Maryland Workplace Electric Vehicle Charging Suitability Tool

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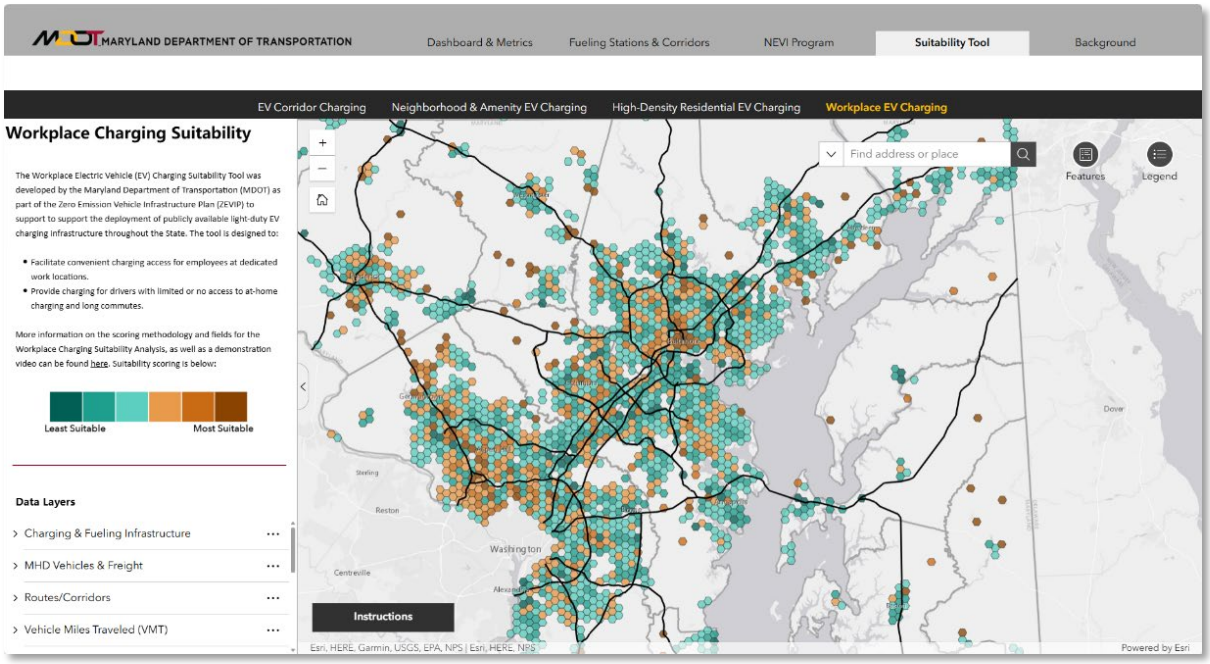

Background

The Maryland Workplace Electric Vehicle (EV) 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.

The tool is designed to:

- Facilitate convenient charging access for employees at dedicated work locations.
- Provide charging for drivers with limited or no access to at-home charging and long commutes.
- Align with U.S. Bureau of Labor Statistics findings that approximately 70 percent of employees work at least 35 hours per week.

Where to Find the Tool

Use the web application here: View the Workplace EV Charging Suitability Tool

Your Insights Help Us Improve

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

Target Audience

Stakeholders and communities interested in EV charger siting include:

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

Workplace Charging Suitability Analysis

This tool utilizes hexagonal binning ('hexbins') to divide Maryland into 12,773, 1-square mile units, allowing for consistent and equitable area comparisons, regardless of the disparities found in census tracts or zip codes. By ranking these hexbins based on weighted scores, the tool produces a clear visualization of the most suitable locations for installing workplace charging infrastructure. This approach enables stakeholders to prioritize investments in areas with the greatest potential impact, ensuring that Maryland's workforce has broad and equitable access to EV charging as part of the state's broader zero-emission transportation goals.

As part of the Zero Emission Vehicle Infrastructure Plan (ZEVIP), MDOT, in coordination with other State agencies, identified a variety of federal and state data layers that would be key in the deployment of workplace charging infrastructure. The list of data layers incorporated into the Workplace EV 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 increasing equitable access to workplace charging. 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.

Additional Information

To learn more about the benefits of publicly available EV charging, visit the Alternative Fuels Data Center: Workplace Charging for Electric Vehicles page.

For supplemental data layers incorporated in the Maryland Suitability Analyses, see the Additional Suitability Layers User Guide.

Table 1: Layers Included in the Workplace Charging Suitability Analysis

Layer Name	Definition	Methodology and 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 with a minimum score of 0 and a maximum score of 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 where Fast Port Count = 0; score of 4 where Fast Port Count = 1–5; score of 3 where Fast Port Count = 6–10; score of 2 where Fast Port Count = 11–15; score of 0 where Fast Port Count > 16. Areas underserved by DC Fast Charging infrastructure are prioritized by being assigned higher scores where fewer existing ports are present.	1	Michael Baker International, compiled from U.S. Department of Energy – National Renewable Energy Laboratory (NREL) / ArcGIS Living Atlas

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 anticipated demand.	2	MDOT/MVA Electric and Plug-in Hybrid Vehicle Registrations by County as of each month-end from July 2020 to February 2026 | 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 3 Target Area	Hexbin is located within a NEVI Round 3 target area and is no more than 50 miles from an existing NEVI qualifying charging station.	Round 3 Target Area = intersection with NEVI Round 3 target area buffer. If any part of the hexbin intersects, score = 1; if there is no intersection, score = 0. Areas with a score of 1 are identified as priority areas for building out AFCs.	3	NEVI Round 3 Target Areas

DC Fast Charging Mileage Gap Score	Segment analysis regarding the distance between fast charging ports along AFCs; includes DC Fast Charging of all power levels and charging type.	Round 3 Gap = intersection with buffers 15–30 miles. Distance between existing EV charging ports that fall within an AFC hexbin is normalized as follows: score of 5 where distance is greater than 30 miles; 4 where distance is 20–30 miles; 3 where distance is 10–20 miles; 2 where distance is 5–10 miles; 0 where distance is less than 5 miles. Areas with the largest gaps receive a higher score with the goal of building greater redundancy for all DC Fast Charging types.	1	Michael Baker International, compiled from Existing DC Fast Stations – U.S. Department of Energy – National Renewable Energy Laboratory (NREL) / ArcGIS Living Atlas
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 = number of retail jobs + real estate jobs + healthcare jobs + education jobs + arts/entertainment jobs + accommodation and 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) – 2023; OnTheMap Census website

Methodology Updates

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

Additional Suitability Tools

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

Purpose of Suitability 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 residential, and neighborhood and amenity.
- Identify EV charging gaps at a high level and areas for light-duty EV charging siting.

The Suitability Tools are not designed to:

- Act as an economic 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.