

*MARYLAND ZERO
EMISSION VEHICLE
INFRASTRUCTURE PLAN
(ZEVIP) 2026*



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MESSAGE FROM *THE SECRETARY*



Now more than ever, Maryland's leadership in the transition to zero-emission vehicles (ZEVs) is essential. Meeting Maryland's ambitious climate goals hinges upon rapidly and strategically decarbonizing the transportation sector, the largest source of greenhouse gas emissions (GHGs) in the state. And for the better part of two decades, the Maryland Department of Transportation (MDOT), alongside state, local, and private sector partners, has propelled Maryland forward in accelerating ZEV adoption and building an expansive charging network.

This past year, our progress has been particularly challenged by national developments. However, from coping with growing pains of a nascent industry, increasing consumer education, providing adequate consumer incentives, and more, Maryland remains resilient and committed to clearing the hurdles that come our way.

In short, MDOT will press onwards through a changing ZEV landscape. Bold state actions described herein add to a coordinated state government approach and are not only timely but imperative to keep moving forward in the face of federal and market uncertainties, which threaten to stall Maryland's momentum.

MDOT is pleased to publish Maryland's first Zero Emission Vehicle Infrastructure Plan (ZEVIP), mapping the road ahead to expand EV charging to support Maryland's ZEV future. MDOT's development of the ZEVIP responds to Governor Moore's [Executive Order 01.01.2024.19](#) calling for state leadership in implementing Maryland's Climate Pollution Reduction Plan. Thank you to the many state agency partners, stakeholders, and communities who have helped shape the ZEVIP with their valuable engagement, input, and support.

I look forward to continuing this zero-emission journey together for Maryland.

Katie Thomson

Secretary
Maryland Department of Transportation

EXECUTIVE SUMMARY

The Maryland Zero Emission Vehicle Infrastructure Plan (ZEVIP), and its accompanying analyses and tools, were created by the Maryland Department of Transportation (MDOT) to accelerate the state's transition to zero emission (ZEV) and electric vehicles (EV) in support of Maryland's ambitious climate goals.

In this plan, ZEVs include plug-in hybrid (PHEV), battery electric (BEV), and fuel cell electric vehicles (FCEV), while EVs refer specifically to PHEVs and BEVs. It will primarily focus on the state's strategy for light-duty EV charging infrastructure as the market for medium- and heavy-duty (MHD) ZEVs continues to mature. At its core, the plan addresses one of the most significant barriers to EV adoption: range anxiety.

The ZEVIP outlines a multi-agency roadmap to guide the coordinated buildout of a robust, accessible, reliable, and interconnected public charging network designed to instill range confidence in Maryland's drivers and fleets and, ultimately, support increased EV adoption.

PURPOSE AND SCOPE

The successful transition to EVs depends on a strong interplay between vehicle adoption, charging infrastructure deployment, public education, and electric grid (grid) readiness. Widespread and reliable public charging infrastructure reduces range anxiety and provides equitable access for fleets and passenger car drivers, particularly those without home charging options, making EVs practical for all communities.

At the same time, higher EV adoption drives demand for charging stations and electricity, requiring a resilient and modernized grid capable of handling increased electricity demand (load) to support charging technology. Public education and outreach are equally vital as they raise awareness of EV benefits, explain charging options, and dispel misconceptions, ensuring consumers feel confident in making the switch to electric. If any one of these elements lag, progress is expected to stall. Infrastructure deployment without public education leads to underuse, and adoption without grid upgrades jeopardizes infrastructure deployment. Assured charging reliability, which depends on rigorous maintenance practices and transparent, real-time performance reporting, is also essential for retaining and growing confidence among EV drivers. Maryland's ZEVIP embodies a thoughtful planning and implementation approach to address each of these components. It is designed to build a reinforcing cycle that accelerates EV market growth and supports a sustainable, reliable transportation future.

MARYLAND'S ZEVIP: A Strategic Plan for the Statewide Expansion of Publicly Available Light-, Medium-, and Heavy-Duty EV Chargers



From Western Maryland to the Eastern Shore, the Maryland ZEVIP seeks to instill range confidence and decrease range anxiety, or the fear that an EV will run out of battery before reaching a charging station or the driver's destination.

EXECUTIVE SUMMARY

APPROACH

The ZEVIP supplies a roadmap and recommendations for state agency coordination to accelerate EV adoption and the deployment of publicly available Level 2 (L2) and Direct-Current Fast Charging (DCFC) infrastructure in Maryland.

To understand Maryland’s current landscape, the plan examines existing EV adoption rates, the geography of existing EV registrations, as well as the geography of existing publicly available L2 and DCFC infrastructure. The approach also looks at future infrastructure deployment through the publication of Maryland’s EV Charging Suitability Tool, a suite of publicly accessible tools to inform infrastructure planning and deployment.

Moreover, by developing high, medium, and low EV adoption scenarios for the year 2031 to align with the state’s greenhouse gas (GHG) reduction goals, the ZEVIP includes estimates of publicly available charging infrastructure needs under multiple charging use cases including corridor, workplace, high-density residential, and neighborhood and amenity charging.

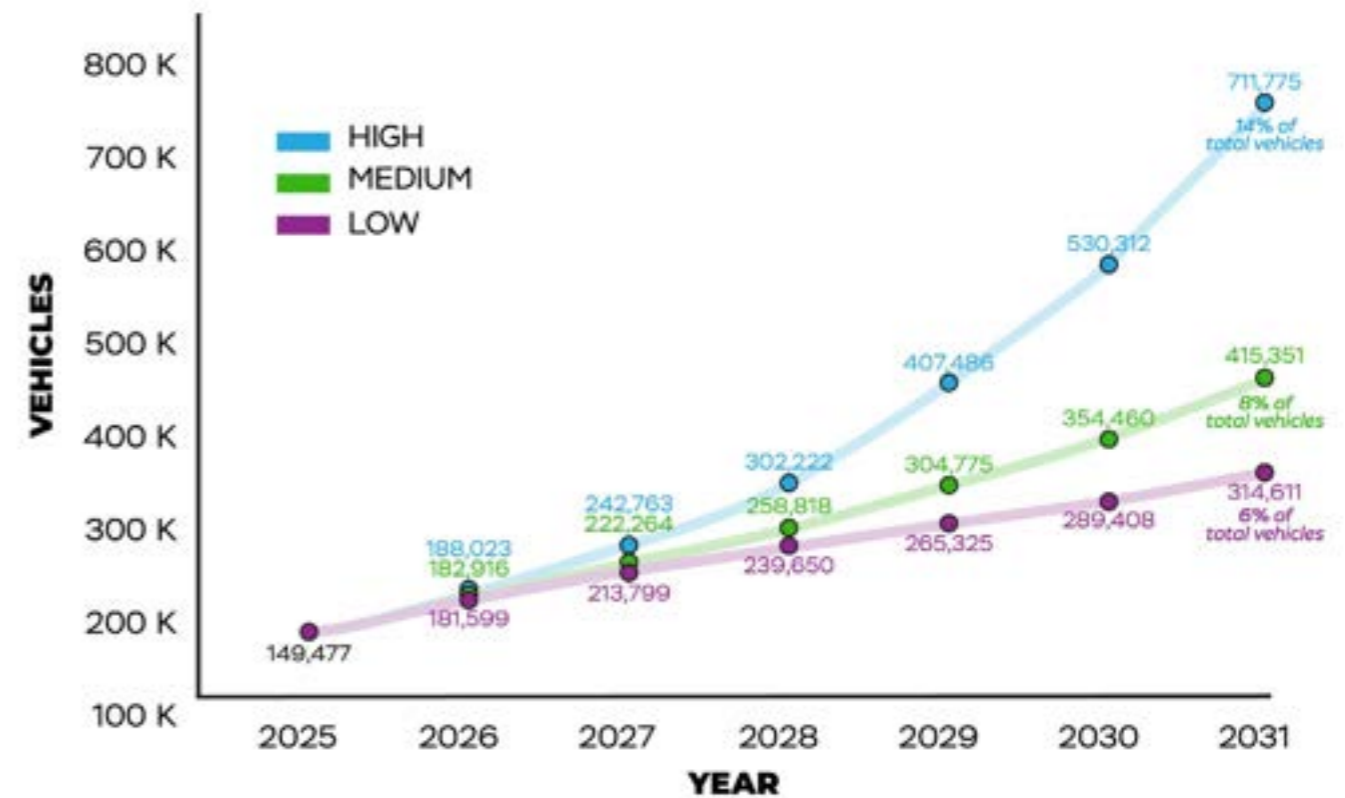
MULTIPLE ZEV ADOPTION SCENARIOS

MDOT, in coordination with the Maryland Department of Environment (MDE), developed multiple light-duty EV adoption scenarios to address cascading uncertainties across policy, industry, and infrastructure.

At the federal level, shifts in funding priorities and regulatory actions, such as the rescission of the federal EV tax credit, create ripple effects that impact consumer demand and influence state and local programs and investment strategies. These changes introduce variability in program implementation and long-term planning.

Within the automotive and EV charging sectors, evolving market conditions, technology adoption rates, and business models add further unpredictability. Grid readiness also remains uncertain, as capacity upgrades and resilience improvements may lag projected charging demand. Finally, global and domestic supply chain disruptions compound these challenges, affecting vehicle availability and infrastructure deployment timelines.

Maryland EV Population Projections (High, Medium, and Low Scenarios)



High Scenario Framework Reflects the retention of federal incentives and the most lenient of the Advanced Clean Car (ACC) II Program implementation scenarios allowing for maximum pooling, environmental justice, historic, and early compliance credits.

Medium Scenario Framework Reflects a full federal repeal of vehicle tax incentives under the Inflation Reduction Act (IRA) based on an average of industry sources. This scenario does not include ACC II implementation.

Low Scenario Framework Assumes EV sales will remain flat at 10% per year in close alignment with average sales trends of 9.50% per year from 2021 through 2025. This scenario does not include federal incentives or the implementation of ACC II.

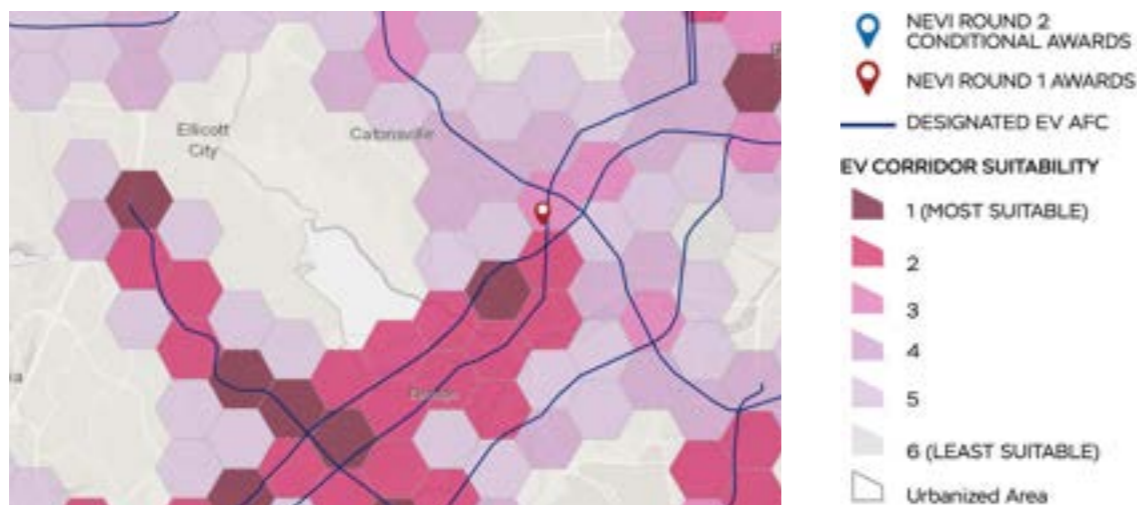
EXECUTIVE SUMMARY

MARYLAND EV CHARGING SUITABILITY TOOL

The Maryland EV Charging Suitability Tool strategically identifies optimal locations for publicly available EV charging infrastructure across the state under multiple use cases including corridor, neighborhood and amenity, high-density residential, and workplace charging, while promoting equitable access and closing gaps. The suite of suitability tools uses a data-driven methodology that divides Maryland into uniform one-square-mile hexagons, or hexbins; aggregates relevant data layers such as vehicle miles traveled (VMT), population density, EV registrations, retail employment, and proximity to existing chargers; and applies weighted scoring based on state priorities. Each hexbin is ranked for suitability, enabling MDOT and stakeholders to make transparent, informed decisions about where to invest in charging infrastructure to best meet the user's needs.

The Maryland EV Charging Suitability Tool helps bridge uncertainty in EV adoption and EV charging needs by providing an adaptable, data-driven snapshot of where infrastructure is most needed at any given moment. Figure 1 below shows an example of suitability for Neighborhood and Amenity EV Charging through the tool. As real-world conditions evolve, such as new chargers coming online, shifting demographics, or changes in EV adoption, the tool can be updated with the latest data, ensuring that suitability scores and priority locations remain accurate and relevant. This flexibility allows Maryland to continuously align its charging deployment strategy with current trends, future scenarios, and on-the-ground realities, supporting smarter, more resilient infrastructure planning.

Figure 1. Maryland EV Charging Suitability Tool: Neighborhood and Amenity Charging Example



AREAS OUTSIDE OF THE ZEVIP SCOPE

PRIVATE CHARGING

While private residential and private workplace charging are core to the charging ecosystem and provide convenient and affordable options, the ZEVIP focuses on the critical, complementary need for reliable public charging infrastructure and does not include analyses or recommendations related to private charging. However, as Maryland's private and public charging network builds out, better understanding how the changing scope of private residential and private workplace charging impacts public charging needs throughout the state will be crucial.

TARGETED PRIVATE INVESTMENT IN INFRASTRUCTURE DEPLOYMENT

The ZEVIP prioritizes public investment for equitable and strategic infrastructure development. Public funding addresses market gaps, provides coverage in underserved areas, and supports early deployment where private investment may be limited or financially unviable.

Targeted private investment analyses and recommendations are not included in this plan. However, private-sector funding can drive scale, innovation, and competitive service delivery by responding to consumer demand and profitability. This in turn enables rapid network growth beyond foundational public investments.

In recognition of the important role private investment plays in infrastructure investment, the ZEVIP provides tools and resources such as collaboration opportunities and a suite of charging suitability tools to guide and inform private-sector investment decisions, fostering a cohesive and efficient buildout of charging infrastructure.

DETAILED DESCRIPTIONS OF RELATED PLANS, PROGRAMS, AND POLICIES

Rather than detailing the full scope of Maryland's ongoing initiatives to electrify the transportation sector, the ZEVIP provides high-level summaries of pertinent plans, programs, and regulatory frameworks. It also includes references and links to authoritative resources for stakeholders seeking comprehensive technical information.

EXECUTIVE SUMMARY

KEY ACTIONS AND OUTCOMES

Key actions to address infrastructure gaps were developed through multi-agency coordination and feedback received through survey responses and stakeholder discussions. The actions support four targets and include detailed descriptions of the purpose behind the actions, desired outcomes, state agencies primarily responsible for the actions, and anticipated timelines for implementation and completion in the Roadmap to the Future section. The following table summarizes the recommended actions.

SUMMARY RECOMMENDATIONS FOR KEY ACTIONS

TARGET 1: INCREASED EV SALES

- 1.1 Complete an EV market study for incentives
- 1.2 Update scenarios-based projections for medium- and heavy-duty ZEVs
- 1.3 Provide fleet transition technical assistance

TARGET 2: EXPANDED EV CHARGER DEPLOYMENT AND RELIABILITY

- 2.1 Invest remaining NEVI funds to close critical charging gaps
- 2.2 Enable real-time charger data sharing
- 2.3 Develop permitting best practices resource for EV chargers
- 2.4 Plan for long-term, sustainable charger operations on state property
- 2.5 Improve workforce training for EV charging infrastructure

TARGET 3: STRATEGIC UTILITY GRID INTEGRATION

- 3.1 Align utility hosting capacity with infrastructure planning tools
- 3.2 Bolster make-ready funding in state incentives programs
- 3.3 Continue integrating EV planning with electricity system planning
- 3.4 Continue evaluating programs and tools to manage EV charging-related grid peak demand

TARGET 4: TACTICAL PUBLIC ENGAGEMENT AND COMMUNICATIONS

- 4.1 Increase partnerships for consumer-focused communications about EVs
- 4.2 Assist high-density residential communities with expanding EV charging
- 4.3 Establish an accessible, public-facing process for installing EV signage on roads
- 4.4 Improve local engagement with planning departments
- 4.5 Engage fleet owners on clean tech transition

THE PATH FORWARD

Despite continued uncertainty in the national EV market, Maryland's continued work on transportation electrification is essential for achieving climate goals, improving air quality, and fostering economic growth. The ZEVIP is not just a roadmap; it is a call to action for state agencies, utilities, local governments, private partners, and the public. By working together, Maryland can build a charging network that supports all communities, drives EV adoption, and positions the state as a national leader in clean transportation.



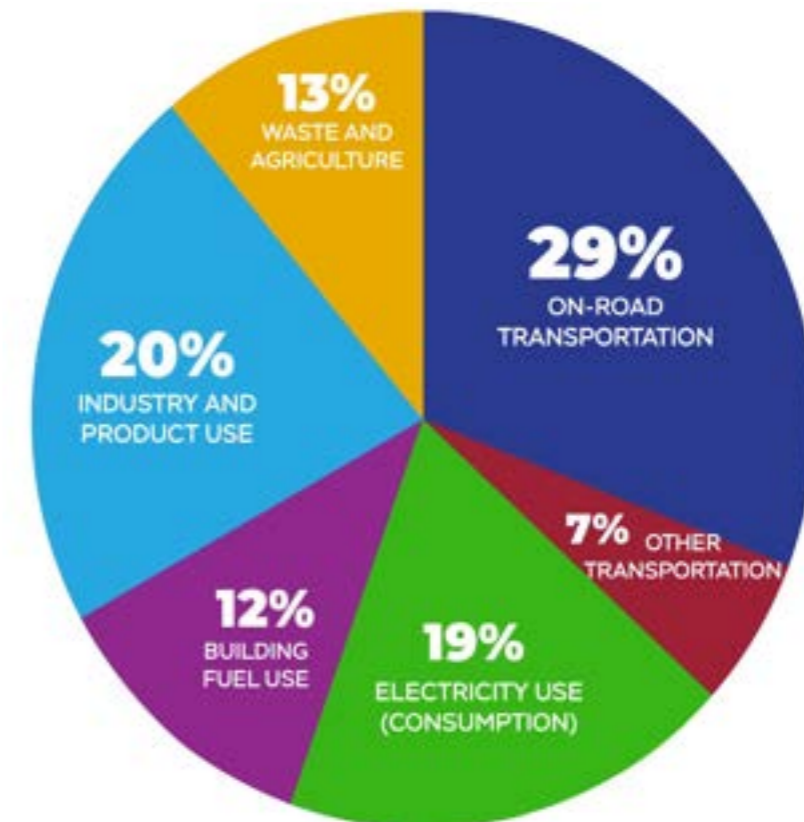
INTRODUCTION

Maryland stands at a pivotal moment in its journey toward a cleaner, more sustainable transportation future. The Maryland Zero Emission Vehicle Infrastructure Plan (ZEVIP) was created in response to Governor Wes Moore's [Executive Order 01.01.2024.19](#) (EO) issued in June 2024. The EO directed the Maryland Department of Transportation (MDOT) to develop the ZEVIP to support the statewide deployment of infrastructure for light-, medium-, and heavy-duty zero-emission vehicles (ZEVs). In this plan, ZEVs are defined as plug-in hybrid (PHEV), battery electric (BEV), and fuel cell electric vehicles (FCEV), while electric vehicles (EVs) refer specifically to PHEVs and BEVs. The plan will primarily focus on the state's strategy for light-duty EV charging infrastructure, acknowledging the market for medium- and heavy-duty (MHD) ZEVs will continue to mature. The ZEVIP, which will be reviewed and updated triennially, is a testament to the state's commitment to accelerating the transition to ZEVs and supporting Maryland's ambitious climate goals.



The urgency to electrify the transportation sector has never been greater. On-road and off-road transportation is the leading emitter of national and state greenhouse gas (GHG) emissions, accounting for more than one-third of GHG emissions in Maryland. Figure 2 illustrates Maryland's 2023 gross GHG emissions inventory, which reflects the outsized role of on-road and off-road transportation emissions. Maryland's sustained leadership in this arena is essential not only for fulfilling the state's climate commitments, but also for continuing to serve as a model for other states confronting comparable challenges.

Figure 2. Percentage of Maryland 2023 Gross GHG Emissions by Sector (MMTCO_{2e})



Source: Maryland 2023 GHG Inventory Preliminary Results

The ZEVIP is designed to address one of the most significant barriers to widespread EV adoption: range anxiety. By outlining a comprehensive, multi-agency roadmap, the plan seeks to build a robust, accessible, reliable, and connected public charging network that instills confidence in Maryland drivers and fleets. The successful transition to EVs depends on the interplay between vehicle adoption, charging infrastructure deployment (both public and private), public education, and electric grid readiness. Each of these elements is essential; if there is any lag, then progress is expected to stall. The ZEVIP embodies a thoughtful approach to planning, uncertainty, and implementation, aiming to create a reinforcing cycle that accelerates EV market growth and supports a sustainable, reliable transportation future.

INTRODUCTION

PURPOSE AND SCOPE

The primary purpose of the ZEVIP is to outline core strategies and recommend state-led actions to improve range confidence for Maryland drivers and fleets by developing a robust and reliable public EV infrastructure network. The plan does not promise absolute range certainty, nor specific tactics or recommendations for private charging, but rather provides the necessary framework and actions to bolster the charging experience in Maryland. Key components of the report include:

- Institutional alignment of federal funding with state and local initiatives, grants, and private-sector investment to advance integrated and efficient deployment.
- Analysis of projected EV populations and corresponding publicly available charging needs, including estimated charger types, quantities, and placements, as well as policy and deployment uncertainty.
- Policy recommendations and actions to accelerate publicly available charger deployment and support EV adoption.
- A coordinated multi-agency framework for implementation, ensuring that efforts are cohesive and effective.
- Stakeholder and public engagement, evidenced through surveys and outreach.
- Development and deployment of the Maryland EV Charging Suitability Tool.

SUPPORTING APPENDICES

The appendices to the Maryland ZEVIP provide key reference materials that support and clarify the analyses and recommendations presented in the plan, offering essential context for readers seeking a deeper understanding of its foundation.

- *Appendix A defines key terms and acronyms used throughout the document.*
- *Appendix B compiles relevant resources for further information.*
- *Appendix C outlines state agency roles and responsibilities in EV adoption and EV charging infrastructure deployment.*
- *Appendix D presents the technical methods and results underlying the light-duty vehicle analysis.*

POLICY CONTEXT

Maryland's efforts to advance ZEV adoption and expand charging infrastructure are shaped by a dynamic interplay of federal and state policy. During the past several years, landmark federal legislation such as the Infrastructure Investment and Jobs Act (IIJA) and the Inflation Reduction Act (IRA) catalyzed unprecedented nationwide investment in ZEV infrastructure, manufacturing, and consumer incentives.

POLICY CONTEXT CONT.

While recent shifts in federal leadership have introduced uncertainty and slowed progress in some areas, Maryland has continued to lead with a comprehensive, multi-layered strategy that secures funding, upholds ambitious climate commitments, and maintains momentum toward transportation decarbonization. Complemented by strong state policies, most notably the Climate Solutions Now Act (CSNA) and adoption of Advanced Clean Cars II (ACC II) and Advanced Clean Trucks (ACT) regulations, Maryland has established a resilient foundation that integrates technical analysis, public input, cross-agency collaboration, and targeted incentive programs. The following sections outline the federal and state policy landscape informing this plan and highlight how Maryland continues to position itself as a national leader in the transition to clean transportation.

FEDERAL POLICY

Enacted in 2021, the IIJA marked a historic federal commitment to ZEV infrastructure by allocating \$7.5 billion from Federal Fiscal Years (FFYs) 2022-2026 for ZEV charging and fueling expansion. The passage of the IRA further accelerated the ZEV transition with direct tax credits for consumers. However, momentum slowed in January 2025 with the change of federal executive leadership. The overall ZEV landscape changed significantly with the rollback of multiple key federal funding programs, including the elimination of tax credits to consumers, increased tariffs for EV components, and lower domestic manufacturing and supply chain investments. Though deployments have slowed due to these changes, ZEVs are here to stay. Across the nation, and in Maryland, deployments continue.

THE INFRASTRUCTURE INVESTMENT AND JOBS ACT AND THE INFLATION REDUCTION ACT

The \$7.5 billion allocated through the IIJA created two primary programs:

- [National Electric Vehicle Infrastructure \(NEVI\) Formula Program](#) - \$5 billion in formula funding under the Federal Highway Administration (FHWA), delivered at \$1 billion annually from FFYs 2022-2026 to states for public EV charging deployment primarily along federally designated [Alternative Fuel Corridors \(AFCs\)](#) and, secondarily, in communities. Ten percent of set-aside NEVI formula funds made available for additional assistance to states and localities, including the [EV Charger Reliability and Accessibility Accelerator \(EVC-RAA\) Discretionary Grant Program](#) to repair and replace broken public EV chargers.
- [Charging and Fueling Infrastructure \(CFI\) Discretionary Grant Program](#) - \$2.5 billion in FHWA discretionary funding for a wider range of eligible applicants to deploy ZEV charging redundancy or alternative fueling infrastructure along AFCs and in communities.

INTRODUCTION

THE INFRASTRUCTURE INVESTMENT AND JOBS ACT AND THE INFLATION REDUCTION ACT CONT.

Additional IJA discretionary funding, more than \$43 billion, became available for related investments such as battery manufacturing, grid enhancements, and workforce retraining. Meanwhile, the IRA, which passed in August 2022, further accelerated ZEV adoption through approximately \$47 billion in direct incentives. Key provisions included:

- [A New Clean Vehicle Tax Credit](#) of up to \$7,500 per vehicle (with North American assembly and sourcing conditions).
- [A Used Clean Vehicle Tax Credit](#) up to \$4,000.
- [A Commercial Clean Vehicle Credit](#) of 30% of the vehicle price (up to \$7,500 or \$40,000 depending on vehicle weight).
- [A charging equipment tax credit](#), covering 30% of residential charging station costs (up to \$1,000) through 2032.

Of these landmark federal investments, approximately \$62.8 million has been allocated to Maryland's NEVI Program, which MDOT administers to expand public fast charging along the state's [23 AFCs](#) and public L2 charging in communities. Maryland's NEVI strategy is detailed in the state [NEVI Plan and Updates](#). Under Rounds 1 and 2, Maryland is investing \$19 million to install 166 new DCFC ports across 31 corridor sites in the state. Maryland is committed to investing its remaining NEVI funds for additional corridor and community charging as quickly as possible.

While the IJA and IRA have delivered historic funding for ZEV infrastructure and incentives, recent federal policy shifts have introduced uncertainty. In mid-2025, Maryland joined a multistate legal challenge to block a federal administration freeze on NEVI formula funds. In late 2025, Maryland again joined a multistate legal challenge to block a federal freeze on CFI and EVC-RAA grant awards. Throughout these challenges, Maryland has demonstrated its dedication to building out the state's public EV charging network by successfully obligating and awarding NEVI funds for corridor charging projects and leveraging IRA-driven tax credits.

MARYLAND POLICY

Maryland's approach to transportation electrification is shaped by a suite of forward-looking policies and programs. The CSNA, enacted in 2022 during the Hogan Administration, mandates a 60% reduction in GHG emissions by 2031 and net-zero emissions by 2045 and prioritizes strategies to reduce emissions from the transportation sector. To comply with the CSNA, MDOT submits [annual reports](#) detailing the status of programs that support the State's GHG reduction goals and broader climate initiatives, including progress on deploying EVs and EV chargers.

In 2023, Maryland adopted the ACC II standards, requiring 43% new ZEV sales by 2027 and scaling up to 100% new ZEV sales by 2035. Maryland's Clean Trucks Act of 2023 requires adoption of California's ACT regulation, setting ZEV sales targets for medium- and heavy-duty vehicles. Recent federal actions like the revocation of Clean Air Act waivers authorizing ACC II and ACT regulations have introduced uncertainty.¹ Despite this, Maryland has responded with executive orders and working groups to maintain progress toward vehicle electrification goals.

In 2025, Governor Moore signed [Executive Order 01.01.2025.10](#), which delayed enforcement of Maryland's ACC II and ACT Programs and established an [ACC II and ACT Working Group](#) consisting of state agencies and key stakeholders to help Maryland navigate an evolving clean transportation landscape and gain feedback on how to meet its climate and environmental priorities. The working group released a recommendations report in late 2025 detailing actions the state and partners could take to continue deployment of EVs and EV chargers despite challenges from the federal government. The ZEVIP builds upon the working group's report by framing complementary, state-led recommended actions to ensure Maryland's public charging network is strategically built out based on projected infrastructure needs and suitability analysis for future deployments.

MARYLAND'S ELECTRIFICATION POLICIES AND PROGRAMS

- [Climate Solutions Now Act \(CSNA\)](#)
- [Advanced Clean Cars II Program \(ACCII\)](#)
- [Transforming Maryland's Electric Grid, Public Conference 44 \(PC44\) Proceeding](#)
- [MEA Transportation Programs](#)
- [Volkswagen Settlement Grants Program](#)
- [Maryland's EV Plan Website \(NEVI and ZEVIP\)](#)
- [Maryland's EV Charging Suitability Tool](#)

INTRODUCTION

MARYLAND POLICY CONT.

To complement Maryland's policies and federal programs, the state offers incentive programs supporting personal EV adoption, fleet transition, and charging infrastructure deployment. These grant and tax credit programs are primarily administered by the [Maryland Energy Administration \(MEA\)](#), [MDE](#), and the [Maryland Motor Vehicle Administration \(MVA\)](#). Furthermore, MDOT administers federal funding through [Maryland's NEVI Formula Program](#) and discretionary grants. Electric utility companies provide additional incentives and technical assistance under the Maryland Public Service Commission (PSC) Public Conference 44 (PC44) proceeding.

The policies and programs outlined above represent only a fraction of the work currently underway across Maryland state agencies to advance vehicle electrification. From expanding supply chains to cultivating a skilled workforce and protecting ratepayers from rising electricity costs, Maryland state agencies have been engaged for years in the foundational work required to decarbonize the state's transportation sector. More information on current ZEV-related roles and responsibilities of state agencies can be found in Appendix C.

Maryland's approach is also informed by valuable stakeholder and community member feedback collected during this plan's development. Model outputs provide a critical analytical foundation, but they must be coupled with structured input from businesses, organizations, and community stakeholders to produce a comprehensive and actionable assessment. By integrating quantitative results with qualitative insights from those experiencing the ZEV transition firsthand, the plan reflects a full and operationally relevant picture of Maryland's needs.

Based on information gathered through a public survey and stakeholder interviews, ZEV adoption in Maryland for both personal and fleet uses will benefit from increases in the availability of reliable and affordable charging, as well as consumer education about incentives and resources. This includes increasing charging access in multi-unit dwelling (MUD) communities, strategically deploying additional fast charging, and developing innovative smart charging and technical assistance solutions. Collectively, Maryland's multi-pronged strategy safeguards essential funding streams, reflects the needs of Marylanders, and advances statewide EV adoption to position the state to remain a leader amid shifting federal policy landscapes.

ADDRESSING UNCERTAINTY

Uncertainty is an important theme woven throughout the ZEVIP, recognizing that shifting federal policies, evolving market conditions, supply chain volatility, and variable grid readiness all influence the pace and success of transportation electrification. Rather than treating these unknowns as obstacles, the plan directly addresses them through analyzing structured scenarios, developing high, medium, and low EV adoption trajectories, aligning infrastructure projections with these scenarios, and using the Maryland EV Charging Suitability Tool and the EV Infrastructure-Projection (EVI-Pro) Lite modeling tool to stress-test decisions under different futures. By embedding uncertainty into its analysis, recommendations, and coordinated multi-agency framework, the ZEVIP ensures Maryland can adapt its investments, policies, and planning to remain resilient in a rapidly changing landscape.

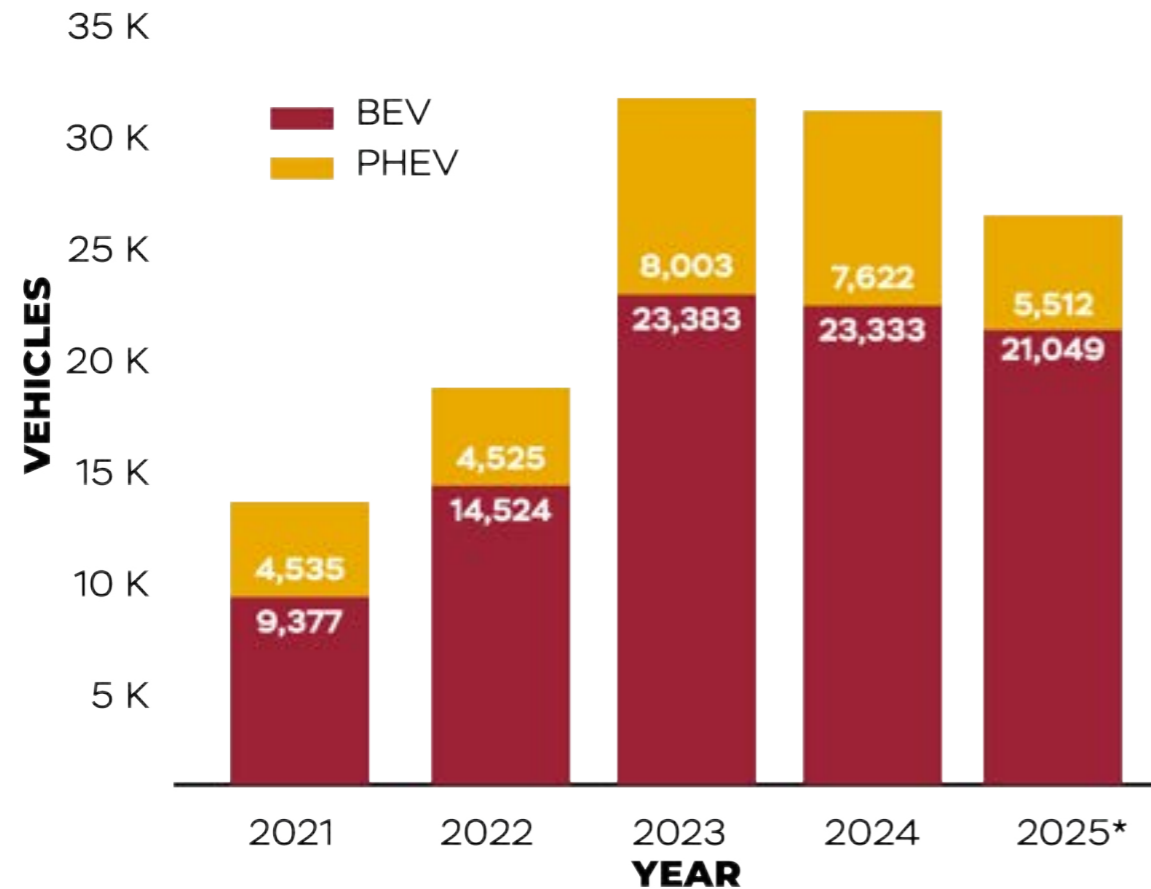


MARYLAND'S EV AND CHARGING INFRASTRUCTURE LANDSCAPE

MARYLAND'S EV LANDSCAPE

Despite changes at the federal level, Maryland has made significant strides in deploying EVs—predominantly light-duty vehicles thus far—and EV chargers. State prioritization of federal funding, litigation to protect obligated federal funds, and state-funded programs have helped Maryland remain in the top 20 for national EV sales.²

Figure 3. Maryland EV (BEV and PHEV) Sales by Calendar Year



*Vehicle sales figures for 2025 reflect the latest available data from the Alliance for Automotive Innovation Electric Vehicle Sales Dashboard through December 31, 2025.

MARYLAND'S PUBLIC CHARGING NETWORK AND EV REGISTRATION DENSITY

By the end of 2025, Maryland had more than 149,000 registered EVs.³ The success in EV adoption is due in part to sustained funding support for the [Maryland EV excise tax credit](#) administered by MVA. More than 5,400 charging ports at 1,700 public EV charging stations throughout Maryland currently support local and interstate EV drivers. These numbers will continue to rise as the state prioritizes funding from federal, state, and utility sources directed at EV charging to enable a cohesive and robust charging network.⁴

Maryland's ecosystem of EVs and charging infrastructure is supported through the implementation of Maryland's NEVI Program, which is assisting the state with closing charging gaps along Maryland's AFCs and in communities, increasing range confidence, and accelerating EV adoption.

ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE) REGISTRATION

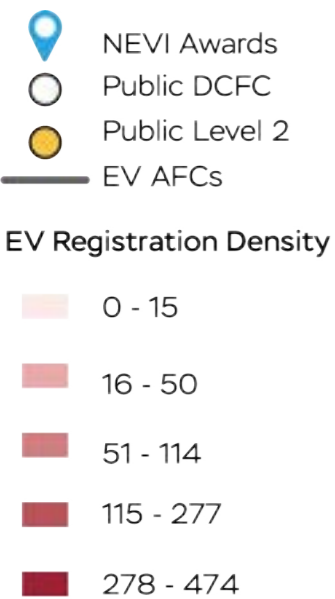
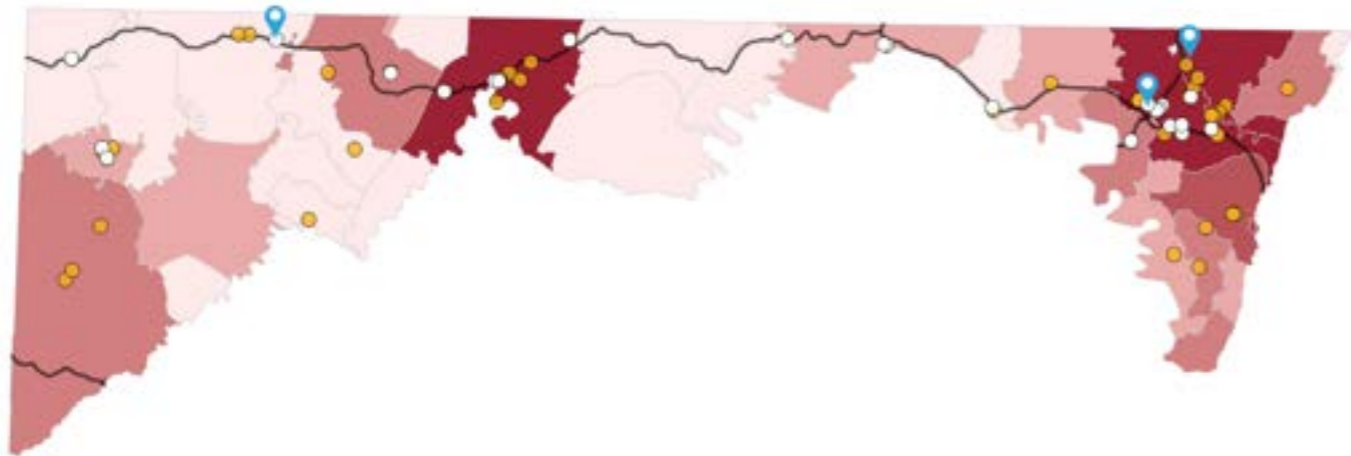
On October 1, 2025, the Maryland Department of Agriculture (MDA) Weights and Measures Division introduced the [EVSE Registration and Certification Program](#), which requires registration with the department for all new and existing publicly available retail DCFC and L2 EV chargers. The program does not cover uptime reliability.

MDA Weights and Measures has the authority to regulate the method of sale of all commodities offered or exposed for sale, as well as weighing and measuring devices used in commercial transactions within the state. In accordance with Maryland law, all EVSE used commercially and available to the public must be "Legal for Trade" and have a National Type Evaluation Program (NTEP) Certificate of Conformance (CC). Legacy EVSE installed prior to January 1, 2023, are not required to have NTEP certification. Any unregistered EVSE found to be available to consumers for use will be removed from service until they are properly registered with MDA.

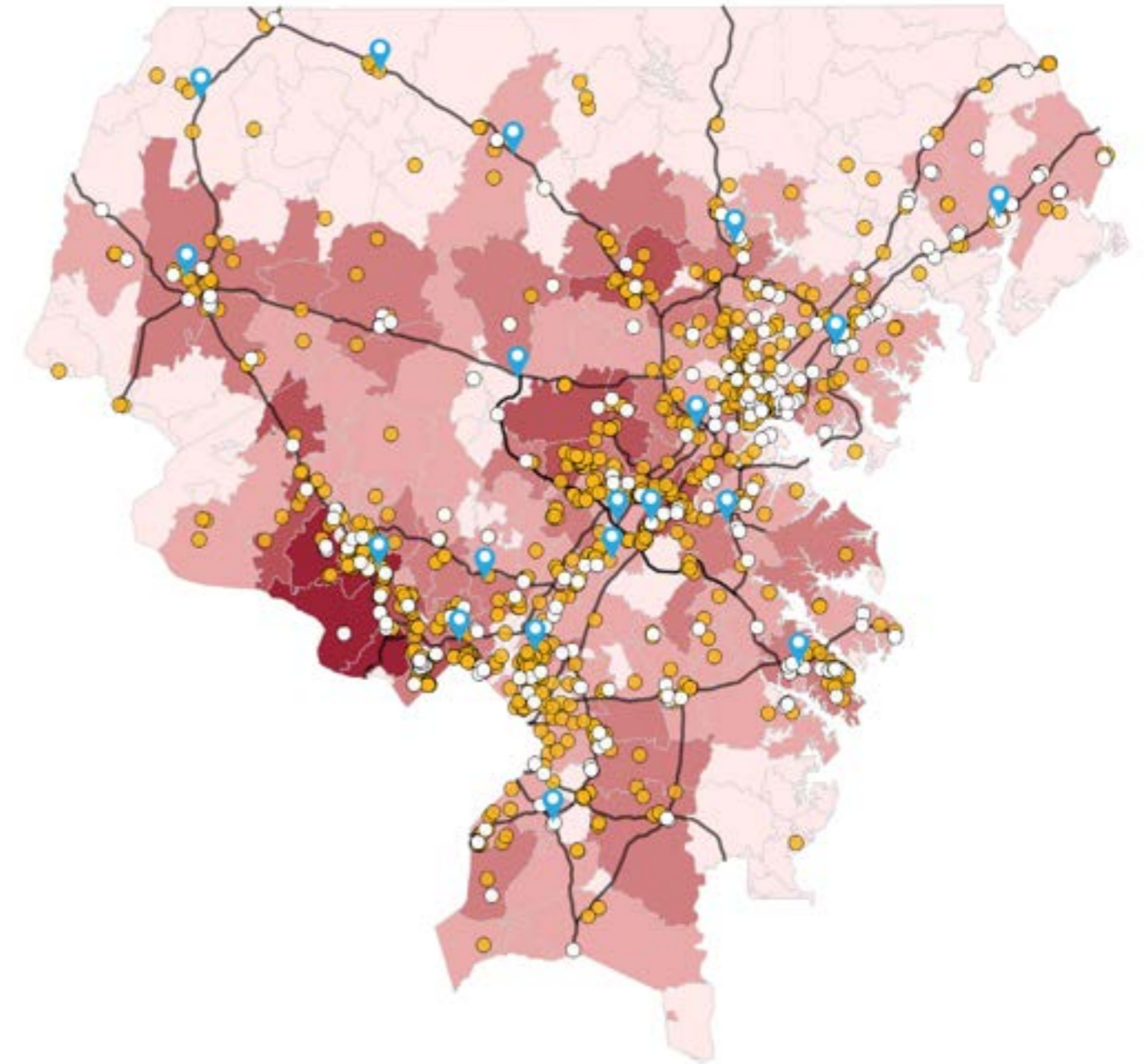
Following feedback from industry, local governments, and community members, MDA announced a six-month extension to the registration deadline for applicable EVSE. The new registration deadline is July 1, 2026, with testing and certification in accordance with the National Institute of Standards and Technology (NIST) Handbook 44, to begin the same month.

MARYLAND'S EV AND CHARGING INFRASTRUCTURE LANDSCAPE

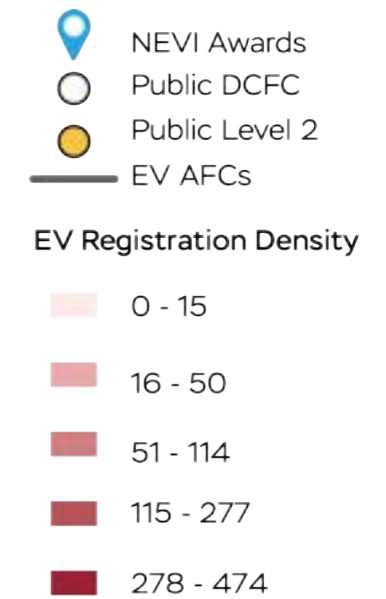
MARYLAND'S PUBLIC CHARGING NETWORK AND EV REGISTRATION DENSITY CONT.



WESTERN MARYLAND*		
Charging Stations		
	Stations	Ports
NEVI	3	14
L2	54	122
Other DCFC	31	90
Total	88	226
Vehicle Registrations	2,123 BEV 1,016 PHEV 3,139 TOTAL	



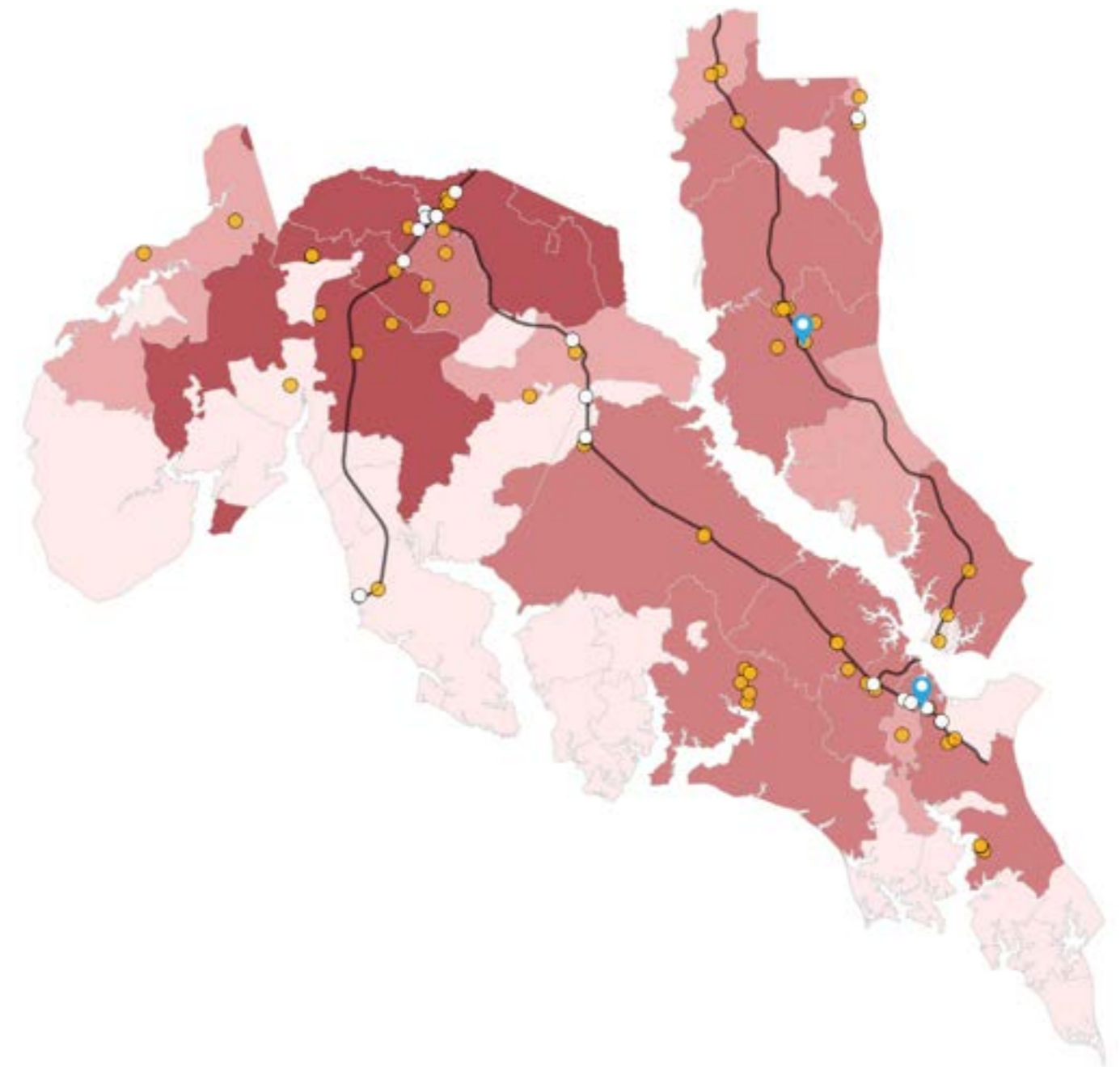
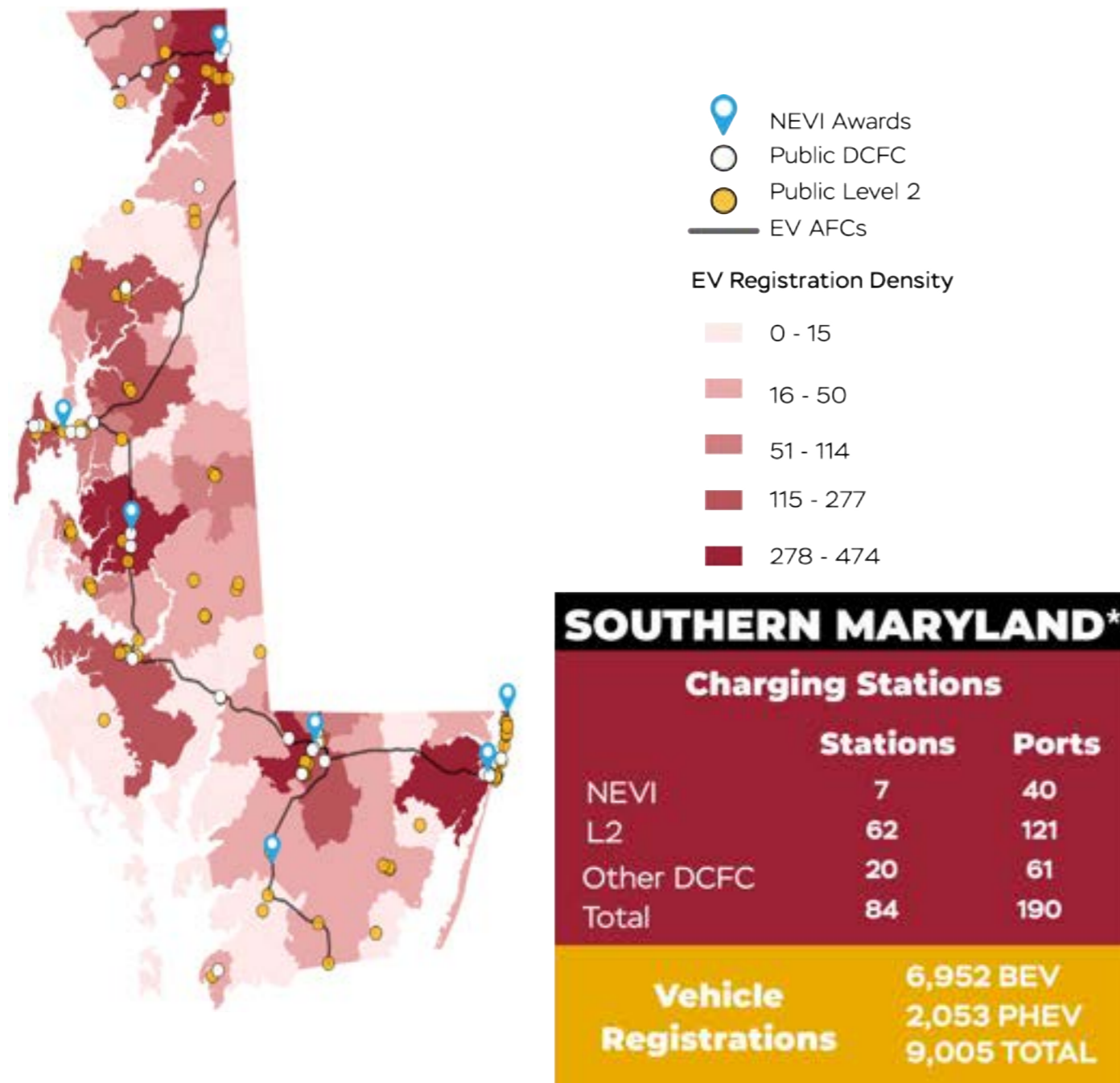
CENTRAL MARYLAND*		
Charging Stations		
	Stations	Ports
NEVI	19	104
L2	1,189	3,428
Other DCFC	254	1,017
Total	1,462	4,549
Vehicle Registrations	101,829 BEV 35,383 PHEV 137,212 TOTAL	



*Data as of December 31, 2025.

MARYLAND'S EV AND CHARGING INFRASTRUCTURE LANDSCAPE

MARYLAND'S PUBLIC CHARGING NETWORK AND EV REGISTRATION DENSITY CONT.



*Data as of December 31, 2025.

MARYLAND'S EV AND CHARGING INFRASTRUCTURE LANDSCAPE

PUBLIC OUTREACH AND ENGAGEMENT

Public feedback is a cornerstone of the ZEVIP. Collecting input from community members and stakeholders throughout the state ensures that Maryland is implementing a public charging network and EV transition that serves all Marylanders. It provides an important lens through which the state can interpret data analysis and ground findings, ensuring results align with what is being heard on the ground.

Outreach and engagement for the ZEVIP build upon work conducted for Maryland's NEVI Plan and Program. In 2024, MDOT issued a [Maryland EV and Infrastructure Planning Survey](#) to support the NEVI Plan and identify the challenges and opportunities associated with EV ownership and EV charging infrastructure installations. Following the survey, three public webinars provided information about electrifying Maryland's transportation sector and solicited opinions on EVs and charging infrastructure.

In 2025 as MDOT began developing the ZEVIP, it released a new [ZEVIP Survey](#) seeking additional feedback from Maryland residents, local fleet managers, and professionals in the EV industry. The survey recorded 1,487 responses, including responses from nine hard-to-reach ZIP codes where MDOT performed targeted outreach. MDOT identified these ZIP codes based on a lack of response to the 2024 survey, proximity to urbanized areas, and potential for EV infrastructure investment to broaden the extent of its public engagement.

The information provided by respondents to the ZEVIP Survey is not inclusive of all perspectives from Marylanders, reaching approximately 53% of all Maryland ZIP codes. However, survey results provide a window into the top areas of opportunities for Maryland leadership in expanding access to EVs and increasing range confidence. Across responses from drivers with personal vehicles, drivers or managers of vehicle fleets, and professionals in the EV industry, common challenges such as EV affordability, availability and reliability of charging infrastructure, workforce readiness, and stability of incentives and funding sources present barriers to EV adoption during the next five years.



MARYLAND'S EV AND CHARGING INFRASTRUCTURE LANDSCAPE

CHALLENGES

Despite Maryland's continued progress, challenges remain. Uncertainty across the EV and charging infrastructure market has intensified since January 2025. Multiple factors contribute to this volatility, including the sunset of federal EV tax credits, the revocation of key funding streams for charging infrastructure and EV supply chain facilities, increased tariffs on critical materials, limited charger availability, and broader market fluctuations such as rising interest rates and shifting economic conditions. These pressures have collectively slowed EV adoption not only in Maryland but nationwide. Compounding these national trends, Maryland faces additional constraints like state fiscal challenges and rising utility costs, both of which influence consumer decision making when considering an EV purchase.

Beyond policy and budgetary constraints, the deployment of EVs and charging infrastructure remains relatively new for both government and industry. The intersections among transportation infrastructure, electric utilities, and consumer charging networks present complex operational and regulatory challenges, including coordination of grid capacity upgrades, permitting processes, equipment standards, and long-term maintenance responsibilities. Achieving wide-scale deployment requires aligned policies, clear regulatory frameworks, and sustained interagency communication. This report represents a critical step toward improving that alignment and supporting coordinated policy development and infrastructure deployment across Maryland agencies.

Accounting for uncertainty is essential when evaluating future investments and policy decisions. While the ZEVIP cannot fully resolve all uncertainties currently affecting the EV market, it addresses them in the following sections by developing scenarios informed by evolving policy conditions, conducting a literature review of leading automotive research, and assessing EV deployment trends based on Maryland's historical data.

Maryland's light-duty⁵ EV and charging infrastructure analyses combine scenario-based projections of future EV adoption with data-driven estimates of charging ports needed to support those vehicles. By modeling high, medium, and low EV adoption pathways, and linking those projections to public charging needs, the plan provides a clear understanding of how infrastructure demand shifts under different market and policy conditions. Complementing this analysis, the Maryland EV Charging Suitability Tool offers a detailed, updatable snapshot of where public charging is most needed across the state. Together, these components create an integrated framework for planning a reliable, equitable, and forward-looking charging network that scales with Maryland's evolving light-duty EV landscape.

MICROMOBILITY IN THE EV TRANSITION

In addition to the adoption of EVs, shifting travel behavior away from single occupancy vehicle use is essential to reducing GHG emissions in Maryland's transportation sector. Micromobility modes serve as an important component of this broader model shift.

Micromobility is a term for small, low-speed, human- or electric powered transportation devices, including bicycles, scooters, electric-assist bicycles (e-bikes), and electric scooters (e-scooters). These modes serve as critical first-and last-mile connectors to transit, particularly for non-car owners and other travelers. While human-powered micromobility has always been a zero emission option, the growth of electric micromobility further reduces reliance on motor vehicles and supports broader decarbonization goals.

Maryland, like other states, is seeing an increase in the use of e-bikes and e-scooters, as evidenced by the nearly 72% of ZEVIP survey respondents who reported owning an electric micromobility vehicle or using electric micromobility options through shared programs (e.g., Lime, Bird, Capital Bikeshare). The state, in collaboration with local government partners, is working to improve micromobility access and safety in Maryland. Currently, eight local jurisdictions in the state offer shared micromobility programs, and personal ownership of e-micromobility is increasing exponentially. In 2026, MDOT published a summary of micromobility regulations and announced plans to develop safety materials for riding and maintaining e-micromobility, as well as guidance on managing shared micromobility programs through effective micromobility parking siting and resources for local jurisdictions.

LIGHT-DUTY EVs AND CHARGING INFRASTRUCTURE ANALYSES

EV ADOPTION SCENARIOS

In close coordination with MDE and other state agencies, Maryland developed three EV adoption scenarios: high, medium, and low, each reflecting different assumptions about federal incentives, regulatory conditions such as ACC II, and historic sales trends. These scenarios provide a spectrum of projected light-duty EV sales through 2031. The projected annual EV sales serve as a proxy for annual EV registrations in Maryland, which are key inputs for the EVI-Pro Lite model to estimate the public and private charging infrastructure required to support Maryland drivers under each future pathway. The scenarios and modeling create a flexible, evidence-based foundation that allows the state to plan for charging needs amid rapidly evolving market conditions. Technical Appendix D provides a detailed explanation of the methods, assumptions, and analytical tools used in this process.

EV SALES PROJECTIONS

- The high scenario reflects the retention of federal incentives and the most lenient of the ACC II Program implementation scenarios allowing for maximum pooling, environmental justice, historic, and early compliance credits. EV sales under this scenario reach 72% market share by 2031, or 711,775 EVs.
- The medium scenario reflects a full federal repeal of vehicle tax incentives under the Inflation IRA based on an average of industry sources with sales reaching 24% market share per year by 2031, or 415,351 EVs. This scenario does not include ACC II implementation.
- The low scenario assumes EV sales will remain flat at 10% market share per year, in close alignment with average sales trends of 9.50% per year from 2021 through 2025. This scenario does not include federal incentives or the implementation of ACC II and totals approximately 314,611 EVs in 2031.

Based on the described scenarios, Figures 4 and 5 illustrate the assumed sales percentages and the resulting total EV populations by calendar year. These EV populations inform the subsequent projections of charging ports needed. The figures also illustrate how the EV adoption scenarios compare to the overall 4,968,850 projected light-duty vehicle registrations in 2031. Under the high EV deployment scenario, EVs will account for approximately 14% of all registered light-duty vehicles in the state. The middle and low scenarios yield lower percentages of EV registrations accounting for approximately 8% and 6% of EVs, respectively, as a total of registered light-duty vehicles.

Figure 4. Maryland EV Sales Assumptions by Calendar Year (High, Medium, and Low Scenarios)

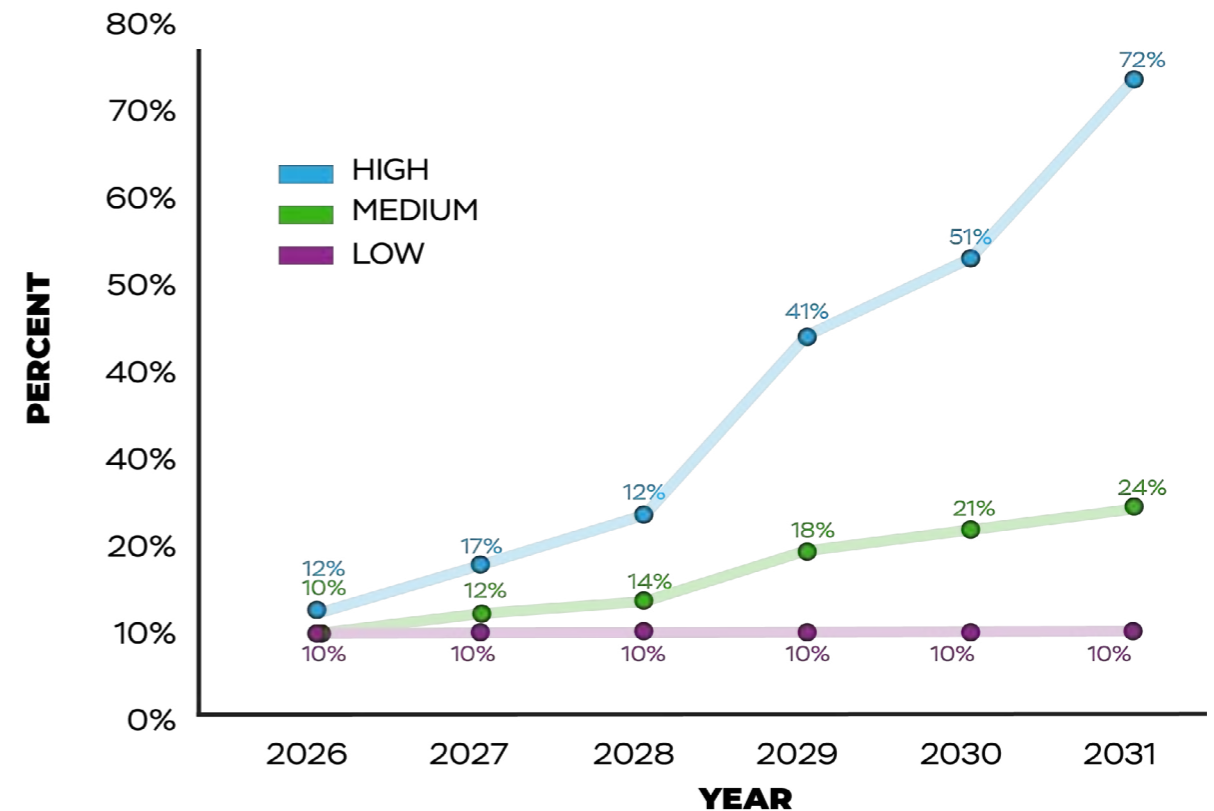
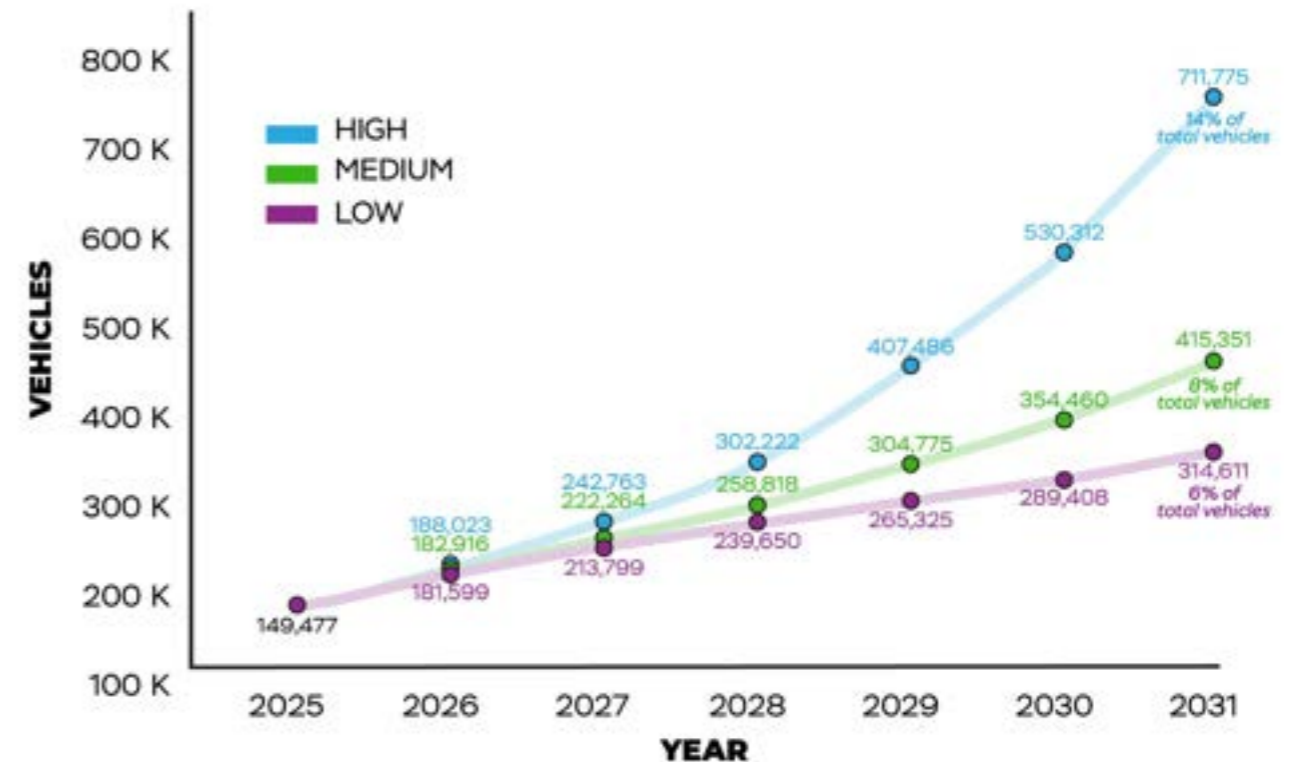


Figure 5. Maryland EV Population Projections by Calendar Year (High, Medium, and Low Scenarios)



Even under the most aggressive EV sales scenarios, Maryland falls short of its previous goal for 1.1 million registered EVs by 2030, which would have required additional investments and policy mechanisms for achievement. The numbers fall more significantly with federal rollbacks and market uncertainty.

LIGHT-DUTY EVs AND CHARGING INFRASTRUCTURE ANALYSES

PROJECTED CHARGING NEEDS

The national EVI-Pro Lite model was used to determine the number and types of EV charging ports necessary to support the projected EV sales. The EVI-Pro Lite Tool was developed by the U.S. Department of Energy’s (DOE) National Laboratory of the Rockies (NLR) as an accessible and simplified version of the EVI-Pro Tool, specifically to estimate how much public and private EV infrastructure is needed to support typical daily travel in a given state or metropolitan area. This tool was chosen for the ZEVIP after surveying several leading models, including those used by our peer states, because of its user-friendly nature, the underpinning of analysis and research conducted at the national level, and consistency with a previous charging infrastructure study commissioned by the PSC.⁶

The simplified, web-based EVI-Pro Lite Tool includes underlying data, inputs, assumptions, and methodologies that are pulled from the original [EVI-Pro Tool](#). This includes data, such as travel behavior, built environment characteristics, and assumptions related to vehicle fleets and technologies. This information is combined with data provided by MDOT to calculate the outputs of the model. Specifically, MDOT supplied EV population, vehicle mix, and the market share percent of PHEVs for each scenario. Technical Appendix D provides a detailed explanation of the assumptions and reasoning for MDOT-supplied inputs used in this process. EVI-Pro Lite’s outputs include public and private charging infrastructure needs broken into Level 1, Level 2, and DCFC port quantities. For the purposes of the ZEVIP, only publicly available L2 and DCFC needs are described in the analysis. Figure 6 illustrates the inputs and outputs of EVI-Pro Lite.

Balancing modeled outputs from EVI-Pro Lite with stakeholder-reported needs is essential for accurately characterizing the range of Maryland’s charging requirements. Both the public ZEVIP Survey and Maryland’s NEVI gap analysis identify specific deficiencies not captured by EVI-Pro Lite’s statewide capacity totals.

Figure 6. Overview of EVI-Pro Lite Modeling Tool ZEV Infrastructure Projections Using EVI-Pro Lite



To translate Maryland’s EV adoption scenarios into charging infrastructure needs, projected EV sales percentages for each scenario were first applied to estimate the total number of registered EVs in 2031. These projected EV populations, reflecting high, medium, and low adoption pathways, serve as the primary inputs to the EVI-Pro Lite model. EVI-Pro Lite then uses these population estimates, along with Maryland-specific assumptions about travel behavior and charging patterns, to calculate the number and types of public charging ports required to support each scenario. The resulting projections in Table 1, which do not include existing installed ports, provide a foundational view of the infrastructure necessary to meet future demand and help Maryland plan for a public charging network that reduces range anxiety and aligns with evolving EV adoption trends.

Table 1. Projected EVs and Public Charging Ports Needed

SCENARIO	TOTAL PROJECTED EVs	PUBLIC DCFC CHARGING PORTS NEEDED	PUBLIC LEVEL 2 CHARGING PORTS NEEDED
LOW	314,611	585	10,063
MEDIUM	415,351	585	11,664
HIGH	711,775	1,058	20,467



LIGHT-DUTY EVs AND CHARGING INFRASTRUCTURE ANALYSES

PROJECTED CHARGING NEEDS CONT.

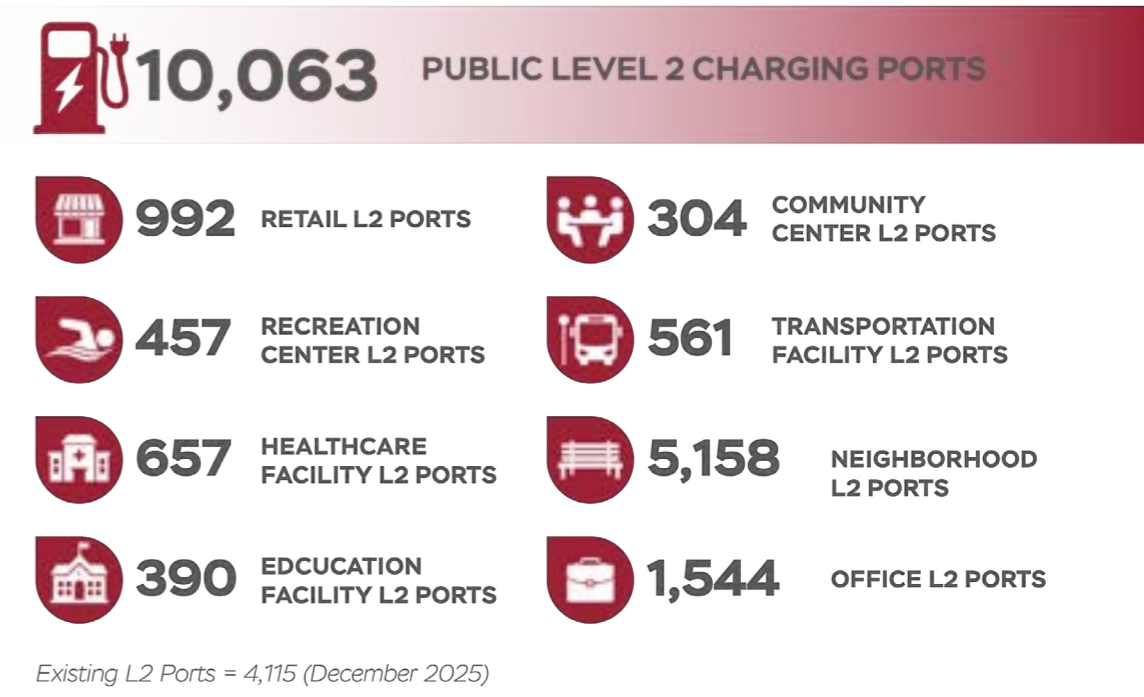
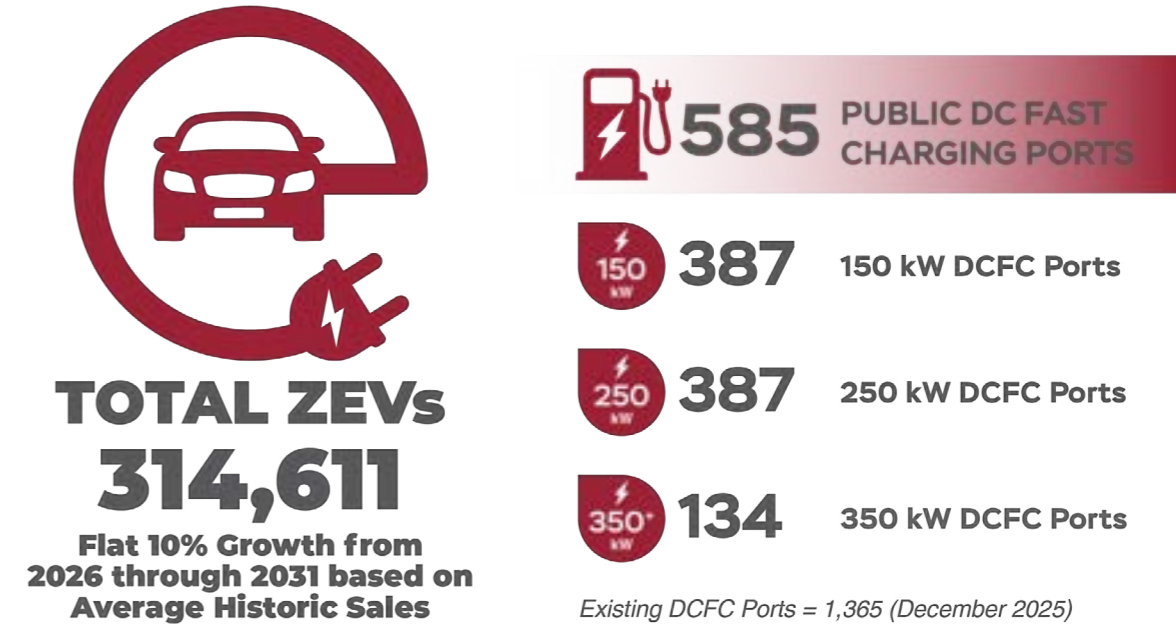
Balancing modeled outputs from EVI-Pro Lite with stakeholder-reported needs is essential for accurately characterizing the range of Maryland’s charging requirements. While all three EV adoption scenarios indicate that the state currently has sufficient DCFC capacity to support basic en route travel along designated corridors, with 1,365 publicly available DCFC ports as of December 31, 2025, both the public ZEVIP Survey and Maryland’s NEVI gap analysis identify specific deficiencies not captured by EVI-Pro Lite’s statewide capacity totals. These sources highlight the need for additional DCFC to address localized coverage gaps, enhance network redundancy, and guarantee reliable charging availability under real-world operating conditions. Survey respondents, including personal EV drivers and fleet operators, consistently emphasized the importance of expanding fast charging at high-throughput locations such as rest areas, highway-adjacent amenity clusters, major transit hubs, and community activity centers, reflecting a demand for infrastructure that aligns with actual travel patterns and dwell-time behaviors.

As of December 31, 2025, Maryland has 4,115 public L2 charging ports statewide. Modeling results indicate that substantially more infrastructure will be required to meet future demand. EVI-Pro Lite estimates a need for approximately 10,063 L2 ports under the low EV adoption scenario and up to 20,467 ports under the high scenario. This underscores the magnitude of the expansion necessary to support projected growth and reflects the model’s assumptions about typical charging behavior, where routine, longer-duration charging events, such as those occurring at workplaces, commercial destinations, and residential areas, are most efficiently served by L2 equipment rather than DCFC.

Stakeholder input from the ZEVIP Survey reinforces this finding. Current EV drivers report a strong preference for L2 charging at locations characterized by extended dwell times, including grocery stores, airports, hotels, museums, and employment centers. In addition to aligning with user behavior, appropriately scaling L2 deployment offers cost advantages, as installation and operating expenses are substantially lower than those associated with DCFC. Survey respondents also emphasized the need for convenient, neighborhood-scale L2 access, particularly in dense urban areas where many residents lack off-street parking or home charging capability, making walk-accessible public charging a critical component of an equitable and functional statewide network.

PROJECTED CHARGING NEEDS CONT.

LOW SCENARIO: Detailed Publicly Available Charging Needs



LIGHT-DUTY EVs AND CHARGING INFRASTRUCTURE ANALYSES

PROJECTED CHARGING NEEDS CONT.

In addition to the projected needs for DCFC and L2 charging, several respondents to the ZEVIP Survey identified a continued role for Level 1 charging in specific long-dwell applications, such as long-term airport parking facilities and public transit lots. Level 1 charging presents a cost-effective option for these settings, as installation typically requires only a standard electrical outlet compatible with drivers' existing charging cords. This approach can also reduce the likelihood of vehicles occupying higher-power chargers after reaching full charge, thereby improving overall utilization efficiency.

Taken together, the EVI-Pro Lite infrastructure projections and the qualitative insights gathered through the ZEVIP Survey provide a comprehensive understanding of the scale and distribution of public charging needed to support Maryland's EV transition during the next five years. These findings inform and underpin the development of coordinated state agency recommendations to advance a reliable, equitable, and future-ready public charging network. Ongoing stakeholder and public engagement will continue to be important in monitoring shifts in perceived charging network deficiencies as more Marylanders adopt EVs.⁷

PROJECTED CHARGING NEEDS CONT.

MEDIUM SCENARIO: Detailed Publicly Available Charging Needs



TOTAL ZEVs
415,351
 24% Growth form 2026 through 2031 based on Industry Research

585 PUBLIC DC FAST CHARGING PORTS

150 kW 266 150 kW DCFC Ports

250 kW 92 250 kW DCFC Ports

350 kW 227 350 kW DCFC Ports

Existing DCFC Ports = 1,365 (December 2025)

11,664 PUBLIC LEVEL 2 CHARGING PORTS

1,300 RETAIL L2 PORTS

412 COMMUNITY CENTER L2 PORTS

574 RECREATION CENTER L2 PORTS

753 TRANSPORTATION FACILITY L2 PORTS

848 HEALTHCARE FACILITY L2 PORTS

5,200 NEIGHBORHOOD L2 PORTS

527 EDUCATION FACILITY L2 PORTS

2,050 OFFICE L2 PORTS

Existing L2 Ports = 4,115 (December 2025)

LIGHT-DUTY EVs AND CHARGING INFRASTRUCTURE ANALYSES

PROJECTED CHARGING NEEDS CONT.

HIGH SCENARIO: Detailed Publicly Available Charging Needs



TOTAL ZEVs
711,775

72% Growth from 2026 through 2031 based on Maximum ACC II Implementation Flexibility

1,058 PUBLIC DC FAST CHARGING PORTS

290 150 kW DCFC Ports

210 250 kW DCFC Ports

558 350 kW DCFC Ports

Existing DCFC Ports = 1,365 (December 2025)

20,467 PUBLIC LEVEL 2 CHARGING PORTS

2,797 RETAIL L2 PORTS

867 COMMUNITY CENTER L2 PORTS

1,109 RECREATION CENTER L2 PORTS

1,540 TRANSPORTATION FACILITY L2 PORTS

1,836 HEALTHCARE FACILITY L2 PORTS

6,705 NEIGHBORHOOD L2 PORTS

1,153 EDUCATION FACILITY L2 PORTS

4,460 OFFICE L2 PORTS

Existing L2 Ports = 4,115 (December 2025)

LIGHT-DUTY EVs AND CHARGING INFRASTRUCTURE ANALYSES

MARYLAND EV CHARGING SUITABILITY TOOL

The Maryland EV Charging Suitability Tool was developed by MDOT to provide a data-driven, adaptable framework for identifying optimal public charging locations across the state. The tool is a foundational analytical component of the ZEVIP and builds directly upon Maryland's earlier work under the NEVI Program and EVI Pro-Lite results. Through a suite of suitability analyses for Corridor, Neighborhood and Amenity, High-Density Residential, and Workplace charging, the tool supports strategic, equitable investment decisions aligned with Maryland's public charging goals. These use cases were intentionally designed to align with Maryland's charging needs and the methodology used for strategic charging deployment in the EVI-Pro Lite modeling tool.

The Maryland EV Charging Suitability Tool is a consistent and spatially comparable analytical method using hexagonal binning, or hexbins. Maryland is divided into more than 12,000 uniform one-square-mile hexbins, allowing for unbiased comparison across geographic areas. Within each hexbin, federal, state, and locally relevant datasets, such as VMT, population density, EV registrations, employment density, existing DCFC and L2 infrastructure, and proximity to key community destinations, are aggregated and processed. Weighted scoring is applied to each data layer based on Maryland's infrastructure priorities, such as redundancy along AFCs, community-level charging access, and support for high-demand travel routes. Hexbins are then ranked by suitability, enabling clear visualization of high-priority charging locations. This methodology is described in further detail in Appendix D and is designed to be updated as conditions change.

The tool's structure also accommodates Maryland's evolving EV landscape and the uncertainties noted throughout the ZEVIP. As new charging stations come online, demographic patterns shift, travel demand changes, or EV adoption accelerates, the underlying datasets and weighting schema can be updated, providing a dynamic "snapshot in time" to reflect the most current statewide conditions. This flexibility enables the tool to remain relevant and aligned with Maryland's multi-scenario EV adoption projections, allowing the state to assess charging needs under different future pathways.

MARYLAND EV CHARGING SUITABILITY TOOL CONT.

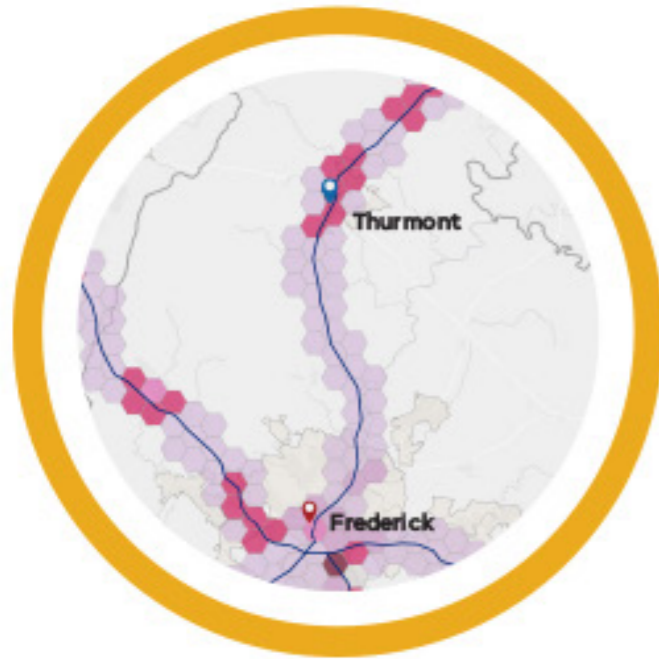
In addition to supporting statewide planning, the tool is designed for use across sectors including local governments, utilities, private charging companies, property developers, and community organizations in making transparent, data-informed siting decisions. The tool's corridor-focused and community-focused modules address different aspects of Maryland's charging needs that are highlighted by EVI-Pro Lite: ensuring redundancy along the 23 AFCs, boosting access in neighborhoods and activity centers, closing gaps near multi-unit dwellings, and increasing workplace charging availability. These modules also integrate NEVI Program criteria, MDOT travel demand analysis, and updated federal program guidance, providing a cohesive statewide framework for infrastructure deployment.

Overall, the Maryland EV Charging Suitability Tool represents a comprehensive and adaptable planning resource that links technical analysis, stakeholder input, and state policy priorities. Its updateable, data-driven design positions Maryland to make efficient, equitable, and forward-looking investments in EV charging infrastructure as market conditions, federal guidance, and community needs continue to evolve.



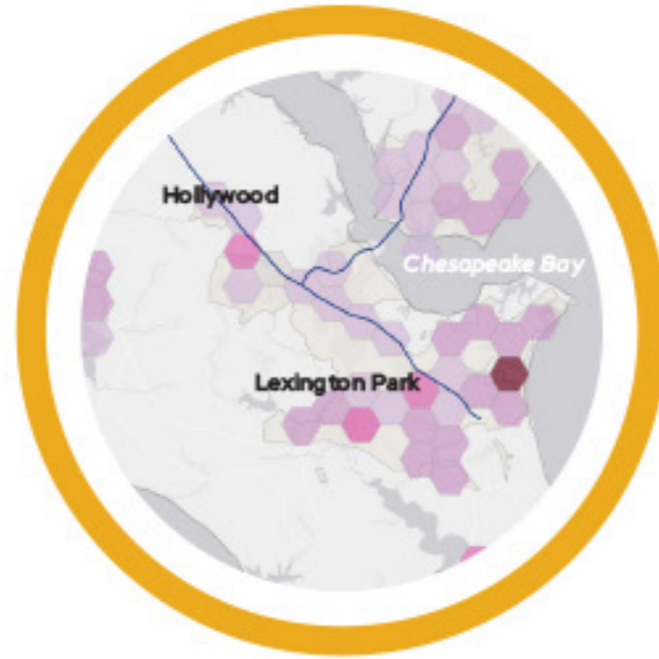
LIGHT-DUTY EVs AND CHARGING INFRASTRUCTURE ANALYSES

MARYLAND EV CHARGING SUITABILITY TOOL CONT.



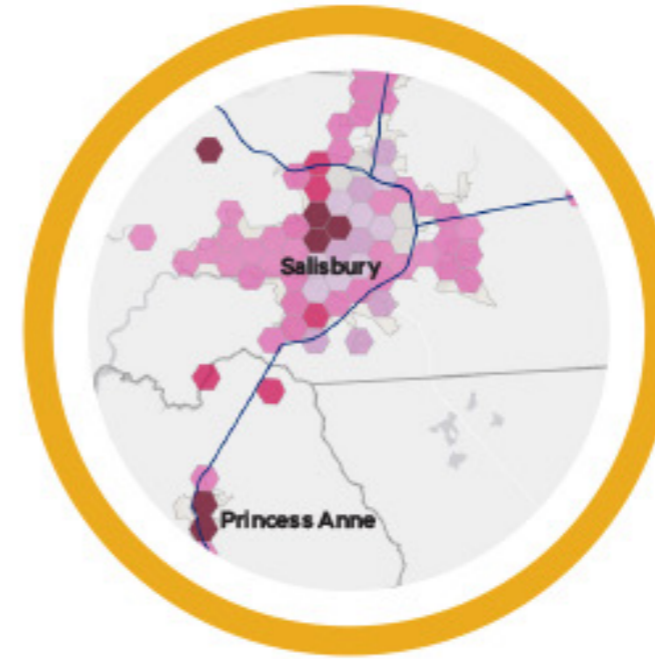
Corridor Charging

- ✓ Increase DCFC to close gaps along AFCs
- ✓ Relieve range anxiety
- ✓ Fill NEVI target area gaps



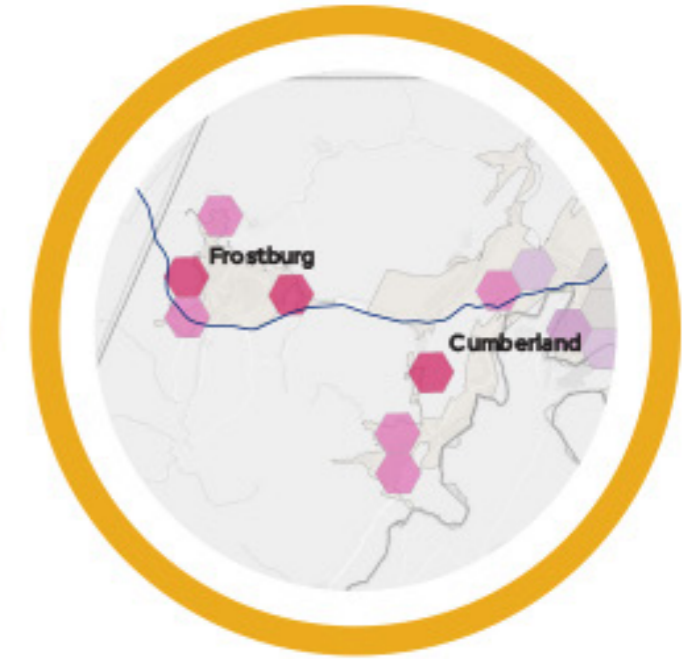
Workplace Charging

- ✓ Increase commuter-based EV adoption
- ✓ Improve charging network resilience
- ✓ Provide opportunities for employer sustainability leadership



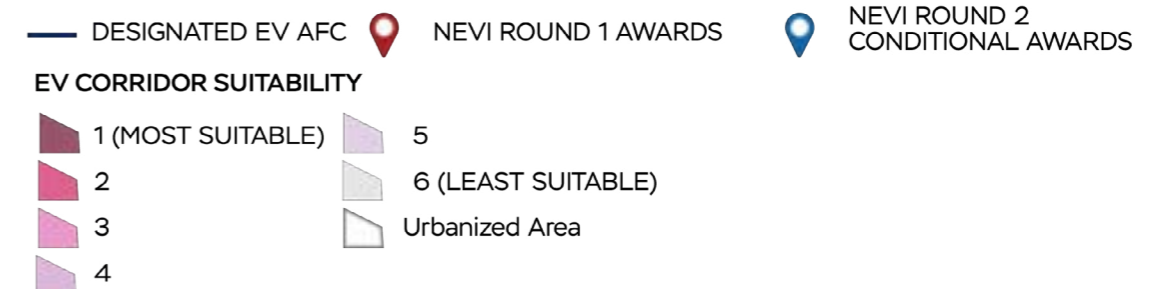
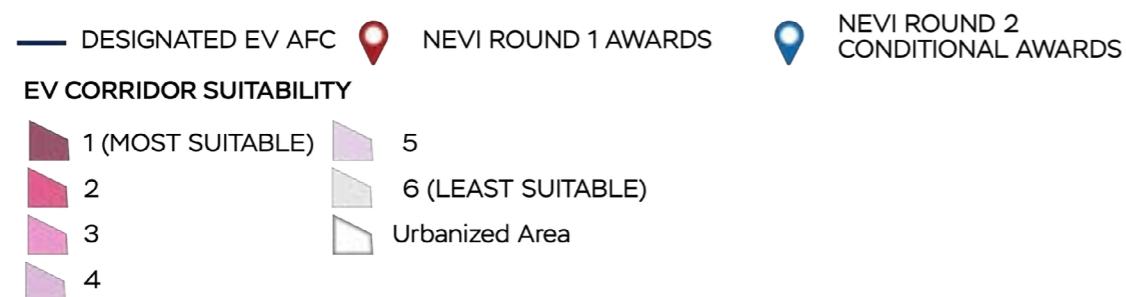
Neighborhood and Amenity Charging

- ✓ Provide charging in communities where people gather
- ✓ Increase equitable access to charging
- ✓ Expand charging visibility in everyday destinations



High Density Residential Charging

- ✓ Increase charging adjacent to MUDs
- ✓ Increase charging available in urban settings (rowhomes)
- ✓ Increases equitable access to charging



MEDIUM- AND HEAVY-DUTY ZEVs AND CHARGING INFRASTRUCTURE

While the ZEVIP primarily focuses on light-duty EV infrastructure deployment, it also considers the significant role of electrifying medium- and-heavy duty (MHD) ZEVs in achieving the state's climate goals. MHD vehicle electrification introduces unique challenges and opportunities related to grid impacts, incentive structures, and policies that enable a robust and reliable charging network. To advance this transition, Maryland has adopted a comprehensive approach that includes sales requirements, workforce development initiatives, technical assistance programs, and targeted incentives.

Of these efforts, the Clean Trucks Act of 2023 most notably required Maryland to adopt the California ACT Program, which mandates manufacturers of MHD vehicles (Vehicle Class 2b-8) to meet increasing ZEV sales requirements starting with the 2027 model year. Following EO 01.01.2025.10 as mentioned previously, enforcement of Maryland's ACT Program will begin with the 2028 model year at the earliest.

The Clean Trucks Act also required MDE to develop [Maryland's Advanced Clean Trucks Needs Assessment and Deployment Plan \(ACT NADP\)](#) to evaluate Maryland's readiness for MHD ZEV adoption and subsequently provide a robust, data-driven roadmap for the transition. The report aims to guide state agencies, policymakers, and stakeholders in implementing the ACT regulation and advancing Maryland's climate and clean transportation goals, even amid federal regulatory uncertainty. It identifies significant infrastructure and investment needs, outlines actionable steps for state agencies and stakeholders, and is anchored by ambitious climate and equity goals. Success will depend on stable funding, strong policy support, coordinated infrastructure deployment, and targeted incentives especially for early adopters and underserved communities.

While BEVs are expected to dominate most MHD vehicle segments, hydrogen fuel cell electric trucks may play a complementary role in specific applications where battery technology faces operational limitations. The Maryland ACT NADP provides projections for commercial hydrogen trucks beginning in 2036 and gradually increasing to capture 25% of total zero-emission long-haul heavy-duty (Class 7-8) tractor trucks sales by 2050. This timeline is based on the current proof-of-concept status of hydrogen vehicles and pilot project demonstrations, with products not expected to be widely available until the late 2020s or early 2030s.

MARYLAND'S ADVANCED CLEAN TRUCKS NEEDS ASSESSMENT AND DEPLOYMENT PLAN: KEY FINDINGS

Multiple studies emphasize that electric distribution network constraints, particularly along freight corridors and at depot locations, represent the primary grid infrastructure challenge from electric vehicles, rather than generation or transmission capacity. This is independent of other factors such as data centers. Implementing the ACT regulation as originally adopted is estimated to result in a roughly 2.6% increase in total statewide electricity consumption by 2035.

A combination of financial incentives and policy mechanisms is necessary to accelerate electric MHD vehicle purchases and charging infrastructure installation. Sufficient and stable funding is critical to sending the signal that MHD vehicle electrification is a priority.

Maryland's MHD vehicle fleet is dominated by Class 2b-3 vehicles, which account for nearly 70% of the total population (approximately 134,000 out of 195,000 vehicles).

Vehicles that run short, fixed, and predictable routes that have regular downtimes are the best fit for early electrification, including Class 8 trash trucks, Class 7 school buses, Class 3-8 straight trucks for regional line-haul, and Class 2b-3 vans for local delivery.

Class 2b-3 vehicles will need a cumulative 23,600 Level 2 charging ports at homes and depots by 2035. Class 4-8 straight trucks will require a cumulative 15,800 charging ports at depots by 2035 to meet ACT requirements.

The cumulative investment needed for charging equipment, installation, and utility make-ready in our Base ACT Scenario is \$805 million (in 2025 dollars) by 2035.

Thirty percent (1,679 vehicles) of Maryland's state owned vehicle fleet have an identical BEV replacement (primarily transit buses, which are not covered by the ACT), while 34% (1,891 vehicles) have a similar BEV replacement.

Beginning in 2036, hydrogen vehicle uptake will be limited to the long-haul truck segment. There would be roughly 2,000 hydrogen trucks that require approximately 15,000 metric tons of fuel annually to support a network of 11 hydrogen stations located along highway corridors in the state by 2050.

MEDIUM- AND HEAVY-DUTY ZEVs AND CHARGING INFRASTRUCTURE

The Port of Baltimore and Maryland’s geographic position on the I-95 corridor establishes the state as a major hub for freight movement. Beyond the Maryland ACT NADP, other regional and national publications examine MHD vehicle infrastructure planning in Maryland. Such publications include the [National Zero-Emission Freight Corridor Strategy](#) and [CALSTART’s East Coast Commercial ZEV Corridor](#) project.

*MHD Electrification at MDOT Modes:
MDOT’s modal administrations and authorities are electrifying.¹⁰
Below are examples of such efforts at two of the modes.*

MARYLAND TRANSIT ADMINISTRATION (MTA)

In 2024, MTA began transitioning its fleet of public transit buses with seven pilot zero emission buses (ZEBs) placed into service. Since then, MTA has accomplished the following activities:

- Completed utility upgrades at the Kirk Bus Division for ZEB charging
- Trained staff for ZEB maintenance and operations
- Currently expanding the ZEB fleet and charging infrastructure to the Northwest Bus Division

Despite a reduced capital budget for ZEB funding causing a slower rollout, work will continue in 2026 and beyond.

MARYLAND PORT ADMINISTRATION (MPA)

MPA continues to advance electrification efforts at the Port of Baltimore, anchored by the approximate \$147 million Environmental Protection Agency (EPA) Clean Ports Grant to deploy zero emission technology, which include:

- 186 off-road zero emission cargo handling units
- 7 on-road ZEVs
- 27 electric drayage trucks
- 151 charging stations
- Utility upgrades at the Dundalk Marine Terminal
- Battery microgrid

Adding to previous EPA Diesel Emissions Reduction Act (DERA) grants and Port modernization initiatives, MPA’s programs accelerate electrification adoption across multiple terminals, support operational readiness, and reduce emissions in and around the Port.

Although MHD vehicle electrification is still in its infancy, Maryland is leading in this space through two pilot projects: the [Clean Corridor Coalition](#) and the [MD-NJ-PA Charging Ahead Partnership](#).⁸ The Clean Corridor Coalition is a multi-state effort in partnership with New Jersey, Connecticut, and Delaware to deploy MHD ZEV charging infrastructure for freight electrification along the I-95 corridor and adjacent roads from Connecticut to Maryland through an EPA Climate Pollution Reduction Grant (CPRG). The MD-NJ-PA Charging Ahead Partnership, funded by FHWA’s CFI Grant,⁹ seeks to strategically and holistically deploy charging infrastructure along the I-81 and I-78 freight corridors spanning Maryland, Pennsylvania, and New Jersey.

Additionally, Maryland has undertaken other initiatives to prepare for MHD vehicle electrification. The 2020 [Maryland Statewide Truck Parking Study \(Study\)](#) was primarily developed to address truck parking shortages and safety concerns throughout the state. The Study also highlights future opportunities for freight electrification deployment at Maryland’s truck parking facilities, which coincide with Maryland’s existing AFC EV network. These facilities will be essential hubs for MHD charging infrastructure, with private truck stop parking playing an important role in the early deployment of infrastructure. However, many facilities currently lack electrical capacity, space, and the utility connections needed for charging. This gap calls for making electrification-ready design a priority for any parking expansion and ensuring coordinated planning with utilities, local governments, and federal funding programs for new or expanded facilities to support the power demands of MHD electric trucks.



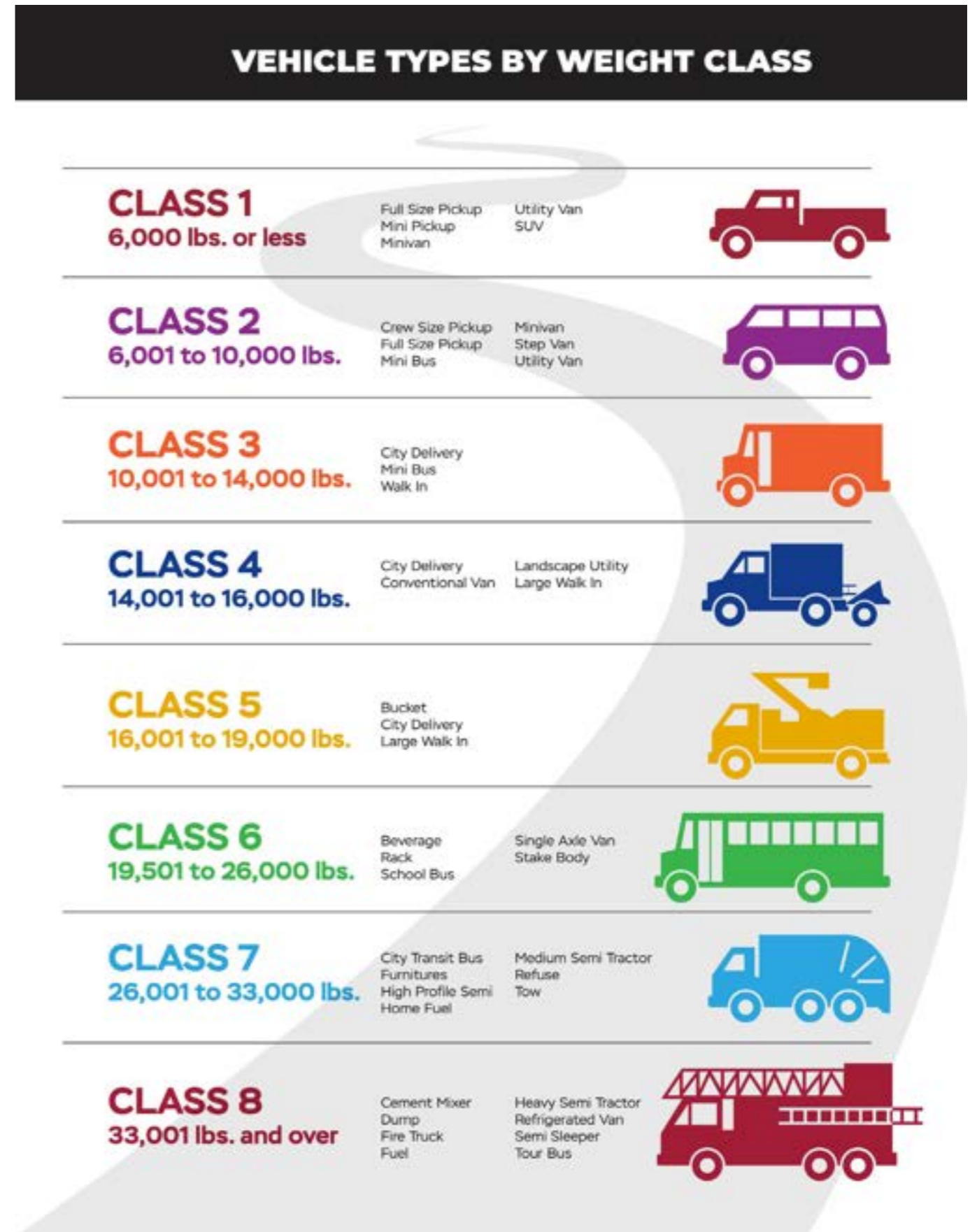
MEDIUM- AND HEAVY-DUTY ZEVs AND CHARGING INFRASTRUCTURE

In 2022, Maryland published the [Maryland State Freight Plan](#)—which identifies policy positions, strategies, and freight projects to improve freight movement efficiency and safety—and the [Maryland State Rail Plan](#)—which outlines public and private investments and policies to ensure the efficient, safe, and sustainable movement of freight and passengers by rail. These plans build upon findings from the Maryland Statewide Truck Parking Study to increase efficiency and reduce GHG emissions in the state’s freight planning portfolio.

Furthermore, the state is advancing electrification of MHD vehicle fleets through several incentive programs administered by MEA and MDE. Through MEA’s [MHD ZEV Grant Program](#), Maryland has invested approximately \$10 million to electrify 93 trucks, including single- and combination unit long-haul, short-haul, and refuse vehicles, as well as off-road equipment. The program has also funded almost \$2 million for eight electric school and transit buses since its launch in Fiscal Year (FY) 2024. [MEA’s Electric School Bus Grant Program](#) has supported 46 electric school buses, two EV fleet transition and management plans, 33 EV chargers, and training for 12 technicians—all of which total approximately \$9 million in funding. In addition, MDE has awarded \$14 million through Maryland’s [Volkswagen Settlement Grants](#) for six electric school buses and 12 electric transit buses, as well as \$1.4 million for four electric trucks. All awarded Volkswagen Settlement funding supports both vehicles and associated charging infrastructure.

STATE GRANTS SUPPORTING MEDIUM- AND HEAVY-DUTY ELECTRIFICATION*			
	VEHICLE TYPE	NUMBER OF VEHICLES	APPROXIMATE FUNDING
MEA MHD ZEV GRANT PROGRAM	Trucks/Off-Road Equipment	93	\$10,409,387.15
	Buses	8	\$1,950,000.00
MEA ELECTRIC SCHOOL BUS GRANT PROGRAM	Buses	46	\$9,133,754.42
	Planes	2	
	Charging Infrastructure	33	
	Technical Training	12 Technicians	
MDE MHD VOLKSWAGEN SETTLEMENT GRANTS	Trucks	4	\$1,400,000.00
	Schools and Transit Buses	18	\$14,000,000.00

*Data as of June 30, 2025.



Source: Alternative Fuels Data Center (AFDC)

MEDIUM- AND HEAVY-DUTY ZEVs AND CHARGING INFRASTRUCTURE

MHD ZEV UNCERTAINTIES

With Maryland's efforts to boost MHD vehicle electrification through policies and programs, recognizing the uncertainties and challenges for successful and timely infrastructure deployment is important. One of the most significant issues is grid capacity and reliability. The high energy demand associated with MHD vehicle charging at fleet depots and along freight corridors will require substantial upgrades to transmission and distribution infrastructure. Coordinating grid enhancements with charging site development is essential to avoid delays and ensure dependable service. These will in turn support more sufficient and consistent charging infrastructure and grid reliability, which are two main challenges reported by owners and operators of EV fleets in the ZEVIP Survey.

Supply chain constraints also pose a challenge. The availability of charging equipment, transformers, and other critical components remains uncertain due to global supply chain disruptions and manufacturing limitations, which could lead to extended lead times for infrastructure deployment. Moreover, Maryland faces major statewide parking shortages for commercial vehicles. Future truck stop electrification and zero-emission freight charging will require extensive upgrades to existing parking facilities, including space reconfiguration, electrical service expansion, and integration of high-capacity chargers. Fleet owners and operators cite the lack of workforce readiness for using and maintaining these vehicles and charging infrastructure as another roadblock for widespread adoption.

Cost and financing represent another barrier. High upfront costs for infrastructure installation and grid upgrades can deter fleets and site hosts from investing in electrification. While incentives help offset some expenses, feedback from fleet owners and operators in the ZEVIP Survey points to the necessity of long-term, predictable financing solutions, innovative business models, and technical assistance for accelerating adoption. Finally, operational uncertainty such as evolving charging patterns, dwell times, peak demand periods, and route variability complicates infrastructure planning and grid impact assessments. Tackling these challenges will require coordinated action among state agencies, utilities, private fleets, and infrastructure providers to ensure Maryland's charging network can support the transition to zero-emission freight and commercial transportation.



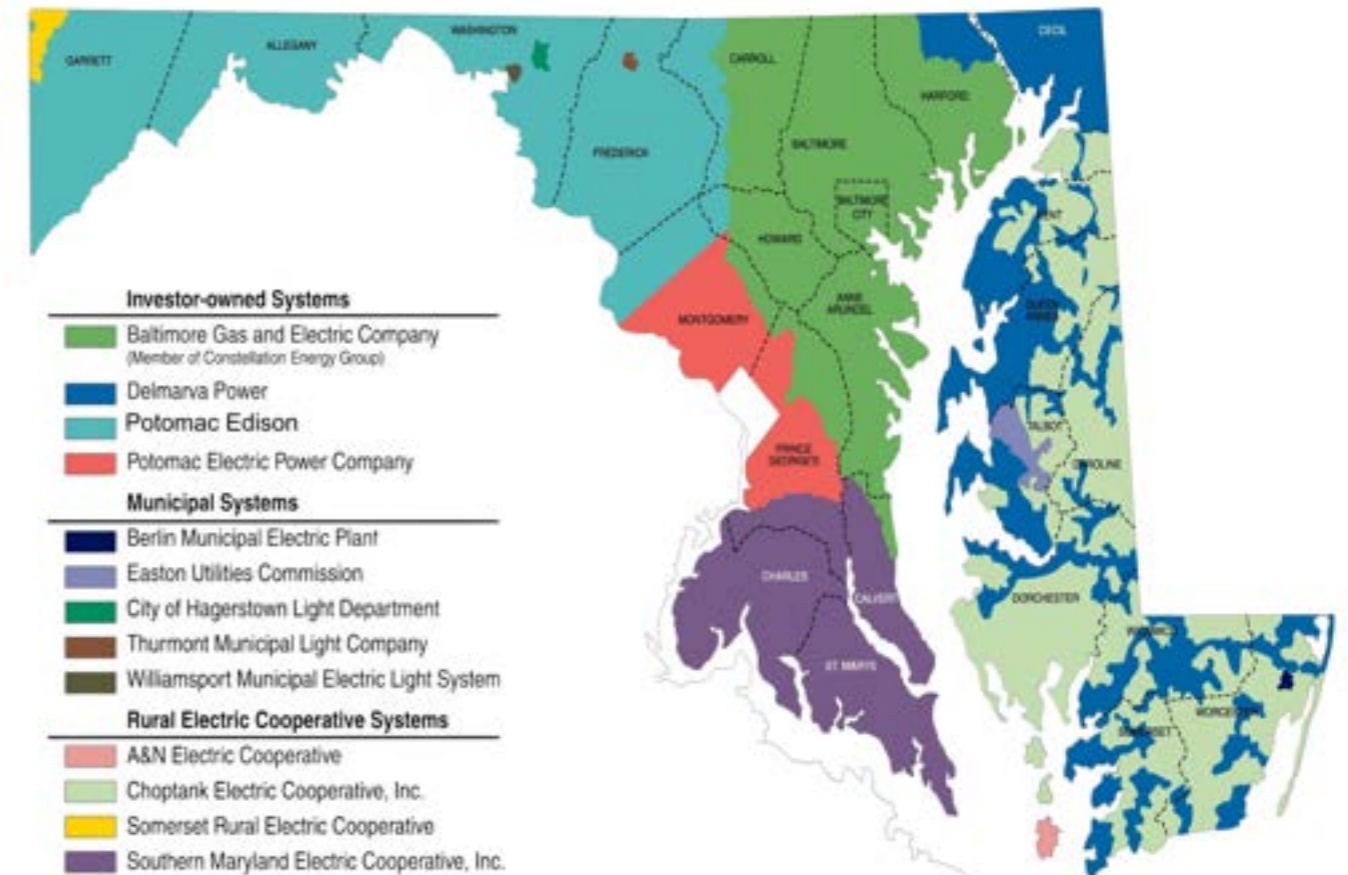
MARYLAND UTILITIES AND THE GRID

As EV charging introduces significant new electrical loads, utility coordination and proactive grid management are crucial in integrating these loads without compromising reliability or affordability. Cohesive planning among utilities will enable strategically sited charging infrastructure supported by adequate distribution capacity and aligned with managed charging programs to reduce peak demand. This collaboration also supports the deployment of make-ready investments, time-of-use rates, and smart charging technologies to optimize grid performance and advance equitable access to publicly available charging stations. Without such coordination, rapid EV adoption could strain local networks, increase costs, and hinder progress toward Maryland’s climate and mobility goals.

Maryland’s electric grid is served by a mix of investor-owned utilities, municipal utilities, and rural cooperatives. These utilities operate within the [PJM Interconnection](#), a regional transmission organization that manages wholesale electricity markets and provides reliability across a 13-state footprint, including Maryland. PJM coordinates transmission planning through its Regional Transmission Expansion Plan (RTEP) and administers capacity auctions that influence supply adequacy and pricing. Maryland’s PSC regulates utilities, oversees infrastructure planning, and ensures consumer protection.

For Maryland’s EV transition, the PSC and five main electric utilities specifically play an outsized role in planning and energizing charging infrastructure. Collectively, the service territories of Baltimore Gas and Electric (BGE), Pepco, Delmarva Power, Potomac Edison, and the Southern Maryland Electric Cooperative (SMECO) represent roughly 95% of the state’s electric utility customers. Each service territory has its own characteristics that determine the utilities’ priorities and operations, such as natural geography, existing asset and infrastructure, and customer density and type. Ensuring these varying priorities are responsive to unique customers’ needs while also cohesively furthering the state’s overall EV portfolio requires close coordination among the utilities and PSC regulatory oversight.

The PSC Electric Vehicle Work Group launched under the [PC44 proceeding](#) helps with this coordination. Its purpose is to address barriers to EV deployment, increase the efficiency and reliability of the electric distribution system, and lower electricity use at times of high demand. The EV Work Group represents a first-of-its-kind coordination among Maryland’s utilities for EV infrastructure planning.



MAP OF MARYLAND’S ELECTRIC UTILITIES SERVICE TERRITORIES

Source: Office of People’s Counsel

MARYLAND UTILITIES AND THE GRID

EV PILOT PROGRAM (Case No. 9478)

The EV Work Group established a statewide EV Pilot Program to aid in EV charging load management, as well as data collection to inform rate and program design. Phase I was intended to be market-enabling rather than market-replacing and authorized the installation of utility-owned public charging stations at government sites, distribution of 3,000 residential L2 smart charger rebates, and 1,000 non-residential rebates for workplaces, multi-unit dwellings, and fleets. Utilities also introduced time-of-use (TOU) rates and fleet electrification tools. TOU rates encourage EV owners to charge during off-peak hours, reducing strain on the grid and lowering costs, which makes EV adoption more attractive. Similarly, increasing public charging infrastructure helps to address range anxiety and improves accessibility, enabling more drivers to confidently transition to EVs.

Following PSC Order 91297 (2024), utilities proposed Phase II programs to expand incentives and improve grid integration based on the efficacy of Phase I programs to significantly scale EV infrastructure. Proposals included support for make-ready infrastructure support,¹¹ active managed charging, and stricter reliability standards (≥ 97 percent uptime).

On January 29, 2026, the PSC issued Order 92166 that reviews the Phase II proposals and comments filed in support or opposition by interested parties to determine which programs provide the most benefit to customers and support Maryland's transportation electrification goals. Notably, the circumstances underpinning Phase II programs have changed since the EV Pilot Program first began. The PSC overall approved most programs, including associated education and outreach budgets, with some modifications limiting costs and scope. It also established a five-year cycle for Phase II programs to align with the duration of Phase I programs. Denials for Charging as a Service (CaaS) proposals and a Grant Assistance Program were due, in part, to concerns about being duplicative of established Make-Ready programs and creating additional administrative burdens and setup costs. As the next step, utilities must file updated budgets and, for utilities without five-year Phase II programs, proposals for extending approved programs to span five years. The Order concludes that following Phase II "as EV charging infrastructure matures, the Commission will begin shifting away from a 'portfolio-of-pilots' approach toward more durable regulatory frameworks, with tariffs playing an implementing role where utility involvement is defined and appropriate."¹²

UTILITY RELIABILITY AND REPORTING (Case No. 9809)

In 2023, Maryland enacted the [Electric Vehicle Charging Reliability Act](#), which requires electric utilities operating EV charging networks to maintain certain uptime standards. In response, the PSC directed the EV Work Group to finalize a Utility Reliability Reporting Template in May 2025, after which utilities began filing reliability data for utility-owned EV chargers authorized under the EV Pilot Program. The PSC established a new docket on August 15, 2025, to house the reports (Case No. 9809).

During Q3 of 2025, Maryland's electric utilities reported the following average uptimes for their networks of public and multifamily chargers: BGE, 86%; Delmarva and Pepco, 93%; SMECO, 93% and Potomac Edison, 96%. These uptimes represent a snapshot of reliability performance for EV charging infrastructure that was installed beginning in 2019, with dedicated operations and maintenance funding by the utilities, as well as regulatory oversight by the PSC. Even with these measures, charging performance is significantly below 97% uptime for some utilities, and the range in reliability is wide.

Despite Maryland's expanding, robust public charging network, utility reliability and reporting provide a glimpse into the persistent performance challenges continuing to impact the charging experience for Maryland EV drivers and hinder greater EV adoption. Data from the utilities serve as a proxy for uptimes that other EV chargers at large and unregulated by the state may be experiencing. As Maryland regulators and lawmakers consider solutions to improve charging reliability, the state and private industry may have lessons to learn from Case No. 9809.

At the time of the ZEVIP's publication, the PSC EV Work Group under PC44 remains active and will continue to meet in order to implement the Commission's Phase II requirements as outlined in Order 92166.¹³



ROADMAP TO THE FUTURE

As Maryland enters the next phase of vehicle electrification, a renewed and comprehensive multi-agency strategy is essential to sustaining the state's leadership during this transition. The recommended actions outlined below were informed by coordination with 11 state agencies,¹⁴ analysis of the ZEVIP Survey data, and insights gathered through stakeholder interviews. The recommendations were cross-referenced with recent reports and ongoing state initiatives to ensure alignment and relevance. The recommendations are designed to be actionable over the next few years in support of four targets:

1. Increased EV sales
2. Expanded EV charger deployment and reliability
3. Strategic utility grid integration
4. Tactical public engagement and communications

For each recommendation, one or more state agency is identified as the leading responsible party due to relevant experience, networks, and/or authority. Additional information on current state agency EV-related roles and responsibilities can be found in Appendix C. In addition to this expertise, leveraging close partnerships with other states, local, non-governmental, and private entities will be crucial for the success of these actions.

MDOT intends to review these recommended actions triennially for any required updates reflecting Maryland's latest needs and progress. To inform this review, MDOT will conduct additional data analysis, public and stakeholder outreach, and interagency consultation.

TARGET 1. INCREASED EV SALES

ACTION 1.1 Complete an electric vehicle market study in collaboration with the Maryland Department of Transportation, Maryland Motor Vehicle Administration, and the Maryland Energy Administration to better understand appropriate and competitive incentives and considerations for light-, medium-, and heavy-duty electric vehicles in Maryland, inclusive of existing programs and gaps in existing programs.

WHY: As state funding programs and the EV market mature, updated evaluations based on sound data are necessary to ensure state dollars incentivizing ZEV adoption are cost effective and strategically supporting the state's climate and vehicle electrification goals. The excise tax credit program for light-duty EVs administered by MVA is continuously oversubscribed. Yet, since the elimination of the federal EV tax credit, there is a lack of data indicating if a state tax credit is the appropriate and effective incentive to encourage light-duty EV adoption. Furthermore, there is insufficient data regarding appropriate and effective incentives for medium- and heavy-duty ZEVs to evaluate for any design changes to improve MEA's MHD ZEV Grant Program. The study will review distinctions among vehicle use types, such as private passenger vehicles, public and private fleets, school buses, transit vehicles, and other high-use applications, as well as impacts that private charging uptake has on public charging needs to inform state programs. The ACC II and ACT Working Group report also included a recommendation for a market study about appropriate and competitive incentives.

OUTPUT(S): Market study and recommendations on incentives.

RESPONSIBLE PARTY: MDOT

TIMELINE: 2026 - 2027

ACTION 1.2 Coordinate between MDE and MDOT to conduct updated low, medium, and high MHD ZEV projections to complement the light-duty EV projections in the ZEVIP and build off the findings and recommendations in the 2025 Advanced Clean Trucks (ACT) Needs Assessment and Deployment Plan (NADP).

WHY: MDE's 2025 ACT NADP, as required by statute, provided important analysis related to ACT. However, in May 2025, the federal government rolled back the ACT rule. Having comparable projections for MHD ZEV population under low, medium, and high scenarios will enable a better understanding of where Maryland currently stands and how clean truck uptake may be impacted by the elimination of ACT.

OUTPUT(S): Low, medium, and high MHD ZEV projections by 2031

RESPONSIBLE PARTY: MDOT and MDE

TIMELINE: 2026

ROADMAP TO THE FUTURE

TARGET 1. INCREASED EV SALES CONT.

ACTION 1.3 Partner with state agencies, Maryland-based fleets, original equipment manufacturers (OEMs), and EV experts to provide technical assistance and planning resources for fleet transition.

WHY: From the ZEVIP Survey results, ACC II and ACT Working Group recommendations, and other avenues, fleet owners and operators, particularly those belonging to small businesses, have expressed that planning for and assessing needs for electrifying their fleets and maintaining status quo performance are key barriers. Maryland's electric utilities are proposing a few technical assistance programs for fleets under Phase II of the PSC EV Pilot Program. However, the State of Maryland and relevant stakeholders could offer complementary and additional resources on this matter, including but not limited to grant funding, analysis, and recommendations for projects, to fortify these efforts.

OUTPUT(S): Technical assistance partnerships and publicly accessible resource guide

RESPONSIBLE PARTY: MEA

TIMELINE: 2026 - 2028

TARGET 2. EXPANDED EV CHARGER DEPLOYMENT AND RELIABILITY

ACTION 2.1 Strategically invest remaining NEVI formula funds to close near-term charging gaps, increase equity in charging access, and future proof for longer-term charging redundancy along corridors and in communities based on Maryland's priorities and expanded federal program flexibility.

WHY: Corridor and community charging infrastructure investments funded under the NEVI Formula Program are primarily near-term solutions for Maryland's charging gaps. The charging market and landscape in Maryland, as well as federal program requirements, have evolved since the program began in 2022. Planning for and implementing investments using Maryland's remaining NEVI funds should account for these shifts and consider future proofing opportunities for longer-term charging redundancy to maximize the benefits for Maryland beyond the last NEVI dollar.

OUTPUT(S): Fully built-out corridors certification, 2-3 additional rounds of procurements and contracting

RESPONSIBLE PARTY: MDOT

TIMELINE: 2026 - 2027

ACTION 2.2 Identify a scalable pathway for real-time data sharing with third parties regarding station location, port availability, and price to charge consistent with NEVI minimum standards for future state-, federal-, and ratepayer-funded networked public chargers to increase uptime and cost transparency with consumers. Assess associated costs with requiring real-time data sharing and steps required should the State of Maryland pursue implementation.

WHY: This recommendation aims to improve reliability for publicly funded, publicly available charging stations without imposing the 97 percent uptime requirement from NEVI minimum standards outlined in 23 Code of Federal Regulations (CFR) Part 680. Currently, imposing such an uptime requirement brings challenges for administration, enforcement, and industry investments as noted in the 2024 [EVSE Work Group report](#) that have yet to be adequately addressed. Harvard University published a [paper](#) in 2025 detailing the case for data transparency in encouraging EV adoption without costing states. Coordination with the Maryland Department of Agriculture's EVSE Registration Program will be needed.

OUTPUT(S): Standard language on real-time data sharing requirements for inclusion in programs

RESPONSIBLE PARTY: MDOT, MEA, and PSC

TIMELINE: 2026 - 2027

ROADMAP TO THE FUTURE

TARGET 2. EXPANDED EV CHARGER DEPLOYMENT AND RELIABILITY CONT.

ACTION 2.3 Coordinate with municipalities and counties to develop an EV charging permitting best practices and checklist resource for streamlining local permitting processes.

WHY: Streamlining permitting for EV charging infrastructure is a persistent area of opportunity noted by charging companies. While permitting is handled at the local level by relevant municipalities and counties, Maryland at the state level can develop resources in coordination with our local partners to assist with streamlining local processes and standardizing where possible. California provides an [example of this](#). A [fact sheet](#) issued by the Northeast States for Coordinated Air Use Management (NESCAUM), National Association of State Energy Officials (NASEO), and American Association of State Highway and Transportation Officials (AASHTO) further emphasizes this strategy and offers a few others for consideration. The ACC II and ACT Working Group report included a recommendation about streamlined permitting as well.

OUTPUT(S): Best practices checklist and outreach

RESPONSIBLE PARTY: MDP

TIMELINE: 2026 - 2027

TARGET 2. EXPANDED EV CHARGER DEPLOYMENT AND RELIABILITY CONT.

ACTION 2.4 Work interdepartmentally to identify and implement long-term, sustainable operation, maintenance, and charging models for state-owned fleet and publicly available chargers. This includes evaluating whether the state assumes ownership, operation, and maintenance of existing publicly available chargers on state property currently under third-party ownership (e.g., utility-owned chargers).

WHY: This recommendation is intended to improve the long-term performance of state-owned chargers and minimize the risk of these chargers becoming stranded assets as we move past the early adoption years. It also addresses an issue that the state is beginning to grapple with: should it take over the ownership of existing publicly available chargers currently owned by utilities under the EV Pilot Program to leverage the sunk capital cost and benefit to Maryland's charging network? In the state's consideration, identifying a potential long-term path forward for state ownership of publicly available chargers is necessary for decision making.

OUTPUT(S): Recommendations for effective and achievable models

RESPONSIBLE PARTY: MDOT, MEA, and DGS

TIMELINE: 2026 - 2028

ACTION 2.5 In coordination with Maryland State Department of Education (MSDE), strengthen partnerships with community colleges, trade programs, local electrician/trade unions, and universities to develop appropriate curriculum and train electricians, mechanics, and emergency responders to enhance skills and workforce knowledge related to EV infrastructure.

WHY: Expanding workforce development for EV and EV charging infrastructure is another persistent area of opportunity to bolster Maryland's EV transition while bringing local economic benefits, as echoed by ZEVIP Survey results. Dedicated programming supports upskilling, job training, and employment opportunities for technicians, electricians, and information technology specialists to transition to or enter the EV workforce. At the end of 2025, Maryland has at least 18 EV-related workforce development programs (according to an inventory by the Clean Corridor Coalition) and 30 [EV Infrastructure Training Program \(EVITP\)](#)-certified contractors. The Maryland Department of Labor (MD DOL) is already engaging with these stakeholders.

OUTPUT(S): Regular coordination with existing programs to update and broaden curriculum, as well as encourage more EVITP certifications

RESPONSIBLE PARTY: MD DOL

TIMELINE: 2026 - 20278

ROADMAP TO THE FUTURE

TARGET 3. STRATEGIC UTILITY GRID INTEGRATION

ACTION 3.1 Engage utilities on how available hosting capacities can interact with state planning tools for siting publicly available charging infrastructure to identify future opportunities for aligned capacity planning.

WHY: Utility hosting capacity refers to the available electrical capacity for new EV charging infrastructure without requiring upgrades. This is often displayed in a map of the electrical utility's service territory. Maryland's EV Charging Suitability Tool, led by MDOT and informed by interagency consultation, identifies suitability for siting public charging infrastructure based on data related to existing and expected charging needs. However, the tool does not currently capture the available utility hosting capacity for areas identified to be suitable for future infrastructure deployment. Without this information, public and private stakeholders cannot make a fully informed planning decision using the EV Charging Suitability Tool alone. On the other hand, the tool can inform utilities on where additional capacity planning may be required based on areas with high suitability for future charging infrastructure and little to no available utility hosting capacity.

OUTPUT(S): Regular coordination meetings and recommendations for shared planning priorities among relevant parties

RESPONSIBLE PARTY: MDOT and PSC

TIMELINE: 2026 - 2028

TARGET 3. STRATEGIC UTILITY GRID INTEGRATION CONT.

ACTION 3.2 Encourage site-level make-ready investment by incorporating make-ready funding in state incentives programs to reduce the burden of upfront costs for new EV charging infrastructure installations.

WHY: This recommendation aims to integrate planning and programming of EV infrastructure deployments with utility coordination. With future state incentive programs, there is an opportunity to include make-ready costs to further decrease barriers for EV charging deployment using lessons learned and financial data from utility programs under Phase I of the EV Pilot Program.

OUTPUT(S): Standard language and recommended incentive structure regarding make-ready installations for inclusion in programs

RESPONSIBLE PARTY: MEA and PSC

TIMELINE: 2026 - 2028

ACTION 3.3 Continue collaboration between the PSC and EV stakeholders for integration of EV infrastructure planning with electricity system planning.

WHY: Since its establishment in 2021, the PSC's Distribution System Planning Work Group has made substantial progress on this topic, alongside input from utilities and other stakeholders. This recommendation aims to add to the PSC's work already underway to improve load forecasting, plan for future demands on the grid induced by EV growth, implement robust planning metrics, and inform rate design.

OUTPUT(S): Recommendations for establishing transparent processes and metrics to improve connection timelines and rate design

RESPONSIBLE PARTY: PSC

TIMELINE: 2026 - 2028

ROADMAP TO THE FUTURE

TARGET 3. STRATEGIC UTILITY GRID INTEGRATION CONT.

ACTION 3.4 Continue evaluation of programs and tools to manage peak demand on the grid associated with EV growth and EV infrastructure expansion.

WHY: Utility investments in the grid are driven by peak load growth. With a growing EV population and charging infrastructure expansion, load management programs can be an effective tool to control peak growth caused by this expansion—among other new loads—and thus help avoid needing additional grid investments. Smart and managed charging programs like vehicle-to-grid (V2G) and other bidirectional charging strategies can be effective tools to control peak demand impacts from EVs, alongside additional emerging loads. Under the PSC’s EV Pilot Program, utilities have demonstrated relevant progress in their load management programs.

OUTPUT(S): Regular assessments of relevant utility programs and tools and updates as needed

RESPONSIBLE PARTY: PSC

TIMELINE: 2026 - 2028

TARGET 4. TACTICAL PUBLIC ENGAGEMENT AND COMMUNICATIONS

ACTION 4.1 Increase partnerships among the state, utilities, OEMs, and automotive dealerships to promote consumer-focused communications about the benefits of EVs and EV charging for EV drivers and fleet owners and operators.

WHY: Dedicated consumer education continues to be a high opportunity for boosting awareness and dispelling misconceptions about EVs. This topic was included in both the ACC II and ACT Working Group report and ZEVIP Survey takeaways. The identified Responsible Parties have significant budget, stakeholder networks, platforms, and authority to improve consumer-facing communications promoting the benefits of EVs. In addition to state government programs, utilities are at the forefront of EV incentive programs and promotion through the PSC’s EV Pilot Program to facilitate electrification and reduce strain on the grid. From that angle, utilities pair well with automotive dealers who are engaging with and educating consumers on EVs, as well as demonstrating the EVs. Blink Charging published a [blog](#) about the opportunities of such partnerships.

OUTPUT(S): Increased and coordinated investments, educational programming, and outreach from utilities and dealerships

RESPONSIBLE PARTY: MDOT, MEA, MDE, and PSC

TIMELINE: 2026 - 2028

ACTION 4.2 Collaborate to increase planning resources and technical assistance targeted toward high-density residential property owners and communities for installing or procuring charging infrastructure based on the successes and challenges among relevant state or utility-administered programs.

WHY: Increasing state-EV charging in high-density residential communities is another persistent area of opportunity for increasing equity in EV adoption. This topic was included in both the ACC II and ACT Working Group report and ZEVIP Survey takeaways. Maryland has seen relevant progress in this area through the PSC’s EV Pilot Program and MEA programs, but there is still work to be done. Under the EV Pilot Program, utility-owned chargers in high-residential communities experienced lower than expected uptake, though the uptake was still greater than rebates distributed to high-density residential property owners for EV charging.

OUTPUT(S): Publicly available planning resources and technical assistance programming tailored for high-density residential charging

RESPONSIBLE PARTY: PSC, MEA, and DHCD

TIMELINE: 2026 - 2028

ROADMAP TO THE FUTURE

TARGET 4. TACTICAL PUBLIC ENGAGEMENT AND COMMUNICATIONS CONT.

ACTION 4.3 Facilitate the installation of signage on state and local roads to direct road users to EV charging facilities and improve public confidence that EV charging stations are available. Establish an accessible, public-facing process to facilitate the placement of General Service Signs on state highways.

WHY: EV signage is a relatively low-cost solution for increasing awareness about available EV charging and enhancing the EV driving experience. States like California and Ohio have already established public-facing processes for installing such signage, which encourage EV charging companies and site hosts to request or install signage for their sites and expedite the process. The ACC II and ACT Working Group report included this recommendation as well.

OUTPUT(S): Transparent, publicly available requirements and process for installing EV charging signage in accordance with the Maryland Manual on Uniform Traffic Control Devices (MdMUTCD)

RESPONSIBLE PARTY: MDOT

TIMELINE: 2026

ACTION 4.4 Collaborate with local planning departments to improve local engagement with EVs and EV charging.

WHY: Local planning departments are best equipped to engage with their local constituents due to their understanding of community needs and strong community relationships. To that end, local planning departments can tailor responsive messaging and programming to promote vehicle electrification.

OUTPUT(S): Engagement coordination meetings with local planning departments and outreach materials for use

RESPONSIBLE PARTY: MDP

TIMELINE: 2026 - 2028

TARGET 4. TACTICAL PUBLIC ENGAGEMENT AND COMMUNICATIONS CONT.

ACTION 4.5 Engage with public and private fleets owners and operators to promote the resources, benefits, and considerations for transitioning their fleets to zero emission technologies. Examples of topics may include charging as a service, workforce development, and available technical assistance.

WHY: Maryland has seen relevant progress in this area through utilities under the PSC's EV Pilot Program, state LDV fleet efforts by DGS, and MEA and MDE programs. Recommendations to engage fleet owners and operators are included in MDE's 2025 ACT NADP and the [Zero Emission Electric Vehicle Infrastructure Council's \(ZEEVIC\) 2023 MHD Vehicle Infrastructure Recommendations report](#).

OUTPUT(S): Coordinated engagement strategy, messaging, and materials on resources

RESPONSIBLE PARTY: PSC, MEA, MDE, DGS, and Commerce

TIMELINE: 2026 - 2028

CONCLUSION

The Maryland ZEVIP establishes a strategic, actionable framework to advance the state's transition to zero emission vehicles. Achieving Maryland's ambitious climate, air quality, and mobility objectives will require not only sustained leadership from state agencies, but also the active participation of utilities, local governments, private sector partners, advocacy organizations, and the public.

As the vehicle electrification landscape continues to evolve, it is imperative that all stakeholders remain engaged, informed, and responsive to emerging challenges and opportunities. The ZEVIP provides a suite of data-driven tools, including the Maryland EV Charging Suitability Tool, scenario planning resources, and collaborative opportunities, to support evidence-based decision-making and facilitate efficient, equitable infrastructure deployment. Stakeholders are strongly encouraged to utilize these resources, integrate them into their planning and operations, and share feedback to enhance their effectiveness.

Continued collaboration and transparent communication will be essential to ensuring that infrastructure investments are aligned with community needs, market trends, and grid capabilities. By leveraging the strategies and resources outlined in this plan, Maryland can deliver a robust, reliable, and accessible charging network that supports all vehicle classes and communities.

Together, through coordinated action and ongoing engagement, Maryland will remain at the forefront of vehicle electrification, delivering lasting benefits for the environment, public health, and economic vitality. The ZEVIP is a living document, and its success depends on the commitment of all partners to implement, evaluate, and refine its recommendations as the state moves confidently toward a zero-emission future.

ENDNOTES

¹ On June 12, 2025, the United States Congress enacted [House Joint Resolution 87 \(2025\)](#) as Public Law No. 119-15, which nullified [EPA Notice 88 Federal Register \(FR\) 20688](#).

² According to [The Alliance for Automotive Innovation Electric Vehicle Sales Dashboard](#)

³ MDOT's [EV Dashboard](#)

⁴ For a complete list of available EV and infrastructure incentives in Maryland, visit <https://marylandev.org/incentives/>.

⁵ Light-duty vehicles are defined as Class 1-2b vehicles corresponding with Source Types 21 (Passenger Car), 31 (Passenger Truck), and 32 (Light Commercial Truck) in the EPA's Motor Vehicle Emissions Simulator (MOVES5) transportation emissions model. See Technical Appendix D for more information.

⁶ Moniot, Matthew, Clément Rames, and Eric Wood. 2019. *Meeting 2025 Zero Emission Vehicle Goals: An Assessment of Electric Vehicle Charging Infrastructure in Maryland*. Golden, CO: National Renewable Energy Laboratory. NREL/TP-5400-71198. <https://www.nrel.gov/docs/fy19osti/71198.pdf>.

⁷ According to [2025 data from Plug In America](#), range anxiety drops from 48% to 22% after owning an EV. This finding adds to results from a [2023 study by Recurrent](#) that indicated range anxiety decreases the longer an individual owns and drives an EV.

⁸ Formerly the MD-NJ-PA-WV Charging Ahead Partnership

⁹ West Virginia withdrew its participation in the project after FHWA did not fund the planning component of the project's proposal and only funded the deployment component.

¹⁰ The MDOT is made up of five modal administrations: the Maryland Aviation Administration (MAA), the Maryland Port Administration (MPA), the Motor Vehicle Administration (MVA), the State Highway Administration (SHA), and the Maryland Transit Administration (MTA). The Maryland Transportation Authority (MDTA) and the Washington Metropolitan Area Transit Authority (WMA-TA) are authorities that are a part of MDOT as well.

¹¹ Make-ready infrastructure generally refers to the electrical upgrades, infrastructure, and site construction work required on both the utility and customer's sides of the meter to make a site ready to connect EV chargers.

¹² Public Service Commission Order No. 92166, p. 96, ML# 326635, (CN 9648, Jan. 29, 2026).

¹³ Pages 72-74 of the PSC 2024 Annual Report provide a more extensive summary of progress under the EV Work Group through 2024. The latest information on the PC44 EV Work Group can be accessed under [Case No. 9478](#) on the PSC's online [Case/Maillog Portal](#).

¹⁴ State agencies involved with developing the ZEVIP include the Comptroller's Office of Maryland, Maryland Department of Commerce, Maryland Department of Environment, Maryland Department of General Services, Maryland Department of Housing and Community Development, Maryland Department of Labor, Maryland Department of Planning, Maryland Department of Transportation, Maryland Energy Administration, Maryland Office of People's Counsel, and Maryland Public Service Commission.

APPENDIX A: ACRONYMS & ABBREVIATIONS

This appendix comprises acronyms and abbreviations used throughout the ZEVIP.

AASHTO	American Association of State Highway and Transportation Officials
ACC II	Advanced Clean Cars II
ACT	Advanced Clean Trucks
AFC	Alternative Fuel Corridor
AFDC	Alternative Fuels Data Center
AWS	Amazon Web Services
BEV	Battery Electric Vehicle
BGE	Baltimore Gas and Electric
CaaS	Charging as a Service
CC	Certificate of Conformance
CFI	Charging and Fueling Infrastructure
CFR	Code of Federal Regulations
Commerce	Maryland Department of Commerce
CPRG	Climate Pollution Reduction Grant
CPRP	Maryland's Climate Pollution Reduction Plan
CRP	Carbon Reduction Program
CSNA	Climate Solutions Now Act
DC	Direct Current
DCFC	Direct Current Fast Charging
DERA	Diesel Emissions Reduction Act
DGS	Maryland Department of General Services
DHCD	Maryland Department of Housing and Community Development
DOE	United States Department of Energy
EJ	Environmental Justice
EO	Executive Order
EPA	United States Environmental Protection Agency
EV	Electric Vehicle
EVAL	Electric Vehicle Adoption Leadership
EVC-RAA	Electric Vehicle Charger Reliability and Accessibility Accelerator
EVI-Pro	Electric Vehicle Infrastructure-Projection Tool
EVITP	Electric Vehicle Infrastructure Training Program
EVSE	Electric Vehicle Supply Equipment
FCEV	Fuel Cell Electric Vehicle
FFY	Federal Fiscal Year
FHWA	U.S. Department of Transportation Federal Highway Administration
FR	Federal Register
FY	Fiscal Year
GHG	Greenhouse Gas
GIS	Geographic Information System
IIJA	Infrastructure Investment and Jobs Act
IRA	Inflation Reduction Act
KW	Kilowatt
L2	Level 2
LEHD	Longitudinal Employer-Household Dynamics

LDV	Light-Duty Vehicle
MAA	Maryland Aviation Administration
MD	Maryland
MDA	Maryland Department of Agriculture
MDTA	Maryland Transportation Authority
MDE	Maryland Department of Environment
MD DOL	Maryland Department of Labor
MdMUTCD	Maryland Manual on Uniform Traffic Control Devices
MDOT	Maryland Department of Transportation
MDP	Maryland Department of Planning
MEA	Maryland Energy Administration
MHD	Medium and Heavy-Duty (Vehicle)
MOVES	Motor Vehicle Emission Simulator
MPA	Maryland Port Administration
MPO	Metropolitan Planning Organization
MSDE	Maryland State Department of Education
MTA	Maryland Transit Administration
MUD	Multi-Unit Dwelling
MVA	Maryland Motor Vehicle Administration
NADP	Needs Assessment and Deployment Plan
NASEO	National Association of State Energy Officials
NEI	National Emissions Inventory
NEPA	National Environmental Protection Act
NESCAUM	Northeast States for Coordinated Air Use Management
NEVI	National Electric Vehicle Infrastructure
NIST	National Institute of Standards and Technology
NLR	National Laboratory of the Rockies
NJ	New Jersey
NTEP	National Type Evaluation Program
OEM	Original Equipment Manufacturer
OPC	Office of People's Counsel
PA	Pennsylvania
PC44	Public Conference 44
PEPCO	Potomac Electric Power Company
PHEV	Plug-In Hybrid Electric Vehicle
PJM	Pennsylvania-New Jersey-Maryland Interconnection
PSC	Maryland Public Service Commission
RFID	Radio Frequency Identification (Card)
RTEP	Regional Transmission Expansion Plan
SHA	State Highway Administration
SIP	State Implementation Plan
SMECO	Southern Maryland Electric Cooperative
SUV	Sport Utility Vehicle
TOU	Time-Of-Use
V2G	Vehicle-to-Grid
VIN	Vehicle Identification Number
VMT	Vehicle Miles Traveled
VW	Volkswagen
WMATA	Washington Metropolitan Area Transit Authority
ZEB	Zero Emission Bus
ZEEVIC	Maryland Zero Emission Electric Vehicle Infrastructure Council
ZEV	Zero Emission Vehicle
ZEVIP	Maryland Zero Emission Vehicle Infrastructure Plan

APPENDIX B: RESOURCES

This appendix comprises many resources that are linked throughout the ZEVIP, as well as additional resources related to zero-emission vehicles (ZEVs) and electric vehicles (EVs) in Maryland.

Data and Dashboards

- [Alliance for Automotive Innovation EV Sales Dashboard](#)
- [United States Environmental Protection Agency \(EPA\) National Emissions Inventory \(NEI\)](#)
- [Maryland Department of Transportation \(MDOT\) Electric Vehicles](#)
- [Maryland Motor Vehicle Administration \(MVA\) Data Dashboard](#)
- [Maryland ZEV Maps and Dashboard](#)

Incentives and Funding Programs (State, Utility, and Federal)

Information on federal, state, and utility incentives and funding programs is subject to change. Program availability, eligibility requirements, timelines, and funding levels may shift based on legislative action, regulatory updates, utility commission decisions, or budgetary constraints. The resources listed in this appendix represent a snapshot in time and may not reflect the most current offerings. Users should consult program websites and official state, federal, and utility sources for the latest information.

State of Maryland

- [Maryland Energy Administration \(MEA\) Transportation Programs](#)
- [Maryland National Electric Vehicle Infrastructure \(NEVI\) Program](#)
- [MVA Excise Tax Credit for Plug-in Electric Vehicles](#)
- [Volkswagen Settlement Grants](#)

Maryland Electric Utility

- [Baltimore Gas and Electric \(BGE\) EV Program](#)
- [Delmarva Power EV Program](#)
- [Pepco EV Program](#)
- [Potomac Edison EV Program](#)
- [Southern Maryland Electric Cooperative \(SMECO\) EV Program](#)

Federal

- [Charging and Fueling Infrastructure \(CFI\) Discretionary Grant Program](#)
- [Clean Ports Program](#)
- [Infrastructure Investment and Jobs Act \(IIJA\)](#)
- [Inflation Reduction Act of 2022 \(IRA\)](#)
- [Electric Vehicle Charger Reliability and Accessibility Accelerator \(EVC-RAA\) Program](#)
- [NEVI Formula Program](#)
 - [NEVI Minimum Standards \(23 CFR Part 680\)](#)

Maryland Plans, Policies, and Statutes

- [Climate Solutions Now Act \(CSNA\) of 2022](#)
- [Maryland Advanced Clean Cars II \(ACC II\)](#)
- [Maryland's Advanced Clean Trucks Act: Needs Assessment and Deployment Plan \(ACT NADP\)](#)
- [Maryland Climate Pollution Reduction Plan \(CPRP\)](#)
- [Maryland EV Plan](#)
- [Maryland Executive Order 01.01.2024.19: "Leadership by State Government: Implementing Maryland's CPRP"](#)
- [Maryland Executive Order 01.01.2025.10: "Ensuring Success with ACC II and ACT in Maryland"](#)
- [Maryland NEVI Plan](#)
- [Maryland State Freight Plan](#)
- [Maryland State Rail Plan](#)
- [MDOT Climate Action Status Annual Report](#)
- [MDOT Greenhouse Gas Reduction Act Plan](#)

Maryland Programs, Councils, and Working Groups

- [Maryland ACC II and ACT Working Group](#)
- [Maryland Alternative Fuel Corridors \(AFCs\)](#)
- [Maryland Commission on Climate Change](#)
- [Maryland Department of Agriculture \(MDA\) EVSE Registration Program](#)
- [Maryland Electric Vehicle Supply Equipment \(EVSE\) Work Group](#)
- [MarylandEV.org](#)
- [Maryland Greenhouse Gas Mitigation Working Group](#)
- [Maryland Public Service Commission \(PSC\) EV Pilot Program](#)
- [Maryland Zero Emission Electric Vehicle Infrastructure Council \(ZEEVIC\)](#)
- [Transforming Maryland's Electric Grid \(Public Conference 44\)](#)

Planning Tools, Technical Assistance, and Training Programs

- [Alternative Fuels Data Center \(AFDC\)](#)
- [Electric Vehicle Infrastructure \(EVI\) Toolbox](#)
- [Electric Vehicle Infrastructure Training Program \(EVITP\)](#)
- [EPA Motor Vehicles Emissions Simulator \(MOVES\)](#)
- [Maryland EV Charging Suitability Tool](#)
- [MDEnviroScreen Tool](#)

Transit, Freight, and Regional Partnerships

- [CALSTART's East Coast Commercial ZEV Corridor](#)
- [Clean Corridor Coalition](#)
- [Maryland Statewide Truck Parking Study](#)
- [Maryland Transit Administration \(MTA\) Zero Emission Buses](#)
- [MD-NJ-PA Charging Ahead Partnership](#)
- [National Zero-Emission Freight Corridor Strategy](#)

National and Regional Organizations and Stakeholder Groups

- [American Association of State Highway and Transportation Officials \(AASHTO\)](#)
- [Electric Vehicle Association of Greater Washington DC \(EVADC\)](#)
- [National Association of State Energy Officials \(NASEO\)](#)
- [Northeast States for Coordinated Air Use Management \(NESCAUM\)](#)
- [Plug In America](#)
- [PJM Interconnection](#)

APPENDIX C: STATE AGENCY ROLES AND RESPONSIBILITIES

In Maryland, no singular state agency is responsible for advancing transportation electrification. Rather, electrifying Maryland's transportation sector requires a whole-of-government approach in which many state agencies play key roles. Cross-departmental expertise and coordination allow Maryland to be more effective and strategic in this complex transition to electric vehicles (EVs). For these reasons, [Executive Order 01.01.2024.19](#) (EO) directed the Maryland Department of Transportation (MDOT) to develop a new multi-agency strategy to build out Maryland's EV charging infrastructure in the Zero Emission Vehicle Infrastructure Plan (ZEVIP). This appendix details the current EV-related roles and responsibilities of Maryland state agencies and provides context for recommendations set forth in the ZEVIP.

State Agency	Roles and Responsibilities	Relevant State and Coalition-Led/ Staffed Initiatives
Maryland Department of Agriculture - Weights and Measures	<p>Holds regulatory authority to ensure fairness and accuracy in commercial transactions involving quantity measurement.</p> <p>Traditionally focused on fuel dispensers at gas stations, MDA Weights and Measures' authority now extends under current law to retail Level 2 and Direct Current EV charging stations as well.</p>	<ul style="list-style-type: none"> Electric Vehicle Charger Registration Program
Maryland Department of Commerce	<p>Works to attract new businesses, support existing companies, create jobs, and provide workforce training and financial assistance as Maryland's lead economic development agency</p> <p>In the EV space, Commerce contributes to the development of Maryland's Climate Corps Service Year Program, supports businesses involved in EVs and charging infrastructure, and conducts outreach to help companies understand the cost and operational benefits of electrifying their fleets.</p> <p>Commerce is also a member of Maryland's Zero Emission Electric Vehicle Infrastructure Council (ZEEVIC) and participated in the ZEEVIC Interagency Working Group to advise the ZEVIP.</p>	<ul style="list-style-type: none"> Transforming Manufacturing Work Group

State Agency	Roles and Responsibilities	Relevant State and Coalition-Led/ Staffed Initiatives
Maryland Office of the Comptroller	<p>Serves taxpayers, vendors, and tax professionals by providing clear financial information, promoting transparency in government spending, and managing the state's tax collection and distribution responsibilities.</p> <p>Effective July 1, 2024, the Budget Reconciliation and Financing Act of 2024 requires the Comptroller's Office to direct sales and use tax revenue from electricity sold for EV charging, other than electricity sold under residential or domestic rate plans, into the Transportation Trust Fund. As a result, new reporting lines have been added to Forms 202 and 202F for businesses to report taxable EV charging electricity sales and the related collected tax.</p> <p>The Comptroller's Office is not a member of ZEEVIC but was invited to participate in the ZEEVIC Interagency Working Group to advise the ZEVIP.</p>	<ul style="list-style-type: none"> Clean Energy Tax Incentives for Maryland Residents
Maryland Energy Administration	<p>Advances clean, affordable, and reliable energy solutions that support Maryland's clean energy and greenhouse gas reduction goals.</p> <p>MEA administers several incentive programs and hosts the Maryland Clean Cities and Communities Coalition to encourage statewide adoption of clean transportation and energy technologies.</p> <p>MEA also leads research efforts and participates in key statewide forums to advance clean transportation. Given the cross-disciplinary nature of this work, MEA collaborates closely with state and local agencies, utilities, and legislators to shape clean energy programs, incentives, technical assistance efforts, workforce development, and policy.</p> <p>MEA is a member of ZEEVIC and participated in the ZEEVIC Interagency Working Group to advise the ZEVIP.</p>	<ul style="list-style-type: none"> Community EVSE Grant Program Electric School Bus Grant Program Maryland Clean Cities and Communities Coalition MarylandEV.org Maryland Multifamily Residential EV Study Medium- and Heavy-Duty Zero-Emission Vehicle Grant Program OPEN Energy Innovation Program Residential and Commercial EVSE Rebate Program

APPENDIX C: STATE AGENCY ROLES AND RESPONSIBILITIES

State Agency	Roles and Responsibilities	Relevant State and Coalition-Led/ Staffed Initiatives
Maryland Department of the Environment	<p>Works to protect and restore the environment and to support healthy, sustainable communities in Maryland.</p> <p>As part of this mission, MDE leads Maryland's regulatory programs for clean cars and trucks, as well as collaborates with other states, automakers, industry groups, and Maryland stakeholders to design policies that accelerate EV adoption and address barriers to transportation electrification. Through a range of funding sources, MDE also supports deployment of zero-emission technologies such as electric school buses, medium- and heavy-duty vehicles, and Port of Baltimore equipment.</p> <p>MDE is a member of ZEEVIC and participated in the ZEEVIC Interagency Working Group to advise the ZEVIP.</p>	<ul style="list-style-type: none"> • ACC II • ACC II and ACT Working Group • ACT Needs Assessment and Deployment Plan (NADP) • Clean Corridor Coalition • MarylandEV.org • Maryland Volkswagen Mitigation Plan • Volkswagen Settlement Grants

State Agency	Roles and Responsibilities	Relevant State and Coalition-Led/ Staffed Initiatives
Maryland Department of General Services	<p>Provides essential facilities management, procurement, and operational support for Maryland's state agencies.</p> <p>DGS plays a key role in electrifying the state vehicle fleet by procuring EVs, installing EV chargers at state facilities, administering Radio Frequency Identification (RFID) cards for public charging access, and expanding workplace charging. In 2024, the agency earned EV Adoption Leadership (EVAL) Gold status for its efforts in fleet electrification, outreach, and workplace charging.</p> <p>DGS also leads EV education for state employees, hosting bimonthly strategy meetings and coordinating the State Government EV Ambassadors group to promote transportation electrification through events like National Drive Electric Month and Drive Electric Earth Month.</p> <p>The agency manages statewide contracts for EV charging stations. In 2024, DGS also helped Maryland serve as the lead state for a new three-year contract through the National Association of State Procurement Officials (NASPO) ValuePoint's EV Charging Station Portfolio. This will provide a broad portfolio of EV charging equipment, installation, maintenance, and support services to public entities nationwide.</p> <p>DGS is also a member of the Electrification Coalition's State Fleet Electrification Cohort which serves as a forum for state agencies to share resources, exchange information, and collaborate to plan and implement the electrification of their fleets.</p> <p>DGS is a member of ZEEVIC and participated in the ZEEVIC Interagency Working Group to advise the ZEVIP.</p>	<ul style="list-style-type: none"> • Electric Vehicle Infrastructure Program

APPENDIX C: STATE AGENCY ROLES AND RESPONSIBILITIES

State Agency	Roles and Responsibilities	Relevant State and Coalition-Led/ Staffed Initiatives
Governor's Office	<p>Advances clean and renewable energy deployment, expands sustainable transportation infrastructure, and supports the growth of a green economy powered by a skilled workforce.</p> <p>On June 4, 2024, Governor Moore signed Executive Order 01.01.2024.19: "Leadership by State Government: Implementing Maryland's Climate Pollution Reduction Plan." The order requires MDOT to revise and expand its ZEVIP to support the statewide deployment of infrastructure for light-, medium-, and heavy-duty zero-emission vehicles (ZEVs).</p> <p>On April 4, 2025, Governor Moore signed Executive Order 01.01.2025.10: "Ensuring Success with Advanced Clean Cars II (ACC II) and Advanced Clean Trucks (ACT) in Maryland." The order established the Maryland ACC II and ACT Working Group to develop recommendations for effective implementation of these programs.</p>	<ul style="list-style-type: none"> Advanced Clean Cars II (ACC II) and Advanced Clean Truck (ACT) Working Group
Maryland Department of Housing and Community Development	<p>Advances homeownership, supports affordable rental housing, and leads community development and revitalization efforts across the state.</p> <p>As Maryland transitions to electric vehicles, DHCD collaborates with MDOT, MEA, and other partners to provide data and guidance for planning EV infrastructure, especially for residents without access to private home charging. DHCD also maintains public information for common ownership communities regarding resident rights and responsibilities, including the right to install or use an EV charger in a homeowner's designated parking space if all relevant building codes, safety standards, and contractor licenses are in compliance. Additionally, DHCD requires all projects that receive Rental Lending assistance to install at least one dual Level 2 (or higher) EV charging station.</p> <p>DHCD is not a member of ZEEVIC but was invited to participate in the ZEEVIC Interagency Working Group to advise the ZEVIP.</p>	<ul style="list-style-type: none"> Multifamily Rental Financing Program Guide

State Agency	Roles and Responsibilities	Relevant State and Coalition-Led/ Staffed Initiatives
Maryland Department of Labor	<p>Supports workers, protects consumers, and helps strengthen Maryland's economy.</p> <p>Within the growing EV sector, MD DOL works to expand the number of licensed electrical workers qualified to install and maintain EV charging infrastructure, including increasing the number of electricians certified through the Electric Vehicle Infrastructure Training Program (EVITP).</p> <p>To build this workforce, MD DOL partners with local stakeholders on federal opportunities such as the Ride and Drive Electric Grant Program, supports apprenticeship programs, and collaborates on the state's Climate Corps Service Year Program. The agency also invests in workforce development through state-funded initiatives.</p> <p>MD DOL is not a member of ZEEVIC but was invited to participate in the ZEEVIC Interagency Working Group to advise the ZEVIP.</p>	<ul style="list-style-type: none"> Employment Advancement Right Now (EARN) Maryland
Maryland Motor Vehicle Administration	<p>Offers Maryland residents comprehensive driver licensing and vehicle services, while also advancing driver safety through initiatives and educational outreach as one of the MDOT modal administrations</p> <p>MVA provides users with up-to-the-minute information on branch office wait times, average visit durations, available services, EV registrations, and other important information.</p>	<ul style="list-style-type: none"> MVA Data Dashboard Maryland's Excise Tax Credit for Plug-In Electric Vehicles Program
Maryland Office of People's Counsel	<p>Independent state agency that represents Maryland's residential utility customers in proceedings before the Public Service Commission, federal regulators, and the courts.</p> <p>OPC works to ensure fair utility rates, protect consumers from harmful practices, and support utility performance improvements aligned with Maryland's environmental and climate goals. The agency also provides public outreach to educate residents on utility issues.</p> <p>For EV-related matters, OPC actively participates in PSC proceedings, including the EV Pilot Program. Its work includes reviewing EV charging rate proposals, evaluating utility-funded incentives or technical assistance programs, and assessing utility-owned chargers at public locations and multi-unit dwellings.</p> <p>OPC is a member of ZEEVIC and participated in the ZEEVIC Interagency Working Group to advise the ZEVIP.</p>	<ul style="list-style-type: none"> Consumer Learning: Electric Vehicles

APPENDIX C: STATE AGENCY ROLES AND RESPONSIBILITIES

State Agency	Roles and Responsibilities	Relevant State and Coalition-Led/ Staffed Initiatives
Maryland Department of Planning	<p>Supports the preservation and responsible use of the state's natural resources, built environment, and public assets to promote strong economic, community, and environmental outcomes.</p> <p>MDP works with local governments to integrate zero emission vehicle (ZEV) planning into comprehensive plans and development regulations by providing guidance, best practices, and technical assistance.</p> <p>As a member of ZEEVIC, MDP contributes land use and transportation policy expertise. The agency also supplies statewide Geographic Information System (GIS) land use and growth data to help identify suitable EV charging locations and collaborates with MDOT to share ZEV program information with local officials and stakeholders.</p> <p>MDP is a member of ZEEVIC and participated in the ZEEVIC Interagency Working Group to advise the ZEVIP.</p>	<ul style="list-style-type: none"> • Local Comprehensive Planning • Maryland's Sustainable Growth Planning Principles
Maryland Public Service Commission	<p>Regulates public utilities to ensure that Marylanders receive safe, reliable, and affordable service.</p> <p>In its oversight role, the PSC establishes standards and policies that consider economic, environmental, climate, and labor impacts, including policies governing EV charging activities carried out by Maryland's electric utilities. The PSC also leads work groups and pilot programs under the Public Conference 44 (PC44) proceedings.</p> <p>The PSC is a member of ZEEVIC and participated in the ZEEVIC Interagency Working Group to advise the ZEVIP.</p>	<ul style="list-style-type: none"> • EV Pilot Program Phase II • EV School Bus Pilot • EVSE Work Group • PC44 Distribution System Planning (DSP) Working Group • PC44 Electric Vehicle Work Group (EV Work Group) • Utility Reliability & Reporting • Vehicle-to-Grid Regulation/DRIVE Act

State Agency	Roles and Responsibilities	Relevant State and Coalition-Led/ Staffed Initiatives
Maryland Department of Transportation	<p>Provides safe, reliable, accessible, equitable, and sustainable transportation options statewide.</p> <p>As part of Maryland's climate goals, to reduce greenhouse gas emissions 60% below 2006 levels by 2031 and achieve net-zero by 2045, MDOT leads efforts to expand vehicle electrification and charging infrastructure.</p> <p>This work includes deploying public light-, medium-, and heavy-duty EV charging stations using federal formula and discretionary funding from programs such as the National Electric Vehicle Infrastructure (NEVI) Program, the Carbon Reduction Program (CRP), the Charging and Fueling Infrastructure (CFI) Program, the Climate Pollution Reduction Grant Program (CPRG), and the EV Charger Reliability and Accessibility Accelerator (EVC-RAA). Additionally, for a total of 41 sites, MDOT has installed public charging, or allowed the installation of public charging on sites owned by all MDOT modal administrations.</p> <p>Given the cross-disciplinary nature of this work, MDOT collaborates closely with state and local agencies, utilities, and legislators to shape supportive programs, incentives, technical assistance, and workforce development.</p> <p>MDOT chairs ZEEVIC and convened the ZEEVIC Interagency Working Group to advise the ZEVIP.</p>	<ul style="list-style-type: none"> • Carbon Reduction Strategy • Clean Corridor Coalition • EVC-RAA: Repairing or Replacing Broken EV Chargers • EV Signage Standards • MarylandEV.org • MD-NJ-PA Charging Ahead Partnership • Maryland EV Charging Suitability Tool • Maryland NEVI Program • ZEV Maps and Dashboard • Zero Emission Electric Vehicle Infrastructure Council (ZEEVIC) • Zero Emission Vehicle Infrastructure Plan (ZEVIP)

APPENDIX D: LIGHT-DUTY VEHICLE TECHNICAL ANALYSIS

INTRODUCTION

This Zero Emission Vehicle Infrastructure Plan (ZEVIP) Technical Appendix documents the analytical foundations used to develop Maryland's high, medium, and low projections for future light-duty electric vehicle (EV) adoption and associated charging infrastructure needs. It details the data inputs, methodologies, and modeling tools applied throughout the analysis and explains how the Maryland EV Charging Suitability Tool was created to support infrastructure planning decisions statewide.

PURPOSE OF THE TECHNICAL APPENDIX

The appendix serves to:

- Provide transparency into the modeling assumptions and analytical processes underlying the ZEVIP.
- Describe how various quantitative inputs, including travel behavior, vehicle technology, emissions factors, and geospatial characteristics were integrated into forecasting models.
- Summarize major analytical outputs, including vehicle populations, charging demand projections, and spatial prioritization criteria for infrastructure deployment.

The appendix does not attempt to reproduce the full methodologies of external tools used in the analysis. Instead, it focuses on how these tools were applied within the ZEVIP context.

MODELING TOOLS USED IN THE TECHNICAL ANALYSIS

A suite of established federal and geospatial tools was employed to estimate EV adoption trends, charging infrastructure requirements, and charging infrastructure deployment recommendations.

United States Environmental Protection Agency (EPA) Motor Vehicle Emission Simulator (MOVES5)

MOVES5 was used to estimate the total 2031 light-duty vehicle (LDV) population / registrations as well as the annual estimated increase in LDV registrations for model years 2026 through 2031. Its outputs informed:

- Total 2031 LDV populations.
- Detailed vehicle population and age-distribution profiles.

Electric Vehicle Infrastructure Projection Tool – Lite (EVI-Pro Lite)

EVI-Pro Lite supported the development of statewide charging needs projections by:

- Estimating the number of publicly available Level 2 (L2) and Direct Current fast charging (DCFC) ports required under various EV adoption scenarios.
- Allocating charging needs across public contexts.

Geographic Information Systems (GIS)-Based Tools and Cloud Platforms

The Maryland EV Charging Suitability Tool was developed using:

- Amazon Web Services (AWS) for cloud-based spatial data processing and computational scaling.
- ArcGIS Online for spatial analysis, mapping, and visualization of suitability criteria for hosting on the Maryland Department of Transportation's (MDOT's) [Zero Emission Vehicle \(ZEV\) Dashboard](#).

Collectively, these tools were essential for modeling both quantitative charging demand and qualitative spatial siting suitability across Maryland.

ZEV and EV Definitions Used in the ZEVIP

To maintain consistency throughout the analysis, ZEVs are defined as:

- Battery Electric Vehicles (BEVs)
- Plug-in Hybrid Electric Vehicles (PHEVs)
- Fuel Cell Electric Vehicles (FCEVs)

EVs refer only to:

- BEVs
- PHEVs

FCEVs are included within the broader ZEV definition but are not considered EVs for modeling or charging-specific calculations in the ZEVIP.

LIGHT-DUTY VEHICLE POPULATION PROJECTIONS

Projecting Maryland's total LDV population is a critical analytical step in estimating statewide charging infrastructure needs. This section describes the methods and data sources used to forecast LDV populations through 2031, which serve as foundational inputs to the state's EV adoption scenarios and associated infrastructure modeling.

Forecasting Total Maryland LDV Vehicle Population

Total LDV populations for 2031 were estimated using the EPA's MOVES5 transportation emissions model and Maryland-specific data inputs. MOVES5 is the EPA-approved and required emissions modeling tool for all states outside California when developing State Implementation Plans (SIPs), conducting transportation conformity and general conformity analyses, and preparing the National Emissions Inventory (NEI). In addition to these mandatory applications, EPA also recommends the use of MOVES for mobile source emissions analysis in National Environmental Protection Act (NEPA) environmental reviews, greenhouse gas (GHG) analyses, and other regulatory assessments that require a detailed accounting of on-road and off-road emissions. MOVES5 estimates vehicle populations and age distributions using a combination of updated national default data and optional user supplied local inputs.

APPENDIX D: LIGHT-DUTY VEHICLE TECHNICAL ANALYSIS

LIGHT-DUTY VEHICLE POPULATION PROJECTIONS CONT.

In Maryland, historic vehicle populations are obtained from the Maryland Motor Vehicle Administration (MVA) and are processed by the Maryland Department of the Environment (MDE) to be used as inputs into the MOVES5 model.

This dataset was most recently updated with 2023 data for incorporation into Maryland’s NEI submission. In MOVES5, the age structure of the vehicle fleet is enhanced from previous versions of the MOVES model by extending modeled ages from 0–30 years to 0–40 years, improving representation of older vehicles in both current and future analysis years. The MOVES5 model requires the population of vehicles by the thirteen source type categories. As highlighted in Table 1, source types 21, 31, and 32 were used to estimate the total LDV populations in 2031.

The 2023 baseline data was prepared and provided by MDE utilizing vehicle identification number (VIN)-decoding. Maryland county vehicle registration data was used to estimate LDV populations for all counties in the state.

For the 2031 analysis year, the vehicle population was forecasted based on projected household and population growth obtained from state and Metropolitan Planning Organization (MPO) sources. The growth rate methodology included choosing the highest growth factors developed from Woods & Poole forecast data (e.g. population, households, or employment) and vehicle miles traveled (VMT) growth.

Table 1: MOVES5 Source Types

Source Type ID	MOVES Source Type	Source Type ID	MOVES Source Type
11	Motorcycle	51	Refuse Truck
21	Passenger Car	52	Single Unit Shorthaul Truck
31	Passenger Truck	53	Single Unit Longhaul Truck
32	Light Commercial Truck	54	Motor Home
41	Intercity Bus	61	Combination Shorthaul Truck
42	Transit Bus	62	Combination Longhaul Truck
43	School Bus		

Because the vehicle age distribution was prepared based on a July 1st snapshot download, the model year 2031 (age 0) population underestimates the actual fleet in the full calendar year 2031. This occurs because the age distribution assumption does not capture sales patterns for previous model year vehicles (e.g., MY 2030) that will continue to be sold into 2031 or the sales of future model year vehicles (e.g., MY 2032) that may also enter the market before the end of the year. To address this issue, the 2031 (age 0) population was adjusted by using the average of the model year 2028–2030 (i.e. age 1 to age 3) populations, providing a more realistic estimate of the

vehicles expected from a full year of 2031 registrations. Table 2 illustrates the 2031 LDV population age distribution by model year based on 2023 planning assumptions.

Table 2: Maryland 2031 LDV Vehicle Population and Age Distribution

Model Year	Age	Vehicle Population	Model Year	Age	Vehicle Population	Model Year	Age	Vehicle Population
2031	0	252,032	2017	14	118,069	2003	28	16,699
2030	1	240,836	2016	15	145,103	2002	29	12,850
2029	2	256,742	2015	16	143,172	2001	30	9,220
2028	3	258,517	2014	17	128,213	2000	31	7,185
2027	4	322,000	2013	18	114,132	1999	32	6,809
2026	5	321,217	2012	19	105,504	1998	33	6,637
2025	6	340,667	2011	20	87,741	1997	34	6,369
2024	7	326,518	2010	21	70,281	1996	35	5,426
2023	8	317,258	2009	22	54,568	1995	36	5,393
2022	9	268,715	2008	23	48,060	1994	37	4,746
2021	10	253,985	2007	24	36,402	1993	38	3,774
2020	11	213,293	2006	25	26,608	1992	39	2,945
2019	12	182,165	2005	26	24,483	1991	40	50,545
2018	13	157,077	2004	27	16,895	Total 2031 LDV Population:		4,968,850

Developing Light-Duty EV Adoption Scenarios

Developing high, medium, and low light-duty EV adoption scenarios is essential for planning Maryland’s future charging infrastructure amid significant uncertainty in federal policy, automotive markets, grid readiness, and supply chain conditions. As described in the ZEVIP, shifts in federal incentives, such as the repeal of tax credits under the Inflation Reduction Act (IRA), along with regulatory changes to programs like Advanced Clean Cars II (ACC II), create cascading impacts on consumer demand, investment strategies, and local implementation timelines. These uncertainties make it impossible to rely on a single forecast of future EV adoption. By constructing high, medium, and low scenarios, Maryland establishes a structured analytical framework that captures a reasonable range of plausible futures. This approach enables the state to stress-test infrastructure needs, identify robust investment strategies, and ensure that planning for public charging infrastructure remains resilient, data-driven, and responsive as market and policy conditions continue to evolve.

Maryland’s projected light-duty EV populations were developed using a registration-based approach informed by EPA’s MOVES5 model. Projections begin with the most recent verified baseline of 149,477 registered EVs as of December 31, 2025. Annual new-vehicle registrations generated using MOVES5 were used as a proxy for total new vehicle sales. Maryland then applied EV sales shares to these estimated new registrations (shown in Table 3) under three adoption scenarios—High, Medium, and Low—to estimate total EV registrations for each year from 2026 through 2031. The adoption scenarios were informed by industry research and developed collaboratively by MDOT and MDE.

APPENDIX D: LIGHT-DUTY VEHICLE TECHNICAL ANALYSIS

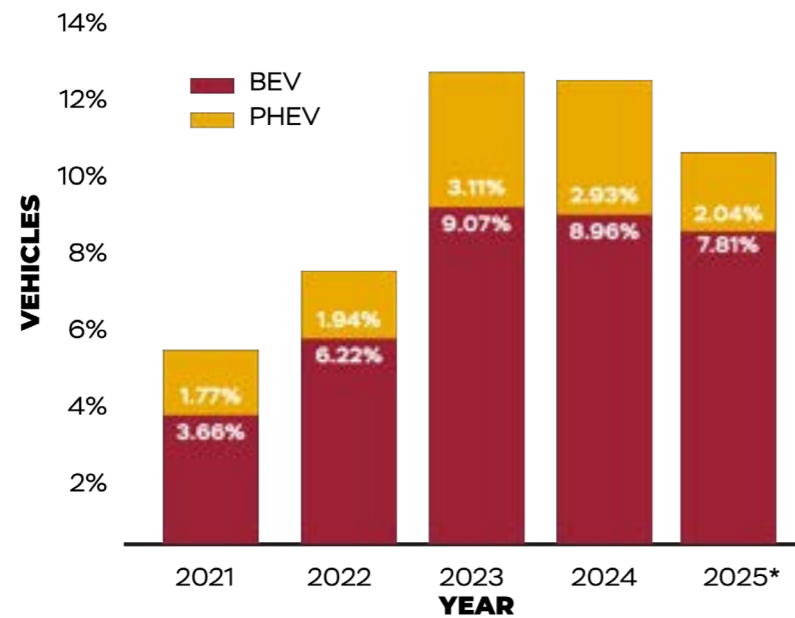
LIGHT-DUTY VEHICLE POPULATION PROJECTIONS CONT.

Table 3: MOVES5 New Vehicle Registrations by Age (2026-2031)

Model Year	Age	Vehicle Registrations
2031	0	252,032
2030	1	240,836
2029	2	256,742
2028	3	258,517
2027	4	322,000
2026	5	321,217

The Low Scenario assumes EV sales remain flat at 10% per year, reflecting the state's historic average annual sales growth of 9.50% from January 2021 through December 2025, as illustrated in Figure 1. This scenario represents a future without federal incentives or implementation of ACC II.

Figure 1: Historic EV Market Share (Percent of Total Vehicle Sales (2021-2025))



*Vehicle sales figures for 2025 reflect the latest available data from the Alliance for Automotive Innovation Electric Vehicle Sales Dashboard through December 31, 2025.

The Medium Scenario assumes a full repeal of federal EV tax credits under the IRA and additional federal rollbacks. Under this scenario, EV sales are projected to increase gradually, reaching 24% of new vehicle sales by 2031 and, like the Low Scenario, it does not assume implementation of ACC II. This scenario was derived by holding EV sales at 10% initially and then increasing them linearly to 24%, representing a conservative trajectory based on the average of 2030 industry forecasts summarized in Table 4.

Table 4: Industry Average Sales Percentages (2030)

Source	ZEV Sales % (2030)
Princeton Repeat	24%
Bloomberg New Energy Finance (NEF)	27%
International Energy Agency (IEA)	20%
J.D. Power	26%
Average	24%

In contrast, the High Scenario reflects the retention of federal incentives and the most flexible version of ACC II implementation, allowing for maximum pooling and early compliance credits, with EV sales reaching 72% of new car sales by 2031.

For each scenario, these annual sales percentages, illustrated in Figure 2, were sequentially applied to estimate annual EV registrations, which were then aggregated into total projected EV populations as illustrated in Figure 3. These scenario-based EV population estimates served as primary inputs to the national EVI-Pro Lite model to calculate the public L2 and DCFC infrastructure needed to support Maryland's drivers under each pathway.

Figure 2: Annual Electric Vehicle Sales Percentages by Scenario 2026-2031

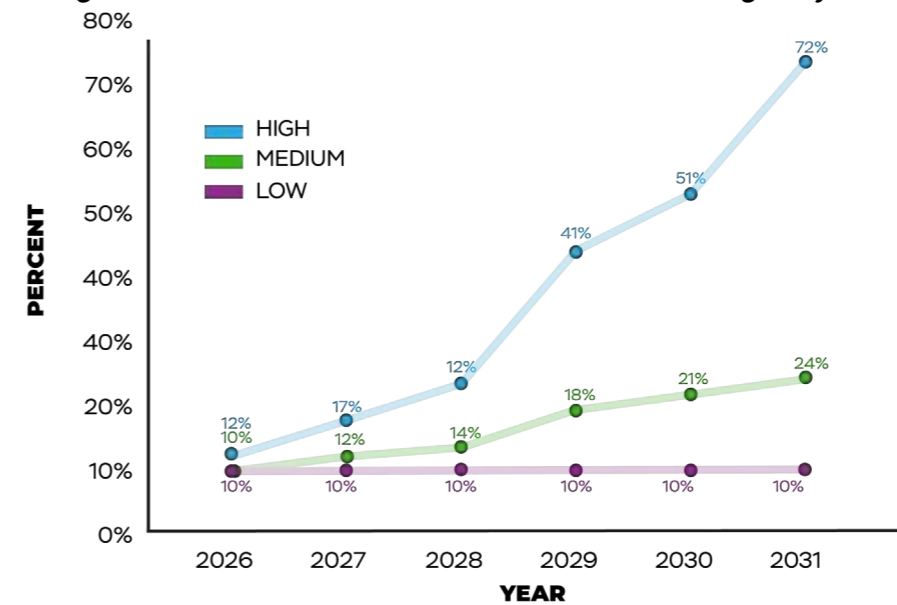
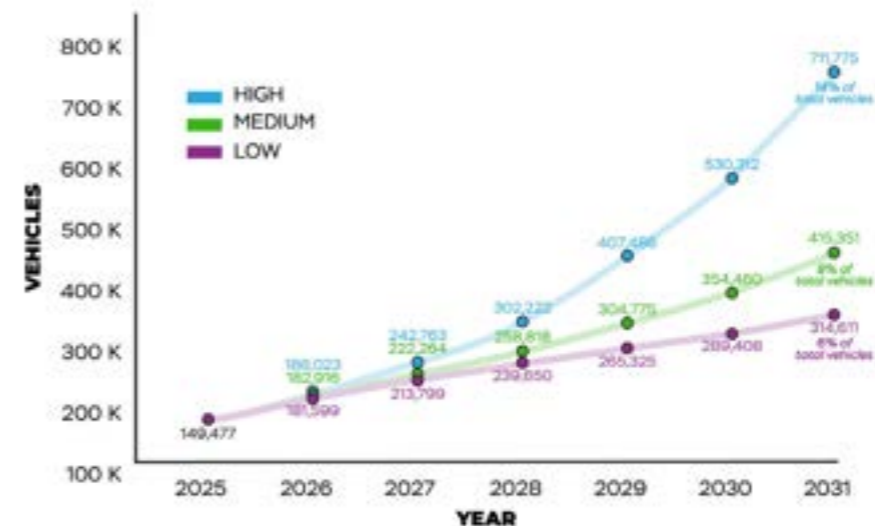


Figure 3: Annual Light-Duty Electric Vehicle Population Projections by Scenario 2025-2031



APPENDIX D: LIGHT-DUTY VEHICLE TECHNICAL ANALYSIS

LIGHT-DUTY VEHICLE POPULATION PROJECTIONS CONT.

To estimate Maryland’s future publicly available EV charging infrastructure needs, the ZEVIP analysis applied a scenario-based forecasting approach grounded in the EVI-Pro Lite Tool, a simplified, publicly accessible model developed by the National Laboratory of the Rockies (NLR) and hosted on the Alternative Fuels Data Center’s (AFDC) website. The tool was designed to project consumer charging demand using real-world driving behavior, vehicle technology characteristics, and built-environment inputs. As described in the main ZEVIP document, EVI-Pro Lite was selected after evaluating multiple tools due to its robust national research foundation, transparent assumptions, compatibility with Maryland’s travel and vehicle fleet data, and use in a previous study commissioned by the Maryland Public Service Commission (PSC).¹ The tool combines national default datasets from the full EVI-Pro model, such as weekday and weekend travel patterns, trip durations, ambient temperature effects on vehicle range, and differences in charging behavior by residential dwelling type, with Maryland-specific inputs provided by MDOT, including projected EV populations, vehicle mix, and PHEV market share for each scenario.

In this analysis, Maryland’s high, medium, and low EV adoption scenarios were used as the primary fleet-size inputs, reflecting a range of outcomes shaped by evolving federal incentives, regulatory environments, and local sales trends. After these scenario-based EV population projections were generated, EVI-Pro Lite was used to estimate the number of public L2 and DCFC ports needed statewide by simulating when and where drivers would require charging outside the home, incorporating the model’s assumption that public charging occurs on an “as-necessary” basis to maximize electric miles traveled. Outputs from EVI-Pro Lite include statewide charging port quantities by charger type, as well as the relative proportion of L2 charging expected across key destination categories such as retail, recreation, employment centers, healthcare facilities, and community gathering places.

Maryland used these EVI-Pro Lite-derived public-charging proportions to distribute total statewide charging needs across the ZEVIP use-case framework of corridor, workplace, high-density residential, and neighborhood and amenity charging, ensuring consistency between modeled charging behaviors and the state’s geospatial siting priorities. The results of these model runs served as the analytical foundation for Maryland’s infrastructure projections, which were further refined through the Maryland EV Charging Suitability Tool, to translate modeled statewide charging quantities into spatially specific investment needs. Together, this integrated methodology provides a rigorous, data-driven foundation for estimating future charging infrastructure requirements and ensuring that Maryland’s public charging network scales effectively under a range of potential EV adoption futures.

¹ Moniot, Matthew, Clément Rames, and Eric Wood. 2019. Meeting 2025 Zero Emission Vehicle Goals: An Assessment of Electric Vehicle Charging Infrastructure in Maryland. Golden, CO: National Renewable Energy Laboratory. NREL/TP-5400-71198. <https://www.nrel.gov/docs/fy19osti/71198.pdf>.

The following section provides a detailed explanation of the EVI-Pro Lite Tool user inputs MDOT elected to update or maintain across the high, medium, and low scenarios. The EVI-Pro Lite Tool’s assumptions were originally derived from 2021 Maryland registration data, and it permits limited user adjustments beyond specifying the total number of assumed EVs.

Access to Home Charging

Decreasing the percent access to home charging increases public L2 and DCFC need as BEV/PHEV drivers will consequently need more access to public charging. The default percentage for home charging access is autopopulated by EVI-Pro Lite to reflect region-specific estimates and PHEV adoption levels modeled in the [2021 NLR research](#) underpinning the tool. Table 5 illustrates the EVI-Pro Lite default percentages based on MDOT’s inputs for the total population of light-duty EVs projected under each scenario and PHEV percentage, the latter of which is explained in the following subsection.

According to another [2021 NLR study](#), approximately 80% of EV charging occurs at drivers’ homes, including multifamily properties. A sensitivity analysis was conducted to estimate the impact that reducing home charging to 80% would have on Maryland’s infrastructure needs. Total L2 ports need increased by 5,195 ports under the low scenario and DCFC ports need increased by 401 ports. This level of sensitivity is significant; however, it was determined by MDOT that there is not enough recent research in Maryland to justify updating the access to home charging percentage defaults.

Table 5: Default Access to Home Charging Percentages by Scenario

EVI-Pro Lite Default	High	Medium	Low
Percent Access to Home Charging	90%	94%	95%

Percent PHEV Share and PHEV Support

Decreasing the percentage share of PHEVs increases the need for public L2 and DCFC because the tool assumes that BEVs rely more heavily on public charging infrastructure. The EVI-Pro Lite Tool’s default assumption is that PHEVs make up 34% of the plug-in vehicle fleet in Maryland; however, as of December 31, 2025, Maryland’s observed PHEV share was approximately 26.3%. Updating the model to reflect Maryland’s actual PHEV share increases projected public charging needs by 582 additional L2 ports and 56 additional DCFC ports. Until more information becomes available about possible changes in the PHEV market share, MDOT elected to update the PHEV percentage to match Maryland’s 2025 market share split.

Adjusting PHEV “support levels” from none to partial, or partial to full, also influences L2 charging needs. Because higher support levels assume that more PHEVs will rely on public charging, L2 demand ranges from a decrease of 4,515 ports (with no support) to an increase of 4,519 ports (with full support) under the low scenario. DCFC needs, however, are assumed not to change with support level. Given the lack of detailed data on how Maryland PHEV owners use home versus public charging, MDOT elected to utilize the default assumption of partial PHEV support.

Percent Vehicle Mix

Table 6 compares the percentage of EVs by vehicle type from MVA’s November 2025 **91**

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registration data with the EVI-Pro Lite default vehicle mix. When excluding the “Other” category, sport utility vehicles (SUVs) make up approximately 64.5% of ZEVs, sedans 30.7%, vans 2.73%, and pickups 2.06%. Relative to the EVI-Pro Lite defaults, these updated values do not significantly change the modeled public charging needs; only one additional L2 port and five additional DC fast charging ports are required under the low scenario. While changing the default assumptions does not materially affect overall charging estimates, MDOT elected to use the updated vehicle mix to better reflect Maryland’s 2025 registrations. Table 6 illustrates the percent fleet mix comparison between MVA EV registration data and the EVI-Pro Lite defaults. MDOT also elected to remove “Other” vehicles from the vehicle mix percentage analysis because these vehicles could not be readily identified as SUVs, sedans, vans, or pickups.

Table 6: Vehicle Percent Mix by Type (Maryland November 2025 EV Registration vs. EVI-Pro Lite Defaults)

Vehicle Type	Total Vehicles (Nov. MVA Reg.)	% of Total	% of Total (Excluding “Other”)	Used for High, Medium, and Low Scenarios	EPL Defaults
SUV	68,403	46%	64.51%	64%	39%
Other	42,290	29%	–	–	–
Sedan	32,552	22%	30.70%	31%	42%
Van	2,897	2%	2.73%	3%	6%
Pickup	2,182	1%	2.06%	2%	13%
TOTAL ZEVs	148,324	100%	100%	100%	100%
TOTAL ZEVs without “Other”	106,034				

EVI-Pro Lite separates public L2 charging needs by destination use case because L2 charging depends heavily on dwell time. The tool uses national datasets on travel behavior, parking duration, and charging patterns to estimate how much L2 demand occurs at locations such as retail centers, recreation sites, healthcare facilities, workplaces, and neighborhoods. This allows planners to align L2 infrastructure deployment with the locations where drivers naturally park long enough for L2 charging to be effective.

In contrast, EVI-Pro Lite separates DCFC needs by power level (150 kW, 250 kW, 350 kW) rather than by use case. DCFC charging is driven by range-extension needs and short-duration charging behavior rather than destination type. Power level is the primary determinant of session duration, grid load, and throughput.

Modeling DCFC needs by charging speed allows for accurate estimation of infrastructure capacity requirements and compatibility with evolving EV charging capabilities and National Electric Vehicle Infrastructure (NEVI) Program standards.

Additional detail on charging needs by use case and scenario is shown in Table 7 for L2 infrastructure and in Table 8 for DCFC power levels (150 kW, 250 kW, and 350 kW).

Table 7: Level 2 Charging Needs by Use Case and Scenario (2031)

EV Charging Infrastructure Needs		High	Medium	Low
Total EV Population		711,775	415,351	314,611
EVI-Pro Lite L2 Use Case	Description	High	Medium	Low
Retail	Shopping (e.g., groceries, clothes, appliances, or dining amenities)	2,797	1,300	992
Recreation Center	Recreational opportunities (e.g., parks, movies, bars, museums, or exercise activities)	1,109	574	457
Healthcare Facility	Hospitals, clinics, dental, or therapy	1,836	848	657
Education Facility	Schools and universities	1,153	527	390
Community Center	Religious and community gathering places / centers	867	412	304
Transportation Facility	Transportation hubs including park-and-rides, railway stations, and airports	1,540	753	561
Neighborhood	Curbside charging near housing	4,460	2,050	1,544
Office	Offices and/or business parks	6,705	5,200	5,158
TOTAL INFRASTRUCTURE NEEDS		20,467	11,664	10,063

Table 8: DCFC Needs by Charging Speed and Scenario (2031)

EV Charging Infrastructure Needs			
EVI-Pro Lite DCFC Port Speed	High	Medium	Low
150kW	290	266	387
250kW	210	92	64
350kW	558	227	134
Total	1,058	585	585

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EVI-Pro Lite produces the same total number of required DCFC ports (585) for both the medium and low EV adoption scenarios because total DCFC need is driven primarily by long-distance, “as-necessary” charging behavior rather than total EV population. The model assumes that most drivers rely on home and workplace L2 charging for daily needs, and only a small proportion of EV trips require fast charging. Because the long-trip and range-extension behaviors modeled for the medium and low scenarios are very similar, and because both scenarios fall below the EV-adoption threshold where DCFC demand begins to scale more sharply, the tool determines that the same overall number of DCFC ports is sufficient to serve statewide needs.

EVI-Pro Lite produces different DCFC power-level needs in the medium and low scenarios because it allocates chargers by vehicle charging capability and expected fast-charging behavior, factors that vary slightly with fleet mix even when total DCFC demand remains the same. As a result, the two scenarios require different combinations of 150 kW, 250 kW, and 350 kW ports despite both totaling 585 DCFC ports.

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[The Maryland EV Charging Suitability Tool](#) provides a comprehensive, data-driven approach to identifying optimal locations for EV charging infrastructure across the state. It was specifically designed to translate the statewide charging needs estimated through the EVI-Pro Lite model into geographically explicit, location-based siting priorities. EVI-Pro Lite outputs such as the projected distribution of public L2 charging across destination categories (e.g., retail, recreation, healthcare, community centers, workplaces, and neighborhood areas) and the total number of DCFC ports needed by charging speed serve as foundational inputs that determine the relative importance of each use case within the suitability framework. These modeled proportions are incorporated as weighting factors that inform how Maryland allocates charging infrastructure needs across four core use cases: Corridor Charging, Workplace Charging, High-Density Residential Charging, and Neighborhood & Amenity Charging.

For each use case, the Suitability Tool combines the EVI-Pro Lite demand shares with Maryland-specific spatial datasets such as travel patterns, employment density, residential characteristics, land-use patterns, and MDEnviroScreen equity indicators using a standardized hexagonal grid and a weighted composite scoring system. This integration ensures that modeled charging behavior from EVI-Pro Lite directly guides the prioritization of physical locations through the GIS-based suitability model. As a result, the tool aligns infrastructure deployment with both the magnitude and type of charging demand forecasted under the high, medium, and low EV adoption scenarios. Broadly, the methodology ensures that Maryland’s charging network grows in a manner that is equitable, efficient, data-driven, and fully aligned with state priorities and federal guidance under the NEVI Program.

The tool was also designed to be updated as new data and planning needs emerge, and while it does not currently incorporate grid load or electrical hosting capacity into the scoring framework, those elements can be integrated in future iterations.

Analytical Framework

The analytical framework for the suitability analysis is built on a consistent spatial unit using hexagonal binning (H3 grid system) at a resolution of one square mile, resulting in 12,773 hexbins statewide. This approach enables uniform spatial comparison and avoids inconsistencies associated with census tracts or ZIP codes. Each hexbin is assigned a weighted composite score based on multiple data layers, which are normalized and aggregated to produce a final ranking. Table 9 provides the total hexbin count by use case.

Table 9: Total Hexbin Count by Use Case

Model	Total Hexbin Count
Alternative Fuel Corridors	2,411
Neighborhood & Amenity	2,635
High-Density Residential	591
Workplace	2,333

Suitability tiers range from 1 (most suitable) to 6 (least suitable), depending on the specific use case. Layer weights are determined by MDOT priorities, NEVI requirements, and stakeholder input.

Core Methodological Steps

Data Collection

Data collection followed best practices in data vetting by drawing on the most up-to-date state and national datasets, such as MVA EV registration data, Replica trip data, U.S. Census Longitudinal Employer-Household Dynamics (LEHD) employment statistics, U.S. Department of Energy (DOE) / NLR charging infrastructure inventories, MDEnviroScreen environmental justice (EJ) scores, Maryland parcel-level land use data, and supplemental layers like floodplain boundaries, hosting capacity, and freight corridors.

Normalization

Continuous variables like VMT and employment density were normalized using Min-Max scaling, while binary layers such as proximity to Alternative Fuel Corridors (AFCs) or NEVI gap presence were scored as 0 or 1.

Weighting

Each layer was assigned a weight based on its relative importance for the use case. This methodology is provided in the use case scenario descriptions below.

Composite Scoring

For each hexbin, the composite score was calculated as the sum of each normalized layer score multiplied by its corresponding weight. Hexbins with higher composite scores are considered more suitable.

Composite Score = (Normalized Layer Score × Weight)

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Ranking

Hexbins were classified into suitability tiers based on use case: Corridor, Workplace, and High-Density Residential. All suitability use cases use a 1–6 scale with 1 representing most suitable locations and 6 representing the least suitable locations. Tier thresholds for all use cases were determined using the Natural Jenks classification method. Natural Jenks refers to the Jenks Natural Breaks classification method, which is a data clustering technique commonly used in GIS to optimally partition data values into distinct groups or classes. The method determines breakpoints by minimizing the variance within each class and maximizing the variance between classes, resulting in groupings that best represent naturally occurring patterns in the data. This approach is particularly useful when assigning tier thresholds, as it helps identify meaningful divisions in the composite scores, ensuring that each tier reflects significant differences in suitability.

Use Case-Specific Considerations

The MDOT recognizes that EV charging needs are not uniform across different communities, travel patterns, and types of destinations. To ensure a robust, equitable, and effective deployment strategy, the plan incorporates multiple distinct use cases, each reflecting the unique requirements of specific settings and user groups.

Corridor Charging:

In the Corridor Charging use case, the analysis prioritizes compliance with AFC standards and focuses on closing gaps identified by the NEVI Program, particularly along corridors with high VMT. To enhance reliability and accessibility, the methodology ensures that each of Maryland's 23 AFCs is equipped with a minimum of two charging stations, spaced no more than 50 miles apart. Table 10 presents the data layer name, associated parameters, its role within the model, the final weight assigned for composite scoring, and the corresponding data source title.

Table 10: Alternative Fuel Corridor Suitability Scoring Methodology and Data Sources

Alternative Fuel Corridors	
Hexbin Ranking	Composite Score
6 Least Suitable	>2.5
5	>4.6
4	>5.64
3	>6.38
2	>7.64
1 Most Suitable	>8.89

Layer Name	Parameter	Use in Suitability Model	Weight	Data Source
Vehicle Miles Traveled	Vehicle Miles Traveled (VMT)	Calculate the length of roads with AADT data (in miles) per hexbin * the total AADT of roads within the hexbin * 365. Use a Min-Max normalization for scoring. <ul style="list-style-type: none"> Min Score: 0 Max Score: 1 	3	Annual Average Daily Traffic (AADT)
Existing DC Fast Charging	Distance to Nearest EV Charging Station	Calculate the number of existing EV charging ports that fall within a hexbin. Use the below for normalization: fast_plug_score = 5 where fast_plug_cnt = 0 fast_plug_score = 4 where fast_plug_cnt > 1 fast_plug_score = 3 where fast_plug_cnt > 5 fast_plug_score = 2 where fast_plug_cnt > 10 fast_plug_score = 0 where fast_plug_cnt > 16	1	Electric Vehicle Charging Stations
Retail and Service Employment	Employment Density by Census Block RAC – Residence Area Characteristic data	Calculate the number of jobs within NAICs categories: LEHD employment categories (retail + real-estate + health-care + education + art-entertainment + Accom-FoodSvc + OtherSvc-ExceptPA)	2	Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics (LODES)
EV and BEV Registration	Electric or Plug-In Hybrid vehicle registrations by county with counts	Calculate the number of EVs registered within each hexbin.	2	Electric and Plug-in Hybrid Vehicle Registrations by County
EJ Score	MDEnviroScreen	Intersection of the centroid of the hexbin with the EJ Screen score.	1	MDEnviroScreen
NEVI Round 2 Target Areas	Distance between NEVI qualifying charging stations	Hexbins are areas with greater than 50 mile gap between NEVI charging stations.	3	Electric Vehicle Charging Stations
NEVI Round 2 Target Area Gaps	AFC with a 15-30 mile gap	Intersection of hexbin with 15 to 30 mile gaps in EV charging station coverage using the conditional NEVI station awards. <ul style="list-style-type: none"> If any part of the hexbin intersects, Score = 1 Otherwise, Score = 0 	3	Electric Vehicle Charging Stations
Alternative Fuel Corridors (AFC)	0.5 mile buffer (each side) of Alternative Fuel Corridor	Intersection of hexbin with an 0.5 mile buffer: <ul style="list-style-type: none"> If any part of the hexbin intersects, Score = 1 Otherwise, Score = 0 	1	U.S. Department of Transportation Designated Alternative Fuel Corridors

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Workplace Charging:

The Workplace Charging use case centers on identifying locations that serve major employment centers, areas with high volumes of commuter trips, and communities that have historically been underserved by EV infrastructure. This approach ensures that charging stations are accessible where they are most needed for daily work-related travel, with an emphasis on promoting equitable access for all commuters.

To further ensure equitable representation in the suitability analysis, the methodology incorporates a data split between 'Urban' and 'Non-urban' areas, as defined by the U.S. 2020 Census. By segmenting data in this way, the analysis prevents high-density urban regions, which typically have greater data availability and population concentration, from disproportionately influencing the overall weighting and final rankings. This approach ensures that the unique needs and priorities of non-urban and rural communities are accurately reflected, supporting a balanced deployment of EV charging infrastructure statewide. Once the analysis was complete for both urban and non-urban areas, the resulting layers were joined to create one contiguous layer for the use case. Table 11 presents the data layer name, associated parameters, its role within the model, the final weight assigned for composite scoring, and the corresponding data source title.

Table 11: Workplace Suitability Scoring Methodology and Data Sources

Workplace		
Hexbin Ranking	Composite Score	
	URBAN	NON-URBAN
6 Least Suitable	>0.6	>0.15
5	>0.97	>0.31
4	>1.71	>1.08
3	>2.46	>1.33
2	>3.47	>1.74
1 Most Suitable	>5.31	>2.13

Layer Name	Parameter	Use in Suitability Model	Weight		Data Source
			Non-Urban	Urban	
All Vehicles Trip Destination	All Vehicles Trip Destination	Density of trip origin and trip destination	2	2	Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics (LODES)
EV Trip Destination	EV Trip Destination	Density of trip origin and trip destination	3	3	Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics (LODES)
Existing DC Fast Charging	Proximity to existing DC Fast	Calculate the number of existing EV charging ports that fall within a hexbin.	1	1	Electric Vehicle Charging Stations
Level 2 Charging Stations	Proximity to existing L2 charging	Calculate hexbins that are within 0.5 miles of existing charging stations. If within 0.5 mile =0 and outside of 0.5 mile= 1.	1	1	Electric Vehicle Charging Stations
Retail and Service Employment	Employment density by NAICs code; Employment Density by Census Block RAC - Residence Area Characteristic data	"Calculate the number of jobs within NAICs categories: LEHD employment categories: Total: Retail and Service (being mapped currently) Retail -- (cns07) Service - (cns11 + cns15 + cns16 + cns17 + cns18 + cns19)"	5	5	Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics (LODES)
People Working or Attending School	Denisty of people working or attending school	Denisty of people working or attending school in hexbin	4	4	Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics (LODES)

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High-Density Residential:

The High-Density Residential use case specifically focuses on multi-unit dwellings (MUDs), apartments, and rowhomes that do not have access to private parking. MDEnviroScreen EJ scores are included to prioritize communities facing cumulative environmental burdens, ensuring that infrastructure deployment aligns with Maryland's equity goals.

Similar to the workplace methodology, the high-density residential methodology also incorporates the urban and nonurban area data separation, analysis, and rejoining to prevent high-density urban regions from dominating the analysis. Table 12 presents the data layer name, associated parameters, its role within the model, the final weight assigned for composite scoring, and the corresponding data source title.

Table 12: High-Density Residential Suitability Scoring Methodology and Data Sources

High-Density Residential		
Hexbin Ranking	Composite Score	
	URBAN	NON-URBAN
6 Least Suitable	>1.42	>1.26
5	>1.77	>1.36
4	>2.99	>3.10
3	>4.01	>4.08
2	>4.87	>4.33
1 Most Suitable	>5.86	>4.60

Layer Name	Parameter	Use in Suitability Model	Weight		Data Source
			Non-Urban	Urban	
All Vehicles Trip Origin	All Vehicles Origin	Density of trip origin and trip destination	2	2	Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics (LODES)
EV Trip Origin	EV Origin	Density of trip origin and trip destination	3	3	Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics (LODES)
EV and BEV Registration	EVs Registered by Zipcode source	Calculate the number of EVs registered within each hexbin.	2	2	Electric and Plug-in Hybrid Vehicle Registrations by County
Existing DC Fast [fast_plug_score]	Proximity to existing DC Fast	Calculate the number of existing EV charging ports that fall within a hexbin.	2	2	Electric Vehicle Charging Stations
L2 Charging Stations	Proximity to existing L2 charging	Calculate hexbins that are within 0.5 miles of existing charging stations. If within 0.5 mile =0 and outside of 0.5 mile= 1.	2	2	Electric Vehicle Charging Stations
Townhouses	Townhouses by Unit Count	Calculate the number of townhouses by hexbin	3	3	Maryland Property Data - Parcel Points
Apartments	Apartments by Unit Count	Calculate the number of apartments by hexbin	5	5	Maryland Property Data - Parcel Points
Residential Condos	Residential Condo by Unit Count	Calculate the number of residential condos by hexbin	5	5	Maryland Property Data - Parcel Points
Designated Multi-family Housing	MUD Locations from MD Multi-family Mapper	Calculate the number of MUD locations s by hexbin	5	5	Multifamily Mapper 3.0
Rowhomes	Rowhomes by Unit Count	Calculate the number of rowhomes by hexbin	4	4	Maryland Property Data - Parcel Points
EJ Score	MDEnviroScreen	Intersection of the centroid of the hexbin with the EJ Screen score.	2	2	MDEnviroScreen

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Neighborhood & Amenity Charging:

The Neighborhood & Amenity Charging use case focuses on locations that function as community gathering points, such as retail centers, healthcare facilities, and recreational areas, while also prioritizing equitable access to EV charging infrastructure in communities based on their MDEnviroScreen EJ score. This is reflected by the selection and weighting of data layers for this model.

To strengthen the suitability analysis and ensure an evidence-based approach to infrastructure planning, the EVI-Pro Lite tool was used to estimate the relative share of public L2 charging stations required across different location types. These percentage outputs were converted into weighting factors for the model. Incorporating these data allows the analysis to account for established, demand-driven benchmarks for each area type, thereby improving the accuracy of spatial weighting across data layers. This approach helps ensure that charging infrastructure deployment aligns with actual charging needs, supporting more efficient and equitable distribution of resources across communities.

Like the workplace and high-density residential methodologies, the neighborhood and amenity methodology also incorporates the urban and non-urban area data separation, analysis, and rejoining to prevent high-density urban regions from dominating the analysis. Table 13 summarizes each data layer, its associated parameters, its role in the model, the final composite weight applied, and the corresponding data source.

Table 13: Neighborhood & Amenity Charging Suitability Scoring Methodology and Data Sources

Neighborhood and Amenity		
Hexbin Ranking	Composite Score	
	URBAN	NON-URBAN
6 Least Suitable	>0.55	>0.29
5	>0.66	>0.33
4	>1.29	>1.29
3	>2.06	>2.19
2	>2.63	>2.46
1 Most Suitable	>3.66	>2.72

Layer Name	Parameter	Use in Suitability Model	Percentage of Public Level 2 needed EVI Pro base on LDV Projections	Weight		Data Source
				Non-Urban	Urban	
Retail Employment	Retail employment density	Calculate the number of jobs within NAICs categories: LEHD employment categories: NAICs: 07, 018, 019	15%	5	5	Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics (LODES)
Recreation Facilities	Recreation Facilities as defined by the Alternative Fuels Data Center: Parks, Movies, Bars, Museum, Exercise Activities Include MD Parcel Data: Fraternal, Gym, Health Club, Auditorium, Bowling, Theater, Skating Rink, Indoor Tennis	Proximity to recreation facilities	6%	3	3	Maryland Property Data - Parcel Points
Healthcare Facilities	Healthcare Facilities as defined by the Alternative Fuels Data Center: Hospitals, clinics, dental, therapy	Proximity to healthcare facilities	10%	4	4	Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics (LODES)
Education Facilities	Education Facilities as defined by the Alternative Fuels Data Center: Schools and Universities	Proximity to education facilities	6%	3	3	Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics (LODES)
Community Facilities	Community Centers as defined by the Alternative Fuels Data Center: Religious and Community Gathering centers	Proximity to community centers.	5%	3	3	Maryland Property Data - Parcel Points

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Layer Name	Parameter	Use in Suitability Model	Percentage of Public Level 2 needed EVI Pro base on LDV Projections	Weight		Data Source
				Non-Urban	Urban	
Maryland Incentive Zones	Mainstreet Areas	Proximity to a designated mainstreet.		3	3	Maryland Incentive Zones - Main Street Areas
EV Trip Destination	EV Destination	Density of trip origin and trip destination.		2	2	Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics (LODES)
Level 2 Charging Stations	Proximity to existing L2 charging	Calculate hexbins that are within 0.5 miles of existing charging stations. If within 0.5 mile =0 and outside of 0.5 mile= 1.		2	2	Electric Vehicle Charging Stations
EJ Score		Intersection of the centroid of the hexbin with the EJ Screen score.		2	2	MDEnviroScreen

Universal GIS Data Sources for Suitability Analyses

Table 14 provides a summary of the data sources used across the four suitability models. The "Date of Last Data Update" column reflects the last time the source data was updated, not when the source data was applied across the suitability models.

Table 14: Data Sources for All Suitability Layers

All Data Sources			
Source Name	Date of Last Data Update	Author	Link
Annual Average Daily Traffic (AADT)	Aug. 2025	MDOT SHA	https://data.imap.maryland.gov/maps/77010abe7558425997b4fc-dab02e2b64/about
Electric Vehicle Charging Stations	Dec. 2025	Michael Baker International, compiled from U.S. Department of Energy - National Laboratory of the Rockies (NLR)	https://www.arcgis.com/home/item.html?id=2ab0ad7a13ce-4148b567a5ba039ff46e
Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics (LODES)	2022-2023	U.S. Census	https://lehd.ces.census.gov/applications/help/onthemap.html#!what_is_onthemap https://onthemap.ces.census.gov/
Electric and Plug-in Hybrid Vehicle Registrations by County	Dec. 2025	MDOT/MVA	https://opendata.maryland.gov/Transportation/MDOT-MVA-Electric-and-Plug-in-Hybrid-Vehicle-Regis/qtcv-n3tc/about_data
MDEnviroScreen	Jun. 2025	MDE	https://mde.maryland.gov/Environmental_Justice/Pages/MDEnviroScreen.aspx
U.S. Department of Transportation Designated Alternative Fuel Corridors	Oct. 2025	USDOT	https://www.arcgis.com/home/item.html?id=3a7ecb0dfede4ddea3ab-c9584328631a

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All Data Sources			
Source Name	Date of Last Data Update	Author	Link
Maryland Property Data - Parcel Points	Jun.2025	State Department of Assessments and Taxation; Maryland Department of Planning	https://data.imap.maryland.gov/datasets/maryland::maryland-property-data-parcel-points/about
Multifamily Mapper 3.0	Aug. 2022	Maryland Department of Housing and Community Development	https://portal.dhcd.state.md.us/GIS/multifamily/index.html
Maryland Libraries	Aug. 2025	MD iMap	https://data.imap.maryland.gov/datasets/a7cf39b7e7394cb-a866c7c0096032e49_0/explore?location=38.833227%2C-77.232700%2C8.32
Maryland Incentive Zones - Main Street Areas	Jan. 2021	MD iMap	https://data.imap.maryland.gov/datasets/ddc995f8db9b4b53ac-f0aa7ff77627b6_1/explore

MDOT will assess and update Maryland's EV Charging Suitability Tool on a quarterly basis, or as needed. The methodology described in this Technical Analysis is therefore subject to change. The most updated methodology can be found online at <https://evplan.mdot.maryland.gov/auto-draft/suitability-analysis/>.

