

REGIONAL STRATEGY FOR ELECTRIC VEHICLE INFRASTRUCTURE IMPLEMENTATION

Guide to building a robust network of EV chargers

Kanti Srikanth
COG Deputy Executive Director

Jeffery King
COG Climate, Energy, Air Program Director

COG Board of Directors
October 9, 2024



Regional Electric Vehicle Infrastructure Implementation Strategy

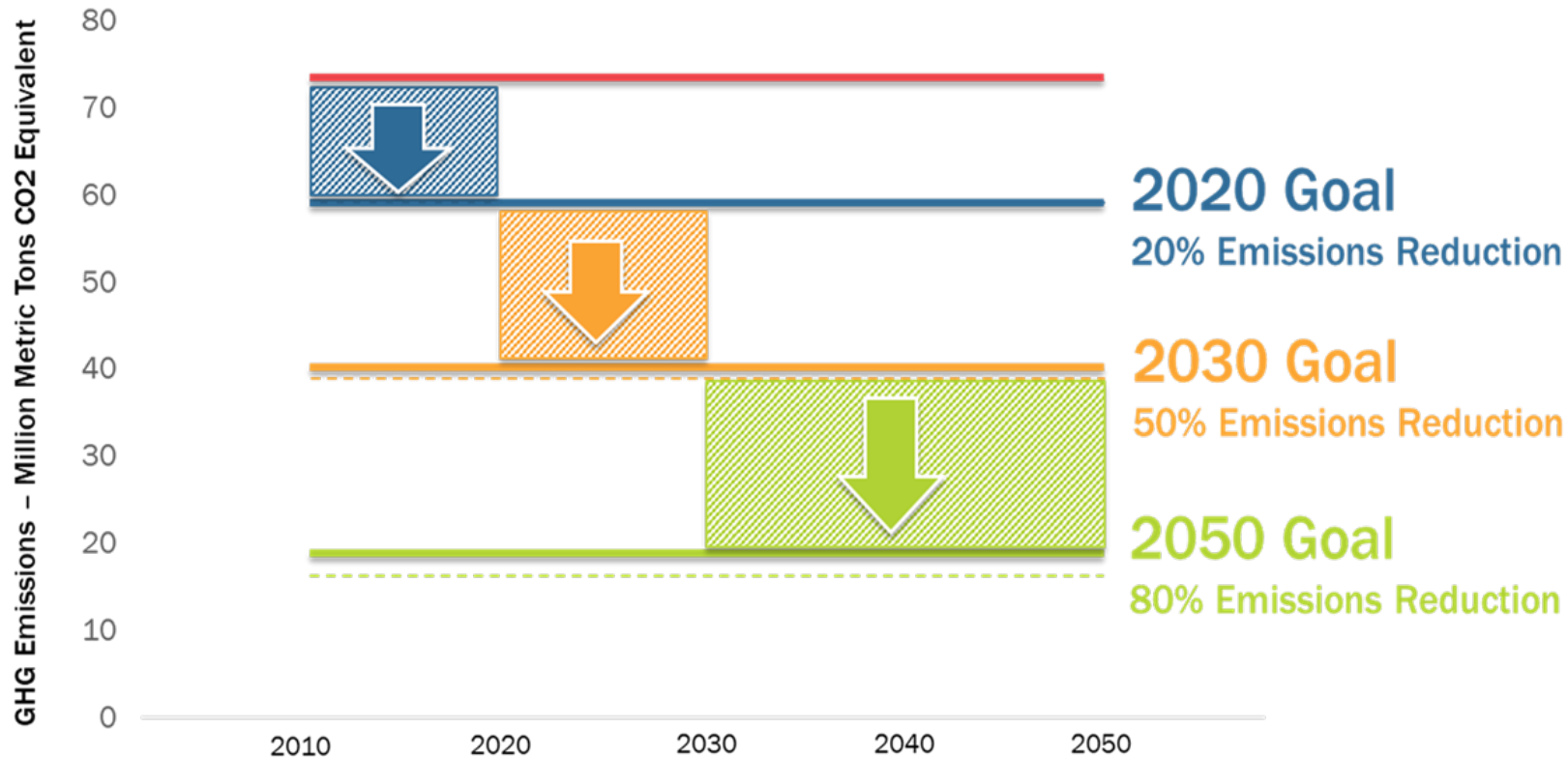
- Executive Summary
- Background and Context
 - State of the Market
 - State of the Region
- Using the EV Charger Siting Analysis
 - How to use the REVII Strategy
 - Technical Approach
 - Limitations and Considerations
- Regional Results
- Jurisdictional Profiles
- Appendices



Access report at: www.mwcog.org/evclearinghouse

What is EV Charging Infrastructure about?

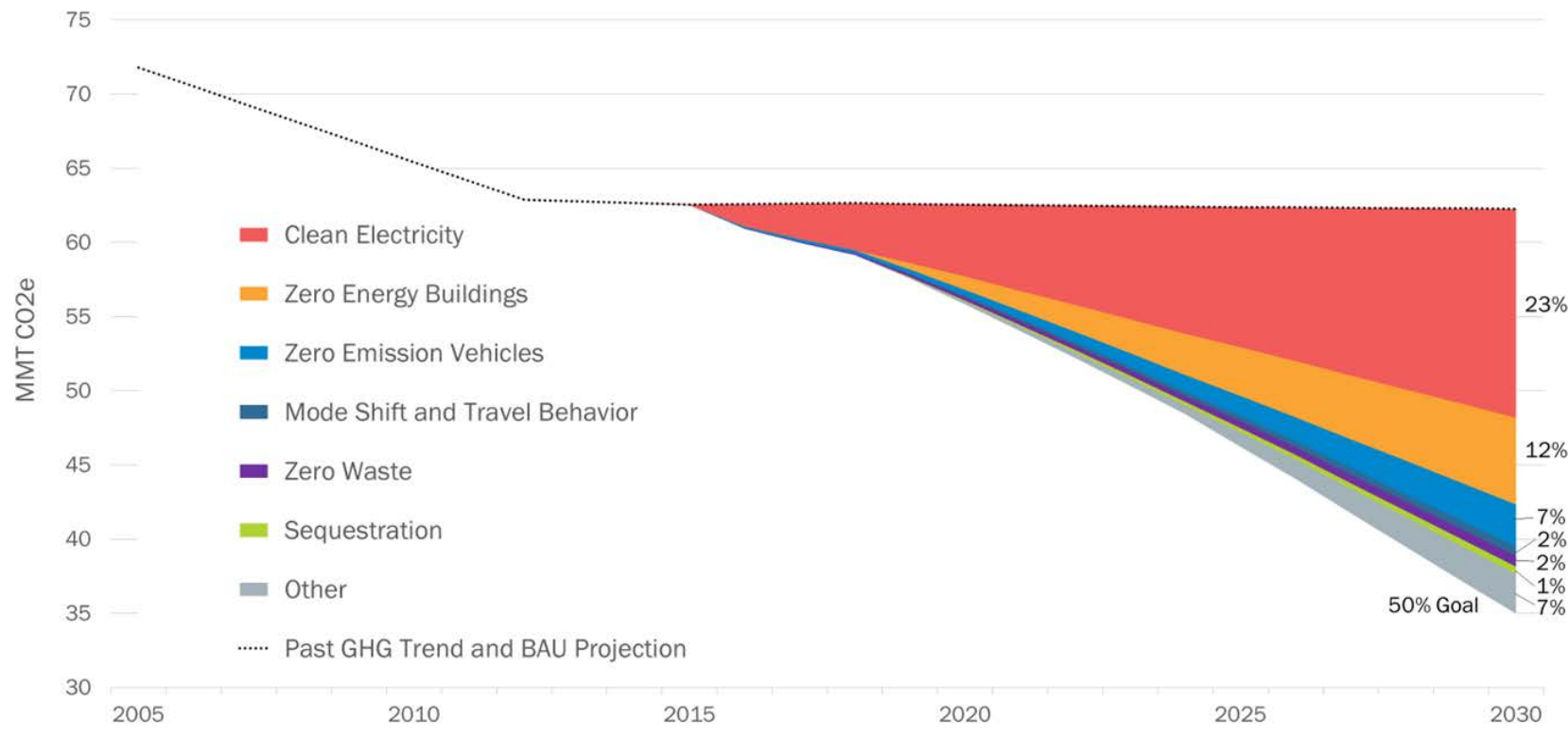
The region's climate change goals!



- Reduce Greenhouse Gases (GHG)
- Become a Climate Ready / Climate Resilient region by 2030

Why a Regional Strategy?

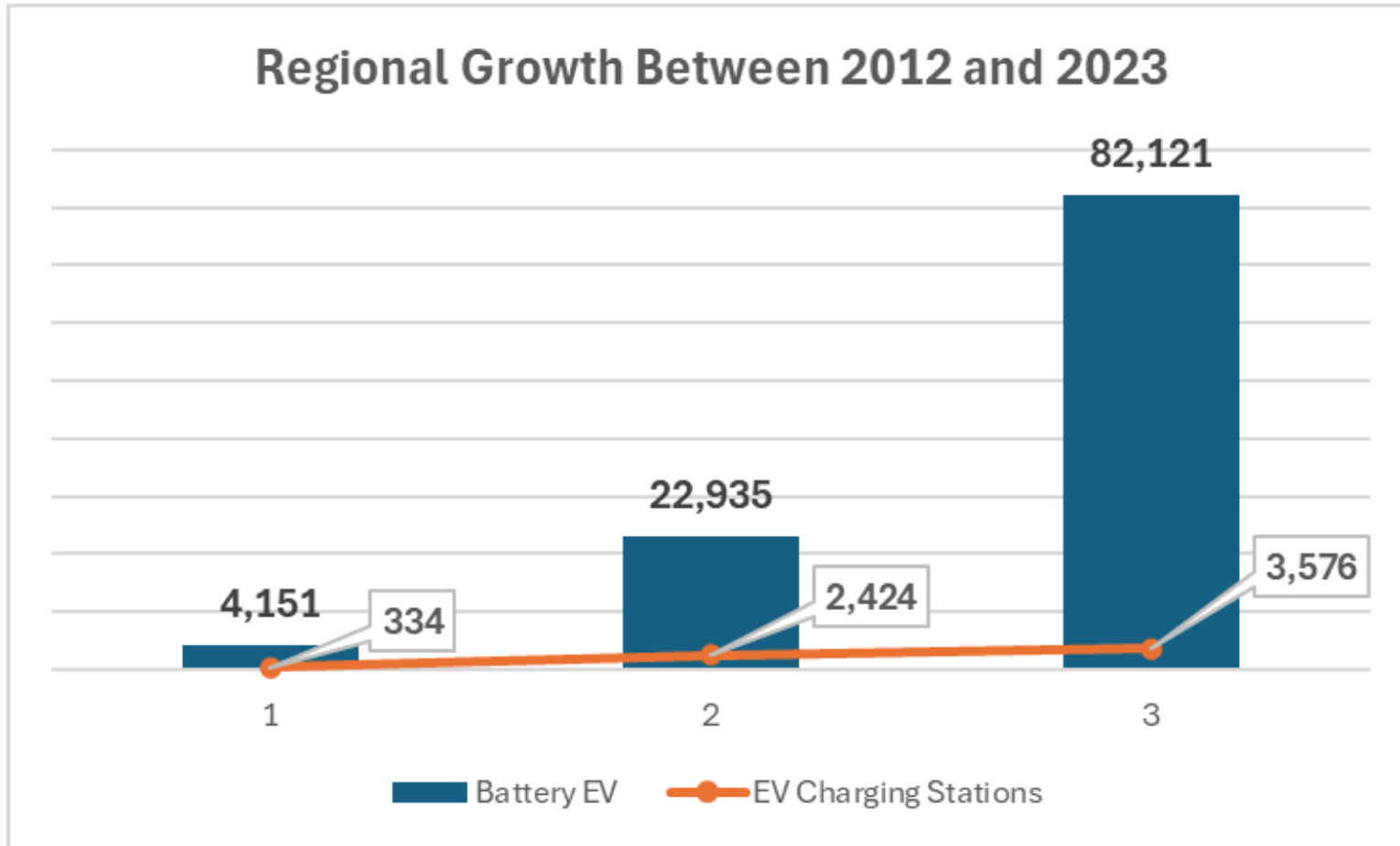
Electric Vehicles (Zero emissions) are one of the top means to achieving regional GHG reduction goals!



Source: Metropolitan Washington 2030 Climate and Energy Action Plan

- Vehicular travel in the region crosses jurisdictional boundaries
- A robust network of charging stations provides for predictable and convenient access to charging and helps accelerate EV adoption

Keep Up /Build on EV Sales Momentum



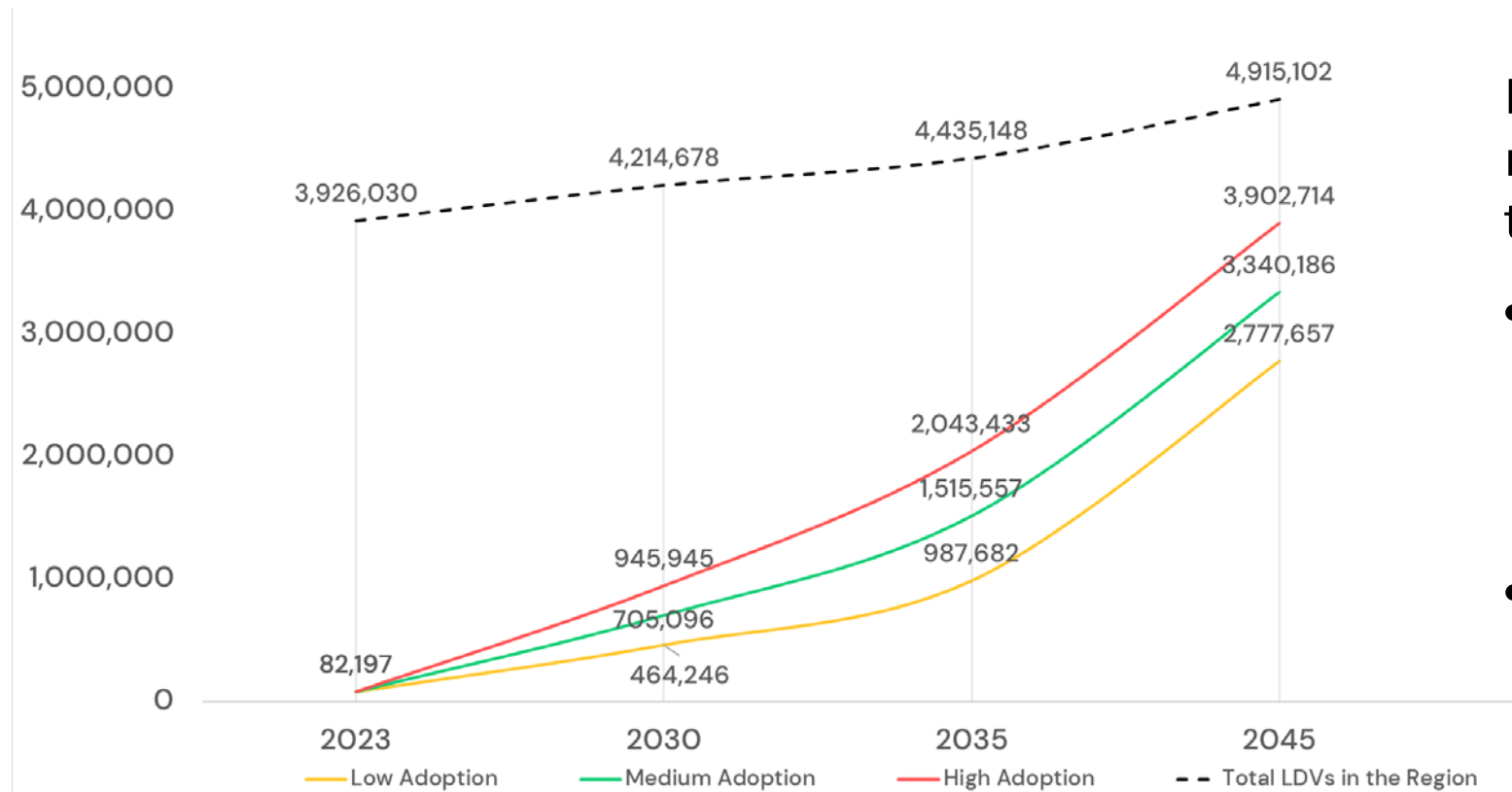
EV charger installations need to be accelerated to keep up with the growing demand.

Take Advantage of Federal Funding

Federal Program	Federal Agency	Amount (FY 22 - 26)	Funding Purpose
National Electric Vehicle Infrastructure Formula	DOT-FHWA	\$5.0 B	Strategically deploy electric vehicle charging infrastructure and establish an interconnected network.
Charging and Fueling Infrastructure Grants	DOT-FHWA	\$1.25 B	Install EV charging and alternative fuel in locations on public roads, schools, parks, and in publicly accessible parking facilities. (Community Charging).
Charging & Fueling Infrastructure Grants	DOT-FHWA	\$1.25 B	Deploy EV charging, hydrogen/propane/natural gas fueling infrastructure along designated alternative fuel corridors. (Corridor Charging)
Low or No Emission (Bus) Grants	DOT-FTA	\$5.625 B	Capital funding for low or no emissions bus projects, bus related equipment, and/or facilities).
Clean School Bus Program	EPA	\$5.0 B	50% of the funds authorized for zero-emission school buses, and 50 % for alternative fuels and zero-emission school buses.
Electric or Low-Emitting Ferry Program	DOT-FTA	\$500M	Pilot Program to support the transition of passenger ferries to low or zero emission technologies.

Electric Vehicle Projections

Regional Electric Vehicle (EV) Infrastructure Implementation Study



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

- Low scenario (Historical trends):
5-fold growth by 2030
2-fold growth by 2035
- High scenario (see note):
11-fold growth by 2030
25-fold growth by 2035

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

Estimated EV Public Charging Station Needs

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

* 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.

Potential Locations For EV Chargers

Depends on objective.

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

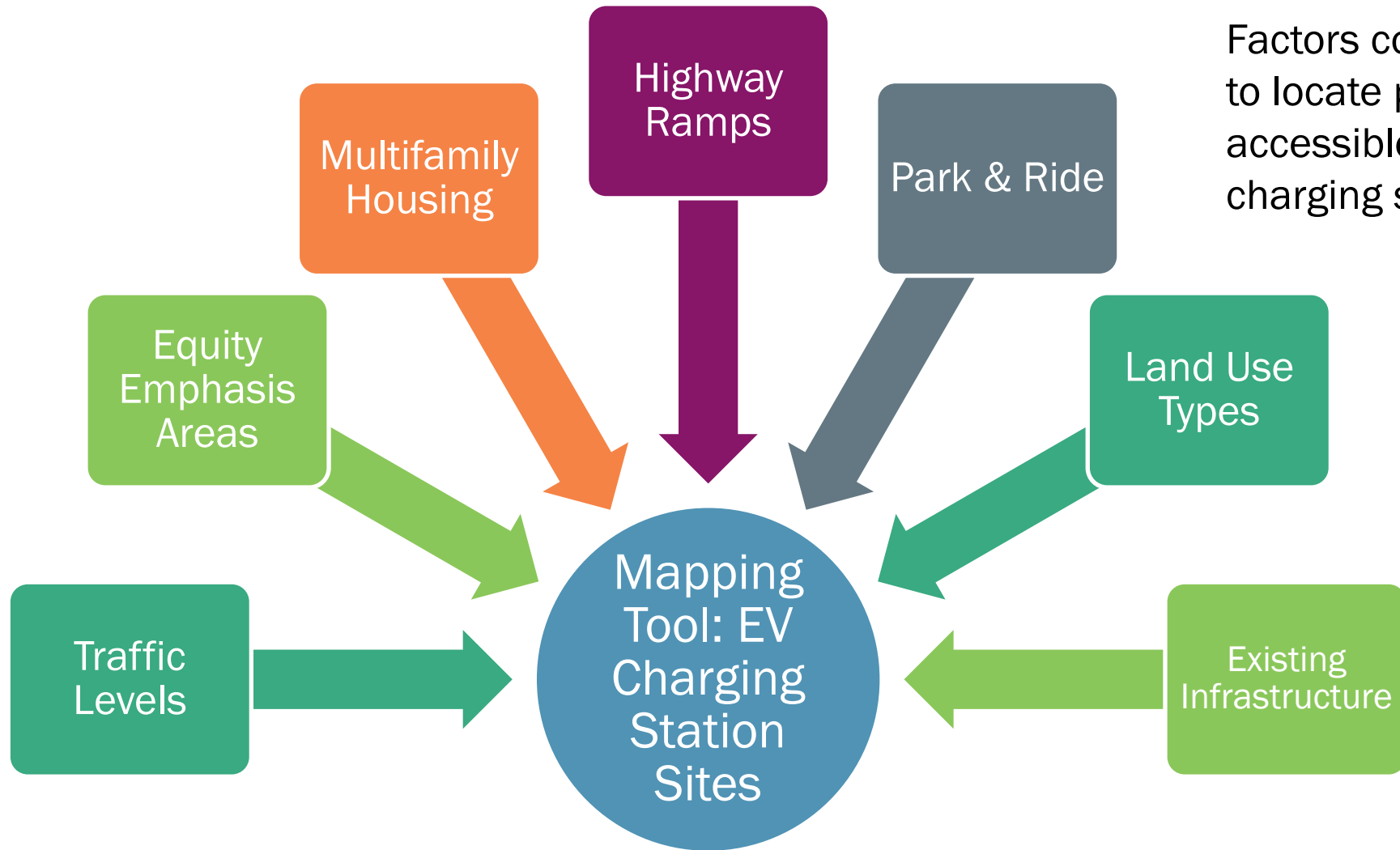
- Focus: Building out Level 2 charging stations in Equity Emphasis Areas.

Prioritizing Direct Current Fast Chargers with Multifamily Housing Focus

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

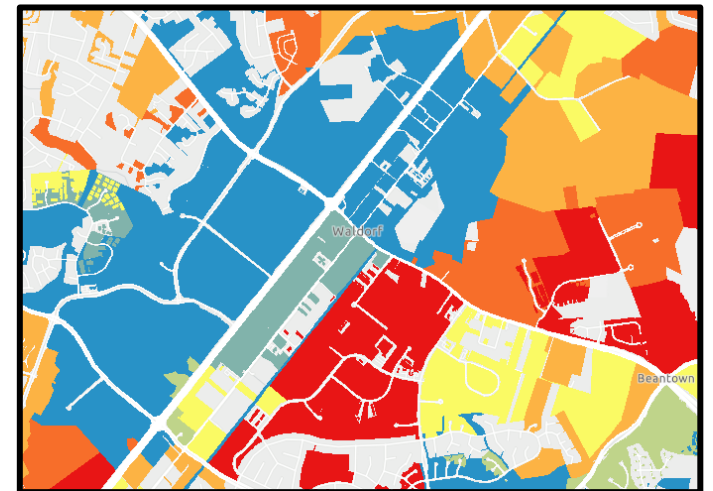
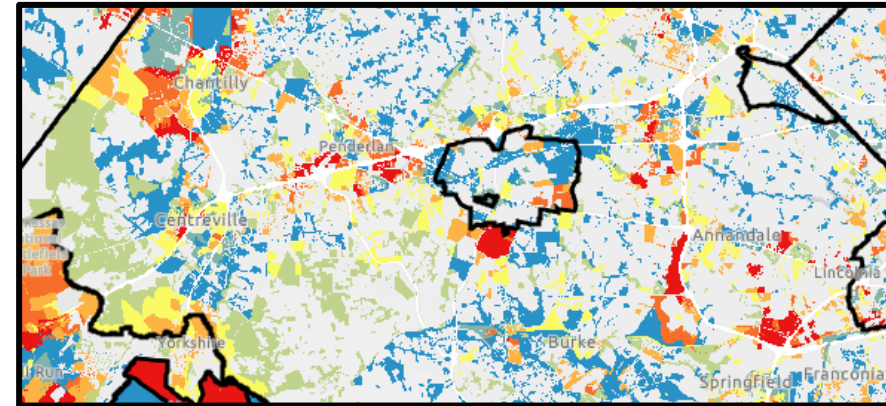
- DCFC charging gives 60 to 80 miles of range per 20 minutes of charging.
- Level 2 charging: 10 - 20 miles of range/hour. Most suitable for residential/workplace locations where charging for at least 4 hours is feasible.

EV Public Charging Potential Deployment Locations




Public Charging Potential Locations: 3 Scenarios, 3 Maps

- Parcels examined and scored 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.
 - Highest ranking/priority: **Red**
 - Lowest ranking/priority: **Blue**
- Jurisdictional level profiles.
- Analysis is at regional level. Ground level local knowledge needed to assess best fit of parcel.




Map: www.mwcog.org/reviistrategymap


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 2045.⁶⁵

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.

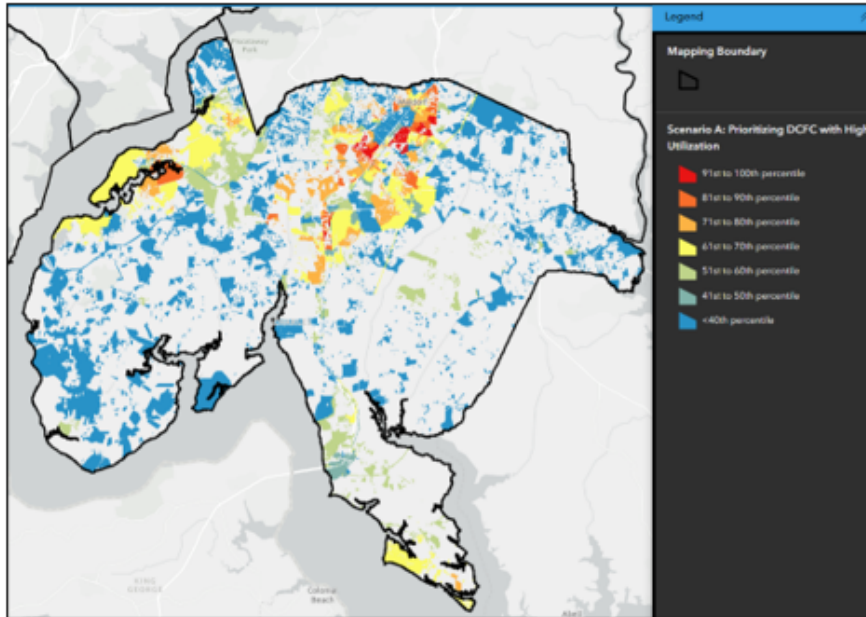
Table 8. Charles County Estimated EV Charging Port Needs

Growth Scenario		Charger Type	2030	2035	2045
Low	EV Charging Port Needs	Public Level 2	258	490	1,181
		Public DCFC	10	17	39
	EVs		7,850	16,261	44,958
Medium	EV Charging Port Needs	Public Level 2	625	1,180	3,079
		Public DCFC	22	39	119
	EVs		20,735	44,903	93,716
High	EV Charging Port Needs	Public Level 2	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.⁶⁶

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



Ways to use the REVII Report

- Assess EV growth scenarios against local climate and EV goals and targets to inform efforts to secure needed resources for implementation.
- Review and contextualize the potential EV charging site locations identified with local EV infrastructure deployment plans.
- Use the identified potential EV charging priority locations to undertake detailed site assessment with local planning staff, as appropriate.
- As a support document to seek federal grants/state programs and to build energy infrastructure into local capital programs and budgets.
 - More than \$203M in federal grants secured to date by COG jurisdictions and agencies
 - About \$120M in NEVI program funds being programmed by 3 state DOTs (FY22-FY24)
- All three State DOTs and several member jurisdictions have Community EV and EV Operation Plans (www.mwcog.org/evclearinghouse)

Kanathur Srikanth

Deputy Executive Director

(202) 962-3257

ksrikanth@mwkog.org

Jeffrey King

Climate, Energy, Air Program Director

(202) 962-3238

jking@mwkog.org

mwkog.org

777 North Capitol Street NE, Suite 300

Washington, DC 20002

