



**MARYLAND
ZERO EMISSION**
Electric Vehicle Infrastructure Council

2019 Annual Report

December 2019

Chaired and Staffed by the



*Presented to
Governor Lawrence J Hogan, Jr.
and the
Maryland General Assembly*

*Presented by the
Zero Emission Electric Vehicle
Infrastructure Council
(SB 714, Chapter 378, Acts of 2015)*

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Acronyms

The following acronyms are used in this report:

ADA	Americans With Disabilities Act
AFIP	Alternative Fuel Infrastructure Program
BEV	Battery Electric Vehicle
BEVI	Baltimore Electric Vehicle Initiative
CAFE	Corporate Average Fuel Economy Standards
CVF	Clean Vehicles and Fuels Workgroup of the Transportation Climate Initiative
DC	Direct Current
DGS	Maryland Department of General Services
EMT	Environmental Mitigation Trust Fund (VW Settlement)
EV	Electric Vehicle
EVI	Electric Vehicle Institute
EVIC	Electric Vehicle Infrastructure Council (Previous ZEEVIC name)
EVIP	Electric Vehicle Infrastructure Program
EVSE	Electric Vehicle Supply Equipment
FAST	Fixing America’s Surface Transportation Act
FHWA	Federal Highway Administration
GHG	Greenhouse Gas
HOV	High Occupancy Vehicle
kWh	Kilowatt-Hour
MDE	Maryland Department of Environment
MDOT	Maryland Department of Transportation
MEA	Maryland Energy Administration

MOU	Memorandum of Understanding
MDOT MVA	MDOT Motor Vehicle Administration
PEV	Plug-In Electric Vehicle - term used collectively for BEVs and PHEVs
PHEV	Plug-In Hybrid Electric Vehicle
PSC	Public Service Commission
TCI	Transportation Climate Initiative
MDOT TSO	The Secretary's Office of the Maryland Department of Transportation
USGBC	U.S. Green Building Council
VMT	Vehicle Miles Travelled
VW	Volkswagen
ZEEVIC	Zero Emission Electric Vehicle Infrastructure Council (Previously EVIC)
ZEV	Zero Emission Vehicle

A Message from R. Earl Lewis, Jr., ZEEVIC Chair



"Our Council experienced significant change in 2019 as our scope expanded to cover all zero-emission vehicles (ZEVs), and the Council's name became the Zero Emission Electric Vehicle Infrastructure Council (ZEEVIC), to reflect our enhanced duties.

Support and momentum for transportation electrification continued throughout 2019. Robust incentives and the advent of new programs and funding sources, as described in this report, will ensure that Maryland remains at the forefront of ZEV technology and infrastructure deployment.

Maryland continues to be recognized as a regional and national leader in planning for our transportation future. In 2019, the Maryland Department of Transportation (MDOT) and ZEEVIC were honored by the Greater Washington Region Clean Cities Coalition (GWRCCC) with a Visionary Award. The award was presented in recognition of our steadfast efforts to remove barriers to the early adoption of zero emission and electric vehicles. The GWRCCC celebrated the results we have achieved through our high level of commitment, leadership, and innovation.

Finally, I would like express my sincere gratitude for the continued efforts of ZEEVIC and the dedication of our members, their organizations, and the members of the public who take time out of their busy days to share their experiences with us and help us proactively work toward solutions. It is this collaboration that keeps Maryland on the leading edge. We continue to invite anyone to reach out to learn more about ZEEVIC and participate in our work."

Introduction

This document fulfills the requirement to submit an annual report of the Maryland Zero Emission Electric Vehicle Infrastructure Council's (ZEEVIC) work and recommendations to the Governor and General Assembly under the Maryland Electric Vehicle Infrastructure Council Act.

Notable Achievements

Since 2011, the Electric Vehicle Infrastructure Council (EVIC) has worked to remove barriers to Plug-in Electric Vehicle (PEV) usage in Maryland through the development of infrastructure action plans, permitting standards, and state incentives for the purchase of PEVs and Electric Vehicle Supply Equipment (EVSE). In July 2019, the membership, responsibilities, and requirements of EVIC were expanded to include zero emission vehicles (ZEVs) and fuel cell electric vehicles (FCEVs) and the council was renamed ZEEVIC. ZEEVIC and its participants worked on several initiatives to advance these interests. Notable 2019 achievements included:

- The Maryland Department of Transportation (MDOT) designed and launched a new [ZEEVIC Website](#) with an interactive Story Map that includes outreach locations, density of EVs by zip code, EVSE locations, and Alternative Fuel Corridors.
- MDOT, in consultation with ZEEVIC, refurbished the [MarylandEV.Org Website](#). The website has a new design, updated information, and acts as a hub for EV information in Maryland.
- The benefits of EV ownership, and the incentives available for the purchase of EVs and installation of EVSE, were shared with 3,100 Marylanders at seven events across five counties to increase awareness through an outreach effort focused on public education.
- In March 2019, the Federal Highway Administration (FHWA) designated I-97, MD 32, MD 100 as Corridor-Ready Electric Vehicle Alternative Fuel Corridors (EV-AFCs). I-795, US 13, MD 4, MD 528 were designated as a Corridor-Pending EV-AFCs. US 1, MD 140, MD 5/MD 235 had portions of the corridor designated as both Corridor-Ready and Corridor-Pending EV-AFCs.
- In August 2019, [MDOT and ZEEVIC were honored by the Greater Washington Region Clean Cities Coalition \(GWRCCC\) with a Visionary Award](#). The award was presented in recognition of our steadfast efforts to remove barriers to the early adoption of zero emission and electric vehicles.
- On September 26, 2019 the first gas station to be converted exclusively to EV charging opened in Takoma Park. The station received funding from MEA and the Electric Vehicle Institute to install 4 DCFCs.

Background on Maryland's Zero Emission Electric Vehicle Infrastructure Council (ZEEVIC)

ZEEVIC Composition and Support

ZEEVIC includes a diverse representation of interests, perspectives, and responsibilities, including utilities, State agencies, private enterprise, non-profit ZEV advocates, and public representation. The ZEEVIC membership list is provided in [Appendix A](#). All ZEEVIC meetings are open to the public and time is allotted at every meeting for the ZEEVIC to hear public comments.

ZEEVIC has three working groups that provide analysis and recommendations to ZEEVIC for consideration. The working groups are:

- Communications
- Legislative
- State Agency

ZEEVIC Formation and Requirements

ZEEVIC was originally established as the EVIC in 2011. In 2015 the Maryland legislature extended EVIC through 2020 and established requirements for the EVIC. The Clean Cars Act of 2019 expanded the scope of EVIC again to include fuel cell electric vehicles (FCEVs), powered by hydrogen. FCEVs were incorporated into all the EVIC requirements, and the EVIC name was changed to the ZEEVIC. Table 1 illustrates the updated requirements and the status of ZEEVIC's legislative requirements as of December 2019.

Table 1: ZEEVIC Legislative Requirements & Status

	Requirement	Status
1	Develop an action plan to facilitate the successful integration of Plug-in Electric Vehicles (PEVs) and Fuel Cell Electric Vehicles (FCEVs) into the State's transportation network.	The Action Plan was delivered in 2012 and the 32 recommendations were revisited this year (See Appendix B)
2	Assist in developing and coordinating statewide standards for streamlined permitting and installation of residential and commercial PEV charging stations and hydrogen refueling supply equipment.	Addressed through Legislative Working Group and ZEEVIC recommendations.
3	Develop a recommendation for a statewide charging and hydrogen refueling infrastructure plan, including placement opportunities for public charging stations.	Addressed through the State Agency Working Group and currently being developed in conjunction with Volkswagen Consent Decree (VW) efforts.
4	Increase consumer awareness and demand for PEVs and FCEVs through public outreach.	Addressed through the Communications and State Agency Working Groups.
5	Make recommendations regarding monetary and nonmonetary incentives to support PEV and FCEV ownership and maximize private sector investment in ZEVs.	Addressed through Legislative Working Group and ZEEVIC recommendations.
6	Develop targeted policies to support fleet purchases of PEVs and FCEVs.	Addressed through the State Agency Working Group.
7	Develop charging solutions for existing and future multi-dwelling units.	Addressed through Legislative Working Group and ZEEVIC recommendations. Specifically targeted by PC44.
8	Develop model procurement practices for light-duty vehicles.	Addressed through the State Agency Working Group.
9	Encourage local and regional efforts to promote the use of electric vehicles and attract federal funding for State and local PEV and FCEV programs.	Currently being addressed in conjunction with VW efforts and work at Metropolitan Planning Organizations (MPOs).
10	Recommend policies that support PEV charging and hydrogen refueling from clean energy sources.	Addressed through the State Agency Working Group. MDOT leading by example through solar program.
11	Recommend a method of displaying pricing information at public charging and hydrogen refueling stations.	To be addressed by Working Groups.
12	Establish performance measures for meeting PEV and FCEV-related employment, infrastructure, and regulatory goals.	To be addressed by Working Groups.
13	Pursue other goals and objectives that promote the utilization of PEVs and FCEVs in the State.	To be addressed by Working Groups.

Status of ZEEVIC's 2012 Recommendations

In addition to the requirements outlined in the previous section, ZEEVIC was also responsible for developing an initial report in 2012 comprised a Statewide Charging Infrastructure Plan, an Action Plan, and 32 recommendations intended to promote widespread PEV adoption. In March 2016, based on advice from the State Agency Working Group, each recommendation from the Council's 2012 report was assigned to a working group for further investigation and comment. The working groups met in the intervening months to address the matters assigned to them. [Appendix B](#) includes an annual status update on each recommendation.

Market Status

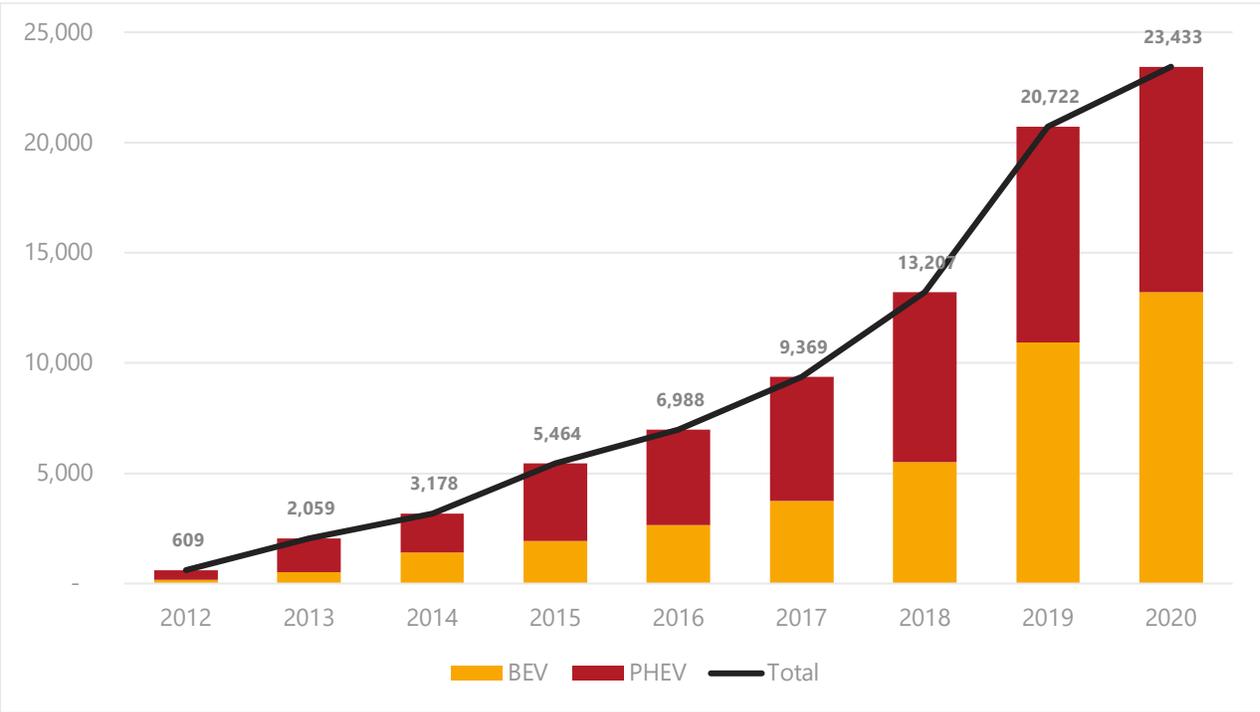
Plug-In Electric Vehicles

Throughout 2019, we continued to experience significant PEV ownership growth in Maryland. Lower vehicle costs, state and federal incentives, and increasing availability of vehicles and charging infrastructure has led to greater numbers of PEVs being registered across the state.

In 2012, there were two Battery Electric Vehicles (BEV) models available in Maryland, (the Nissan Leaf and the Chevrolet Volt). Today, there are over 15 BEV models available for purchase in Maryland in addition to over 30 plug-in hybrid vehicles (PHEVs). [Appendix C](#) includes a list of all PEVs currently available for purchase in Maryland.

As illustrated in Figure 1: **Total PEVs Registered in Maryland (Fiscal Years 2012-2020*)**, the total number of PEVs registered in Maryland increased from 609 in fiscal year (FY) 2012 to 23,433 in December 2019. As of December 31, 2019, 56% (13,198) of the vehicles registered were BEVs and 44% (10,235) were PHEVs.

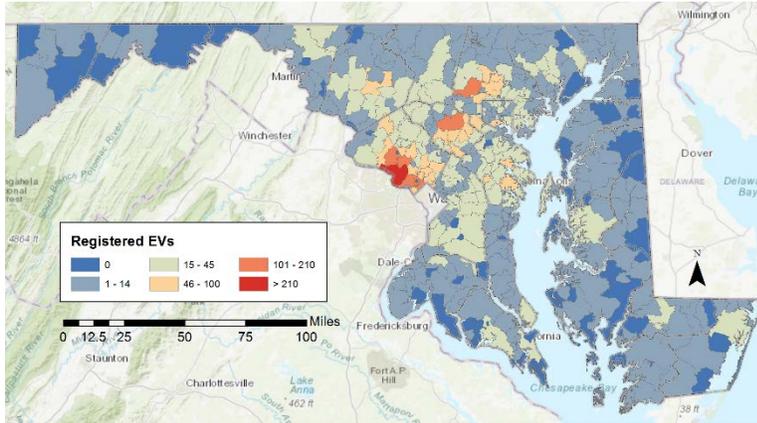
Figure 1: Total PEVs Registered in Maryland (Fiscal Years 2012-2020*)



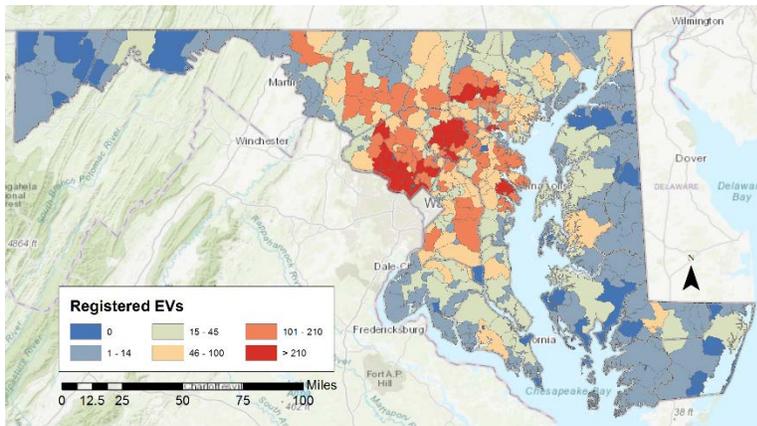
*FY 2020 numbers are as of December 31, 2019.

EV Trends

The MDOT Motor Vehicle Administration (MDOT MVA) tracks zip code information for all registered EVs in the State. The information identifies the total number of EVs registered in each of Maryland's 604 zip codes.



In June 2016, approximately 1/6th of all Maryland zip codes did not have an EV registered. Western Maryland and the Eastern Shore of Maryland were home to the majority of these 101 zip codes without a registered EV. EV registration was primarily concentrated in counties along the Baltimore-Washington Corridor. The corridor was home to the only 8 zip codes in Maryland that had more than 100 registered EVs. Only one of those 8 had more than 210 EVs registered. Six of the 8 zip codes were located in Montgomery County while the remaining 2 zip codes were located in Howard and Baltimore Counties.



As of December 2019, the number of Maryland Zip Codes without a registered EV decreased by almost half to 56 zip codes. While Western Maryland and the Eastern Shore of Maryland are still home to the majority of zip codes without a registered EV, EV registration is no longer concentrated in the counties along the Baltimore-Washington Corridor. Zip codes located along the

AFCs, including I-270, I-70, I-83, US 50, and US 301, have seen an increase in the number of EVs registered. Nine Counties, including Montgomery, Anne Arundel, Howard, Baltimore, Baltimore City, Frederick, Prince George's, Carroll, and Washington, are home to 73 zip codes with more than 100 registered EVs. Of those 73 zip codes, 23 zip codes located in Montgomery, Howard, Baltimore, Anne Arundel, and Baltimore City have more than 210 EVs registered.

PEV Charging Infrastructure

2019 was another year of growth in the availability of public charging infrastructure in Maryland. PC44 has spurred installations of residential, multi-family, and public charging, with more anticipated in 2020.

A goal of the 2012 Infrastructure Plan was to facilitate charging both at home and the workplace to ensure EV drivers would have the opportunity to recharge. The establishment of adequate charging infrastructure is necessary to alleviate "range anxiety." The concerns about short battery life and long periods required for charging are quickly changing. There are three types of chargers that can be installed: Level 1, Level 2, and DC Fast charging. The [U.S. Department of Energy's Station Locator](#) is an on-line tool that allows users to find charging stations. The speed of charging and the power required varies by charger type and is illustrated in Table 2.

Table 2: EVSE Power Requirements, Charging Speed, and Public Availability in Maryland

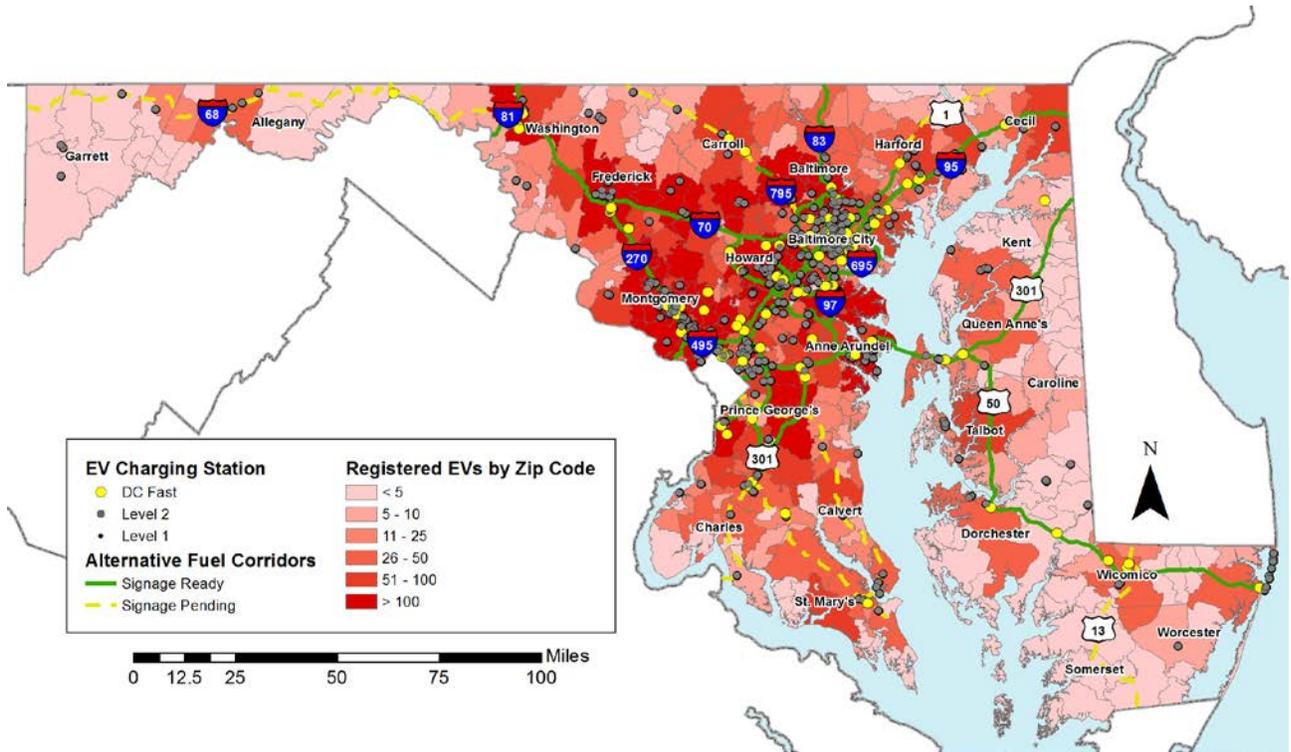
EV Charger Type	Speed	Power Required	Total in MD ¹	% of Total
Level 1	11-20 hours for Full Charge	120 volts	38	2%
Level 2	3-8 hours for Full Charge	240 volts	1,472	80%
DC Fast Charge	30 minutes for 80% Charge	208-600 volts	330	18%

Figure 2 illustrates the locations of the over 630 EV charging stations and over 1,800 public outlets available in Maryland as of December 2019. Each location has one or more chargers, and each charger has one or more outlets.

Notably, the Electrify America stations in Maryland were installed at the Columbia Walmart in November 2019 and is the largest Electrify America site in Maryland. This site has a bank of 10 chargers are now available and is one of 14 nationwide to have 10 chargers.

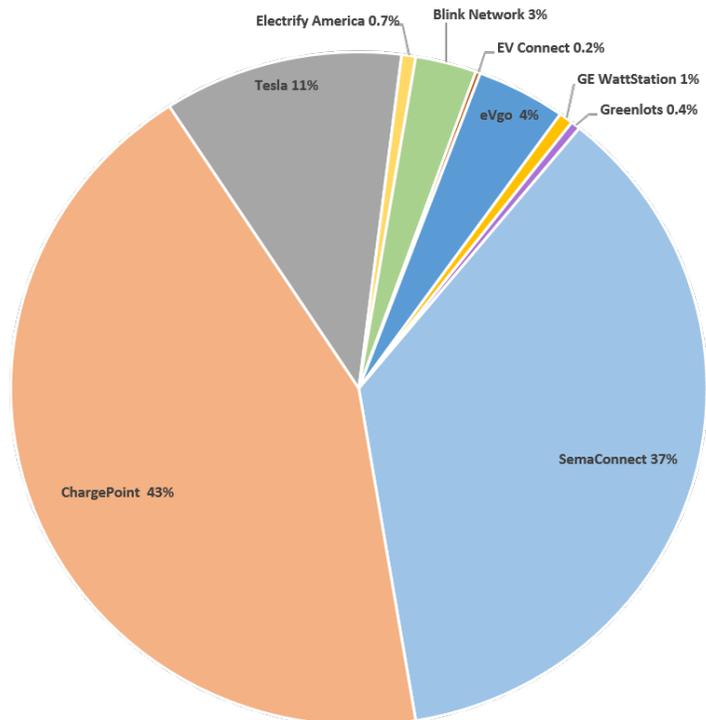
¹ <http://www.afdc.energy.gov/locator/stations/>

Figure 2: Existing, Publicly Available EV Charging Stations & EV Charging Corridors



There are now nearly 200 outlets for charging vehicles installed at state owned or leased facilities. These charging stations are located at facilities owned or leased by MDOT, Maryland Department of Environment (MDE), Maryland Energy Administration (MEA), Maryland Department of General Services (DGS), and the University of Maryland System.

Figure 3: Maryland's Charging Network



Charging Networks

As illustrated in Figure 3, there are several charging networks now operating in Maryland. Though offerings vary among EVSE providers, charging networks may include advanced functionalities for site hosts, such as pricing and access controls, data reporting, and charger availability notifications. The two largest networks

in the State are ChargePoint and SemaConnect and these two companies are currently responsible for approximately 80% of the available chargers statewide.

Fuel Cell Electric Vehicles (FCEVs) and Hydrogen Fueling

Currently there are no FCEVs or hydrogen fueling stations in Maryland. There are two light-duty FCEV models currently available for sale in the United States, the Honda Clarity and the Toyota Mirai, although they are rarely available outside of California.

Most public hydrogen fueling stations are currently located in California as well, although there are planned public stations in New England. Private fleet stations are planned or currently installed in Washington, D.C., Delaware, Ohio, New York, Massachusetts, Rhode Island, and South Carolina.

ZEEVIC's 2019 Activities

ZEEVIC Meeting Agendas

The Council held six meetings in 2019. Meeting dates and topics that were discussed are listed in Table 3. ZEEVIC typically meets every other month at MDOT's Secretary's Office (TSO) and the working groups meet in the intervening months. All Council meetings are open to the public and the agendas are posted on the [ZEEVIC website](#) in advance of the meetings.

ZEEVIC has three informal working groups: Legislative, Communications, and State Agencies. Working group meetings are generally held on alternating months from full Council meetings. The working groups tackle specific issues and bring their research and recommendations to the full council.

Table 3: 2019 ZEEVIC Meeting Topics

Date	Meeting Topics
01/30/2019	Annual Priorities, Legislative Update (EV Tax Credit Bills), PSC PC44 Update, Legislative Update – HOA Bill and Parking Bill, VW Mitigation Workplan, Maryland FHWA Corridor Nominations, MDP 'A Better Maryland' Plan, MEA EVSE Incentives
03/29/2019	Legislative Update (Clean Cars Act of 2019, Right to Charge, and School Bus Electrification), MarylandEV.Org Outreach, PSC PC44 Update, Maryland FHWA Corridor Nominations, MDOT MetroQuest EVSE Siting Tool, MDOT Solar Canopy Charging, MDOT Connected Autonomous Vehicles Working Group, MEA EVSE Incentives, Annual Priorities
05/23/2019	Transition to ZEEVIC, Legislative Update (Clean Cars Act of 2019 and Right to Charge), MarylandEV.Org Outreach, PSC PC44 Update, VW Mitigation Workplan, Announcement of New Maryland FHWA Corridors, MDOT MetroQuest EVSE Siting Tool, MEA EVSE Incentives
07/18/2019	First Meeting as ZEEVIC, Legislative Update Planning, Howard County HOA EVSE Installations, MarylandEV.Org Outreach, Summer Transportation Institute at Morgan State University, MDOT MetroQuest EVSE Siting Tool, MDOT Signage Plan, MEA EVSE Incentives, VW Mitigation Workplan, BGE and PHI EVsmart Marketing, PSC PC44 Update
09/27/2019	GWRCCC's Maryland Visionary Award, Legislative Update (Re-authorization of ZEEVIC, Education and Outreach to Committees), MarylandEV.Org Outreach, National Drive Electric Week, MDOT MetroQuest EVSE Siting Tool, MDOT Signage Plan, FHWA AFC Corridor Solicitation, MEA EVSE Incentives, Opening of first All-electric charging station, Morgan State University Research (autonomous EVs), VW Settlement, MDE EV Infrastructure Development, Annual Report

11/21/2019

National Governor's Association's Grid Modernization Retreat, Transportation Climate Initiative's (TCI) Memorandum of Understanding (MOU), Baltimore Auto Show, Police Vehicle Electrification Efforts (MotorWeek), New ZEEVIC Members, Legislative Update (Advocacy and Education Outreach), Legislative Session (EV Incentives Bill), Dealership Outreach, 2020 Maryland Legislative Technology Fair (Intelligent Transportation Systems), MarylandEV.Org Outreach, MDOT MetroQuest Update, MDOT Signage Plan, EVSE Rebate, Alternative Fuel Infrastructure Program (AFIP), Greenhouse Gas Reduction Act Draft Plan, BGE, PHI, & SMECO Updates, Annual Report, Maryland EV Trends

2018-19 ZEEVIC Priorities

In January 2019, the Council established a set of four priorities. Below are those priorities, and updates on their progress.

1. Maximizing the use of grant and alternative funding opportunities for EV / EVSE in MD.
2. Developing an approach to address the Right to Charge and EV Parking/Anti-Icing.
3. Ensuring EV readiness through strategic infrastructure planning that focuses on corridors, workplaces, and communities.
4. Continuing education and outreach coordination with a focus on diversity and equity.

Outreach Efforts

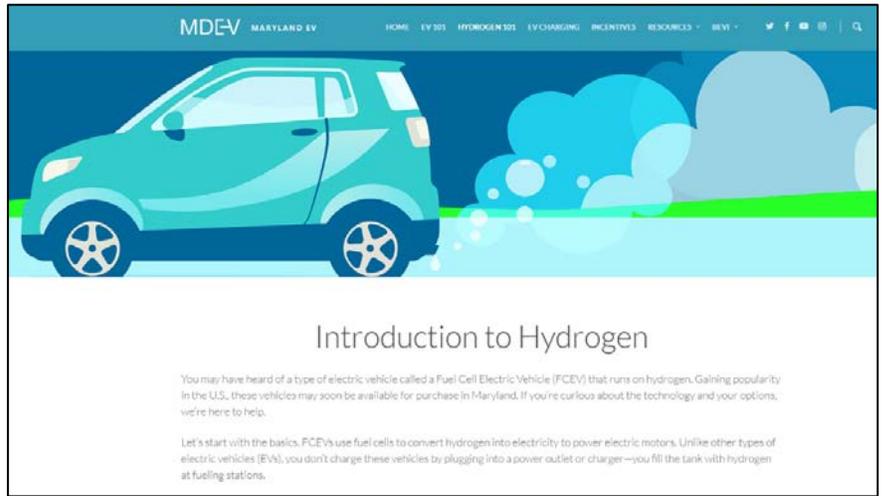
MEA, MDE, and MDOT continued their coordination with ZEEVIC to increase EV awareness through an outreach effort focused on workplace charging, vehicle dealership, and public education. 2019 highlights include:

- Creation of Hydrogen and FCEV talking points and basic education to address questions at outreach events.
- Introduction of MarylandEV.org materials in Spanish and Korean, and the first Maryland EV outreach efforts in those languages. Spanish language materials particularly were very well received, and recipients indicated they have a true need for further EV materials in Spanish.

- Finalizing major updates to the MarylandEV.org website, including a new Hydrogen 101 page.

The website received over 13,000 page views in 2019.

- Deployment of a social media presence and campaign on Facebook and Instagram to drive traffic to MarylandEV.org. To track social media content across ZEEVIC members, the hashtag #MarylandEV is being used in posts. The MarylandEV is also on



Twitter with the handle @MarylandEV. The social media referrals became the main source of traffic to the MarylandEV.org website. The number of MarylandEV Facebook page followers doubled in 2019, with some promoted Facebook posts reaching over 30,000 Marylanders.

- In 2019, MDOT and partner organizations targeted attending culturally diverse events, to provide EV information to new audiences. MDOT staffed informational booths at seven events and was able to directly interact with 3,100 individuals (touchpoints) in three languages (English, Spanish, and Korean). As illustrated in Table 4, in person, public outreach remains a cornerstone of the Maryland ZEV communications and education strategy.

Table 4: 2019 Public Outreach

Date	Outreach Event	Individuals/ Touchpoints	Outreach Languages
07/20/2019	World Heritage Festival	141	English
08/05/2019	Festival Latino de Maryland	251	English, Spanish
08/11/2019	Latin Heritage Festival	754	English, Spanish
09/07/2019	Caribbean Food and Wine Festival	351	English
09/15/2019	Hagerstown Hispanic 13 th Annual Festival	375	English, Spanish
09/21/2019	42 nd Annual Korean Festival	1,027	English, Korean
10/20/2019	Howard County Diwali Festival	201	English

The World Heritage Festival in West Shore Park, Baltimore, Maryland was the first public outreach event held by MDOT. Upon hearing learning about EV benefits, many attendees that passed by the MDEV booth stayed to discuss the finer details of EVSE installation, tax incentives, and scenarios where owning an EV could improve their lifestyle. Attendee's top concerns about EVs were purchase price, vehicle range, and uncertainty about the availability of charging infrastructure. Many attendees were curious about how to apply for charging rebates and how long the rebates would be available.



Festival Latino de Maryland was held at the Maryland State Fairgrounds. MDEV had brochures available in English and Spanish, and the bilingual staff in attendance proved to be invaluable in communicating finer pieces of information with some attendees. Some visitors seemed skeptical of the rebate program and were not positive the Federal and State government were really offering benefits and that the consumers would get their money back. Most visitors did not know about the benefits of EVs, were unsure where to purchase EVs, and wanted to know when charging infrastructure would be expanding.

The Latin Heritage Festival was held in Silver Spring, Maryland at Veteran's Plaza. MDEV had brochures available in English and Spanish and had bilingual staff present. Many visitors stated that they had no idea about the incentives and would take advantage of them when they purchase a car. Many visitors were concerned about the availability of charging infrastructure and curious what type of energy sources (e.g., renewable or fossil fuels) electric companies were using to generate enough electricity to keep up with growing demand. Visitors were happy to hear about incentives but unsure how to access them, and one visitor worked at a dealership that sells EVs and had no idea the incentives existed.



The Caribbean Food and Wine Festival took place at the Howard County Fairgrounds in West Friendship, Maryland. Many visitors, including some recent EV buyers, were unaware of incentive programs for EV and EVSE purchases but happy to learn that these programs exist. Visitors expressed concerns about vehicle range, asked for rebate program details, and informed MDEV about their experiences with the rebate program. Some visitors refused

to stop at the stand because they believed EVs are too complicated.

The Hagerstown Hispanic 13th Annual Festival took place at the Hagerstown Fairgrounds. The consensus from the public was that EVs are a good thing, but many visitors did not know that EVs could be purchased at a regular car dealership and that dealerships had little to no knowledge about EVs. Many visitors were happy to learn there are incentive programs available and more EVs available than Tesla. Attendees asked why dealerships do not have much information on EVs and had many concerns about range anxiety and infrastructure availability. Attendees knew about federal incentives for EVs but were unaware of state incentives. Similarly, some businesses were interested in learning more about workplace charging installations and incentives.



The 42nd Annual Korean Festival was held at the Howard County Fairgrounds. MDEV had staff in attendance that were fluent in English and Korean. Many visitors were unaware the Federal Government was still offering EV incentives and only some were aware of State incentives. Visitors were curious about the details of the EV rebate programs, and recent car buyers expressed that they wished they had known about the incentives before buying a car.

Howard County Diwali Mela was held at the Meadowbrook Athletic club in Ellicott City. The attendees at this event seemed more aware of EV rebate programs than other event attendees and many knew about the program in detail. Attendees were worried that the lack of program funding would prevent them from receiving any program benefits. Many people knew that the program funds had run out and had questions about the difference between the EV and EVSE incentives. Similarly, some attendees mentioned they never received an HOV sticker for their EV, would like more EV charging stations, and were curious about business incentives.



National Drive Electric Week

A number of [National Drive Electric Week](#) events were held across Maryland in September. The public attended events in Annapolis, Baltimore, Clarksville, Frederick, Hyattsville, and Poolesville to learn about EV benefits. The events included vehicle displays, ride and drives, educational seminars, and more.



Ancillary ZEEVIC Member Efforts

PSC Public Conference 44

The PC44 Electric Vehicle Work Group efforts began in early 2018 with the goal of implementing a coordinated statewide electric vehicle portfolio to address the barriers to the EV deployment, increase the efficiency and reliability of the electric distribution system, and lower electricity use at times of high demand. Order No. 88997 was issued on January 14, 2019, allowing BGE, PHI, and Potomac Edison to create residential, multifamily, and public charging programs for five-years.

Of note in the Order, “the Commission finds that continued coordination among EVIC, these state agencies, and the Utilities presents the best pathway to rapidly and equitably expanding EV infrastructure in Maryland . . . Rather than duplicate the efforts of ZEEVIC and other state agencies, the Commission directs the Utilities to work with these resources to develop programs aimed at advancing equitable access to transportation electrification.”²

BGE and PHI

Discussion of the utility actions under Order No. 88997 has been on the agenda of every 2019 ZEEVIC meeting, and the utilities have been engaging members of the working groups, providing event and outreach coordination. The [BGE](#), [Pepco](#), and [Delmarva Power](#) launched their incentive programs on July 1, accepting applications for residential and multi-family chargers. They additionally began accepting requests from potential site-hosts for their utility-owned public charging program.

To advertise the launch of these incentives, BGE and PHI created a new, joint EVsmart campaign which links to the MarylandEV.org website.

Exelon EV Focus Group Research

BGE and PHI conducted exploratory research by engaging focus groups consisting of EV owners and prospective EV owners to better understand consumer relationships with EVs. Their main objectives were to understand perceived benefits and tradeoffs of EV ownership, reveal “pain points” related to buying and charging EVs, investigate consumer responses to EV incentives, and provide direction for marketing concepts in promoting EV-centered programs. The exploratory research yielded six key insights of consumer relationships with EVs:

² Page 69

1. Financial savings are the key driver behind an EV purchase, including tax incentives, fuel savings, and lower maintenance costs. Potential owners are less aware of the specific financial details and many are interested in an online cost comparison tool.
2. The primary barriers to EV adoption are range anxiety, followed by upfront costs, battery replacement, and battery functionality. A lack of information heightens concerns among EV potential owners.
3. There is an opportunity to educate customers on the benefits and costs of EV ownership when customers are considering a new car. Providing information to dealerships can help them supplement their salesperson’s knowledge and educate prospective owners.
4. BGE’s EV Program rebate along with faster charging is motivating to EV owners, but there is a lack of knowledge related to types and installation. Limiting the rebate to 1,000 customers mutes the appeal.
5. BGE/PHI is a credible resource for a public charging network. Customers feel utilities should be promoting EV adoption and providing information about chargers.
6. Convenience, savings and home charging are the messaging themes that best resonate with the target audience.

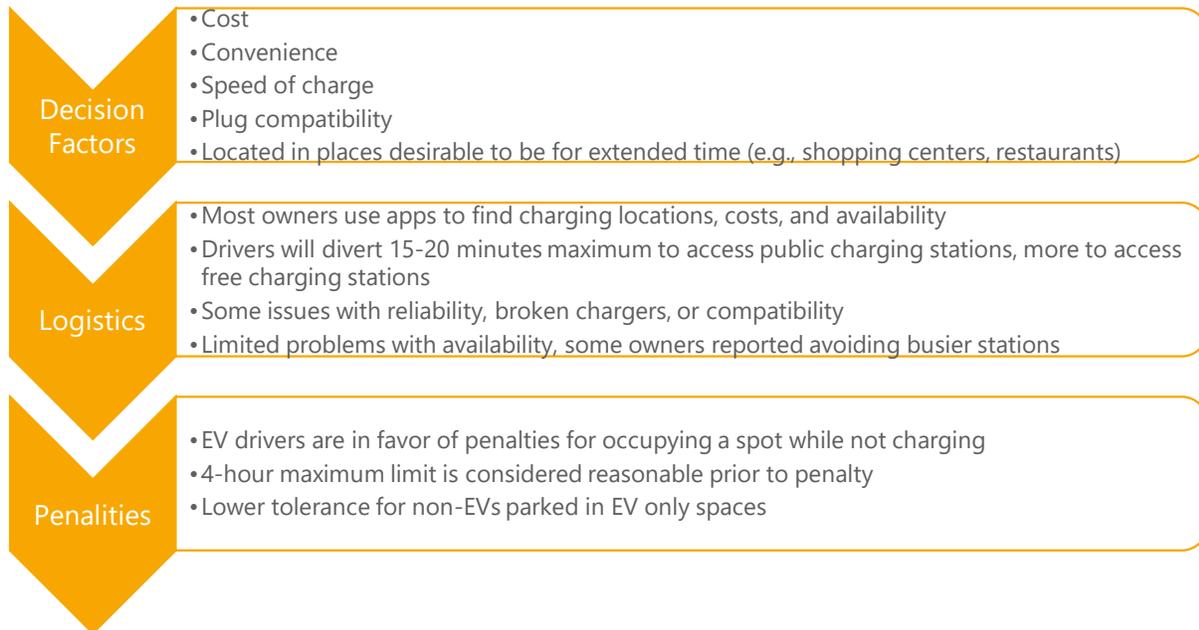
The focus groups also identified key purchasing factors. The factors that most likely influence the purchase of an EV are tax credits, promotions and incentives, total cost of ownership, range on a single charge, and acceleration and performance. BGE and PHI also identified positive and negative perceptions of EV ownership. BGE and PHI note that negative perceptions of EVs are the same for both current EV owners and prospective EV owners, but concerns are elevated for prospective owners. These perceptions are summarized in the following table:

Table 5. Focus Group Perceptions of EV Ownership

Positive Perceptions	Negative Perceptions
Financial savings	Range anxiety
Low maintenance	Battery life in different temperatures
Environmentally friendly	Purchase costs and battery replacements
Feelings of technological advancement	Public charging stations
Workplace charging	Variety of charging standards
Positive emotional response	Inconvenient

BGE and PHI note that the perceptions present among prospective EV owners demonstrates a clear disparity in EV knowledge between owners and prospective owners. Prospective owners are interested in online tools to understand and compare costs of ownership, lack understanding of battery charging, have a greater concern about charging network accessibility, have limited visibility in day-to-day issues (e.g., cold weather impacts, charging time), and lack awareness of financial incentives. Differences between consumer types need to be taken into consideration when designing messaging for those who have not yet purchased an EV.

Current EV owners report primarily charging at home but agree there is a need for more public charging stations. BGE and PHI identified decision factors, logistics, and penalties that EV owners are comfortable with using and being implemented. Figure X below summarizes EV owners' opinions related to public charging.



The focus groups also contributed to the development of marketing concepts and themes. Marketing related to family does not resonate well in communicating benefits of EV ownership and was received negatively. Themes related to the future, high-tech, and innovation generated mixed responses because they do not offer a real statement about benefits. Marketing focused on convenience and savings resonates the best with consumers and elicited many positive reactions in the focus groups. Convenience and savings convey an omnipresence to EVs that make them more approachable. However, the focus groups emphasized that they would like to see more marketing that includes concrete data and charts comparing mileage and annual fuel versus charging costs.

Potomac Edison

Potomac Edison will be launching its pilot program in December 2019 and will then begin public outreach to announce its public charging station efforts as well as rebates and off-peak charging incentives for residential customers and rebates for Multi-Unit Dwelling property owners.

SMECO

Additionally, using the model set forth for other utilities by PC44, SMECO submitted a proposal to create a public charging program in Southern Maryland and received PSC approval on July 31, 2019. The SMECO program will model the public program by installing SMECO-owned chargers over five years on public property and conducting customer EV outreach and education.

Maryland Clean Cars Program and the ZEV Memorandum of Understanding

Under federal law, California is permitted to promulgate vehicle emission standards that are more stringent than the national standards. Other states have the option to choose whether to follow either the national or California standards. In 2007, Maryland elected to follow the California standards and enacted the Clean Cars Program via legislation which officially adopted California's vehicle emissions standards. The program went into effect for all cars beginning with model year 2011.

On October 24, 2013, Maryland joined seven other states (California, Connecticut, Massachusetts, New York, Oregon, Rhode Island, and Vermont) and signed a memorandum of understanding (MOU) committing to coordinated action to ensure the successful implementation of their state ZEV programs. As part of this effort, a Multi-State ZEV Action Plan was developed and released in 2014. This plan detailed the various efforts outlined in the ZEV MOU.

To reflect the changes that have occurred since the Action Plan was released in 2014, the ZEV MOU released the 2018-2021 Multi-State ZEV Action Plan.

The clean air association of the northeast states (NESCAUM) released the following description of the 2018-2021 Action Plan:

The Action Plan, which builds on the successes and lessons learned from implementation of an earlier 2014 ZEV Action Plan, presents 80 market-enabling action recommendations for states, automakers, dealers, utilities, charging and fueling companies and other key partners to rapidly accelerate mainstream consumer adoption of ZEVs, including plug-in hybrid, battery electric and hydrogen fuel cell vehicles.

Many of the 2014 Action Plan recommendations have been successfully implemented or are under way. For example, Task Force states have:

- Enacted ZEV purchase and infrastructure incentive programs;
- Launched a first-ever jointly funded state/industry brand-neutral consumer outreach and education campaign;
- Established a state/dealership workgroup to foster collaboration with dealers;
- Opened public utility commission proceedings to consider utility and other transportation electrification programs; and
- Partnered with automakers on a "Collaboration for ZEV Success" to accelerate ZEV adoption.

While many of the recommendations in the 2014 Action Plan remain valid today, the new Action Plan represents a redoubling of state efforts to accelerate electrification of the light-duty vehicle market, and recognition of the important role that public-private partnerships involving the automakers, dealers, utilities, and others play in the effort. Recommendations for states and other key partners in the updated Action Plan are focused on five priority areas:

- Raising consumer awareness and interest in electric vehicle technology;
- Building out a reliable and convenient residential, workplace and public charging/fueling infrastructure network;
- Continuing and improving access to consumer purchase and non-financial incentives;
- Expanding public and private sector fleet adoption; and
- Supporting dealership efforts to increase ZEV sales.

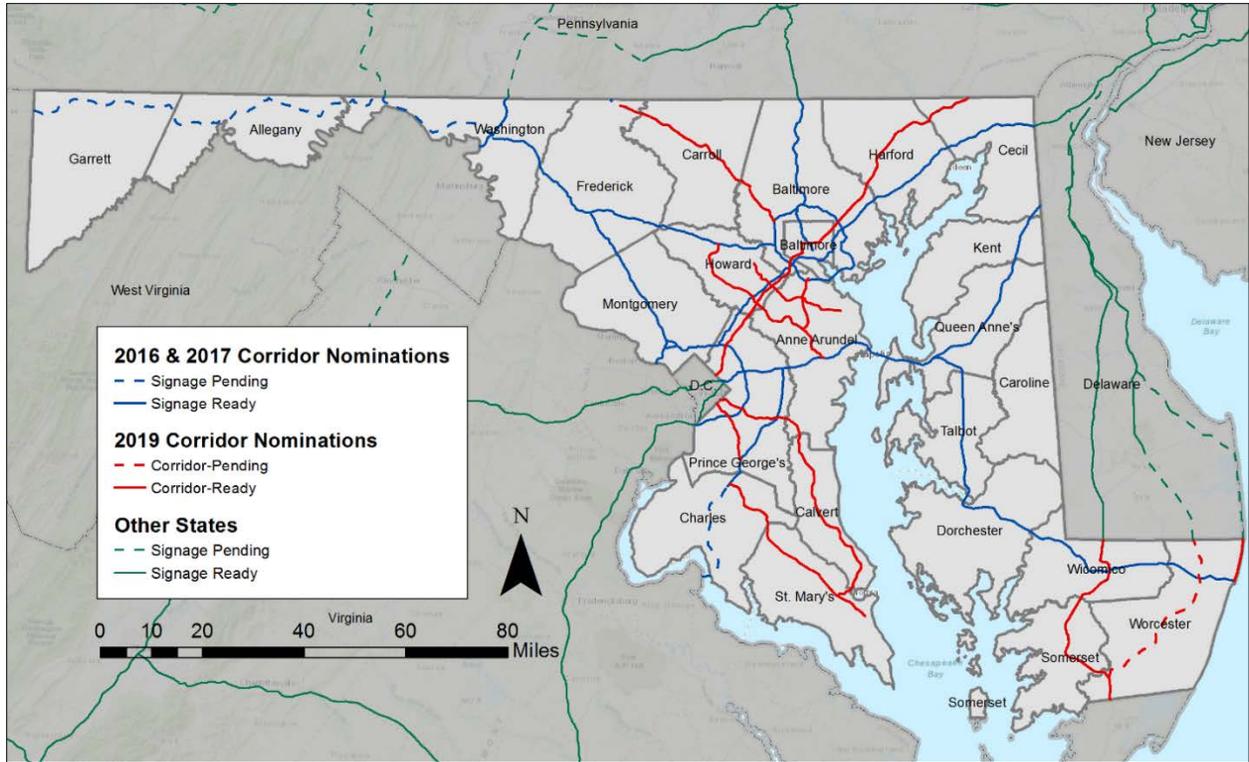
MetroQuest

In October 2019, MDOT, in coordination with ZEEVIC, finalized and launched the Maryland Local Government EV Survey using MetroQuest. The survey, which will remain open until March 31, 2020, will gather input from MPOs, counties, and local municipalities on their experience with EVs, EVSE, and EV Chargers within their region in order to understand the challenges related to installing ZEV infrastructure, their existing knowledge of EVs and EV infrastructure, and any future plans and opportunities in their region. The MPOs, counties, and local municipalities will also be able to identify optimal sites for ZEV infrastructure as well as the locations of any planned stations. MDOT will use the information to fill in current gaps within the existing infrastructure network and support the growth of EV and EV infrastructure in Maryland.

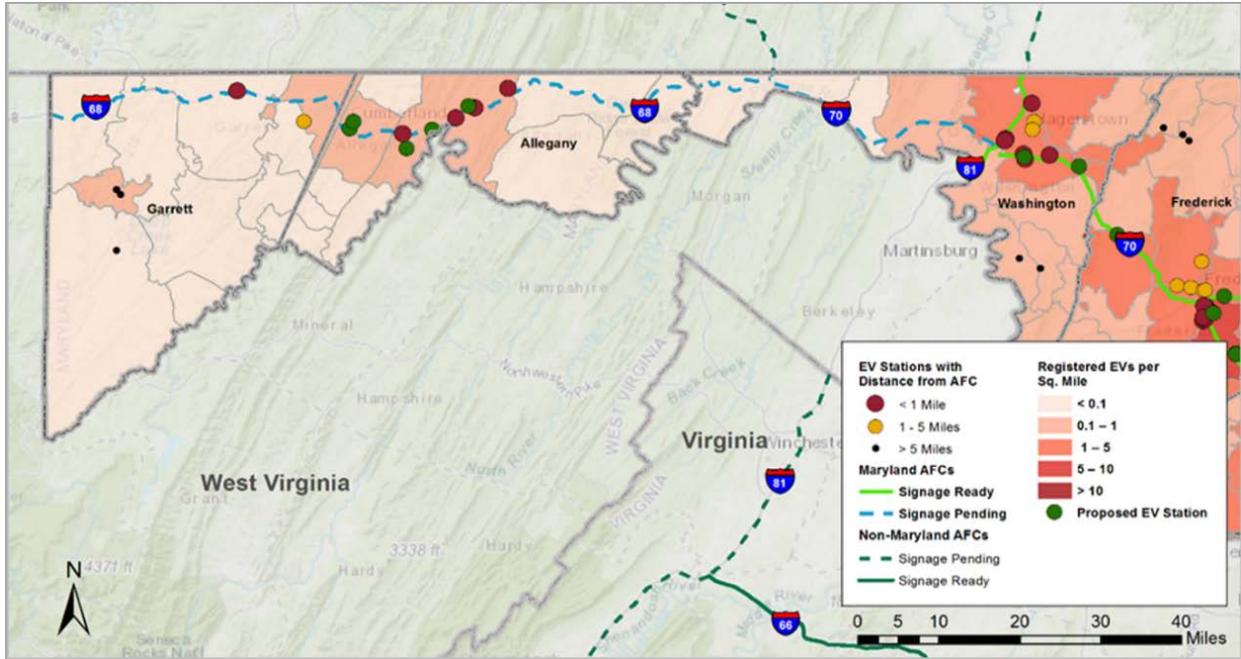


Alternative Fuel Corridors and Signage

In January 2019, the MDOT submitted a nomination to the Federal Highway Administration (FHWA) to designate eleven additional alternative fuel corridors. The nominated corridors included I-97, I-795, US 1, US 13, US 113, MD 140, MD 32, MD 100, MD 4, MD 5/MD 235, and MD 528. The corridors build on the existing network of EV corridors within Maryland and provide links to existing EV corridors within adjacent states as shown below. In August 2019, FHWA accepted MDOT's nomination bringing Maryland's total number of designated AFCs up to 20.



In September 2019, MDOT submitted an application for the I-70/I-68 Corridor in response to FHWA’s Solicitation for AFC Deployment Plans. The proposed I-70/I-68 Corridor serves not only as the main connection to popular destinations in Western Maryland, but is a major gateway to the west, connecting Maryland to neighboring states and as far west as Utah. Currently, the 3 Counties, where the proposed corridor is located, have 25 EV charging stations. This accounts for only 4 percent of all EV charging stations in Maryland. The I-70/I-68 Corridor also contains a number of zip codes with the fewest number of registered EVs. If selected, MDOT would develop a Corridor Deployment Plan which will support in the identification of potential alternative fuel stations along the corridor. By filling in the gaps within the alternative fuel network, Maryland will strengthen their current network of AFCs, will promote ZEV growth in an area with a low concentration of ZEVs, and will ensure that most Interstates in Maryland have a designation of “Corridor-Ready”.



MDOT continues to develop the Maryland Electric Vehicle Service Equipment Signage Plan. The plan will be one of the first EV signage plans completed in the country and will provide guidance on the acquisition, installation, placement, and maintenance of EV signs. The plan will also identify stations that currently have signage, stations without signage as well outline MDOT’s prioritization process for the installation of signage in the future.

Maryland Infrastructure Promotion

In accordance with the Council’s Statewide Infrastructure Plan recommendations, MEA administers several transportation incentive programs designed to accelerate the adoption of PEVs and the installation of EVSE.

Alternative Fuel Infrastructure Program

The [Alternative Fuel Infrastructure Program](#) (AFIP) was created to increase the availability of alternative refueling infrastructure, including EVSE and hydrogen. The DC Fast Charging stations require a minimum 50% match and are eligible for a maximum award of \$55,000 per station. Hydrogen fueling equipment also requires a 50% match and are eligible for a maximum award of \$300,000 per station. In FY 2018, MEA awarded approximately \$786,000 for 16 fast chargers at 7 locations. Charger installations took place throughout 2019 and will continue into 2020. Once completed, these chargers have the potential to displace over 845,000 gallons of petroleum annually. The FY 2020 AFIP application opened July 1, 2019 and closed December 31, 2019.

MEA and Maryland Clean Cities helped support three EV projects responding to DOE Funding Opportunity Announcements (FOA). All three EV projects were awarded funding. The projects being

supported are Multi-Unit Dwelling Plug-in Electric Vehicle Charging Innovation Pilots led by Center for Sustainable Energy, an EV data collection project led by Energetics, and a Mid-Atlantic Electric School Bus Experience Project led by Virginia Clean Cities.

MEA also hosted a [hydrogen workshop](#) on June 20, 2019 at Montgomery Park to provide education on the hydrogen fuel cell vehicle industry and its applications. The workshop covered a variety of topics including hydrogen fuel cell market growth, resiliency, environmental benefits, infrastructure design and availability, and safety. There were over 20 individuals in attendance (see picture below).



Electric Vehicle Excise Tax and EVSE Rebate Incentives

In addition to the federal tax incentive (up to \$7,500) for the purchase of a PEV, Maryland offers an excise tax credit of the lesser of the vehicle excise tax or \$3,000. Eligible PEVs and FCEVs must have a purchase price of below \$63,000.

Maryland also provides a rebate program for the installation of charging infrastructure. Rebates are available for up to 40% of the purchase and installation price of the EVSE and are capped at the following amounts:

- Residential: 40% up to \$700
- Commercial: 40% up to \$4,000
- Retail Service Station: 40% up to \$5,000

As of December 2019, 1,135 rebates have been issued totaling the full \$1.2 million budget. Since 2015, over \$3.4 million in rebates have been distributed across the state.

Both Maryland incentives were set to expire in 2017 but were adjusted and extended through 2020. The legislation adjusting and extending the credits is listed in [Appendix D](#).

Volkswagen Settlement

In the fall of 2016, Volkswagen (VW) settled to pay \$14.7 billion dollars through a case filed by EPA alleging that VW violated the Clean Air Act with regards to approximately 580,000 vehicles, model years 2009 to 2016 with 2.0 and 3.0-liter diesel engines. The VW vehicle computers contained algorithms that caused the emission control system of those vehicles to perform differently during normal operations than during emission testing. The vehicles were emitting NOx emissions significantly in excess of EPA compliance levels under normal operating conditions.

The settlement is divided into three pools of money, the Environmental Mitigation Trust (EMT), the Zero Emission Vehicle ZEV Investment, and Consumer Vehicle Buyback and Modification. The breakdown of funding is illustrated in Figure 6.

Environmental Mitigation Trust

In 2018, Maryland released a draft work plan for use of the EMT funds as defined in Appendix D-2 of the settlement. The EMT funds are primarily designed to reduce diesel emissions, and up to 15% of the allotted funds may be used for the installation of light-duty, public EVSE. Maryland has been allocated approximately \$75.7 million dollars under the EMT, and in the draft plan, allocates the full 15% (\$11.3 million) for the installation of EVSE.

Proposals for eligible mitigation projects under the diesel vehicle replacement portion of the EMT were due May 6, 2019. Maryland received over forty proposals and is in the process of reviewing them and announcing awards. Concurrently, Maryland is working on developing the framework for the light-duty EV infrastructure component. As noted above, there is \$11.3 million dollars allocated for these projects. Maryland expects to start accepting proposals for these projects in the spring of 2020.

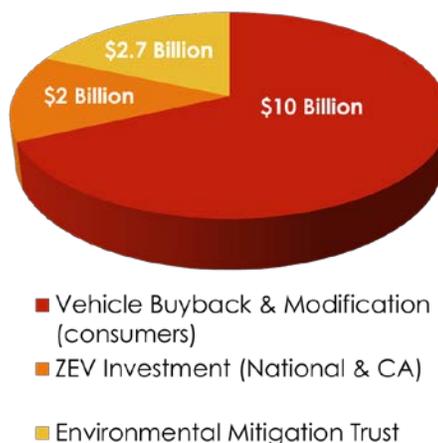
More information on the draft plan and proposals can be found here:

<http://www.mde.state.md.us/programs/Air/MobileSources/Pages/MarylandVolkswagenMitigationPlan.aspx>

ZEV Investment

Appendix C of the settlement establishes a nationwide ZEV investment program which provides a total of \$2 billion to install EVSE and conduct brand-neutral outreach efforts. The program specifies that \$800 million will be dedicated to California projects and \$1.2 billion will be available for the rest of the Country,

Figure 4: Volkswagen Settlement Funding



the funding will be implemented in 30-month increments of \$300 million per period and must be fully spent within 10 years. On December 9, 2016, VW launched their website, www.electrifyamerica.com, for accepting the first round of project proposals and ideas under the ZEV Investment fund.

Transportation Climate Initiative (TCI)

The Transportation and Climate Initiative (TCI) is a collaboration of the transportation, energy, and environment agencies of the 11 Northeast and Mid-Atlantic states and the District of Columbia. Through the TCI Clean Vehicles and Fuels workgroup, state agency participants have shared best practices and coordinated multi-state initiatives to facilitate the deployment of electric vehicle charging infrastructure and other alternative fueling stations in the region.

Maryland continues to be an active participant in the Clean Vehicles and Fuels (CVF) workgroup of TCI which aims to support the mass-market deployment of clean vehicles in the TCI states, and to maximize the economic opportunities that these vehicles can bring to our region.

Greenhouse Gas Reduction Act & The Maryland Commission on Climate Change

The Greenhouse Gas Reduction Act of 2009 was enacted in light of Maryland's vulnerability to the impacts of climate change. The Act required the State to develop plans, adopt regulations, and implement programs to reduce greenhouse gas (GHG) emissions by 25% from 2006 levels by 2020. In 2016, Senate Bill 323 (Ch. 11) reaffirmed the GHG reduction goal of 25% from 2006 levels by 2020 and establishes a new reduction goal, requiring the State to develop plans, adopt regulations, and implement programs to reduce GHG emissions by 40% from 2006 levels by 2030. Innovative and widespread vehicle technology improvements, including the proliferative of PEVs, will be vital to reducing transportation sector emissions and meeting Maryland's GHG reduction goals. The Maryland Commission on Climate Change reaffirmed this importance in their [2019 Annual Report](#), which recommends specific actions related to meeting the State's ZEV goals and projections.

Connected and Automated Vehicle (CAV) Efforts

Like many states, Maryland has been preparing for the changes to mobility, safety, and investment that are being driven by the emergence of CAV technology. In this transportation environment of the future, technological advances can greatly reduce or eliminate the tragically high cost of traffic crashes while allowing for more efficient vehicular movements that reduce congestion and delay. Maryland is committed to embracing CAV technology and its potential benefits and welcomes the opportunity to collaborate with partners interested in researching, testing, and implementing CAVs and innovative technologies in the State.

School Bus Study

MEA conducted an alternative fuel school bus study to better understand existing school bus fleets, alternative fuel buses, and school perceptions of new buses. To do this, MEA's study develops a baseline for the existing state school bus fleet, compares the existing fleet baseline to alternative fuel options through a market analysis, and contains survey data from school transportation officials to better understand motivations, challenges, and roadblocks to alternative fuel school bus adoption. The study indicates that electric and propane buses are the most favorably viewed alternative fuel buses, but that schools are hesitant to transition to alternative fuels without more financial assistance.

Recommendations

Policy Recommendations

ZEEVIC came to consensus on three policy recommendations, 1.) the right to charge, 2.) EV parking, and 3.) EV-ready building codes to pursue during calendar year 2019. ZEEVIC has been working diligently in these areas and, as illustrated in the report above, has made some progress. ZEEVIC will continue to pursue these recommendations in 2020. ZEEVIC will prepare educational materials on these three issues for policy makers.

Additional Recommendations

Future Development and Research Recommendations

ZEEVIC recommends continuing to harmonize efforts with Maryland Commission on Climate Change and the PSC. Coordination in 2019 provided a boost to key EV outreach efforts with the launch of utility education and marketing campaigns under Order No. 88997. The utility outreach is a five-year program, so coordination, and not duplication, of efforts will remain crucial. There are several recommendations for areas that warrant further research and analysis:

- Developing a better understanding of the environmental and economic opportunities that can be realized through the growth of BEV ownership and EVSE installation in Maryland.
- Ensuring EV readiness by finding an appropriate balance between home/workplace/public charging infrastructure.
- Developing a better understanding of the needs of underserved communities within the context of EV deployment.

Affiliated Electric Vehicle Efforts

ZEEVIC will continue to explore and make recommendations on PEV affiliated issues, such as CAVs, low-speed vehicle access, and electric scooter programs.

Communications

ZEEVIC has provided guidance and support for several important communications working group efforts in 2019, including: the launch of a social media campaign, new content on the MarylandEV.org website, new languages for materials, and the continued dedication to direct public outreach. To maintain the momentum generated by this year's accomplishments, the following goals were determined for the upcoming year:

- Broaden our scope to incorporate more local and regional partnerships, particularly with respect to public outreach and website maintenance and development.

- Develop a dashboard for tracking EV and EVSE related data on the EVIC and/or MarylandEV.org websites.
- Explore the benefits of establishing a SharePoint site for EVIC members.
- Work more closely with other related groups including those addressing connected and autonomous vehicles.

Appendix A – 2019 ZEEVIC Membership

Group Represented	Name
Secretary of Transportation (MDOT)	R. Earl Lewis, Jr. Deputy Secretary (Council Chair)
Academic Community; a Maryland institution of higher education with expertise in energy, transportation, or the environment (1)	Z. Andrew Farkas, Ph.D. Morgan State University, Director and Professor for National Transportation Center
Maryland Association of Counties; rural region (1)	Weston Young Wicomico County
Maryland Association of Counties; urban or suburban region (1)	(VACANT)
Maryland Municipal League; rural region (1)	Timothy P. Davis Planner, City of Frederick
Maryland Municipal League; urban or suburban region (1)	(VACANT)
Baltimore Electric Vehicle Initiative (1)	Elvia Thompson Baltimore Electric Vehicle Initiative
Electric Companies (2)	Kristy Fleischmann BGE Robert Stewart PEPCO Holdings, Inc.
Electric Vehicle Manufacturer (1)	(VACANT)
Electric Vehicle Charging Station Manufacturer (1)	Dave Schatz Director, Public Policy ChargePoint, Inc.
Fuel Cell Electric Vehicle Manufacturer (1)	David E. Bauer, Esq. Hyundai Motor Company

Group Represented	Name
Fuel Cell Electric Vehicle Infrastructure Equipment Manufacturer (1)	(VACANT)
Fleet Operators (1)	(VACANT)
Electrical Workers (1)	Michael A. Wall Clinton Electric Company
Environmental Community (1)	Scott Wilson Electric Vehicle Association of Washington D.C.
Public, with expertise in energy or transportation policy	Paul Verchinski
Maryland Automobile Dealers Association (1)	(VACANT)
Retail Electric Supplier Community (1)	(VACANT)
Senator (1)	Clarence K. Lam, M.D. Democrat, District 12 Baltimore & Howard Counties
Delegates (2)	Andrew Cassilly Republican, District 35B, Cecil and Harford Counties David Fraser-Hidalgo Democrat, District 15, Montgomery County
Maryland Department of Planning	Bihui Xu Manager, Transportation Planning
Secretary of the Environment	Benjamin Grumbles
Secretary of Commerce	Kelly Schulz
Technical Staff of the Maryland Public Service Commission	Kevin Mosier Wholesale Markets Liaison
Maryland Energy Administration	Mike Jones Transportation Program Manager

Appendix B – 2012 Recommendations & Action Plan Status

The following tables outline the status of each of the 32 recommendations included in the 2012 EVIC report. The recommendations are grouped by key themes and include the following details:

- The initial (2012) Phase of the recommendation:
 - Phase I: results in little to no immediate fiscal impact and could be undertaken swiftly pending shifts in policy;
 - Phase II: requires substantial new funding and may have to be implemented over several years as funding becomes available;
 - Phase III: exhibits potential for significant benefits but requires additional study and / or resources.
- Whether or not any legislation is required to implement the recommendation.
- The workgroup that the recommendation has been referred to.
- Details on any future action(s) required.

Coordinated Action													
1	A coordinated effort to promote PEV adoption will require continued oversight and management. It is recommended that EVIC be continued beyond its current sunset date of 6/2013.												
	<table border="0"> <tr> <td><i>Phase</i></td> <td>I</td> <td></td> </tr> <tr> <td><i>Legislation Required</i></td> <td>Y</td> <td>SB714 extended EVIC until June 2020</td> </tr> <tr> <td><i>Refer to Workgroup</i></td> <td colspan="2">Not at this time.</td> </tr> <tr> <td><i>Future Action Required</i></td> <td colspan="2">SB714 requires interim reports on December 1st of each year and a final report of EVIC's work and recommendations by June 30, 2020.</td> </tr> </table>	<i>Phase</i>	I		<i>Legislation Required</i>	Y	SB714 extended EVIC until June 2020	<i>Refer to Workgroup</i>	Not at this time.		<i>Future Action Required</i>	SB714 requires interim reports on December 1st of each year and a final report of EVIC's work and recommendations by June 30, 2020.	
<i>Phase</i>	I												
<i>Legislation Required</i>	Y	SB714 extended EVIC until June 2020											
<i>Refer to Workgroup</i>	Not at this time.												
<i>Future Action Required</i>	SB714 requires interim reports on December 1st of each year and a final report of EVIC's work and recommendations by June 30, 2020.												
2	Creation of an Urban/ Workplace Charging Task Force to specifically study the issues and opportunities presented by workplace and urban charging and develop solutions and best practices.												
	<table border="0"> <tr> <td><i>Phase</i></td> <td>I</td> </tr> <tr> <td><i>Legislation Required</i></td> <td>N</td> </tr> <tr> <td><i>Refer to Workgroup</i></td> <td>Workplace / Urban Charging Workgroup Existing Workplace Charging Committee will now include efforts related to urban charging.</td> </tr> <tr> <td><i>Future Action</i></td> <td>To be determined through workgroup.</td> </tr> </table>	<i>Phase</i>	I	<i>Legislation Required</i>	N	<i>Refer to Workgroup</i>	Workplace / Urban Charging Workgroup Existing Workplace Charging Committee will now include efforts related to urban charging.	<i>Future Action</i>	To be determined through workgroup.				
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<i>Legislation Required</i>	N												
<i>Refer to Workgroup</i>	Workplace / Urban Charging Workgroup Existing Workplace Charging Committee will now include efforts related to urban charging.												
<i>Future Action</i>	To be determined through workgroup.												
3	Creation of a State Agency Task Force to develop policies for PEV charging at State facilities by State employees, including the use of existing electrical outlets where feasible.												
	<table border="0"> <tr> <td><i>Phase</i></td> <td>I</td> </tr> <tr> <td><i>Legislation Required</i></td> <td>N</td> </tr> <tr> <td><i>Refer to Workgroup</i></td> <td>State Agency Workgroup</td> </tr> <tr> <td><i>Future Action</i></td> <td>State Agency Workgroup meeting regularly to implement recommendation.</td> </tr> </table>	<i>Phase</i>	I	<i>Legislation Required</i>	N	<i>Refer to Workgroup</i>	State Agency Workgroup	<i>Future Action</i>	State Agency Workgroup meeting regularly to implement recommendation.				
<i>Phase</i>	I												
<i>Legislation Required</i>	N												
<i>Refer to Workgroup</i>	State Agency Workgroup												
<i>Future Action</i>	State Agency Workgroup meeting regularly to implement recommendation.												
4	Dedicated staff should be identified to implement the recommendations of EVIC.												

	<i>Phase</i>	I
	<i>Legislation Required</i>	N
	<i>Refer to Workgroup</i>	State Agency Workgroup
	<i>Future Action</i>	To be determined through workgroup.
Policy Changes		
5	The State should place increased emphasis on the electrification of transportation, and its accompanying potential for energy storage and peak load management, as a specific component of the State's overall energy goals. Several aspects of current state policy are technically in conflict with the goal of expanded PEV adoption. The mandates of State programs and funding sources directed toward petroleum use reduction, GHG emissions reduction, and/or support for renewable energy, including the programs of instrumentalities such as the Maryland Clean Energy Center, should be realigned where necessary to ensure support for the advancement of Electric Vehicles.	
	<i>Phase</i>	I
	<i>Legislation Required</i>	TBD
	<i>Refer to Workgroup</i>	State Agency Workgroup
	<i>Future Action Required</i>	To be determined through workgroup. Informal discussions on this have taken place w/ DGS.
6	Institute goal for state agencies that the state vehicle fleet increase the number of its zero-emission vehicles through the normal course of fleet replacement so that at least 10 percent of fleet purchases of light-duty vehicles be zero-emission by 2020 and at least 25 percent of fleet purchases of light-duty vehicles be zero-emission by 2025. This directive shall not apply to vehicles that have special performance requirements necessary for the protection of the public safety and welfare. DBM should be directed to investigate:	
	<ul style="list-style-type: none"> • Potential for leasing PEVs • Bulk purchase agreements, with local government • Bulk purchase or lease agreements with the NE corridor states. 	
	<i>Phase</i>	I
	<i>Legislation Required</i>	TBD
	<i>Refer to Workgroup</i>	State Agency Workgroup
	<i>Future Action Required</i>	To be determined through workgroup. Informal discussions on this have taken place w/ DGS and MDE drafted an executive order.
7	Integration of EVs into State and regional plans and policies: State government should promote EVs through engaging all levels of government in a collaborative approach to EV-friendly plans and policy development consistent with State and Local Smart Growth goals. Policy should include integration of EVs and infrastructure planning into existing regional and local planning processes, such as regional transportation plans, regional (nonattainment area) action plans, local comprehensive plans, zoning, building and other related ordinances and regulations.	
	<i>Phase</i>	I
	<i>Legislation Required</i>	N
	<i>Refer to Workgroup</i>	State Agency Workgroup
	<i>Future Action Required</i>	Workshops have been held at Baltimore and Washington, DC MPOs. Future actions to be determined through workgroup.

Policy Changes (Continued)											
8	The PEV Excise Tax Credit expires July 1, 2013. EVIC recommends:										
	a. The legislature extended the statute expiration date to July 1, 2016										
	b. Remove the 10-vehicle limit placed on businesses										

	c. Consider turning the credit into a point of purchase rebate to reduce the consumer's cash outlay d. Consider expanding beyond the 8,500-pound weight limit
	<i>Phase</i> I - II Recommendation a. is Phase I. Recommendations b.-d. are Phase II. <i>Legislation Required</i> Y Excise tax credit was extended to 2020 <i>Refer to Workgroup</i> Legislative Workgroup <i>Future Action Required</i> TBD – Tax credit extended.
	Regarding the PEV Charging Station Income Tax Credit, EVIC recommends: a. Extend the program for an additional 3 years b. Remove the 30-tax credit limit imposed in the statute (per year cap on stations)
9	<i>Phase</i> I - II Recommendation a. is Phase I. Recommendations b. is Phase II. PEV charging station tax credit was changed to a rebate and extended <i>Legislation Required</i> Y to 2020. Legislation required to remove the cap under item b. <i>Refer to Workgroup</i> Legislative Workgroup <i>Future Action Required</i> To be determined through workgroup.
	Support extension of the Federal Section 30C tax credit for alternative fuel infrastructure. The IRS Code Sec 30C alternative fuel vehicle refueling property credit (commonly referred to as the infrastructure or 30C credit) originally provided 30 percent of the cost of any property for storing (at the point of dispensing) or dispensing alternative fuel placed in service after 2005 and before the end of 2009. These credits were extended through 2011.
10	<i>Phase</i> I <i>Legislation Required</i> Y Was extended through the end of 2016. <i>Refer to Workgroup</i> Legislative Workgroup <i>Future Action Required</i> To be determined through workgroup.
	Extend the HOV lane Use Permits to 2020, continuing the caveat to consult with SHA on potential congestion management
11	<i>Phase</i> I <i>Legislation Required</i> Y Was extended to 2022. <i>Refer to Workgroup</i> Legislative Workgroup <i>Future Action Required</i> TBD – exemption extended to 2022.
	Multi-dwelling Unit Charging Grant Program: Establish a grant program to assist in the funding of EVSE equipment, installation & initial procurement of transaction management software for Multi-Unit Dwellings
12	<i>Phase</i> II <i>Legislation Required</i> Y Was addressed. <i>Refer to Workgroup</i> Legislative Workgroup <i>Future Action Required</i> To be determined through workgroup.

Outreach & Education	
13	<p>Adopt a specific symbol or logo to identify State funded or supported EV equipment, technology or materials, i.e., a State EV website, posters, newsletters, materials etc. This logo would be prominently displayed on State Fleet Vehicles that are EV, as well as on any EV License Plate or decal that may be developed for any state use.</p> <p><i>Phase</i> I <i>Legislation Required</i> N <i>Refer to Workgroup</i> State Agency Workgroup <i>Future Action Required</i> Continue use of MDEV logo at outreach events.</p>
14	<p>A state website should be developed for Maryland specific EV info on any incentives, regulations, programs, plus links to other EV sites. Website can be used to promote any related state priority, such as choosing renewable energy for consumers' electricity generation.</p> <p><i>Phase</i> I <i>Legislation Required</i> N <i>Refer to Workgroup</i> State Agency Workgroup <i>Future Action Required</i> Revised MDEV website in development.</p>
15	<p>It is recommended that educational workshops or webinars be conducted for developers, property managers and homeowner associations about the benefits of providing charging. These should provide information about best practices and implementation of charging programs, cover applicable regulations, incentives, real world costs of installation, most cost-effective options, possibilities for using renewable energy in support of charging, and the types of chargers and management services available. Workshops should provide models for dealing with allocation of electricity and maintenance costs, reservation of parking spaces, installation issues, and policies for visitor use. Workshops should also provide a showcase for charging and management service businesses active in Maryland. Workshops/webinars could be provided through partnership with EV non-profits.</p> <p><i>Phase</i> II <i>Legislation Required</i> N <i>Refer to Workgroup</i> State Agency Workgroup to follow-up with Education & Outreach Workgroup <i>Future Action Required</i> To be determined through workgroup(s).</p>
16	<p>It is recommended that a series of guidance documents be developed to provide guidance on charger installation, management and regulation. The Transportation and Climate Initiative (TCI) and others have produced guidance documents that could be the basis of MD documents, along with the findings of EVIC.</p> <p><u>EV Infrastructure Planning Guide for Local Governments</u>: to include model documents for permitting, siting and design, building codes, and zoning, including historic district overlays, and parking ordinances.</p> <p><u>Guidance Document for Local Governments</u> on the issues and complexities of providing urban charging and potential solutions.</p> <p><u>Document on Charging in the Urban & Multi-unit Setting</u>: To include best practices in the implementation of charging programs. Cover applicable regulations and incentives, real world costs, most cost-effective options, possibilities for using renewable energy in support of charging, charger types and management services available. Provide models for allocation of electricity and maintenance costs, reservation of parking spaces, and policies for visitor use. Should include templates or "sample policy" documents that homeowner and condo associations, apartment complexes, etc. can use in adopting their own policies.</p> <p><i>Phase</i> I <i>Legislation Required</i> N <i>Refer to Workgroup</i> State Agency Workgroup <i>Future Action Required</i> To be determined through workgroup. TCI and other applicable guidance documents have been posted to EVIC resources website.</p>
17	<p>Outreach Materials should be developed, i.e. brochures, presentations, e-newsletter, and webinars on sub-topics.</p>

	<i>Phase</i>	II
	<i>Legislation Required</i>	N
	<i>Refer to Workgroup</i>	Education & Outreach Workgroup
	<i>Future Action Required</i>	To be determined through workgroup. Include State efforts / coordinate with State Agency Workgroup.

Promotion of Infrastructure: State Charging Stations

The State should promote, through new and existing programs, and incentives, and in conformance with the State’s goals for Smart Growth, the establishment of adequate EV charging infrastructure to support a goal of 60,000 EVs on the road by 2020.

18	<i>Phase</i>	I
	<i>Legislation Required</i>	N
	<i>Refer to Workgroup</i>	State Agency Workgroup
	<i>Future Action Required</i>	To be determined through workgroup. Include target of 300,000 EVs by 2025.

There are currently seventy-three charging stations accessible by the public installed at state facilities. The Council recommends that the State monitor the installation of private sector charging facilities across the state and continue to add charging infrastructure at state facilities in areas that are underserved.

19	<i>Phase</i>	I
	<i>Legislation Required</i>	N
	<i>Refer to Workgroup</i>	State Agency Workgroup
	<i>Future Action Required</i>	Workgroup is coordinating with DBM and other State agencies to monitor the total of state and private sector charging installations.

The Council recommends that the State retain the data collection software and continue to allow public access to these charging stations, free of charge until June 30, 2014. In the interim, host agencies shall collect data on the usage of the stations and the amount of electricity used in order to facilitate planning for future installations, electrical infrastructure and cost recovery. Utilization data will be available to the public.

20	<i>Phase</i>	I
	<i>Legislation Required</i>	N
	<i>Refer to Workgroup</i>	State Agency Workgroup
	<i>Future Action Required</i>	To be determined through workgroup.

Promotion of Infrastructure: Urban Charging Infrastructure

In urban areas state and local officials, along with utilities, business organizations and property managers should discuss options for wiring existing garages for charging. Garage managers could then incorporate that service into long-term parking agreements with urban area employers.

21	<i>Phase</i>	I
	<i>Legislation Required</i>	N
	<i>Refer to Workgroup</i>	Workplace / Urban Charging Workgroup
	<i>Future Action Required</i>	To be determined through workgroup.

Urban Demonstration Projects:

- a.) Work with a local county or municipality to install and make available charging stations in government parking garages for urban resident charging.
- b.) Work with county or municipality to identify off-street outdoor parking locations where local resident PEV charging can be provided (Level 1 and Level 2).
- c.) Work with a business or institution to make Level 1 and/or Level 2 PEV charging available to nearby residents.
- d.) Work with a multi-unit dwelling owner or property manager to make Level 1 and Level 2 charging available for one or more spaces in a shared parking facility and arrange for tracking and billing for electricity usage by residents.

	<i>Phase</i>	II
	<i>Legislation Required</i>	N
	<i>Refer to Workgroup</i>	Workplace / Urban Charging Workgroup
	<i>Future Action Required</i>	To be determined through workgroup. Several local governments have charges in municipal garages.

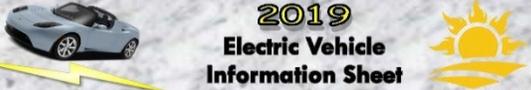
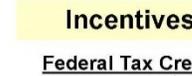
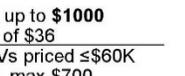
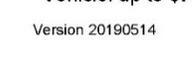
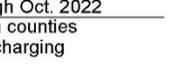
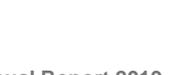
Charging Solutions		
		Revision of Zoning and Planning Codes: Municipal zoning and planning codes should be amended to permit and regulate on-street PEV charging, require PEV parking spaces in new developments and re-development initiatives and include siting and design guidelines for PEV charging stations, Level 1 outlets and parking spaces.
23	<i>Phase</i>	NA
	<i>Legislation Required</i>	Y
	<i>Refer to Workgroup</i>	Legislative and Education & Outreach Workgroups
	<i>Future Action Required</i>	To be determined through workgroup(s). Potential example from Montgomery County.
24		Historic District Restrictions: State and local zoning and historic district codes should be reviewed for the existence of provisions that could effectively prohibit the installation of PEV charging stations and outlets in historic districts or in close proximity to historic properties. The adoption of code amendments that prohibit unreasonable restrictions on the installation of charging equipment in historic districts while conforming to the federal requirements may be necessary to ensure the location of an adequate number of charging stations and outlets in these communities. Reasonable alternatives, such as siting charging in adjacent public and/or business parking areas should be considered and encouraged.
	<i>Phase</i>	NA
	<i>Legislation Required</i>	Y
	<i>Refer to Workgroup</i>	Legislative and State Agency Workgroups
	<i>Future Action Required</i>	To be determined through workgroup(s).
25		On-Street Parking: Building on the municipal parking permit model for residential on-street parking, local government-owned and maintained PEV charging stations (Level 2 charging) and 120V outlets (Level 1 charging) can be installed and made available in designated on-street spaces for use by residents who purchase a PEV upgrade to their on-street parking permit.
	<i>Phase</i>	NA
	<i>Legislation Required</i>	N
	<i>Refer to Workgroup</i>	Legislative and Workplace / Urban Charging Workgroups
	<i>Future Action Required</i>	To be determined through workgroup(s).
26		Measures to Discourage Overstaying: There are a number of possible measures that, if adopted, can discourage overstaying. Limiting the number of hours a car can occupy the parking space, with associated fines, is one option. Rate structures can also be an effective disincentive. Usage of a pricing mechanism that is based on hourly rates and charges progressively higher rates once the vehicle is fully charged, alone or in combination with the automatic assessment of additional "inconvenience fees," is another option that could encourage drivers to move their vehicles once they are fully charged.
	<i>Phase</i>	NA
	<i>Legislation Required</i>	N
	<i>Refer to Workgroup</i>	State Agency Workgroup
	<i>Future Action Required</i>	Suggested this measure be tabled for the time being.
27		Charging and Metering Configurations: To address challenging parking and metering configurations at multi-dwelling unit properties property owners and managers should consider the addition of Level 2 chargers at unassigned shared parking spaces in configurations that maximize the number of spaces that the charging cord can reach.
	<i>Phase</i>	NA
	<i>Legislation Required</i>	N

	<i>Refer to Workgroup</i>	None
	<i>Future Action Required</i>	Recommendation to be removed as it is no longer relevant
28	Clustering Level 1 Charging: Assigned parking spaces can be reassigned to locate parking for PEV drivers in clusters close to 120V outlets.	
	<i>Phase</i>	NA
	<i>Legislation Required</i>	N
	<i>Refer to Workgroup</i>	None
	<i>Future Action Required</i>	Suggested this measure be tabled for the time being due to technology.
Charging Solutions (Continued)		
29	Allocation of Costs and Responsibility for Installation and Maintenance of Charging Stations: Installing necessary panel and wiring upgrades and maintaining the PEV equipment in good repair, and tracking and paying for the electricity usage is a threshold issue for all multi-dwelling unit residents and property owners. The following strategies should be considered: <ul style="list-style-type: none"> • Use of a business model in which a charging station provider, at its own expense, installs, maintains and owns the charging station and rebates the cost of electricity usage back to the property owner. The PEV owner pays for access to charging in the network through a monthly membership fee. (www.PEVgonetwork.com) • Installation of charging stations by the property owner who recovers the cost of the station and electricity usage through add-ons to leases or, in condominiums or cooperatives, through a special assessment for PEV drivers. • Future State and/or local government programs to support the installation of PEV charging in these more challenging environments and reduce the cost to the property manager/owner. 	
	<i>Phase</i>	NA
	<i>Legislation Required</i>	N
	<i>Refer to Workgroup</i>	None
	<i>Future Action Required</i>	Suggested this measure be tabled for the time being.
30	Technical Workshops: Recommend that the PSC hold Technical Workshops to gather information on innovations in the interface between PEVs and the electrical grid, including both technical feasibility and cost/benefit.	
	Workshop topics should include: <ul style="list-style-type: none"> • Vehicle –to-Grid (V2G) • Vehicle to Home • Potential for use of down-cycled batteries for power storage. 	
	<i>Phase</i>	NA
	<i>Legislation Required</i>	N
	<i>Refer to Workgroup</i>	None
	<i>Future Action Required</i>	The Chair of EVIC did send a letter to the PSC requesting workshops in 2013. The State Agency Workgroup determined this was not within the State's role.
31	Investment: Foster emerging PEV technologies and their potential for a role in electrical grid management through existing financing vehicles, such as InvestMaryland.	
	<i>Phase</i>	NA
	<i>Legislation Required</i>	N
	<i>Refer to Workgroup</i>	TBD
	<i>Future Action Required</i>	The State Agency Workgroup determined this was not within the State's role.
32	Financing: The State should explore opportunities to reduce the upfront costs of PEVs and charging infrastructure installation through public/private financing to allow for the provision and underwriting of	

	low-interest, low-risk loans to energy projects that further the State’s energy goals, and to link EV charging to renewable energy and grid management.
	<i>Phase</i> NA
	<i>Legislation Required</i> N
	<i>Refer to Workgroup</i> State Agency Workgroup
	<i>Future Action Required</i> Many incentives currently exist.

Charging Solutions (Unnumbered Recommendations)	
3	Permit Streamlining: Based on the Council’s review and outreach to the community they found no significant existing barriers to the permitting of EVCS, and therefore make no recommendation for action at this time.
3	<i>Phase</i> NA
	<i>Legislation Required</i> N
	<i>Refer to Workgroup</i> NA
	<i>Future Action Required</i> None.
	Pricing Displays: The Council recommends that no action be taken to fix a pricing display model for Maryland until after the national standard has been developed and adopted by the National Institute of Standards and Technology (NIST), as those standards are anticipated in July 2013.
	<i>Phase</i> NA
	<i>Legislation Required</i> N
	<i>Refer to Workgroup</i> State Agency Workgroup
	<i>Future Action Required</i> To be determined by workgroup.

Appendix C – PEVs Available for Purchase in Maryland in 2019

 The Electric Vehicle Association of Greater Washington DC evadc.org								
	Base Price (USD) ¹	Net Price (USD) ²	Range (mi) ³	Batt. (kWh)	0-60 (sec)	MPG equiv ³	Fuel / Mo. ⁴	
 Volt	\$33,220	\$29,470	53+gas	18.4	8.4	106	\$58	 Pacifica minivan
 Chrysler Pacifica hyb.	\$39,995	\$32,495	32+gas	16	7.4	82	\$83	 Honda Clarity PHEV
 Ford Fusion Energi	\$34,595	\$27,393	26+gas	9	8.0	103	\$67	 Kia Niro
 Honda Clarity PHEV	\$33,400	\$25,900	48+gas	17	7.7	110	\$58	 Kia Optima
 Hyundai Ioniq PHEV	\$25,350	\$20,807	29+gas	8.9	8.9	119	\$54	 Prius Prime
 Hyundai Sonata PHEV	\$33,400	\$28,481	28+gas	9.8	7.6	99	\$67	 BMW i3
 Kia Niro PHEV	\$28,500	\$23,957	26+gas	8.9	9.0	105	\$63	 BMW i8
 Kia Optima Plug-In	\$35,390	\$30,471	29+gas	9.8	9.1	103	\$67	 BMW X5
 MINI Cooper s E Countr.	\$36,900	\$32,899	12+gas	7.6	6.7	65	\$125	 Cadillac CT6
 Mitsubishi Outlander	\$35,795	\$29,959	22+gas	12	9.2	74	\$100	 Karma
 Subaru Crosstek Hyb.	\$34,995	\$30,493	17+gas	8.8	8.3	90	\$79	 Mercedes C350e
 Toyota Prius Prime	\$27,350	\$22,848	25+gas	8.8	10.5	133	\$50	 Mercedes GLC350e
Average U.S. Gasoline Car Price			\$34,500					
 Audi A3 e-tron	\$39,500	\$34,998	16+gas	8.8	7.6	83	\$88	 Mercedes S560e
 BMW 330e	\$45,600	\$41,599	22+gas	7.6	5.6	71	\$108	 Porsche Cayenne
 BMW 530e	\$53,400	\$48,732	16+gas	9.4	6.0	72	\$117	 Porsche Panamera
 BMW 740e xDrive	\$91,250	\$86,582	14+gas	9.2	5.1	64	\$125	 Volvo S60 T8
 BMW i3 Range Extender	\$48,300	\$40,800	126+gas	42.2	8.0	100	\$58	 Volvo S90 T8
 BMW i8	\$147,500	\$141,831	18+gas	11.6	4.2	69	\$121	 Volvo XC60 T8
BMW X5 xDrive40e	\$63,750	\$59,082	13+gas	9.2	6.2	56	\$138	Volvo XC90 T8
Cadillac CT6 Plug-In	\$75,095	\$71,345	31+gas	18.4	5.2	62	\$113	
Karma Revero	\$130,000	\$122,500	37+gas	21.4	5.4	60	\$125	
Land Rover Sport P400e	\$79,000	\$71,913	13+gas	20^	6.3	—	—	
Mercedes C350e	\$48,895	\$45,394	8+gas	6.2	5.8	51	\$121	
Mercedes GLC350e	\$50,650	\$46,190	10+gas	8.7	6.2	56	\$138	
Mercedes GLE550e	\$66,700	\$62,240	8+gas	8.8	5.3	43	\$163	
Mercedes S560e	\$100,000^	\$94,000^	20+gas	13.5^	4.7	65^	\$125^	
Porsche Cayenne	\$79,900	\$73,230	14+gas	14.1	4.7	47	\$154	
Porsche Panamera	\$102,900	\$96,230	14+gas	14.1	4.4	51	\$154	
Volvo S60 T8	\$55,045	\$50,043	22+gas	10.4^	4.5	74	\$104	
Volvo S90 T8	\$63,900	\$58,898	21+gas	10.4	4.7	71	\$108	
Volvo XC60 T8	\$55,300	\$50,298	17+gas	10.4	4.9	58	\$129	
Volvo XC90 T8	\$67,000	\$61,998	17+gas	10.4	5.9	58	\$133	

Incentives

Federal Tax Credits
Vehicle: up to \$7500

Version 20190514

DC: EV Supply Equipment (EVSE) Tax Credit - 50% of cost up to \$1000
Excise tax exemption. Reduced vehicle registration fee of \$36

Maryland: Excise Tax Credit, \$100/kWh Battery, max \$3000 on EVs priced ≤\$60K
EV Supply Equipment (EVSE) Tax Credit - 40% of cost, max \$700
High Occupancy Vehicle (HOV) Lane Exemption through Oct. 2022

Virginia: Reduced personal property tax in Arlington and Loudon counties
Discounted electricity rates for off-peak residential EV charging



	Base Price (USD) ¹	Net Price (USD) ²	Range (mi) ³	Batt. (kWh)	0-60 (sec)	MPG equiv ³	Fuel / Mo. ⁴	QC ⁵	
All Electric									
Chevy Bolt	\$36,620	\$32,870	238	60	6.5	119	\$46	Y	Harley LiveWire
Fiat 500e	\$32,995	\$25,495	84	24	8.9	112	\$50		Harley LiveWire
Harley LiveWire	\$29,799	\$29,799	88*	---	3.0*	---	---	Y	Fiat 500e
Honda Clarity Elect.	\$33,400	(lease only)	89	25.5	---	114	\$50	Y	Honda Clarity Elect.
Hyundai Ioniq Elect	\$30,315	\$22,815	124	28	9.9	136	\$42	Y	Hyundai Ioniq Elect
Hyundai Kona Elect	\$36,950	\$29,450	258	64	7.6	120	\$46	Y	Hyundai Kona Elect
Kia Niro EV	\$38,500	\$31,000	239	64	7.8	112	\$50	Y	Kia Niro EV
Kia Soul EV	\$35,000 [^]	\$27,500 [^]	243	64	7.6	114	\$50	Y	Kia Soul EV
Nissan LEAF S	\$29,990	\$22,490	150	40	7.4	112	\$50	Y	Nissan LEAF S Plus
Nissan LEAF S Plus	\$36,550	\$29,050	226	62	6.4	108	\$50	Y	Nissan LEAF S Plus
Smart EQ fortwo	\$23,900	\$16,400	58	17.6	11.4	108	\$50		Smart EQ fortwo
VW e-Golf	\$31,895	\$24,395	125	35.8	9.6	119	\$46	Y	VW e-Golf
Zero SR/F	\$18,995	\$18,995	109*	14.4	3.3 [^]	---	---		Zero SR/F
Average U.S. Gasoline Car Price		\$34,500							
Audi e-tron	\$74,800	\$67,300	250 [^]	95	5.5	---	---	Y	Audi e-tron
BMW i3	\$44,450	\$36,950	153	42.2	7.2	113	\$50		BMW i3
Jaguar I-Pace	\$69,500	\$62,000	234	90	4.5	76	\$71	Y	Jaguar I-Pace
Tesla Model 3 Std.	\$35,000	\$31,250	220*	60 [^]	5.6	131	\$42	Y	Tesla Model 3 Std. Plus
Tesla Model 3 Std. Plus	\$39,900	\$36,150	240*	60 [^]	5.3	133	\$42	Y	Tesla Model 3 Std. Plus
Tesla Model 3 Long Range	\$49,900	\$46,150	310*	80 [^]	4.4	130	\$42	Y	Tesla Model 3 Long Range
Tesla Model S Std.	\$78,000	\$74,250	285	75 [^]	4.0	103	\$54	Y	Tesla Model S Long Range
Tesla Model S Long Range	\$88,000	\$84,250	370	100 [^]	3.7	111	\$50	Y	Tesla Model S Long Range
Tesla Model X Std.	\$83,000	\$79,250	250	75 [^]	4.6	93	\$58	Y	Tesla Model X Long Range
Tesla Model X Long Range	\$93,000	\$89,250	325	100 [^]	4.4	87	\$63	Y	Tesla Model X Long Range

Tesla Model 3

EVA/DC meets the 3rd Wednesday of every month. See evadc.org/meeting.

Home Charging

Typically costs 4 ¢ / mile. (3 mi / kWh, 12 ¢ / kWh)

240V Home Charging Station

Charge using an ordinary 120V outlet. Dedicated circuit recommended.



Install a home 240V charging station for faster charging at home. \$400-\$1000 + installation



Public Charging

Cost varies, free - 49 ¢ / kWh



240V Public Charging Station



Why Drive Electric?

- Performance** - Instant torque makes driving fun again
- Silent and Smooth** - Electric motor is whisper quiet, no vibration
- Practicality** - Range exceeds most daily needs of 40 miles
- Reliability** - Simple drivetrain has few moving parts to repair
- Better Fuel Economy** - Go 100 miles on \$4 of electricity
- Clean Energy** - Electricity can be made from renewable sources
- National Security** - Domestic electricity instead of foreign oil



480V DC Fast Charger

How long does it take to charge?

- Level 1:** 120V AC (regular outlet)
Reclaim 5 miles per hour charging
 - Level 2:** 240V AC (J1772 / dryer plug)
Reclaim 15-60 miles per hour charging
 - Fast Charge:** 480V DC
Reclaim 50-200 miles in 30 minutes
- Actual times depends on vehicle

EVA/DC is providing the following for informational purposes only. We do not endorse or recommend any specific vehicle manufacturer or distributor. Information subject to change.

1. Base price before tax incentives, destination.
2. Net price after federal tax credit. State credits may still apply. Consult tax advisor.
3. EPA combined city/highway, except as noted

4. EPA, 15000 miles/year, 12¢ / kWh
 5. DC Quick / Fast Charge optional
- * Source: Vehicle Manufacturer
^ Estimate

Appendix D – Related Legislation (enacted 2011-2019)

Legislation Passed

In the 2019 Legislative Session, the General Assembly enacted the following:

- HB 1246, Chapter 679, Acts of 2018 – Vehicle Laws – Licensing and Registration– Clean Cars Act of 2019

This bill changed EVIC to ZEEVIC and extended the purview to include hydrogen fueling and FCEVs. The bill also changed the excise tax credit to include FCEVs and updated the excise tax credit award calculations.

- HB 1255, Chapter 492 School Bus Transition – Zero-Emission Vehicles – Grant Program and Fund

This bill requires the Department of the Environment and the Department of Transportation to jointly provide technical assistance establishing Zero-Emission Vehicle School Bus Transition Grant Program, install charging infrastructure, and develop plans to transition to the use of ZEVs.

In the 2018 Legislative Session, the General Assembly enacted the following:

- HB 714, Chapter 679, Acts of 2018 – Vehicle Laws – HOV Lanes – Plug-In Electric Drive and Hybrid Vehicles

This bill extended the termination date to September 30, 2022, for certain provisions of law authorizing certain hybrid vehicles to use a certain high occupancy vehicle (HOV) lane regardless of the number of passengers for plug-in electric drive vehicles and qualified hybrid vehicles

In the 2017 Legislative Session, the General Assembly enacted the following:

- SB 393/HB 406, Chapter 362, Acts of 2017 – Vehicle Laws – Licensing and Registration– Clean Cars Act of 2017

This bill extended through fiscal year 2020 the Electric Vehicle Recharging Equipment Rebate Program and authorization to issue motor vehicle excise tax credits for qualified PEV vehicles. The bill:

- Increased the total amount of rebates from up to \$600,000 to a maximum of \$1,200,000, increasing the amount required to be transferred from the Strategic Energy Investment Fund to the Transportation Trust Fund

- Increased the amount of motor vehicle excise tax credits that may be issued during a fiscal year. The credit value was reduced to \$100 kWh of battery capacity of the vehicle up to \$3,000.
- The bill also added additional eligibility requirements, capping qualifying vehicle purchase prices at \$60,000, and requiring a minimum battery capacity of 5 kWh.

http://mgaleg.maryland.gov/2017RS/Chapters_noln/CH_362_hbo406e.pdf

In the 2016 Legislative Session, the General Assembly enacted the following:

- **HB 1179, Chapter 734, Acts of 2016 – Vehicle Laws – HOV Lanes – Plug-In Electric Drive and Hybrid Vehicles**

This bill extended the authorization of BEVs to use HOV lanes regardless of the number of passengers through September 30, 2018. It also allows for qualified hybrid vehicles to use HOV lanes (effective from October 1, 2016 through September 30, 2018). The hybrid HOV lane use is restricted to the portion of US 50 designated as an HOV lane, between I-95 / I-495 and US 301. All PEVs must obtain a permit to use HOV lanes. A copy of the bill can be found here:

http://mgaleg.maryland.gov/2016RS/chapters_noln/Ch_734_hb1179T.pdf.

- **SB 998/HB 1279, Chapters 334 and 335, Acts of 2012: Motor Vehicle Administration - Plug-In Vehicles - Disclosure of Personal Information**

This bill addressed concerns expressed by the utility companies and other stakeholders over the potential for PEV clustering and the maintenance of local grid reliability. This legislation helped to alleviate that concern by requiring the MDOT MVA to share PEV registration information necessary for grid planning purposes with the appropriate utility, specifically (1) the street address and (2) type of PEV purchased. When a PEV is registered with the MDOT MVA, the MDOT MVA can provide the residential address of the owner to the electric utility to ensure that the utility can make any necessary upgrades to the transformers and maintain safe and efficient load distribution. A copy of the bill can be found here:

http://mlis.state.md.us/2012rs/chapters_noln/Ch_335_hb1279T.pdf

- **SB 997/HB 1280, Chapters 631 and 632, Acts of 2012: Electric Vehicle Users and Charging Stations – Exclusions**

This bill provided regulatory clarification for owners and operators of PEV charging stations and PEV charging station service companies or providers by excluding them from the definition of an “electricity supplier” or a “public service company” as defined in law and regulated by the Maryland PSC. The bill also made it clear that these entities continue to remain within the definition of “retail electric customer.” The elimination of regulatory uncertainty removed a potential barrier preventing PEV investors and industry participants from entering the market in Maryland. With this new level of regulatory certainty, Maryland’s PEV market will be better poised to grow beyond its existing infrastructure and is a signal of Maryland’s commitment to the development of a vibrant PEV market. A copy of the bill can be found at:

<http://mlis.state.md.us/2012rs/bills/hb/hb1280t.pdf>

In the 2015 Legislative Session, the General Assembly enacted the following:

- SB 714, Chapter 378, Acts of 2015 - Maryland Electric Vehicle Infrastructure Council - Reporting and Sunset Extension

This bill extended the tenure of the Council until 2020 and set out annual reporting requirements.

A copy of the bill can be found at:

http://mgaleg.maryland.gov/2015RS/Chapters_noln/CH_378_sb0714t.pdf

In the 2014 Legislative Session, the General Assembly enacted the following:

- SB908/HB1345, Chapters 359 and 360, Acts of 2014 - Electric Vehicles and Recharging Equipment - Rebates and Tax Credits

This bill extended the excise tax incentive for three (3) years until June 30, 2017 and amended the credit to relate the amount credited to the battery capacity of the vehicle. An electric vehicle would receive a credit of \$125 per kWh of capacity up to a cap of \$3,000. It also converted the Income Tax Credit for EVSE to a rebate program that includes installation costs in the incentive calculation, remove the provision limiting businesses to a maximum of 30 chargers, and increases the residential and commercial caps. Copies of the bills can be found at:

http://mgaleg.maryland.gov/2014RS/Chapters_noln/CH_359_sb0908t.pdf and

http://mgaleg.maryland.gov/2014RS/Chapters_noln/CH_360_hb1345e.pdf

In the 2013 Legislative Session, the General Assembly enacted the following:

- SB 600/HB836, Chapter 64, Acts of 2013: Vehicle Laws –Electric Vehicles

This bill, in addition to harmonizing variations in the definition of “plug-in electric drive vehicle” that appeared in various sections of the Maryland Code, extended the termination date for the exemption allowing the use of Maryland’s High Occupancy Vehicle (HOV) lanes by PEVs, regardless of the number of passengers, to September 30, 2017. It also extended the tenure of the Council to June 30, 2015. A copy of the bill can be found at:

http://mgaleg.maryland.gov/2013RS/Chapters_noln/CH_64_sbo600t.pdf

- HB 791/SB728, Chapter 389, Acts of 2013: Tax Credits – Electric Vehicles – Extensions

This bill extended the existing tax credits that incentivize the purchase of PEVs and their charging equipment. The credit against the State income tax for PEV charging equipment was extended through tax year 2016. The credit against the motor vehicle excise tax was extended to July 1, 2014 and tied the amount of the credit allowed to the size of the vehicle’s battery capacity. A copy of the bill can be found at:

http://mgaleg.maryland.gov/2013RS/Chapters_noln/CH_389_hb0791e.pdf