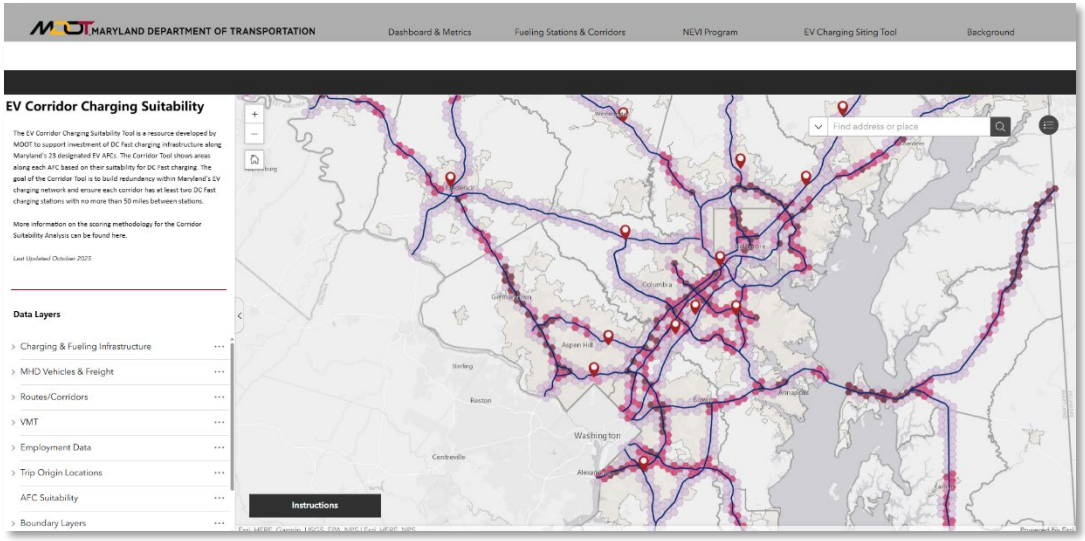
Maryland EV Corridor Charging Suitability Tool

Last Updated: November 2025



Background

The Maryland Electric Vehicle (EV) Corridor Charging Suitability Tool was developed by the Maryland Department of Transportation (MDOT) as part of the Zero Emission Vehicle Infrastructure Plan (ZEVIP) to support the deployment of publicly available light-duty EV charging infrastructure throughout the State and the build-out of Maryland's 23 EV Alternative Fuel Corridors (AFCs). The tool is designed to:

- Increase Direct Current Fast Charging (DCFC) to Close Existing Gaps Along AFCs
- Address Range Anxiety
- Prioritize High Vehicle Miles Traveled (VMT) / Retail-Based Employment
- Account for Proximity to Existing DCFC
- Fill National Electric Vehicle Infrastructure (NEVI) Target Area Gaps

Where to find the Tool

You can follow this link to view and use the tool:
https://experience.arcgis.com/experience/d8d908d9e62f4054b14ec8f6cbb5392b/page/Siting-Tools

Your Insights Help Us Improve

If you have any feedback or questions related to the tool, please visit our Maryland Electric Vehicle Charging Suitability Tool Feedback and Questions Form.

Target Audience

Stakeholders and communities interested in EV charger siting such as:

- Local governments
- Local businesses and non-profits
- EV charging industry
- Property developers
- Electric utilities

EV Corridor Charging Suitability Analysis

The Tool utilizes hexagonal binning (hexbins) to create 12,773, 1-square mile hexbins across the State. The number of hexbins were further refined to those that intersect and are within 1-mile of a designated AFC. Unlike census tracts or zip codes, which vary in size, these hexbins allow for an apple-to-apple comparison of areas within Maryland. Data within each hexbin was aggregated and a weighted score was applied based on Maryland's priorities, resulting in a visualization of the most suitable locations for the installation of DC Fast charging infrastructure along Maryland's AFCs.

As part of the NEVI Plan, MDOT, in coordination with other State agencies, identified a variety of federal and state data layers that would be key in the deployment of charging infrastructure under the NEVI Program. The list of data layers incorporated into this EV Corridor Charging Suitability Tool were further refined based on Maryland's charging priorities as well as changes to federal policies and priorities. These layers were aggregated and weighted based on Maryland's priorities for building redundancy along the AFCs for convenient inter- and intrastate travel through the NEVI Program and beyond. The weighted scores were then combined to give an overall weighted score for each hexbin. Hexbins were then ranked on a scale from 1 to 6, 1 being the most suitable for EV charging infrastructure and 6 being the least suitable based on the overall weighted score.

To learn more about the benefits of publicly available EV charging, please visit the Alternative Fuels Data Center: Charging Electric Vehicles in Public website.

The layers included in the EV Corridor Charging Suitability Analysis are identified in the table below. To view information on supplemental data layers that are incorporated in the Maryland Suitability Analyses, please visit: https://evplan.mdot.maryland.gov/wp-content/uploads/2025/10/Additional-Suitability-Layers-User-Guide.pdf

Layer Name	Definition	Methodology & Scoring	Weight	Source
Vehicles Miles Traveled (VMT)	Total VMT on AFC within the hexbin that have annual average daily traffic (AADT) data.	VMT = Length of all roads * Total AADT (in miles) of roads * 365 Used a Min-Max normalization for scoring: • Min Score: 0 • Max Score: 1 ❖ Areas with elevated VMT were assigned greater weight, reflecting their increased potential for EV charger utilization.	3	MDOT SHA Annual Average Daily Traffic (AADT)
Existing Direct Current (DC) Fast Charging	Total number of existing DC Fast Charging Ports within the hexbin.	Existing = Sum of DC Fast Charging Ports Used for normalization of scoring: • Score of 5: Fast Port Count = 0 • Score of 4: Fast Port Count = 1 – 5 • Score of 3: Fast Port Count = 6 – 10 • Score of 2: Fast Port Count = 11 – 15 • Score of 0: Fast Port Count > 16 ❖ Areas underserved by DC Fast Charging infrastructure are prioritized by being assigned higher scores to those with fewer existing ports.	1	Michael Baker International, compiled from U.S. Department of Energy - National Renewable Energy Laboratory (NREL) / ArcGIS Living Atlas

Layer Name	Definition	Methodology & Scoring	Weight	Source
EV Registration	Number of Electric or Plug-in Hybrid Vehicles Registered within the hexbin.	EV Registration = Sum of the number of EVs registered ❖ Regions with higher concentrations of EV registrations were assigned greater weight to reflect the anticipated demand.	2	MDOT/MVA Electric and Plug-in Hybrid Vehicle Registrations by County as of each month end from July 2020 to January 2025 | Open Data | opendata.maryland.gov
MDEnviroScreen	An area's environmental justice concern. EnviroScreen Scores closer to 1 represent areas of the greatest environmental justice concern.	EnviroScreen Score = Intersection of the centroid of the hexbin with the EnviroScreen Score ❖ Communities facing higher cumulative environmental burdens are prioritized in planning and resource allocation.	1	MDEnviroScreen Tool
Round 2 Target Area	Hexbin is located within a NEVI Round 2 Target area and is no more than 50 miles from an existing NEVI qualifying charging station.	Round 2 Target Area = Intersection with NEVI Round 2 Target Area Buffer Intersection of hexbin: • If any part of hexbin intersects, Score = 1 • No intersection, Score = 0 ❖ Areas with a Score of 1 are identified as priority areas for building-out AFCs	3	NEVI Round 2 Target Areas
Round 2 15 – 30 Mile Gap	Hexbin is located within 15-30 miles from an existing NEVI qualifying Station.	Round 2 Gap = Intersection with buffers 15 – 30 miles Intersection of hexbin: • If any part of hexbin intersects, Score = 1 • No intersection, Score = 0 ❖ Ares with a Score of 1 are identified as priority areas for infrastructure deployment to create redundancy.	3	Micheal Baker International, compiled from Existing DC Fast Stations < 4 150kW CCS Ports- U.S. Department of Energy - National Renewable Energy Laboratory (NREL) / ArcGIS Living Atlas

Layer Name	Definition	Methodology & Scoring	Weight	Source
Alternative Fuel Corridor	Hexbin is located within 1-mile of a designated EV AFC	AFC = Within 1-mile buffer of a designated EV AFC ❖ Areas with a Score of 1 are identified as priority areas for infrastructure deployment to create redundancy.	1	Federal Highway Administration Alternative Fuel Corridors from the Alternative Fuels Data Center
OnTheMap (OTM) Employment	Employment density of Retail and service using North American Industry Classification System (NAICS) Codes by census blocks.	OTM Employment = # Retail jobs + # Real estate jobs + # Healthcare jobs + # Education jobs + # art entertainment jobs + # Accommodation & Food Service jobs + # Other Service jobs except Public Administration ❖ Retail and service industry were prioritized due to their potential to generate consistent demand for EV charging infrastructure, particularly in areas with high employee and customer activity.	2	U.S. Census- LEHD Origin-Destination Employment Statistics (LODES)- 2022 https://onthemap.ces.census.gov/

The methodology and data layers will be updated as necessary, based on the needs and priorities of Maryland.

Additional Suitability Tools

In addition to EV corridor charging suitability, Maryland has developed other suitability tools that address publicly available high-density residential, workplace, and neighborhood and amenity charging for light-duty EVs. The following graphics illustrate the purpose and use of the Maryland Light-Duty EV Charging Suitability Suite of Tools.

The Suitability Tools are Designed to:

- Help inform local/state-wide decisions for public light-duty EV charging siting.
- Consider different use cases for light-duty EV charging; corridor, workplace, high-density housing; and neighborhood.
- Identify EV charging gaps at a high level and areas for light-duty EV charger siting.

The Suitability Tools Are Not Designed To:

- Act as an economic or a cost/benefit analysis tool.
- Provide exact locations for light-duty EV charging.
- Calculate GHG reductions or savings.
- Indicate the role of private vs. public investments.
- Inform siting based on electric utility hosting capacity.