

Regional Electric Vehicle Infrastructure Implementation (REVII) Strategy



Strategy Document and Mapping

TPB Technical Committee
September 6, 2024

Agenda

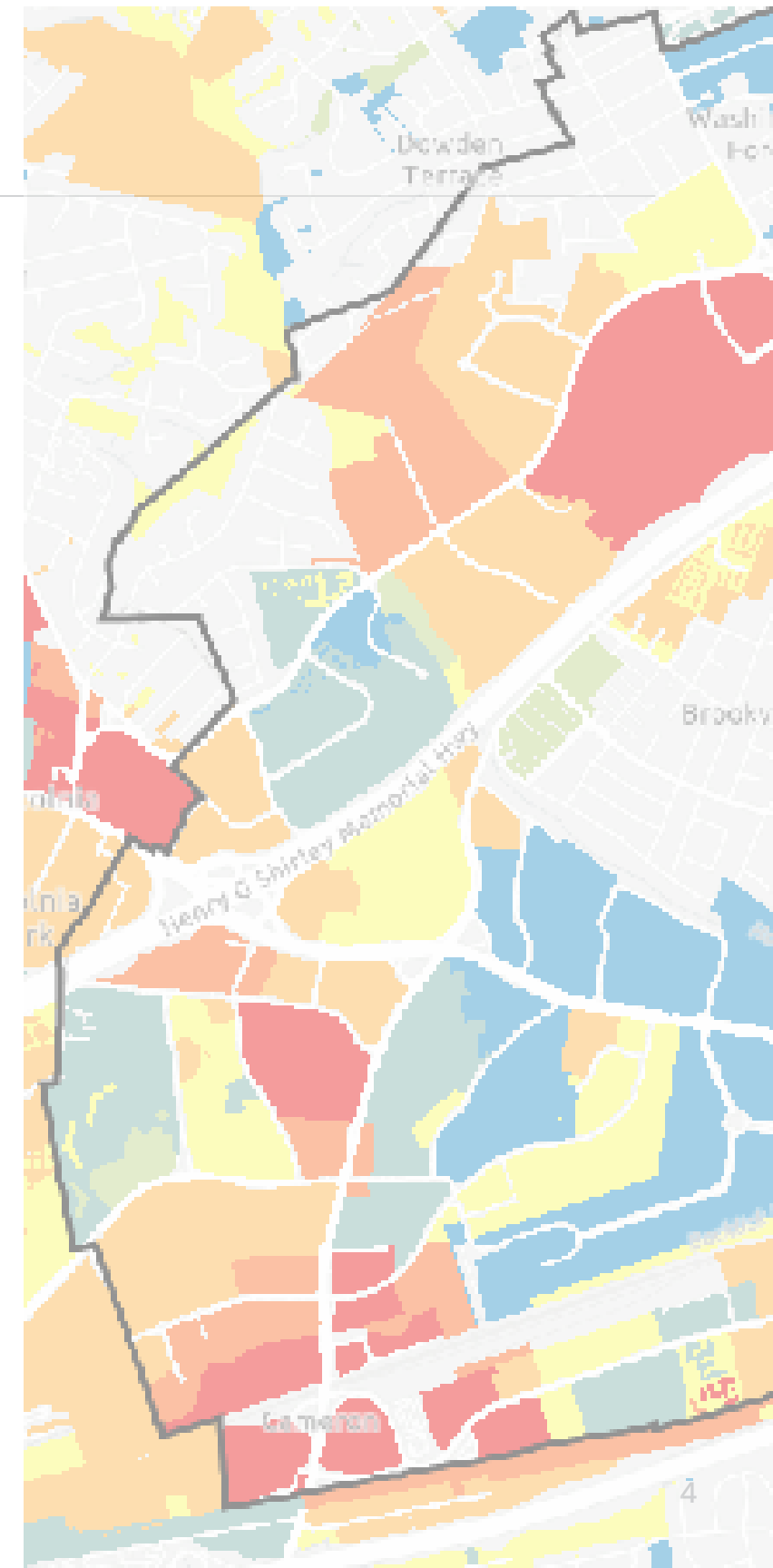
- Project Overview
- Light-Duty Electric Vehicle Registration & Charging Needs Forecast
- Light-Duty Electric Vehicle Charger Deployment Priority Locations Map
- Connecting the Dots
- REVII Strategy Document
- Questions



Project Overview

Project Overview & Introduction

- **Light-duty electric vehicle registration projections for 2030, 2035, and 2045 by county and region.**
 - Three scenarios: low, medium, and high scenarios
 - Goal: plan for light-duty electric vehicle charging station demand
- **Develop light-duty electric vehicle charging station deployment location recommendations map**
 - Three scenarios for different priorities.
 - Goal: Help jurisdictions identify and prioritize parcels for light-duty electric vehicle charging station installations.

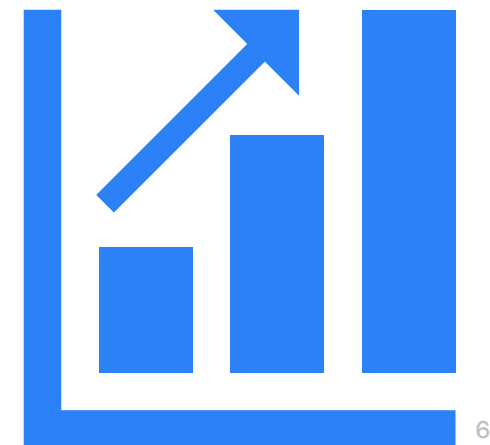




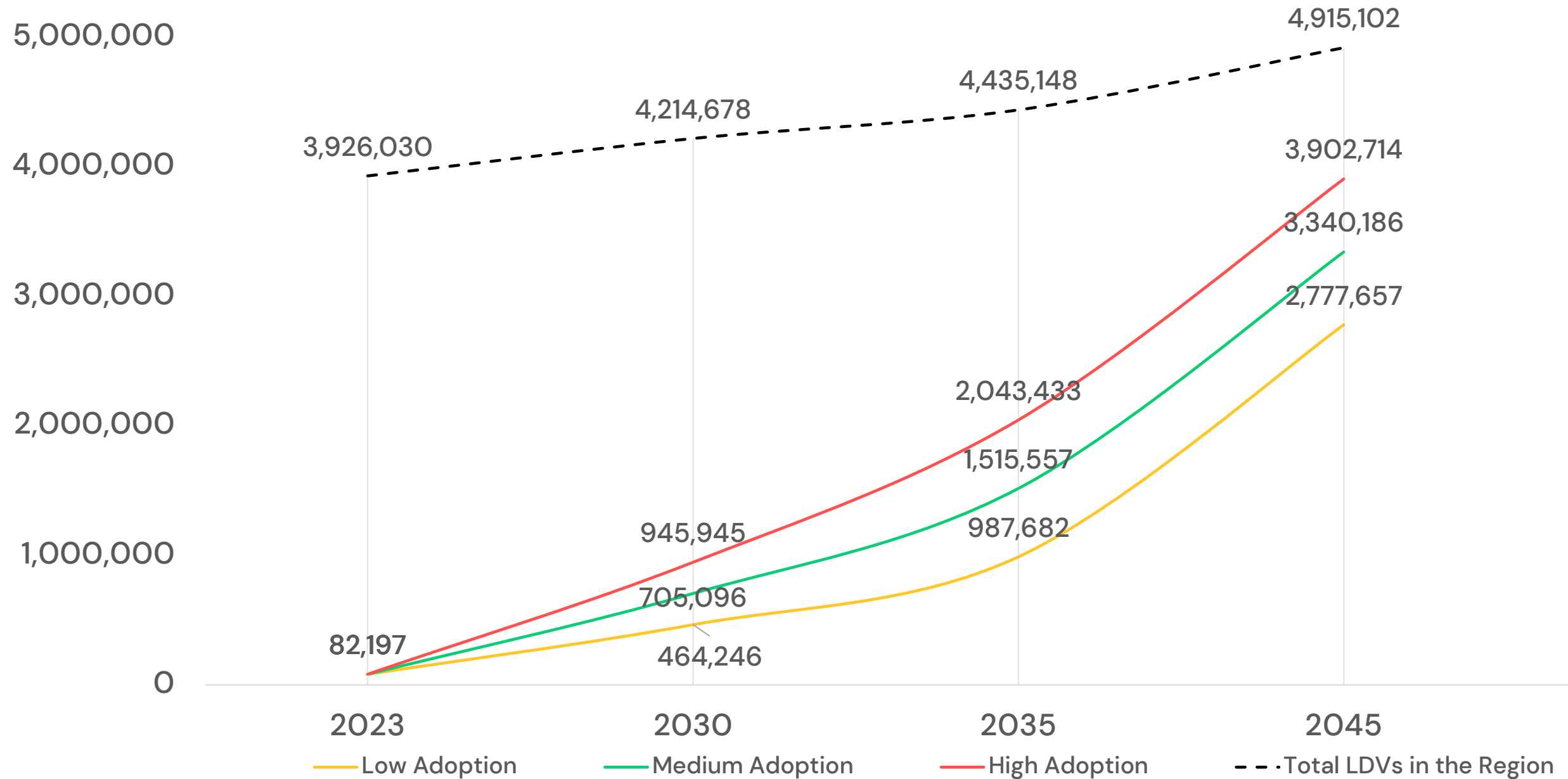
Light-Duty EV Registration Forecast

Projection Scenarios

- **Low:** Growth rate informed by historical vehicle registration data and knowledge of the jurisdiction, serves as a conservative estimate.
- **Medium:** Average of low and high scenarios.
- **High:** Advanced Clean Cars adoption; subsequent goal of approximately 80% EVs by 2045. This scenario serves as the maximum potential for EV adoption.
- MWCOCG historic vehicle registration data is used for years 2010–2020. Growth rates for observed electric vehicle registrations from MDOT and Atlas are used for 2021 through 2023.



Regional Light-Duty EV Projections by Scenario and Year



Projected Regional EV Charging Needs

As of December 31, 2023, the region had 82,197 EV registrations, 3,974 Level 2 ports, and 385 direct current fast charger (DCFC) ports.

Scenario		Charger Type	2030	2035	2045
Low	EV Charging Port Needs	Public Level 2*	13,848	30,647	72,013
		Public DCFC**	485	1,103	2,447
	<i>EVs</i>		<i>464,246</i>	<i>987,682</i>	<i>2,777,657</i>
Medium	EV Charging Port Needs	Public Level 2	21,840	44,333	86,936
		Public DCFC	785	1,538	2,955
	<i>EVs</i>		<i>705,096</i>	<i>1,515,557</i>	<i>3,340,186</i>
High	EV Charging Port Needs	Public Level 2	29,339	58,822	98,704
		Public DCFC	1,052	2,024	3,320
	<i>EVs</i>		<i>945,945</i>	<i>2,043,433</i>	<i>3,902,714</i>



* Level 2 charging gives EVs 10 to 20 miles of range per hour and are 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.

Status of the Region's EV Charging Infrastructure

Current EV Charging Port Count
 Level 2: 3,974
 DCFC: 385*

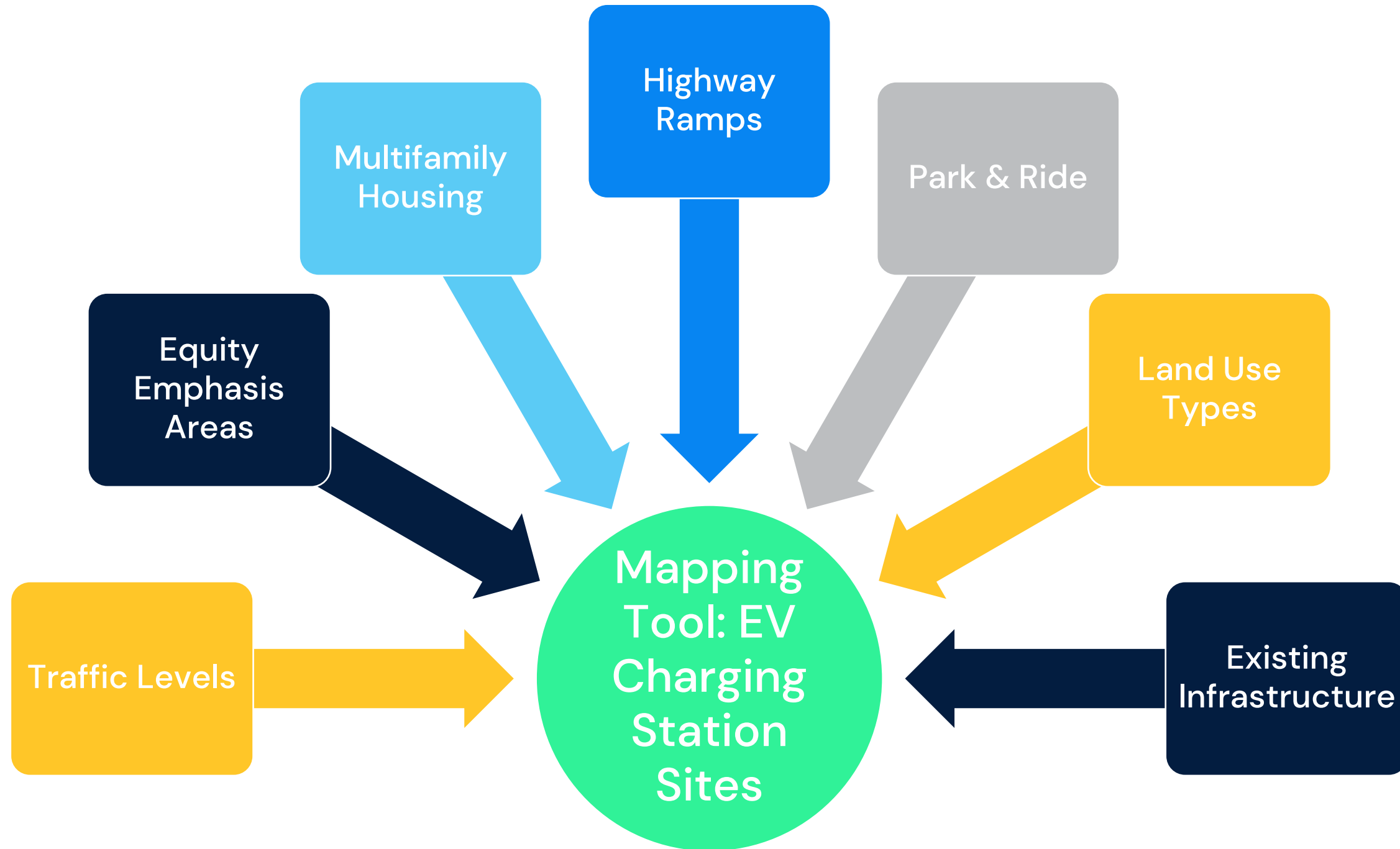
Existing Charging Ports as a Percentage of Projected Charging Needs

	2030	2035	2,045
Low Adoption	Level 2: 29% DCFC: 79%	Level 2: 13% DCFC: 35%	Level 2: 6% DCFC: 16%
High Adoption	Level 2: 14% DCFC: 37%	Level 2: 7% DCFC: 19%	Level 2: 4% DCFC: 12%



Light-Duty EV Charging Station Deployment Priority Locations Map

Methodology Overview



Three Analysis Scenarios

Prioritizing Direct Current Fast Chargers with High Utilization

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

Prioritizing Level 2 Chargers with Equity Focus

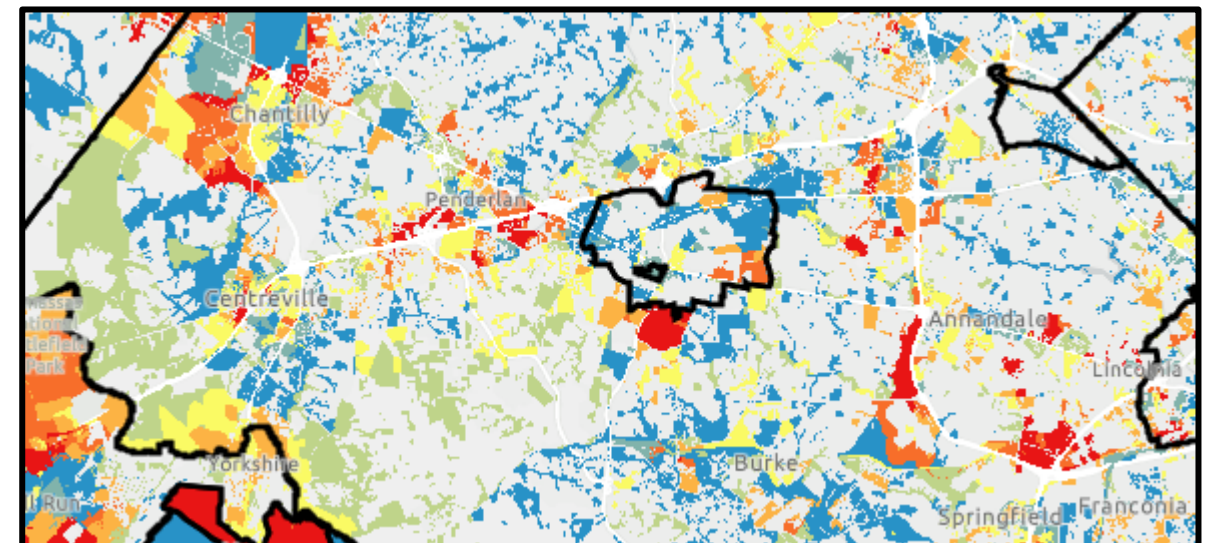
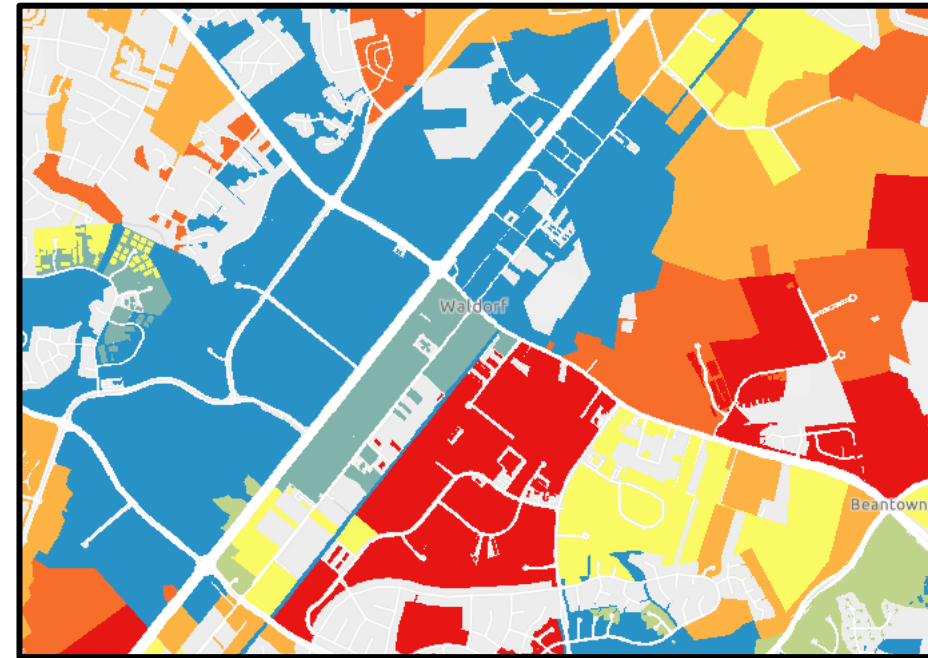
- Focus: Building out Level 2 charging stations in equity emphasis areas.

Prioritizing Direct Current Fast Chargers with Multifamily Housing Focus

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

Three Scenarios, Three Maps

- Parcels are scored for EV charging station deployment suitability based 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.



These screenshots show the results at different scales. The top image is zoomed in. The bottom image is zoomed out. Results will display in more granularity the closer you zoom in on the map.



Connecting the Dots

Light-Duty EV Projections and Charging Station Priority Map

- Light-duty EV projections are used to calculate 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 number of charging ports deployed and at which locations is up to the jurisdiction, these products serve as guidelines for deployment planning.
- You can use the map for any stage of your 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 (i.e., checking electrical conduit/infrastructure that exists or needs installed)

The analysis is regional. Jurisdictions should use this study in conjunction with local knowledge to determine the best path forward for deploying EV charging stations.



Strategy Document

Strategy Components

- 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



Jurisdictional Profiles

- Quick EV registration and EV charging port statistics
- Deployment progress
- EV registration projections
- Trends in EV adoption
- Projected EV infrastructure needs
- High-level image of the siting analysis results
- Site recommendations



Example 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 2045.⁶³

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.

Example Jurisdictional Profile: Charles County

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 I.B for technical methodology on calculating EV charging port needs.

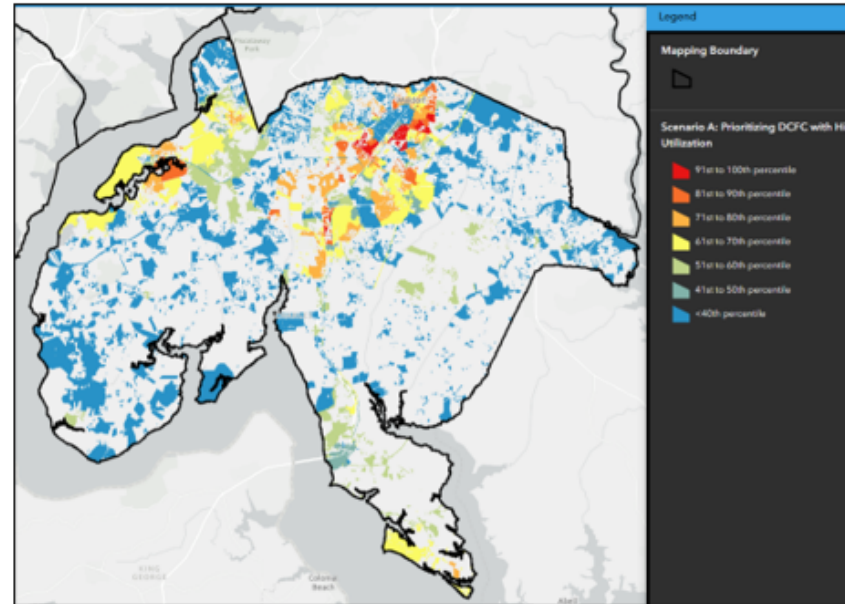
Table 8. Charles County Estimated EV Charging Port Needs

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

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.⁶⁶

Example 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.

Example Jurisdictional Profile: Charles 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



Accessing the REVII Strategy

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>





Questions?