

Electric Vehicle Infrastructure at Maryland State Facilities

Statewide EV Infrastructure Strategy & Guidance to Agencies



Office of Energy & Sustainability

Contents

I. Introduction	4
II. Background	4
Addressing Climate Change through Electric Vehicles	4
Fleet Electrification in Maryland	5
Statewide Collaboration	5
III. State Fleet	7
Baseline Inventory of State Fleet Vehicles	7
Analysis: Potential of State Fleet to Electrify	7
IV. EV Charging Infrastructure	10
Types of EV Charging Infrastructure	10
Existing Infrastructure in Maryland	10
Infrastructure at State Facilities	11
V. Funding	13
Funding for ZEVs in State Fleet	13
Funding for Infrastructure	14
VI. EV Infrastructure Strategy	16
Overview	16
Phase I - Supporting EV incoming fleet in FY 2021	17
Phase II - Ramping Up Infrastructure in FY 2022	17
Phase III : Moving Towards Dedicated Fleet Charging	19
VII. Guidance for Installing EV Infrastructure at State facilities	20
High Level Process Overview	20
Determining the Appropriate Approach	21
EV Infrastructure Construction Process	22
Utility Installed infrastructure	22
State installed infrastructure	24
Scenario A: State installed infrastructure - DGS PM, Included in new construction or major renovation, DGS DCE Capital	25
Scenario B: State installed infrastructure - DGS PM, Stand Alone Procurement	26
Scenario C: State installed infrastructure - Goes entirely through Agency with no DGS involvement	26
VIII. Procurement Resources	27
Charging Infrastructure on Statewide Contract	27
EVs and PHEVs on Statewide Contract	27
IX. Additional Considerations	28
Signage & Pavement Markings	28

ADA Considerations	28
X. Next Steps and Future Considerations:	28
XI. Appendices	29
Appendix A.	29
BGE EV Smart - Detailed Infrastructure Installation Process	29
Appendix C.	29
Software agreements Greenlots & ChargePoint	29
Appendix D.	29
EV Charging Station Specification	29
Appendix E.	29
DGS Facilities & Operations EV Policy	29
Appendix F.	29
Definitions	29

About this document

Version: 1.0

Last Update: 2/8/2022

Note that as fleet electrification and charging infrastructure projects move quickly, they may not be represented in this version. DGS will publish updated versions at least annually.

This document was authored by the DGS Office of Energy & Sustainability with significant contributions from DGS Design & Construction.

Many thanks to our colleagues at DBM, MDE, MDOT, and MEA for their review and input.

Questions about this document should be directed to:

Korin Sharp
EV Charging Program Coordinator
Korin.Sharp@maryland.gov

Emily Soontornsaratool
Chief, Sustainability
Emily.Soontornsaratool@maryland.gov

I. Introduction

The purpose of this document is twofold. First, the document will define the Department of General Services's (DGS)'s strategy for installing electric vehicle (EV) charging infrastructure (also referred to as charging stations or electric vehicle supply equipment (EVSE) at State facilities. Second, this document will provide guidelines for State agencies interested in pursuing EV charging at State facilities.

Throughout this document, the following acronyms are used: EV, ZEV, and PHEV.

- **Electric vehicles (EVs)** have a battery instead of a gasoline tank, and an electric motor instead of an internal combustion engine. Fully electric vehicles may also be referred to as **Zero Emissions Vehicles (ZEVs)** because they produce no emissions from the on-board source of power. Note that these terms are used interchangeably within this document.
- **Plug-in hybrid electric vehicles (PHEVs)** are a combination of gasoline and electric vehicles, so they have a battery, an electric motor, a gasoline tank, and an internal combustion engine. PHEVs use both gasoline and electricity as fuel sources. A PHEV is not a Zero Emission Vehicle.

See Appendix F for a full list of definitions.

II. Background

Addressing Climate Change through Electric Vehicles

For over a decade, Maryland has created numerous laws and policies to mitigate the effects of climate change, including the 2009 Greenhouse Gas Emissions Reduction Act (GGRA) which, when amended and signed by Governor Hogan in 2015, established a goal of reducing greenhouse gas (GHG) emissions by 40% below 2006 levels by 2030.

Maryland's transportation sector, powered almost exclusively with fossil fuels, contributes 36% of the State's greenhouse gas emissions, which is higher than the national average.¹ Converting the State's fleet to EVs, which contribute no tailpipe emissions, is a necessity to meeting the goals set by the GGRA.

¹ <https://news.maryland.gov/mea/2020/09/30/tracking-marylands-zero-emission-vehicle-activity/>

Coupled with the electrification of the transportation sector is the State's goal to increase the amount of renewable energy on the electric grid. The Maryland Renewable Portfolio Standard (RPS) requires that every year the grid will be powered by a greater percentage of renewable energy, and GHG emissions associated with electricity use will be reduced. Moving away from dependence on fossil fuels and towards electrification--while simultaneously making the electricity grid more renewable--means that Maryland can significantly reduce its transportation-related GHG emissions.

Further driving Maryland's efforts towards converting its fleet to EVs is the Light Duty ZEV Memorandum of Understanding (MOU), which was signed in 2013 and updated in 2018. With this agreement, Maryland joined eight other states in committing towards electrifying their light duty vehicle fleets. This MOU established a goal of 300,000 ZEVs on the road in Maryland by 2025. The electrification of Maryland's State fleet vehicles is one way for the State to lead by example on climate change and meet the ZEV goal.

A Medium and Heavy Duty ZEV MOU was signed on July 14, 2020 and included California, Colorado, Connecticut, Maine, Maryland, Massachusetts, New Jersey, New York, North Carolina, Oregon, Pennsylvania, Rhode Island, Vermont, Washington, Vermont, and D.C. It builds off the success of the 2013 MOU and subsequent action plans and commits signatories to work together to foster a self-sustaining market for zero emission medium and heavy-duty vehicles. The 2020 MOU calls for 30% of new truck and bus sales to be zero emission by 2030 and 100% by 2050 and emphasizes the need to accelerate deployment of zero emission trucks and buses in disadvantaged communities.

Fleet Electrification in Maryland

Beginning in Fiscal Year (FY) 2020, the enacted budget bill reallocated Strategic Energy Investment Fund (SEIF) funds from Maryland Energy Administration's Renewable and Clean Energy programs agency fleet budgets and required the State, with some exceptions, to procure EVs and PHEVs when replacing State fleet vehicles. With this allocation, the State added 5 EVs and 68 PHEVs to its fleet in FY 2020. A large number of PHEVs were procured due to a lack of charging infrastructure in place in the first year of the fleet electrification process.

In FY 2021, the level of SEIF funding for fleet electrification was maintained, and 40 EVs were added. The FY 2022 budget requires that EVs comprise 25% of the State's passenger vehicle purchases. The State purchased an additional 88 EVs in December 2021.

The FY 2023 budget allowance as proposed by the Governor assumes continued use of SEIF funding for fleet electrification. Selection of which FY 2023 vehicle replacements will be EVs will take place in Spring 2022.

Statewide Collaboration

An increasingly electrified State fleet will require charging infrastructure to support it. To that end, a coordinated approach among State agencies is critical. DGS's Office of Energy and Sustainability leads the Statewide approach for the planning and installation of EV infrastructure, but it relies heavily on the expertise and input of sister agencies including the Maryland Department of Transportation (MDOT), the Department of Budget and Management (DBM), the Maryland Energy Administration (MEA), and the Maryland Department of the Environment (MDE).

Roles & Responsibilities

There are numerous State government stakeholders affected by fleet electrification and EV charging infrastructure. Below is a summary of the major stakeholders and their respective roles and responsibilities.

Agency	Role
DGS	<ul style="list-style-type: none">• Coordinates Statewide Strategy for EV infrastructure at State Facilities through the establishment of a centralized EV program, standardized policies and procedures, legal agreements, procurements, and other guidance• Provides Design & Construction project management for some EV charging projects• Collects data on existing, planned and in progress EV charging infrastructure at State facilities• Identifies potential EV sites for future State EV fleet vehicles• Coordinates with utilities on Statewide EV Infrastructure through the Maryland Public Service Commission's (PSC) pilot program• Funds \$1 Million in EV charging projects at State facilities annually (budget dependent)
DBM	<ul style="list-style-type: none">• Provides fleet management for the State• Maintains State fleet vehicle data (ongoing)• Manages the SEIF budget for purchasing ZEVs and PHEVs in State fleet• Establishes the budget for all State agency vehicle purchases in the Governor's annual budget allowance, and in that process approves specific vehicles for replacement
MDOT	<ul style="list-style-type: none">• Chairs the Zero Emission Electric Vehicle Infrastructure Council (ZEEVIC)• Provides technical and subject matter expertise to DGS on ZEV infrastructure strategy and projects• Maintains data set on public EV charging outlets and stations in the State

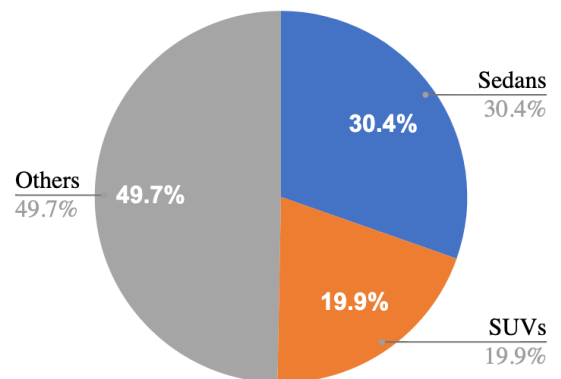
	<ul style="list-style-type: none"> • Tracks and reports EV registrations (monthly reporting) • Alternative Fuel Corridor (AFC) nominations • Manages the installation of EV charging for MDOT locations
MDE	<ul style="list-style-type: none"> • Administers the Volkswagen Settlement Funds • Provides technical expertise to DGS on ZEVs and charging infrastructure • Drafts the Greenhouse Gas Reduction Act Plan
MEA	<ul style="list-style-type: none"> • Administers the SEIF, which is utilized for both EV purchases and charging infrastructure expenses • Administers the EV Charging Station Rebate Program
All Using Agencies	<ul style="list-style-type: none"> • Coordinate with DGS to report new and planned EV infrastructure • Work with DBM to identify Potential EVs • Apply for Funding • Maintain EVs and owned infrastructure • Maintain ongoing EV charging data

III. State Fleet

Baseline Inventory of State Fleet Vehicles

In 2020, DGS collected State fleet vehicle data from 40 executive agencies, excluding MDOT and the University System of Maryland (USM) in order to determine the State's potential to electrify.² Police pursuit vehicles were not included in the fleet data. As a result of the data collection effort, DGS received detailed data on 4,015 State fleet vehicles across 40 agencies to assist with future EV planning.

Distribution of Vehicles in the Dataset
- by Vehicle Type



Analysis: Potential of State Fleet to Electrify

DBM's guidelines indicate that fleet vehicles are eligible for replacement when they are over 10 years old, or have more than 100,000 miles.

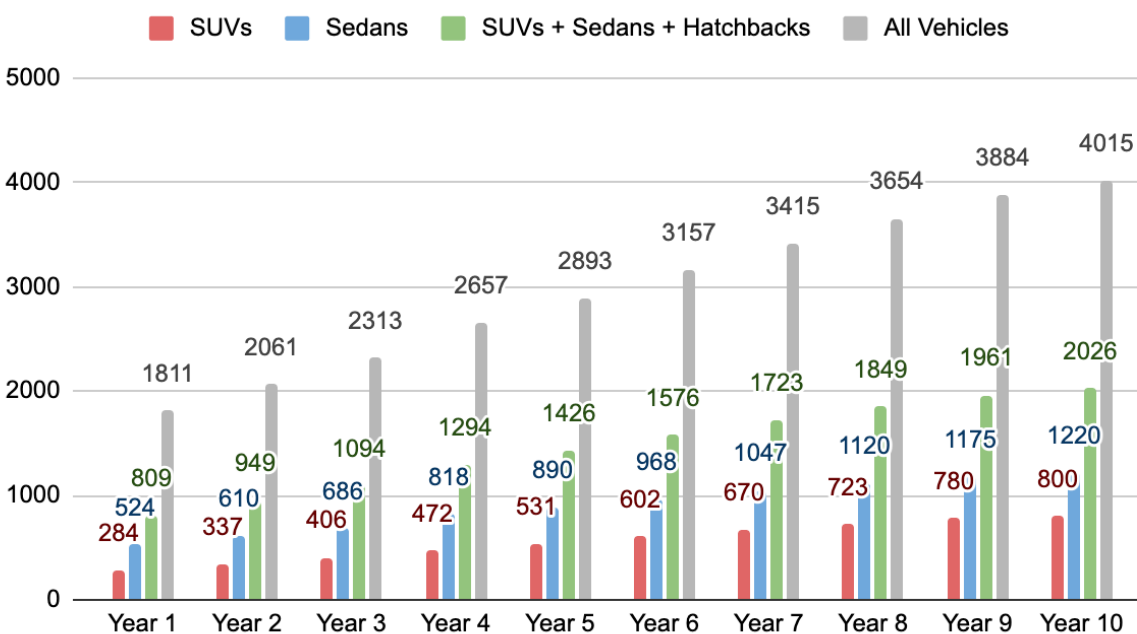
² Note that MDOT was excluded because it has collected and compiled its agency's fleet data as part of the MDOT Fleet Innovation Plan.

Eligible vehicles are currently limited to sedans and SUVs due to the availability of EVs of similar vehicle types. The cumulative number of sedans and SUVs that fall into a “High Mileage Vehicles” or “Older Vehicles” category, over the next 10 years were determined to be “eligible vehicles for replacement.” DBM and DGS anticipate additional vehicle classes becoming available in 2023 and beyond.

Eligible vehicles are represented in the table in the chart below.

If the State chooses ZEVs as replacement vehicles for all sedans and SUVs, then approximately half of the State’s non-police fleet would be electrified by 2030.

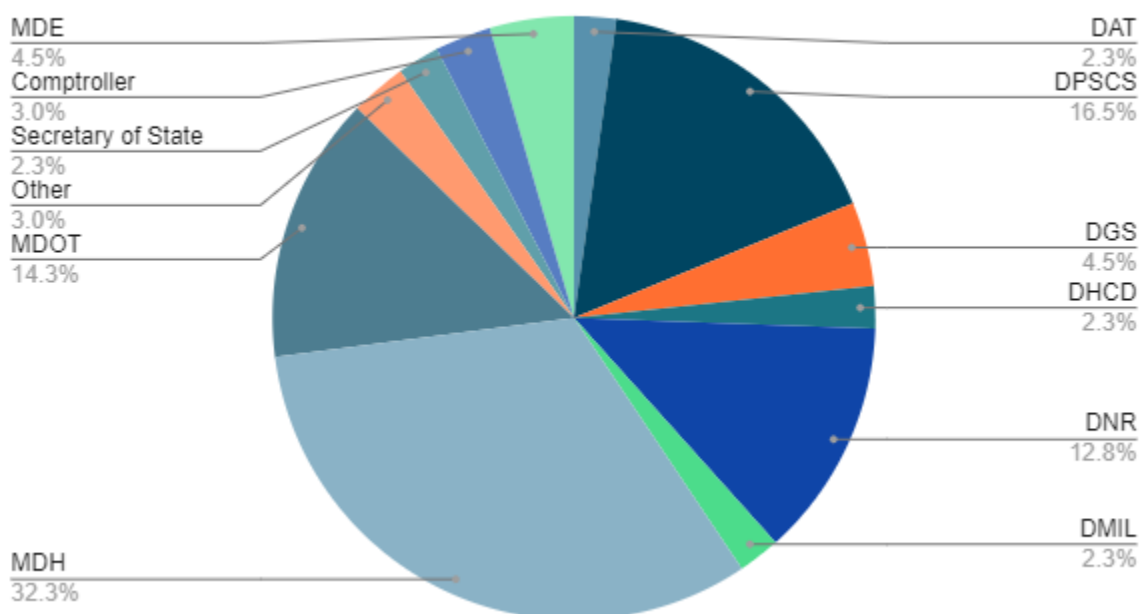
Cumulative no. of High Mileage or Older Vehicles over the next 10 years:



Since FY2020, the State has started to replace eligible vehicles with EVs. In FY 2020, 5 Chevy Bolts were purchased. In FY 2021, 38 Chevy Bolts and 2 Ford Mustang Mach Es were purchased. In FY 2022, the State purchased 88 additional EVs, consisting of 58 Chevy Bolts

and 32 Ford Mustang Mach Es.

EVs by State Agency (2020-2022)



IV. EV Charging Infrastructure

Types of EV Charging Infrastructure

Charging an EV is similar to refueling a conventional vehicle with gas, but there are differences depending on the type of infrastructure that you are using.

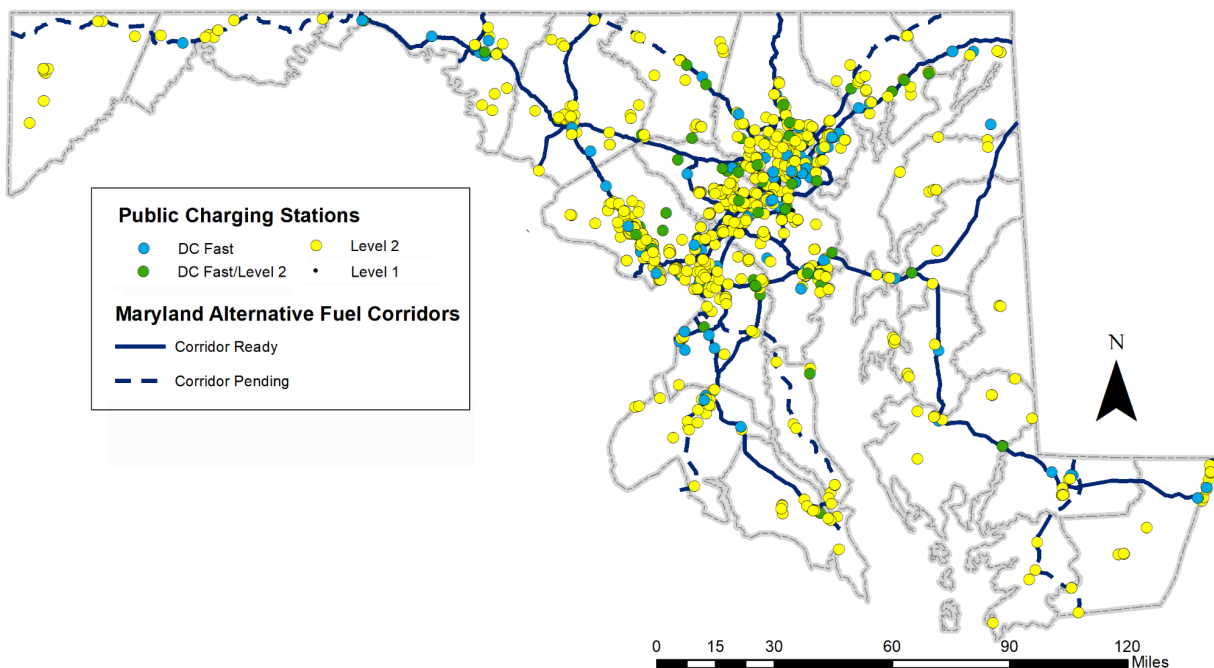
Level 1 chargers use the vehicle's cord set to plug into a common 120v outlet. These types of chargers take the longest, at approximately 11-30 hours to fully charge a vehicle, depending on battery capacity. An electric vehicle can maintain more than 40 miles a day if charged using this method. Level 1 charging is not sufficient for State fleet needs.

Level 2 chargers require additional equipment and utilize 240V outlets. According to [Maryland EV](#), a 7.2kWh level 2 charger typically takes 3-8 hours to fully charge an empty battery. Each hour adds approximately 20 miles of driving range. This makes it a better solution for the State fleet than Level 1. Level 2 chargers may be eligible for funding from MDE Charge Ahead Grant Program and MEA charging stations rebates.

DC Fast Chargers (DCFC) are the fastest type of charging infrastructure. Depending on battery size, DC Fast chargers can charge some EVs up to 80% in as few as 20-30 minutes. Each hour adds approximately 100 miles of driving range. DC Fast Chargers may only be installed where adequate utility infrastructure is located, including the availability of three phase power. Not every vehicle can be charged using DCFC, and there are multiple connectors for this type. DC Fast Chargers may be eligible for funding from MDE Charge Ahead Grant Program and MEA charging stations rebates, but due to their high cost, they generally will not be an option for DGS funding.

Existing Infrastructure in Maryland

The Zero Emission Electric Vehicles Infrastructure Council (ZEEVIC), chaired by MDOT, has done significant work to identify and map existing public EV charging infrastructure in Maryland. A map of existing charging stations is made available on the [Maryland Zero Emissions Electric Vehicle Infrastructure Council](#) website.



Note that the data set MDOT maintains does not differentiate between charging infrastructure at State facilities and/or available to State fleet vehicles from the broader data set.

Infrastructure at State Facilities

In order for EVs in the State fleet to charge, there must be dedicated and available infrastructure. DGS has taken the lead to identify what the State has and what it will need in regards to charging infrastructure and to capture and track information about infrastructure at State facilities as it is installed and used.

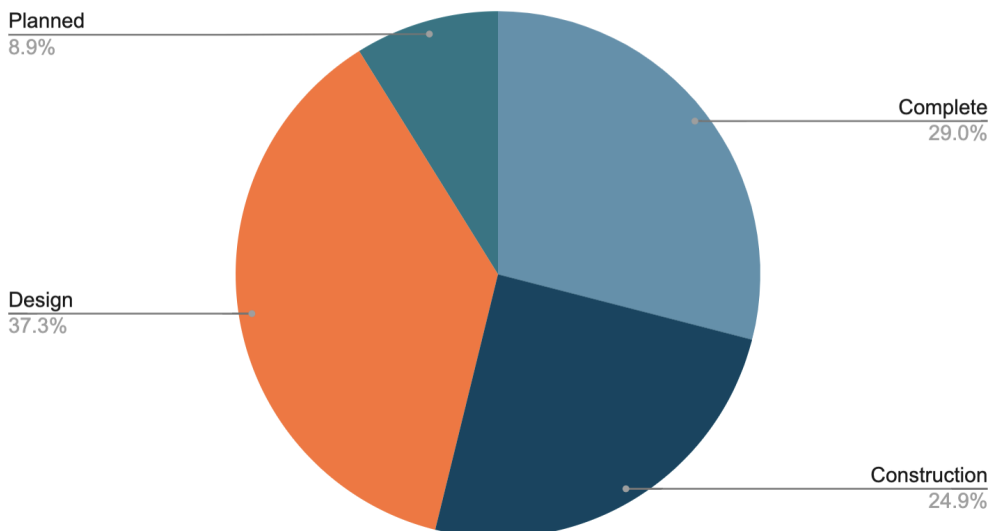
To compile a centralized list of EV charging stations at State facilities, DGS has developed a data collection form to collect all needed data points in a complete and consistent way. State agencies installing EV infrastructure must utilize this form to ensure DGS is able to track State EV projects. DGS Project Managers should also use this form for capital projects and small procurement projects that include EV charging.

Access the form here:

https://docs.google.com/forms/d/1q6_XvEzOuuJ0bfQIP-urr8a1aRd9owL5PI1oEuXgytl/edit

As of November 22, 2021, DGS has documented 25 EV charging station projects in different stages of development across the State.

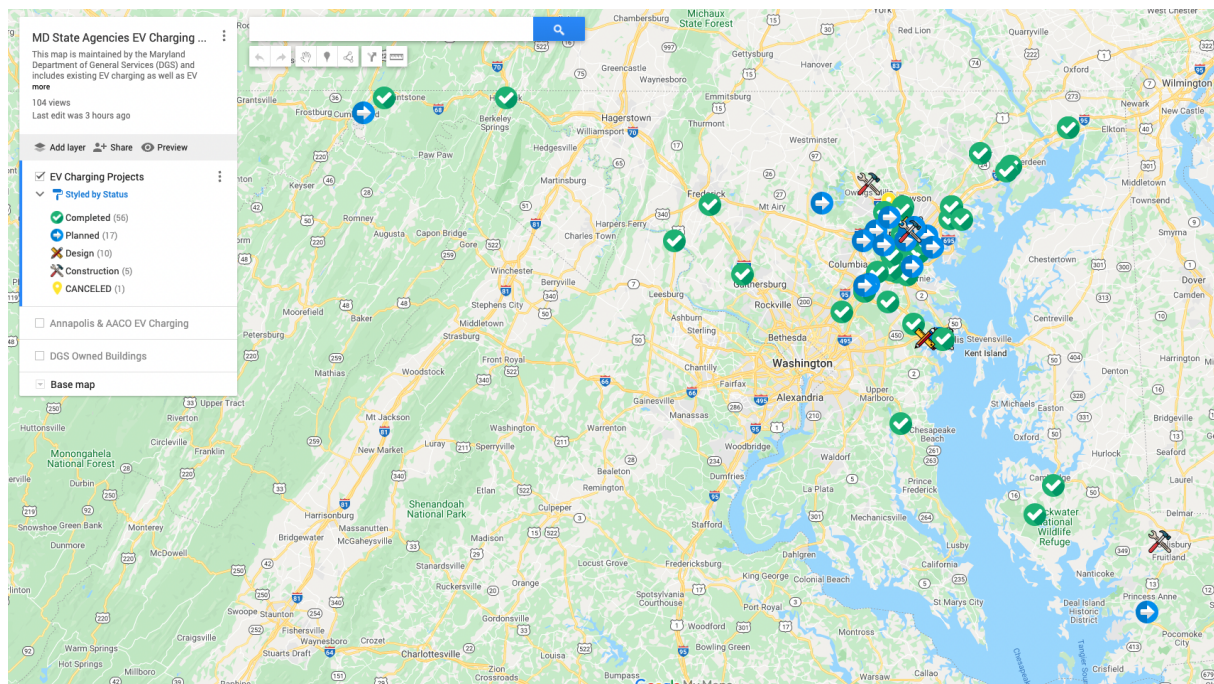
Project Status



Once complete, these 25 projects will add approximately 125 charging ports by June 2022.

- 7 Fully Complete (25 ports)
- 6 in Construction
- 9 in Design
- 3 Planned

The map below indicates the locations of Maryland State Agencies' EV charging.



Updated 1/3/2022

V. Funding

Funding for ZEVs in State Fleet

In FY 2020, dedicated funding for ZEV fleet vehicles was included in the enacted budget bill, and it was established that the purchase of ZEVs was an allowable use of Regional Greenhouse Gas Initiative (RGGI) auction revenues in the Strategic Energy Investment Fund (SEIF), managed by MEA. Specifically, the funds are appropriated from the Renewable and Clean Energy subaccount of the SEIF. According to DBM, RGGI auction revenues are expected to remain available for Maryland's use into the future.

Funding for fleet electrification efforts was continued in the FY 2021 and FY 2022 budgets, as well as in the Governor's proposed budget allowance for FY 2023. For FY 2023, \$1.25 million of SEIF is allocated to DBM to pay for the cost differential between non-EV and a ZEV vehicle replacements for State agencies, and \$1 million is provided to DGS for charging infrastructure.

DBM and DGS will work to identify which State agencies have fleet replacement needs that can most quickly transition to ZEVs and strategically budget these funds for those agencies in the beginning years of this program.

Funding for Infrastructure

Funding for infrastructure will always remain a determining factor when installing charging stations at State facilities. In addition to the \$1 million in funding allocated to DGS in FY 2022 to install EV charging stations at State facilities, there are two other sources identified to assist with costs associated with State installed infrastructure: VW Settlement funds, and MEA Rebates. Note that no upfront State funding is necessary for infrastructure installed by the electric utilities through the Public Service Commission (PSC) Pilot Program, but that the charging stations must be located at a publicly accessible location. The utilities included in the pilot (BGE, PEPCO, Delmarva and Potomac Edison) will own the charging stations, will provide the electricity, and will charge customers for their use.

DGS Funds

In FY 2022, DGS was allocated \$1 Million in its budget to implement EV charging at State facilities. Through a collaborative process with DBM, EV projects were identified to align with the purchase of EVs by State Agencies and their anticipated charging needs. There is a limited amount of funding that may be available in FY 2023. Interested agencies may contact Emily Soontornsaratool for more information: Emily.Soontornsaratool@maryland.gov.

Volkswagen (VW) Settlement Funds

On September 18, 2015, the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) issued a Notice of Violation of the Clean Air Act (CAA) to Volkswagen AG (VW), Audi AG, and Volkswagen Group of America, Inc. alleging that model year 2009-2015 Volkswagen and Audi diesel cars equipped with 2.0-liter and 3.0-liter engines included software that circumvents EPA and CARB emissions standards for nitrogen oxides (NO_x). This software is considered a "defeat device" as defined under the Clean Air Act and allowed cars to meet emissions standards in a laboratory or a testing station. During normal operation, however, those vehicles emitted nitrogen oxide at up to 40 times the approved standards. Approximately 550,000 vehicles in the United States had "defeat devices" installed; approximately 16,000 were delivered to Maryland. On October 25, 2016, as a result of a 2016 settlement between EPA, CARB and Volkswagen for violations of the CAA that involved software designed to defeat emissions standards, Volkswagen is required to spend \$2.7 billion on emission reduction programs nationwide.

Under the Environmental Mitigation Trust established in the 2016 settlement, Maryland is eligible to receive \$75.7 million for use on specifically defined mitigation projects to remediate the excess nitrogen oxide emissions. MDE was the lead agency tasked with developing Maryland's mitigation plan in accordance with the list of eligible projects and matching fund

requirements required under Appendix D-2 of the settlement. The draft plan placed priority on EV charging infrastructure – allocating the full 15 percent (\$11.3 million for Maryland) that is allowed for this category – and the replacement of older, dirty diesel engines with new, cleaner technologies. Electric buses and heavy-duty equipment such as trucks, boats and locomotives are potential projects that are eligible for funding.

MDE requested public comments on the draft plan and held public meetings in August 2018. Changes made to the draft plan in response to public comments include an increase in funding for local government projects, and the addition of a pilot program of electric school buses. The plan has been finalized and approved by the Trustee. Vehicle replacement project proposals were accepted until May 6th, 2019. MDE received over forty proposals for funding. MDE completed its review of these programs and submitted approximately forty proposals to the VW Trustee for final approval. MDE has received Trustee approval on all proposals. MDE is finalizing contracts between MDE and the Grantees.

For the light duty EV Infrastructure piece of the Volkswagen settlement, MDE worked with MEA to develop the framework and requirements for this program. The Maryland VW EV Infrastructure Program will focus on workplace, corridor/Hub, and State owned property charging. There will be three rounds of funding with the funds evenly distributed over each round (approx \$3.7 million per funding round). The first round of funding was announced on December 8, 2020 with proposals due March 5, 2021. MOUs are being finalized. Round two will begin in early 2022.

Additional information on Maryland's Plan can be found at:

<https://mde.maryland.gov/programs/Air/MobileSources/Pages/MarylandVolkswagenMitigationPlan.aspx>

MEA Rebates for Charging Equipment

MEA is working with Marylanders to expand the State's growing EV recharging infrastructure through the Electric Vehicle Supply Equipment Rebate Program.

Through the program, residents, governments and businesses can acquire a State rebate for purchasing or installing an EV charging station, known as Electric Vehicle Supply Equipment (EVSE). In order to receive these rebates, eligible participants must apply to the MEA, which will issue rebates on a first-come, first-served basis.

PSC Pilot Program

Another method of obtaining EV charging infrastructure is through the PSC's Pilot Program. Under this program, no upfront State funding is necessary for infrastructure installed by the electric utilities through the program. However, the charging stations must be located at a publicly accessible location. The utilities included in the pilot (BGE, PEPCO, Delmarva and Potomac Edison) will own the charging stations, will provide the electricity, and will charge customers for their use. Below is additional background information regarding the program.

In 2019, the Maryland Public Service Commission Order 88997 was issued approving a pilot program across the four investor-owned electric utilities (BGE, Pepco, Delmarva, and Potomac Edison) in Maryland. Maryland's largest electric cooperative (SMECO) was separately approved to run a public-charging pilot program. The pilot aimed to:

- Assist customers in understanding and managing their EV charging load;
- Collect data and information on EV charging patterns and behavior to enable the design of future rates, technology opportunities, and other EV programs; and
- Collect data and information on grid impacts.

The pilot runs through 2023, with the possibility of a PSC renewal. Participating utilities are required to develop EV-Only Time-of-Use rates. Other pilot features include Demand charge credit for workplace, fleets, multi-unit dwellings and a limited number (300) of public DC Fast Chargers. Over 960 utility-owned charging stations will be installed on property leased, owned, or occupied by the State, counties, or municipal governments.

VI. EV Infrastructure Strategy

Overview

DGS will work collaboratively and in partnership with DBM to ensure that infrastructure needs reflect the growing State fleet. DGS has created a centralized program that will standardize policies and procedures, track, and provide oversight for EV infrastructure installation at State facilities.

DGS's order of priority for installing infrastructure is as follows:

1. Charging for existing and incoming ZEV on State fleet;
2. Charging for existing PHEV on State fleet;
3. Employee charging access at State facilities; and
4. Public charging at State facilities.

Infrastructure will continue to be prioritized for existing and incoming State fleet ZEVs. DGS will use the State fleet vehicle data, including age, mileage, and parking location, to plan for infrastructure and to ensure adequate power and that enough electrical conduits are installed with each charger to meet future charging needs. As EV infrastructure is rolled out, regardless of the location or approach, the installing Agency must notify DGS. The Agency should also request data from DGS and DBM on expected EV fleet needs over the next decade to ensure adequate infrastructure is installed.

DGS is identifying FY 2022 EV sites in collaboration with DBM and MEA as the next round of State fleet vehicles is identified. The location and concentration of "eligible vehicles" will be used to ensure that EV sites can be consolidated in the initial roll out to benefit the greatest number of vehicles and agencies.

To minimize the upfront costs to the State and to ramp up infrastructure quickly, DGS is working with the utilities to ensure that sites that are good candidates for utility installed infrastructure can be implemented through those programs. Sites that are not publicly accessible, for example behind a gate or in a gated garage, are good candidates for State-installed infrastructure. See section VII below for a more detailed explanation of the two approaches.

Agencies should consider electrical capacity upgrades, site construction, and ongoing fees for data services and maintenance in addition to the charging station equipment and installation. When possible, DGS will consider future proofing opportunities to minimize expansion costs.

Phase I - Supporting EV incoming fleet in FY 2021

Time frame: June 2020 - December 2021

Under this phase, DGS:

- Ensured that infrastructure is in place to support the incoming ZEV fleet
- Finalized certain template legal agreements;
- Collected and analyzed data on the State's fleet;
- Documented processes and standardized procedures for future projects;
- Developed relationships and defined roles and responsibilities; and
- Surveyed the State on workplace charging needs.

Phase I efforts included 21 charging ports installed at 6 sites to support the 45 ZEVs added to the State's fleet. Additionally, DGS has finalized legal agreements, including the Right of Entry (ROE) agreement with BGE (See Appendix B), PEPCO, and Delmarva, as well as software agreements with Greenlots and LilyPad (See Appendix C), and have documented processes and procedures (in this document).

Because work under Phase I supported the incoming ZEVs, there will be significant work to do to ramp up EV installation to ensure the State is reaching ambitious ZEV and climate goals in the longer term Phase II.

Phase II - Ramping Up Infrastructure in FY 2022

Time frame: June 2021 - June 2022

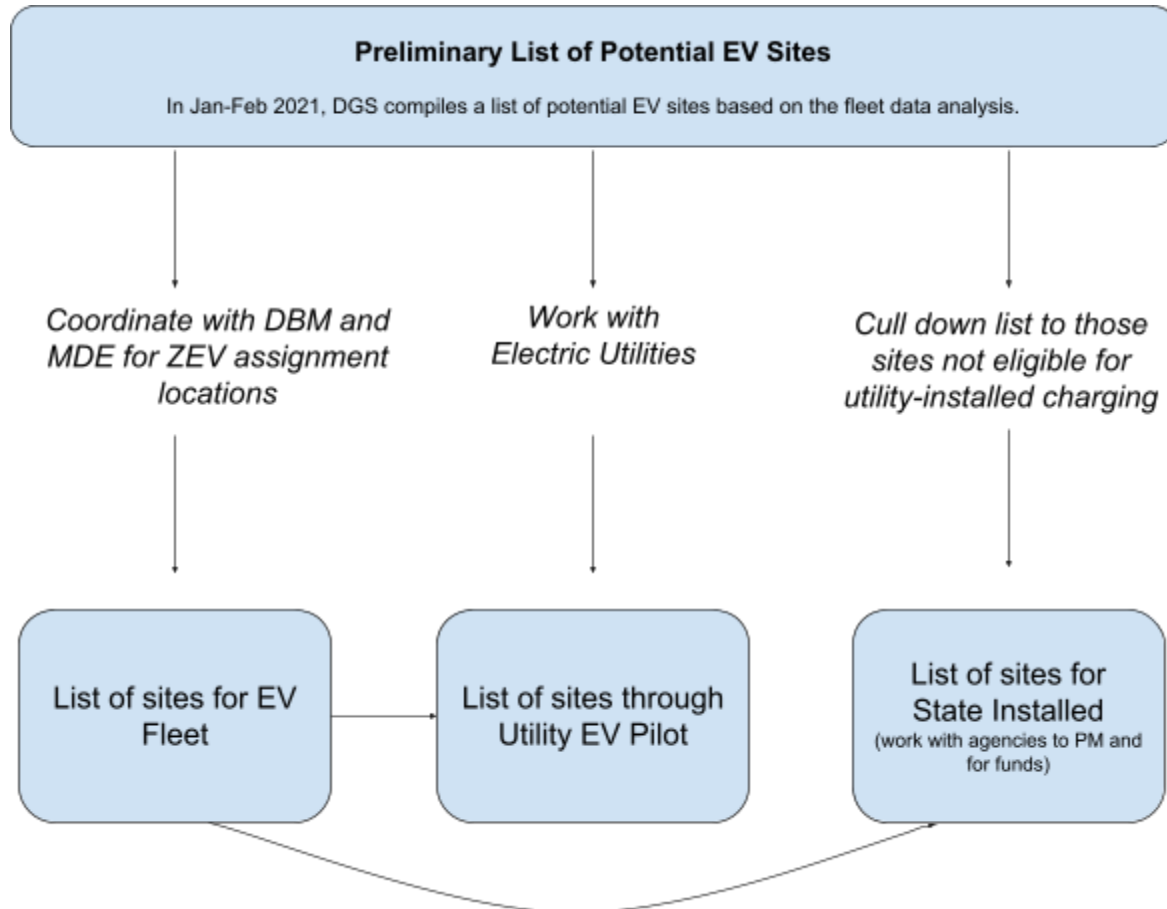
Concurrently with the wrapping up of infrastructure projects under Phase I, DGS started Phase II. Phase II is a proactive approach to planning for the future needs of the State and identifying the steps to meet them. Phase II employs a data-based, collaborative approach to ramp up EV infrastructure significantly to meet the growing fleet charging needs.

Under this phase, DGS is utilizing \$1 Million in budgeted funding to:

- Identify EV infrastructure sites;
- Identify sites suitable for utility-installed infrastructure and sites suitable for; State-installed infrastructure
- Roll out infrastructure based on these plans; and
- Revisit lists annually based on each year's expected ZEV needs.

Phase II will use the collected fleet data set as well as Agency EV requests and Agency vehicle replacement plans as a basis for identifying a list of potential EV sites in FY 2022.

The following diagram shows how the preliminary list of potential EV sites will serve as the basis for identifying sites to pursue through utility installed infrastructure, and through State-installed infrastructure.



A dynamic approach means that these processes are happening in tandem, and with coordination among parties.

Phase III : Moving Towards Dedicated Fleet Charging

While the current phase includes some sharing of fleet charging infrastructure with workplace and public charging, Phase III will evaluate the appropriate ratio of charging ports per fleet vehicle while considering expansion needs.

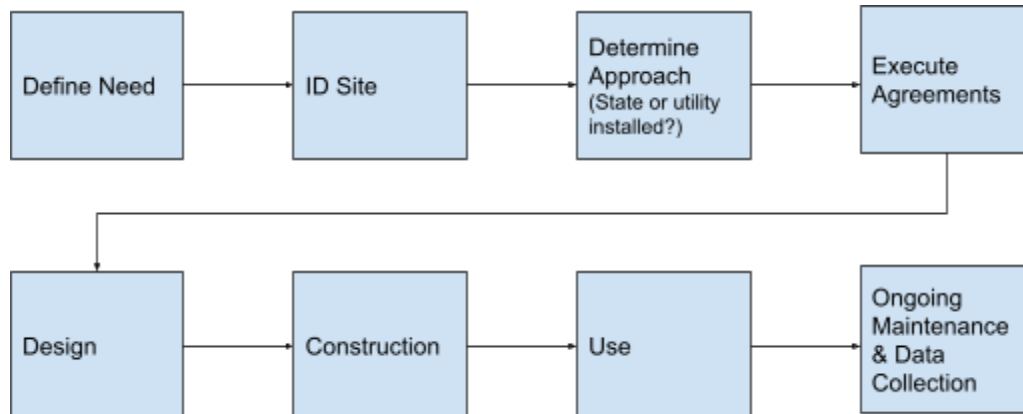
Under this phase, DGS will:

- Continue to proactively plan for an electrified fleet
- Determine next steps for when the PSC Pilot project has completed.
- Pursue solutions for EV charging at the State's leased locations
- Finalize a longer term procurement strategy for EV infrastructure, maintenance, and data needs.

VII. Guidance for Installing EV Infrastructure at State facilities

High Level Process Overview

All EV charging infrastructure projects will follow the same basic overall process.



1. **Define Need.** Understanding and documenting the need for EV infrastructure. The Using Agency and/or DGS asks the following questions: Is infrastructure needed to support existing or incoming State fleet vehicles? Or is it in anticipation of future State fleet needs? Or is the need to have EV charging infrastructure in place to support workplace charging or the general public? While defining need, it will need to be determined how much infrastructure is needed, if additional conduit is needed for future EV charging, and what type of infrastructure (level 2 or DC fast charging) is necessary. If the Using Agency is defining the need for charging, it is highly recommended that they consult with the DGS EV Program for input at this stage.
2. **Site Identification.** Using the information gathered through your needs assessment, a site or sites for installing EV infrastructure can be identified.
3. **Determine the Appropriate Approach.** Decide which approach (either utility-installed or State-installed) will be the best fit based on your needs and site. See the decision tree in the following section for assistance in determining the appropriate approach.
4. **Execute Agreements.** Regardless of the approach that is selected, there will be legal agreements to execute. Agreements may include: ROE agreement with utility, contract with charging station vendor, etc.
5. **Design.** The design process can begin. See detailed processes for different approaches and scenarios in the below sections.
6. **Construction.** Construction and energizing of the site.
7. **Use.** Open the infrastructure for use.
8. **Ongoing maintenance & data collection.** Maintenance will be handled differently depending on the approach. Data will likely be collected regardless of approach.

Determining the Appropriate Approach

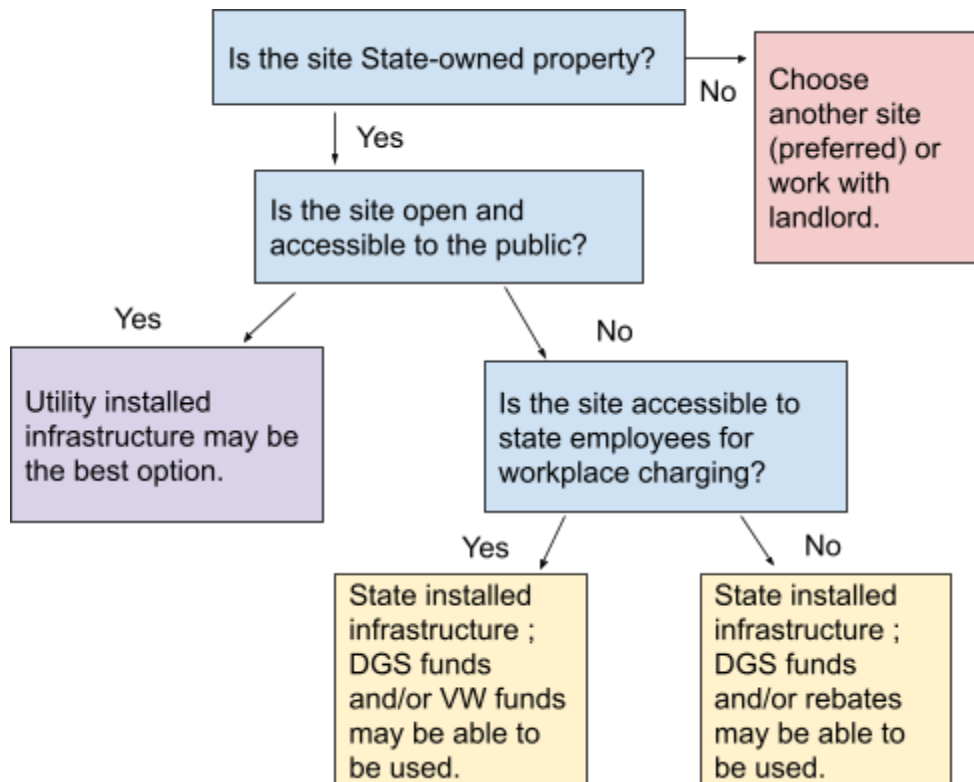
The process for installing EV infrastructure at State facilities will depend upon whether infrastructure will be installed through the Public Service Commission (PSC)'s EV infrastructure pilot ("Utility Installed Infrastructure") or through State managed construction projects ("State Installed Infrastructure").

Utility Installed Infrastructure	State Installed Infrastructure
Through PSC pilot * <ul style="list-style-type: none"> • BGE - EV Smart • Delmarva • PEPCO • Potomac Edison 	1. DGS Capital 2. DGS Small Procurement 3. Agency Managed

*a limited number of charging stations will be available per utility under this project

Deciding which of these two approaches is appropriate depends on site location, accessibility to non-fleet vehicles, security, and funding needs, among other factors.

The below decision tree may help agencies decide which approach is right for them, but note that it does not include all considerations.



EV Infrastructure Construction Process

Utility Installed infrastructure

Infrastructure that is installed through the PSC EV Charging Stations Pilot by one of the regulated electricity utility companies (BGE, PEPCO, Delmarva, or Potomac Edison) will all follow the same general process:

1. Identification of potential EV charging site.

Two types of chargers (Level 2 and DC Fast) are available through the program. The utility coordinates all equipment purchase and installation efforts. The utility owns, operates, and maintains the EV chargers. Eligible site hosts must meet the following criteria:

- a. Be a current commercial customer with available electricity distribution capacity;
- b. Have jurisdiction over the parking area and electrical access at the site;
- c. Agree to provide the right-of-entry necessary to install and operate charging stations;
- d. Ensure the site is available to the public (e.g., not behind a gate) 24 hours per day, seven days per week, through, at least January 13, 2024 (the end of the program's duration); and
- e. Agree to work in partnership for the duration of the program.

2. Expression of interest to the regulated utility. Agencies may initiate contact with the appropriate representatives from each utility (Please cc: DGS in all communications: Emily.Soonhorsatool@maryland.gov)

- a. BGE: Joseph Picarelli (Joseph.Picarelli@bge.com)
- b. PEPCO: Barbara Gonzalez (bmgonzalez@pepco.com)
- c. Delmarva: Lori Van Hoy (Lori.VanHoy@delmarva.com)
- d. Potomac Edison: Neil Keating (nkeating@firstenergycorp.com)

3. An initial site visit is conducted by the utility in partnership with the site host. Charger installation often requires involvement and approval from multiple departments or staff. Suggested personnel to be involved from project start may include representatives from the State Agency divisions as applicable, including Site Facilities, Engineering, Communications, and Sustainability, or equivalents.

4. A preliminary site proposal is developed by the utility and submitted to the site host for review. Once acceptable to host, a digital signature is required. A signed site proposal confirms the number of chargers to be placed on site, the parking spaces to be designated as EV charging, and the general location of support equipment. A new meter will be installed at each site, and the utility is the account holder. As such, the site host's bill will not be impacted.

5. Upon receipt of the signed site proposal, the utility will initiate creation of a detailed design package and Right of Entry Agreement. This process can take up to four weeks to complete. Construction drawings are developed and submitted to the site host for review. It is recommended that scheduling of work, and any shutdowns, be stated by the Agency to the utility, and that the utility list requirements on the construction drawings. The final design package will be sent to the site host to be signed. Upon receipt of signed documents, construction will be scheduled, and dates will be communicated to the designated site contact
6. Right of Entry (ROE) signed. The utilities do not require an easement and, given the short term nature of the pilot program, easements are not recommended. If the government entity would like an easement, it should discuss the proposed charger installation and easement with its legal staff. At this time an MOU will also be signed between the agency and DGS, if necessary.
7. Construction: Can take several weeks to a few months depending on complexity of the project. The utility will complete all site work and provide the EV parking space signage for each installed unit. However, parking space paint detail will be the responsibility of the site host, if desired. DGS will maintain a replacement stencil for paint maintenance.
8. Energization: The utility commissions and energizes chargers and the service period begins.
9. Opening for Use: RFID cards or a downloaded app will be required at most charging stations to initiate charging. Some locations will also accept a credit card.
10. Ongoing maintenance and data collection: The utility will maintain the charging stations for the duration of the approved program period. If requested, the utilities can provide monthly reports on the number of charging sessions and duration of charging sessions.

A detailed process for BGE's EV Smart program is included in Appendix A.

State Installed Infrastructure

When the State procures and installs charging infrastructure outside of the PSC's pilot program, it is referred to as "State Installed Infrastructure." This approach may fall into one of three scenarios, depending on the size of the project and the procurement authority.

Scenario	Description	Contract value	Project Management
A	Included in new construction or major renovation using capital project funds	Any (usually high dollar value projects)	DGS Design, Construction, Energy (DCE) Capital Construction

B	Procurement of a standalone EV infrastructure project paid for with funds received from DGS	Any (often small procurements)	DGS DCE Office of Energy & Sustainability
C	Agency procures as a small or stand alone procurement using own operating funds	Under \$50K Under \$100K for DNR	Agency

**Any project receiving funding through DGS will be managed by DGS.*

Scenario A: State installed infrastructure - DGS PM, Included in new construction or major renovation, DGS DCE Capital

In Scenario A, the EV infrastructure is included as part of a capital construction project, such as a new construction or a major renovation. As it is only one component of a larger capital project, the process will follow the usual capital construction process, with EVs being included as one aspect.

Process:

1. Program Part I. The using agency defines the basic need and justification for the capital project which is approved by DBM. Note that the need is for a new construction or renovation project. There is a cost estimate associated with Program Part I. This should include the EV infrastructure.
2. Program Part II. A more detailed description includes the project needs. The Using Agency or a firm hired by the using agency (off of the Indefinite Quantity Contract (IQC)) should include EV infrastructure in the project description. Program Part II will go to DBM and DGS for approval. The DGS Cost Center will use the information in Part I/II to develop a Cost Estimate Worksheet (CEW). This is the basis for the project budgets.
3. The project is advertised for Architecture and Engineering (A&E) technical proposals for the design. A firm is selected through competitive evaluation based on its technical proposal.
4. The fee to design is negotiated with the selected firm.
5. The negotiated fee will be approved by the Board of Public Works (BPW) or Departmental Procurement Review Board (DPRB) depending on the contract value and fund source.
6. Design Phase is completed. (Timeframe: Generally 1 year)
7. 4 month procurement - advertise and award for construction phase (awarded on low bid)
8. Construction (Typically 1-2 years)

9. The entire project will be turned over to the Using Agency at Substantial Completion of the construction.
10. There is a post-construction 2-year warranty period.

Adding EV infrastructure into projects that are already underway is possible, but may present some challenges. When possible, EV infrastructure should be considered and included from the beginning of the project (in Program Part I). Please see the Green Purchasing Committee-approved EVSE specification (Appendix D) for equipment information and requirements.

Scenario B: State installed infrastructure - DGS PM, Stand Alone Procurement

In this scenario, EV infrastructure is procured and installed as a stand-alone project that is managed by DGS.

1. With DGS guidance, identify a potential EV charging site. The agency will define its need and identify a potential charging site. It will also determine if the appropriate approach is State-Installed Infrastructure.
2. Document need (# of stations, # of conduits for future expansion)
3. Visit the site and determine the locations for the chargers and availability of power.
4. Determine if a new electrical line of service is needed.
5. Create a design or scope of work /Project Manual.
6. Utilize Statewide contracts and circulate project through DPRB for approvals..
7. Execute agreements
 - a. Agencies should leverage an existing Statewide contract for EV infrastructure -
 - I. Include a minimum of 2 years of maintenance; and
 - II. Include a 5-year cloud data software subscription.
8. Utility service coordination. Note that it is important to get any utility invoice paid in full early to avoid delays.
9. Project Kick-off:
 - a. Obtain Purchase Order (PO) from procurement officer.
 - b. Hold pre-construction/kick-off meeting.
 - c. Issue Notice to Proceed to contractor with start date and end date.
10. Construction. Includes: Delivery and staging of equipment and materials, excavation, laying conduit, pouring cement pads, landscaping/seeding, wiring, installation of equipment, parking lot striping and stenciling, installation of signage, etc.
11. Commissioning. Commissioning may include site energization, setting up software, setting up payment processes, etc.
12. Open for use
13. Ongoing maintenance. Software maintenance will be included under the using agency's agreement with the network provider.
14. Ongoing data collection.

Scenario C: State Installed Infrastructure - Goes entirely through Agency with no DGS involvement

1. Identification of potential EV charging site. The agency will define their need and identify a potential charging site. It will also determine if the appropriate approach is State-Installed Infrastructure and confirm it is within their procurement authority to pursue outside of DGS.
2. Document need (# of stations, # of conduits)
3. **Notify DGS** of the location and estimated number and type of chargers.
4. May utilize Statewide contracts to obtain a vendor's services.
5. Execute agreements (contract, etc)
6. Design drawings
7. Construction
8. Signage and pavement markings
9. Utility energization
10. **Notify DGS. Complete the EV infrastructure survey to ensure the site is added to the State's EV charging inventory.**
11. Commissioning
12. Open for use
13. Ongoing maintenance
14. Ongoing data collection

Maintenance & Data Collection

DGS will work towards a long-term solution for ongoing maintenance and data services.

VIII. Procurement Resources

Charging Infrastructure on Statewide Contract

There are two Statewide contracts that are available for agencies to use through July 2022. Both are Intergovernmental Cooperative Purchasing Agreements (ICPAs) through Sourcwell. We are working on new procurement mechanisms.

Vendor	BPO #
Lilypad EV LLC	001B9400046
ZECO SYSTEMS, INC. D/B/A GREENLOTS	001B9400047

EVs and PHEVs on Statewide Contract

The following Electric Vehicles (EVs) and Plug-In Hybrid Electric Vehicles (PHEV) are available for Agencies to purchase through Statewide contracts:

- [Nissan Leaf](#) (EV);
- [Mustang Mach E](#) (EV);
- [Chevrolet Bolt](#) (EV); and
- [Chrysler Pacifica Hybrid](#) (PHEV).

IX. Additional Considerations

Signage & Pavement Markings

See EVSE specifications on the Green Purchasing site. (Appendix D)

ADA Considerations

Accessibility should be considered in every project. DGS will work to identify best practices for including ADA accessibility in the EV charging project design process.

X. Next Steps and Future Considerations:

- The Maryland Green Purchasing Committee will support Fleet Electrification in Maryland by issuing guidance on procuring and buying EVs and/or EV charging equipment through the publishing of tools such as a purchasing guide or environmentally preferable specifications.
- DGS will create a web page to house State EV resources and policies as a published resource for State agencies
- The State of Maryland may want to pursue Electric Vehicle Adoption Leadership [\(EVAL\)](#) certification for workplace charging.
- DGS Real Estate should ensure that leased facilities will provide adequate charging for expected State fleet needs.
- DGS will work on determining a fee structure for charging station usage.
- DGS will compile data at a central level.
- DGS will define the process for RFID card issuance and invoicing for State fleet drivers to utilize EV charging stations.
- We will consider managed charging solutions and power sharing.

XI. Appendices

Appendix A.

[BGE EV Smart - Detailed Infrastructure Installation Process](#)

Appendix B.

[BGE Right of Entry agreement template -- to use for utility-installed infrastructure](#)

[Pepco Right of Entry agreement template](#)

[Delmarva Right of Entry agreement template](#)

Appendix C.

Software agreements [Greenlots](#) & [ChargePoint](#)

Appendix D.

[EV Charging Station Specification](#)

Appendix E.

[DGS Facilities & Operations EV Policy](#)

Appendix F.

[Definitions](#)