a progressively cleaner mix of vehicles from year to year with the option of credit banking and trading; and (3) a requirement that a specified percentage of passenger cars and light-duty trucks be ZEVs with no exhaust or evaporative emissions.[5]

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[2] California is the only state with the ability to create its own air quality standards and thus qualify for a waiver because it is the only state that had adopted motor vehicle emissions standards prior to March 30, 1966, as required under § 209(b) of CAA.

[3] CAA defines "state" to mean a state, Washington DC, the Commonwealth of Puerto Rico, the Virgin Islands, and American Samoa and includes the Commonwealth of the Northern Mariana Islands.

[4] States using § 177 of CAA include Colorado, Connecticut, Delaware, Maine, Maryland, Massachusetts, Minnesota, Nevada, New Jersey, New Mexico, New York, Oregon, Pennsylvania, Rhode Island, Vermont, Virginia, and Washington.

[5] As discussed in the section below on Zero Emission Vehicle (ZEV) Standards, the ZEV requirement was moved from the LEV program to a separate ZEV program in 2012.

The LEV standards have been updated twice since they were originally adopted. In 2004 California adopted the LEV II regulations which were notable for a provision requiring manufacturers to control GHG emissions from vehicles for model years 2009 through 2016, the first such regulation of its type in the country at the time. Subsequently, in 2012 California adopted the current LEV III standard as one component of their ACC program. The LEV III standard establishes increasingly stringent emissions standards for both criteria pollutants and GHG emissions for new passenger vehicles through model year 2025.

Zero-Emission Vehicle Standards

California first adopted ZEV standards as a component of the LEV regulations adopted in 1990, requiring that 10% of passenger cars and light-duty trucks sold in California be ZEVs by model year 2003. The ZEV standards were separated into their own program in 2012 with the adoption of ACC I. Among other things, under ACC I and the updated ZEV standards, 22% of passenger cars and light-duty trucks sold in California were required to be ZEVs by model year 2022.

Advanced Clean Cars Program

California's ACC Program combines several different emissions standards into one package, including the LEV standards and the ZEV standards. According to the California Air Resources Board (CARB), the goal of the ACC Program is to "rapidly scale down emissions of light-duty passenger cars, pickup trucks and SUVs and require an increased number of zero-emission vehicles to meet California's air quality and climate change emissions goals."

ACC I was adopted by CARB in 2012 and included LEV and ZEV standards for model years 2015-2025. In 2022 California adopted ACC II, implementing the next level of LEV and ZEV standards for model years 2026-2035. ACC II requires that all new passenger vehicles sold in California be zero emissions by 2035 and imposes more stringent standards on gasoline cars and heavier passenger trucks to continue to reduce smog-forming emissions. According to CARB, the regulations will (1) substantially reduce air pollutants; (2) further develop the ZEV market; (3) take further steps to reduce pollution from internal combustion engines; and (4) provide public health benefits of at least $12 billion in California.[6] As of June 2024, 11 states, including Maryland, and Washington DC have adopted at least some portion of ACC II.[7]

[6] *See* the California Air Resources Board ACC Program website: https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/about.

[7] States that have adopted ACC II include Colorado, Delaware, Maryland, Massachusetts, New Jersey, New Mexico, New York, Oregon, Rhode Island, Vermont, and Washington.

Advanced Clean Cars II in Maryland

The Maryland Clean Cars Act of 2007 required the Maryland Department of the Environment (MDE) to establish by regulation and maintain an LEV program that is (1) authorized by § 177 of CAA and (2) applicable to model year 2011 and each model year thereafter.[8] Accordingly, MDE created the Maryland Clean Cars Program (MCCP) and in November 2007 adopted California's LEV II standards for model years 2011-2014. According to MDE, implementation of the LEV II standards resulted in a significant reduction of a number of emissions in the State, including VOCs and NO_x, both of which contribute to ground-level ozone.

In 2012 MDE adopted ACC I for model years 2015-2025. The State anticipates that the adoption of ACC I will reduce smog-forming pollutants and GHG emissions from vehicles by 75% and 35%, respectively, by 2025.

ACC II Adoption and Climate Commitments

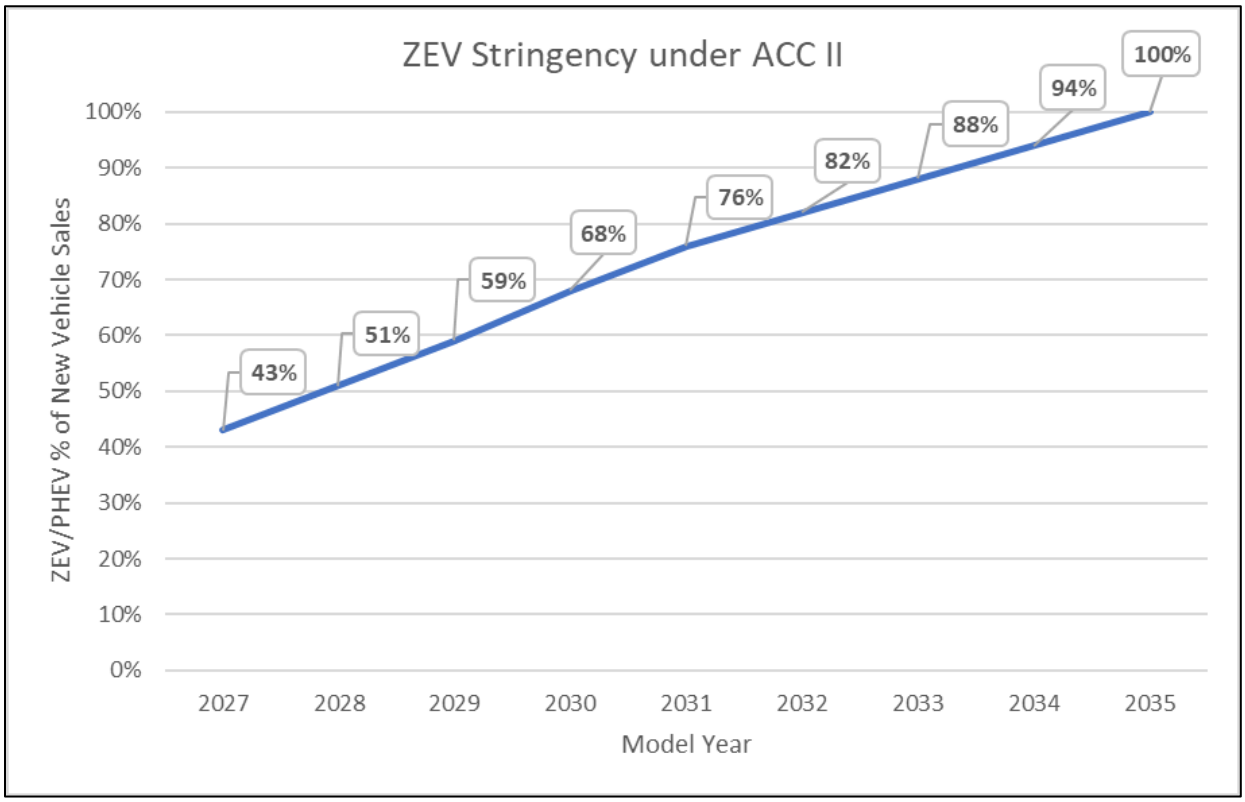
MDE made further updates to MCCP in May 2023 by adopting ACC II requirements,[9] including requirements that (1) original equipment manufacturers (manufacturers) that sell more than 4,500 light-duty vehicles per year increase the volume of zero emission cars and light trucks for sale, with ZEVs ultimately accounting for 100% of all sales by model year 2035 and (2) internal combustion engine vehicles meet increasingly stringent pollutant standards during the period in which they continue to be sold.[10] **Exhibit 1** below shows the annual percentage of new vehicle sales that must be ZEVs under ACC II. Under the standard, the percentage requirement for ZEVs may include battery electric vehicles (EV), plug-in hybrid electric vehicles (PHEVs), and hydrogen fuel cell vehicles.

[8] *See* Chapters 111 and 112 of 2007.

[9] Regulations implementing MCCP, referred to as the Low Emissions Vehicle Program, may be found in COMAR 26.11.34.

[10] These requirements apply to manufacturers only and not to auto dealerships.

Exhibit 1
Percent of New Vehicle Sales Required to be Zero-Emission Vehicles Under ACC II



PHEV: Plug-in hybrid electric vehicle
ZEV: Zero-emission vehicle

Note: Under Advanced Clean Cars II the percentage requirement includes ZEVs and PHEVs.

Source: Maryland Department of the Environment

Because Maryland did not adopt the ACC II requirements before the end of 2022, ACC II will not be enforced in 2026, and manufacturers will have two model years of lead time to prepare to meet the requirements as required under CAA. Accordingly, Maryland will revert back to federal vehicle emissions standards for 2026 (commonly referred to as the "gap year").[11] MDE anticipates that the State will continue to receive ZEVs in 2026 since manufacturers can earn

[11] According to MDE, while certain air emissions from vehicles manufactured in accordance with ACC II may differ slightly from emissions of vehicles manufactured in accordance with federal emissions standards, the differences are expected to be negligible and have little, if any, impact on meeting NAAQS and other federal requirements.

early compliance values for supplying more vehicles than required in the two years before implementation (model years 2025 and 2026 in Maryland).[12]

According to MDE and the Maryland Department of Transportation, adoption of ACC II will lead to significant additional emissions reductions compared with ACC I. Notably, ACC II is anticipated to:

- reduce vehicular NO_x by 5,978 tons and $PM_{2.5}$ by 585 tons between 2027-2040; and
- reduce vehicular carbon dioxide emissions by 2.461 million metric tons in 2031.

Furthermore, by 2040 net health benefits are anticipated to equal approximately $603.5 million per year due to decreases in respiratory and cardiovascular illness and associated lost workdays.

Adoption of ACC II is considered a critical part of the State's efforts to reach its climate commitments. Under the Climate Solutions Now Act of 2022, the State must reduce its GHG emissions by 60% from 2006 levels by 2031 and achieve net-zero emissions by 2045.[13] The State's Climate Pollution Reduction Plan, which was finalized in 2023, assumes implementation of ACC II and notes, "[t]his policy alone may do more than any other to reduce GHG emissions in Maryland."

Compliance with and Enforcement of Advanced Clean Cars Program

Compliance with Advanced Clean Cars Program

Manufacturers prove compliance with the ACC Program through a credit or value system. To incentivize manufacturers to build longer-range vehicles, ACC I uses a sliding scale for earning credits that is based on battery range. Under ACC I, manufacturers may earn 0.5 credits for each 50-mile range ZEV sold, up to a maximum of 4 credits for each ZEV sold with a range of 350-miles or more. Manufacturers may also earn 0.4 credits for each 10-mile range PHEV sold and up to a maximum of 1.1 credits for each PHEV sold with a range of 80-miles or more.

The ACC II system is designed to reflect vehicle sales more closely and uses a value system similar to the credit system under ACC I. Under ACC II, ZEV sales and compliance values are generally on a 1:1 basis, with manufacturers earning 1 value for each ZEV sold with a range of 150 miles or more if the range is certified using a five-cycle test or 200 miles or more if the range

[12] In Maryland, the ZEV and PHEV market share threshold above which manufacturers may earn early compliance values is 7%. Manufacturers that sell ZEV and PHEV in the State in excess of the 7% threshold may earn early compliance values for those vehicles.

[13] *See* Chapter 38 of 2022.

is certified using a two-cycle test. Manufacturers may also earn 0.63 values for each 43-69-mile range PHEV sold for model years 2026-2028 and 1 value for each PHEV sold with a range of 70 miles or more. To incentivize ZEV sales, a manufacturer's total PHEV sales may not exceed 20% of the manufacturer's total EV sales for a given model year. Because battery electric vehicles make up the majority of EV sales in the State at 65% in 2022, the values manufacturers receive for sales in the State will largely reflect the full 1:1 sales-to-value ratio.

Additionally, there are programs provided under ACC II that allow manufacturers more flexibility to receive additional values that can be used to satisfy compliance requirements, similar to provisions in ACC I. **Exhibit 2** below details the various ACC II value compliance and flexibility programs.

Exhibit 2
Advanced Clean Cars II Value Compliance and Flexibility Programs

Program	Value Details
Historical Credits Cap: 15% of annual sales* Sunset: After MY 2030	Manufacturers may use excess ACC I credit balances from previous years.
Early Compliance Values Cap: 15% of annual sales Sunset: After MY 2028	Manufacturers may use values attained in the two MYs before start of ACC II in the § 177 state to meet a portion of ZEV requirement.
Environmental Justice Values Cap: 5% of annual sales Sunset: Between MY 2028 and MY 2031 depending on the option used	Manufacturers that sell EVs used for community-based clean energy programs may receive additional values of 0.5 for ZEVs and 0.4 values for PHEVs. ZEVs and PHEVs sold below a specified retail price may receive 0.1 value and formerly leased ZEVs sold at specified dealerships for less than $40,000 may receive up to 0.25 values.
Future Value Banking Cap: None Sunset: None	Beginning in 2026 manufacturers may bank excess values for up to 4 additional MYs.
Pooling Values Cap: 25% of annual sales in MY 2026 decreasing to 5% of annual sales in MY 2030 Sunset: After MY 2030	Manufacturers may transfer excess values earned in other states to maintain compliance.

Program	Value Details
Trading Values Cap: None Sunset: None	Manufacturers may trade excess values with other manufacturers.
PHEV Values Cap: 20% of annual ZEV sales Sunset: None	Manufacturers may meet portion of ACC II ZEV sales requirement with PHEV sales

ACC: Advanced Clean Cars
PHEV: plug-in hybrid electric vehicle
MY: model year
ZEV: zero-emission vehicle

*While the percentage requirement is often framed in terms of vehicle sales, under Advanced Clean Cars II the requirement is calculated based on production volume and is calculated using different formulas depending on the model year.

Source: Maryland Department of the Environment; RMI Institute; International Council on Clean Transportation

Enforcement

Fines for Manufacturers

Enforcement under ACC II is similar to enforcement under ACC I. Manufacturers are required to submit annual compliance reports to receive credits or values for each LEV sale. Depending on the percentage of LEV sales, manufacturers receive a credit or value or a deficit status for that year. Each credit, value, or deficit for a particular model year remains for up to three years, and any deficit must be recovered by the fourth year or the manufacturer will be subject to a civil penalty for every credit or value below the ACC ZEV percentage requirement. Beginning in 2026, the penalty increases from $5,000 per credit under ACC I to $20,000 per value under ACC II. Because future values under ACC II will largely reflect actual vehicle sales, the penalty could be viewed as a per-vehicle penalty. For example, if a manufacturer fails to meet the sales threshold by 20 vehicles in a given year under ACC II, it will have three years to sell that number of vehicles or accumulate values to avoid all penalties.

Some states, such as Virginia, have raised concerns about the financial impact that penalties imposed under ACC II could have on the auto industry, particularly in states where EVs, ZEVs, and PHEVs represent a small or stagnant portion of a manufacturer's market share in the state. The market share of EVs, ZEVs, and PHEVs is growing in Maryland, increasing from 64,395 vehicles registered at the end of January 2023 to 102,530 vehicles registered as of April 30, 2024 – an increase of approximately 59%. Additionally, MDE reports that as of March 2023 no manufacturer

has been issued a fine in any state that has adopted California's emissions standards and that many manufacturers have a surplus of credits in their accounts. CARB, the entity responsible for, among other things, overseeing the ACC I credit system, also indicates that it is unlikely that a manufacturer would not be able to meet the ZEV percentage requirements under ACC II given how far in advance manufacturers must plan their vehicle production.

State Oversight

To track the implementation of and compliance with ACC I ZEV percentage requirements, CARB developed the Zero Emission Vehicle Credit Reporting and Data Tracking System (ZEV CRDTS). Each manufacturer uses ZEV CRDTS to submit sales and compliance credit information to the appropriate oversight agency for California and § 177 states that then verify manufacturer compliance based on the data submitted. MDE is the State's oversight agency for compliance with ACC and has an internal account within the ZEV CRDTS system to track manufacturer sales and compliance data. In 2023 CARB submitted a budget request to create a similar reporting and tracking system for ACC II.

CARB also maintains the ZEV Credits Disclosure Dashboard through which the public may monitor manufacturers' compliance with ACC I ZEV percentage requirements within the state. Multiple § 177 states maintain or provide data for websites that provide publicly available data regarding EVs in the state, including, for some websites, the number of EVs registered in a state disaggregated by manufacturer.[14]

Implications of Adopting ACC II

Manufacturers

Issues regarding the financial impact of ACC II on manufacturers include the increased costs of manufacturing a growing number of ZEVs and the feasibility of manufacturing the number of ZEVs necessary to meet ACC II requirements. Nevertheless, numerous manufacturers have responded positively to ACC II. Ford has stated that EVs are an important part of their long-term plans, GM and Cadillac have committed to meeting ACC II ZEV percentage requirements, and Volvo discontinued manufacturing diesel-powered vehicles in March 2024 and plans to sell only ZEVs worldwide by 2030. While several manufacturers have either paused EV production or delayed meeting their EV goals for various reasons,[15] manufacturers continue to invest hundreds of billions of dollars to develop and produce multiple models of ZEVs, including pickup trucks, SUVs, and passenger cars. Additionally, a set regulatory structure like ACC II generally provides industries with the stability necessary to plan for future production and growth.

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[14] Section 177 states with these websites include Colorado, Maryland, Minnesota, New York, Oregon, Virginia, and Washington.

[15] Manufacturers that have either paused or delayed EV production or meeting EV goals include Mercedes Benz, JLR, GM, and Ford.

Dealers

While ACC II does not place direct mandates on vehicle dealerships, many dealers have expressed concerns about unintentional consequences related to the ZEV sales requirements. For example, the requirement that manufacturers produce and sell enough vehicles to meet ZEV sales requirements in the relevant § 177 states could create unintended consequences if a manufacturer experiences a ZEV supply shortage. In this situation, the manufacturer could strategically decrease the total vehicle inventory supplied to states with ZEV standards to ensure that the manufacturer meets the ZEV percentage requirements. This could result in a smaller total inventory in a given state, causing residents to purchase vehicles in neighboring states. A reduced vehicle inventory could also impact used vehicle sales as consumers shop elsewhere and consequently dealers receive fewer trade-in vehicles.

Consumers

To address consumer concerns regarding battery and range limitations, ACC II requires stronger point of sale protections. Under ACC II all ZEVs must have a minimum battery warranty of 8 years or 100,000 miles, which generally provides coverage for a longer duration than the warranties offered on comparable gasoline vehicles.[16] Additionally, all batteries on new and used ZEVs must be durable enough to maintain at least 70% of their range for 10 years or 150,000 miles for model years 2026 to 2029 and 80% for 10 years or 150,000 miles for model years 2030 and beyond.[17]

States are also addressing economic issues surrounding ZEVs and ACC II that are important to consumers, such as the high cost of purchasing ZEVs and installing residential charging equipment. California has led the country by investing billions of dollars in ZEV adoption that includes, among other things, ZEV rebates, economic assistance programs, and funding for charging infrastructure.[18] To address similar consumer concerns in Maryland, the following are some of the incentives available at both the State and federal level:

- ***Maryland Excise Tax Credit:*** provides up to $3,000 for qualifying ZEVs;

[16] In 2024, typical gas-powered vehicle warranties are three years or 36,000 miles per vehicle and five years or 60,000 miles for the powertrain.

[17] Additional ZEV parts requirements include a 70% battery health requirement for model years 2026-2030 and 75% after 2031, a propulsion-related parts warranty for three years or 50,000 miles, and a warranty of seven years or 70,000 miles for high-priced parts.

[18] California's Clean Cars 4 All program provides up to $9,000 to low-income drivers who transition from a gasoline-powered vehicle to a ZEV. The Clean Vehicle Rebate Project provides California residents with up to $7,000 for income-qualified drivers to buy or lease a ZEV. The Clean Vehicle Assistance Program provides low-income car buyers in California with specifical financing and up to $5,000 in down-payment assistance. Additionally, the state's ZEV budget includes $300 million for increasing charging infrastructure, with a specific focus on consumers who may not have a garage where they can charge their ZEV.

- ***Maryland Electric Vehicle Supply Equipment Rebate Program:*** provides a rebate of up to 50% of the cost of acquiring and installing EV supply equipment, with rebates of up to $700 for an individual and up to $5,000 for a business;

- ***Federal Tax Credit for Electric Vehicle Supply Equipment:*** provides a tax credit for the cost of acquiring and installing EV supply equipment, with individuals eligible for a tax credit the lesser of 30% of the equipment's cost or $1,000, and businesses eligible for a tax credit the lesser of 6% of the equipment's cost or $100,000 per unit;

- ***Federal Tax Credit for Purchase of New ZEV by Individual:*** provides a tax credit of up to $7,500 for the purchase of new ZEVs that have their final assembly in North America and meet increasingly more stringent critical mineral and battery component requirements;

- ***Federal Tax Credit for Purchase of New Electric or Fuel Cell Electric Vehicles by Business:*** provides tax credits for businesses and tax-exempt organizations of up to $7,500 for new ZEVs under 14,000 lbs. and $40,000 for new commercial ZEVs over 14,000 lbs.; and

- ***Federal Tax Credit for Purchase of Pre-Owned ZEV by Individual:*** provides up to $4,000 in tax credits to qualifying buyers for the purchase of eligible pre-owned ZEVs.

Additionally, most electric utilities offer time-of-use rates that can reduce the costs of charging by billing less for electricity used during off-peak hours. Chapter 476 of 2024 requires each investor-owned electric company in the State[19] to make time-of-use rates available to its customers and requires that the rates establish a sufficient price discount for off-peak hours compared to peak hours.

EV Charging

Given the anticipated increase in EVs in the coming decade due to ACC II and federal and State policies to encourage adoption of EVs, the ability to charge an ever-increasing number of EVs is necessary. To meet ACC II and the State's climate commitments, the number of charging stations will need to increase across the State.

ACC II does not provide any guidelines or requirements for EV charging infrastructure and there is limited information about how many chargers are needed to both fulfill current need and keep pace with ACC II and the State's climate commitments. International Energy Association (IEA) benchmarks suggest 10 EVs for each charging station. As of 2022 Maryland had approximately 12 EVs per charging station, ranking ninth in the nation for EV charging stations per capita but falling slightly short of the 10 EVs per charging station benchmark used by IEA. More study will be needed to analyze the number and optimal location of charging stations, track

[19] Investor-owned utilities in the State include Baltimore Gas and Electric Company, Potomac Electric Power Company, Delmarva Power and Light Company, and Potomac Edison Company.

the number and location of charging stations as each station comes online, and determine whether the State's charging infrastructure will meet consumer need as EV and PHEV sales continue to increase.

In addition to achieving the appropriate ratio of EV charging stations to EVs, the following challenges will also need to be taken into consideration as EV infrastructure continues to develop.

- ***Charging Station Location:*** Charging stations tend to be located in urban areas, central areas of commerce (such as shopping centers, airports, businesses, and hotels), and at private businesses and homes. Ensuring appropriate geographic coverage of charging stations and access to the stations by low- and middle-income individuals will be imperative to facilitate EV adoption. Additionally, because the vast majority of EV charging occurs at home, providing access to charging stations for residents of apartments and condominiums will be necessary. In January 2024 the Maryland Clean Energy Center received $15.0 million from the U.S. Department of Transportation to fund 58 EV charging stations across the State and invest in workforce development around charging station infrastructure. Additionally, in July 2024 Governor Wes Moore announced $12.1 million in federal funding through the National Electric Vehicle Infrastructure program for the installation of 130 direct current fast charging (DC fast charging) EV stations at 23 sites in 15 counties across the State.

- ***Charging Station Fee Structure and Affordability:*** While the EV industry is moving toward a charging station fee structure based on kilowatt-hours used rather than on the amount of time it takes to charge a ZEV, the current fee structure is unregulated and may be free, based on a pay-as-you-go model, or subscription-based. Additionally, private companies, such as Tesla and ChargePoint, own many charging stations and can increase charging fees at any time. On average, charging an EV costs half of what it costs to refuel a comparable gasoline vehicle.

- ***Changing Charging Station Standards:*** There are three main types of DC fast charging connectors in use (CCS1, CHAdeMO, and J3400, also known as the Tesla connector). Having multiple types of connectors in use creates challenges when trying to charge an EV or PHEV equipped with a connector that does not match the type used at a charging station. While the Federal Highway Administration is in the process of updating its minimum standards and requirements for charging stations, including standardizing the use of J3400 connectors at federally funded EV charging stations, there is no uniform charging connector standard. Additionally, as battery and charging technologies advance, the charging infrastructure that is already in place may need to be retrofitted or replaced to stay up-to-date with new technologies.

- ***Impact on the Electric Grid:*** The increased adoption of EVs has the potential to add new constraints to the electric grid or require new grid and power system design considerations. While it is anticipated that the transmission-level grid will be able to handle increases in

load, the adoption of EVs can create distribution-level constraints and impacts requiring the need for proactive planning. The time-of-use requirements established under Chapter 476 of 2024 may help to reduce peak electricity demand from EVs by incentivizing charging at non-peak hours.

Advanced Clean Cars II in Other States

As indicated under Advanced Clean Cars Program on page 3 of this report, the majority of states (39) have not adopted ACC II. Virginia adopted ACC II in February 2024 and would have been the twelfth state to implement ACC II but subsequently announced in June 2024 that the state would not follow ACC II after 2024 and would instead follow federal emissions standards beginning January 1, 2025. Similarly, Connecticut proposed adopting ACC II in 2023 but ultimately withdrew the proposal.

Requiring manufacturers to sell ZEVs (and by extension, reduce the number of gasoline vehicles) has been a major factor in how multiple states view the ACC Program, particularly given ACC II's requirement that 100% of new cars and light trucks be ZEVs by 2035. While 34% of states have adopted at least some vehicle emissions standards from California, several states have since removed requirements and some states, like Maryland, have adopted ACC standards but with modifications such as adopting portions of the standards or providing specified exemptions. Additionally, in 2023 and 2024 at least seven states introduced legislation that would either prevent the adoption of ACC standards or repeal current ACC standards within the state. **Exhibit 3** summarizes ACC II adoption and modifications in § 177 states while **Exhibit 4** highlights legislation introduced across the country to prevent or repeal ACC standards.

Exhibit 3
Adoption and Modification of Advanced Clean Cars II

Adopted ACC II	Details
Colorado	Implemented beginning with MY 2027 with 82% ZEV requirement by 2032.
Delaware	Implemented beginning with MY 2027 and includes an 82% ZEV requirement by 2032.
Maryland	Implemented beginning with MY 2027. Exempts certain vehicles.*
Massachusetts	Implemented beginning with MY 2026.
New Jersey	Implemented beginning with MY 2027.
New Mexico	Implemented beginning with MY 2027 and includes an 82% ZEV requirement by 2032.
New York	Implemented beginning with MY 2026.
Oregon	Implemented beginning with MY 2026.
Rhode Island	Implemented beginning with MY 2027.
Vermont	Implemented beginning with MY 2026.
Washington	Implemented beginning with MY 2026.
Washington D.C.	Implemented beginning with MY 2027.
Withdrew or Repealed ACC II	
Connecticut	Withdrawn in 2023.
Virginia	Repealed in 2024.

MY: model year
ZEV: zero-emission vehicle

* Exempts vehicles sold for registration outside of the State, vehicles sold from a licensed dealer to another licensed dealer, and vehicles exempted from the Low Emission Vehicle program by California.

Source: California Air Resources Board; DSire Insight

Exhibit 4
Legislation to Prevent or Repeal Advanced Clean Cars

State	Bill/Chapter Number	Summary	Status
Alaska	HB 375 of 2024	Prohibits restrictions on the sale or use of a vehicle based on its energy source.	Failed
Kentucky	Ch. 114 of 2024	Prohibits adoption of standards identical to California emissions standards.	Passed
Louisiana	Act No. 251 of 2024	Prohibits restrictions on the sale or use of a vehicle based on its energy source.	Passed
Maryland	SB 1063/HB 1247 of 2024	Prohibits the application of ACC II to vehicles before MY 2030. Prohibits application of certain penalties to manufacturers for failing to meet minimum EV and PHEV delivery requirements.	Both failed
Minnesota	SF 1455/HF 1849 of 2023	Among other things, prohibits restrictions on the purchase or sale of motorized equipment based on fuel type and repeals vehicle classifications, emissions standards, and credit accounting requirements based on California standards.	Failed
	HF 1373 of 2023	Among other things, prohibits restrictions on the purchase or sale of vehicles based on fuel type and repeals vehicle classifications, emissions standards, and credit accounting requirements based on California standards.	Failed
	HF 1383 of 2023	Repeals vehicle classifications, emissions standards, and credit requirements based on California standards.	Failed

New Mexico	SM 2 of 2024	Resolution requesting the repeal of the state's ZEV mandates and no further action regarding EVs without first conducting specified analysis.	Failed
	HB 76 of 2024	Prohibits adopting or continuing rules regarding ZEV sales requirements.	Failed
Washington	HB 1183 of 2023	Repeals a previously enacted law requiring the adoption of California emission standards.	Failed

ACC: Advanced Clean Cars
EV: electric vehicle
MY: model year
PHEV: plug-in hybrid electric vehicle
ZEV: zero-emission vehicle

Source: DSire Insight; Department of Legislative Services

Upcoming Changes to ACC II

In October 2023 staff for CARB began developing amendments to ACC II to address consumer, industry, and climate concerns. Public meetings are scheduled through fall 2024 and the amendments will be formally presented to CARB in summer 2025. While the draft amendments are subject to change, as of September 2024 the amendments include, among other things:

- more stringent standards for GHG emissions and other vehicle pollutants;
- new standards to improve communication between charging equipment and EVs and PHEVs; and
- updated Monroney sticker (window sticker) requirements to provide more helpful information to consumers considering purchasing a ZEV or PHEV.

As these amendments demonstrate, EV technology and the needs of consumers are continually changing. In addition, climate commitments have become more ambitious as federal, state, and local governments work to address the impacts of climate change. As a result, the ACC Program will continue to be updated and modified and Maryland, as well as other § 177 states, will need to continue updating their regulations and implementing programs to remain in compliance with CAA requirements.