Maryland Department of Transportation
Zero Emission Vehicle Infrastructure Plan (ZEVIP)
Survey Results

Executive Summary

Maryland Department of Transportation (MDOT) distributed an online survey across the state from April 25, 2025, to June 13, 2025, to gather input from Maryland residents, local fleet managers, and professionals in the electric vehicle (EV) industry to inform Maryland's Zero Emission Vehicle Infrastructure Plan (ZEVIP).

The survey included 44 questions in English and in Spanish and received a total of 1,487 responses. It aimed to gauge support for state policies and infrastructure development related to EVs, to identify the challenges and opportunities of EVs, and to assess current EV ownership trends.

This is our second annual survey, and we wanted to improve on our previous outreach. To distribute the survey to hard-to-reach areas, we identified nine outreach areas based on ZIP codes that did not respond to the previous 2024 survey, are nearby urbanized areas, and have opportunities for electric vehicle infrastructure investment. The nine targeted outreach areas are Perryville, Princess Anne, Swanton, Frostburg, Baltimore, Kingsville, Marriottsville, Mount Rainier, and Bryan Park/Waldorf. MDOT successfully reached eight of the nine areas.

We distributed the survey to partner agencies, governmental bodies, universities/colleges, non-profit organizations, current EV Mailing List subscribers, previous MDOT webinar participants through email newsletters, website updates, and social media posts.

We developed the survey to collect specific information from various audience groups: 1). individuals who own EVs for personal use, 2). individuals who use EVs for commercial, business, or government purposes, 3). individuals who work in the EV industry, 4). individuals who plan to own an EV in the future, and 5). individuals who are not involved or interested in EVs. Each audience group received a set of curated questions based on their level or type of involvement with EVs.

The survey results highlighted interest in and support for the electric vehicle industry in Maryland. It also revealed areas for growth and opportunity. By analyzing the results, we were able to derive overall recommendations, a summary of results, and direct quotes based on the survey's sample size, which are all presented in this report.

MARYLAND ZERO EMISSION Vehicle Infrastructure Plan

Key Takeaways and Recommendations

1) **Expand EV Charging Access in Multi-Unit Dwellings (MUDs):** Increase incentives, establish mandates, and offer resources to enable EV charging installation in condominiums, apartments, and townhouses. High demand for private use EVs suggests residents need home charging options, particularly where off-street parking is limited.
2) **Collaborate with Utility Companies to Ensure Grid Reliability and Smart Charging:** Continue to coordinate with utilities to plan proactive grid updates, offer off-peak charging incentives, and pilot V2G (vehicle-to-grid) systems through the Public Service Commission's Statewide Electric Vehicle Portfolio and other avenues.
3) **Establish Maryland EV Infrastructure Performance Standards:** Following recommendations by the EV Supply Equipment (EVSE) Workgroup, create performance standards for public chargers to enhance reliability for both personal and fleet EV adoption.
4) **Implement Fleet Transition Support for Businesses and Municipalities:** Provide technical assistance, planning tools, and predictable funding options for fleet conversion through utility and state programs.
5) **Amplify Maryland EV's Incentives Webpage:** Increase awareness of Maryland EV's webpage that offers a centralized, user-friendly list of available incentives in Maryland.
6) **Develop a Maryland EV Workforce Readiness Strategy:** Partner with community colleges, trade programs, and universities to train electricians, mechanics, and emergency responders to enhance skills and workforce knowledge related to EV infrastructure.
7) **Launch Pilot Community EV Car-Sharing and Charging Hubs:** Partner with car-sharing companies and local governments to pilot programs in underserved or high-density communities to increase comfort with EVs and encourage community buy-in.
8) **Bundle EVs with Energy Assistance and Transportation Programs:** Embed EV education into utility bill assistance, rural transit programs, and vehicle registration processes.
9) **Create a Maryland EV Public Education Campaign:** Promote EV benefits and dispel misconceptions about range and reliability through schools, media, and local events to boost awareness and interest.
10) **Deploy Additional Fast Chargers in Strategic Locations:** Add redundancy in public fast chargers at locations along highly traveled routes, such as rest stops, amenity clusters near highways, key transit stations, and popular community hubs.

Summary of Results

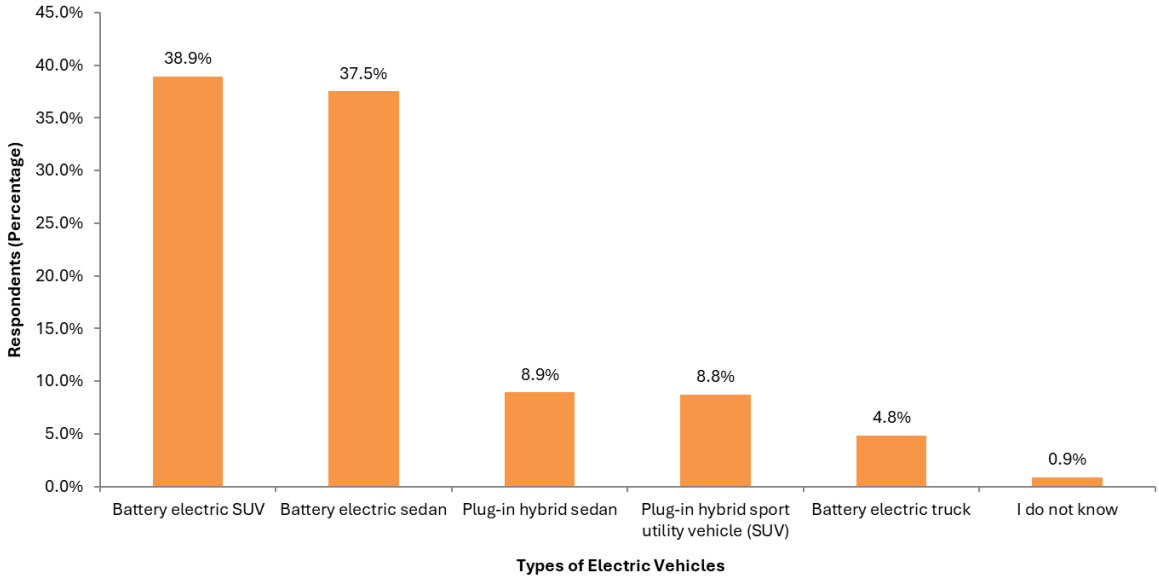
EV Ownership and Charging

1. Most survey respondents (40.6% or 570) own an EV for personal use. The survey also reached individuals who use EVs for commercial, business, or government purposes (6.9% or 98), who work in the EV industry (12.8% or 180), who plan to own an EV in the future (24.1% or 339), and who are not involved or interested in EVs (28.3% or 397).

2. **EV for Personal Use:**

   The top two types of EVs owned are battery electric SUVs (38.9% or 218) and battery electric sedans (37.5% or 210) based out of 560 total responses.

   Out of 315 responses, the top five make and models include the Tesla Model Y, Tesla Model 3, Hyundai IONIQ 5, Nissan Leaf, and Chevy Bolt. Out of 546 responses, the current charging ranges are typically below 300 miles (80.0% or 437). Out of 559 responses, EV owners feel very confident (61.1% or 342) with charging their PHEV or BEV to meet daily needs.



3. **EV for Commercial, Business, or Government Use:**

   Out of 51 responses, full battery EV (BEV) are most commonly owned, managed, or operated for commercial, business, or government purposes (66.7% or 34) compared to plug-in hybrid EV (PHEV) (25.5% or 13), and are typically charged during the day at workplaces (52.9% or 27). The common type of uses are sedans (56.9% or 29) and SUVs (21.6% or 11). Out of 40 responses, the top three make and models include the Chevy Bolt, Nissan Leaf, and Ford Escape. Out of 52 responses, the current charging ranges are typically below 300 miles (94.2% or 49). Out of 52 responses, owners and operators of EV fleets do not feel confident (32.7% or 17) with charging their PHEV or VBEV to meet daily needs.

Out of 51 responses, the majority serve Central (Anne Arundel, Baltimore, Carroll, Harford, and Howard Counties; Baltimore City) regions at 75% or 39 respondents.

28 survey respondents commented on the opportunities related to owning and managing an EV fleet over the next five years, summarized as follows:

- Increasing sustainability by reducing and eliminating carbon emissions in Maryland.
- Reducing fleet maintenance and operating costs.
- Expanding charging infrastructure for private and public charging.
- Prioritized access to funding and resource allocation as new programs become available.

30 survey respondents commented on the challenges related to owning and managing an EV fleet over the next five years, summarized as follows:

- Insufficient and inconsistent charging infrastructure and grid reliability.
- Range limitations between worksites cause loss of production and delays.
- Lack of workforce readiness and knowledge of EV use and maintenance.
- Uncertainty with funding sources and evolving technologies.

4. **EV Industry Professionals:**

Out of 87 responses, there is a wide range of types of involvement within the EV Industry, summarized as follows:

- Research and expertise in EV-related work include planning, policy, utility coordination, charger design and installation, training, funding, distribution, and research through government agencies, nonprofits, or private firms.
- Businesses that design, manage, operate, and install EV infrastructure.
- Supporting and advocating for greater EV adoption and greenhouse gas reductions.

Federal uncertainty has a 'very high' and 'high' impact (55.2% or 37) on companies, organizations, and jurisdictions decision-makers to invest in EVs or EV charging due to the shift in grant funding and tax credit availability.

> *"Without certainty on tax credits for battery production and EV charging, it adds to the challenge for my nonprofit to get EV retrofits built and delivered to low-income families…People look to the federal government to seed the market, and it has created a vacuum of uncertainty reducing our chances of investing in Maryland." – Survey Respondent*

56 survey respondents commented on the opportunities related to EV industry involvement over the next five years, summarized as follows:

- Enhancing the use of clean energy sources and improving air quality.
- Near-term EV investments in urbanized areas near the I-95 corridor.
- Supporting public-private partnerships related to EV funding, research, and infrastructure development and deployment.

> *"Despite federal uncertainty (and even hostility), the long-term outlook is bright. We see Maryland as having friendly policies towards EVs. We also see Baltimore as a place to invest long term to support conversations at scale and to provide access to local stakeholders that might make the EV conversion market possible at scale." – Survey Respondent*

30 survey respondents commented on the challenges related to EV industry involvement over the next five years, summarized as follows:

- Shortage of funding and inconsistent policy support to launch EV related non-profit and community-based approaches, especially in underserved areas like Dundalk and rural Maryland.
- Inadequate charging infrastructure, vandalism, and rising vehicle and battery costs.
- Limited availability of commercial EVs, minimal training for emergency responders, and lack of skilled professionals in sales and maintenance.

5. **Future EV Owners (Personal and Commercial)**

   The top three reasons why 250 survey respondents plan to own an EV for personal use are charging cost savings, maintenance/repair cost savings, and climate/air quality benefits.

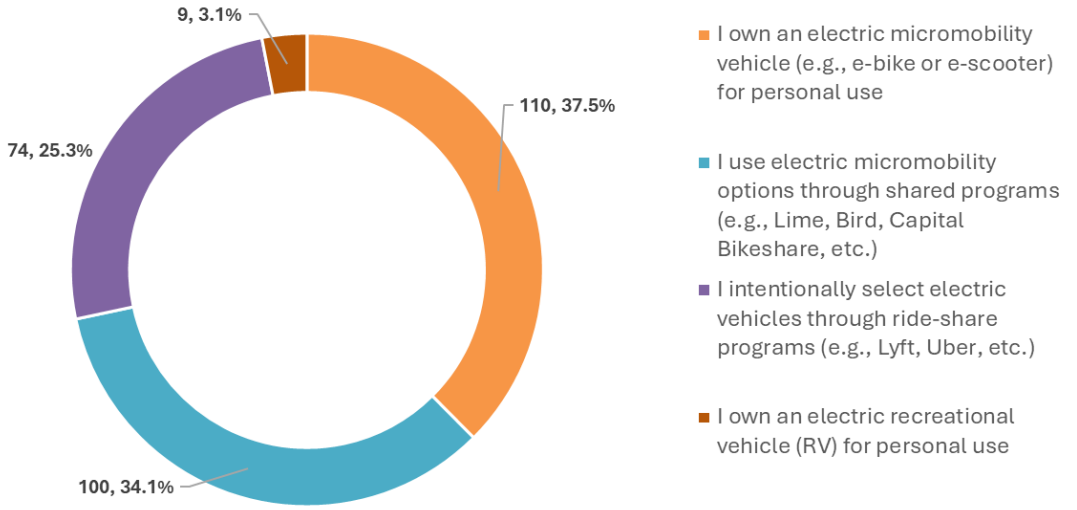
   The top three reasons why 132 survey respondents plan to purchase or convert to an EV fleet are the maintenance/repair cost savings, charging cost savings, and convenience/reliability of public charging.

6. **Not Involved or Interested in EVs**

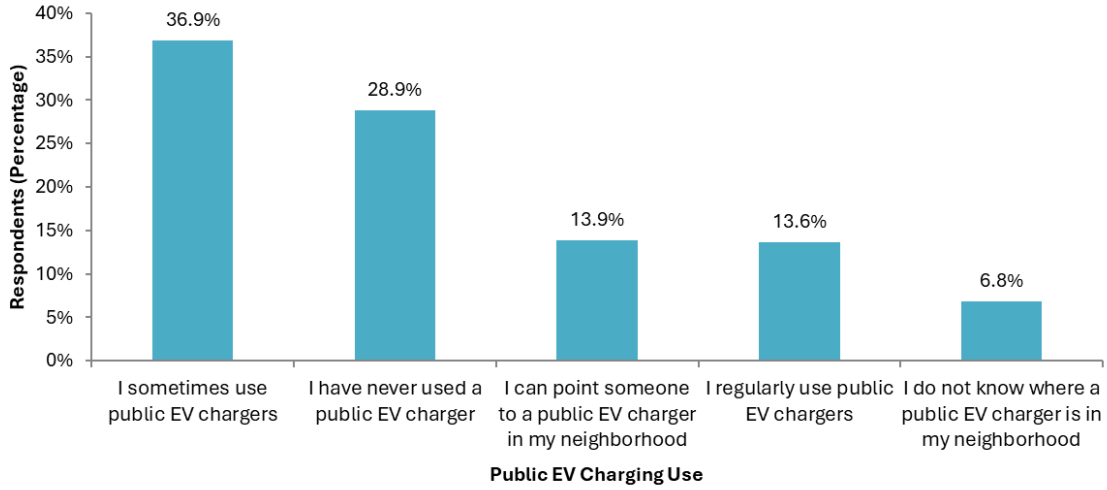
   The top three reasons why 323 survey respondents do not plan to own an EV for personal use are because of the EV purchase price, availability and reliability of public charging stations, and charging speed/time requirements.

   The top three reasons why 244 survey respondents do not plan to purchase or convert to an EV fleet are because of the EV purchase price, availability and reliability of public charging stations, and public charging costs.

7. Survey respondents were asked if they use EV or electric micromobility options and 241 answered the question. Most respondents own an electric micromobility vehicle such as an e-bike or an e-scooter (38% or 110).



8. Out of 852 responses, most survey respondents sometimes use public EV chargers (36.8% or 314), and most believe that there is not adequate public EV charging infrastructure in their neighborhood (73.7% or 628).



"I plan to buy an electric car in the future and have the ability to put in a charger at my home. My concern would be more for charging ability when I'm away from home." – Survey Respondent

9. Out of 796 responses, most of the survey respondents reported that the speed of charge and on-site amenities (e.g., restrooms, food/drink, retail, green space) are the most important public EV charging features.

> *"Having nearby amenities is important – it's great to be able to walk to get coffee or food while fast charging. Fast charging in the very back corner of some Home Depot parking lot which is a 15-20 min walk from anything is not at all ideal." – Survey Respondent*

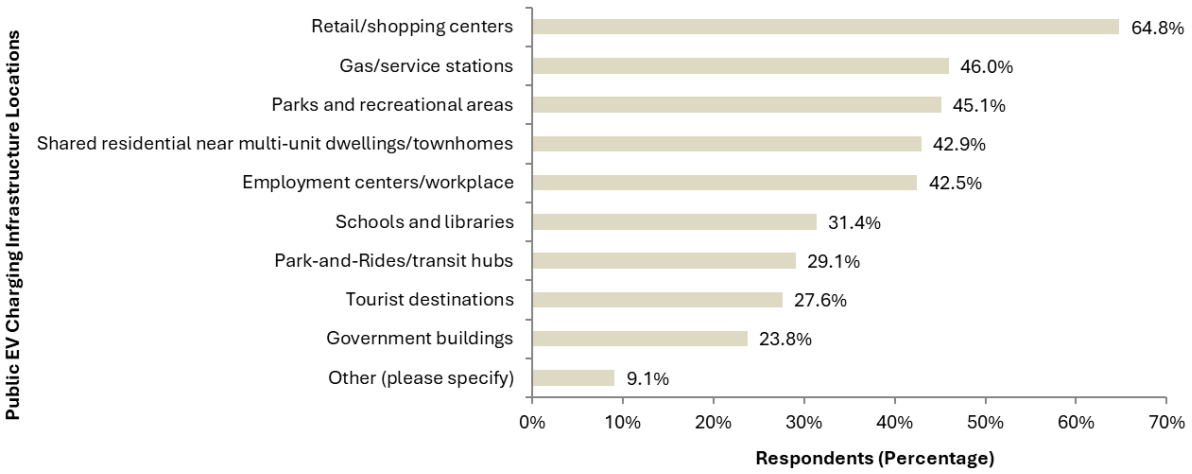
10. Out of 697 responses, the majority of respondents are not familiar with any Maryland EV incentives or resources (51.36% or 358).

    The top three resources that are familiar to survey respondents are the Motor Vehicle Administration (MVA) Excise Tax Credit for Plug-in EVs (23.1 % or 161), EV Emissions Inspection Exemption (20.9% or 146), and EV High-Occupancy Vehicle Lane Permit (16.0% or 112).

    A total of 40 comments were received which mentioned the Maryland Solar Program, Federal EV Tax Credit, and Federal EVSE Tax Rebates as other resources and incentives. However, the majority of the comments mentioned difficulties with meeting eligibility requirements, having applied but not hearing back, or repeatedly getting referred to the website.

11. Out of 829 responses, most respondents would like to see more public EV charging infrastructure in retail/shopping centers (64.8% or 537), gas/service stations (46.0% or 381), and parks and recreational areas (45.1% or 374).

    A total of 75 comments were received with recommended locations for EV charging infrastructure, summarized as follows:
    - Prioritize curbside Level 2 charging in dense urban neighborhoods, along residential streets, and near multifamily housing for overnight and long-duration parking.
    - Install chargers at grocery stores, gyms, restaurants, movie theaters, and transit stations (e.g., MARC, Penn Station).
    - Expand charging infrastructure along highways (I-95, I-70, I-270) and at rest stops, welcome centers, and rural areas to support long-distance travel.



"I applaud Maryland's efforts. I am a small business owner looking to open and manage an EV charging site in PG County." – Survey Respondent

12. Out of 1131 responses, many respondents reported that public EV charging stations are physically damaged, unresponsive, or broken (43.2% or 489); are too slow (39.1% or 442); and are often in use by others and unavailable for use (36.0% or 408).

13. Out of 901 responses, the majority were learning about Maryland EV and EV charging efforts for the first time through the survey (60.3% or 543). Many survey respondents have visited the Maryland EV Plan website (20.6% or 186) and/or received Maryland EV incentives and resources (15.7% or 142) over the past 3 years.

14. A total of 286 comments and questions were received on a variety of topics, highlighting opportunities and challenges. Below are the key takeaways and trends that provide context for the opportunities and challenges mentioned.

    Opportunities: Many respondents expressed strong support for EV adoption in Maryland and mentioned the convenience of home charging and called for more reliable and accessible public charging in urban and multi-family housing areas.

    Respondents suggest adding Level 1 and 2 charging in parking lots, workplaces, hotels, near transit hubs, and prioritizing fast chargers along highways and at travel destinations. Current EV owners and users emphasized the value of incentives, reliable infrastructure, and coordination with private businesses and local governments. Overall, feedback supported continued investment and thoughtful planning to ensure equitable and efficient EV infrastructure growth.

Examples of opportunities mentioned:

- Support for EV Infrastructure Expansion
- Home Charging Station Convenience
- Positive EV Ownership Experiences
- Suggestions for Practical and Affordable EV Charging Station Deployment
- Government Support and Incentives
- Integration with Broader Sustainability Goals

Challenges: Many respondents highlighted serious concerns about EV charging infrastructure, affordability, and practicality in Maryland. The current EV charging stations were cited as unreliable, insufficient, and inconvenient in rural areas like the Eastern Shore and Western Maryland, which creates range anxiety.

> *"The low levels of incentive funding and frequent interruptions to state funding programs will pose challenges for investment in rural areas, particularly in Delmarva Power territory where utility rates are more challenging, and especially if the 30C tax credit is repealed and/or uncertainty persists around the (National Electric Vehicle Infrastructure) NEVI Program." – Survey Respondent*

Many of the comments noted the challenges associated with cost, government subsidies, and perceived environmental tradeoffs of EVs, including concerns over battery manufacturing, disposal, and fire safety.

Renters, townhouse and apartment dwellers, and residents without off-street parking consistently reported that home charging is inaccessible, making EV ownership unfeasible without major public infrastructure changes.

Examples of challenges mentioned:

- Lack of Reliable and Widespread Charging Infrastructure
- Limited Home Charging Options for Various Housing Types
- High Cost and Limited Incentives
- Distrust in Government Mandates and Spending
- Environmental and Safety Concerns
- Charging Experience Frustrations
- EV Technology Skepticism

> *"I have wanted my next car to be an EV, but now I live in a townhouse with no garage. Not sure how I can charge at home (would require a charging cord over the sidewalk and the distance may be too great)..." – Survey Respondent*

15. A total of 296 survey respondents provided their email address to join the MDOT EV Plan Mailing List which shows interest in learning more about Maryland's EV efforts.

Origins and Destinations

16. A total of 195 origin-destination trips were recorded. In descending order, the top five counties with the highest number of origin-destinations per county are Baltimore City (107), Montgomery County (65), Anne Arundel County (49), Prince George's County (47), and Howard County (39).

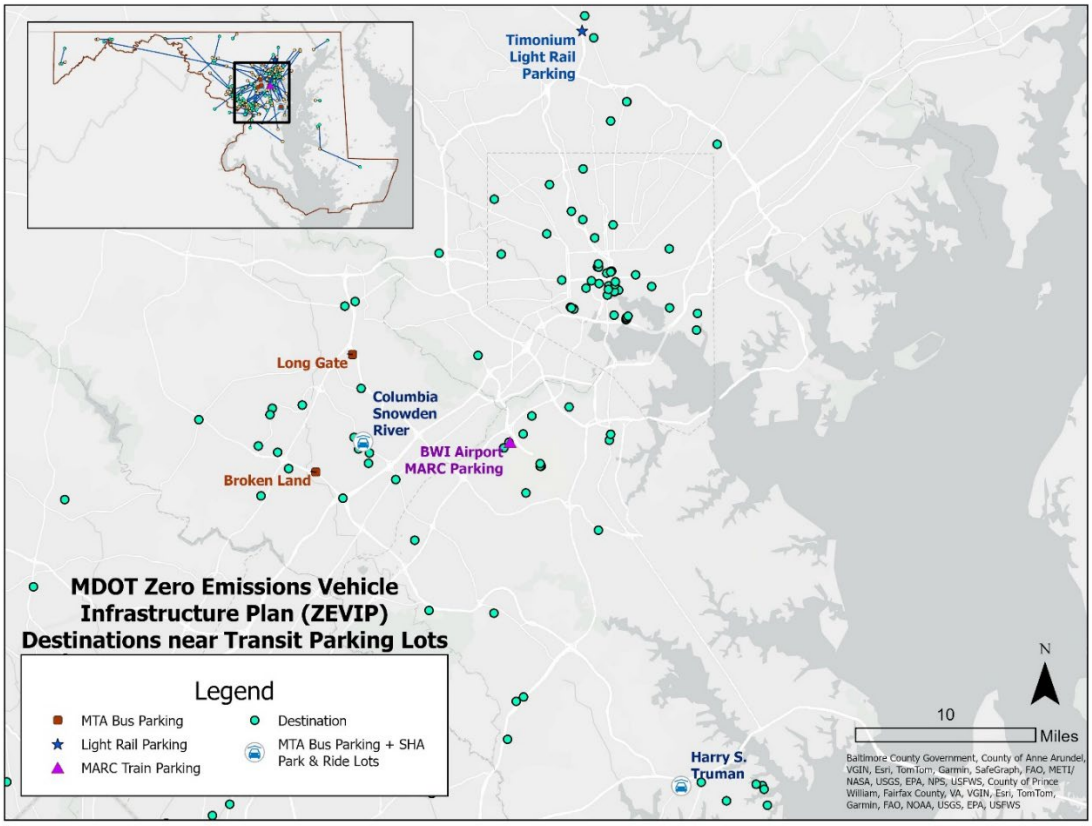
Jurisdiction	Origins	Destinations
Allegany County	2	3
Anne Arundel County	22	27
Baltimore County	17	10
Baltimore City	48	59
Calvert County	1	0
Caroline County	0	0
Carroll County	5	1
Cecil County	0	1
Charles County	0	0
Dorchester County	2	0
Frederick County	6	4
Garrett County	2	2
Harford County	4	0
Howard County	20	19
Kent County	0	0
Montgomery County	36	29
Prince George's County	24	23
Queen Anne's County	1	1
St. Mary's County	0	0
Somerset County	0	0
Talbot County	1	2
Washington County	1	2
Wicomico County	0	1
Worcester County	0	0
Washington DC	2	5
Arlington County, VA	0	2

17. Based on land use patterns and origin-destination trip data, most survey respondents commute between clusters of urbanized areas with high residential and commercial density. This finding indicates the importance of not only planning for EV charging infrastructure in high density urbanized areas, but also for EV charging infrastructure along highly trafficked routes connecting those areas to support Marylanders traveling from Point A to Point B.

18. Additionally, the following highway segments identified through origin-destination trip data and open responses from the survey should be considered for additional public charging locations at nearby airports, grocery stores, and malls:

- **Interstate 83 (I-83)** located in Baltimore City running between Downtown Baltimore north to Interstate 695 (I-695) near the northern suburb of Timonium.
- **Interstate 95 (I-95)** located in Prince George's County running between Beltsville to the Baltimore City Carroll Park area.
- **Interstate 495 (I-495)**, or the Capital Beltway, between Bethesda, Montgomery County to Greenbelt, Prince George's County neighborhoods.
- **Interstate 270 (1-270)** located in Montgomery County from Germantown to North Bethesda neighborhoods.

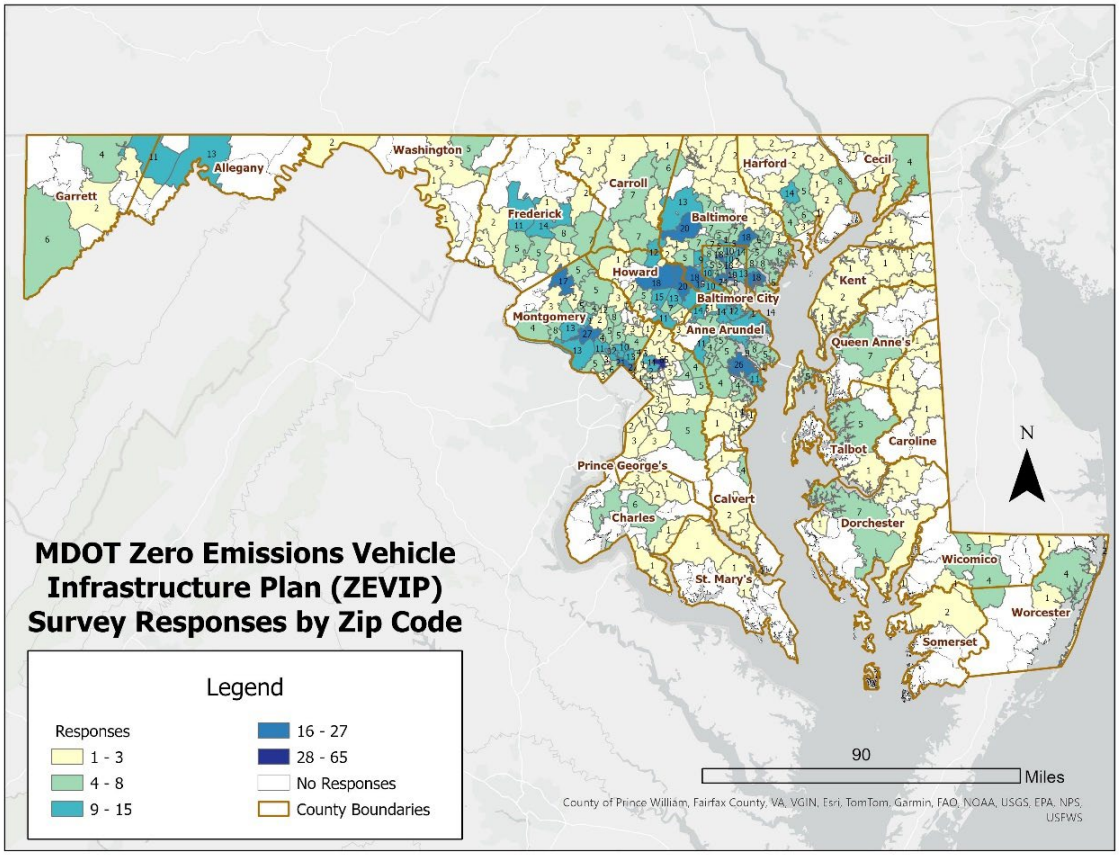
19. There may also be opportunities to add charging infrastructure nearby or within the following transit parking lots based on nearby clusters of destinations:
    - **Columbia Snowden River Pkwy:** MD 175 at Snowden River Parkway (Park and Ride)
    - **Annapolis Harry S. Truman:** MD 665 at Riva Road (Park and Ride)
    - **Baltimore/Washington International (BWI) Airport Maryland Area Rail Commuter (MARC) Parking:** 2 Amtrak Way (commuter rail)
    - **Timonium Light Rail Parking:** 2335 Greenspring Drive (light rail)
    - **Snowden River:** Snowden River & Little Patuxent Pkwy (bus)
    - **Harry S. Truman:** Harry S. Truman & Riva Rd (bus)
    - **Broken Land:** Broken Land Pkwy. & MD 32 (bus)
    - **Long Gate:** MD 100 & Long Gate Pkwy (bus)



Demographics

20. The survey received a total of 1,487 responses, setting a new record for EV and EV charging surveys issued by MDOT following the 2024 NEVI survey. Through each community and stakeholder engagement, MDOT strives to reach more and more of the 6.26 million Maryland residents (2024 Census).

21. **Survey Responses per ZIP Code in Maryland**
    The top five survey response areas in descending order are Greenbelt, Prince George's County (65); Rockville, Montgomery County (27); Takoma Park, Montgomery County (27); Morrell Park, Baltimore City (24); and Annapolis, Anne Arundel County (26).



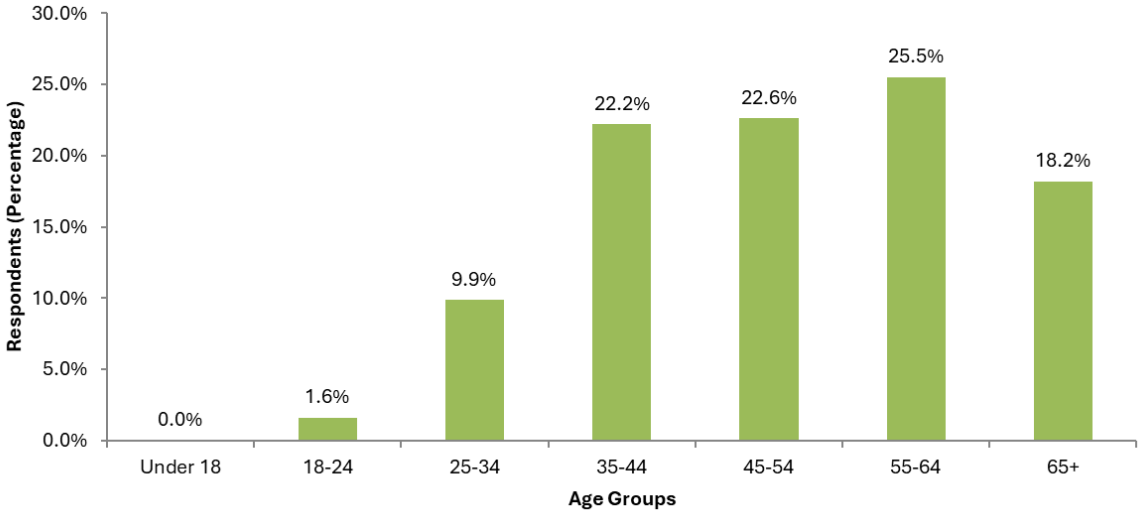
The previous NEVI survey completed in 2024 reached approximately 62% of all ZIP Codes in Maryland. From the previous survey results, MDOT identified 1-4 focus outreach areas in each of Maryland's five regions (Eastern, Western, Central, Capital, and Southern) that received zero survey responses in 2024 and that are in proximity to urbanized areas. MDOT then shared the survey with stakeholders specific to the focus outreach areas, which included local governments, homeowners associations, chambers of commerce, community-based organizations, and more.

Region	Focus Outreach Area	Zip Code	County	Response Count
Eastern Shore	Perryville	21903	Cecil	2
Eastern Shore	Princess Anne	21853	Somerset	7
Western Maryland	Swanton	21561	Garrett	4
Western Maryland	Frostburg	21532	Allegany	38
Central	Towson	21252	Baltimore	4
Central	Kingsville	21087	Baltimore	1
Central	Marriottsville	21104	Carroll	24
Capital	Mount Rainier	20712	Prince George's	1
Southern	Bryans Road	20616	Charles	0

The ZEVIP survey reached approximately 53% of all ZIP Codes in Maryland and successfully reached most focus areas with the exception of one area.

22. **Age:** The 2024 Census states that 22.0% of Maryland's population is under 18 years old and 17.3% of the state's population is 65 and older.

    1,419 respondents answered this question. 1,256 respondents (88.5%) were over 35 years old. There was low representation from the under-35 demographic with no responses from individuals younger than 18 years old.

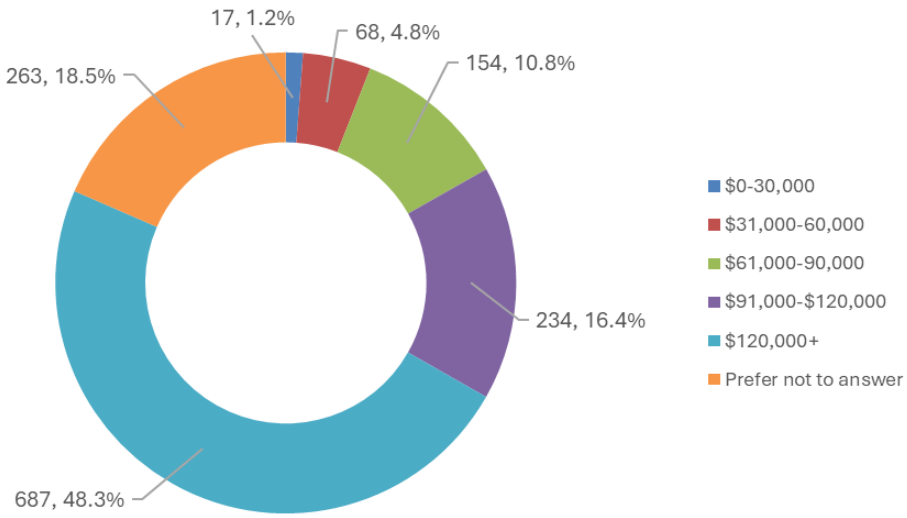


23. **Race/Ethnicity:** The 2024 Census states that 57.2% of Maryland's residents are "White alone" and 31.6% of the population is "Black alone." According to the 2024 Census, Maryland's White alone population percentage is lower than that of the United States (75.3%), and Maryland's Black population percentage is higher than that of the United States (13.7%).

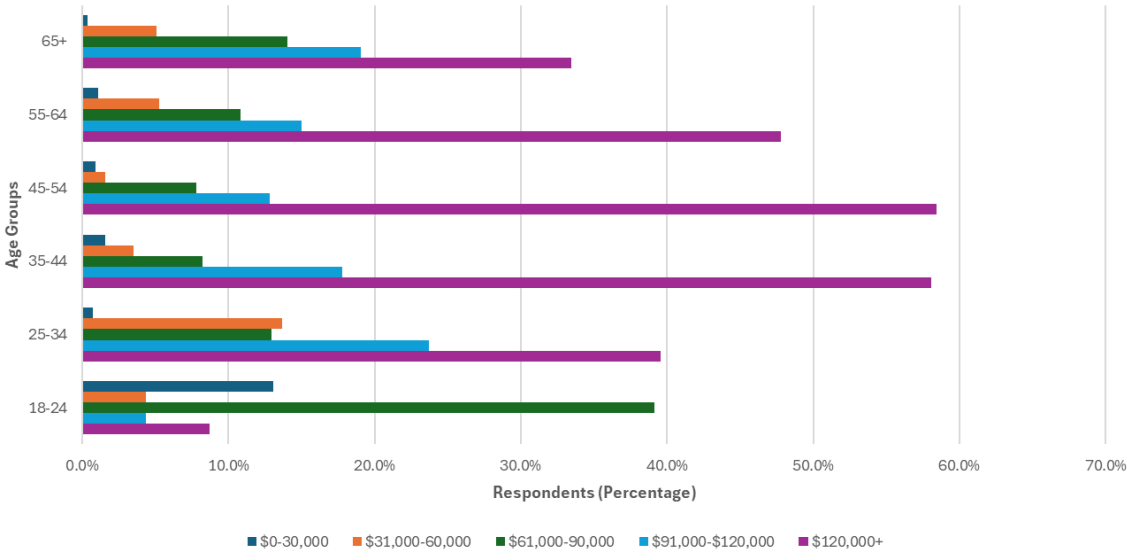
    1,417 respondents answered this question. Most respondents (957 or 67.5%) are White/Caucasian. Compared to Maryland and United States Census data, this survey shows greater representation of different racial and ethnic groups compared to the 2024 NEVI survey, which is an improvement in data collection inclusivity.

24. **Housing:** Most respondents live in single-family detached housing (64.6% or 918). Survey respondents who own an EV for personal use reported higher rates compared to survey respondents who do not own an EV for personal use.

25. **Income:** The Census states that Maryland's median household income in 2023 dollars is $101,652. In 2023, the median household income in the United States was $78,538 (Census). 1,423 respondents answered this income-related question. Most respondents (687 or 48.3%) earned over $120,000 as their annual household income.



26. **Income/Age:** Respondents' incomes also differed by age. For all age groups, except 18-24, most respondents earned over $120,000. For the 18-24 age group, most respondents earned between $31,000 and $60,000. The percentage of people who earned over $120,000 in each age group also declined as the age groups got younger.



Survey Team

The consultant team, Michael Baker International (MBI) and Assedo Consulting (Assedo) supported MDOT on the creation, distribution, and analysis of the survey. MBI identified and recommended the nine focus outreach areas to improve distribution of the survey. Assedo led the analysis of survey results, in coordination with MDOT and MBI.

Thank You

Thank you to the community members and stakeholders who took the time to provide your valuable feedback to shape the future of EV charging in Maryland.