

# REGIONAL ELECTRIC VEHICLE INFRASTRUCTURE IMPLEMENTATION STRATEGY

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National Capital Region  
**Transportation Planning Board**

# Why Develop a Regional Electric Vehicle Infrastructure Implementation (REVII) Strategy?

- The TPB's Climate Change Mitigation Study of 2021 (CCMS) found that transitioning vehicles from fossil fuels to clean fuels is the action with the highest potential to reduce greenhouse gas (GHG) emissions from the on-road transportation sector and help the region achieve its GHG reduction goals.
- The Bipartisan Infrastructure Law (2021) established a \$7.5B program within the U.S. Department of Transportation (DOT) to fund the development and installation of electric vehicle (EV) charging infrastructure - the \$5 billion National Electric Vehicle Infrastructure (NEVI) Formula Program and the \$2.5B Charging and Fueling Infrastructure Discretionary Grant Program (CFI Program).
  - COG submitted a successful regional application for Round 1B of CFI funding (\$3.9 million award)
  - COG recently submitted an application for Round 2 of CFI funding, which was informed by the REVII Strategy



# The REVII Strategy

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- Developed for the TPB as a follow-up to the findings of the CCMS
- Developed by ICF and overseen by the Regional Electric Vehicle Deployment (REVD) Working Group
- Joint effort between TPB and COG
- Funded through the TPB's Unified Planning Work Program (UPWP)
- Intended to serve as planning resource to assist the region in developing a network of publicly accessible EV charging stations



# The REVII Strategy: Key Objectives

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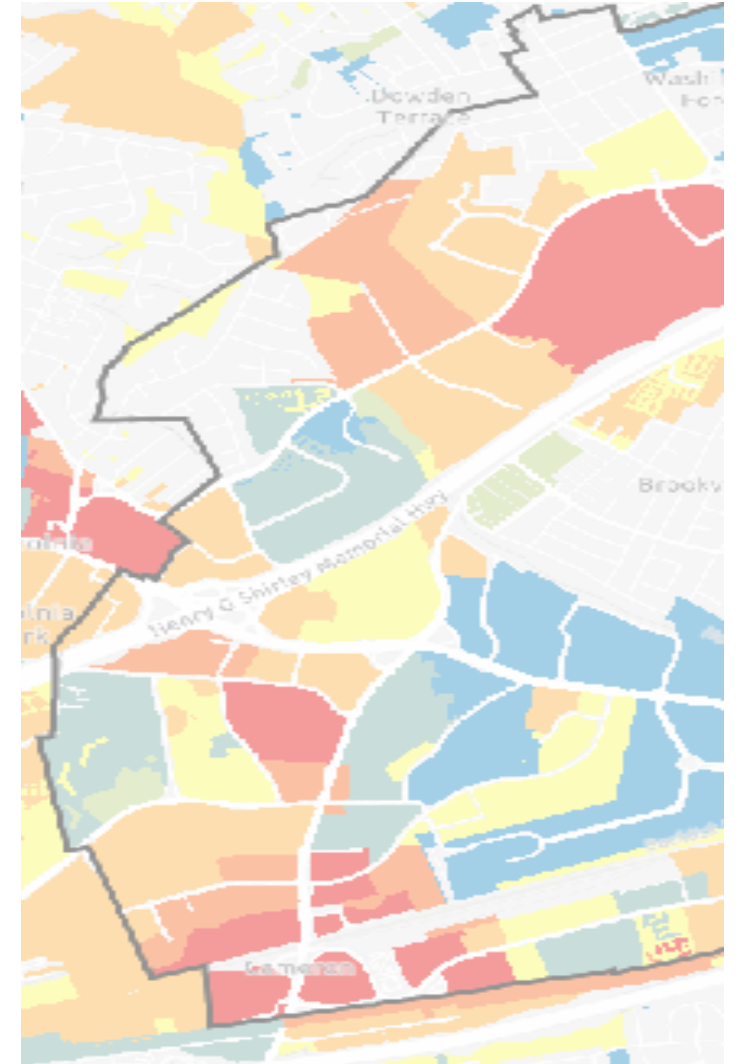
- Identify locations for publicly accessible Level 2 and direct current fast charging (DCFC)\* facilities to support increased EV adoption throughout the metropolitan Washington region.
- Support reliable access to publicly accessible EV charging infrastructure, particularly in areas with limited at-home charging, including multi-family housing (MFH) developments and disadvantaged communities.
- Help ensure that all populations in the metropolitan Washington region, including disadvantaged communities and individuals living within equity emphasis areas (EEAs), are able to access and benefit from the financial and environmental benefits of EVs.

\* Level 2 charging gives EVs 10 to 20 miles of range per hour and is most suitable for residential and workplace locations where charging for at least 4 hours at a time is feasible. DCFC charging gives 60 to 80 miles of range per 20 minutes of charging.

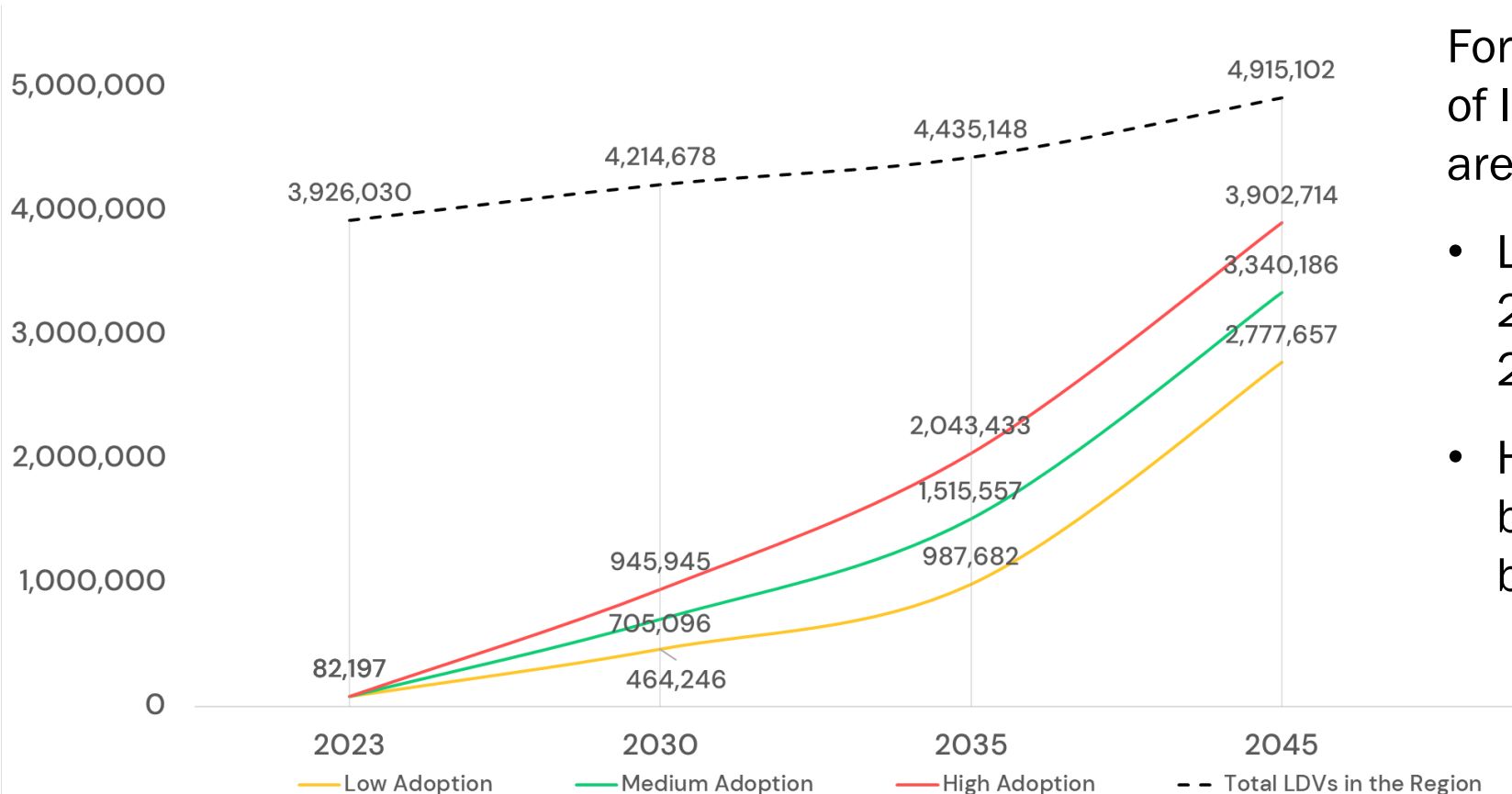


# Project Components

- Projection of light duty electric vehicles (EV) and EV charger needs in the region – 2030, 2035, and 2045
  - Three EV adoption scenarios – Low, Medium, High
  - Purpose is to help region plan for to meet the demand for EV infrastructure
- Identification of potential priority locations to install EV Charging stations in the region
  - Three scenarios
  - Purpose is to help jurisdictions identify and prioritize locations to install EV charging stations



# Electric Vehicle Projections



Forecasts for growth in number of light duty EVs in the region are extremely high:

- Low scenario: 5-fold growth by 2030 and 12-fold growth by 2035
- High scenario: 11-fold growth by 2030 and 25-fold growth by 2035

*Low growth – Historical trends*

*High growth – State policies – Advanced Clean Car 2 and 80% EVs by 2045*



# Public EV Charging Station Needs

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As of January 1, 2024 in the region:

- 82,197 light duty EVs
- 4,359 publicly accessible EV charging stations
  - 3,974 Level 2\*
  - 385 DC Fast Charging\*\*

The forecast substantial growth in EVs for the region will merit significant expansion of the publicly accessible EV charging infrastructure

- Low growth: 3.2 times current number by 2030 and 7 times by 2035
- High growth: 7 times current number by 2030 and 14 times by 2035

\* Level 2 charging: 10 - 20 miles of range/hour. Most suitable for residential/workplace locations where charging for at least 4 hours is feasible.

\*\* DC Fast Charging: 60 to 80 miles of range per 20 minutes of charging.



# EV Public Charging Station Needs – Details

Scenario		Charger Type	2030	2035	2045
Low	EV Charging Port	Public Level 2*	13,848	30,647	72,013
		Public DCFC**	485	1,103	2,447
	<b>Total Charging Ports</b>		<b>14,333</b>	<b>31,750</b>	<b>74,460</b>
	<i>Total EVs</i>		<i>464,246</i>	<i>987,682</i>	<i>2,777,657</i>
Medium	EV Charging Port	Public Level 2	21,840	44,333	86,936
		Public DCFC	785	1,538	2,955
	<b>Total Charging Ports</b>		<b>22,625</b>	<b>45,871</b>	<b>89,891</b>
	<i>Total EVs</i>		<i>705,096</i>	<i>1,515,557</i>	<i>3,340,186</i>
High	EV Charging Port	Public Level 2	29,339	58,822	98,704
		Public DCFC	1,052	2,024	3,320
	<b>Total Charging Ports</b>		<b>30,391</b>	<b>60,246</b>	<b>102,024</b>
	<i>Total EVs</i>		<i>945,945</i>	<i>2,043,433</i>	<i>3,902,714</i>

\* Level 2 charging: 10 - 20 miles of range/hour. Most suitable for residential/workplace locations where charging for at least 4 hours is feasible.

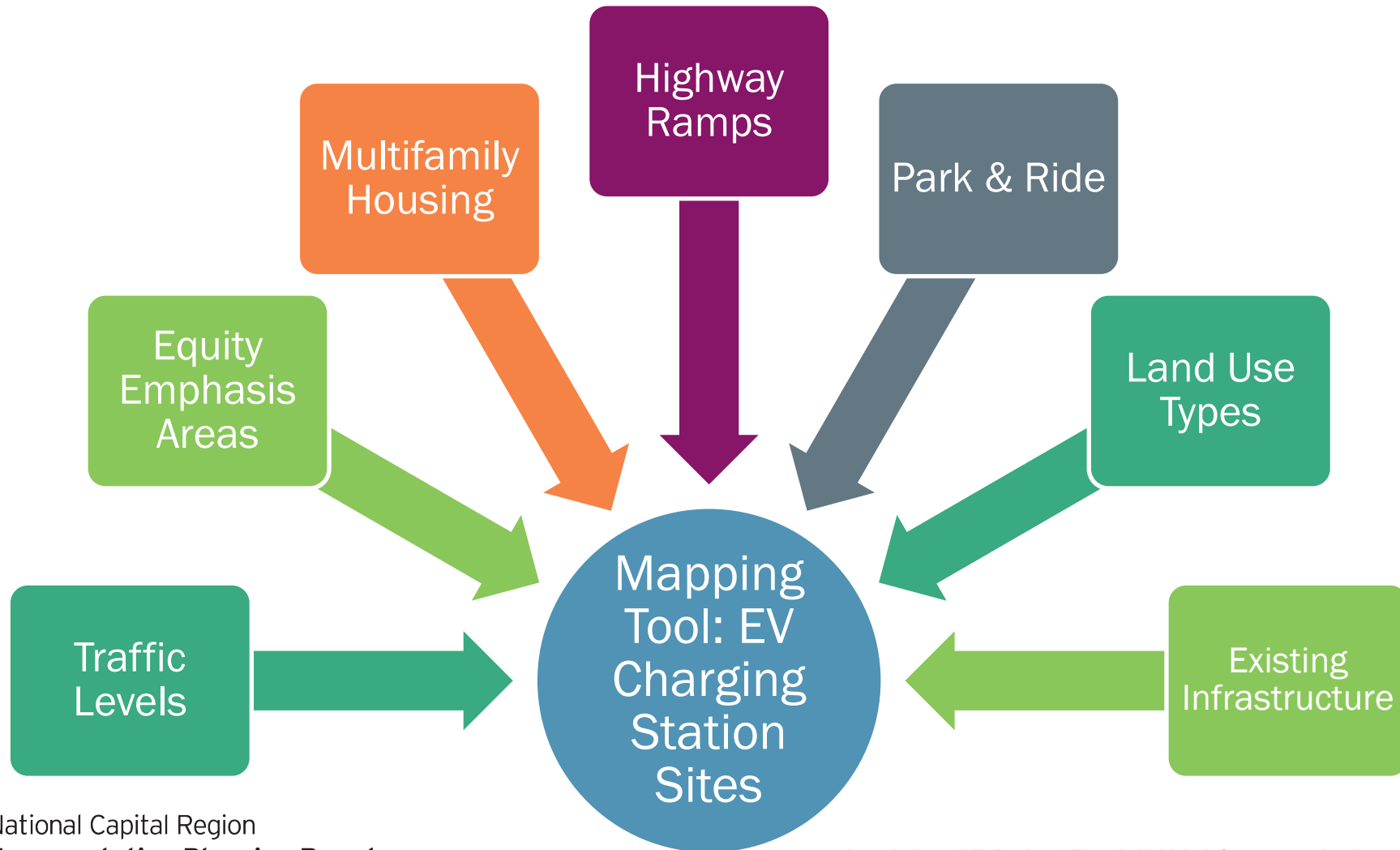
\*\* DCFC charging gives 60 to 80 miles of range per 20 minutes of charging.





# EV Public Charging Potential Deployment Locations

Factors considered to locate publicly accessible EV charging stations



# EV Public Charging Deployment Location: Scenarios

## Prioritizing Direct Current Fast Chargers with High Utilization

- Focus: Building out direct current fast charging stations to serve a larger number of vehicles more quickly.

## Prioritizing Level 2 Chargers with Equity Focus

- Focus: Building out Level 2 charging stations in equity emphasis areas.

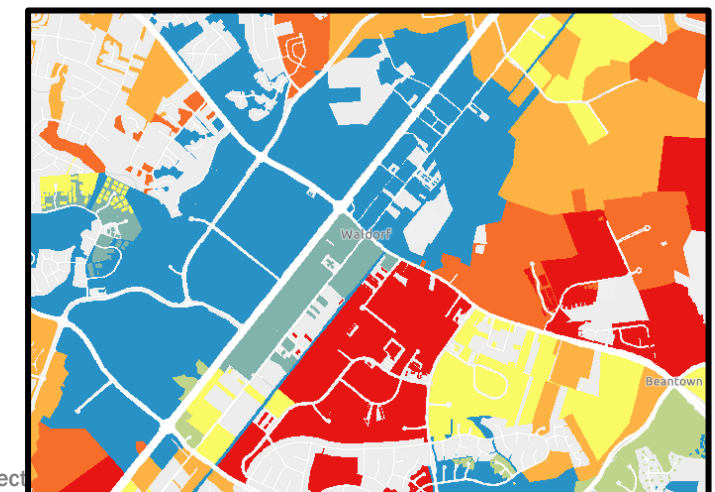
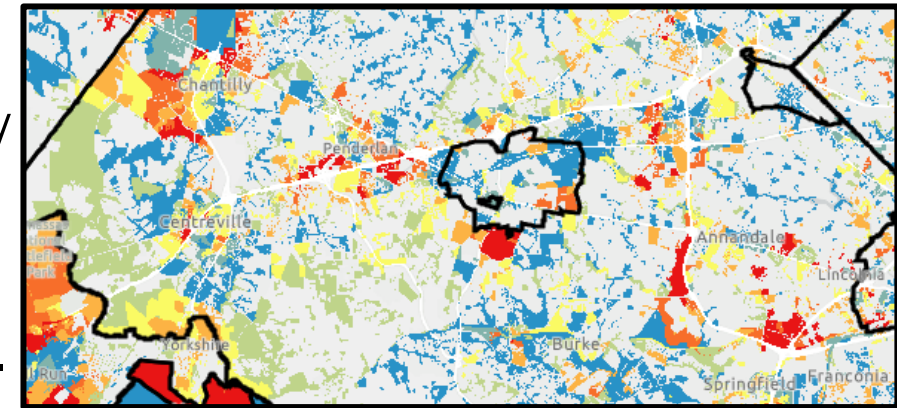
## Prioritizing Direct Current Fast Chargers with Multifamily Housing Focus

- Focus: Building out direct current fast chargers in areas located near multifamily housing developments.



# EV Public Charging Potential Locations: Three Scenarios, Three Maps

- Parcels are examined and scored for potential EV charging station deployment suitability based on traffic levels and different site characteristics:
  - Score Increases: park-and-ride, multifamily housing, equity emphasis area, highway ramps
  - Score Decreases: existing charging stations
- Results for all three maps are displayed by priority.
  - Results are displayed in percentile scores
  - Highest ranking/priority: **Red**
  - Lowest ranking/priority: **Blue**
- Each set of scenario results may be viewed on the same online mapping platform.



# REVII Strategy Document

- Executive Summary
- Background and Context
  - State of the Market
  - State of the Region
- Using the EV Charger Siting Analysis
  - How to use the REVII Strategy
  - Technical Approach
  - Limitations and Considerations
- Regional Results
- Jurisdictional Profiles
- Appendices



# REVII Strategy Jurisdictional Profile: Charles County



## Total EV Registrations\*

1,812



## EV % of Total LDVs

1%



## Current EV Charging Ports

31 Level 2

5 DCFC



## County Progress

Charles County developed a Climate Resilience Plan in 2020

\*As of April 2024

## Charles County

Maryland

### EV and Charging Infrastructure Deployment Progress

Over the past few years, Charles County has taken the following actions to reduce GHG emissions and support EV adoption:

- In 2020, the county created a Climate Resilience Action Strategy which is aimed to help them prepare for, adapt to, and recover from the impacts of climate change. The County is currently working to expand this work through the development of a Climate Action Plan for Resilience and Mitigation that will address both government operations and the broader community.
- Established the Resilience Authority of Charles County, a nonprofit organization that, as a government instrumentality, is operated for the public purpose of responding to the impacts of climate change in communities across Charles County and the State.
- Opened their first EV chargers in 2012 at the Welcome Center, P.D. Brown Library, and Potomac Branch Library as part of the county's climate change initiative.
- Partnered with SMECO to install 15 additional EV chargers at various locations across the county on public property.

### EV Registration Projections

At the end of April 2024, Charles County had approximately 1,800 registered EVs, accounting for 1% of total LDVs in the county. Table 7, below, shows the number of EVs and percentage of EVs in the LDV population for low-, medium-, and high-adoption scenarios at benchmark years 2030, 2035, and 2045.<sup>65</sup>

Table 7. Charles County EV Registration Projections

Growth Scenario	2030		2035		2045	
	# EVs	% EVs	# EVs	% EVs	# EVs	% EVs
Low	7,850	5%	16,261	10%	44,958	25%
Medium	20,735	14%	44,903	28%	93,716	52%
High	33,620	22%	73,544	46%	142,473	79%

### Trends in EV Adoption

Over the last five years, Charles County has made marked progress in launching GHG and EV initiatives. From 2020 to 2024 alone, the number of EVs on the road grew by almost 1,200 vehicles, a 298% increase in EV registrations. Similarly, after deploying their first charger in 2012, the county now has 36 charging ports available.

Despite Charles County being a predominately rural area, this growth is expected to continue in the county as barriers to adoption are lowered, even in the low adoption scenario. In terms of infrastructure, EV chargers are currently concentrated in more densely populated areas along the US-301 corridor, with few chargers located within EEAs or in rural portions of the county. To ensure equitable access to EV charging infrastructure for anticipated EV adoption and to support higher EV adoption rates, continued efforts are needed to deploy chargers in high-traffic populous areas, including considerations for EEAs and rural portions of the county.

### Projected EV Charging Infrastructure Needs

To support the projected EV registrations above, Charles County would need to deploy the following estimated numbers of EV chargers for each scenario and planning year. See Appendix 1.B for technical methodology on calculating EV charging port needs.

Table 8. Charles County Estimated EV Charging Port Needs

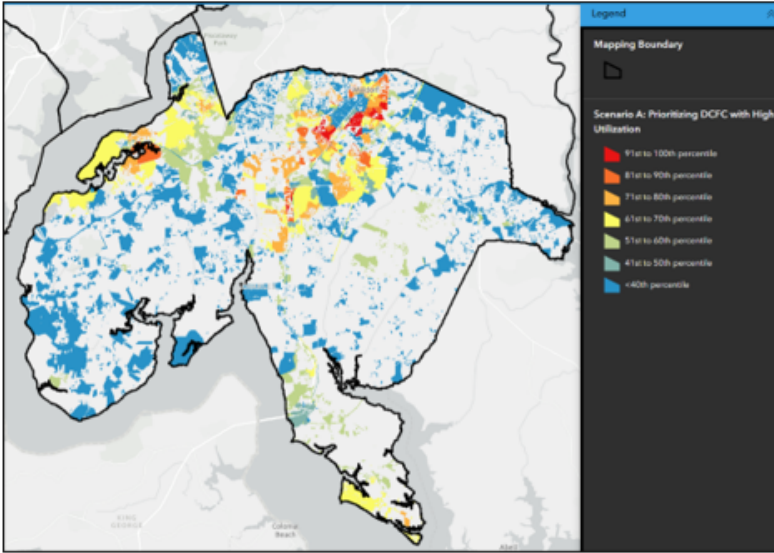
Growth Scenario	Charger Type	2030	2035	2045
Low	EV Charging Port Needs	258	490	1,181
	Public DCFC	10	17	39
	EVs	7,850	16,261	44,958
Medium	EV Charging Port Needs	625	1,180	3,079
	Public DCFC	22	39	119
	EVs	20,735	44,903	93,716
High	EV Charging Port Needs	1,014	2,413	4,294
	Public DCFC	35	91	150
	EVs to Support	33,620	73,544	142,473

Figure 15 summarizes the charger siting analysis results for Charles County. The charger siting analysis identifies and ranks parcels of land based on their suitability for deploying public EV chargers. Three scenarios were tested. This map shows Scenario A, Prioritizing DCFC with High Utilization. The online map can be used to display all three scenarios. Red parcels are high priority, and blue parcels are low priority. Charles County may use this map and these estimated charging port needs to support and participate in the development of a regional charging network.<sup>66</sup>



# REVII Strategy Jurisdictional Profile: Charles County

Figure 15. Charles County EV Charging Siting Analysis Results



## EV Charger Deployment Site Recommendations

The sites identified below are examples of locations where Charles County may choose to deploy or engage and support the private sector in deploying EV chargers. The images of each site are provided at the CBG level, which includes the recommended site and the surrounding area. These sites are recommendations, not requirements, and are highlighted due to their high scores in EV charger GIS siting analysis. However, Charles County may have different priorities or location preferences than the ones highlighted below. As such, additional priority options are available for use and consideration in the online interactive map. Charles County may consider and move forward with these locations for deployments but should rely on local knowledge, expertise, and priorities when siting EV chargers. See the [interactive map](#) to view all priority locations, EEAs, and transportation infrastructure within the county.

## Waldorf Senior Center and Recreational Center

The Waldorf Senior Center and Recreation Center in Waldorf is close to a large residential area, government facilities and local businesses. The recreational center is less than a mile from a major road, MD-5, and within two miles of US- 301 making it an attractive location for residential and community traffic. This area is also within an EEA and includes MFH. Level 2 chargers are ideal for community residents and DCFC may be useful for a wider range of users visiting the various social and governmental services close by.

Figure 16. Waldorf Senior Center and Recreational Center



# REVI Strategy: Components and How Best to Use

- Light-duty EV projections informs the approximate number of EV charging stations needed to support future EV adoption in the region
- The charging station priority map helps identify potential locations to deploy the estimated number of needed charging ports
  - The analysis is regional. Jurisdictions should use the identified parcels in conjunction with local knowledge to determine if the parcel is indeed the best location within the general area for deploying EV charging stations.
  - The number of charging ports deployed and at which locations is up to the jurisdiction, these products serve as guidelines for deployment planning.
- The EV charging station locations map may be used for any stage of planning process:
  - Start your planning process by using the map to identify priority locations generally to help focus your planning efforts
  - Crosscheck against locations you have already flagged as high interest areas for charging station deployments
  - Use high priority parcels as a starting point for in-depth charging station siting assessments (e.g., checking electrical conduit or other amenities that exists or needs to be installed)



# Accessing the TPB REVII Strategy Document and Tools

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The REVII Strategy document may be found online at:

<https://www.mwcog.org/documents/2024/09/04/regional-electric-vehicle-infrastructure-implementation-revii-strategy-climate--energy-climate-change-electric-vehicles/>

The REVII Strategy EV charger siting priority map may be found online at:

<http://www.mwcog.org/reviistrategymap>





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