DRAFT FOR MAYOR AND
COUNCIL REVIEW
MARCH 24, 2025

DRAFT

Electric Vehicle Readiness Plan

A community-wide roadmap for the City of Rockville

Department of Public Works
www.rockvillemd.gov/climate
240-314-8870

City of Rockville Get Into It

ICF

Metropolitan Washington Council of Governments

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Accessibility Acknowledgement

The City of Rockville strives to provide documents and plans that meet accessibility guidelines and can be used by all residents, visitors, and stakeholders. The font, colors, alternative text for images, and paragraph and column formatting consider readers who may use screen readers for accessibility. Maps provided in this plan are displayed at a scale to show the entire city on a single page. All maps in this plan are provided on the City of Rockville website in a format that can be zoomed in for specific features. For additional accessibility resources, please contact the City of Rockville ADA Coordinator at ada@rockvillemd.gov or 240-314-8108 (TTY 240-314-8137).

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Mayor and Council Resolution

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Terms and Acronyms

ADA	Americans with Disabilities Act
AFC	Alternative Fuel Corridor designated by the NEVI program
AFDC	Alternative Fuels Data Center, a clearinghouse of data established by DOE
BEV	Battery electric vehicle. See also EV.
BIPOC	Black, Indigenous, and People of Color
Charging Station	Chargers and associated ports located at the same address.
Charging Infrastructure	Above- and below-ground equipment and wiring that supports charging vehicles. In this document, charging infrastructure refers to both the charging station and to any utility or customer make-ready equipment needed for the station.
CFI	Charging and Fueling Infrastructure Grant included in the Infrastructure Investment and Jobs Act (IIJA) of 2021
CFTA	Maryland Energy Administration's Clean Fuels Technical Assistance program
CIP	Capital improvement program that describes the financing and timing of built projects.
City	The City of Rockville (unless otherwise noted)
CAP	Rockville Climate Action Plan
Connector	The component of a charging station that connects with the vehicle and provides electricity. Connector is sometimes used interchangeably with the terms charge point or port. This document also uses the term plug.
County	Montgomery County (unless otherwise noted)
DCFC	DC Fast Charger, sometimes referred to as Level 3, is the fastest type of charging available and can recharge an EV at a rate of 3 to 20 miles of range per minute (or 180 to 1,200 miles of range per hour). Unlike Level 1 and Level 2 charging that uses alternating current (AC), DCFC charging uses direct current (DC). The voltage is also much higher than Level 1 and 2 charging.
DOE	U.S. Department of Energy
EIA	U.S. Energy Information Administration
Electrification	The switching of engines or appliances typically powered by a fossil fuel source (gasoline, diesel, heating oil, propane, or methane/natural gas) to electricity - powered models.
E-Mobility Opportunities	A catch-all term for electric vehicles, electric car share, and electric micromobility devices such as electric bicycles, electric scooters, and other forms of battery-powered personal or shared (and non-transit) transportation
EMD	Environmental Management Division in the Department of Public Works
EPA	U.S. Environmental Protection Agency
EV	Electric vehicle. A vehicle powered, at least in part, by electricity. Unless otherwise noted, the term EV in this report refers to all plug-in vehicles and includes BEVs and plug-in hybrid electric vehicles (PHEVs, defined below). The term EV is synonymous with plug-in electric vehicle and Battery Electric Vehicle.
EV-Ready	A designated parking space which is provided with one 40-ampere, 208/240-volt dedicated branch circuit for future dedicated Level 2 EVSE servicing EVs.
EVSE	Electric vehicle supply equipment which includes charger, ports, customer interface, transformers and other on-site equipment necessary to charge vehicle batteries.

EV-Capable	A dedicated parking space which is provided with electrical panel capacity and space to support a minimum 40-ampere, 208/240-volt branch circuit for each EV parking space, and the installation of raceways, both underground and surface mounted, to support the EVSE.
Garage Orphan	"Garage orphan" EV owners are individuals who do not have reliable access to at-home EV charging and are without dedicated off-street parking, garage or driveway.
GHG	Greenhouse gas. GHGs are gases that trap heat in the atmosphere, such as carbon dioxide, methane, and nitrous oxide, resulting in climate change.
kW	Kilowatt
kWh	Kilowatt-hour
HEV	Hybrid-electric vehicle. Vehicle that uses energy recapture technology to extend gas mileage without a plug-in feature.
HOA	Homeowners' association
ICF	ICF International Inc., the consulting firm that provided plan technical assistance.
IRA	Inflation Reduction Act of 2022
Level 1 Charger	Level 1 charging uses a common 120-volt household outlet. Every electric vehicle or plug-in hybrid can be charged on Level 1 by plugging the charging equipment into a regular wall outlet. Level 1 is the slowest way to charge an EV. It adds between 3 and 5 miles of range per hour. Level 1 EV charging stations are typically located at residences to enable overnight charging and are more practical for charging PHEVs.
Level 2 Charger	Level 2 charging is the most widely used level for daily EV charging. Level 2 ESVE can be installed at home, at the workplace, as well as in public locations like shopping plazas, train stations, and other destinations. Level 2 charging can replenish between 12 and 80 miles of range per hour, depending on the power output of the Level 2 charger, and the vehicle's maximum charge rate.
Level 3 Charger	See DCFC.
LMI	Low- to moderate-income
MEA	Maryland Energy Administration
Micromobility Devices	Micromobility devices include bicycles, scooters, skateboards, segues, etc.
MPDU	Moderately priced dwelling unit
MWCOG	Metropolitan Washington Council of Governments
NEVI	The federal National Electric Vehicle Infrastructure Formula Program is providing funding to states to strategically deploy electric vehicle (EV) charging stations and to establish an interconnected network to facilitate data collection, access, and reliability.
PHEV	Plug-in hybrid-electric vehicle: a vehicle that can be re-charged by plugging in to an electricity source and contains a combustion engine fueled by gasoline or diesel.
ROW	Right-of-way or street

Executive Summary

Imagine Rockville as a city in which EV charging is available, accessible, equitable, affordable, safe and convenient for all who live in, work in, and visit the city and depend on vehicles for travel. Rockville's Electric Vehicle (EV) Readiness Plan serves as a guiding document and plan of action to work towards this vision. To prepare for the growing number of plug-in electric vehicles on the road, state and local leaders are advancing community EV readiness by developing EV-related infrastructure plans, policies, and services. EV readiness requires a coordinated effort among all levels of governments, the contractor community, businesses, property managers, local automobile dealers, community associations, residents, and the local electric utility providers to develop and manage a robust regional charging network.

The path to installing and operating EV charging infrastructure (also known as electric vehicle supply equipment, or EVSE) varies by location; therefore, local planning is necessary to assess local community conditions, needs and barriers; proactively plan for rapidly evolving EV technology and markets; and coordinate with local, state, regional and federal EV transportation initiatives. Many residents, visitors, and businesses recognize the benefits of zero tailpipe exhaust, convenient charging, and up to 65 to 80% lower greenhouse gas emissions of electric vehicles. But public charging networks are lagging behind Rockville's rapidly rising EV ownership. Strategic and significant private and public sector investment is needed to develop the EV infrastructure network. Rockville has an opportunity to support emerging technologies by removing barriers for EV adoption and closing EV infrastructure gaps when possible.

The City's Comprehensive Plan and the Climate Action Plan recommend developing an Electric Vehicle Readiness Plan to expand EV charging infrastructure equitably across the city. The plan is intended to be used by the city and stakeholders to understand how to improve EV networks and programs in Rockville. The plan advances the use of EVs to improve air quality, reduce greenhouse gas emissions, foster economic development, and, consistent with the Social Justice Resolution, encourage the expansion of EV infrastructure especially in historically excluded communities. It is important to note that while this plan focuses on EVs, they are but one element in a sustainable equitable transportation network that emphasizes biking, walking, rolling, public transit, and other low-emission travel modes.

The planning process involved coordination with the Maryland Department of Transportation, the Metropolitan Washington Council of Governments, Montgomery County and the Rockville community.

Existing and Projected EV Adoption and Charging Demand

Rockville is 13.5 square miles with approximately 70,900 residents. The city is bisected by Interstate 270 and is south of Maryland 200, both designated by the Maryland State Plan for National Electric Vehicle Infrastructure (NEVI) as EV Alternative Fuel Corridors (AFCs). One corridor, Interstate 270, currently meets the federal minimum station and mileage requirements for electric vehicle charging infrastructure, the Maryland 200 corridor requires infrastructure. In addition to regional corridor charging, expansion of the local EV charging network is required to serve home, work and destination charging.

As of the end of 2023, there were more than 1,800 estimated EVs registered in the City of Rockville's major zip codes (20850, 20851, 20852) scaled to population. According to the Alternative Fuels Data Center, there are approximately 168 existing public charging ports in Rockville (147 Level 2 ports and 21

DCFC ports). According to ICF projections, EV registrations are projected to grow to at least 6,976 by 2030 and 30,621 by 2045. An expanded network of EV charging infrastructure is needed to serve this growth in electric vehicles, especially at homes, workplaces, public facilities, parks, multi-unit buildings, commercial areas, transit centers, and destination areas.

Plan Recommendations and Best Practices

To meet the growing demand for EVs and guide city policies, programs, and projects the EV Readiness Plan identifies four goals and 26 actions that focus on: 1) EV ready codes, policies, and procedures; 2) robust and equitable charging network; 3) clean municipal fleet; and 4) inclusive public engagement and oversight. These goals and the actions are summarized below with details described in Chapter 7.

Goal 1: EV Ready Codes, Policies and Procedures

Update and align codes, policies, guidelines, permitting and inspection processes to reduce barriers, streamline and expedite EV charging infrastructure development.

1.1 Update City Codes	
1.1.1	Update the Building Code and Property Maintenance Regulations (Chapter 5)
1.1.2	Update the Forest and Tree Preservation Ordinance (Chapter 10.5)
1.1.3	Update the Streets, Roads, Rights-of-Way, and Public Improvements Code (Chapter 21)
1.1.4	Update the Traffic Code (Chapter 23)
1.1.5	Update the Zoning Ordinance (Chapter 25)
1.2 Develop guidelines and standards	
1.2.1	Develop a simplified EV charging application and guide to streamline plan review, permitting and inspections
1.2.2	Develop right-of-way EV charging guidelines and a streamlined approval process to serve residents without access to garages, driveways or dedicated parking spaces
1.2.3	Establish design standards for public EV charging stations
1.3 Advocate for safe, reliable, affordable and equitable electric mobility	
1.3.1	Advocate for government and utility policies and programs to support EVs and e-micromobility opportunities

Goal 1 includes nine actions to update to current codes, policies and procedures to create a predictable and transparent local approval process that can help attract station developer investment and spur charging-station growth. The current EV charger installation permitting process is time consuming, lacks a defined workflow process, and lacks transparency. Most current codes (except the Building Code, updated in 2024) do not reference electric charging stations as an accessory use or define any standards relating to them. The City has authority over permitting and inspections, development review policies,

zoning codes, building codes, tree requirements, aspects of the public right of way, and other regulations that can be updated. Streamlining permitting can foster a more seamless installation process that protects the environment, safety, and serves the public interest.

Other policies are needed to address the need for curbside charging solutions for homes without garages, driveways or designated parking (commonly referred to as garage orphans). Charger standards based on best-practice guidance will make the public charging experience easier. The City can also advocate for federal or state initiatives that support all low emissions e-mobility travel options.

Goal 2: Robust and Equitable Charging Network

Expand access to EV charging to equitably serve residents, workers, visitors, and the municipal fleet.

2.1 Coordinate with partners to meet charging demands	
2.1.1	Engage with residential properties to expand access to home charging
2.1.2	Engage with commercial properties to expand access for workplace, fleet, and destination charging
2.1.3	Coordinate with Montgomery County to expand public charging
2.1.4	Coordinate with Pepco to expand public charging and ensure grid capacity for charging
2.1.5	Identify City-owned properties and rights-of-way in gap areas and leverage outside funding and partnerships to expand public charging infrastructure
2.1.6	Promote EV infrastructure to support other e-mobility opportunities, such as e-bikes, e-scooters, EV ride-hailing, or EV car-sharing services

Goal 2 includes six actions to support the development of a robust and equitable charging network that recognizes that different land use types require different approaches for EV readiness. The city can use education and outreach, partnerships and incentives to promote a robust network to support anyone owning/operating electric vehicles. Taking an equity lens to the work ensures that residents without home charging capability, especially in low- and moderate-income homes and other historically excluded communities, have access to public charging. Small businesses, non-profits, places of worship, and tax-exempt properties may also need support.

- **Residential properties** serve an important role for convenient charging. Most residents of single-unit detached homes can install a simple home charger and conveniently charge their cars overnight. These residents benefit from streamlined and affordable permitting and inspections and incentives. It is also important to have community charging infrastructure that is easily accessible to residents of multi-unit buildings, condominiums, townhomes, and single-unit homes without garages, driveways, or designated parking spaces. Residents with shared parking

or no on-site charging infrastructure can benefit from nearby public charging at commercial properties or within the public right-of-way.

- **Commercial properties** can support destination, fleet, and workplace charging as well as garage orphans at nearby multi-unit properties or residences without driveways. Long distance travelers driving through Rockville can charge at fast chargers along major throughfares such as Interstate 270. Many fully electric vehicles with longer ranges may only need to charge once a week under normal daily travel needs and can utilize chargers at their destinations or at public fast chargers. Other visitors, especially those with hybrid vehicles with limited range will need to charge regularly at destinations to avoid burning gasoline or diesel on the way home. Destinations with longer dwell times and locations further from transit can ensure EV owners benefit from their services by offering charging at their parking facilities. Fleet operators and employees can benefit from charging made available at their workplace.
- **City and County government properties** can further help meet gaps in the local charging network at facilities, community centers, libraries, schools. For example, these sites can host Pepco-sponsored public charging and install grant-sponsored chargers. City and County-hosted public charging can serve residential gaps and destination/workplace gaps as well as serve their fleets and employees. City sponsored chargers are not intended to supplant private investment, only to supplement and fill gaps when opportunities exist to leverage outside funding. These properties can also support e-mobility opportunities such as electric bikes, scooters, or car-sharing through property leasing or supportive policies or initiatives.

Goal 3: Clean Municipal Fleet

Implement a multi-year fleet electrification strategy that aligns with fleet vehicle replacement schedules, duty cycles, and EV infrastructure.

3.1 Electrify eligible vehicles and equipment	
3.1.1	Replace eligible non-emergency light-duty fleet with electric vehicles
3.1.2	Monitor and pilot clean technologies for medium-duty and heavy-duty vehicles
3.1.3	Monitor and pilot clean vehicle technologies for police vehicles
3.1.4	Monitor and pilot clean technologies for off-road equipment
3.1.5	Coordinate an interdepartmental clean fleet team for training and management
3.2 Deploy electric charging infrastructure	
3.2.1	Implement the Electric Vehicle Charging Infrastructure Capital Improvement Program (CIP GA23)
3.2.2	Leverage outside funding and resources to support fleet EV electrification and infrastructure planning, design and installation
3.2.3	Operate, maintain and manage EV charging infrastructure

Goal 3 includes eight actions in a multi-year strategy to electrify the City's fleet vehicles when feasible. Fleet has already begun to electrify eligible vehicles, beginning with light duty sedans, SUVs and pickup trucks not utilized in snow operations or emergencies. Further work is planned to evaluate heavy duty and police options, monitor new technologies, seek grants when aligned with duty needs and replacement cycles, coordinate with drivers to support charging education and access, and to implement the EV Infrastructure CIP (GA23) to install charging infrastructure. This will occur in phases aligned with duty cycles, technology, funding sources, and the deployment of charging infrastructure.

Goal 4: Inclusive Public Engagement and Oversight

Conduct inclusive and equitable public engagement to support EV adoption and monitor plan implementation.

4.1 Outreach and Engagement	
4.1.1	Coordinate with community partners to conduct an inclusive public education and engagement campaign on electric vehicles and charging infrastructure
4.1.2	Promote the regional electric vehicle purchasing cooperative (EVPC) to increase the scale and rate of EV adoption
4.2 Execute plan and monitor progress	
4.2.1	Monitor and report plan progress through the Climate Action Plan annual report

Goal 4 includes three actions to support successful plan implementation involving ongoing public engagement and oversight. The EV Readiness Plan incorporates public feedback at all stages. The plan will also promote discounts, incentives, etc. to enable more participation from historically excluded communities. Progress will be communicated as parts of the Climate Action Plan annual report to ensure accountability.

Next Steps

The plan provides a recommended framework for expanding access to EVs and charging, including streamlining and aligning an EV charging policy and permitting framework and expanded public education and outreach. The plan identifies potential communities and neighborhoods that are candidates for EV charging expansion. Some locations may be eligible for private investment, grant funding or partnerships. Appendix H is a comprehensive planning table of existing, planned, and proposed EV charging locations being installed or under consideration with some level of city involvement. This table is intended to be updated routinely to reflect progress. Appendix H also provides a summary of the status and funding sources of potential fleet and public charging at city-owned facilities and right-of-way. Given that each has unique site conditions and community needs, the plan does not include prescriptive designs for charging infrastructure installations.

The next steps involve interdepartmental coordination to streamline the EV charging plan and permitting framework and coordination with local jurisdictions, utility companies, and potential site owners and managers to discuss site recommendations, partnership opportunities, strive to address barriers, refine cost estimates for charging equipment and installation, and obtain funding. Appendix I presents a conceptual implementation plan for the EV Readiness Plan's 26 actions and summarizes each action's targeted benefits, estimated level of city investment, priority, action lead, partners and estimated timeframe.

1 Introduction

1.1 Purpose and Scope

Rockville's Electric Vehicle Readiness Plan identifies ways the city can work with county, state, regional, and federal programs and private entities to facilitate the shift to electric vehicles (EV), meet the community's growing demand for charging, and ultimately reduce tailpipe emissions and air pollution. The plan sets an aspirational vision for EV charging to be accessible, equitable, affordable, safe and convenient for all who live, work, and visit Rockville. By identifying location, number, and knowing how many, where, and what types of chargers are needed to serve residents, businesses, visitors, and city fleet, the city will be better prepared to explore federal and state infrastructure funding and partnership opportunities to expand public charging to serve all that live, work, and visit the city. The plan focuses on electrification of light-duty passenger vehicles in the community and the city's municipal fleet.[1] The scope of the plan includes the following sections:

- **Overview of Electric Vehicles and Charging Infrastructure**: Provides a general overview of common EV terminology, technology, markets, costs and business models to serve as a foundation for the plan.
- **Existing Conditions and Projections:** Summarizes Rockville's current electric vehicle registrations, locations of existing EV charging stations and projects future growth through 2045 under three growth scenarios for future EV registrations and EV charging needs.
- **Equity Considerations**: Identifies ways to engage with historically excluded and disadvantaged communities and address common equity barriers. This includes supporting EV access for renters, multi-unit residents, visitors, low/moderate income, communities of color, seniors, small businesses, and homes or buildings with shared parking or without garage or driveway access. ADA accessibility is a key component of equity.
- **EV Charging Needs Assessment**: Assesses Rockville's EV charging needs with an overview of EV patterns and locations considerations, a GIS-based spatial analysis for priority locations to serve home, workforce/fleet, destination and travel charging needs, best practices for siting EV charging and a review of community site suggestions and planned projects.
- **EV Policy Overview and Recommendations:** Reviews opportunities, community needs, funding sources, and policy and permitting changes to accelerate EV charger installation.
- **Rockville EV Readiness Goals, Strategies and Actions:** Outlines the four goals and 26 recommended actions to accelerate EV adoption, promote equity, and guide public involvement and plan oversight.
- **Implementation and Next Steps:** Identifies near-term next steps and outlines a concept implementation plan that prioritizes engaging the community and streamlining city processes and policies.

[1] Other transit vehicles and school buses serving Rockville are operated by Montgomery County or WMATA, which have separate initiatives underway to transition to zero-emission vehicles over the long term.

1.2 Guiding Principles

The following guiding principles were utilized during the planning process:

1. Envision electric vehicles as one element in a sustainable transportation network that emphasizes biking, walking, rolling, public transit, and other low-emission travel modes.
2. Seek opportunities for partnerships, grants, rebates, incentives, resource-sharing and technical assistance to reduce costs and support electric vehicle adoption in the city fleet and the community.
3. Expand outreach and access to electric vehicles and charging to all Rockville communities, especially underrepresented groups and people of color, people with disabilities, seniors, renters, multi-unit residents, low-income residents, small businesses, and those without access to driveways or garages who depend on vehicles for transportation.
4. Reduce unnecessary hurdles and streamline the city's plan review and permitting processes, monitor evolving technologies and best practices, and develop guidelines and policies to proactively support EV charger installation and EV adoption.
5. Work with community members to identify charging station needs and identify ways to support private investment in charging infrastructure. Identify locations on city property and right-of-way – curbside, parks, community centers, and other facilities – to fill gaps in the public charger network. Work with Montgomery County, State of Maryland, and other institutional partners to do the same.
6. Monitor plan implementation and adjust as necessary.

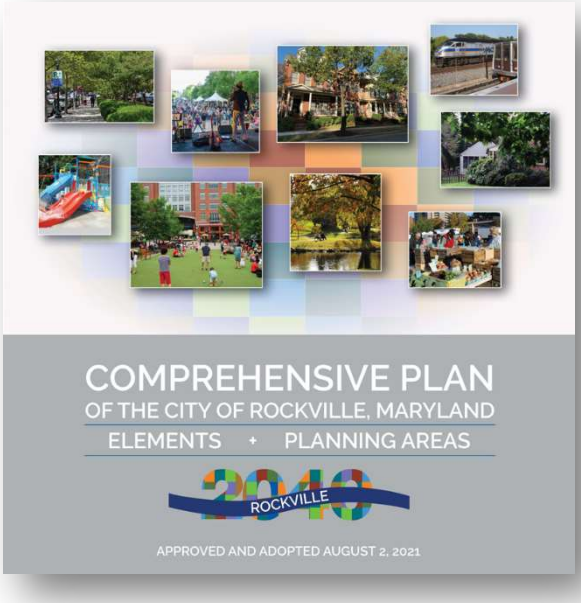
Sustainable transportation elements, such as transit, a bicycle, and an electric vehicle, are integrated in Artist Anna Rose Soevik's "Rockville Today" mural at an apartment building near Twinbrook Station. Courtesy The JBG Companies.

1.3 Policy Background

The EV Readiness Plan is aligned with several adopted plans and policies including the Comprehensive Plan, Climate Action Plan, and the Social Justice Resolution. The plan also works in conjunction with Rockville's Pedestrian Master Plan, Bikeway Master Plan and Vision Zero Plan to support a sustainable transportation network.

Comprehensive Plan

The EV Readiness Plan was developed to support the Comprehensive Plan's policies and actions, including the following:



- *Transportation Element Policy 14:* Reduce carbon emissions from cars, trucks, and buses operated by Rockville residents, businesses, and government.
- *Transportation Element, Action 14.3:* Create a plan for a transition to electric cars and trucks that outlines steps the City will take to become an electric vehicle-friendly city by encouraging the use of zero-emission vehicles, including expanding public electric charging stations…and adopting new building code requirements for electric vehicle charging stations in new construction and existing office, commercial, and multi-unit residential buildings.
- *Environment Element, Action 2.7:* Incorporate environmentally sustainable 'green' building practices in existing and new City facilities, including electric vehicle fleets and charging stations.

Climate Action Plan

Building on principles set forth in the Comprehensive Plan, Rockville adopted its first Climate Action Plan (CAP) in January 2022 which identified 42 strategies in 7 categories. The three goals of the Climate Action Plan are to reduce greenhouse gas emissions, increase resilience to climate change, and incorporate equity in implementation to reduce environmental disparities. Vehicle electrification can play a critical role in addressing the threat of climate change and reducing local air pollution. Transportation is one of the leading contributors to GHG emissions across the nation, state, and city. As illustrated in Figure 1, Rockville's transportation emissions contributed approximately 35% of the community's greenhouse gas emissions in 2020. Transportation-related emissions also affect air quality and human health and impacts historically excluded and disadvantaged communities at higher rates.

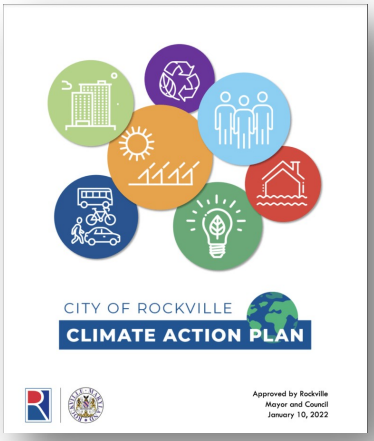
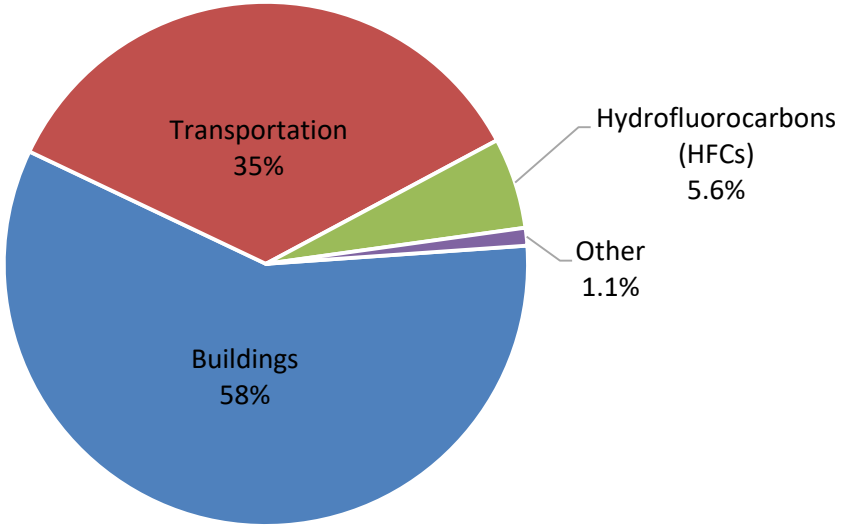


Figure 1. Rockville's Community Greenhouse Gas Emissions[2]



To address this significant source of greenhouse gas emissions, the Climate Action Plan called for several electric-vehicle related actions, including:

- *Develop a Rockville Community Electric Vehicle (EV) Readiness Plan (Action C-11)*
- *Require new developments and redevelopments to be electric vehicle-ready (Action C-12)*
- *Promote a regional electric vehicle purchasing cooperative (EVPC) (Action C-13)*
- *Convert the City fleet to cleaner and more efficient fuel sources (Action C-16)*

[2] MWCOG. Rockville Community-wide Greenhouse Gas Emissions Inventory Summaries. Retrieved from: https://www.mwcog.org/documents/2022/12/27/community-wide-greenhouse-gas-emissions-inventory-summaries-featured-publications-greenhouse-gas/

- *Establish a new Capital Improvement Plan (CIP) to expand electric vehicle charging infrastructure on City property to serve employees, fleet, and the community (Action C-17)*

Electric vehicle readiness is intended to complement, not displace, easy access to other transportation modes. These actions are one part of a sustainable, multi-modal transportation system that also includes the following Climate Action Plan actions:

- *Work with WMATA, MDOT, and Montgomery County to maximize transit accessibility and ridership and enhance mobility options (Action C-10)*
- *Expand active transportation and shared micro-mobility network by implementing improvements in Bicycle Master Plan and Vision Zero Plan (Action C-14)*
- *Adopt and implement a Pedestrian Master Plan (Action C-15)*
- *Update city teleworking and transit benefit policies to encourage City employees to reduce vehicle miles traveled (VMT) (Action C-18)*

Since the Climate Action Plan was adopted, the City of Rockville has continued to make strides in implementing the Vision Zero Action Plan and Bicycle Master Plan, electrifying the city fleet, establishing and implementing an electric vehicle infrastructure CIP, adopting the Pedestrian Master Plan and updating building codes in 2024. The City continues to work with WMATA, Maryland and Montgomery County to maximize transit accessibility. The City updated the teleworking policy as an effective way to meet City operational, customer, and employee needs while promoting efficiencies and consideration for the positive environmental effects of reducing unnecessary commutes. Developing an Electric Vehicle Readiness Plan is a key part of fostering sustainable, low emissions transportation in the City of Rockville and beyond.

Social Justice Resolution

The Electric Vehicle Readiness Plan is consistent with the Social Justice Resolution (#10-21) adopted by the Rockville Mayor and Council in 2021. The resolution:

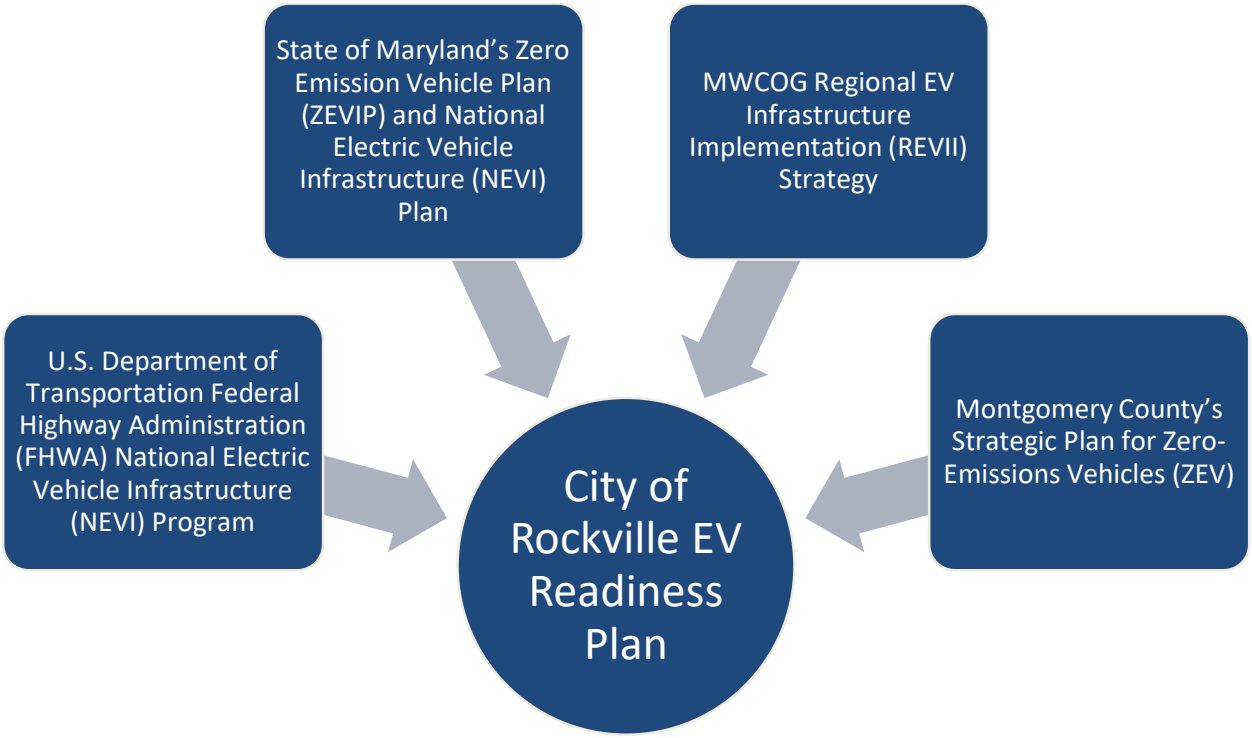
- *Commits to the establishment of government policies and practices that promote racial and ethnic equity and social justice;*
- *Recognizes "the history of racism in our country and how it has led to many current-day disparities;" and*
- *Commits to "systematically and deliberately applying a racial and ethnic equity lens in its decision-making process to build a community that is inclusive, equitable, prosperous, and healthy for all."*

Equity considerations are woven throughout this plan and its guiding principles to ensure that all members of the community have access to low-emission transportation options. The plan recognizes barriers to equal access to electric vehicles and charging such as cost, access to incentives, government distrust, and the effects of historic racism on resources, wealth and community disinvestment. The plan seeks to improve access for EV charging for populations residing in multi-unit residential buildings or in units without access to designated parking. The plan also promotes other e-mobility opportunities, such as e-bikes, e-scooters, EV ride-hailing, or EV car-sharing services.

1.4 Plan Coordination and Development

The plan was developed by the Environmental Management Division (EMD) of Public Works with consultant support from ICF International, and support from the Metropolitan Washington Council of Governments and Montgomery County. Feedback from internal and external engagement was incorporated and helped to frame the plan's priorities and actions. The Environment Commission and the Transportation and Mobility Commission were consulted at the project launch to provide early input in plan formulation. Appendix A describes the steps in plan development.

Figure 2. National, State, Regional and Local Coordination on Rockville's EV Readiness Plan



While Rockville's EV planning process was initially launched in 2022, additional time was dedicated to coordinating with county, state, regional and national electric vehicle infrastructure planning efforts. Under the Bipartisan Infrastructure Law (BIL), states were required to develop and submit an EV Deployment Plan describing how each state intends to use its apportioned National Electric Vehicle Infrastructure (NEVI) Formula Funds. NEVI Formula Funds cannot be obligated until the Federal Highway Administration (FHWA) approves the state's plan. Maryland's NEVI Plan was released in 2022, updated in 2023 and 2024, and is key to Maryland's Zero Emission Vehicle Plan (ZEVIP).

Additionally, the Metropolitan Washington Council of Governments released a Regional Electric Vehicle Infrastructure Implementation (REVII) Strategy in July of 2024 to serve as a guide to help state and local jurisdictions across the region plan for developing their EV charging infrastructure to support the transition of light duty vehicles to electric power. The REVII strategy includes an assessment of publicly-accessible EV charging infrastructure needs and identification of priority areas for infrastructure investment across the metropolitan Washington region and mapping tool that is available on the REVII Strategy EV siting parcel review website.

Furthermore, close coordination with Montgomery County's Zero-Emissions Vehicle (ZEV) planning process was important for sharing information on existing and planned community EV charging infrastructure, community need, and identify factors and opportunities that may impact expansion. Several County agencies play a role in EV infrastructure planning and development. For example, the city is coordinating with Montgomery County General Services, Environmental Protection, Montgomery Parks, Montgomery County Public Schools, and other agencies on deployment of public charging projects.

1.5 Community Engagement

Rockville conducted local community engagement for the EV Readiness Plan with a variety of groups and stakeholders. Anyone who travels, rides, drives, or parks in Rockville or owns, leases, or manages parking spaces in Rockville has a relevant stake in local electric vehicle infrastructure. Residents, visitors, commercial and multi-unit property owners, businesses, Rockville Chamber of Commerce, Rockville Economic Development Inc., as well as Mayor and Council, Boards and Commissions, and City staff were involved in developing the plan. Montgomery County, the State of Maryland, Pepco, and the Metropolitan Washington Council of Governments are also key partners in electric vehicle planning. Table 1 below lists Rockville's outreach and engagement for the EV Plan development.

Table 1. EV Readiness Plan Community Engagement

Element/Event	Host	Audience	Format	Dates	Participation
Electric Vehicle Engagement Webpage and Crowd-Source EV Charger Needs Map	EMD	Public	Webpage and Online GIS map	Open 12/1/2022 through 1/17/2023	107 locations (149 DCFC ports + 404 Level 2 ports)
EV Surveys for Residents, Large Property Owners/HOAs, and Employees	EMD/ICF	Public/ Employees	Online surveys	Open 12/1/2022 through 1/17/2023	244
EV Open House (Multiple community groups and Boards and Commissions invited; included in City outreach media)	EMD/ICF	Public	Virtual Public Engagement	12/8/2022	22
Twinbrook Community Recreation Center	EMD	Public	In-person tabling	12/30/2022	21
Lincoln Park Community Center	EMD	Public	In-person tabling	1/4/2023	34
Washington Auto Show	MWCOG and GWRCCC[3]	Public Policy Staff	In-person panel presentation	1/19/2023	50
Human Rights Commission	EMD	Boards and Commissions	Virtual meeting presentation overview CAP/EV Survey	1/25/2023	8
Internal Discussion on EVSE Permitting and Planning	EMD/ICF	DPW, CPDS staff	Virtual Discussion	2023-2024	15
Environment Commission	EMD	Boards and Commissions	Ongoing Virtual Briefings	Ongoing	9
EV Draft Plan Open House	EMD	Public	Virtual Public Engagement	10/10/2024	29

[3] Greater Washington Regional Clean Cities Coalition

Community Surveys and Feedback

The City of Rockville launched a community engagement webpage at www.engagerockville.com/evplan. Three surveys were conducted, one for Residents and Visitors, one for City of Rockville Employees, and a third for Organizations and Larger Property Owners. The surveys were available from December 2022 through February 2023 and received a total of 244 responses. The surveys and webpage included an interactive map that allowed the public to indicate locations where chargers should be added to the network to help with the charger needs assessment. Details of Rockville's survey and other feedback are summarized in Appendix B.

Montgomery County Department of Environmental Protection also released a Community Electric Vehicle Charging Survey from February-June 2023.[4] The survey received 592 responses and consisted of 12 questions and covered topics including key principles to guide government officials, locations that are most important for EV charging and what features should be included at charging sites. Additionally, Maryland Department of Transportation issued a statewide EV and Infrastructure Planning Survey in April and May 2024.[5] Survey information relating to regional needs and EV charging priority sites in Rockville was also factor in the EV planning process.

Overall, community surveys reflect that reliable electric vehicle charging infrastructure is needed throughout a variety of property types, particularly multi-unit and residences with shared parking. These needs are required immediately to adequately serve current and near-term electric vehicle users. Cost and equitable access are some of the most critical concerns. The plan's goals and recommended actions are designed to address common themes received during the community engagement process:

- **Costs**: Concern for the additional costs associated with purchasing EVs, installing charging, and to use public charging. Need for support and assistance on options to lower costs, access incentives, and reduce EV installation costs.
- **Education and outreach**: Overall interest in more information on EVs in general, where to find existing community EV charging stations, planned locations of new EV charging stations, as well as ways to access incentives, grants, and other ways to save money.
- **Charging access for multi-unit and townhouse communities with shared parking**: Residents in multi-unit, condo and townhouse communities with shared parking have limited access to charging and barriers to installations. Support is needed to expand charging access.
- **Homes lacking garages or driveways**: Requested safe charging solutions for homes without garages or driveways (including addressing issues of running cords over sidewalks).
- **Accessible charging**: Stressed the importance of including accessible charging.
- **Unclear plan/permitting process**: Requested streamlined and simplified process to install charging.
- **Charging gaps**: Suggested public EV charging locations to fill gaps (see map in Figure 22).

[4] Montgomery County Community Electric Vehicle Charging Survey: https://mygreenmontgomery.org/2023/montgomery-county-reports-community-electric-vehicle-charging-survey/
[5] Maryland EV and Infrastructure Planning Survey: https://evplan.mdot.maryland.gov/wp-content/uploads/2024/07/Key-Takeaways-Summary_MDOT-NEVI_Share-Public.pdf

2 Overview of Electric Vehicles and Charging Infrastructure

2.1 Types of Electric Vehicles

An electric vehicle (EV) is a vehicle powered, at least in part, by electricity. Unless otherwise noted, the term EV in this report refers to all plug-in vehicles, both battery electric and plug-in hybrids. While the EV market is evolving rapidly, common electric vehicle terms and characteristics including the following:

- A **battery electric vehicle (BEV)** is powered solely by an electric battery, with no gas engine parts. BEVs are recharged by an external power source. These vehicles always operate in all-electric mode and have typical driving ranged between 100 to 400 miles.
- A **plug-in hybrid electric vehicle (PHEV)** is a vehicle that runs partially on electric power and partially on conventional fuel. Its battery can be re-charged by plugging in to an electricity source and also contains a combustion engine that is fueled by gasoline or diesel. Plug-in hybrid vehicles have a limited electric range (20 to 40 miles on electricity) and may need to be charged daily to meet typical driving needs with the electric motor. Availability of frequent charging helps PHEVs reduce emissions.
- A conventional **hybrid electric vehicle (HEV)**, such as the original Toyota Prius that did not have a plug-in feature, uses a gas engine and an electric motor. These vehicles have increased fuel efficiency and rely on a special battery to extend their mileage. While the design is more technologically advanced than conventional combustion engine-only vehicles, these hybrids rely only on conventional fueling stations and do not require any special planning or policy approaches.

2.2 Benefits of Electrified Mobility

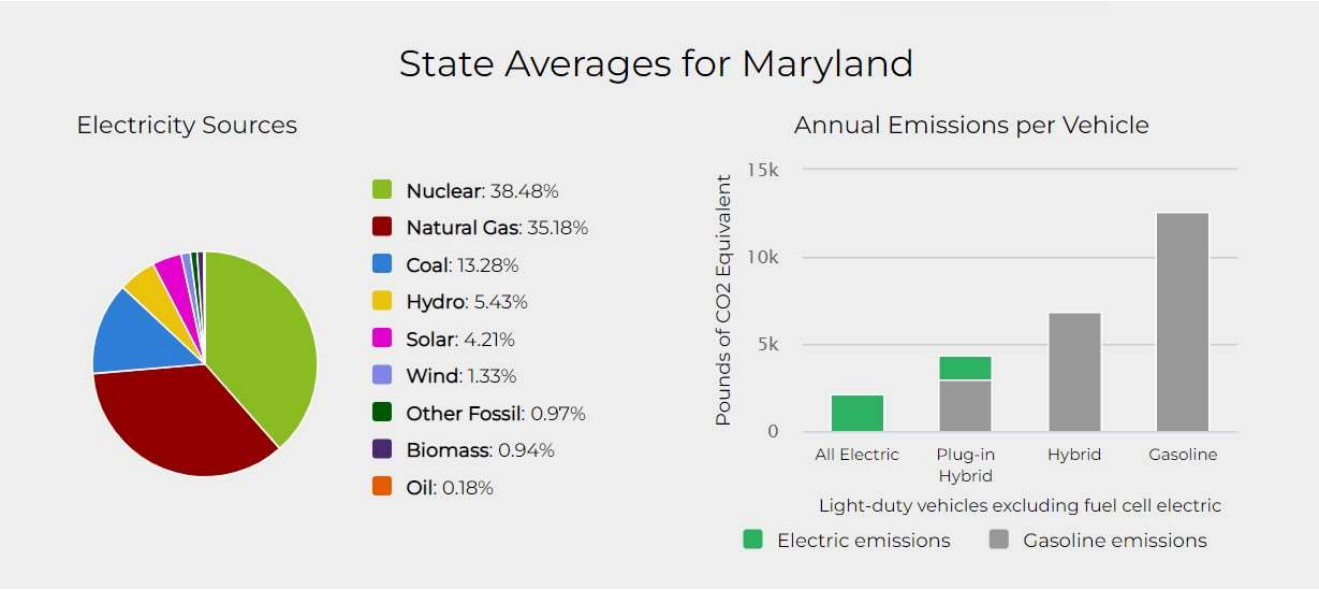
Vehicle electrification can play a critical role in addressing the threat of climate change and reducing local air pollution in Rockville. Electric vehicles (EVs) produce zero tailpipe emissions and zero total GHG emissions if powered by renewable energy. Beyond emissions reductions, EVs offer several additional benefits to consumers like lower operating and maintenance costs, regenerative braking, emissions testing exemptions, and a quieter and smoother driving experience.

Lower Life Cycle Emissions

A 2022 study by the University of Michigan and Ford Motor Company found that battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs) have, respectively, about 64% and 28% lower life cycle greenhouse gas emissions than internal combustion engine vehicles.[6] The extent of operating emissions reductions depends on several factors, including vehicle model, electric grid generation mix, and driving and charging patterns. The left side of Figure 3 shows Maryland's electricity mix, made up of mostly nuclear and natural gas sources. An EV charged in Maryland emits approximately 80% lower emissions per mile than equivalent combustion vehicle. Transportation emissions constitute about 36% of Rockville's greenhouse gas emissions inventory, second only to buildings (see Figure 1).

[6] Woody, Maxwell, et al. The role of pickup truck electrification in the decarbonization of light-duty vehicles. Retrieved from: https://iopscience.iop.org/article/10.1088/1748-9326/ac5142

Figure 3. Maryland Electricity Sources and Emissions per Vehicle by Fuel Type[7]



Reduced Air Pollution

Electric vehicles produce zero tailpipe emissions, greatly benefitting human health.[8] EV adoption can help reduce the levels of nitrogen oxides, volatile organic compounds, fine particle pollution, and sulfur dioxide – pollutants that can have harmful effects on lung and heart health.[9] The American Lung Association estimated the health impacts of a national shift to 100% sales of zero-emission passenger vehicles by 2035 and medium- and heavy-duty trucks by 2040, coupled with renewable electricity, and found that up to 110,000 premature deaths and 2.78 million asthma attacks could be avoided between 2020 and 2050.[10] In Maryland, between 2020 and 2050, health benefits under this scenario could exceed $27 billion.[11] Low-income and historically excluded communities are typically exposed to a higher proportion of environmental hazards and siting EV charging infrastructure can encourage EV adoption to reduce those impacts.

Lower Operating and Fuel Costs

Although the upfront costs of EVs are typically higher than comparable gas-fueled vehicles, maintenance and fuel costs tend to be lower. Due to the design of the EV powertrain, oil changes, tune ups, and emissions tests are not required. Over a typical vehicle lifetime, EV drivers save approximately 50% on repair and maintenance costs. EVs are more energy efficient than gas vehicles, and it typically costs less to charge an electric vehicle than to pay for gas. A 2020 Consumer Reports study found that all-electric EV drivers spend approximately 60% less on fuel costs than the average vehicle in the same class.[12]

[7] https://afdc.energy.gov/vehicles/electric_emissions.html
[8] PHEVs produce zero tailpipe emissions when running on electric-only mode.
[9] American Lung Association. Zeroing In on Health Air. Retrieved from: https://www.lung.org/getmedia/13248145-06f0-4e35-b79b-6dfacfd29a71/zeroing-in-on-healthy-air-report-2022
[10] Ibid.
[11] Ibid.
[12] Consumer Reports. Electric Vehicle Ownership Costs. Retrieved from: https://advocacy.consumerreports.org/wp-content/uploads/2020/10/EV-Ownership-Cost-Final-Report-1.pdf

High Performance and Increased Sustainability

EVs offer a quieter driving experience and faster acceleration rates. Additionally, some EVs can serve as a distributed energy resource. EV batteries can store energy, which allows for bidirectional charging, or energy flow from batteries back to the grid. Vehicle-grid integration uses software and smart data systems to facilitate bidirectional charging. This practice can help manage energy loads for buildings, facilities, the electric grid, and other assets.

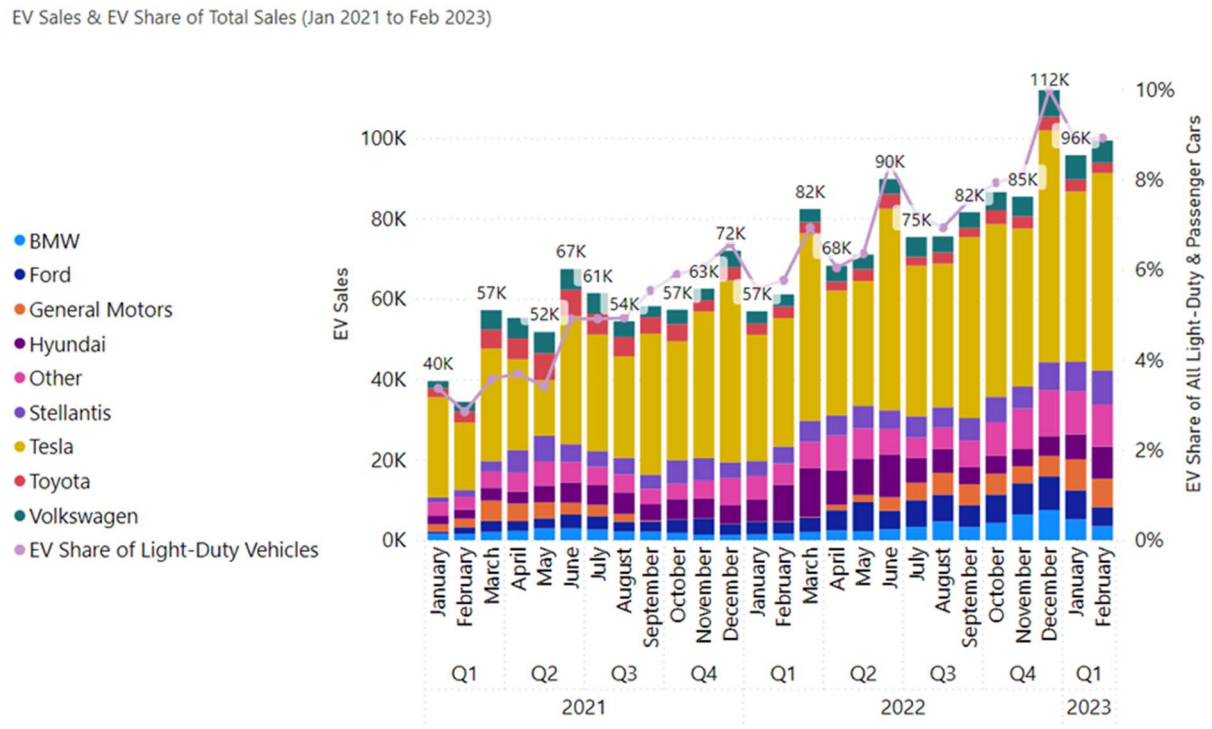
2.3 Current EV Market

EVs make up a small but quickly growing share of vehicle sales in the United States. In 2020 and 2021, 308,000 and 608,000 EVs were sold in the U.S. respectively.[13] EV sales in the month of February 2023 represented approximately 9 percent of the passenger vehicle market in the US, as seen in the Figure below.[14] There are now more than three million EVs on the road and over 135,000 public EV chargers nationwide.[15] Passenger vehicles, also called light-duty vehicles, are vehicles with a maximum gross vehicle weight rating of 8,500 pounds or less.

EV sales are expected to continue growing throughout the United States as vehicle manufacturers recognize the importance of electrification and take steps towards this transition. The Biden Administration announced a goal to build 500,000 EV charging stations across the country by 2030.[16] Since 2021, companies in the United States have invested around $85 billion in EV manufacturing. Major auto manufacturers have made commitments to expand production of EVs. General Motors has pledged to transition to a full electric fleet by 2035. By 2025, Toyota will have 70 electric vehicles in the market.[17] In 2023 nearly 73 EV models were available in the US.[18]

[13] U.S. DOE. New Plug-in Electric Vehicle Sales in the United States Nearly Doubled from 2020 to 2021. Retrieved from: https://www.energy.gov/energysaver/articles/new-plug-electric-vehicle-sales-united-states-nearly-doubled-2020-2021
[14] Atlas Public Policy. Q2 2022: U.S. EV Market Overview.
[15] White House. Fact Sheet: Biden-Harris Administration Announces New Private and Public Sector Investments for Affordable Electric Vehicles. Retrieved from: https://www.whitehouse.gov/briefing-room/statements-releases/2023/04/17/fact-sheet-biden-harris-administration-announces-new-private-and-public-sector-investments-for-affordable-electric-vehicles/
[16] U.S. DOE. 5 Clean Energy Moments From President Biden's State of the Union Address. Retrieved from: https://www.energy.gov/articles/5-clean-energy-moments-president-bidens-state-union-address
[17] Motavalli, Jim. Forbes. Every Automaker's EV Plan Through 2035 and Beyond. Retrieved from: https://www.forbes.com/wheels/news/automaker-ev-plans/
[18] IEA. Global EV Outlook 2022. Retrieved from: https://www.iea.org/reports/global-ev-outlook-2022/trends-in-electric-light-duty-vehicles

Figure 4. EV Sales and Market Share (January 2021 through February 2023) [19]



2.4 Challenges to EV Adoption

Even with momentum on the local, state, and federal levels, barriers to EV adoption remain, including higher upfront purchase prices, inadequate charging infrastructure and concerns about EV range, and environmental concerns in the production process.

High Upfront Purchase Prices

Historically, there has been a perception of a significant price gap between EVs and comparable gas vehicles. Currently, the actual price difference is small. In 2023, consumers could purchase a gas-fueled Hyundai Kona for $23,640 and a Hyundai Kona Electric for $33,550. Currently, gas-fueled Ford F-150s sells for $39,600, while the electric Ford F-150 Lightning sells for $39,974.[20] In addition, buying used EVs, EV tax credits and rebates, cheaper fueling costs, and lower maintenance costs can all reduce the price gap between EVs and gas vehicles.

Inadequate Charging Infrastructure

A lack of sufficient, reliable infrastructure remains a barrier to EV adoption. While there has been significant growth in EV charging infrastructure, there are still gaps in transportation corridors and throughout the community. Additionally, inoperable and poorly maintained public charging stations increasingly frustrate drivers.

[19] Atlas Public Policy. EV Sales and Market Share (January 2021 through February 2023). Retrieved from: https://www.atlasevhub.com/materials/automakers-dashboard/
[20] Baldwin, Roberto et al. Car and Driver. EVs vs. Gas: Which Cars are Cheaper to Own. Retrieved from: https://www.caranddriver.com/shopping-advice/a32494027/ev-vs-gas-cheaper-to-own/

Range Anxiety

Many current and prospective owners have "range anxiety" – the concern that the battery will run out of power before reaching the destination. This concern is intensified for those who do not have access to a charger at home, which is more common for low-income households, those living in multi-unit dwellings or homes without garages or driveways. Combined with concerns about inadequate charging infrastructure are concerns about the range of EVs in hot and cold weather. For gas vehicles, waste heat produced by the engine helps power the heating system. For EVs, the energy for heating comes entirely from the same battery that propels the vehicle, meaning that the range is reduced when heating systems are on. Additionally, EV battery thermal management systems use energy to keep the battery at an optimal temperature, so the battery uses extra energy on hot and cold days to regulate battery temperature.

Environmental Impacts of EV Manufacturing

Environmental concerns associated with EVs manufacturing also remains a barrier to adoption. EVs require approximately six times more minerals than gas-fueled cars.[21] EV batteries require lithium, cobalt, and other rare earth minerals. The International Energy Agency (IEA) predicts that demand for minerals for EV and battery storage will grow more than 30 times between 2020 and 2050, and that this demand will surpass the expected supply from existing mining projects.[22] Mining processes are often energy intensive. However, research and development efforts are underway to reduce the environmental impacts of mining. The Snow Lake Lithium mine in Canada, for instance, is working towards a carbon neutral process for mining lithium, including by using only 100% renewable energy.[23] Additionally, new processes are being developed to increase the efficiency of battery recycling and reuse. The United States Federal Consortium for Advanced Batteries (FCAB) and several other new initiatives are committing to increasing domestic mineral production and recycling, relying less on minerals extracted from other countries. These improvements, paired with the much lower greenhouse gas and tailpipe emissions, make electric vehicles more environmentally friendly overall compared to conventional vehicles.

[21] van Halm, Isabeau. Mining Technology. Concerns for Mineral Supply Chain Amid Booming EV Sales. Retrieved from: https://www.mining-technology.com/features/concerns-for-mineral-supply-chain-amid-booming-ev-sales/
[22] Ibid.
[23] Snow Lake Lithium. Retrieved from: https://snowlakelithium.com/

2.5 EV Charging Infrastructure

A critical step in boosting the number of electric vehicles in Rockville will be installing more charging infrastructure. EV charging infrastructure is also known as electric vehicle supply equipment (EVSE).

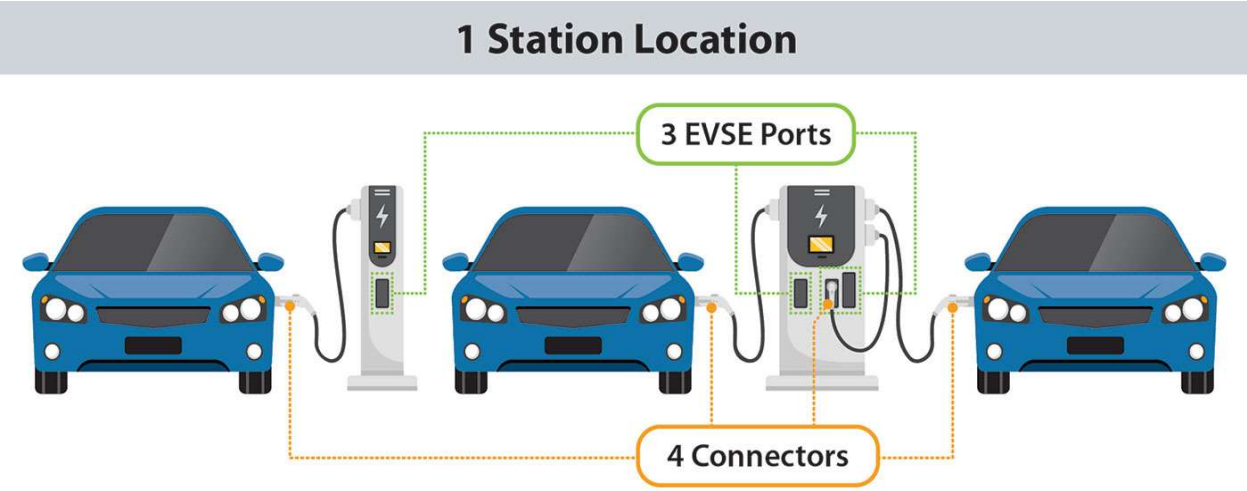
Charging Infrastructure Terminology

The charging infrastructure industry has aligned with a common standard called the Open Charge Point Interface (OCPI) protocol with the following hierarchy for charging stations: **location, EVSE port, and connector.**

The Department of Energy's Alternative Fuels Data Center (AFDC) and the Station Locator use the following charging infrastructure definitions:

- **Station Location**: A station location is a site with one or more EVSE ports at the same address. Examples include a parking garage or a mall parking lot.
- **EVSE Port**: An EVSE port provides power to charge only one vehicle at a time even though it may have multiple connectors. The unit that houses EVSE ports is sometimes called a charging post, which can have one or more EVSE ports.
- **Connector**: A connector is what is plugged into a vehicle to charge it. Multiple connectors and connector types (such as CHAdeMO and Combined Charging System/CCS) can be available on one EVSE port, but only one vehicle will charge at a time. Connectors are sometimes called plugs.

Figure 5. EV Charging Station Terminology[24]



[24] Alternative Fuels Data Center. Developing Infrastructure to Charge Electric Vehicles. Retrieved from: https://afdc.energy.gov/fuels/electricity_infrastructure.html

Charging Equipment

There are several types of chargers and connectors. EVSE are characterized by the maximum amount of power they can deliver to an EV battery.

- **Level 1 chargers** are conventional 120-volt wall outlets. These chargers provide two to five miles of range per hour of charging. Due to this relatively slow charge rate, Level 1 charging is most common in residential settings where regular overnight charging is possible.
- **Level 2 chargers** use 240-volt service. These chargers provide 10 to 20 miles of range per hour and are most suitable for residential and workplace locations where at least 4 hours is feasible.
- **Level 3 chargers or Direct Current Fast Chargers (DCFCs)** give 60 to 80 miles of range per 20 minutes of charging. DCFCs are useful in publicly accessible spaces where parking dwell times may be short.

EVs range in battery capacity (kWh) and the intake of power will depend on the charger's power level (kW). How quickly or slowly an EV can charge its battery will depend on how large the battery is (kWh) and how powerful the charger is (kW).

There are different connectors for Level 2 (AC charging and Level 3 fast charging due to the increased power levels and additional wiring to handle the kilowatts (kW) delivered. While there is consideration to move toward a universal plug technology, currently the common plug-in connector types in North America include:

- **J1772** – standard connector for most EV types
- **CCS** – crossover connector that can accept Level 1, Level 2, or DC fast charging
- **CHaDEmO** – connector used by Japanese automakers
- **J3400** – Tesla models use the J3400 that is compatible with Level 2 or Tesla DC fast charging equipment.

Table 2 summarizes EV charging equipment types and connector types.

Table 2. EVSE Type and Connector Information[25]

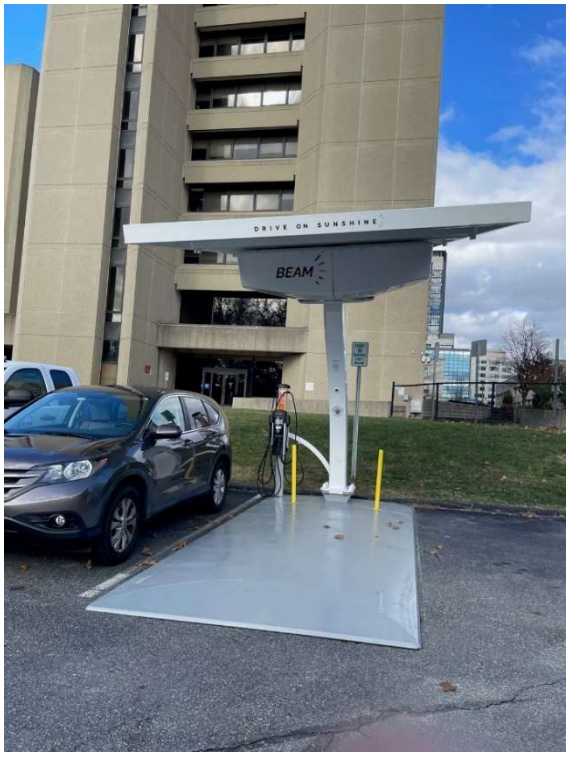
	Level 1	Level 2	DC Fast Chargers
Description	120 volt (V) alternating current (AC) port, single phase service 12-16 amp (A)	208/240V AC port, single phase service 12-80A	208/480V AC circuit, three-phase service connection 50-200A
Connector Type(s)	 J1772 charge port Standard Wall Outlet	 J1772 charge port	 Combined Charging System (CCS)  CHAdeMO  Tesla
Typical Use Cases	Light-duty EVs; residential, workplace	Light and medium-duty EVs; residential, workplace, public charging, fleets	Light, medium, and heavy-duty EVs; public charging, fleets
Typical Charge Time	2-5-miles/1 hour of charging. PHEVs can be fully charged in 2-7 hours; BEVs in 14-20+ hours.	10-20 miles/1 hour of charging. PHEVs can be fully charged in 1-3 hours; BEVs in 4-8 hours.	60-80-miles/20 min of charging BEVs can be fully charged in 30-60 minutes.
Limitations	Lower power delivery lengthens charging time.	Requires additional infrastructure and wiring.	Can only be used by EVs currently, depending on vehicle capabilities. Higher upfront and operation costs.

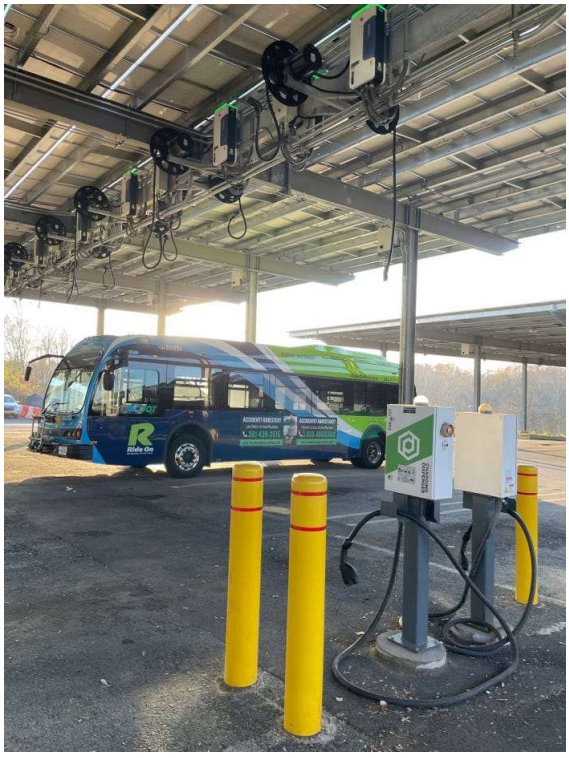
*Charge times are for light-duty EVs and varies based on battery size.

[25] U.S. Department of Energy. Developing Infrastructure to Charge Plug-In Electric Vehicles, https://afdc.energy.gov/fuels/electricity_infrastructure.html

The chargers described above are typically associated with plug-in chargers; the market also features overhead, inductive, and catenary chargers that can be used on a range from light duty, transit buses, electric rail and streetcars. Other charger technologies may also include:

- **E-micromobility charging**: Electric scooters and electric bicycles (e-bikes) can be plugged into a wall outlet to recharge with an ACDC adaptor. E-bikes typically have longer ranges reducing the need for charging away from home, especially for bicycles with removeable batteries allowing them to be easily brought to an outlet. Future planning can monitor other e-micromobility charging needs and consider ways to make charging even easier and incentivize the availability of public charging outlets for e-micromobility devices such as in secure parking facilities at major destinations or multi-unit properties. Electrified docking stations are also on the horizon for e-bikeshare or e-scooter share as a potential accessory use in rights of way or other public areas.
- **Solar charging**: Emerging charging options incorporate solar energy to charge electric vehicles to offset demand on the grid; either in connection with a rooftop solar, battery storage, community solar, solar-powered charging stations or vehicle-integrated photovoltaics. Solar charging technologies are evolving and being tested in the market. The photos below illustrate a portable solar charging station and solar canopy powered microgrid and bus chargers at Brookville Bus Depot, both implemented by Montgomery County.





Bus Depot photo credit: Business Insider (https://www.businessinsider.com/clean-zero-emission-bus-transit-montgomery-county-maryland-2023-11)

2.6 Charging Infrastructure Costs

The costs of EV infrastructure are important factors in planning for EV expansion. Beyond charging equipment, costs may include equipment costs, installation costs, and utility upgrade costs. Estimates of these different cost components are summarized in the tables below.

Equipment Costs

The costs of the EVSE vary based on the type and strength of the charging equipment. Average cost ranges for each type of charger are shown in the table below.

Table 3. Average Range of Site-Level EV Charging Equipment Costs[26,27,28]

Item	Minimum Cost Estimate	Maximum Cost Estimate
Level 2 Charger, per port	$400 (Residential), $2,500 (Commercial)	$6,500
DCFC (50 kW)	$20,000	$35,800
DCFC (150 kW)	$75,600	$100,000
DCFC (350 kW)	$128,000	$150,000

Installation Costs

Sometimes, site upgrades are needed to enable EVSE installation. Installation costs are heavily dependent on local site locations. Average installation costs are shown in the table below.

Table 4. Average Charger Installation Costs[29,30,31]

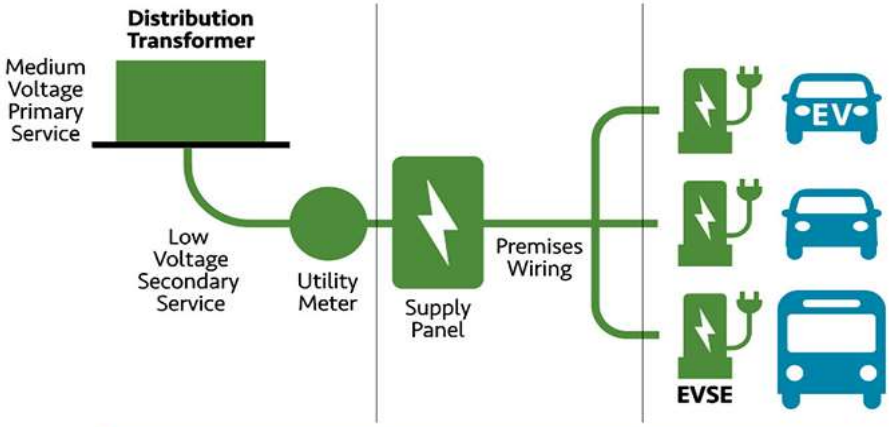
Charger Type	Minimum Cost Estimate	Maximum Cost Estimate
Level 2 Charger	$600 (Residential L2 Charger)	$6,500 (Commercial L2 Charger)
DCFC	$20,000	$94,000

[26] ICF. (December 2019). Comparison of Medium- and Heavy-Duty Technologies in California. California Electric Transportation Coalition, https://www.caletc.com/assets/files/ICF-Truck-Report_Final_December-2019.pdf
[27] U.S. Department of Energy. (November 2015). Costs Associated with Non-Residential Electric Vehicle Supply Equipment, Retrieved from: https://afdc.energy.gov/files/u/publication/evse_cost_report_2015.pdf
[28] Nelder, C. & Rogers, E. (December 2019). Reducing EV Charging Infrastructure Costs. Rocky Mountain Institute, https://rmi.org/wp-content/uploads/2020/01/RMI-EV-Charging-Infrastructure-Costs.pdf
[29] ICF. (December 2019). Comparison of Medium- and Heavy-Duty Technologies in California, https://www.caletc.com/assets/files/ICF-Truck-Report_Final_December-2019.pdf
[30] U.S. Department of Energy. (November 2015). Costs Associated with Non-Residential Electric Vehicle Supply Equipment, https://afdc.energy.gov/files/u/publication/evse_cost_report_2015.pdf
[31] Energy Marketers of America (December 2020). Utility Investments and Consumer Costs of Electric Vehicle Charging Infrastructure, https://www.energymarketersofamerica.org/ema_today/attachments/Energy_Marketers_of_America_Study-Utility_Infrastructure_for_EVs.pdf

Utility Upgrade Costs

Electric utilities may need to upgrade their distribution grid infrastructure to enable EVSE operations. This process often involves upgrading transformers and conductors at EVSE sites. The figure below provides a simplified illustration of the process of delivering power to EVSE.

Figure 6. Utility and Customer EV Infrastructure Equipment[32]



	UTILITY SERVICE	PREMISES WIRING	EVSE
1. Traditional	Electric Company	Customer	
2. Make Ready	Electric Company		Customer
3. EVSE Only	Electric Company	Customer	Elecric Company
4. Full Ownership	Electric Company		

If a site does not have enough capacity to deliver power for an EV charger, the service transformer would need to be upgraded. When grid upgrades are requested as part of a specific customer project, the customer is typically responsible for the associated cost. The table below shows average unit costs for service transformer upgrades, based on average estimates from the National Renewable Energy Laboratory's (NREL) unit cost database and unit cost guides from California's three major investor-owned utilities.

[32] U.S. DOT. EV Infrastructure Project Planning Checklist. Retrieved from: https://www.transportation.gov/rural/ev/toolkit/ev-infrastructure-planning/project-planning-checklist

Table 5. Average Unit Costs for Service Transformer Upgrades[33,34,35,36]

Unit Size	Cost Estimate	Unit Size	Cost Estimate
Transformer (25 kVA)	$3,853	Transformer (500 kVA)	$55,300
Transformer (50 kVA)	$4,178	Transformer (750 kVA)	$64,100
Transformer (75 kVA)	$5,249	Transformer (1000 kVA)	$93,933
Transformer (100 kVA)	$6,057	Transformer (1500 kVA)	$106,450
Transformer (150 kVA)	$45,100	Transformer (2500 kVA)	$164,550
Transformer (300 kVA)	$45,600		

Utility feeder lines that serve areas of a city may not have sufficient capacity to add new EVSE, especially DC fast chargers. Upgrades to utility feeder lines have widely varying costs, so it is not possible to provide a "rule-of-thumb" range.

Additional Cost Considerations

Other costs may include adding networking and communication capabilities and soft costs such as permitting processes and fees. Additionally, there are ongoing charger operation and maintenance costs associated with EVSE ownership. Maintenance may include cable management and storage, regular parts checks, and cleaning equipment. Charging stations may also need occasional repairs. Costs will vary based on warranty pricing, general wear and tear, and more, charging station owners should estimate average annual maintenance costs of up to $400. It is important to establish whether the site host, charging network, or installer is responsible for maintenance costs. Maintenance contracts should include a response time, time for given repair, and an overall uptime requirement.[37]

Due to the costs incurred by operating EV charging infrastructure, site hosts may elect to generate revenue or charge a fee to use their chargers. Common pricing structures include charging by kWh, length of time, session, or by subscription. For example, in 2019, the Maryland Public Service Commission (PSC) approved the implementation of an electric vehicle charging pilot program for investor-owned utilities in the state. Under this program, public EV chargers owned and operated by public utilities, such as Pepco, were authorized to charge $0.18 per kWh for Level 2 charging and $0.34 per kWh for DC Fast Charging.

[33] Horowitz, Kelsey. 2019 Distribution System Upgrade Unit Cost Database Current Version. National Renewable Energy Laboratory, https://data.nrel.gov/submissions/101
[34] PG&E Unit Cost Guide. www.pge.com/pge_global/common/pdfs/for-our-business-partners/interconnection-renewables/Unit-Cost-Guide.pdf
[35] SCE Unit Cost Guide. www.sce.com/sites/default/files/inline-files/Attachment_A-Unit%20Cost%20Guide%202021_Final.pdf
[36] SDG&E Unit Cost Guide. www.sdge.com/sites/default/files/documents/unit.cost_.guide_.3.31.20_R3_EAJ1.pdf
[37] AFDC. Charging Infrastructure Operation and Maintenance. Retrieved from:

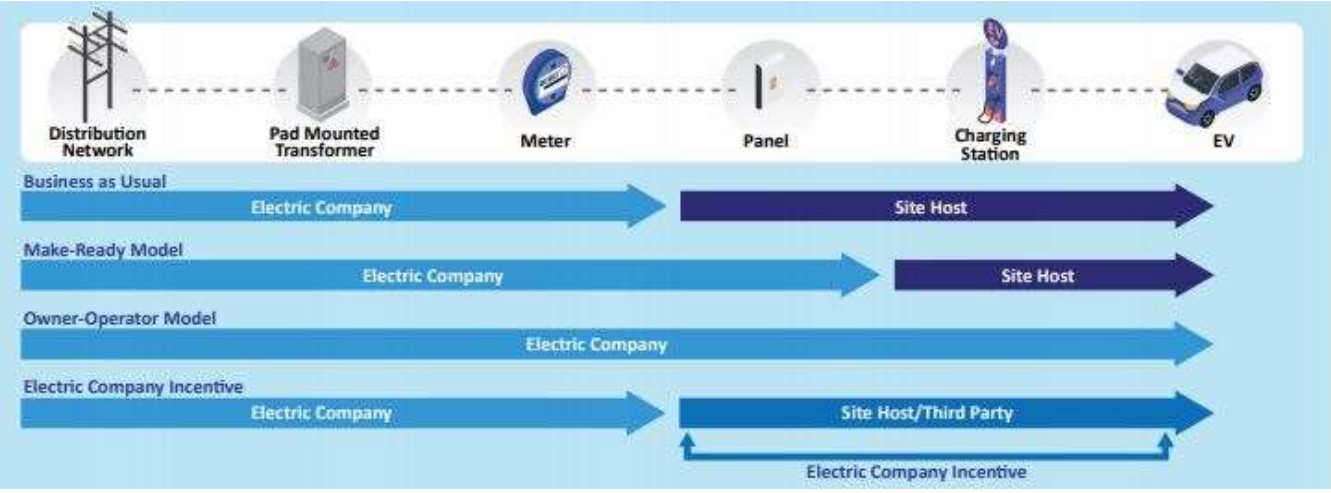
2.7 Charging Infrastructure Ownership and Business Models

Several charging station business and ownership models are available to entities interested in developing charging infrastructure. Understanding ownership models starts with understanding the various components that are part of the broader charging system.

Ownership Models

The figure below from the Electric Power Research Institute (EPRI) shows four types of EV charging infrastructure ownership models from the perspective of an electric utility.

Figure 7. Electric Vehicle Charging Infrastructure Ownership Models[38]



The four types of infrastructure ownership models illustrated above are a business-as-usual model, the make-ready model, the owner-operator model, and the electric company incentive model. The difference between ownership models is found in which party owns and operates site-level charger equipment, including the panel and the charging station itself. Naturally, utilities will own electric transmission and distribution infrastructure, but virtually any entity can own and operate site-level EVSE. For Rockville stakeholders, the list of infrastructure ownership options includes the following:

- **Site-Host Owner-Operator:** In this model, the entity hosting the charging stations also owns the charging stations. This model gives the site host complete control of the station and allows them to keep all revenue, but also places the most risk on the host, including risks associated with maintenance, obsolescence, and low charger utilization.
- **Utility Ownership:** In this model, the electric utility would own the charging station. The utility may lease the chargers to the site host or develop its own sites and charging network. For non-utility entities that lease chargers, risks associated with maintenance and charger obsolescence are reduced, but risk of low charger utilization still remains.
- **Third-Party Ownership:** In this model, a site host may partner with a third-party to handle a portion or all of the ownership, operation, maintenance, and billing responsibilities for the charging stations. There is flexibility in this approach as the two parties may agree to the terms,

[38] Electric Power Research Institute. Interoperability of Public Electric Vehicle Charging Infrastructure. Retrieved from: https://www.eei.org/-/media/Project/EEI/Documents/Issues-and-Policy/Electric-Transportation/Final-Joint-Interoperability-Paper.pdf

roles, and responsibilities of their choosing. This approach includes partnerships with EV service providers such as ChargePoint or Shell Recharge Solutions, which is common.

- **Infrastructure-as-a-Service/Charging-as-a-Service:** Infrastructure-as-a-Service is a business model in which a third-party covers all capital expense associated with charging infrastructure development, owns the equipment, and then effectively leases it to a site host under a service agreement that may also include assistance with operations and maintenance. There is a broad range of Public-Private Partnership (P3) delivery models with varying levels of City participation and risk transfer. This approach can be beneficial for entities that seek to reduce or minimize the upfront capital cost. The Infrastructure-as-a-Service provider would effectively convert the capital cost of infrastructure development to an operating cost and pass those costs on to the site host via a monthly fee with the addition of a service charge. This approach may be more costly to site hosts in the long run due to service fees but may still be attractive depending on the value that the site hosts places on reduced upfront costs.

The City of Rockville has utilized combination of approaches. The City formed lease agreements for Pepco to install charging stations on its property and rights-of-way. Pepco contracts with third parties to maintain and operate the stations. Similar models may be used with other grant-funded public chargers.

Fee Structures

An advantage of being a Site-Host Owner-Operator is control over pricing and consistency and optimization of customer experience. This control comes at the price of total responsibility for station operational and maintenance costs, coordination with utilities, and having detailed knowledge of electricity rates. Knowledge of electricity rate structures can be particularly important if the charging infrastructure is connected to the site host's existing electricity meter. In such cases, also known as operating "behind the meter," balancing the optimal pricing structure with the existing electricity demand can become complicated. If owner-operators site charging stations in unfavorable markets or pursue fee structures that negatively impact utilization or dwell time, then the costs of operating stations can outweigh the benefits. Alternatively, well-sited charging stations have the potential to bring significant financial benefits to the owner-operator.

When choosing a fee structure, owner-operators have a range of options though typically fees fall into one of three categories listed below. [39]

- **No Fee/Free Charging**: Charging is offered for free to customers solely as an amenity. Value is derived from alternative sources such as increased sales or corporate branding.
- **Nominal fee for Cost Recovery**: Fees are set high enough to recoup operational and/or installation costs and insulate the owner-operator from spikes in costs from increased utilization. Fees are typically set as a price per kilowatt-hour (kWh) of electricity delivered, per unit of time, or per charging session.
- **Profit Center**: The fee is designed to turn a profit from the sale of charging services. Fees are typically set as a price per kWh of electricity delivered, per unit of time, or per charging session.

[39] Atlas Public Policy. Public EV Charging Business Models for Retail Site Hosts. Retrieved from: https://atlaspolicy.com/wp-content/uploads/2020/04/Public-EV-Charging-Business-Models-for-Retail-Site-Hosts.pdf

3 Existing Conditions and Projections

3.1 Existing EV Registrations

As of 2023, there were more than 1,800 estimated EVs registered in the City of Rockville's major zip codes (20850, 20851, 20852) scaled to population. While zip-code data is compiled for the county, individual addressed-based EV registration data was not available to determine Rockville residency. Therefore, EV registrations were calculated using county-level registration data and proportional population data. EVs account for approximately 3% of all vehicles registered in the City. BEVs make up 73% of EVs in the City, while PHEVs make up the remaining 24%.

3.2 Existing Public EV Charging Stations

Data from the U.S. Department of Energy's Alternative Fuels Data Center and Plugshare[40] was used to identify, analyze, and map the chargers currently available across the city. According to the Alternative Fuels Data Center, there are approximately 168 charging ports available to the public in the City of Rockville, with 147 Level 2 ports and 21 DCFC ports (as of November 2023).[41] However, many of these ports are not available to all EV drivers. Thirteen of the DCFC ports are exclusively Tesla chargers.[42] About half of the total 168 ports are similarly restricted to fleet, employees, or customers, leaving about 83 available to the wider public. At any given time, some stations will be undergoing maintenance or unavailable, and new stations will come online. Table 6 summarizes existing chargers. The complete list of existing charging stations in Rockville as of November 2023 is found in Appendix D.

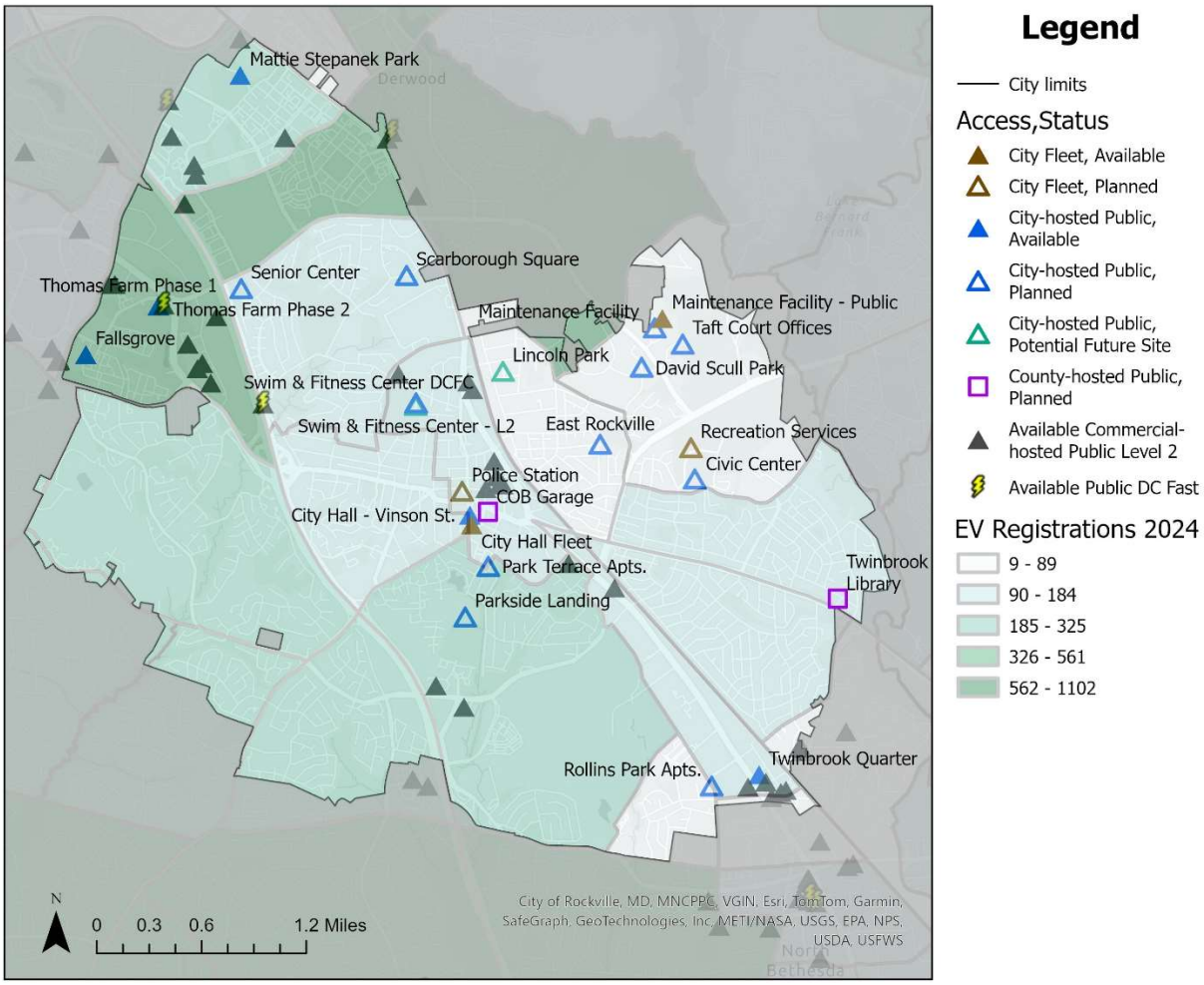
Table 6. Overview of Existing Commercial Private and Public EV Charging Stations (2023)

Property Type	Sum of Level 2 Ports	Sum of DCFC Ports	Sum of Total Ports
Auto Dealer	8		8
Health and Medical	12	2	14
Hotel	2		2
Mixed Use	11	8	19
Multi-Unit Dwelling	15	7	22
Office	41	1	42
Montgomery College	18		18
Retail & Entertainment	13	2	15
County Fleet	14		14
City Fleet	3		3
Schools	8		8
City Public	2	1	3
Grand Total	**147**	**21**	**168**

[40] Plugshare.com. Retrieved October 2023 from: http://www.plugshare.com.
[41] AFDC. Alternative Fueling Station Locator. Retrieved from: https://afdc.energy.gov/stations/#/find/nearest
[42] 7,500 Tesla supercharger and destination chargers are expected to be accessible to non-Tesla EVs by 2024. Retrieved from: https://www.whitehouse.gov/briefing-room/statements-releases/2023/02/15/fact-sheet-biden-harris-administration-announces-new-standards-and-major-progress-for-a-made-in-america-national-network-of-electric-vehicle-chargers/

Figure 8 illustrates the concentrations of EV registrations in Rockville with an overlay of the locations of the existing, planned (pending grant funding and site conditions), and proposed public charging stations on properties or right-of-way owned by commercial property owners, Montgomery County and the City of Rockville. The figure does not include private charging stations, such as home charging. Higher concentrations of EV registrations are located in communities in North and West Rockville. Lower concentrations of EV ownership occur in east Rockville, which currently lacks access to existing public charging.

Figure 8. Public Electric Vehicle Charging Stations and EV Ownership



3.3 EV Adoption Projections

EV registration market growth scenarios for Rockville were completed by utilizing the state goal benchmarks in addition to historical and existing estimated EV registrations. Three different vehicle growth scenarios were forecast as part of this study:

- **Business-as-Usual (BAU) Growth**: The historical EV growth rate in Rockville was used to project future EV deployment as a function of projected population growth. Due to the lack of city-level EV registration data, current and historical EV registrations were calculated using county-level registration data and proportional population data. Rockville has higher baseline proportions of EV registrations compared to other communities in Maryland; therefore, BAU projections tends to be higher than medium and high statewide projections in 2025 and 2030. [43, 44, 45]
- **Medium Growth**: An average of the BAU and high growth projection.
- **High Growth**: The projected ratio of Rockville to Maryland's population was applied to meet each of the state EV goals that the City of Rockville would be responsible for in benchmark years 2025 and 2030. Following 2030, projections are extrapolated from an assumed goal of 80% EV registrations out of total vehicle registrations by 2045.

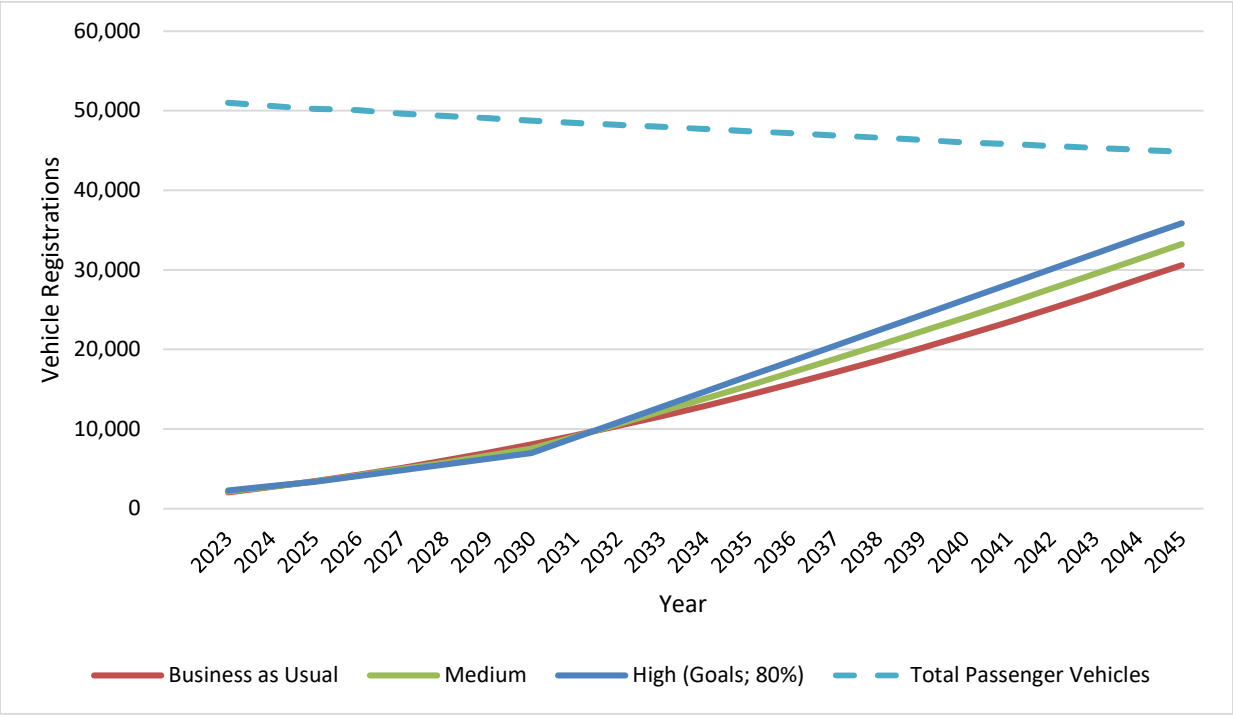
Table 7. Projected EV Registrations by Benchmark Years
(Estimated Rockville share of State EV registrations needed to meet State goals)

Year	2025	2030	2035	2040	2045
Business as Usual EV Projection	3,441	8,083	14,260	21,771	30,621
Medium EV Projection	3,410	7,529	15,437	24,011	33,254
High (ZEV Goal; 80%) EV Projection	3,379	6,976	16,613	26,250	35,887
Total Passenger Vehicle Registrations	50,239	48,760	47,447	46,045	44,859

In the near term, EV registrations in the BAU scenario outpace Rockville's proportion of Maryland's 2025 and 2030 ZEV goals in the high scenario. When the high scenario shifts to an 80% goal by 2045, the high scenario has a greater increase than the BAU scenario, as shown in Figure 9.

[43] MDOT/MVA. Electric and Plug-in Hybrid Vehicle Registrations by County as of each month end from July 2020 to April 2023. Retrieved from: https://opendata.maryland.gov/Transportation/MDOT-MVA-Electric-and-Plug-in-Hybrid-Vehicle-Regis/qtcv-n3tc
[44] MVA. Vehicle Registration by County for FY2010 to FY2022. Retrieved from: https://opendata.maryland.gov/Transportation/MVA-VEHICLE-REGISTRATION-by-COUNTY-FY-2010-to-FY-2/kqkd-4fx8
[45] MWCOG. Round 9.2 Cooperative Forecasting Summary Tables. Retrieved from: https://www.mwcog.org/documents/2021/12/02/cooperative-forecasts-employment-population-and-household-forecasts-by-transportation-analysis-zone-cooperative-forecast-demographics-housing-population/

Figure 9. Projected EV Registrations Over Time



3.4 EV Charging Infrastructure Projections

Just like combustion vehicles depend on gasoline and diesel fueling stations; electric vehicles need to access charging infrastructure to refuel. Since not all residents will have the ability to charge at home, public charging is an important provision that helps increase confidence in this new technology. Workplace charging, fleet charging, and visitor charging are other critical components of a complete infrastructure system.

The U.S. Department of Energy's Electric Vehicle Infrastructure Projection Tool (EVI-Pro Lite) was used to project the amount of private and public charging needed for current and projected EVs in the City of Rockville. Electric Vehicle Supply Equipment (EVSE) infrastructure needs are evaluated by Single-unit, Shared Private, Public Level 2, and Public DCFC. [46]

The EVI-Pro Lite tool uses a set of variables[47] to determine the amount of EVSE infrastructure needed to support EVs, including:

- Number of EVs that need access to charging
- Proportion of ownership of PHEVs versus BEVs
- Percentage of drivers with access to home charging
- Local travel patterns

The results from the City of Rockville EV projection scenarios were applied to benchmark years 2025, 2030, 2035, 2040, and 2045 to determine the number of EVs deployed in the Rockville region.[48] EVSE assessment results for Rockville are shown in the table below and modeling assumptions are described in Appendix E.

EVSE needs are listed in terms of number of ports by EVSE type, EV growth scenario, and benchmark year. It is important to note that these are conservative projections based on the assumption that only 75% of drivers will have access to home charging and data on shared private charging, either multi-unit or workplace charging, is not easily accessible. It is also important to note that residential charging and workplace charging are key to address charging demand since the vast majority of EV drivers primarily charge either at home or at work.

[46] AFDC. EVI-Pro Lite Tool. Retrieved from: https://afdc.energy.gov/evi-pro-lite

[47] The following EVI-Pro Lite assumptions were used for the City of Rockville's EVSE needs assessment: Vehicle mix: BEV Sedans: 42%; BEV C/SUVs: 39%; BEV Pickups: 13%; BEV Vans: 6%; PHEV Share of BEVs: 34%; Full support provided for PHEVs; Percent of drivers with access to home charging: 75%.

[48] As it is structured, EVI-Pro Lite will only be able to project EVSE needs for scenarios in which the EVs make up less than 10% of projected light duty vehicles for the area. To model EVSE needs for higher proportions of EVs, projected EV registration values were divided by 10 for a "small scale" projection input into EVI-Pro Lite. EVI-Pro Lite's projected "small scale" EVSE figures were then multiplied by 10 for a "full-scale projection" of EVSE needs. This type of adjustment is commonly done when the EVI-Pro Lite tool is used for local government EV infrastructure planning studies.

Table 8. Projected EV Charging Needs by Benchmark Year

Scenario			2025	2030	2035	2040	2045
Business as Usual (BAU)	EVSE Needs (port count)	Single-unit	2,292	5,753	9,930	15,160	21,322
		Shared Private	172	455	725	1,107	1,557
		Public Level 2	214	585	919	1,403	1,973
		Public DC Fast	9	35	45	70	98
		Total Ports	**2,686**	**6,828**	**11,619**	**17,738**	**24,949**
	EVs to Support		3,441	8,083	14,260	21,771	30,621
Medium	EVSE Needs (port count)	Single-unit	2,375	5,359	10,749	16,719	23,156
		Shared Private	173	424	785	1,221	1,691
		Public Level 2	220	545	995	1,547	2,142
		Public DC Fast	11	33	50	77	106
		Total Ports	**2,779**	**6,360**	**12,578**	**19,564**	**27,095**
	EVs to Support		3,410	7,529	15,437	24,011	33,254
High (State ZEV Goal; 80%)	EVSE Needs (port count)	Single-unit	2,353	4,965	11,568	18,279	23,906
		Shared Private	172	393	845	1,334	1,790
		Public Level 2	218	505	1,070	1,691	2,228
		Public DC Fast	11	31	53	84	91
		Total Ports	**2,753**	**5,893**	**13,536**	**21,388**	**28,016**
	EVs to Support		3,379	6,976	16,613	26,250	35,887

With 168 existing public charging ports in Rockville (147 Level 2 ports and 21 DCFC ports), even with the addition of expected planned stations, the City is projected to need double the current public chargers to meet the demand for public Level 2 chargers by 2030 (between 505 to 585 L2). In the near term, EVSE needs in the BAU scenario outpace Rockville's proportion of Maryland's 2025 and 2030 ZEV goals in the medium and high scenarios. When the high scenario shifts to an 80% goal by 2045, the high scenario has a greater increase than the BAU scenario. Assuming all stations are posted online, many multi-unit dwelling developments are lagging in charger concentrations. Projected EV ownership and demand for the shared private and public chargers to support them may vary based on a variety of factors:

- The proportion of drivers with access to home charging.
- The proportion of hybrid vehicles needing frequent charging compared to BEVs with longer ranges needing charging once a week.
- How quickly the market responds by providing charging and improving charging technology.
- Development charging infrastructure requirements and how quickly redevelopment occurs.
- Gas prices, electricity prices, vehicle prices, and charger costs balanced against incentives and incomes.
- Vehicle practicality for a variety of families, employees, and fleets, and model availability.
- Corporate average fuel economy standards and state laws.
- Private vehicle ownership rates and if they are reduced by improved transit access, transit-oriented development, car-sharing, ride-sharing, and bicycle and pedestrian facilities.

Clear needs for additional EVSE are shown in this analysis, yet adjustments may be needed depending on future conditions, technology, and market demand.

4 Equity Considerations

Ensuring equitable access to electric vehicle (EV) charging is an important consideration when planning infrastructure development. Low-income and historically excluded communities are typically exposed to a higher proportion of environmental hazards and EV charging infrastructure can make it easier to encourage EV adoption as a strategy to reduce those impacts. Even with momentum on the local, state, and federal levels, barriers to community-wide EV adoption remain. The plan identifies ways to identify and engage with historically excluded communities and address common equity barriers.

4.1 Identifying Historically Excluded Communities

Designing actions to address equity barriers can assist low-income, Black, Hispanic, Indigenous, and people of color, non-English speakers, people with disabilities, senior citizens, and other historically excluded people to benefit from the community-wide transition to clean-fuel transportation. Government mapping tools and localized data can help identify these historically excluded communities. Recent federal legislation such as the Inflation Reduction Act and the Bipartisan Infrastructure Law emphasized the Justice 40 Executive Order from the Biden Administration to direct 40% of federal funding towards what they termed "disadvantaged communities" which were partially defined by census tract in various mapping tools for that purpose.

Government equity mapping tools: the following regional and state climate and equity tools have been developed to help local governments identify "disadvantaged communities." Rockville has used these tools as a starting point and in grant narratives, while using local knowledge and data to create a fuller more accurate picture of where community needs can be met.

- MWCOG Equity Emphasis Areas: MWCOG and the National Capital Region Transportation Planning Board provides census tract-level data on concentrations of low-income and/or minority populations.
- Maryland Environmental Justice Screen Tool: Maryland mapping tool that includes a data on a range of socioeconomic factors, environmental effects, sensitive populations, and pollution burden exposure metrics.

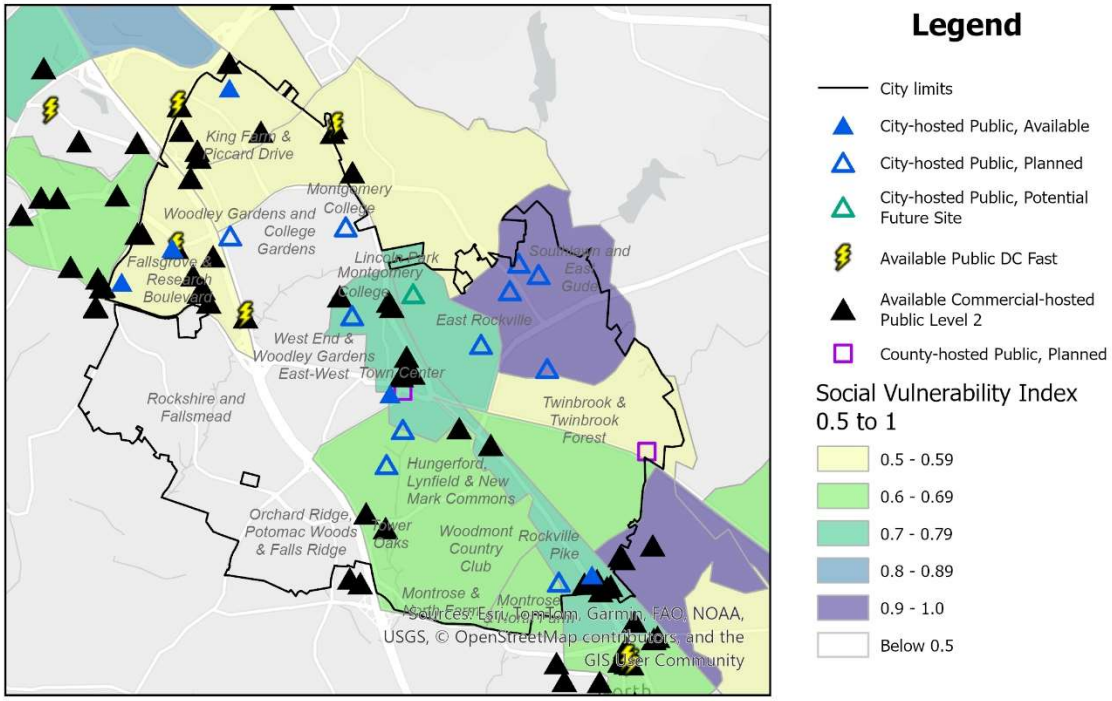
Additional national-level climate and equity tools have been developed to help identify disadvantaged communities with slightly varying data, listed below.

- Climate and Economic Justice Screening Tool (CEJST): The White House Council on Environmental Quality (CEQ) provides interactive maps of disadvantaged communities established by Justice40 Interim Guidance.
- Screening Tool for Equity Analysis of Projects (STEAP): The Federal Highway Administration provides mapping tools that supports environmental justice screening.
- Low-Income Energy Affordability Data Tool: The U.S. Department of Energy developed a tool that provides estimates of low-income and moderate-income household energy data.
- Geospatial Energy Mapper (GEM): Mapping tool from Argonne National Laboratory for planning energy infrastructure in the United States.

- Social Vulnerability Index (SVI): The U.S. Center for Disease Control provides maps of 16 census variables to help local officials identify communities that may need support before, during, or after disasters.
- Electric Vehicle Charging Justice40 Map: Tool to help EV charging planning efforts align with Justice40.

Examples of the different equity mapping tools are presented below. Figure 10 map draws on data from the Centers for Disease Control (CDC) Social Vulnerability Index (SVI) which is comprised of four separate metrics: socioeconomic status, household characteristics, racial and ethnic minority status, and housing type and transportation. Higher SVI scores on a scale from 0 to 1 indicate higher prevalence of social vulnerabilities related to those four metrics. As seen in the map, communities on the east side of Rockville and to the south along MD Route 355 have a higher SVI. While there are charging stations located along Route 355, there are no existing stations in the northeastern quadrant. This area has the potential need for the expansion of public charging to serve these communities.

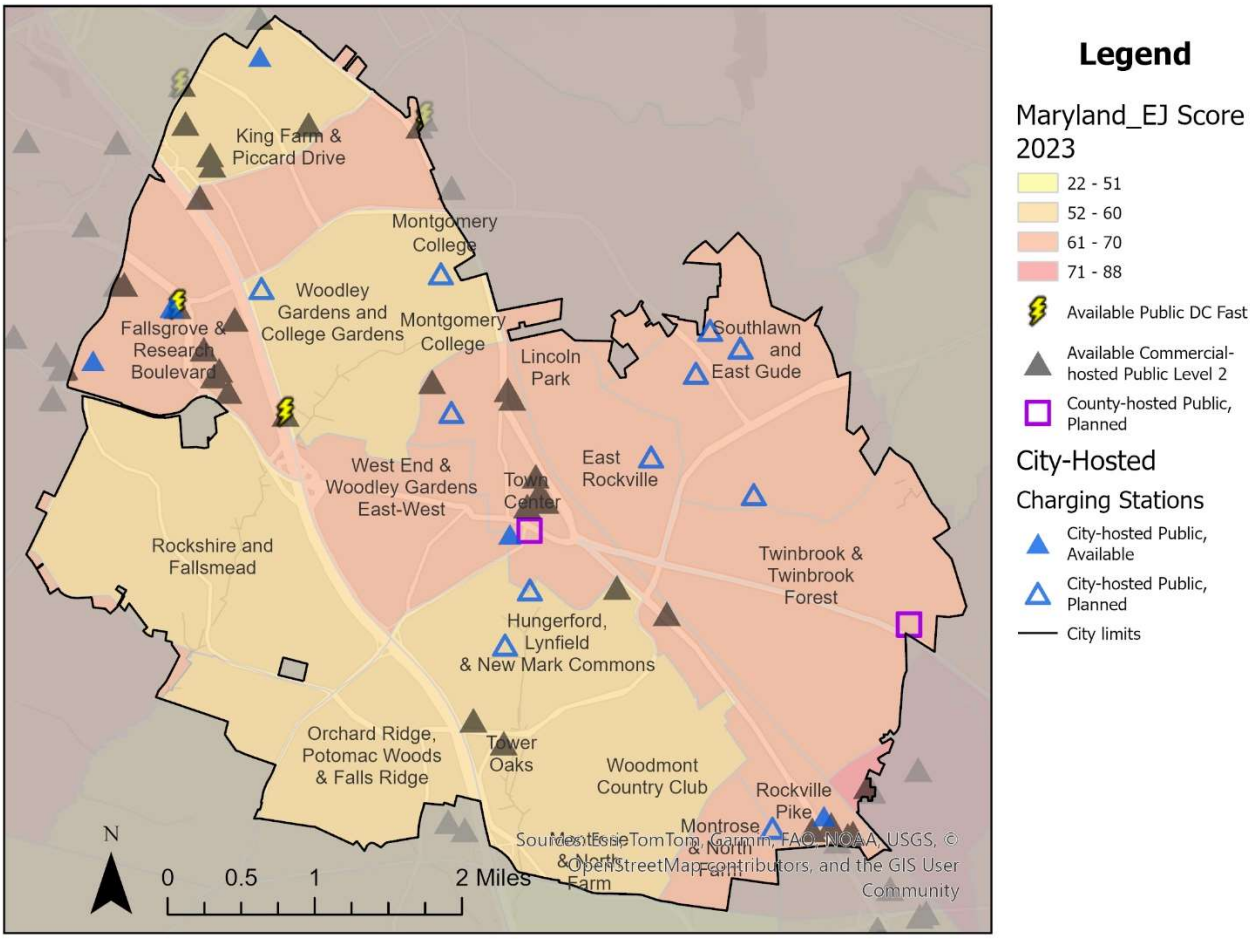
Figure 10. CDC Social Vulnerability Index[49]



[49] Agency for Toxic Substances and Disease Registry. CDC/ATSDR Social Vulnerability Index. Retrieved from: https://www.atsdr.cdc.gov/placeandhealth/svi/index.html

Figure 11 maps data from the Maryland Environment Justice Screen (MD EJ Screen) which is made up of four data groups: pollution exposure, environmental effects, sensitive populations, and socio-economic factors. This data set identifies nearly the entire east side and the central portion of Rockville with higher EJ scores which indicates more environmental impacts and higher socio-economic vulnerability in those census tracts.

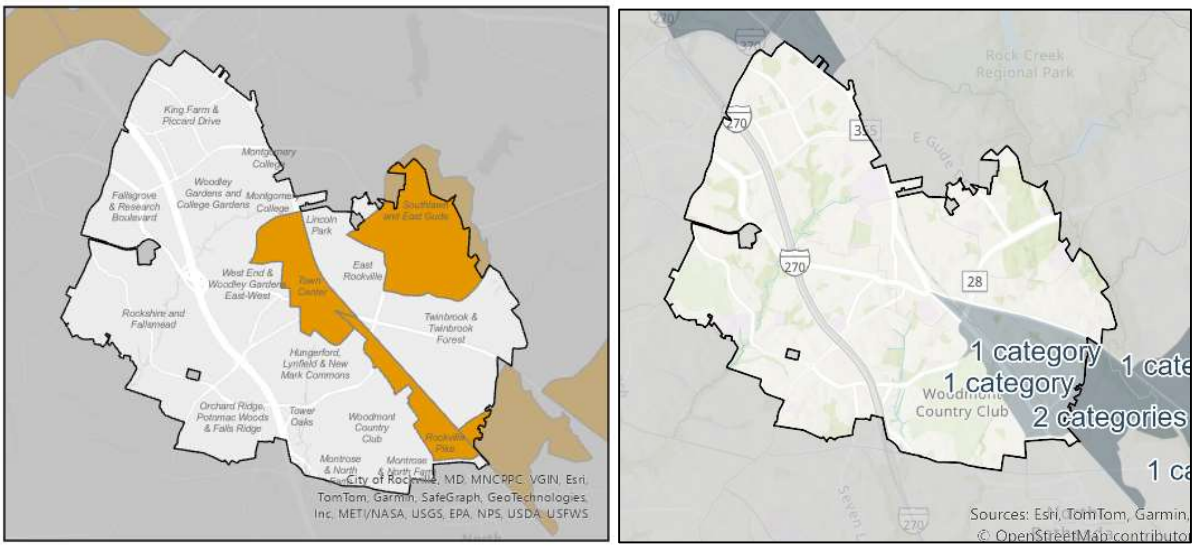
Figure 11. Maryland Environmental Justice Screen Tool[50]



[50] MDE. Maryland Environmental Justice Screening Tool (MD EJScreen). Retrieved from: https://mdewin64.mde.state.md.us/EJ/

MWCOG Equity Emphasis Areas (Lower Left) and Justice 40 Disadvantaged Communities (Lower Right) Census Tracts display different areas along MD 365, East Rockville and Twinbrook. The Metropolitan Washington Council of Governments and the Transportation Planning Board developed Equity Emphasis Areas that identify census tracts with high concentrations of low-income individuals and/or traditionally disadvantaged racial and ethnic population groups. Justice 40 identifies census tracts in gray which are (1) at or above the threshold for one or more environmental, climate, or other burdens, and (2) at or above the threshold for an associated socioeconomic burden. Two census tracts in Rockville qualify as disadvantaged communities under one burden category and one census tract on the southeast edge of the City qualifies as disadvantaged under 2 burden categories.

Figure 12. MWCOG Equity Emphasis Areas and Justice 40 Disadvantaged Communities

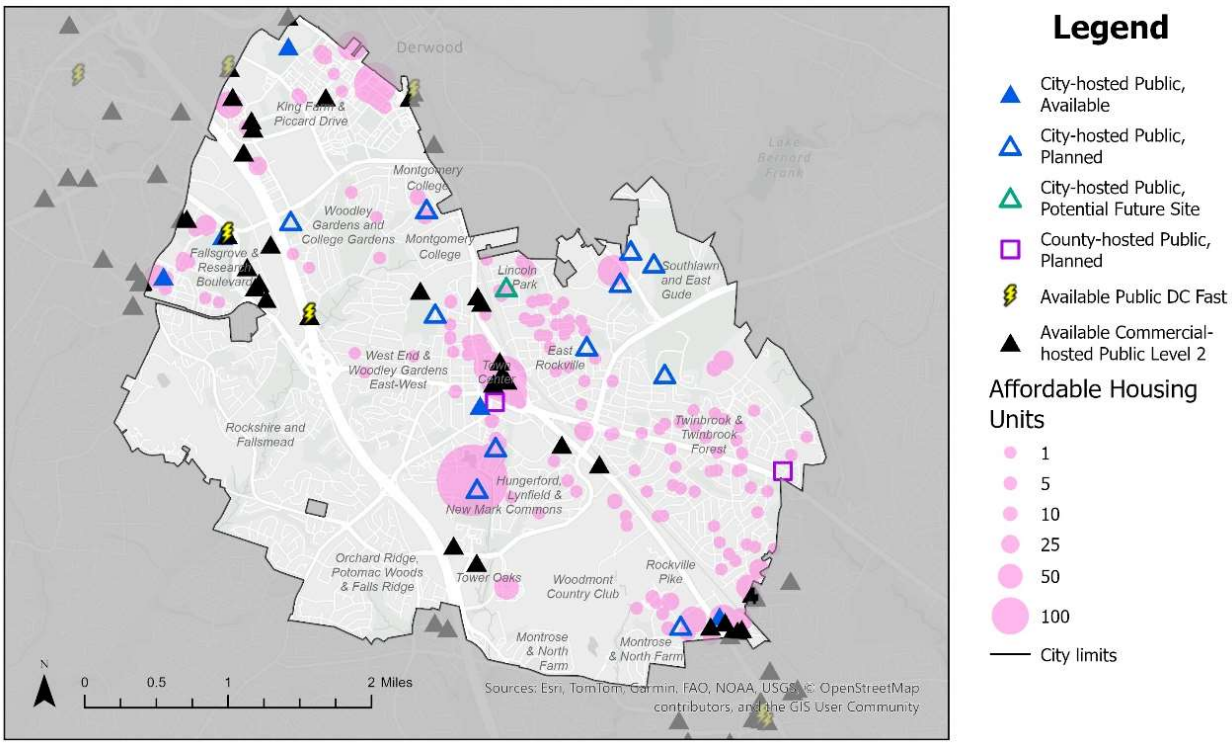


Local Data

Local neighborhood and affordable housing data can supplement census-tract level data to identify other priority areas for grant-sponsored public charging stations or other support for equitable charging infrastructure. Families, businesses, and individuals do not sort themselves neatly by race or income in census tracts. For example, most of Rockville Housing Enterprises (RHE) properties and many other affordable housing developments fall outside of these zones. Conversely, many economically privileged communities and individuals also reside in the federal "disadvantaged community" tracts.

Figure 13 maps the relative concentrations of affordable housing in Rockville, which includes Rockville Housing Enterprises, public housing, multi-unit housing supported by state funding, moderately priced dwelling units (MPDUs), and naturally occurring affordable housing. Areas with the larger pink circle symbols indicate a greater number of affordable housing units with the area. Affordable housing is integrated with market-rate throughout the City.

Figure 13. Affordable Housing Units



These data sources can also inform community engagement. Charging infrastructure projects should be designed alongside a diverse set of community members to understand their needs and consider local context to ensure appropriate charging solutions for the area. Equity is a consideration in all the actions and explored more in the following section on community engagement.

4.2 Outreach and Engagement with Historically Excluded Communities

Communicating and engaging with communities to understand their specific transportation needs is critical to developing appropriate solutions. The City should work with trusted partners within communities that can help collect feedback and contextualize responses. With their input, communities and the city can collaboratively develop solutions that directly address community concerns and maximize investments to best serve drivers that may have a harder time accessing charging infrastructure. Examples of potential barriers include, but are not limited to:

- Language barriers for education on EVs, charging station instructions, and assistance navigating financial incentives.
- Greater financial need to purchase or lease EVs or access charging infrastructure.
- Payment barriers to pay for public charging, including lack of a credit card/bank card to pay for charging or the lack or lack of smart phone or sufficient data or power to connect with a charging network app/payment system.
- Difficulties accessing charging infrastructure residents in rental properties.
- Difficulties applying commuting subsidies (e.g., gas card) to charging stations.

Additional items should be considered when communicating with these groups to conduct education and outreach efforts:

- Translate education materials into multiple languages as needed and engage with vendors to translate sales materials.
- Plan outreach at locations where people already meet. Connect with community-based organizations and community leaders to disseminate information about EVs and EV charging infrastructure.
- Educate the audience on why and how the topic of EVs and EV charging infrastructure is relevant to them, including topics such as emissions benefits, improved mobility, and cost of ownership benefits.
- Provide education and assistance accessing incentives for EV purchasing and EV charging infrastructure installation.
- Educate on less costly ways to own, operate, or ride an EV and access EV charging infrastructure, such as purchasing a used EV, participating in an EV carshare or rideshare program where available, utilizing public EV charging stations, or utilizing EV charging infrastructure available in multi-unit dwellings.
- Plan public charging infrastructure to have accessible payment methods, such as a contactless payment method that accepts major credit and debit cards and accepts payment through either an automated toll-free phone number or a short message/messaging system (commonly abbreviated as SMS). Payment methods should not require a membership, not affect the power flow to vehicles, and provide access for those that are limited English proficient.

4.3 EV Incentives to Reduce Upfront Costs

Although the price gap between EVs and comparable gas vehicles, as described in Section 2.4, is closing over time, vehicles plus the cost to install or access EV chargers may be prohibitive or may be perceived as prohibitive for historically excluded communities. Awareness of EV tax credits and rebates described in Section 6.2 and Appendix F, cheaper fueling costs, and lower maintenance costs can reduce the total cost of ownership between EVs and gas vehicles even further and make EVs more attractive. Public outreach and education on the availability and process to access these incentives is crucial to make EVs a viable option for a wider range of the public. Additionally, many jurisdictions can lower barriers to EV adoption and charging infrastructure specifically for low- and moderate-income residents by promoting or offering additional targeted incentives. For example, some jurisdictions promote or add to Inflation Reduction Act rebates for used EVs. Other jurisdictions encourage and assist property owners to take advantage of separate or larger incentives offered through the county, state, utilities, or the Internal Revenue Service (IRS) to purchase EVs and/or charging infrastructure.

4.4 Accessible EV Charging

The Maryland Accessibility Code (MAC) includes many accessibility requirements applicable to electric vehicle charging stations, among which are provisions regarding access to sites, facilities, buildings, and elements, as well as specific requirements for operable parts and accessible routes. Though specific scoping provisions for EV-Parking Spaces are absent from the MAC, regulated entities must still ensure that they are accessible to and usable by individuals with disabilities. The U.S. Access Board included the following recommendations for two aspects of accessibility:[51]

- **Accessible mobility features***: A reasonable number of EV chargers must have physical access for people who use mobility devices, such as wheelchairs, scooters, walkers, and canes. Accessible mobility features primarily concern the size of the vehicle charging space, providing access aisles, how and where the chargers are installed, and the physical operability of the charger.*
- **Accessible communications features***. All EV chargers should have accessible communication features and operable parts. This enables EV chargers to be used by people who are deaf or hard of hearing, little people, and other people with disabilities who do not need accessible mobility features (like access aisles) to use an EV charger.*

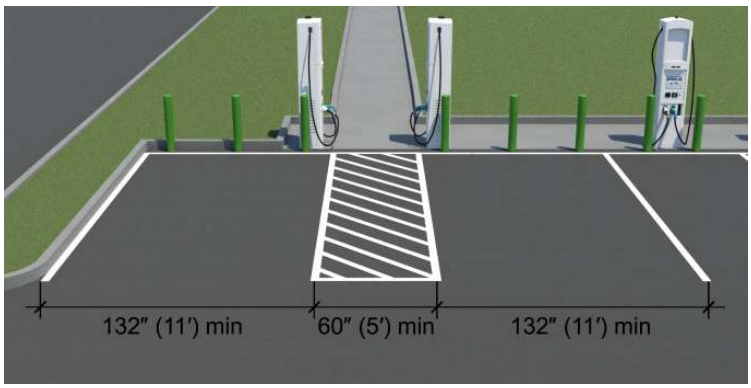
The Fair Housing Act (FHA) requires covered facilities to have public and common use areas that are readily accessible and usable by people with disabilities but does not specify requirements for EV parking spaces.[52] Chapter 11, Accessibility, of the 2021 International Building Code (IBC) specifies the following to address mobility accessibility at EV charging stations and aligns with the design recommendations of the U.S. Access Board, as illustrated in Figure 14.[53]

- **Section 1107.2.1 Number of accessible vehicle spaces**: *Not less than 5 percent of vehicle spaces on the site served by electrical vehicle charging systems, but not fewer than one for each type of electric vehicle charging system, shall be accessible.*

[51] U.S. Access Board. Design Recommendations for Accessible EV Charging Stations: https://www.access-board.gov/tad/ev/
[52] U.S. Department of Housing and Urban Development. Housing Discrimination Under the Fair Housing Act: https://www.hud.gov/program_offices/fair_housing_equal_opp/fair_housing_act_overview
[53] International Building Code: https://codes.iccsafe.org/content/IBC2021P1/chapter-11-accessibility#IBC2021P1_Ch11_Sec1106

- **Section 1107.2.2 Vehicle Space Size**: *Accessible vehicle spaces shall comply with the requirements for a van accessible parking space that is 132 inches (3350 mm) minimum in width with an adjoining access aisle that is 60 inches (1525 mm) minimum in width.*

Figure 14. Example of Accessible Vehicle Charging Space and Access Aisle [54]



Employing these standards for new parking lots can be factored early in the design process; however, adding accessible EV charging to existing parking lots may present unique design challenges involving access to electricity, conflicts with underground infrastructure or trees, and compliance with minimum parking requirements. For example, the retrofit of an existing parking lot may result in the loss of one or more parking spaces to create the 60-inch access aisle and may conflict with zoning minimum parking requirements. It is generally not practicable to add parking to an existing parking lot to meet minimum parking standards because of space constraints, conflicts with utilities and other site conditions, and the potential to trigger compliance with other ordinances, such as stormwater management. This is an example of a trade-off that should be factored into future updates to the City's local codes and ordinances to reduce barriers to providing accessible EV charging on existing developed sites.

Converting an existing accessible parking space to an accessible EV charging space is not recommended unless there are already more than the required number of ADA spaces in an existing lot. Restricting a required accessible space to electrical vehicle charging only would be a violation of the ADA/Maryland Accessibility Code/IBC and use of the space for charging would also be restricted to disability placard customers. Instead, the Access Board suggests adding an accessible EV charging space(s) with non-ADA charging spaces with a "Use Last, Designed for Accessibility" sign, as illustrated in Figure 15, to alert drivers to choose another EV charging space if available when they do not require accessibility features. This ensures that accessible charging is provided and that people without disability placards could use EV charging spaces designed for accessibility when all others are occupied, resulting in greater use of available chargers and limited parking spaces. Allowing the installation of access aisles and design for accessibility in EV charging spaces provides without limiting the space to disability placard-only can also expand charger access. Once the minimum accessible spaces count is met, adding accessibly designed EV charging spaces can help meet the need for accessible charging and maximize both accessibility and charging options.

[54] U.S. Access Board. Design Recommendations for Accessible Electric Vehicle Charging Stations. https://www.access-board.gov/tad/ev/

Figure 15. Example of "Use Last" Approach for Accessible Mobility Features[54]

A "use last" sign indicates an EV charging space is accessible but directs people to use this space only when other charging spaces are occupied, or accessibility features are needed.

4.5 Alternative Electric Mobility Opportunities

While the focus of this plan is on electric vehicles, providing access to other forms of electric mobility, such as electric ride-sharing, bicycles, and scooters can support equitable mobility. Electric scooters and electric bicycles (e-bikes) can typically be plugged into a wall outlet with an AC/DC converter. These options are also more affordable than electric vehicles. Publicly accessible charging stations for micromobility can help expand the range of these modes and make them more accessible to people living in multi-unit dwellings and other locations where at-home charging is not as feasible. Additionally, it is also important to have good pedestrian access and micro mobility transportation options for EV charging station users. Siting and designs should make it easy for people to park their car at an EV charger and then walk to or utilize an electric scooter or a bicycle to ride to their home, work, hotel, or a nearby restaurant.

4.6 Equity Focused Expansion of EV Charging Infrastructure

A lack of sufficient charging infrastructure remains a barrier to equitable EV adoption. Many prospective owners have "range anxiety" – the concern that the battery will run out of power before reaching their destination. This concern is intensified for those who do not have access to a charger at home, which is more common for low-income households and those living in multi-unit dwellings. Government policies and support can make a significant impact in serving historically excluded communities. Table 9 summarizes the various factors for prioritizing equitable EV charging sites; the list is not intended to be interpreted as the order of prioritization. Promoting private investment and/or siting public EV charging in these locations can encourage a more equitable charging network and clean transportation system. These factors guide the City's public charging supplementation efforts described in Appendix I (subject to feasibility, available parking spaces or rights of way locations, and available partnerships and funding resources).

Table 9. Factors for Prioritizing Equitable EV Charging Sites

1.	Public affordable housing (e.g., Rockville Housing Enterprises, Housing Opportunities Commission)
2.	Moderately priced dwelling units
3.	Located in disadvantaged census tracts by tools such as Justice 40, CDC Social Vulnerability Assessment, or Maryland EJ Screen, or EPA's Climate and Environmental Justice Screening Tool
4.	Near known naturally occurring affordable housing
5.	Near multi-unit rental apartments, condos and higher residential density areas
6.	Near local small or minority, female and disabled-owned (MFD) businesses
7.	In existing developments with known installation challenges such as shared parking or watermains or other utilities under the sidewalks
8.	Near neighborhoods with single-unit or townhomes lacking driveways, garages, and/or ability to install a driveway

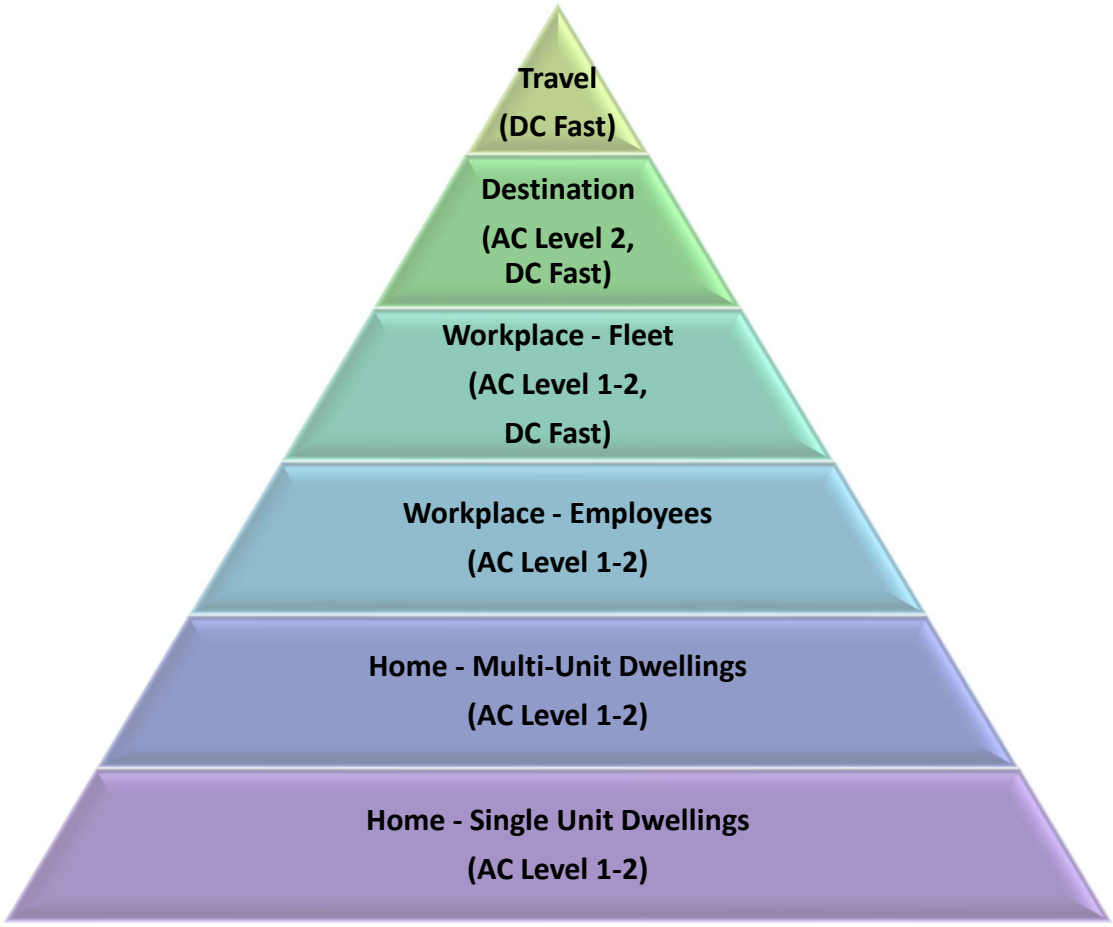
5 EV Charging Needs Assessment

To help Rockville prepare for an increase in EV charging demand, the plan includes a needs assessment with a summary of best practices for charging services, equity considerations, EV barriers and opportunities, and an EV siting charging analysis to inform goals and recommended actions.

5.1 Charging Patterns and Location Considerations

Adequate charging infrastructure must be planned and installed across Rockville to allow EVs to be as attractive as conventional vehicles. The location of public chargers will affect usage, and therefore their cost-effectiveness and ability to provide a return on investment. A charging hierarchy helps focus on service needs to develop priorities, as illustrated in Figure 16.[55] The base of the hierarchy indicates the charging locations that should be most numerous and common, and higher up the pyramid represents less frequent charging opportunities. This should not be misinterpreted as one level of the pyramid being more important than the other; having a well-balanced charging infrastructure that provides charging opportunities at all levels of the pyramid is critical.

Figure 16. EV Charging Needs Pyramid



[55] Argonne National Laboratory, Building the Charging Pyramid: What Cities Can Do to Grow the Market, https://slideplayer.com/slide/15705047/

5.2 Home Charging

At the base of the hierarchy are private, at-home chargers. Access to home charging is the most critical factor determining whether households will adopt an EV. Different housing and ownership types have different needs and constraints. According to the Rockville 2022 Residential Unit Count and Associated Estimated Population Report, Rockville contains the following ratios of single-unit detached, single-unit attached (townhomes), multi-unit dwelling units (apartments and condominiums), and other units (assisted living/senior housing).[56]

Table 10. Rockville Housing Inventory and Population Estimates (2022) [57]

	Single-unit detached	Single-unit attached	Multi-unit dwelling	Others (Assisted Living/Senior Housing)	Total
Household size	2.99	2.597	2.095	1.2	
Unit count	11,308	4,292	11,547	3,096	30,243
Unit percentage	37%	14%	38%	10%	100%
Population	33,519	11,035	22,981	3,326	70,815
Percent population by unit type	47%	16%	32%	5%	100%

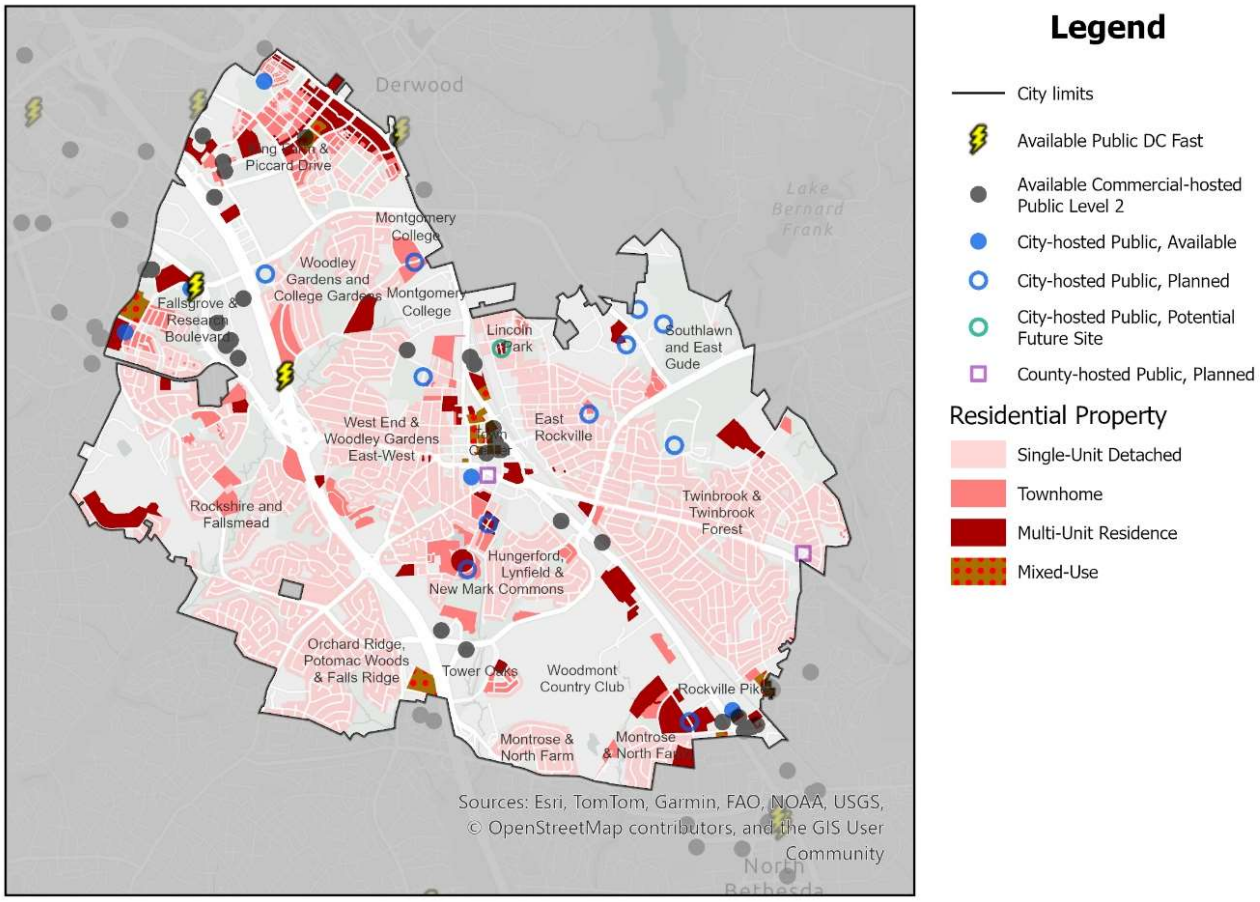
According to this data, 47% of Rockville residents reside in approximately 11,308 single-unit detached homes and 16% reside in 4,292 single-unit attached homes that may be able to charge at home with modest retrofits, with some exceptions for homes without driveways or garages. Almost 32% of the population lives in approximately 11,547 multi-unit dwellings which are the most challenging to retrofit with charging infrastructure. Additionally, renters who must rely on the landlords, property managers, or property owners to provide charging face additional barriers that require special support.

The map in Figure 17 displays the location of these residential property types to assist in planning for household charging. The majority of Rockville's land use by area features single-unit detached homes with scattered townhomes and multi-unit properties.

[56] Average household sizes used in Rockville's population estimates are: 2.99 for a single detached unit, 2.597 for a single attached unit (townhomes) and 2.095 for a multi-unit development (apartments and condominiums). For the "others" category, that includes nursing homes and senior housing, a 1.20 population multiplier is assumed. All population numbers are estimates based on the population factors or the multipliers used to determine the number. Vacancy rates as assumed are 1% for single-unit detached and attached units, 5% for multi-unit developments, and 15 % for "others" category, that diminish the population totals.

[57] City of Rockville Residential Unit Count and Associated Estimated Population, December 2022. Retrieved from https://www.rockvillemd.gov/DocumentCenter/View/47589/2022-Residential-Unit-Count-and-Associated-Estimated-Population

Figure 17. Residential Property Types in Rockville



Single-Unit Dwelling Charging

Maryland's EV Charging Station New Construction Requirement mandates new residential buildings (single-unit detached houses, duplexes, and townhouses) constructed after October 1, 2023, which include a garage, carport, or driveway must include a Level 2 EV charging station or electric pre-wiring to support a Level 2 EV charging station. The builder must provide buyers with information on EV charging station make-ready options and all available rebate programs for EV charging station purchase and installation.[58] Nevertheless, the majority Rockville's existing single-unit dwellings do not have charging and will need to be retrofitted by the owners. Single-unit dwellings with designated garage or driveway parking tend to have sufficient capacity and space to support overnight Level 1 or Level 2 charging with more straightforward and predictable installation processes and costs. However, some homes may require electrical panel upgrades, extensive conduit, or dry wall repairs, which increase installation costs.

Homes Without Garages, Driveways or Designated Onsite Parking

There are many instances of existing single-unit dwellings without reliable access to garages, driveways or designated parking spaces suitable for EV charging. The EV industry uses the term "garage orphans" to describe these EVs drivers. Garage orphans have become a growing issue across the country and

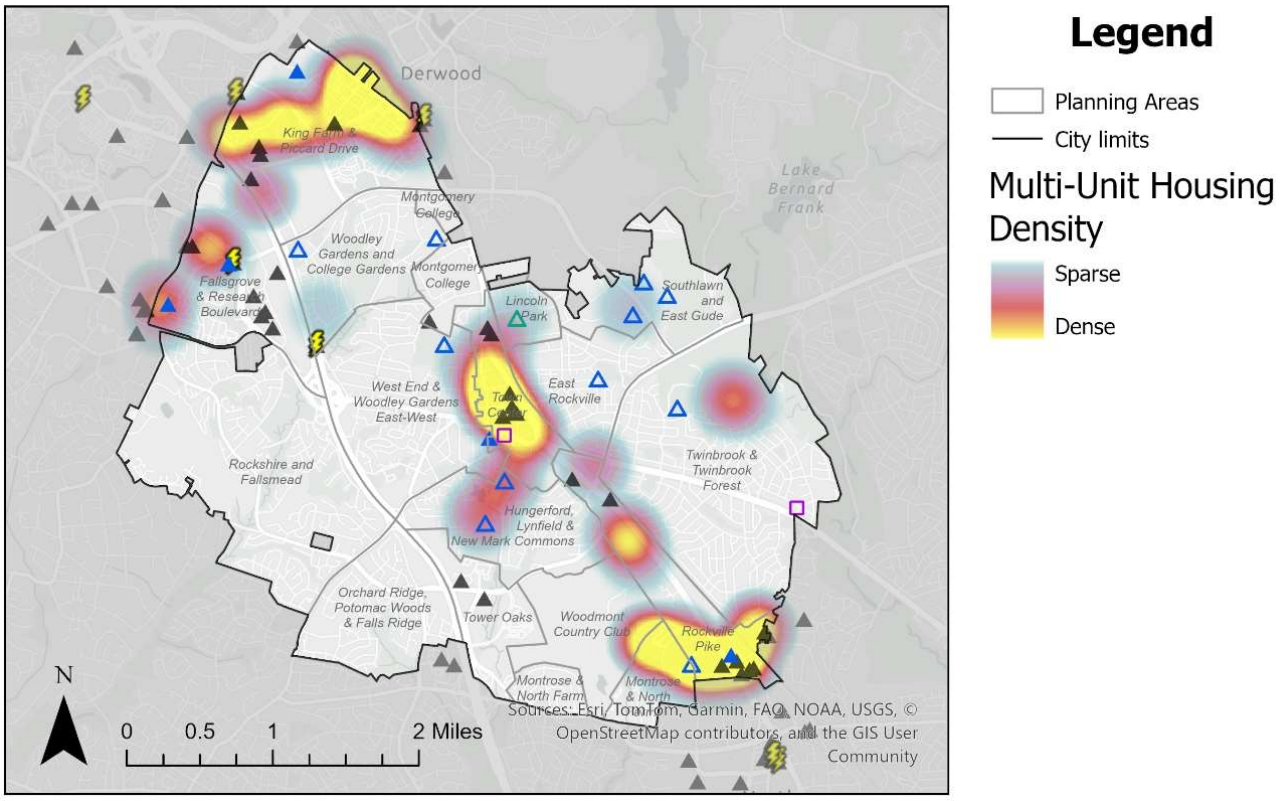
[58] Alternative Fuels Data Center. Electric Vehicle (EV) Charging Station New Construction Requirement: https://afdc.energy.gov/laws/12622

various jurisdictions are testing tailored solutions to provide charging to these residents. The City currently lacks the geographical data to efficiently calculate the exact numbers of properties without driveways. However, anecdotally, these properties are present in higher numbers and concentrations in our older homes in more established neighborhoods such as in Twinbrook, East Rockville and Lincoln Park. Some townhouse communities have shared parking with water mains installed under the surface of the parking lot which may add additional challenges to install EV charging. Additionally, some residential neighborhoods lacking driveways also have limited street parking, so any on-street charging may also pose a challenge. These residential properties will need tailored solutions for EV charging access.

Multi-Unit Dwelling Charging

EV owners who live in multi-unit dwellings face limited at-home charging options due to the complexities of negotiating costs, installation logistics, and liability issues with the landlord or site host. Installing EV chargers in common areas ensures equal access for all tenants and their guests. The barriers to installing charging infrastructure at existing multi-unit dwellings can be alleviated by offering streamlined permitting and financial incentives to induce property owners to install charging equipment at their apartment or condo complexes. Figure 18 shows the relative density of multi-unit dwelling units (shown in red in the map on Figure 17) with the yellow areas being the most concentrated.

Figure 18. Multi-Unit Housing Density



5.3 Workplace Charging

Charging at workplaces can support both employees that commute to the office and fleets. According to Rockville Economic Development, Inc. (REDI), the largest employers in Rockville include the following companies summarized in Table 11.

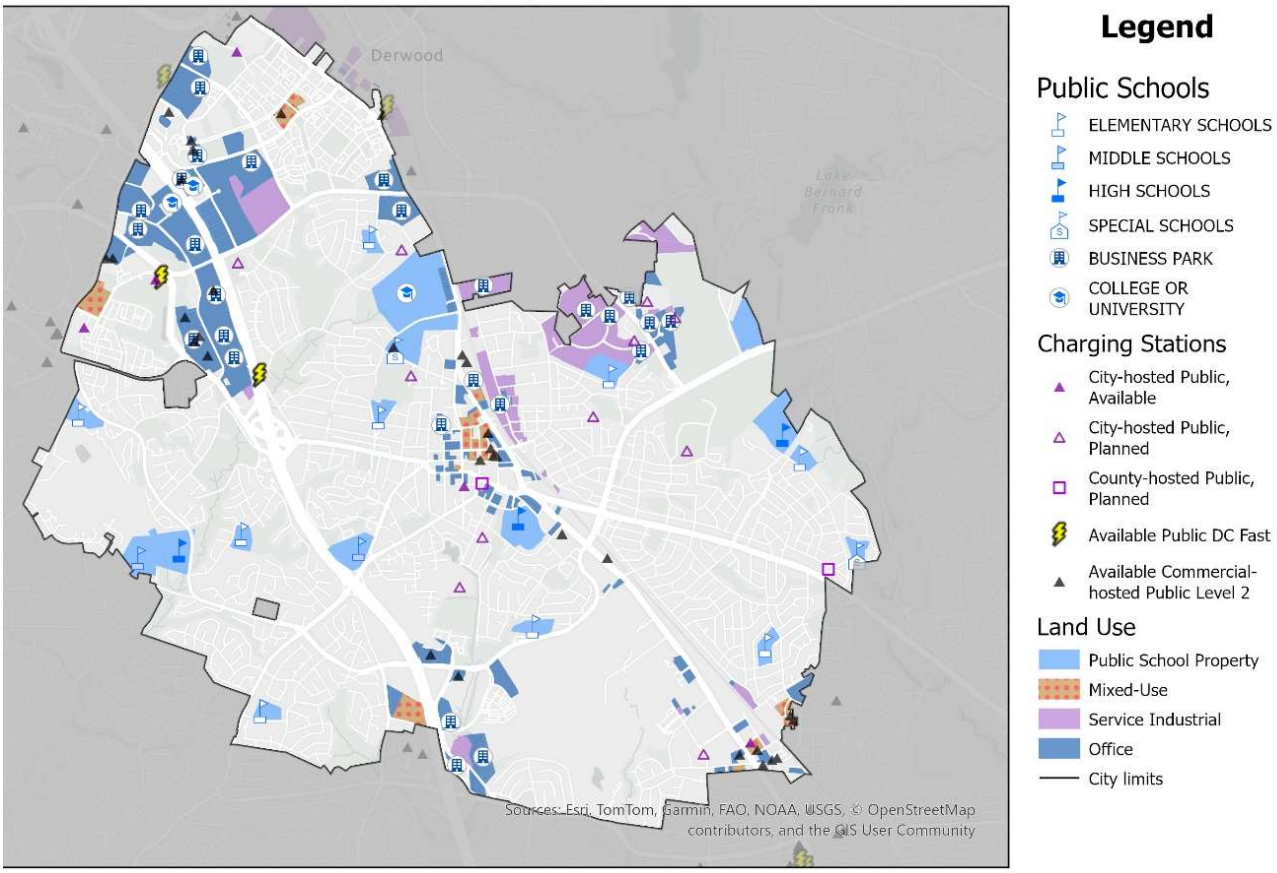
Table 11. Large Employers in Rockville[59]

Company Name	Company Type	No. of Employees
Montgomery County Government	Government	5,165
Montgomery County Board of Education/Public Schools	Education Government	2,500
Westat, Inc.	Rockville IT Companies	1,750
Montgomery College	Education	1,950
Northwestern Mutual Life Insurance Company	Insurance	623
Lockheed Martin Information Systems	Engineering/IT Contractor	565
City of Rockville	Government	518
Quest Diagnostics Incorporated	Health Care	500
Meso Scale Discovery, LLC	Manufacturing	496
The EMMES Corporation	Medical Research	475
Otsuka Pharmaceutical	Biotech	471
BAE Systems, Inc.	Engineering/IT Contractor	440
Client Network Services, LLC	Computers/Data Processing	400
Turning Point Global Solutions, L.L.C	Computers/Data Processes	385
Booz Allen Hamilton	Business Consulting	375
Woodmont Country Club	Golf Course	350
Optimum Choice, Inc	Health Care	300

Several of the largest companies and organizations have already initiated EV charging programs. Montgomery County government is the Rockville's largest employer, with most employment concentrated in the Town Center. Montgomery County is planning to install a mix of Level 2 and Level 3 charging stations at over 60 public facilities, including a fast-charging hub in downtown Rockville and Level 2 charging at the Twinbrook Library. EV chargers are also currently installed in parking facilities serving the Rockville Campus of Montgomery College, Westat, Northwestern Mutual Life Insurance (Tower Building), and are planned at various City of Rockville facilities. Figure 19 shows the location of office and service jobs, schools and workday charging. Additional support may be needed other large and small businesses to expand the charging network or for public installations to fill in the gaps. Streamlining EV site planning and permit requirements could support the expansion of workplace EV charging infrastructure.

[59] Rockville Economic Development, Inc. Retrieved on 8/14/2024 from https://rockvilleredi.org/large-employers-in-rockville/

Figure 19. Locations of Jobs, Schools and Workplace Charging

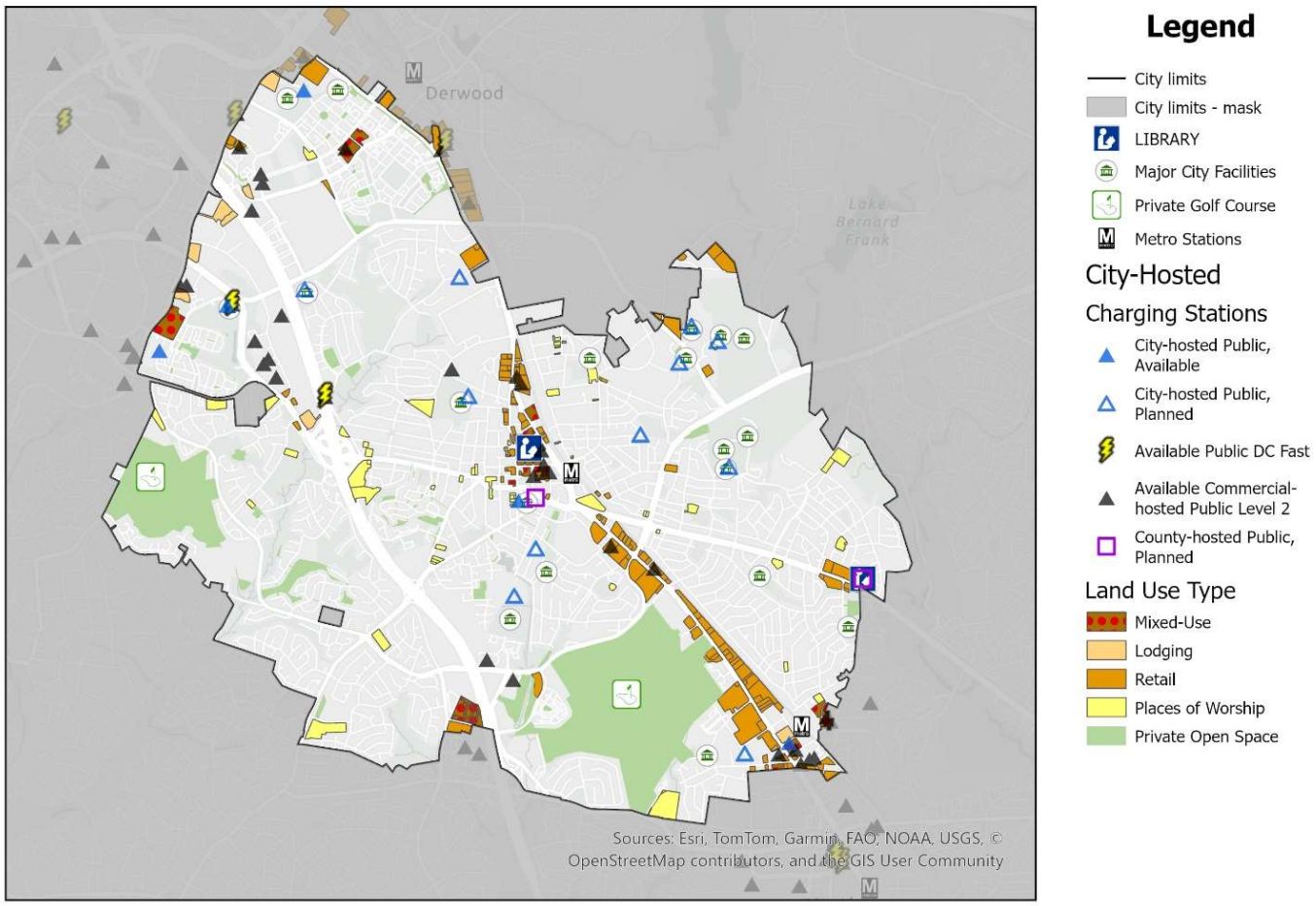


5.4 Destination Charging

Destination infrastructure opportunities include civic or cultural locations, retail locations, shopping centers, city or county facilities and parks or other locations where a person typically parks for a relatively extended period of time. This type of charging is also known as opportunity charging and is suited for Level 2 or DC fast chargers depending on the location and type of site host. Many of these sites are illustrated in Figure 20 on the following page and were identified in the crowd-sourced map (see also Figure 22, p. 68). Community surveys hosted by Rockville and Montgomery County identified the following destination locations in Rockville.

- Rockville's most regionally well-known shopping area is Rockville Pike, or 'the Pike' for short. In addition to daily needs, the Pike is a place to buy durable goods, including furniture and automobiles. It is the city's main economic engine for commercial sales and a major employment area. Community survey responses identified several areas along the Pike for potential destination EV charging, including Congressional North, Congressional Plaza, Congressional South, Wintergreen Plaza, Rockville Metro Station, Montgomery College and College Plaza.
- The City of Rockville owns several potential destination EV charging sites, including the Rockville Swim and Fitness Center and nearby Skate Park, Rockville Civic Center Park which includes the F. Scott Fitzgerald Theater and Glenview Mansion, Thomas Farm Community Center, Rockville Senior Center, RedGate Park, Mattie J.T. Stepanek Park, Dogwood Park, Twinbrook Community and Recreation Center, and Lincoln Park Community Center.
- Montgomery County owns a variety of government facilities, schools, and libraries in Rockville. Destination sites identified by community surveys include the County Council garage, various public schools, and the Twinbrook Library.
- Examples of other destinations identified by community surveys include Rockville Town Square, King Farm Village Center, Fallsgrove Village Center, Rockville Ice Arena and Sportsplex on Southlawn Court, Twinbrook Metro Station, Twinbrook Marketplace, Twinbrook Quarter, Woodmont Country Club, Lakewood Country Club, and various places of worship.

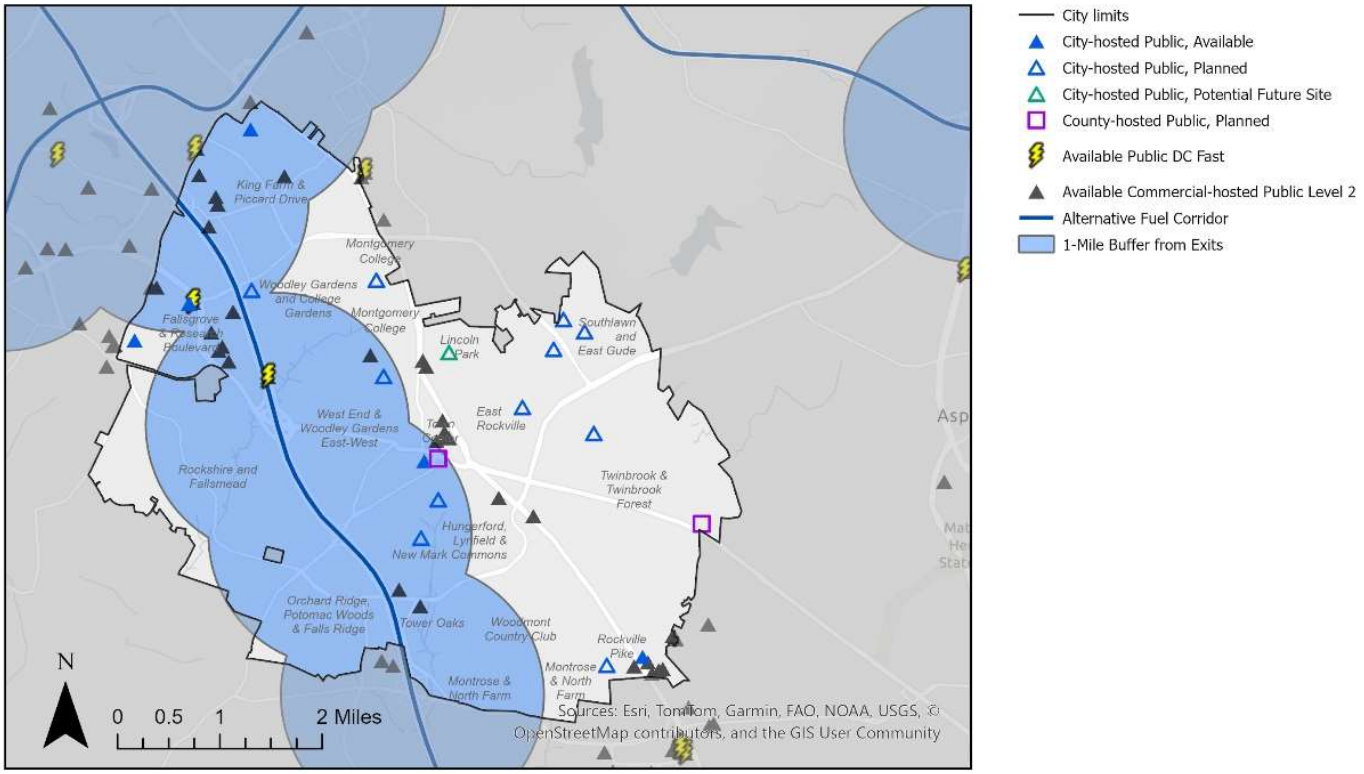
Figure 20. Potential Destinations and Charging Locations



5.5 Travel Charging

Long distance trips rely on access to convenient, reliable and safe fast chargers which are more costly to install and should be located in convenient high-use areas. Maryland is planning to install chargers near designated corridors as part of the National Electric Vehicle Infrastructure (NEVI) network which will assist areas near Rockville. There is also state and federal funding to support additional charger installation. Maryland Department of Transportation (MDOT) awards grant funding for fast charging stations through the NEVI program. Properties within a one-mile radius around exits on the state's Alternative Fuel Corridors (AFCs), including I-495, I-270 and MD 200, are eligible in the first round of funding (see Figure 21). Once the state has certified that its AFCs meet the NEVI standard, MDOT will award grant funding for community charging projects across the state based on factors described in the MD Zero Emissions Vehicle Infrastructure Plan (ZEVIP).

Figure 21. Alternative Fuel Corridor 1-Mile Buffers in and Near Rockville



5.6 Best Practices for Siting EV Charging

Once the general neighborhoods or properties are identified as EV charging candidates then site conditions can be assessed. The following best practices for siting EV infrastructure can prioritize site locations. These practical considerations and the Factors for Prioritizing Equitable EV Charging Sites (Table 9) and other analysis in this plan guide the City's EV infrastructure planning locations described in Appendix I.

- **Traffic patterns**: Siting an EV charging station in a highly trafficked area will increase utilization and maximize station owner investments.
- **Dwell time**: How long a driver spends at any given location will contribute to the duration of the charging session. For example, charging stations located near highways should consider DCFC, as drivers may only intend to make a quick stop. Most other destinations where drivers may park for hours at a time, like shopping centers and workplaces, should consider installing Level 2 chargers.
- **Electrical capacity**: Sufficient electrical capacity is needed to support EV charging infrastructure. Coordination and collaboration with local utilities is an important component of ensuring successful deployment of EV infrastructure. Rockville is in Pepco's electric service area. As Rockville identifies potential EV charging station locations, the process may involve working with Pepco to conduct site assessments which evaluate whether there is sufficient electrical capacity to serve the expected increase in load. Utilities could also take an observed increase in demand and incorporate future load into their plans to invest in grid resources and distribution upgrades. Appendix C provides an online load capacity map to represent areas on the distribution grid where there is reasonable capacity to accommodate electric vehicle charging infrastructure and general areas where load capacity may be constrained and could require system upgrades to accommodate new load project connections.
- **Proximity to existing electrical infrastructure**: The greater the distance between the EV charger and the electrical panel to which it will be connected, the more expensive the installation. This is particularly true if the installation requires the electrical cable to be placed underground. This cost of trenching, particularly if pavement needs to be removed and replaced, can be significant.
- **Parking capacity**: Ensuring that there is sufficient parking capacity before dedicating EV-specific parking spaces mitigates potential tension between EV and gas car drivers over parking designations.
- **EV charging accessible mobility features**: Site analysis and designs need to incorporate accessible mobility features. A reasonable number of EV chargers must have physical access for people who use mobility devices, such as wheelchairs, scooters, walkers, and canes. Accessible mobility features primarily concern the size of the vehicle charging space, providing access aisles, how and where the chargers are installed, and the physical operability of the charger. Retrofitting of existing parking may require repurposing of one or more parking spaces for the creation of an access aisle and charging space. See Equity Considerations for more information.
- **Safe pedestrian access and micromobility options**: Designs should incorporate good pedestrian access to allow EV drivers to walk safely to nearby amenities while charging. Additionally,

collocating EV charging stations by micro mobility options (electric scooters, bicycle share, etc.) can also support use while the vehicle is charging.

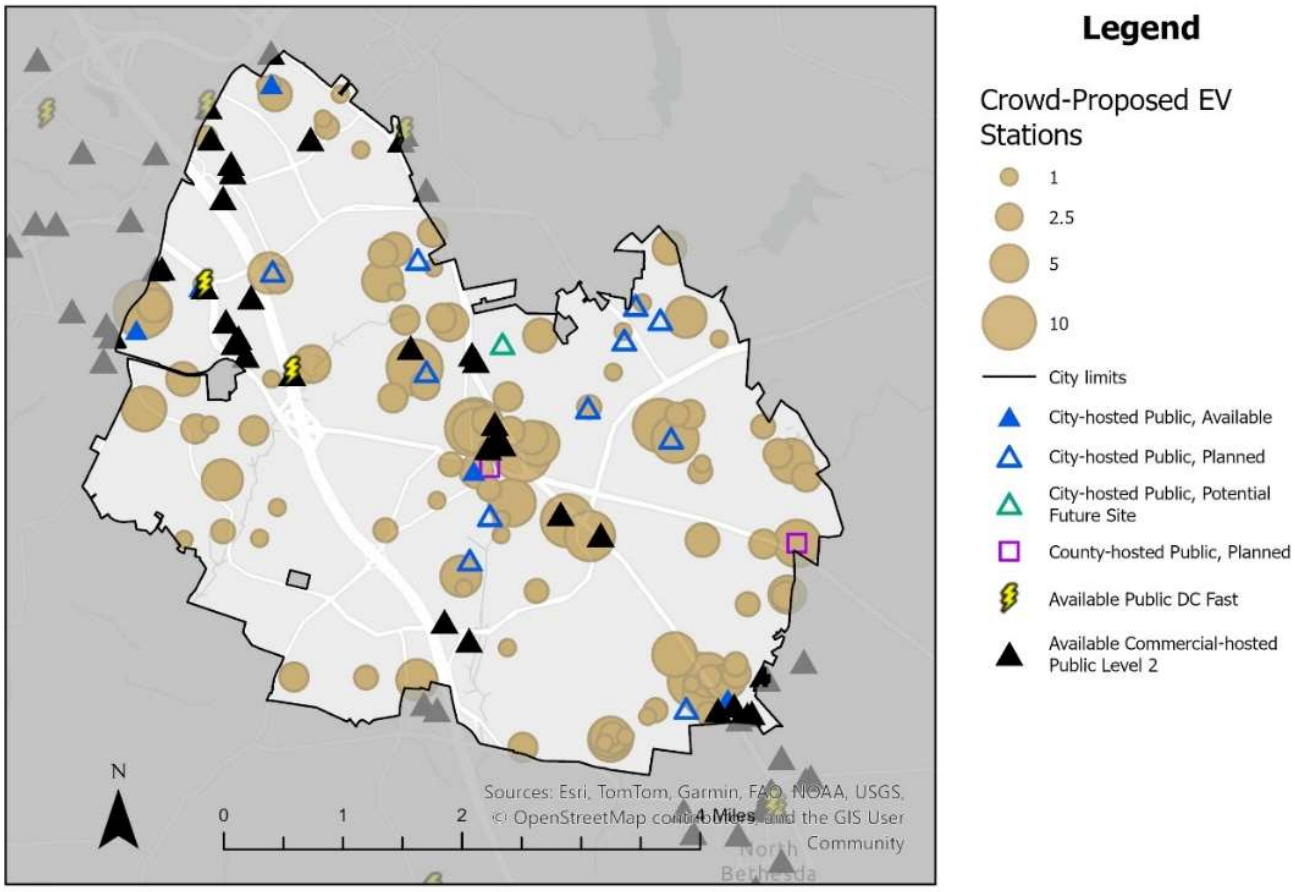
- **Existing EV infrastructure**: Siting new EV infrastructure to fill gaps in the regional charging network is important to build drivers' confidence in being able to charge their vehicle no matter where they are in the region and minimize potential "range anxiety." Online resources, such as the AFDC Station Locator are available to locate existing infrastructure.
- **Proximity to public transportation and travel corridors**: Maximize public investments in shared mobility by siting EVSE near bus or train stations. Siting EVSE by highly trafficked travel corridors reduces range anxiety for drivers that drive along such corridors.
- **Historically excluded or underserved communities**: Areas or locations with underserved communities to ensure regional charging networks are equitably distributed. Historically excluded communities vary significantly by region and can be identified through a range of criteria (historical health and environmental impacts, lack of resilient infrastructure and investment, low-income, etc.). There are a variety of local, regional, and federal datasets on environmental justice communities. See Equity Considerations for more information.
- **Proximity to multi-unit housing**: Most EV drivers charge at home or at work, but barriers to installing EV charging at multi-unit housing makes it difficult for residents to consider an EV as their next vehicle. By siting public charging nearby, there would be increased access to EV charging for all residents of nearby multi-unit housing developments. These sites are more likely to have higher utilization, as drivers may use nearby public stations are a replacement for at-home charging.
- **Amenities**: Clear directional signage and sufficient lighting helps to alleviate safety concerns is another best practice. Access to typical amenities like bathrooms and food is also beneficial.

5.7 Community Suggestions for Public Charging Sites

Community surveys for EV planning involved a crowd-sourced electric vehicle charger needs map in which respondents were invited to propose locations for public charging. The purpose of the survey was to understand public sentiment about the types of places where residents would ideally prefer to charge if they were to own or operate an electric vehicle. The following map shows the 203 charger locations identified by the public. The size of the circle represents the number of 'likes' at each proposed location. Sites receiving popular support for EV charging infrastructure include:

- Rockville Town Square
- Swim & Fitness Center
- Civic Center Park
- Richard Montgomery High School
- Twinbrook Library
- Rockville Metro
- Fallsgrove Village Center
- Congressional Plaza/ Congressional South
- Ritchie Center
- Wintergreen Plaza

Figure 22. Crowd-Source EV Station Proposed Locations from EV Survey



5.8 Proposed Expansion of EV Chargers

Concurrently with the EV planning process, Rockville is collaborating with several public and private partners to plan for the expansion of equitable charging infrastructure throughout the region. The map in Figure 8 displays potential future public and fleet charging sites that are in various in the stages of development, from conceptual plans for grant support to construction. Many of the sites identified by the community were submitted for consideration for federal and state funding. These sites were specifically selected because they help to expand community-based infrastructure and fill gaps in access by equitably expanding the deployment of publicly available EV fueling infrastructure. The following is a summary of an initial list of proposed charging, which may be revised in the future to address funding and partnership prerequisites, site conditions, and additional community feedback.

- Maryland is planning to support charger installations near designated corridors as part of the National Electric Vehicle Infrastructure (NEVI) network. Interstate 270 and Maryland 200 are designated as EV Alternative Fuel Corridors (AFCs). Only one corridor, Interstate 270, currently meets the federal minimum station and mileage requirements for electric vehicle charging infrastructure, the remaining corridors require infrastructure.
- Montgomery County is planning to install a mix of Level 2 and Level 3 charging stations at over 60 public facilities, including a fast-charging hub in downtown Rockville and Level 2 charging at the Twinbrook Library. For example, the proposed Fast Charging Hub in downtown Rockville is adjacent to the Montgomery County Executive Office Building. This site will expand access to high-speed charging for commuters, multi-unit dwellers, County fleet, and light- and medium duty commercial fleet vehicles.
- The City of Rockville partnered with Pepco for the installations of 17 public charging ports at five sites: Mattie Stepanek Park, Thomas Farm Community Center and on-street parking at City Hall/Vinson Street, Fallsgrove Drive/Prettyman Drive, and Twinbrook Station/Bouic Avenue. Rockville is also collaborating with Montgomery County and Maryland agencies on grant applications to add additional charging at community facilities and parks, such as the Swim and Fitness Center, Senior Center and Civic Center Park, and expand curbside charging in the public right-of-way adjacent to low- and moderate-income multi-unit dwellings to provide home charging access to residents without dedicated off-street parking. In addition, public and fleet EV charging associated with solar canopy grants are planned to be located at the Rothgeb Maintenance Facility and 6 Taft Court. Rockville is planning to install more fleet chargers at City Hall, the Police Station and Recreation Services.

These City partnerships are designed to modestly supplement public charging. The expansion of other community charging stations will require coordination with community partners and private and public investment. The EV Readiness Plan's recommended actions are designed to facilitate charger installation through the private sector everywhere they are needed to meet and increase consumer demand.

6 EV Policy and Funding Overview

The following summarizes EV charging infrastructure policies, regulations and funding opportunities applicable in the City of Rockville and opportunities for to reduce barriers to support charging infrastructure.

6.1 Maryland EV Charging Policies and Regulations

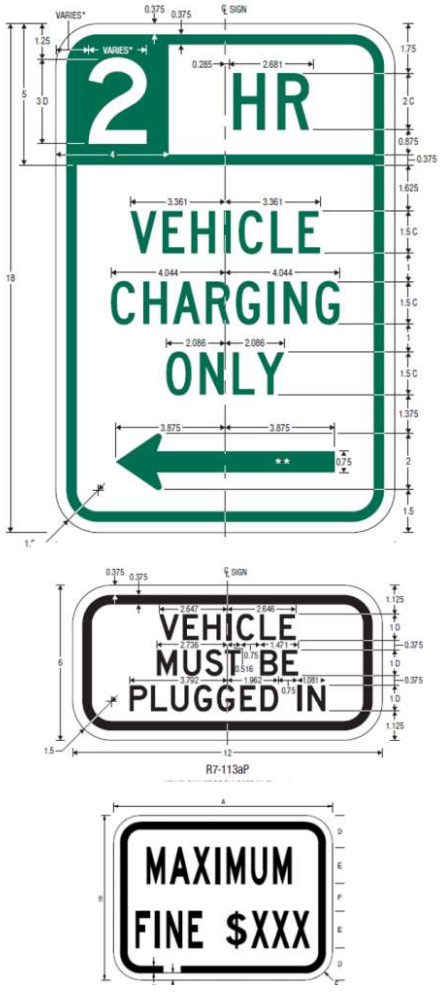
Maryland-adopted policies and regulations to encourage a uniform appearance of stations, restrictions on parking in charging stations ensures that more drivers have access to charging, right-to-charge regulations for HOAs, and requirements for charging stations in newly constructed homes with garages and driveways.

Anti-idling policies restrict access to electric vehicle charging (also called electric vehicle supply equipment or EVSE) parking spaces to electric vehicles (EVs) that are actively charging.

In 2022, the Maryland Legislature passed Senate Bill 146 (SB146)[60] and House Bill 157 (HB157)[61]:

> *"Prohibiting a person from stopping, standing, or parking a vehicle that is not a plug-in electric drive vehicle plugged into charging equipment in a parking space that is designated by certain signage indicating for the use of plug-in electric drive vehicles only; requiring that a parking space for the use of plug-in electric drive vehicles be counted as part of the overall number of parking spaces for certain purposes; establishing a civil penalty of $100 for a violation of the Act; etc."*

SB 146 and HB157 also included **EV charging signage requirements** to be developed by the Maryland Department of Transportation, (example shown to the right). EV signage must indicate the charging space is only for EV charging, day or time restrictions, states maximum violation fine, and is consistent with design and placement specifications in the Manual on Uniform Traffic Control Devices for Streets and Highways. The new signage series will be distributed to agencies and contractors that work with signage and will be made available via the Maryland Zero Emission Electric Vehicle Infrastructure Council distribution list.[62]



Maryland's Real Property Code includes a **right-to-charge regulation where Homeowners Associations (HOAs)** may not prohibit or restrict the installation or use of an EV charging station in a homeowner's designated parking space. HOAs can put reasonable restrictions on EV charging station installations but must treat them like any other unit architectural modification.[63]

[60] Maryland SB0146, 2022: https://mgaleg.maryland.gov/mgawebsite/Legislation/Details/SB0146?ys=2022RS
[61] Maryland HB0157, 2022: https://mgaleg.maryland.gov/mgawebsite/Legislation/Details/HB0157?ys=2022RS
[62] MDOT. ZEEVIC November 2022 Notes: https://www.mdot.maryland.gov/OPCP/ZEEVIC_Notes_Nov2022_FINAL.pdf
[63] Alternative Fuels Data Center. Electric Vehicle (EV) Charging Station Policies for Associations: https://afdc.energy.gov/laws/12624

Maryland's **EV Charging Station New Construction Requirement** mandates newly constructed residential buildings after October 1, 2023, which include a garage, carport, or driveway must include a Level 2 EV charging station or electric pre-wiring to support a Level 2 EV charging station. The builder must provide buyers with information on EV charging station make-ready options and all available rebate programs for EV charging station purchase and installation.[64] Furthermore, Section 3 of Chapter 582 assigned the Maryland Energy Administration the crucial task of studying the costs, barriers, and impacts related to requiring both new and existing multi-unit residential buildings to include EVSE-installed or EV-ready parking spaces. This study may help inform future policies for multi-unit residential buildings.

6.2 Funding Resources

There are several federal, state, and utility incentives and funding programs available to support local EV infrastructure development. Appendix F provides more details of current and potential EV and EVSE funding opportunities and Rockville's current or potential participation approaches for each opportunity. This information was collected from the MWCOG EV Clearinghouse and the Urban Sustainability Directors Network Funding Opportunities website, which are regularly updated with EV-specific resources and opportunities. Some of these funding opportunities have dedicated funding allocated to Maryland, such as the National Electric Vehicle Formula Program or the Carbon Reduction Program, while other opportunities have more varied award ranges.

The City of Rockville monitors EV and EV charger funding opportunities and participates or partners on grant applications and planning processes when projects align with grant requirements and schedules. Community grants offer an opportunity for the City to receive funding to build EV charging stations on public property, such as facilities, parks and public roads. Minimum standards and requirements for EV charging infrastructure, as outlined in the NEVI Formula Program Final Rule from February 2023,[65] apply to all Title 23 funded EV charging programs. These standards are included in the planning process for city EV infrastructure projects to maintain eligibility for funding.

For many other federal programs, the City is also monitoring opportunities to play a coordinating role. There are funding programs available to public and private property owners that can enhance the regional charging network. The City will continue to work with partners to strengthen applications for funding and to ensure that EVSE investments best serve the community. Highlights of funding opportunities the City of Rockville is currently exploring to expand EV charging:

- Partnered with the Maryland Clean Energy Center and Montgomery County on applications to the Department of Transportation Charging and Fueling Infrastructure (CFI) grants for several public EV chargers.
- Awards from Maryland Energy Administration for technical assistance for electric vehicle fleet planning (2021), EV charging rebates (2022 and 2023) and installation of EV charging stations (2023 and 2024).

[64] Alternative Fuels Data Center. Electric Vehicle (EV) Charging Station New Construction Requirement: https://afdc.energy.gov/laws/12622

[65] https://www.federalregister.gov/documents/2023/02/28/2023-03500/national-electric-vehicle-infrastructure-standards-and-requirements

- Partnered with Pepco for installation and operating of public EV charging stations on City-owned property and rights-of-ways.
- Enrolled in the Pepco Fleet Assessment Program for free technical assistance to assess fleet charging and electrical infrastructure needs (2024).
- Award from the Maryland Department of Transportation for public charging stations.
- Participated in the EPA Carbon Pollution Reduction Program plan development workgroup through MWCOG.
- Promoting electric vehicle resources to the residents, businesses and common ownership communities. For example, the federal government offers tax credits for new EVs, used EVs, and EV charging infrastructure.[66] [67] [68]

6.3 Rockville Policies and Permit Framework

Rockville established an initial policy framework to support EV readiness in the Comprehensive Plan, Climate Action Plan, and Capital Improvements Program. Rockville has also taken initial steps to update building and electrical codes to incorporate EV charging. Additional steps are needed for a consolidated update and alignment of the zoning code, other municipal codes, permit applications and inspections to support predictable and transparent processes for the efficient expansion of EV infrastructure.

Since Rockville is mostly built-out, most EV charger installations will occur on existing developed sites. Rockville currently does not have a simplified planning/permit process for EV charging station installations. While permits are designed to ensure the safety and reliability of EV chargers, a lengthy planning and permitting cycle can discourage those wishing to install EV charging stations. Implementing a transparent, streamlined process can greatly cut back on the project time and costs associated with installation while ensuring all necessary requirements are met. Changes to local planning and permitting requirements would especially benefit multi-unit, workplace/fleet, destination and travel charging.

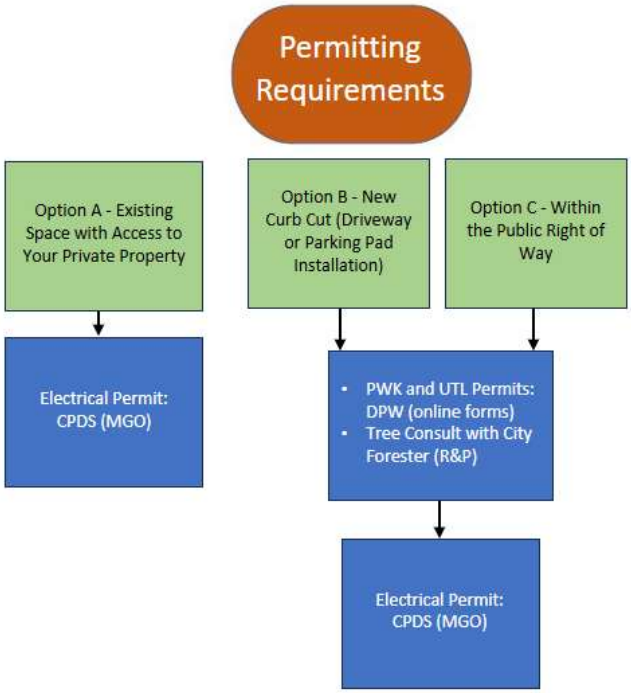
[66] AFDC. Electric Vehicle (EV) and Fuel Cell Electric Vehicle (FCEV) Tax Credit. Retrieved from: https://afdc.energy.gov/laws/409
[67] AFDC. Pre-Owned Electric Vehicle (EV) and Fuel Cell Electric Vehicle (FCEV) Tax Credit. Retrieved from: https://afdc.energy.gov/laws/13038
[68] AFDC. Alternative Fuel Infrastructure Tax Credit. Retrieved from: https://afdc.energy.gov/laws/10513

6.4 Rockville Existing Regulatory Approval Processes

Current planning and permitting processes for EV Charger installations differ by type of installation.

Single-Unit Dwelling EV Charging Installations: The permitting requirements for the different options to serve single-unit dwelling is summarized in Figure 23. The installation of a Level 2 wall charger in the garage of a single-unit home may only require an electrical permit. However, if a home does not have a designated garage or driveway and is considering installing a Level 2 charger, a review may be required to determine if it is first feasible to install a parking pad. If that is not an option, Public Works may allow Level 2 charger installation in public Rights-of-Way (ROW) under certain situations. Public Works is considering implementing a process similar to Montgomery County's Residential Electric Vehicles (EV) Charging Permitting Guidelines,[69] for the charging in the public right-of-way. The installation of charger in the public ROW would also require a Public Works Permit and Mayor and Council authorization of a license agreement.

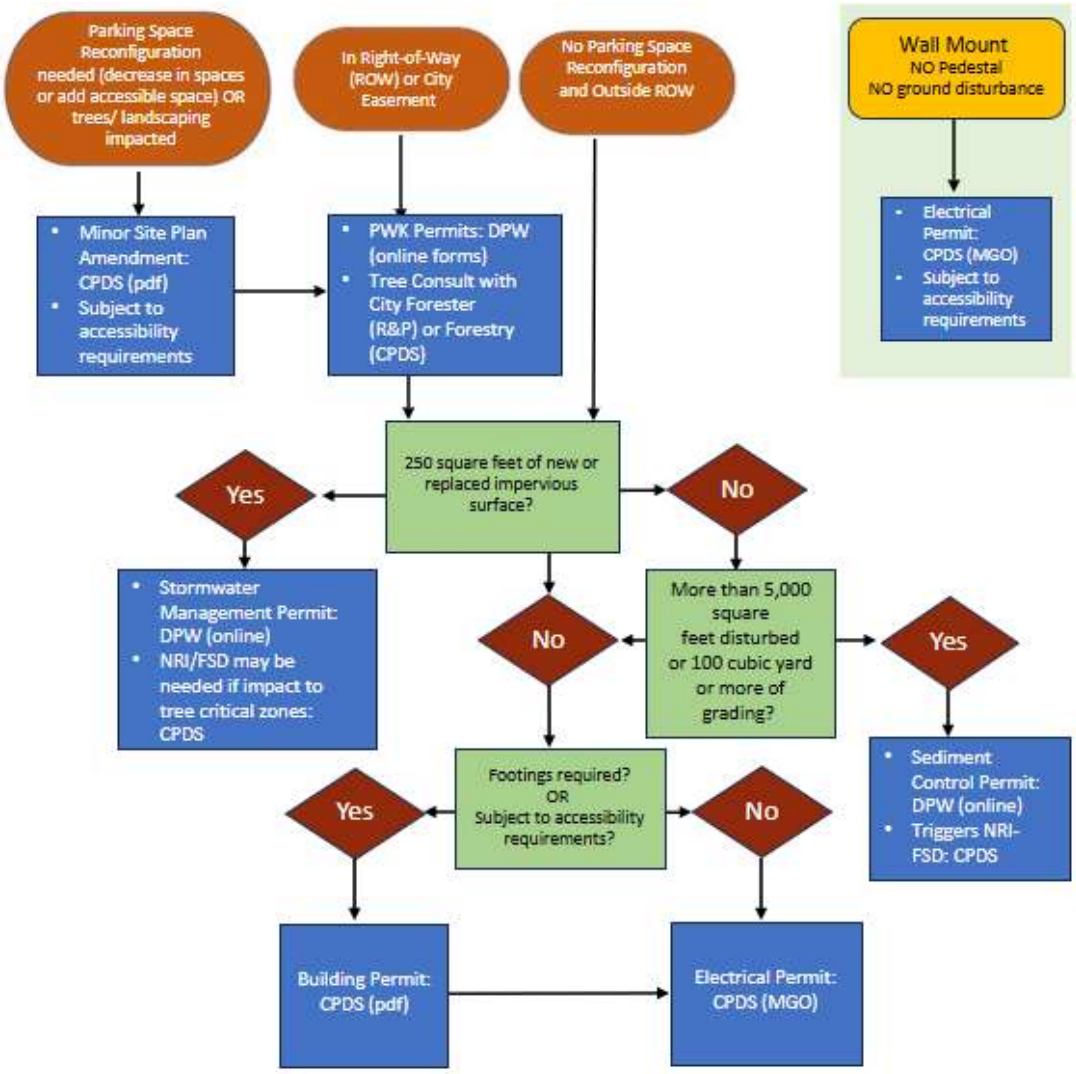
Figure 23. Concept of Existing Single-Unit Dwelling Home EV Charger Permitting Process



[69]Montgomery County Department of Transportation and Department of Permitting Services https://www.montgomerycountymd.gov/DPS/Resources/Files/RCI/EV%20Charging%20Stations%20in%20the%20ROW.pdf).

Multi-Unit and Non-Residential EV Charging Installations: The installation of public pedestal chargers may require a more comprehensive review to ensure compliance with zoning, building, electrical, accessibility, fire safety, forest and tree protection, streets, roads, rights-of-way, and public improvements, and sediment control and stormwater management ordinances and regulations (conceptually summarized in Figure 24). Additionally, of the nine potential permits required for EV charger permitting, two formats exist. Many of the permit application links direct a user to the My Government Online (MGO) website, while others use non-MGO forms to collect data. Some forms collect data on-line (but not in MGO) while others require a user to download and complete a pdf and submit via email. In practice, some requirements are streamlined depending on the circumstances – e.g. abbreviated processes for stormwater and sediment control if less than 0.2 acres are disturbed. Still, aligning these requirements, streamlining applications, and developing guidelines and standards would reduce barriers, time and resources both for the applicant and the responsible departments.

Figure 24. Concept of Existing Commercial EV Charger Permitting Process



A streamlined, fully-automated permit application and plan review process for EV charging stations would simplify the user experience. The process charted in Figures 23 and 24 could inform the logic to allow MGO or other future application management systems to automate or simplify the plan review and permitting process such that an applicant would enter required fields and be able to submit plans for review through one platform. A summary of existing requirements and opportunities for clarification and streamlining are summarized below:

- **Zoning Ordinance (Chapter 25)**: Rockville's Zoning Ordinance details parking space minimum requirements for several use categories broken into additional sub-categories, such as residential, institutional, commercial, miscellaneous, and industrial and service. EV charging installations to existing sites may require changes to parking configurations or impacts to parking space dimensions to address accessibility. These changes may involve a minor site plan amendment. The zoning ordinance does not currently reference EVSE-specific policies. Furthermore, parking requirements do not incorporate EV charger expansion needs. Key issues include parking count mandates, charger accessibility, and EV readiness. Issues also arise when converting existing standard parking spaces to EV charging spaces is perceived as violating minimum parking requirements. This can be further complicated if adding EV chargers to an existing parking lot reduces the total number of parking spaces because space is needed for the provision of an access aisles to the station. Flexibility in parking minimum calculations is needed. The City launched a Zoning Code Re-write process which provides an opportunity to ensure that electric vehicle infrastructure policies are in sync with the zoning code.
- **Building and Property Maintenance Regulations (Chapter 5)**: Rockville's building codes were recently updated to require a minimum number or percentage of parking spaces for new residential or commercial construction to be "EV-Capable", "EV-Ready" or "EV-Installed" and accessible charging. One goal of enacting requirements for EV charging parking spaces is to lower the installation costs for EV chargers. Installing EV infrastructure in new developments along with larger construction efforts can be substantially less expensive than installing EV infrastructure as a retrofit. For installation to existing developed sites, pedestal chargers that require a footing may require a building permit as well as an electrical permit.
- **Traffic Code (Chapter 23)**: The traffic code does not address EV charging. Future updates to Section II Stopping, Standing and Parking are needed to address EV parking and authorize fees for city owned and operated public EV chargers. Some jurisdictions offer free charging in some locations to encourage EV ownership. Many jurisdictions establish an initial fee and routinely update the fee via resolution to reimburse the City for actual electricity use, as well as the proportional costs associated with the management, operation, maintenance, and replacement costs of charging stations. Some jurisdictions establish a fee schedule that encourages drivers to vacate a station when finished charging.
- **Streets, Roads, Rights-of-Way, and Public Improvements Code (Chapter 21)**. The current code does not address EV chargers in public rights-of-way (although permitted in practice). Provisions may be added to the code to officially authorize ROW agreements for EV chargers. The development of ROW guidelines and a permitting process would support EV charging access.

- **Forest and Tree Preservation Ordinance (Chapter 10.5)**: The ordinance requires the applicant to submit a Natural Resource Inventory/Forest Stand Delineation and Forest Conservation Plan for projects that disturb land and require a sediment and erosion control permit, even for existing developed sites without forest or tree impacts.
- **Sediment Control and Stormwater Management (Chapter 19)**: The code requires sediment control for any land disturbing activity that (1) involves five thousand (5,000) square feet or more of disturbed area; or (2) involves one hundred (100) cubic yards or more of grading. The code requires stormwater management for any development that (1) involves five thousand (5,000) square feet or more of disturbed area; (2) creates or replaces two thousand (2,000) square feet or more of impervious area on a single unit detached dwelling, townhouse or semi-detached dwelling lot; or () creates or replaces two hundred fifty (250) square feet or more of impervious area on property other than a single unit detached dwelling, townhouse or semi-detached dwelling lot. The disturbance needed to run conduit to install EV charging infrastructure or modify an existing parking space/configuration for accessibility in an existing developed site could trigger these requirements.

6.5 Rockville Fleet Policies

This section describes the City's plan to transition City fleet vehicles to electric and other low/zero emission technologies where feasible. The Climate Action Plan contains the following actions and policies:

- **Action M-06**: *Convert the City fleet to cleaner and more efficient fuel sources*.
- **Action M-07**: *Establish a Capital Improvement Project to expand electric vehicle charging infrastructure on City property to serve employees, fleet and the community*.

As part of the Climate Action Plan adoption in 2022, the Mayor and Council adopted Resolution 02-22 to transition the city's on-road fleet to cleaner, more efficient vehicles. Since the adoption of the resolution, all leased vehicles up for replacement are substituted with electric models except for police vehicles or those used in snow/ice operations that must be available 24-hours per day. The total number of vehicles currently leased in 2024 was 152 out of 187, and by the end of FY 2025, the total number of leased vehicles will be 167 out of 187. Of the 187 vehicles scheduled for the lease program, approximately 70 light-duty vehicles are currently suitable for electrification (37%). Other vehicles that are purchased by the City including heavy-duty vehicles, dump trucks and refuse trucks currently do not have electrified models available on the market that suits the vehicle's duty cycle. When those purchases are made, the Fleet Manager investigates available options. As of 2024, Rockville's fleet incorporated 20 battery electric vehicles (BEV), 1 plug-in hybrid electric vehicle (PHEV), and 3 hybrid vehicles.

The FY 2023 budget created the Electric Vehicle Infrastructure CIP (GA23) to expand EV charging infrastructure on city property and possible rights-of-way adjacent to city facilities, to serve the fleet, and potentially employees and the community. Phase 1 involves the purchase and installation of charging infrastructure to serve light duty fleet according to the vehicle replacement schedule. Phase II involves planning for heavy duty fleet, such as buses and refuse, as available models come on the market that meet duty cycles. Appendix H summarizes existing, planned, and potential EV infrastructure at city facilities and rights of way to supplement the commercial and residential charging network. In support of Phase 1, three Level 2 single port charging stations are installed at City Hall, two Level 2 single port chargers are installed at the Fleet Services facility, and one portable Level 2 charger is available at the Water Treatment Plant. Staff is also planning to expand charging infrastructure to serve fleet at City Hall, the Police Station, Recreation Services Building, 6 Taft Court, and the Rothgeb Maintenance Facility. The city also continues to explore grants and partnerships with private firms to install, operate and maintain public chargers on other city facilities (see Appendix H).

Public chargers are installed at City Hall, Thomas Farm Community Center and Mattie Stepanek Park and are planned for the Swim and Fitness Center, the Senior Center, and Civic Center Park. These stations are available to employees to charge personal vehicles but could only be used by fleet if procurement policies and payment protocols are modified to allow fleet access to private charging stations.

Retrofitting some facilities to install fleet charging stations to accommodate the growth in electric vehicles may be challenging due to site and electricity service constraints. Additional analysis and solutions are needed for EV infrastructure planning to serve the following:

- **Rothgeb Maintenance Facility**: Space planning and an electrical assessment is needed to serve light-duty fleet, heavy-duty fleet and off-road equipment charging needs. For example, assessments of charging needs for potential electrification of Senior Transit Buses and Refuse fleet. Additionally, the city is also planning to transition city-owned landscaping equipment and contracts to comply with Montgomery County's gas-powered leaf blower ban. This would require a plan for charging electric leaf blowers and potentially other off-road equipment.
- **6 Taft Court**: Renovations involve some uncertainty with the potential relocation of staff and fleet from Rothgeb, City Hall, and future uses for the unoccupied south wing.

- **Police Station**: Limited on-site parking at the Police Station necessitates leasing parking from a nearby property owner. The current parking facility does not provide access to EV charging. Additionally, the city does not have a policy for charging police take-home vehicles. Electrification of police vehicles is dependent on available vehicle technology that meets service needs, finding solutions for charging near the Police Station, and developing a policy for take-home charging.
- **Procurement policies**: Rockville's Procurement Card (P-card) Policies and Procedures Manual does not permit payment for fuel. The current policy views electrical vehicle charging as similar in nature to filling up a vehicle with gasoline or diesel fuel and restricts P-card payments at privately-owned charging stations. This may limit use of fleet EVs for business travel or fleet access to privately operated charging stations on city-owned sites (i.e., fleet unable to charge at Pepco-operated fast chargers at Thomas Farm Community Center). The P-Card Program may approve exceptions to its policies, rules and procedure in an emergency situation, on a case-by-case basis, just as it does in instances where City fuel pumps are inoperable.
- **Strategic planning for fleet and employee charging**: With limited parking space availability at city facilities to meet fleet, employee and public charging demands, the city could evaluate the installation of dual-use stations where the public or employees could utilize the charging infrastructure during the day and fleet could charge at night. Management software, effective signage, and oversight would be needed to ensure Fleet charging is available.
- **Parking and accessibility requirements**: As previously discussed, the minimum parking space requirements of the Zoning Ordinance can constrain property owners' ability to meet building code EV charging requirements which include ADA EV charging spaces when retrofitting existing parking spaces. Many existing city facility sites contain only the minimum number of spaces, and accommodating accessible EV chargers reduces the total number of spaces[70], which in turn can fail to meet the required minimum parking space count. Flexibility in the parking minimums can assist with this challenge and other solutions, discussed further under the Zoning Ordinance on p. 72.

Technologies, markets and programs for low/zero emissions vehicles and infrastructure will continue to innovate and evolve over the next decade. The City's annual fleet replacement assessment will continue to evaluate opportunities and be positioned to take advantage of federal initiatives, funding programs, or new market options for low/zero emissions vehicles that meet service duty needs.

[70] https://www.ada.gov/law-and-regs/design-standards/2010-stds/#208-parking-spaces

7 Rockville EV Readiness Goals, Strategies and Actions

To accelerate EV adoption, promote equity, and guide public involvement and plan oversight, the plan establishes 4 goals, 8 strategies and 26 actions (Figure 25). These actions support the vision that EV charging is accessible, equitable, affordable, safe and convenient for all who live, work, and visit Rockville. The subsequent sections provide details on background and implementation for each action.

Figure 25. Rockville EV Readiness Goals, Strategies, and Actions

Goal 1: EV Ready Codes, Policies and Procedures

Update and align codes, policies, guidelines, permitting and inspection processes to reduce barriers, streamline and expedite EV charging infrastructure development.

1.1 Update City Codes	
1.1.1	Update the Building Code and Property Maintenance Regulations (Chapter 5)
1.1.2	Update the Forest and Tree Preservation Ordinance (Chapter 10.5)
1.1.3	Update the Streets, Roads, Rights-of-Way, and Public Improvements Code (Chapter 21)
1.1.4	Update the Traffic Code (Chapter 23)
1.1.5	Update the Zoning Ordinance (Chapter 25)
1.2 Develop guidelines and standards	
1.2.1	Develop a simplified EV charging application and guide to streamline plan review, permitting and inspections
1.2.2	Develop right-of-way EV charging guidelines and a streamlined approval process to serve residents without access to garages, driveways or dedicated parking spaces
1.2.3	Establish design standards for public EV charging stations
1.3 Advocate for safe, reliable, affordable and equitable electric mobility	
1.3.1	Advocate for government and utility policies and programs to support EVs and e-micromobility opportunities

Goal 2: Robust and Equitable Charging Network

Expand access to EV charging to equitably serve residents, workers, visitors, and the municipal fleet.

2.1 Coordinate with partners to meet charging demands	
2.1.1	Engage with residential properties to expand access to home charging
2.1.2	Engage with commercial properties to expand access for workplace, fleet, and destination charging
2.1.3	Coordinate with Montgomery County to expand public charging

2.1.4	Coordinate with Pepco to expand charging infrastructure and ensure grid capacity
2.1.5	Identify City-owned properties and rights-of-way in gap areas and leverage outside funding and partnerships to expand public charging infrastructure
2.1.6	Promote EV infrastructure to support other e-mobility opportunities, such as e-bikes, e-scooters, EV ride-hailing, or EV car-sharing services

Goal 3: Clean Municipal Fleet

Implement a multi-year fleet electrification strategy that aligns with fleet vehicle replacement schedules, duty cycles, and EV infrastructure.

3.1 Electrify eligible vehicles and equipment

3.1.1	Replace eligible non-emergency light-duty fleet with electric vehicles
3.1.2	Monitor and pilot clean technologies for medium-duty and heavy-duty vehicles
3.1.3	Monitor and pilot clean vehicle technologies for police vehicles
3.1.4	Monitor and pilot clean technologies for off-road equipment
3.1.5	Coordinate an interdepartmental clean fleet team for training and management

3.2 Deploy electric charging infrastructure

3.2.1	Implement the Electric Vehicle Charging Infrastructure Capital Improvement Program (CIP GA23)
3.2.2	Leverage outside funding and resources to support fleet EV electrification and infrastructure planning, design and installation
3.2.3	Operate, maintain and manage EV charging infrastructure

Goal 4: Inclusive Public Engagement and Oversight

Conduct inclusive and equitable public engagement to support EV adoption and monitor plan implementation.

4.1 Outreach and Engagement

4.1.1	Coordinate with community partners to conduct an inclusive public education and engagement campaign on electric vehicles and charging infrastructure
4.1.2	Promote the regional electric vehicle purchasing cooperative (EVPC) to increase the scale and rate of EV adoption

4.2 Execute plan and monitor progress

4.2.1	Monitor and report plan progress through the Climate Action Plan annual report

The following section describes each of the EV Readiness actions in more detail as summarized in the legend in Figure 26. The City is already taking steps to implement many of these actions; however, additional resources and community involvement are needed to achieve EV readiness goals. While several actions are beyond Rockville's direct control and may require leadership from federal, State and County agencies, City advocacy and partnerships can support action implementation that leads to broader benefits.

Figure 26. Legend for EV Readiness Action Summaries

Action #.#.#: Action Number and Abbreviated Name

Objective: Description of the action objective.

Lead: Leading organization or department

Partners: Partnering departments and/or outside organizations

Resources: Staff resources, capital or one-time upfront costs to initiate action, annual operating costs

Timeframe: The timeframe and status of the action (ongoing, proposed, phased, expansion of existing program, etc.)

Equity: Description of equity considerations for each action to be considered during implementation.

Overview: Narrative describing the action background, intent and resources needed for implementation.

Next Steps: Description of next steps for action implementation

EV Ready Codes, Policies and Procedures

Update and align codes, policies, guidelines, permitting and inspection processes to reduce barriers, streamline and expediate EV charging infrastructure deployment.

Goal 1: EV Ready Codes, Policies and Procedures

Action 1.1.1 Update the Building Code and Property Maintenance Regulations (Chapter 5)

Objective: Update the Building and Property Maintenance Regulations (Chapter 5) to include local amendments that delineate minimum requirements for EV charging in parking spaces in new construction and renovated buildings.

Lead: Community Planning and Development Services

Partners: Public Works, City Attorney's Office

Resources: Staff resources for ordinance development and training and outreach to the development community for implementation.

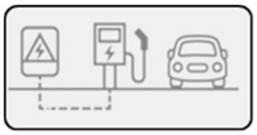
Timeframe: Progressively phase-in and refine requirements during the International Code Council (ICC) building code cycles for 2021, 2024, 2027 and 2030.

Equity: In 2024, the Mayor and Council adopted building code amendments that retain Chapter 11 of the 2021 International Building Code (IBC) to streamline accessibility compliance and improve equity. Compliance with Chapter 11 ensures compliance with the ADA, the Fair Housing Act Guidelines for Construction, the Architectural Barriers Act, the Maryland Accessibility Code, and HUD standards.

Overview: Amendments adopted in May of 2024 included minimum EVSE requirements for residential, multi-unit and commercial properties. Local amendments adopted in 2024 included:

- Article V – Basic Building Code: Provisions to address accessibility to EV charging stations.
- Article VII – Electrical Code: Increase the minimum service disconnect size for one- and two-unit dwellings from 150 to 200 Amperes to ensure sufficient service and panel capacity to support electrification.
- Article VIII – Energy Conservation Code: Includes definitions for EV parking spaces, mandates for single-unit EVSE for State level (HB830), and baseline requirements in IECC Section C405.14 for three different EV charging levels illustrated in Table 12. Emphasis is placed on home charging.

Table 12. Rockville EV Charging Requirement Levels in Building Codes

	EVSE INSTALLED  ***EV charger installed***	**EVSE READY**  *Electrical panel capacity, conduit, and full circuit*	**EVSE CAPABLE**  *Electrical panel capacity and conduit*
OCCUPANCY GROUP			
Commercial with 20 or more parking spaces	2%	8%	10%
Multi-family residential with 10 or more parking spaces required	10%	10%	30%

Next Steps: Continue to monitor technology, ICC amendments, Chapter 5 implementation, best practices and refine in future building code updates.

Action 1.1.2 Update the Forest and Tree Preservation Ordinance (Chapter 10.5)

Objective: Update the Forest and Tree Preservation Ordinance (Chapter 10.5) to protect existing trees while streamlining the review and approval processes for the installation of EV charging station by eliminating non-value-added steps.

Lead: Community Planning and Development Services

Partners: Public Works, Recreation and Parks, City Attorney's Office

Resources: Staff resources for ordinance development and training for implementation.

Timeframe: Short-term (0-3 years)

Equity: Reducing permitting review burdens has a positive impact on applicants with less resources to support the permitting process.

Overview: The requirement for plan amendments to existing developed sites to submit a Natural Resource Inventory and Forest Stand Delineation (NRI/FSD) and Forest Conservation Plan places additional costs and burdens on property owners and is a barrier to expanding the EV charging network. Exemptions for small projects that do not impact critical root zones or the substitution of small-scale tree save plans can be instituted to protect nearby trees and support EVSE installation. Amendments proposed in 2024 and anticipated to be adopted in 2025 to facilitate the installation of EV charging include:

- An exemption from Natural Resource Inventory and Forest Stand Delineation (NRI/FSD) for applications of the site plan, project plan, or amendments thereto that do not require a sediment control permit or impact the critical root zones of any significant trees or trees subject to a previously approved forest conservation plan. This is intended to eliminate the need for an NRI/FSD in the event of an application that proposes no significant disturbance or tree impact.
- Any activity on publicly-owned property required to install electric vehicle charging infrastructure, solar panels, or improvements necessary to comply with the Americans with Disabilities Act, provided that the activity is within an area previously improved with impervious surfaces and the applicant has received approval of a tree save plan.

Next Steps: Adopt proposed amendments in 2025, subject to the review and approval of the Maryland Department of Natural Resources, as applicable. Implement, monitor, and refine as needed.

Action 1.1.3 Update the Streets, Roads, Rights-of-Way, and Public Improvements Code (Chapter 21)

Objective: Update the Streets, Roads, Rights-of-Way, and Public Improvements Code to ensure that electric mobility and charging on public streets can be done safely and the process is clear and straightforward to implement.

Lead: Public Works

Partners: Community Planning and Development Services, City Attorney's Office

Resources: Staff resources to research and develop ordinance amendments, guidelines, standards, applications, and agreements for permit review and approval.

Timeframe: Short-term (0-3 years)

Equity: By creating the option and process for on-street charging in the public right-of-way (ROW), a jurisdiction can extend equitable EV charging access; especially for multi-unit households, renters, common ownerships communities or single-unit households without access to off-street parking. In neighborhoods where on-street parking is especially tight, community outreach and coordination is needed to assess community charging needs and seek input on what types of chargers should be deployed, how many, and the best locations to serve local needs. It is also important for public charging in the ROW to remain affordable. Another equity consideration is charging support for other affordable electric mobility options, such as electric ride-sharing, e-bikes, and e-scooters (which typically only require access to a 120V receptacle).

Overview: Facilitating on-street charging for residents who do not have dedicated off-street parking is among the most challenging charging use cases. Cities can help create on-street charging opportunities through a combination of charger siting requirements, curbside programming, expedited permitting, and incentives to help direct charger placement in the areas of most need. This may involve the provision of curbside charging by either a local government, utility, a third-party operator, a neighborhood or civic association, or a resident.

The code requires a Public Works permit from the City to construct, excavate, drill, connect to, install, or plant any public improvement of a permanent or temporary nature. Except as otherwise provided in this section, no other work or private improvement is allowed in the City right-of-way or easement, except as authorized and permitted by the Director. Public Works can consider models from other jurisdictions. For example, Montgomery County developed guidelines and requires a ROW Permit and Declaration of Covenants for Maintenance and Liability for Occupation of the Right of Way. Takoma Park, Baltimore County, and Washington D.C. have also developed guidelines and requirements. These models, described in Table 13, allow for privately owned EV charging stations to be installed in the public right-of-way adjacent to public streets. Residents of homes that qualify can charge while parked on the curb using electricity from their home meter. However, in many cases the parking space adjacent to a curbside EV charging station is available for public use. Property owners do not have exclusive rights, privileges, or priority for parking adjacent to the EV charging station.

Next Steps: Include in next planned update anticipated to begin in 2025. Following adoption, Action 1.2.2 involves developing guidelines and processes for implementation.

Action 1.1.4 Update the Traffic Code (Chapter 23)

Objective: Update the Traffic Code ordinance to incorporate public curbside charging, establish a fee for city-provided charging, and enforcement of EV charging parking regulations.

Lead: Public Works

Partners: Police – Parking Enforcement, City Attorney's Office, Community Planning and Development Services, Finance, Maryland agencies

Resources: Staff resources for ordinance development and implementation.

Timeframe: Short-term (0-3 years)

Equity: Providing and enforcing clear EV charging parking limitations allows more people to access public chargers, especially residents without private parking. Implementation can ensure that education, clear signage, and adequate education and warnings are incorporated and that citations are applied reasonably. City-established rates for city-provided charging should consider cost and affordability.

Overview: The traffic code is used to manage public parking and currently does not address EV charging stations, including municipal lots, privately operated parking lots or garages, and on-street locations. Updates to the parking ordinances can help a jurisdiction become EV friendly by:

- Providing clear design requirements for EV charging equipment, parking spaces, and signage.
- Permitting law enforcement to enforce regulations (e.g., parking in an EV charging station space is permitted only for EVs, the time an EV can be parked in the space, or all EVs must be actively charging while parked).
- Authorizinge and establishing a fee for the use of public electric vehicle charging stations within the city's operational control.

Rockville's current penalty for a violation of a parking restriction sign is sixty dollars ($60). Meanwhile, Maryland anti-ICEing law to keep Internal Combustion Engine (ICE) cars from blocking electric vehicle charging stations includes a one hundred ($100) penalty that can only be enforced if the charging station provider posts signs that conform to the requirements in the legislation. A ~~publicly accessible plug-in EV charging space must be designated by a~~ sign mustthat indicates that the charging space is only for EV charging; includes any day or time restrictions; states the maximum fine that may be incurred for a violation; and beis consistent with the design and placement specifications established in the Manual on Uniform Traffic Control Devices for Streets and Highways adopted by the State Highway Administration under § 25–104 ~~of this article~~. Therefore, the enforceability of Maryland's or Rockville's law is dependent on the nature of the parking signs.

Additionally, ~~the~~ code ~~may be~~ updates are neededd to authorize a fee for the use of EV charging stations within the City's operational control. Many jurisdictions establish an initial fee and routinely update the fee via resolution to reimburse ~~the City~~ for actual electricity use, as well as the proportional costs associated with the management, operation, maintenance, and replacement costs of charging stations. Some jurisdictions establish a fee schedule with dwell/idle fees that encourages drivers to vacate a station when finished charging to maximize charger use and generate additional revenue. The Mayor and Council discussed three rate philosophies: free charging,

cost recovery, and revenue generating. They recommended a blended strategy that recognizes differences in the charger type, location and use. Most public charging fees, such as for stations located in residential areas, should be consistent with a cost recovery philosophy. ~~While f~~Fast chargers or chargers in high-traffic areas may include cost recovery and a revenue generating dwell time/idling fee after a grace period. The dwelling/idling fee would encourage vehicle relocation after charging is complete to ~~to~~ encourage turnover and enable the charger to serve more vehicles. Offering free charging is not ~~generally~~ supported except potentially in rare cases in which drawing more visitors to a location or providing charging as a special amenity would be appropriate. Ongoing monitoring of data related to station use, station costs, revenue, and community needs is also recommended as fees are routinely evaluated and refined.

Next Steps: Update the Traffic Code to authorize a user fee. Establish user fee(s) by a resolution that recovers costs and encourages turnover in high-traffic areas. Implement, monitor, and refine as needed.

Action 1.1.5 Update the Zoning Ordinance (Chapter 25)

Objective: Update the Zoning Ordinance to include definitions for terms associated with EV charging infrastructure and ensure provisions do not unnecessarily restrict or create overly burdensome processes for station installation.

Lead: Community Planning and Development Services

Partners: Zoning Consultant, Public Works, City Attorney's Office

Resources: Staff and consultant resources for ordinance review, development, adoption, and implementation.

Timeframe: Incorporate into the Zoning Ordinance Rewrite (ZOR), adoption anticipated spring 2026

Equity: Reducing barriers, creating a clear, predictable process can lower the costs and time required for installation and facilitate an equitable distribution of chargers throughout communities, serving areas outside those with the highest EV adoption rates.

Overview: Zoning ordinances regulate land use, including what can be built on a property. Extended zoning review, with multiple rounds of comments, and the application of parking count minimums are the most common causes of charging project delays. Rockville's Zoning Ordinance details parking space requirements for several use categories broken into additional sub-categories, such as residential, institutional, commercial, miscellaneous, and industrial and service. Rockville's zoning ordinance does not currently have any EV- or EVSE-specific parking policies. The current effort to rewrite the zoning code provides an opportunity to ensure that the code is in synch with EV readiness policies, building codes and the Comprehensive Plan.

In the context of EV readiness, local governments can use zoning ordinances to control where EV charging stations are allowed or prohibited. EV charging installations to existing parking lots may require changes to parking configurations or impacts to parking space(s) and dimensions to incorporate accessible charging. These changes may currently involve a minor site plan amendment. Jurisdictions can update zoning ordinances to become EV friendly in the following ways:[71]

- **Definitions**: Most zoning codes do not include definitions for EV charging equipment. Including a clear, broad definition of EV charging that does not differentiate between power levels (i.e., Level 2 or DC Fast Charging) or type of charging (i.e., public vs light-duty fleet charging) will reduce barriers and allow flexibility as use cases evolve.
- **Use**: Land use and zoning codes should properly reference and categorize EV charging equipment. This avoids charging stations being misclassified as traditional gas fueling or automobile service stations, which vary differently in actual use and are subject to restrictions or standards involving underground tanks, hazardous materials, traffic, and commercial activity. The City can consider allowing EV charging as an accessory use in all zones. Charging as an accessory use reflects current practice for common station locations, such as charging collocated with retail parking lots, office buildings, or as a dedicated portion of a larger parking facility. To the extent possible, avoid requiring discretionary zoning approvals for EV charging projects as they can introduce significant delays, uncertainty, and added cost to a project.

[71]Ed Gilliland and Robert Graff. Planning and Zoning Guidance for Electric Vehicle Charger Deployment. Sustainable Energy Action Committee with RMI and the Interstate Renewable Energy Council. August 2023. https://sustainableenergyaction.org/resources/planning-and-zoning-guidance-for-electric-vehicle-charger-deployment/

- **Parking requirements**: Adding EV chargers to an existing parking lot is complicated by parking requirements when it reduces the total number of parking spaces because additional space is needed for the station(s) and/or the provision of access aisles. Options include allowing these EV charging spaces to count toward zoning parking minimums, considering accessible charging spaces as two standard spaces, reducing the minimum number of required parking spaces by the amount that is necessary to accommodate the EV charging station, associated equipment, and access aisles, or removing the requirement to conduct a parking review for applications solely for installation of EV charging stations as an accessory use.
- **Design**: Preferred locations of EV charging stations that meet dimensional standards for parking and drive aisles, as well as setback, landscape and screening and other aesthetic design standards in zoning codes may present additional challenges in locations that would otherwise be the most feasible, optimal use, or cost-efficient locations. Charging infrastructure located at greater distances from the power source and interconnection result in higher costs, additional site impacts, and longer permitting and construction times. Allowing administrative relief from setback requirements or focusing on broader performance outcomes (i.e., provision of shade, pedestrian safety, landscaping) in lieu of prescriptive standards provides flexibility to balance priorities in a practical manner. In areas with sensitive design standards, station developers are encouraged to collaborate on practical design elements to be implemented.
- **Signage**: Signage for EV charging stations is important to help EV drivers navigate to charging stations, outline the rules for use, and support enforcement of rules. Challenges arise when basic EV charger signage (not involving digital signage) require additional processes for approval. Including design guidelines, such as graphics for wayfinding signs, vertical signs, and pavement marking can support design consistency and streamline permitting.
- **Approval Process**: Common challenges occur when the application process is unclear and inconsistent. Additionally, a process that involves special exceptions or waivers that require planning commission or Mayor and Council approval can add significant time and cost. Identifying which levels and locations of EV charging may be approved administratively and clearly identifying exceptions that require other approvals can streamline the process. Some jurisdictions include language authorizing administrative review and approval of alternative design options if strict compliance with guidelines is not possible. Designing a user-friendly, all-electronic application process to enable concurrent site, building, electrical, accessibility, and fire-safety reviews and consolidating cross-departmental questions and comments can also streamline the process.

Next Steps: Incorporate EV ready provisions in the zoning ordinance rewrite, implement, monitor, and refine as needed. The zoning ordinance rewrite will consider appropriate options for flexibility in parking space minimums to more easily enable ~~for~~ parking lot retrofits to incorporate accessible charging. Following adoption, Actions 1.2.1 and 1.2.3 involve developing applications and design standards for implementation. ~~The zoning ordinance rewrite will consider appropriate options for flexibility in parking space minimums for parking lot retrofits to incorporate accessible charging.~~

Action 1.2.1 Develop a simplified EV charging application and guide to streamline plan review, permitting and inspections

Objective: Develop a simplified EV charging electronic application and guidebook to streamline plan review, permitting and inspections to provide a predictable and transparent process to facilitate installations.

Lead: Community Planning and Development Services

Partners: Public Works, City Attorney's Office, Recreation and Parks, IT

Resources: Staff and consulting resources to develop the application and guide. Funding for integrated permitting software, configuration and training.

Timeframe: Phase improvements: minor updates (0-2~~3~~ years), comprehensive updates (>3 years)

Equity: Reducing barriers and creating a clear and predictable process can lower the costs and time required for installation and facilitate EV adoption for all residents and business owners. This can particularly benefits applicants with fewer resources.

Overview: Depending on the circumstances, the current process can involve up to nine approvals or permits. Applicants are required to submit multiple sub-applications, each with its own fee, and navigate different ways to submit each application (via download and completion of pdfs from the City website, or an automated online process through MyGovernmentOnline). This also requires staff to navigate multiple systems that do not communicate with each other. Furthermore, as applications increase, a standardized practice for approval will be necessary to manage the workload. Aligning these requirements, streamlining the application, and developing guidelines and standards aligned with best practices would significantly reduce barriers to installations and reduce time and resources for the applicant and the responsible departments.[72]

In 2018, the Mayor and Council endorsed the FAST (Faster, Accountable, Smarter, and Transparent) project to improve development review and permitting process, and in 2024, Mayor and Council held a work session and endorsed the second phase of FAST. Updates recommended as part of FAST include the creation of a complete virtual One-Stop Shop that includes all development and permitting applications in a comprehensive system and a streamlined process that combines separate applications and fees when possible. The City should apply these recommendations to develop a simplified EV charging station application and checklist to consolidate the steps and the multiple layers of documentation. Consolidated application materials may include a single-line electrical diagram and electrical plan, simplified site plan amendment with parking and ADA accessibility information, tree or landscaping impacts, site disturbance information, lighting, safety measures and signage.

Next Steps: Continue internal stakeholder discussions to provide updates to the FAST initiative, plan and budget for comprehensive permitting software, and implement, monitor, and refine as needed.

[72] Electric Vehicle Charging Station Permitting Guidebook: https://business.ca.gov/wp-content/uploads/2019/12/GoBIZ-EVCharging-Guidebook.pdf
Electric Vehicle Supply Equipment Permitting and Inspection Guidelines: https://newbuildings.org/wp-content/uploads/2022/11/2020-NEC-EVSE-MF-and-Office-Permitting-and-Inspection-Guide.pdf

Action 1.2.2 Develop right-of-way EV charging guidelines and a streamlined approval process to serve residents without access to garages, driveways or dedicated parking spaces

Objective: Establish standard practices to reduce costs and barriers associated with providing safe EV charging in public rights-of-way (ROW) to serve residents without dedicated off-street parking.

Lead: Public Works

Partners: Community Planning and Development Services, Recreation and Parks

Resources: Staff resources and consultant support.

Timeframe: Improvements may be phased depending on level of complexity: minor updates (0-2~~3~~ years), comprehensive updates (>3 years)

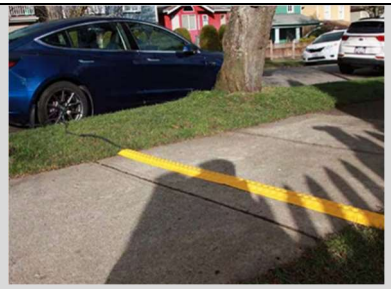
Equity: This action focuses on expanding equitable charging for residents without designated parking in garages or driveways, which often includes residents in lower income brackets. Implementation should consider options to minimize costs and barriers for residents while protecting public safety and equipment in~~,~~ rights-of-way ~~and improvements~~.

Overview: "Garage orphans" is a term used to describe EV drivers that do not have access to a driveway or garage where they could install a private EV charging station. Garage orphans have become a growing challenge across the country and various jurisdictions are testing tailored solutions to provide EV charging access in the public ROW. When it is not feasible to install a driveway utilizing the city's existing Residential Driveway Apron Program, charging in the right-of-way (ROW) may be considered. Use of the ROW is covered by Chapter 21 – Streets, Roads, Rights-of-way, and Public Improvements. The City does not currently have specific code provisions or standards for EV chargers in the ROW but is exploring options for developing standards and specifications or changes to Chapter 21 (Action 1.1.3).

Examples of models for ROW EV charging with pros and cons are described in Table 13. M~~and m~~any jurisdictions employ one or more of these models to meet the ~~various~~ needs of residents and ~~specific~~ site conditions. Model 1 involves partnerships with private vendors to ~~The City has already partnered with Pepco to implement vendor~~ install~~ed~~ and operate public charging in the ROW~~, similar to Model 1~~. Model 2 ~~Staff is also considering processes similar to Montgomery County that allow~~ permits residents to install and maintain Level 2 chargers in the ROW, under certain site conditions ~~(Model 2) as described below~~. Model 3 ~~Staff is also evaluating safety and mobility concerns associated with~~permits residents to install~~ed~~ channel duct systems to house Level 1 or 2 charging cables flush with sidewalks. ~~(Model 3) and~~ Model 4 involves charging cord guidelines for Level 1 charging that require covers with highly visible, stable, and secure low-angle cable ramps ~~(Model 4)~~.

All systems must meet the requirements of the Electrical Code and charging stations must be listed by an approved product listing agency, rated for outdoor use and installed in accordance with the manufacturer's specifications.

Table 13. Comparison of Models for EV Charging in Public Rights-of-Way (ROW)

 **Model 1** **Vendor Installed Charging**	 **Model 2** **Resident Installed Charging**	 **Model 3** **Resident Installed Charging Duct/Cord**	 **Model 4** **Charging Cord Guidelines**
Washington DC created a public space permit which allows EV charging station vendors to install Level 2 or DC fast charging stations in eligible curbside locations. [73] **Pros:** Provides guidance for a resident-led process to engage the community, identify a location, and partner with a vendor to provide publicly accessible on-street charging. Vendor pays for installation and management; requires less city and resident resources. **Cons:** Converts ICE parking space to EV charging space; may pose challenges in areas with limited parking; may involve lengthy community engagement and permitting processes. **Recommendation:** Continue to employ this model in appropriate areas utilizing a license and maintenance agreement.	Montgomery County and Takoma Park utilize *Residential EV Charging Permitting Guidelines* that include a separate permitting process to allow residents to install Level 2 EV chargers in the public ROW under certain site conditions.[74] **Pros:** Offers residents private L2 charging options. Allows staff to work with resident to devise a charging solution for a particular site. **Cons:** Does not provide public charging benefit or ensure 24/7 charging access for resident as the parking space must remain publicly available. Requires more resources to implement (costly, uncertain application process and approval timelines). **Recommendation:** Develop design and inspection standards to ensure proper implementation in appropriate areas.	Several European cities allow residents to hire a contractor to install a channel/duct system into the sidewalk or pavement to create a flush conduit for Level 1 or 2 charging cables. The cable can be removed when charging is not needed.[75] **Pros:** Hybrid solution that offers residents a private charging option that may be more affordable than a standing charger. Charging asset is flush with sidewalk and can be removed when not in use or during snow/ice events. **Cons:** Does not provide public charging benefit or ensure 24/7 charging access for resident as the parking space must remain publicly available. Requires Public Works permit. **Recommendation:** Develop design and inspection standards to ensure proper implementation in appropriate areas.	Washington DC and Vancouver developed electric vehicle charging code guidance for residents extending electrical cords across sidewalks for Level 1 charging. [76] **Pros:** Provides residents a more affordable alternative for Level 1 charging that may encourage a higher rate of PHEV adoption. Does not eliminate a regular parking space. Cord covers allow some flexibility in the location of the EV parking space. **Cons:** Level 1 is usually not suitable for EVs as the only charging source. Cords crossing sidewalks may pose safety, mobility and liability concerns. **Recommendation**: This model is not recommended for implementation due to safety and mobility concerns,

[73] Washington D.C. Electric Vehicle Charging Station Permit Application: ddot.dc.gov/sites/default/files/dc/sites/ddot/page_content/attachments/%28Final%29%20EV%20Charging%20Workflow%5B42%5D.pdf
[74] Montgomery County Residential EV Charging Permitting Guidelines: https://www.montgomerycountymd.gov/DPS/Resources/Files/RCI/EV%20Charging%20Stations%20in%20the%20ROW.pdf
[75] Crossing the Pavement with an EV Charging Cable: https://evani.uk/crossing-the-pavement-with-an-ev-charging-cable/
[76] Washington, DC: https://ddot.dc.gov/sites/default/files/dc/sites/ddot/Admin%20Issuance%20EV%20Charging%20Guidance.pdf

The Mayor and Council reviewed the four models and provided feedback to allow Models 1, 2 and 3 in the ROW under appropriate circumstances to expand charging access in challenging residential sites.

Model 1 Recommendation: The City should continue to employ this vendor partnership model to expand public charging in appropriate areas utilizing a license and maintenance agreement. Neighborhoods or HOAs could similarly work with a vendor to install charging in the ROW in a central, publicly accessible location. Additional guidance can be included in the code and updates to design standards and specifications.

Model 2 Recommendation: When there is no on-site existing parking space and it is not feasible to install a driveway or parking pad, resident installed charging in the ROW may be permitted in appropriate areas. ~~For Model 2, Resident Installed Charging,~~ Sstaff intends to follow policies for ~~EVSE~~ charging in the public ROW based on guidelines~~ance~~ from Montgomery County and consider requests on a case-by-case basis, as they do all other requests to use the public ROW for private uses. When a request is made, DPW reviews the request and issues an initial determination with guidance for next steps. In making this determination, staff look at specific characteristics of the property and advise the owner of one of the following options:

(a) ~~Deny request i~~If there is an existing parking space on the property, deny request for ROW charging and permit the resident to install onsite EV charging.~~, with access on the private property, to install an EV charging on the property~~.
(b) If there is space and appropriate site conditions to ~~C~~construct a new curb cut (driveway or parking pad) on the property, permit the resident to install an EV charging station and parking space on the property.
(c) If there are no onsite options and appropriate ROW conditions, permit the resident to ~~i~~install a curbside EV charging station at an appropriate location along or adjacent to the frontage of the property within the public ROW.
(d) If there are no onsite options and the ROW has space limitations, conflicts with grades, utilities or trees, safety concerns, etc., ~~i~~inform the ~~owner~~ resident that the property is not a candidate for an EV charging station in the ROW and provide the reason. ~~(i.e., space limitations, conflicts utilities or trees, safety concerns, etc.)~~

To implement Model 2, ~~T~~the City has a Residential Driveway Apron Program that can provide the permitting and construction services required to install a driveway apron in the public right-of-way, in connection with a new driveway. Planning and Development Services will also evaluate the property for potential zoning issues. Recreation and Parks would evaluate the property for street tree conflicts or impacts. This model should include coordination with neighbors and property owner acknowledgement that the parking space adjacent to the curbside EV charging station remains publicly available.

~~If there is not adequate space to install a private driveway, or if it is too complex or cost prohibitive, staff will consider allowing explore allowing the installation of a curbside EV charging station along or adjacent to a property frontage within the public ROW. A site visit will provide a better understanding of~~can identify ~~any potential issues with grades, existing utilities, and existing features such as trees.~~

~~If staff supports the installation in the public ROW, staff will notify the owner of the findings and ask them to submit a formal request. The formal request must include a Site Plan and EV Charging Station details. Staff will reviews the submission to confirm the location of the EV Charging Station and that the station meets the City's requirements. Once staff approves the submission, a ROW license agreement must be prepared and taken to Mayor and Council for approval. If the Mayor and Council authorize the ROW license agreement, the agreement will be signed and then application for the required permits from DPW (ROW) and ISD (electrical) must be completed prior to installation.~~

Model 3 Recommendation: The city should develop design specifications and inspection standards for the flush channel/duct system to allow residents to install Level 2 curbside charging in appropriate locations without having a pedestal in the ROW. The model should include provisions for applications, permitting, inspections, and enforcement if needed. This model should include coordination with neighbors and property owner acknowledgement that the parking space adjacent to the curbside EV charging station remains publicly available.

Model 4: This model was not recommended due to safety and mobility concerns.

~~Evaluating the options and streamlining the approach and considering additional options can allow more charging in challenging residential sites.~~ Each model includes a site plan and EV station details. Staff reviews the submission to confirm the location of the EV charging station and that the station meets the city's requirements. Once staff approves the submission, a ROW license agreement must be prepared and brought to Mayor and Council for approval. Once authorized, the agreement will be signed and then applications for the required permits from DPW (ROW) and ISD (electrical) must be completed prior to installation.

Changes to processes for each model should establish criteria that aim to reduce ~~time~~review time, allow options that are lower cost ~~where possible~~, ensure safety, and provide a clear decision tree. For example, one change could be to allow the Department of Public Works Director to execute right of way agreements for EV chargers. Providing flexibility to address ~~any~~ tree or stormwater concerns such as planting in another site or using permeable pavers could also make the process more suited to the goal of reasonably balancing environmental amenities. Establishing standards, ~~an~~ clear application**s** and a more streamlined process will help improve processing time and standardize the customer experience.

Next Steps: Implement~~ing additional~~ recommended options and a streamlined process for this action wi**th**~~ll require~~ input from ~~a range of~~ interdepartmental staff, the public, the Environment Commission, and the Transportation and Mobility Commission. Staff has already begun initial discussions to balance the needs of pedestrians, ADA design, costs and burdens for EV owners, and other uses of the ROW. These changes will be incorporated in policies and design standards.

Action 1.2.3 Establish design standards for EV charging stations

Objective: Develop site design standards for EV charging stations in parking lots, garages and curbside that aligns with best practices and state and federal standards for signage, station design and layout, pedestrian safety and operational protocols.

Lead: Community Planning and Development Services

Partners: Public Works

Resources: Staff and/or consulting resources to develop standards.

Timeframe: Medium-term (3-5 years)

Equity: Standards ensure seamless operability which is especially critical for people with disabilities, language barriers, or technology barriers.

Overview: This action is intended to promote a level of uniformity among charging station designs in parking lots, parking garages and the public right-of-way to guide applications and streamline permitting. Standards may include wayfinding signage, station signage, pavement marking, parking space size, mounting specifications, lighting, safety bollards, wheel stops, accessibility, cord storage, and pedestrian access and safety to allow EV drivers to walk safely to nearby amenities while charging. Existing standards that may be referenced include but are not limited to:

- The US Department of Transportation Federal Highway Administration's Manual on Uniform Traffic Control Devices includes regulatory signs for electric vehicle charging and parking facilities: https://mutcd.fhwa.dot.gov/resources/policy/rsevcpfmemo/.
- The U.S. Access Board, an independent federal agency that issues accessibility guidelines under the Americans with Disabilities Act (ADA), and other laws, produced a technical assistance document to assist in the design and construction of electric vehicle (EV) charging stations that are accessible to people with disabilities. Design Recommendations for Accessible Electric Vehicle Charging Stations
- The City of Atlanta zoning code outlines design standards and other criteria for EV parking and charging facilities.
- Many installations may leverage federal, state and utility funding, so charging equipment and services must meet the signage and operations requirements of these entities. Standard operational protocols such as those in 23 CFR Part 680 for federally funded chargers (https://www.federalregister.gov/documents/2023/02/28/2023-03500/national-electric-vehicle-infrastructure-standards-and-requirements) include standards for interoperability, accessibility, connector types, Level 2 ENERGY STAR certification, traffic control devices, payment methods, and others.

Next Steps: The City should coordinate with Montgomery County, the Metropolitan Washington Transportation Planning Board and Maryland in developing standards to be incorporated in the Zoning Ordinance, development of ROW guidelines, and single EV application processes.

Action 1.3.1 Advocate for government and utility policies and programs to support EVs and e-micromobility opportunities.

Objective: Monitor and advocate for federal, state and utility legislation, incentives, plans and programs to support safe, sustainable and equitable electric vehicle and e-micromobility opportunities.

Lead: City Manager's Office/Mayor and Council

Partners: Public Works, Environmental Commission, Maryland Municipal League, Montgomery County, Metropolitan Washington Council of Governments and other jurisdictions and partners.

Resources: Existing staff resources and lobbying services to monitor and assess policies and legislation.

Timeframe: Ongoing

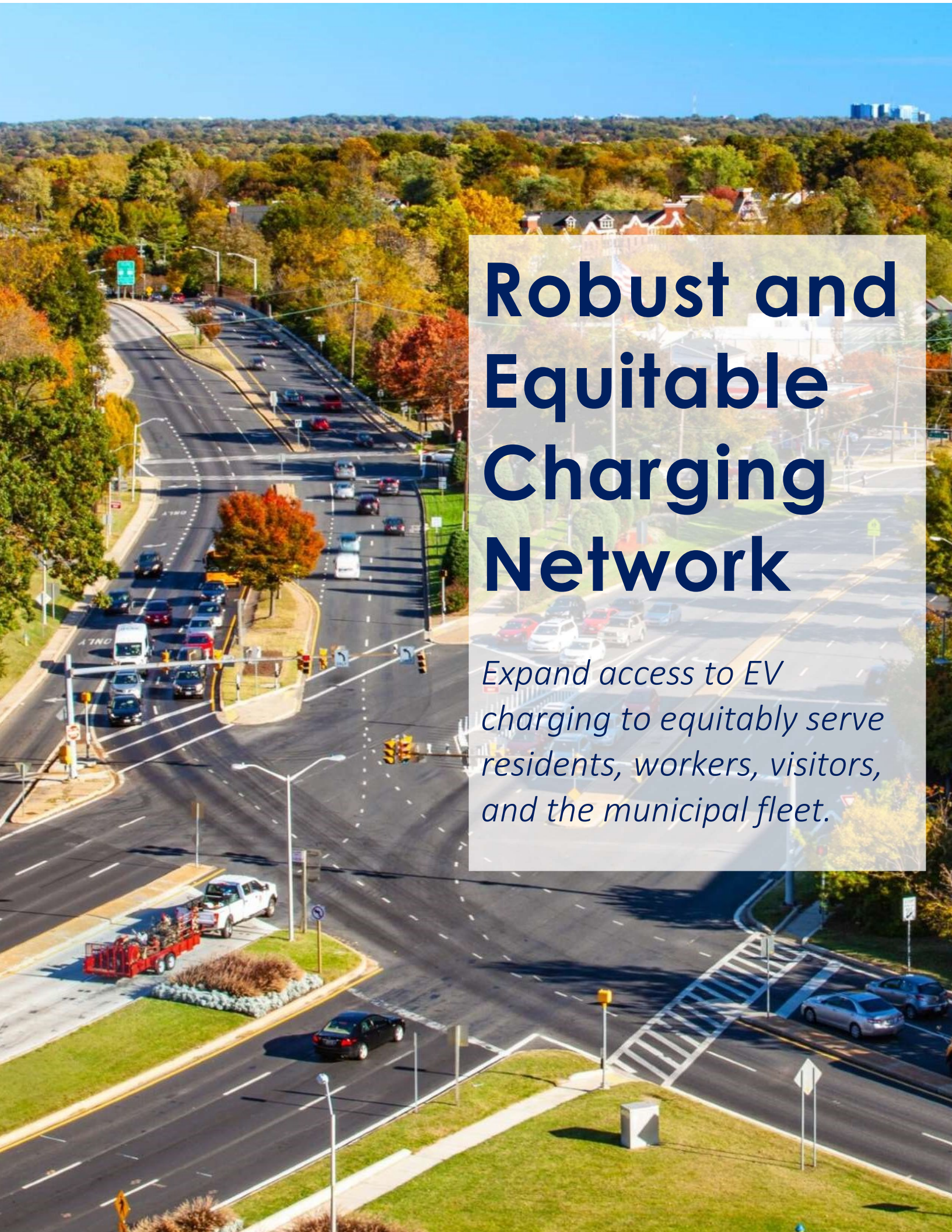
Equity: Advocating for programs to support public charging networks, reliability and affordability is a key component of serving residents with less wealth to afford their own homes with dedicated parking. Supporting e-micromobility also expands the transportation options available for residents that cannot afford a personal vehicle.

Overview: Many EV policies and e-micromobility standards are beyond local government control; therefore, advocacy and coordination with federal and state agencies, the Maryland Public Service Commission, local utilities, and other agencies is needed. Issues may include, but are not limited to:

- **EV charging station reliability/uptime standards**: Charger reliability is a major concern of EV drivers that have encountered broken or malfunctioning hardware or software. While reliability standards/uptime requirements are not currently widespread, it has become an emerging policy priority as programs look to ensure reliability as investments in EV charging infrastructure increase. While there are no existing uptime requirements for EV charging infrastructure, several federal agencies and the state has begun evaluating such requirements.
- **Electrical capacity**: Coordination and collaboration with the Maryland Public Service Commission and public utilities to anticipate local capacity needs, develop programs to manage peak growth, and strategically invest in capacity improvements will be needed to support the successful, affordable and reliable electrification of transportation and building systems.
- **Electricity/EV charging rates**: Monitoring rates for electricity and public EV charging to better serve customers and protect them from unnecessary and inappropriate costs.
- **Interoperability**: EV charging infrastructure interoperability occurs when the software and hardware components, such as charging networks and their mobile apps, charging stations, power grid, payment options, connectors, charging levels, and the EVs themselves, can "operate cohesively and seamlessly" with each other. There are several connector types and major charging network providers, and the communications protocols and billing processes in the industry are not standard for charging stations or network providers. Often, EV service providers will have proprietary network protocols which can lead station owners to be locked-in to a single provider for the life of their charging stations. An open protocol approach, such Open Charge Point Protocol (OCPP) which is used in Europe, may enable charging station owners to switch between network providers without needing to purchase new equipment.

- **EV roaming**: The concept allows EV drivers to charge at public chargers from any owner or operator without the need for multiple subscriptions or contracts. It delivers the true "charge anywhere" experience where one can charge on the road, across regions and borders on any service provider's EV charging network. Although appearing seamless to consumers, delivering electric vehicle roaming services is profoundly complex, requiring negotiated service and clearing agreements among charging providers and operators, comprehensive communications standards, various protocols, and support of multiple languages, currencies, tax rates, and regulations. Adoption of Open Charge Point Protocol is one way to enable hardware and software from different networks to become interoperable.
- **Incentives and financing programs:** Advocate for federal, state, and utility tax credits, grants, rebates, and technical assistance to support the purchase, operation, or maintenance of EVs, EV charging infrastructure, e-bikes or e-scooters and e-micromobility device charging.
- **Standardized Safety Practices:** Federal, state, and regional agencies can support training and emergency response readiness for battery fire safety protocols. Consumer and business education on the dangers of off-market or substandard e-micromobility batteries and enforcement of bans on the sale of uncertified batteries is needed to ensure consumer safety. City Public Works staff participated in a regional lithium-ion battery fire safety training and these types of events should continue. Training on scooter operations can reduce injuries. As the market evolves, different types of vehicle classifications, licenses, speed restrictions, age restrictions, and helmet regulations may be appropriate for certain e-micromobility devices.

Next Steps: Ongoing monitoring and assessments of policies and programs.



Robust and Equitable Charging Network

Expand access to EV charging to equitably serve residents, workers, visitors, and the municipal fleet.

Goal 2: Robust and Equitable Charging Network

Action 2.1.1 Engage with residential properties to expand access to home charging

Objective: Engage with residential, multi-unit apartments and condo residents, renters, managers and owners, HOAs, and civic/neighborhood associations to learn about charging needs and collaborate to expand charging access.

Lead: Public Works

Partners: Public Information Office, Housing and Community Development, Community Planning and Development Services, Human Services Advisory Commission, Environment Commission, Montgomery County Department of Environmental Protection, Montgomery County Green Bank, Maryland Clean Energy Center other community partners

Resources: Expanded staff resources to develop education and outreach materials and engage with residents. Minor costs for outreach materials.

Timeframe: Ongoing; expansion of existing program.

Equity: Outreach and engagement should be designed to address the barriers and considerations described in Section 4.2 Outreach and Engagement with Historically Excluded Communities.

Overview: The City has received multiple EV charging inquiries from HOAs, civic associations, and other multi-unit property owners and residents without access to driveways and garages. After permitting processes are streamlined and clarified, the next step is to conduct outreach and engagement to residential neighborhoods and property owners. Many residential communities may not be aware of their options for vehicles and charging. General outreach and education on EV operations, charging, charger installation, and available financial incentives can help residents bridge this gap. Examples of topics relevant to residents may include:

- Types of electrical vehicles and incentives
- Types of EV charging for a home or community and eligible incentives
- Process for planning and executing an EV charging project (e.g., single unit with designated parking, multi-unit with shared parking, ROW projects, etc.)
- Ways to engage residents and management
- Programs and technical assistance provided by the Montgomery County Green Bank or other non-profit associations to implement charging; including the Capital Area Solar Switch program that offers a cooperative purchase of rooftop solar, battery storage and/or EV chargers
- Project costs and incentives (equipment, installation, recurring costs for network fees, maintenance plans, utility rates and demand charges)
- Maintenance of charging cords, connection issues, cleaning, tripped circuits
- How to manage charger use and parking (parking signage and restrictions, registered users, charging for usage, and reservations)

Next Steps: Coordinate with community partners, assess needs, and devise outreach programs.

Action 2.1.2 Engage with commercial properties to expand access to workplace, fleet and destination charging

Objective: Engage commercial properties, businesses, institutions, non-profit entities, places of worship, to expand access for workplace, fleet, and destination charging.

Lead: Public Works

Partners: Community Planning and Development Services, Public Information Office, Rockville Economic Development Inc., Montgomery County, Montgomery County Green Bank, Maryland Clean Energy Center, Pepco

Resources: Staff resources to expand current program

Timeframe: Ongoing

Equity: Focusing outreach on small, local businesses, tax-exempt companies, places of worship and other smaller destinations is one way to prioritize and reach historically excluded communities.

Overview: The top barriers identified by organizations and large property owners for installing chargers were cost, electricity access or capacity, and management of charging stations and infrastructure. Many private organizations are not aware of the various technical assistance and incentive programs to serve workers, fleets, visitors, or nearby residents. Expanded engagement with commercial property owners may include:

- EV incentives, rebates and tax credits available for the purchase and installation of electric vehicle charging stations
- Planning and permitting process for charger installation
- Operations and maintenance cost, load management and revenue opportunities
- Value of EV charging amenities to attract and retain employees, tenants and customers
- Best practices to address safety, way finding, and charger compatibility
- Options for the inclusion of solar panels with new EV chargers, such as solar canopies over parking spaces, to reduce energy costs, reduce the load on the grid, and provide shade and protection from rain for EV drivers when charging.

Targeted outreach to commercial property owners identified in the community surveys (Section 5.7), workplace charging (Section 5.3), and destination charging (Section 5.4) can meet demand to fill gaps in commercial charging.

Next Steps: Develop and expand local contact lists. Explore current lines of communication between the City and the County and these entities to determine the best way to engage.

Action 2.1.3 Coordinate with Montgomery County to expand public charging

Objective: Coordinate with Montgomery County on their plans to expand public charging on County properties in or near Rockville that serve residents, visitors, and workers.

Lead: Public Works

Partners: Montgomery County, Community Planning and Development Services, City Attorney's Office

Resources: No additional resources required.

Timeframe: Ongoing

Equity: The County's proposed public charging stations are located in areas to fill gaps in public charging, such as historically excluded communities and near multi-unit housing.

Overview: Various Montgomery County agencies are installing or are proposing to install public EV charging infrastructure on the following County properties in and near Rockville. Information from Montgomery County Public Schools was not available. The County and its agencies are similarly seeking funding and grants to assist with County-hosted stations. Table 14 summarizes County planned and proposed stations as of fall 2024; additional opportunities for coordination are outlined in Appendix H. The City meets with County representatives periodically to monitor and coordinate plans to expand public charging in the region. The City can assist by providing transparent, coherent, and streamlined permitting services.

Table 14. Montgomery County Planned and Proposed Public Charging in/near Rockville

Site Name	Address	Type	Site Description	Status
Twinbrook Library	202 Meadow Hall Dr, Rockville	Library	Located in equity emphasis area	Selected for funding
Council Office Building Fast Charging Hub	100 Maryland Ave, Rockville	Charging Hub		Selected for funding
Parkway Woods	12933 Twinbrook Parkway, Rockville	Residential	Multi-unit residential owned by the Housing Opportunities Commission	Proposed
Shady Grove Apartments	16125 Crabbs Branch Way, Derwood	Residential	Multi-unit residential owned by the Housing Opportunities Commission	Proposed
Montrose Park and Ride Lot	Rockville Pike and Montrose Road, North Bethesda	Commuter	Commuter surface parking lot	Selected for funding

Next Steps: Continue to coordinate as needed to expand public charging.

Action 2.1.4 Coordinate with Pepco to expand charging infrastructure and ensure grid capacity

Objective: Work with Pepco to utilize the EVsmart public and fleet programs to expand charging and advocate to ensure grid capacity to support charging.

Lead: Public Works

Partners: Pepco, City Attorney's Office, Recreation and Parks, Community Planning and Development Services

Resources: Staff resources for agreements, project coordination, plan review and permitting.

Timeframe: Public charging station design and construction from 2019 through 2024; operations and five-year agreement renewals from 2024 through 2029. Fleet assessment completed in 2024; coordination for fleet charging rebates from 2025 through 2028.

Equity: The City coordinated with Pepco to identify sites that serve community charging gaps and increase access for residents in multi-unit residential buildings. Future charger locations can continue to prioritize multi-unit and commercial properties in historically excluded neighborhoods.

Overview: In 2019, the Maryland Public Service Commission (PSC) approved a five-year electric vehicle charging infrastructure pilot program for the state's largest electric utilities to jump start the deployment of a public EV charging network across the state. Between 2019 and 2022, the Mayor and Council authorized several license and maintenance agreements with Pepco to install, operate and maintain EV charging infrastructure at the city-owned parks, facilities and public rights-of-way listed in Table 15 at no cost to the city. By the end of the pilot, Rockville received 15 level 2 ports and 2 Level 3/DC fast charging ports at five sites. Additional Pepco-owned Level 2 stations were installed at Montgomery County Public Schools' Carver Educational Services Center. Pepco also provided a fleet EV technical assessment to support future eligibility for future rebates for fleet charger installations.

Table 15. Pepco License Agreements for Public Electric Vehicle Charging Stations

Location	Level 2 Ports	Level 3 Ports	Location Type	License Agreement Date
Thomas Farm Community Center	2	2	Community Center	Authorization: 7/8/2019 Agreement executed: 12/5/2019 Agreement amended: 8/2/2022
Mattie Stepanek Park	4		Park	Authorization: 7/8/2019 Agreement executed: 8/2/2022
City Hall (Vinson Street)	2		Right-of-way	Authorization: 6/14/2021 Agreement executed: 7/7/2022
Fallsgrove (Prettyman Drive)	3		Right-of-way	Authorization: 6/14/2021 Agreement executed: 7/7/2022
Twinbrook Station (Bouic St.)	4		Right-of-way	Authorization: 6/14/2021 Agreement executed: 7/7/2022
Total	**15**	**2**	**5 sites**	

Next Steps: Monitor site operations and refine the five-year license agreements as needed. Monitor filing with the Maryland Public Service Commission (PSC) to ensures the program continues to support operations and expansion of charging infrastructure.

Action 2.1.5 Identify City-owned properties and rights-of-way in charging gap areas and leverage outside funding and partnerships to expand public charging infrastructure

Objective: Continue to assess locations and install public electric vehicle charging stations on City property in high-charger needs areas, leveraging grants and partnerships.

Lead: Public Works

Partners: Pepco, Community Planning and Development Services, Maryland Clean Energy Center, Maryland Energy Administration, Montgomery County, MWCOG, etc.

Resources: Staff resources for grant applications, partnership development, and project management.

Timeframe: Phased over 5 years

Equity: These stations by design serve residents without easy access to charging at home, such as those in multi-unit developments or housing without assigned parking or driveways to help ensure equal access to charging, and at modest costs.

Overview: City sponsored chargers are not intended to supplant private investment, only to supplement and fill gaps when opportunities exist to leverage outside funding. The equity assessment, multi-unit/workplace/destination assessments, and stakeholder outreach identified several City-owned properties or rights-of-way that could fill public charging gaps. The public charging sites listed in Appendix H are in various stages of evaluation for charging partnerships and grants.

Next Steps: Continue to implement planned projects, evaluate feasibility, monitor needs, and refine list as needed.

Action 2.1.6 Promote EV infrastructure to support other e-mobility opportunities, such as e-bikes, e-scooters, EV ride-hailing, or EV car-sharing services

Objective: Research and identify opportunities to support other alternative e-mobility modes of transportation throughout the community.

Lead: Public Works

Partners: Public Information Office, Montgomery County, MWCOG, Maryland

Resources: Staff resources, materials, CIP Funding

Timeframe: TBD

Equity: Supporting other e-mobility modes can be focused on providing lower-income members of the community a way to affordably get around without having to own a vehicle.

Overview: The city partners with Montgomery County for access to electric e-bike share through Capital Bikeshare stations. Four more stations are being planned in the Twinbrook neighborhood. A portion of the bicycles provided and re-stocked at the stations by Capital Bikeshare are e-assist and are recharged by the company periodically. There is one Zipcar location in Town Center which is currently an internal combustion engine. Some ride-hailing companies offer users the ability to choose "green" ride options, such as a hybrid or electric vehicle driver. Rockville is also served by dockless rideshare e-bikes and e-scooters through the County's micromobility program. Some companies offer personal e-scooter rentals for a low fee. Some cities develop public-private partnerships to run e-car sharing in their jurisdictions.

The City should monitor grants, partnerships, and other policy or outreach opportunities to promote and support e-bikes, e-scooters, EV ride-hailing, or EV car-sharing services in Rockville. This may involve expanding outreach activities to include training on riding scooters and e-bike safety as part of Bike to Work Day or other events. Other opportunities may involve seeking funding for rebate or grant programs for low-income residents. Grants to support EV car-sharing services in the City are also another possibility to explore in this longer-term action.

The City should also monitor state and federal safety standards and advocate where needed, and supplement with local codes or policies as needed to ensure safe use and standardization for a smooth and safe customer experience.

Next Steps: Continue to explore potential options to support e-mobility and work to implement them.

Clean Municipal Fleet

Implement a multi-year electrification strategy that aligns with fleet replacement schedules, duty cycles, and EV infrastructure.

Goal 3: Clean Municipal Fleet

Action 3.1.1 Replace eligible non-emergency light-duty fleet with electric vehicles

Objective: Electrify light-duty non-emergency vehicles through the lease program in accordance with the vehicle replacement schedule.

Lead: Public Works

Partners: All departments with fleet

Resources: Incremental lease prices in operating budget, charging infrastructure deployment and management

Timeframe: Ongoing through 2030

Equity: Staff work with fleet drivers to ensure replacements meet duty cycles and have access to charging.

Overview: Section 6.5 Rockville Fleet Policies describes electrification policies and plans. Of the 187 vehicles scheduled for the lease program, approximately 70 light-duty vehicles, such as sedans, SUVs, mini-vans and pickups trucks, are currently suitable for electrification (37%). The other light-duty vehicles that serve emergency functions, such as police or snow/ice operations duty cycles, are not yet eligible for electrification. Of the 70 leased vehicles currently suitable for electrification, currently 30% have been converted to an electric version. In 2024, the city fleet included 20 battery electric vehicles (BEV), 1 plug-in hybrid electric vehicle (PHEV), and 3 hybrid vehicles.

The rate of future light-duty electrification is dependent on replacement schedules and the deployment of critical EV charging infrastructure. Delays in charging infrastructure deployment impact the ability to electrify additional fleet (see Action 3.2.1). Work continues involving contracts, site plan amendments, and permits for the installation of electric vehicle charging stations to serve fleet at City Hall, the Police Station, Recreation Services, 6 Taft Court, the Rothgeb Maintenance Facility, and the Swim and Fitness Center. The actions outlined in Goal 1 for EV ready codes and permitting will also support this action.

Next Steps: Implement, monitor, and refine as needed.

Action 3.1.2 Monitor and pilot clean technologies for medium-duty and heavy-duty vehicles

Objective: Monitor vehicle options, performance records, and funding opportunities to pilot electric senior transit buses and refuse vehicles.

Lead: Public Works

Partners: Recreation and Parks

Resources: Additional funding for the incremental vehicle purchase in operating budget or to accelerate vehicle replacement schedule, cost and installation of charging infrastructure.

Timeframe: Evaluate for vehicle replacements in FY 2026 and beyond, pending deployment of chargers.

Equity: Acquiring electric models for heavy duty vehicles will reduce exhaust exposure of crews who operate them. Shuttles would reduce exposure of seniors. The City is interested in upgrading these vehicles when models are available that can serve the duty functions, subject to budget and grant availability and concurrent with charger installation to serve them.

Overview: Senior transit buses and refuse trucks are potential candidates for electrification in the medium to heavy-duty fleet.

- **Senior transit buses**: Rockville's fleet currently includes five transit buses that primarily serve seniors from their individual residences to the Senior Center, shopping, and other local locations. Four transit buses (14 passenger, low floor shuttle buses with lifts) serve four routes per day, typically 80 miles per day. These buses could benefit from electrification to improve operations, comfort, noise and reduced emissions. Fleet also includes a 27-passenger bus that typical serves long distance trips where charging may not be easily accessible and may not be a good candidate for electrification.
- **Rear-loading refuse trucks**: While electric refuse trucks may offer lower cost per mile and deliver noise and pollution reduction benefits, the trucks have high upfront capital cost (more than $500,000, compared to a $350,000 diesel vehicle) and limited performance data for real service over the lifespan. Fleet is monitoring vehicle options that can operate for ten-hours shifts and service more than 1,000 homes per route, under extreme hot and cold weather conditions.
- **Charging**: To serve these vehicles, appropriate charging infrastructure is first needed at Rothgeb Maintenance Facility and potentially at the Senior Center, if parking and electrical capacity were available (see Action 3.2.1).

Next Steps: Monitor, seek outside funding, and pilot.

Action 3.1.3 Monitor and pilot clean vehicle technologies for police vehicles

Objective: Evaluate opportunities to pilot clean vehicle technologies in the police fleet.

Lead: Police

Partners: Public Works, Recreation and Parks, City Manager's Office

Resources: Additional funding and resources for incremental vehicle and parking lease prices, charging infrastructure deployment and management, take-home charging.

Timeframe: Pending emerging technology and Police Station parking lease timeframes

Overview: Rockville's Police fleet drives more than 500,000 miles per year, comprising approximately 60% of the miles driven by the city's gasoline fleet. Police's Parking Enforcement fleet was the first to incorporate EVs because their duty cycles align with electric models and the vehicles park at City Hall to charge overnight. Electrifying other police vehicles is dependent on a variety of factors, including but not limited to the availability of vehicle technologies that meet duty-cycles and reduce charge times to support shift schedules, solutions to provide charging near the Police Station, resiliency planning to charge during emergencies or power outages, and establishment of a policy for take-home charging.

- **Technology**: Currently there are no pursuit-rated or special service package EVs for law enforcement or police service. The police department monitors technology and performance to identify electric pursuit vehicles with a proven record of meeting the demands of law enforcement duty cycles with adequate space and power for onboard equipment and accessories, such as computers, dashboard electronics, sirens, lights, a push bar, and other necessities. Additionally, the lifecycle of EVs is important to consider. EV ranges change depending on speed, braking (regen), payload, outside temperatures, geographic hill or grade changes, and any other battery energy use during operation. A phased strategy could be developed that evaluates different duty-cycles and identifies hybrid or electric options for less intensive uses, such as administrative or detective vehicles, before patrol vehicles.
- **Charging cycles and leased parking**: Charging presents a significant barrier, both with the time it takes to charge a vehicle and the feasibility to access charging near the Police Station. It may take 30 mins to two hours to fully charge a car, which does not align with patrol shift schedules. Therefore, it is important to identify charging technology that aligns with patrol fleet downtime or dwell time. Additionally, while one Level 2 charging station is planned at the Police Station, the current parking lot configuration does not support additional charging. Due to limited on-site parking at the Police Station, the city currently leases parking from a nearby property owner. Current leased parking does not provide access to Level 2 or fast charging. Future police parking leases would need to incorporate charging provisions.
- **Resilient charging**: Mission-critical fleets must also have mission-critical EV charging. A strategy must be developed for robust and resilient charging that is able to operate at any time of day or night, in emergencies and when the power is out.
- **Take-home charging**: The city would need to establish a charging policy for take-home vehicles so that individual officers would have access and time to charge in-between shifts. Additionally, not all officers have access to home charging or the ability to install chargers.

Next Steps: Monitor vehicle technology options and charging options for leased parking.

Action 3.1.4 Monitor and pilot clean technologies for off-road equipment

Objective: Monitor cleaner technologies for other off-road equipment (such as leaf blowers, mowers, golf carts and other construction equipment) to reduce emissions, pollution and noise.

Lead: Recreation and Parks

Partners: Public Works

Resources: Initial funds to purchase electric blowers were included in FY 2025 budget. Evaluate future funding needs to test and purchase equipment, provide charging infrastructure, and safely store and dispose of batteries at the end of the life-cycle.

Timeframe: FY 2025 and beyond.

Equity: Converting gas- and diesel-powered equipment to electric will reduce exposure of landscaping and construction crews and the public to air pollution and noise.

Overview: Montgomery County Council enacted Bill 18-22, Noise Control- Leaf Removal Equipment - Amendments, in September 2023 to phase-out the sale and use of gas-powered leaf blowers and leaf vacuums in most areas of the county. This bill applies in City of Rockville and will be enforced by Montgomery County Department of Environmental Protection (DEP) as part of the noise ordinance. The bill prohibits the sale (staring July 1, 2024) and use (starting July 1, 2025) of handheld, backpack, and walk-behind gas-powered leaf blowers and leaf vacuums.

The city is planning to transition city-owned landscaping equipment and contracts to comply with the new legislation. This would require funding to replace gas powered leaf blowers with electric leaf blowers, multiple batteries, charging infrastructure, and potentially charging electrical upgrades and battery storage upgrades for fire safety. FY 2025 funding from the Department of Energy's Energy Efficiency Community Block Grant (EECGBG) is planned to purchase a landscape trailer equipped to charge electric equipment.

Next Steps: Implement, monitor, and refine as needed.

Action 3.1.5 Coordinate an interdepartmental clean fleet team for EV training and management

Objective: Establish an interdepartmental clean fleet team for EV training and management.

Lead: Public Works

Partners: All staff driving electric fleet vehicles.

Resources: Staff resources for training development, tracking, and outreach.

Timeframe: Initiated and ongoing

Equity: Current EV fleet resources are accessible online and available to staff with regular computer access. However, when electrifying vehicles driven by staff with limited computer access, other communication tools may be needed to provide convenient access to information and resources.

Overview: As additional EVSE is installed, and the Fleet Manager continues to lease EVs to replace ICE vehicles in the Fleet in support of a cleaner fleet as outlined in the Climate Action Plan, more employees will be operating EVs as part of their work programs. The following items will allow for the coordination of and on-going engagement of an interdepartmental clean fleet team.

- Maintain a Microsoft EV Fleet Teams group to share EV information with staff assigned EV fleet vehicles.
- Create and update a map layer and a printable map that shows locations of Fleet accessible EVSE. Host link to maps on EV Fleet Team.
- Host a training video or PowerPoint on the Teams site to train all Teams members on (at minimum) the types of electric drive vehicles, how to optimize range while driving a BEV, types of EVSE infrastructure available at City facilities, and how to use them. For example, the National Institute of Building Sciences offers a video on demand *"Plug-In Electric Vehicle Overview for Drivers"* after free sign-up. https://education.wbdg.org/FEMP58/FEMP58_sum.php
- Create an EV Fleet Operator policy, similar to the fuel policy, that indicates that fleet charging stations requiring an RFID or access code are for Fleet use only and not to be used for personal vehicles.
- Work with Fleet/Legal/Procurement staff to determine an out of range/emergency charging plan where drivers may need to charge outside of City EVSE range during power outages. This may require adjustments to P-card policies to enable use of private stations.
- Develop guidance for best practices for proper EV and EVSE operation and charging etiquette (i.e. best climate control settings for seasonal changes, safety, scheduling/rules for moving EVs from charger ports once charge is achieved).
- Develop standard directions for reporting faulty and inoperable charging equipment.

Next Steps: Implement, monitor, and refine as needed.

Action 3.2.1 Implement the Electric Vehicle Charging Infrastructure Capital Improvement Program (CIP GA23)

Objective: Implement the CIP to strategically expand the network of electrical vehicle charging infrastructure on city property and rights-of-way to serve the fleet and potentially employees and the community.

Lead: Public Works

Partners: Recreation and Parks, Community Planning and Development Services

Resources: Funding programmed in the CIP.

Timeframe: FY 2023 and beyond.

Equity: While the CIP prioritizes fleet charging, the planning strategy includes private partnerships and/or siting public EV charging in locations identified in the Equity Assessment (Section 6.5) to encourage a more equitable charging network and clean transportation system.

Overview: The FY 2023 budget created the Electric Vehicle Infrastructure CIP (GA23) to strategically plan, design and install chargers, also known as electric vehicle supply equipment (EVSE), at city facilities and rights-of-way in coordination with the fleet electric vehicle acquisition and replacement cycle and Rockville's Electrical Vehicle Readiness Plan. Phase 1 involves the purchase and installation of charging infrastructure to serve light duty fleet as aligned with the vehicle replacement schedules. Phase 2 involves planning for heavy duty fleet, such as buses and refuse, as available models come on the market that meet duty cycles. The city also pursues grants and partnerships to expand community charging.

A comprehensive summary of the status and funding sources of fleet and public charging at city-owned facilities and right-of-way is described in Appendix H.

Next Steps: Implement, monitor, and refine as needed.

Action 3.2.2 Leverage outside funding and resources to support fleet EV electrification and infrastructure planning, design and installation

Objective: Strategically seek outside funding from federal, state, and utility rebates for vehicles and charging infrastructure when projects align with funding requirements and schedules.

Lead: Public Works

Partners: Recreation and Parks, City Manager's Office, Finance, City Attorney's Office, grant partners

Resources: Staff resources for funding applications and grant management and reporting.

Timeframe: Ongoing.

Equity: Leveraging outside funding can help electrify harder to convert vehicle types that could benefit crews, seniors, etc. and reduce air pollution in the City.

Overview: Funding opportunities supporting electrification of transportation are summarized in Section 6.2, Funding Resources, and details of City of Rockville Participation Status for more than 30 funding sources are summarized in Appendix F. It should be noted that the funding opportunities listed in these sections are subject to change as federal EV policies are modified.

The city is in various stages of implementation of projects receiving outside funding or technical support from Pepco, the US Department of Transportation, Maryland Energy Administration, Department of Energy, and Pepco. Staff will continue to monitor funding and partnership opportunities to support fleet electrification and charging infrastructure deployment.

Next Steps: Continue to implement current grant projects and monitor future opportunities.

Action 3.2.3 Operate, maintain and manage EV charging infrastructure

Objective: Establish protocols for operations, management and maintenance of EV charging assets on city-owned property and rights-of-way, both city-owned and leased.

Lead: Public Works

Partners: Recreation and Parks, Contractors, EVSE Partners, Pepco

Resources: Annual budgets for operation and maintenance of City-owned and operated stations. Staff resources for lease management of privately-owned sites. Potential revenue from charging station use (see Action 1.1.4 for establishment of charging rates) or site leases.

Timeframe: Ongoing.

Equity: Many city-sponsored stations are located to fill charging gaps and provide charging access for underserved communities. Ensuring affordable charging rates and providing ongoing maintenance and management of these stations is critical to ensure reliable and affordable service.

Overview: As the city installs EV charging stations on city property and works with partners (e.g., Pepco, Francis, Tesla, etc.) to install public stations on city-owned property and rights-of-way, protocols need to be established for tracking, management and maintenance of these assets.

- EV charging assets should be incorporated into the City's asset management software system for tracking and management.
- For private-owned and operated stations, the City will rely on those entities to operate, maintain and manage the equipment. The City will direct users to the appropriate entity if contacted regarding issues with the infrastructure. Management and oversight of lease agreements and coordination with each station owners will be ongoing.
- For stations installed, owned and operated by the City, operating budgets will need to incorporate operating, network, maintenance and repair costs. The City will also need to establish and implement routine inspections and maintenance to manage these assets. Additionally, load management strategies may be implemented to balance the power distribution, preventing overload and minimizing the risk of charger failures. For public and fleet chargers, a phone number will be added to the front of the EVSE, directing users as to which contact should be used to report issues. This may differ based on manufacturer. Additionally, the interdepartmental team for EV drivers (see Action 3.1.5) will share EV information, charging questions and issues, and reporting instructions when stations are not operational or have issues.

Next Steps: Implement, monitor, and refine as needed.

Inclusive Public Engagement and Oversight

Conduct inclusive and equitable public engagement to support EV adoption and monitor plan implementation.

Goal 4: Inclusive Public Engagement and Oversight

Action 4.1.1 Coordinate with community partners to conduct an inclusive public education and engagement campaign on electric vehicles and charging infrastructure

Objective: Increase public understanding and encourage the use of electric vehicles and charging stations. Connect community members with resources to reduce barriers associated with EV adoption.

Lead: Public Works

Partners: Public Information Office, Rockville Environment Commission, Montgomery County, Metropolitan Washington Council of Governments, other regional partners

Resources: Staff resources for communication plan development and implementation, additional funding for outreach materials.

Timeframe: Ongoing

Equity: Ensuring equitable engagement is essential to creating an inclusive approach to promoting the use of electric vehicles and charging infrastructure. The city should take steps to connect with community-based organizations and community leaders to facilitate information sharing and gather feedback. Special attention should be taken to reach low-income communities and share incentives that can reduce the upfront cost of EV purchasing and charger installation. Efforts should be taken to ensure that outreach materials meet ADA requirements and are available in multiple languages. Staff should also engage with vendors to facilitate translation of sales materials.

Overview: Engaging residents and community members to understand their specific transportation needs is critical to developing appropriate solutions and developing an inclusive public outreach campaign is integral to promoting public understanding of EVs and encouraging their use.

- **Community Needs and Barriers:** The City should work with trusted partners and EV champions within existing communities to assist in collecting feedback and contextualizing responses. With input from communities, the City can collaboratively develop solutions that directly address community concerns, maximize investments to best serve drivers and remove barriers. Barriers to using EV's and accessing charging infrastructure may include:
  - Financial burden of purchasing or leasing an EV or EV charging infrastructure.
  - Access to adequate charging infrastructure (proximity to transportation hubs or city centers, no or limited parking and insufficient power supply at single-unit homes, multi-unit housing, businesses etc.)
  - Preferences for locations for future EV charging infrastructure
  - Lack of a smart phone, sufficient data, power and credit or debit cards to connect with a charging network app/payment system.
  - Limited informational resources on EV options, financial incentives, lifestyle changes, user instructions, etc.
  - Language barriers on informational resources charging station instructions
  - Difficulty applying for commuting subsidies (e.g., gas card) to charging stations
- **Key Messages:** Messages promoting EV use should be tailored to specific audiences and communities after gauging their needs, barriers and general knowledge level. Overarching messaging themes may include:

  - Educating audiences on how EVs and EVSE works, types of EVs available, types of charging stations and when to use them, accessibility options and "Use Last" signage, and addressing concerns or misconceptions regarding charging, vehicle range, and charging times.
  - Educating audiences on why and how the topic of EVs and EV charging infrastructure is relevant to them, including topics such as emissions benefits, improved mobility, and cost of ownership benefits.
  - Breaking down the costs associated with EVs and EVSE and how to reduce those costs by applying for incentives, tax credits, grants and other funding.
  - Sharing the current and future demand for EVSE and the direct and in-direct benefits of installing EVSE for businesses and multi-unit properties.
  - Promoting additional ways to save money while owning, renting or accessing an EV such as purchasing a used EV, vehicle cost calculators, ride sharing and finding and accessing convenient EV charging infrastructure.
  - Promoting the Capital Area Solar Switch program that offers a cooperative purchase of rooftop solar, battery storage and/or EV chargers.
- **Channels for Education and Outreach:** A variety of channels and methods exist and will be used to conduct education and outreach efforts. Steps should be taken to gather information from the community on preferred communication methods and tailor outreach to specific audiences and goals. Outreach opportunities include:
  - Websites (City of Rockville, Montgomery County, utilities etc.)
  - Rockville Reports (paper and online) and city email newsletters
  - Social media (Facebook, Instagram, X)
  - Virtual and in-person information sessions, training and technical assistance
  - Paper and online outreach materials such as postcards, fact sheets, case studies, checklists, and frequently asked questions
  - Informational tables or presentations at local events and meetings (e.g., National Night Out, community meetings, board meetings)
  - Physical showcases, EV "ride-and-drive" events and EVSE demonstrations
  - Educational signage at city facilities with charging infrastructure
  - Recognition programs and events

Next Steps: Engage partners, conduct feedback surveys/events, and develop communication plan.

Figure 27. Public engagement at various National Night Out events in Rockville

Action 4.1.2 Promote the regional electric vehicle purchasing cooperative (EVPC) to increase the scale and rate of EV adoption

Objective: Increase awareness and facilitate participation in Montgomery County's electric vehicle purchasing cooperative (EVPC).

Lead: Montgomery County

Partners: Public Works, Public Information Office, Rockville Environment Commission

Resources: Staff resources and Partner resources

Timeframe: Ongoing

Equity: An EV purchasing co-op program should help make EVs more accessible to all, particularly to lower-income residents and others who have historically been left out of similar technology initiatives. Steps should be taken to increase awareness about the EVPC to residents in these groups and, as part of its education and public engagement campaign, the city should collect information from residents regarding financial barriers and provide this feedback to Montgomery County to better inform the EVPC program.

Overview: To foster EV market adoption, Montgomery County Department of Environmental Protection (DEP) launched the EV Purchasing Co-op (EVPC)[77] in 2022 to help residents find discounts and promotions on EVs, provide education, share incentives from governments, utilities and local businesses, and host events that allow community members to experience EV's firsthand. The program also includes an EV Pledge and EV Purchasing Co-op newsletter to connect members with a growing network of community partners, participating organizations, and "Electrified Dealers" to answer questions, organize events, support unique local benefits for EV drivers, and make EV ownership attractive, convenient, and cost-effective. The city should continue to partner with Montgomery County to promote the EVPC to residents through education opportunities and outreach, similar to the model used by the successful solar co-op program.

Next Steps: Continue to coordinate with Montgomery County DEP to promote the EVPC.

Figure 28. Montgomery County's EV Purchasing Co-op Displays Vehicles at Community Events

[77] Montgomery County EV Purchasing Co-op: https://www.montgomerycountymd.gov/DEP/energy/zev/ev-dealership-incentives.html

Action 4.2.1 Monitor and report plan progress through the Climate Action Plan annual report

Objective: Integrate an EV plan module into the Climate Action Plan tracking system and annual report for monitoring and highlighting progress and accomplishments related to electric vehicles and charging stations.

Lead: Public Works

Partners: All city departments, Montgomery County, COG, Pepco

Resources: Staff resources for tracking, monitoring and reporting.

Timeframe: Annual updates

Equity: Metrics that focus on equity and reducing barriers to EV adoption for low-income communities should be integrated into plan reporting.

Overview: Continuous monitoring, tracking, and reporting on the EV plan is not only essential for highlighting progress and reporting to leadership and the public, but also for identifying challenges and adjusting strategies as electric vehicle and charging technology improves. On an annual basis, the City should assess and report on readiness strategies and goals through the Climate Action Plan Annual Report. Outcomes-based indicators are preferred but, in many cases, qualitative updates, project status, percent completed or estimated quantities reached may suffice. Examples metrics may include:

- Regional charging station availability
- Number of EV related permits approved
- Attendance at city hosted EV events
- Regional EV registrations

Next Steps: Determine metrics and integrate the EV plan module into the Climate Action Plan annual report and online dashboard: https://performance.envisio.com/dashboard/rockvillemd3023

8 The Road Ahead - Implementation and Next Steps

Rockville's community-wide Electric Vehicle Readiness Plan outlines existing conditions, provides recommendations, and shares best practices to guide decision-making related to EV charging policies, permitting, siting, procurement, installation, and existing and upcoming funding opportunities. The Plan builds upon Rockville's ongoing sustainability and equity work to support federal, state, county, and municipal emissions reduction and EV adoption goals.

The following near-term next steps include:

- Educational events and media to share the findings in the plan, benefits of electric vehicles, rebates and credits available, and City involvement in facilitating EV adoption.
- Updating and aligning codes and ordinances to clarify and streamline EV charging installation requirements.
- Revising permitting processes, webpages, and guidance materials for project applicants.
- Installing grant-funded public charging from federal and state infrastructure funding.
- Continuing to convert fleet vehicles where possible and implementing the Electric Vehicle Charging Infrastructure capital improvement program for the installation and maintenance for chargers.
- Developing capacity with partners to collaborate with HOAs and multi-unit property owners to access funding opportunities for chargers at properties not expected to be redeveloped in the next few years.
- Developing capacity with partners to engage the private sector and non-profit employers, commercial and destination sites to connect them with information and resources to install charging at their locations for workers, visitors, and fleets.
- Plan reporting will be incorporated into the Climate Action Plan annual report and dashboard.

Appendix H is a comprehensive planning table of all existing, planned, and proposed EV charging locations being installed or under consideration which can be updated to reflect progress. Appendix I presents a conceptual implementation plan for the EV Readiness Plan's 26 actions. Appendix I summarizes each action's targeted benefits, estimated level of city investment, priority, action lead, partners and estimated timeframe. Plan implementation requires continuous collaboration across all departments and with community partners to create robust solutions tailored to Rockville's context and community needs. With assistance and input from many, Rockville can achieve a cleaner transportation future that reflects our climate action and equity values.

Appendices

Appendix A: EV Readiness Plan Development Process

Step 1 – Project Launch (Summer 2022 – Winter 2023)

- Rockville launched the Electric Vehicle Readiness Plan development process with a virtual live public joint meeting of the Environment Commission and the Transportation and Mobility Commission on July 27, 2022 for initial input for plan scope and public engagement.
- On December 9, 2022, the City held an Open House on the initial findings from ICF International on EV existing conditions and needs assessment were presented for feedback.
- The City launched a community engagement webpage, at http://www.engagerockville.com/evplan.
- Three surveys were conducted to obtain input from different audiences: 1) Residents and Visitors; 2) City of Rockville Employees, and 3) Organizations and Larger Property Owners. The surveys were available from December 2022 through February 2023. The surveys and webpage included a map for the public to indicate locations where chargers should be added to the network to inform the charger needs assessment.
- Additional outreach included in social media, email and print newsletter and other in-person and virtual events.

Step 2 –Staff and Consultant Coordination and Initial Analysis (2023)

- In January 2023, ICF International and the Department of Public Works Environmental Management Division co-hosted an internal meeting with Public Works and Community Planning and Development Services staff to outline the current permitting application workflows and identify areas for improvement to streamline the process and ensure fees are structured equitably.
- Staff analyzed survey findings based on the survey and crowd-source charger map findings .
- ICF developed the first draft inputs for the plan, including a review of best practices, electric vehicle adoption and charger projections, and a summary of local needs of Rockville.

Step 3 – County, State and Regional Coordination (2023 - 2024)

- Staff participated in several county, state and regional EV planning efforts, including but not limited to efforts led by the Metropolitan Washington Council of Governments (ICF regional EV analysis, Regional Electric Vehicle Infrastructure Investment (REVII) Strategy), Montgomery County (monitoring and sharing policy approaches in electric vehicle building code development and electric vehicle plan development), the State of Maryland (National Electric Vehicle Infrastructure Program), and the Maryland Clean Energy Center (Maryland Equitable Charging Infrastructure Partnership).
- Montgomery County EV Survey conducted a survey in 2023 with 592 online survey participants with 620 suggested charging locations, including 10 Rockville locations.

- Rockville participated in several state and federal EV charging funding and partnerships applications. Rockville was awarded a $48,000 grant from the Maryland Energy Administration to install EV charging to serve fleet at the Recreation Services Building and Rothgeb Maintenance Facility; an in-kind value of $949,343 for four DC fast electric vehicle chargers at the Swim and Fitness Center through the Charging and Fueling Infrastructure (CFI) Program Grant – Round 1B Grant Award; $324,051 for up to four public Level 2 charging sites from the Maryland Department of Transportation's Carbon Reduction Program; and is also partnering with Montgomery County on grant-funded public charging installations on County property in Rockville.
- Public charging station outreach. Coordinated with Pepco to host the ribbon cutting for the Rockville's first right-of-way charging stations by City Hall (April 15, 2024). By the end of 2024, Pepco completed public charging installations at five sites, providing a total of 17 ports.

Step 4 – Draft Plan Revision and Additional Analysis, Internal Review (2024 - 2025)

- Previewed draft action list with the Environment Commission for input (January 11, 2024)
- Developed the 2nd draft plan incorporating a GIS mapping analysis, refined the action list to align with the Envisio software reporting and online dashboard framework, incorporated updates for state and federal funding resources, and refined action items to incorporate public feedback and lessons learned from ongoing EV charger installation.
- Draft Electric Vehicle Readiness Plan Preview Open House (October 10, 2024)
- The draft plan was shared internally for review by staff including Community Planning and Development Services, Public Works, Housing and Community Development, and Recreation and Parks Department and revised.
- Released Draft Electric Vehicle Readiness Plan for public comment (January 17, 2025).

Step 5 – Final Plan and resolution presented to Mayor and Council for considered for adoption (2025)

- Present plan to the Mayor and Council and incorporate feedback (February 2025).
- Mayor and Council adopt plan (tentative March 2025).

Step 6 – Plan Implementation (2025 and beyond)

- The EV Readiness Plan Recommendations will guide implementation in coordination with appropriate departments and outside partners.
- Progress will be communicated within the Climate Action Plan annual reports and key metrics will be followed.
- Plan will be adjusted as needed to evolving market conditions, emerging opportunities, and community input.

Appendix B: Summary of Community Surveys and Feedback

Community feedback received during the planning process included virtual events, in-person tabling, and online surveys for residents/visitors, large property owners, and employees. Overall, community feedback indicated that more electric vehicle charging infrastructure is needed for a variety of property types, particularly multi-unit and shared parking residences. These are required immediately to adequately serve current and near-term electric vehicle users. EV vehicle and charging installation costs and equity are some of the most critical concerns.

Resident and Visitor Survey Results

The Resident and Visitor Survey received 120 responses. Survey results are summarized below, complete survey results are available on the plan's public engagement website.[78]

- 72% of respondents identified their race as White (Rockville has just under 50% White residents) and 28% identified as Black or African American, Asian American, Indigenous, two or more races, or other race.
- Respondents were 54% male, and 72% earned over the median household income of $100,000.
- More than a third of respondents already own an electric vehicle, and another third plan to within the next 5 years. Most of the remaining third would consider owning one; only five were not considering owning an electric vehicle.

Notable takeaways:

- Close to a quarter of respondents do not have a driveway or garage at their residence.
- The most important consideration in purchasing any vehicle was price, with range (gas or battery), environmental sustainability, vehicle size and trunk space, and cost of fuel the next most important factors.
- 76% responded it would be easy/fairly easy to charge at home, but 21% said it would not be easy.
- The biggest obstacles to accessing charging were charging station availability, time and frequency of charging needed, followed closely by cost and lack of home or workplace chargers.
- Respondents had many questions and were eager to learn more about electric vehicles, incentives, the technology of installing chargers, and the role of the city.
- Respondents ranked the following criteria for how the City should prioritize charging locations (1 highest, 7 lowest):
    1. In auto-dependent neighborhoods (lack of transit, walk, bike options)
    2. Near arterial roads, highways, and commute corridors
    3. Access for low-income residents, seniors, Black, Indigenous, and People of Color (BIPOC)
    4. Near residents' homes
    5. Access to renters and multi-unit communities
    6. Near major workplaces
    7. Commercial areas, near shopping centers, restaurants, doctors' offices, tourist destinations.

Survey participants provided a variety of feedback and recommendations for EV plan priorities and policies. Examples of community comments include:

[78] Resident and Visitor Survey Results: https://www.rockvillemd.gov/DocumentCenter/View/55944/Survey_Responses_Report_Modified-for-Posting

- "There are currently two chargers in my building which need to be shared among 15 floors of residents. With the recent increase in popularity of electric cars, this is simply not enough. How can we incentivize buildings like mine to increase the number of available chargers?"
- "The need is now! Commercial areas and destinations like shopping centers should be prioritized."
- "Please help HOAs install them - especially smaller ones. Also consider working with churches."
- "Work with MCPS to add chargers at schools that staff can use during the day and then community members without driveways can use in evenings and weekends."
- "Why don't more public parking lots have solar canopies with EV chargers?"
- "The City should develop a process for considering and issuing permits to homeowners who don't have a driveway and who want to install an EV charger in the right of way in front of their home."
- "Have as many accessible chargers as possible!"
- "Please remember the renters and the working class."
- "Add charging stations to ALL Rockville facilities/buildings including Swim Center, Jury parking lot, Courthouse, more at Town Square."

Property Owner's Survey Results

There were eight responses to the Organizations and Large Property Owners survey. Six represented HOAs or neighborhood associations, one represented a multi-unit property, one represented an office, and one represented retail. Only two had installed a charger, but two others are exploring options. Survey results are summarized below, complete survey results are available on the plan's public engagement website.[79]

The top barriers to installing chargers were cost, electricity access or capacity, and management of charging stations and infrastructure.

Other barriers, selected once or more, included:

- Parking configurations
- Long-term operating and maintenance
- Operating costs
- Permitting and zoning
- Space constraints
- Managing low or high usage patterns
- Parking and ADA requirements
- Supply chain constraints

Comments identified the following needs:

- Policies for residents running cords over sidewalks
- Charging stations on city-owned property to support small condo associations
- Financial and technical support for HOAs especially given Maryland's law requiring a certain percentage in reserves

[79] Organizations and Larger Property Owners/HOA Survey results: https://www.rockvillemd.gov/DocumentCenter/View/55943/EV_Survey_Responses_Report_Organizations

- Serving charging needs for units without garages

Employee Survey Themes

The Rockville City Employee Electric Vehicle Survey received 116 responses and found the following:

- 95% report driving alone to work 2-5 days per week.
- 7% own an EV and 19% plan to own one soon. One-third of respondents were not interested in owning an electric vehicle.
- About 54% would likely be able to charge at home but the remaining 46% would need to rely on other workplace or public charging networks.
- About 71% of employee survey respondents said that charging at work might increase the probability that they might purchase or lease an electric vehicle.
- City Hall was indicated by 70 respondents as the main parking location for employees' personal vehicles. Other employee parking locations included Rothgeb Maintenance Facility (17), Swim and Fitness Center (16), Civic Center Park (16), Lincoln Park Community Center (8), Thomas Farm Community Center (8), Twinbrook (8), Police Station (7).

The survey indicated an interest in increasing charger availability at or near work to support City employee commute via EVs. With limited parking space availability at City facilities to meet fleet, employee and public charging demands, the city may consider opportunities for dual-use stations where the public or employees could utilize the charging infrastructure during the day and fleet could charge at night. Management software and oversight would be needed to ensure fleet charging is available.

Feedback from In-Person and Virtual Engagement Sessions

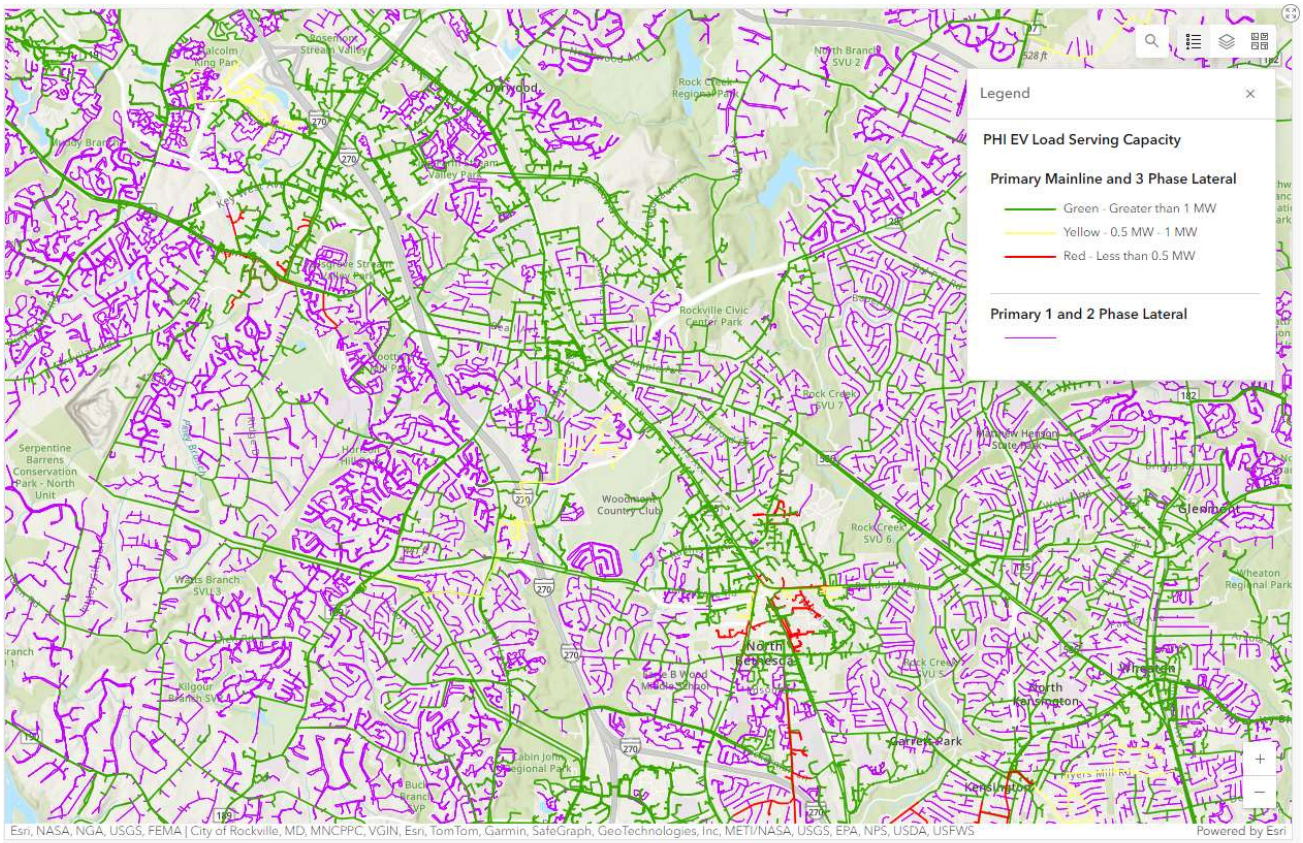
In-person information booths were held at Twinbrook Community Recreation Center and Lincoln Park Community Center. These sessions revealed that many residents were curious about how electric vehicles work and their reliability. In addition, developing familiarity in new transportation technologies and building relationships with trusted community leaders were cited as needs. Including these aspects in future outreach efforts will improve implementation of the EV Readiness Plan.

Feedback from virtual engagement sessions tend to involve more EV experienced drivers. Participants supported the development of EV charging policies for housing units without garages or driveways; support for expanding charging to HOA, townhouses or multi-unit buildings with shared parking; requirements to ensure charging infrastructure was functional for different connector types and reliable; support for simplifying access to public charging by reducing the need to download multiple charging apps.

Appendix C: Electric Utility Capacity

Pepco, Delmarva Power and Light Company and Atlantic City Electric (PHI) provide an online load capacity map to represent areas on the distribution grid where there is reasonable capacity to accommodate electric vehicle charging infrastructure and other load sources with lower probability of necessitating extensive equipment upgrades or line extensions that would add cost or time to projects. The map in Figure 29 shows general areas where load capacity may be coming constrained and could require system upgrades to accommodate new load project connections. Three-phase power is shown with green, yellow, and red lines. Phase 1 and 2 lateral power is shown with the magenta lines. One key difference between single-phase vs. three-phase is that a three-phase power supply better accommodates higher loads. Commercial and industrial facilities usually use a three-phase supply. Residential homes are usually served by a single-phase power supply. Areas served by magenta, would more likely require system upgrades for load demands greater than 100 kW, such as potentially required by Level 3 DC fast chargers. Residential Level 1 and 2 chargers would not likely trigger capacity upgrades.[80]

Figure 29. Exelon Utilities Available Load Capacity Map



[80] Retrieved on 8/6/2024 from: https://exelonutilities.maps.arcgis.com/apps/dashboards/5bbc65640e0749a8a3f391af5f9188b4

Appendix D: List of Public and Commercial Private EV Charging Stations in Rockville (2023)

(as of October 2023, retrieved from AFDC https://afdc.energy.gov/stations/#/find/nearest and Plugshare https://www.plugshare.com/)

Station Name	Street Address	Type	Level 2 Ports	DCFC Ports	Total Ports	Network	Public/ Private	Private Use
Montgomery College North Garage	North Campus Dr	Montgomery College	18		18	Non-networked	Private	Students/Staff
MOM's Organic Market – Gaithersburg	10 Upper Rock Circle	Retail & Entertainment	2		2	Blink	Public	
Montgomery County Council Building 1	100 Maryland Ave	County Fleet	2		2	ChargePoint	Private	Fleet
Montgomery County Council Building 2	100 Fleet St	County Fleet	2		2	ChargePoint	Private	Fleet
Montgomery County Council Building 3	100 Fleet St	County Fleet	2		2	ChargePoint	Private	Fleet
Montgomery County Executive Office Building	101 Monroe St	County Fleet	2		2	ChargePoint	Private	Fleet
Rockville City Hall Bouic House	126 S Washington St	City Fleet	3		3	ChargePoint	Private	Fleet
Woodley Gardens Shopping	1101 Nelson St	Retail & Entertainment	1	1	2	EVgo	Public	
Ingleside at King Farm	1050 Gaither Rd	Health and Medical	2		2	Blink	Private	Employees, guests, residents
The Tower Building	1101 Wootton Parkway	Office	5		5	Blink	Public	
Audi Rockville	1125 Rockville Pike	Auto Dealer	2		2	Blink	Private	Customers
Kanso Twinbrook	12503 Ardennes Ave	Office	1		1	Non-networked	Private	Employees
Kanso Twinbrook	12504 Ardennes Ave	Office		1	1	Tesla	Private	
Montgomery County Fleet	1283 Seven Locks Rd	County Fleet	2		2	ChargePoint	Private	Fleet
BMW of Rockville	1300 Rockville Pike	Auto Dealer	2		2	Non-networked	Private	Customers
Montgomery County Health and Human Services	1301 Piccard Dr	County Fleet	4		4	Non-networked	Private	Employees

Station Name	Street Address	Type	Level 2 Ports	DCFC Ports	Total Ports	Network	Public/ Private	Private Use
Psomagen	1330 Piccard Dr	Office	1		1	Non-networked	Private	Employees, fleet
Kaiser Shady Grove Medical Center	1396 Piccard Drive	Health and Medical	4		4	Blink	Public	
The District	1370 Piccard Dr	Retail & Entertainment	1		1	Non-networked	Private	Employees
Irvington Center	1416 Piccard Dr	Retail & Entertainment	1		1	Blink	Public	
Falls Grove Office Center	14955 Shady Grove Rd	Office	1		1	Blink	Public	
Fallsgrove Plaza	14995 Shady Grove Rd	Retail & Entertainment	2		2	Blink	Public	
355 Toyota CT4000	15625 Frederick Rd	Auto Dealer	2		2	ChargePoint	Private	Customers
Viva Creative Studio	168 Rollins Ave	Retail & Entertainment		1	1	Tesla	Private	Employees
WESTAT I	1600 Research Blvd.	Office	2		2	Blink	Public	
WESTAT II	1600 Research Blvd.	Office	3		3	Blink	Public	
WESTAT III	1600 Research Blvd.	Office	2		2	Blink	Public	
WESTAT IIII	1600 Research Blvd.	Office	3		3	Blink	Public	
1700 Research	1700 Research Blvd	Office	2		2	Non-networked	Public	Public
Galvan at Twinbrook	1801 Chapman Ave	Multi-Unit Dwelling	2		2	Blink	Public	
1801 Rockville Pike	1801 Rockville Pike	Office	2		2	Blink	Public	
Research Boulevard (Charging Stations)	1803 Research Blvd	Office	4		4	Blink	Public	
JLB Builder Escher 1	1900 Chapman Ave.	Multi-Unit Dwelling		2	2	ChargePoint	Public	
JLB Builder Escher 2	1900 Chapman Ave.	Multi-Unit Dwelling		2	2	ChargePoint	Public	
Rockville Town Square - Tesla Supercharger	333 Hungerford Dr.	Mixed Use		8	8	Tesla	Private	

Station Name	Street Address	Type	Level 2 Ports	DCFC Ports	Total Ports	Network	Public/ Private	Private Use
2000 Tower Oaks	2000 Tower Oaks Blvd	Office	2		2	Blink	Public	
Park Plaza	2099 Gaither Rd	Office	4		4	Blink	Private	Residents
ExecuSuites I-270	2275 Research Blvd	Hotel	2		2	Blink	Private	Guests
King Farm Village Center	302 King Farm Blvd	Retail & Entertainment	2		2	Volta	Public	
Post Fallsgrove	302 Prettyman Dr	Multi-Unit Dwelling	3		3	Non-networked	Private	
Post Fallsgrove	302 Prettyman Dr	Multi-Unit Dwelling		3	3	Tesla	Private	
Ansel RTC Phase II#4	33 Monroe St	Mixed Use	2		2	ChargePoint	Public	
Ansel Station2	33 Monroe St	Mixed Use	2		2	ChargePoint	Public	
Rockville Town Square - Garage A	330 Hungerford Dr	Mixed Use	1		1	Blink	Public	
Rockville Metro Plaza, Rockville MD	378 Maryland 355	Mixed Use	2		2	Volta	Public	
Rock Terrace School	390 Martins Ln	County Public	4		4	Shell Recharge	Public	
Rockville Town Center	44 Maryland Ave	Mixed Use	4		4	Blink	Public	
Redland Center	520 Gaither Rd	Office	4		4	Non-networked	Private	
The Terano Apartments	5720 Fishers Ln	Multi-Unit Dwelling	2		2	ChargePoint	Public	
The Terano Apartments	5720 Fishers Ln	Multi-Unit Dwelling	2		2	ChargePoint	Public	
The Alaire	5750 Fishers Ln	Multi-Unit Dwelling	2		2	Blink	Public	
Jefferson Plaza	600 Jefferson Plaza #100	Office	2		2	ChargePoint	Private	Employees
Giant Food - Hungerford	625 Hungerford Dr	Retail & Entertainment	2		2	Volta	Public	
Pepco - Thomas Farm Community Center	700 Fallsgrove Dr	City Public	2	1	3	Shell Recharge	Public	

Station Name	Street Address	Type	Level 2 Ports	DCFC Ports	Total Ports	Network	Public/ Private	Private Use
Ingleside at King Farm	701 King Farm Blvd	Multi-Unit Dwelling	2		2	Non-networked	Private	Employees, guests, residents
One/Two Irvington Center	702 King Farm Blvd	Office	1		1	Blink	Private	Employees
Twin Oaks Shopping Center	711 Hungerford Dr	Retail & Entertainment	2		2	Blink	Public	
CDJR Rockville Ct4K	755 Rockville Pike	Auto Dealer	2		2	ChargePoint	Private	Customers
Three Irvington Center	800 King Farm Blvd	Office	1		1	Blink	Public	
805 King Farm	805 King Farm Blvd	Office	1		1	Blink	Public	
Ourisman Chevrolet	807 Rockville Pike	Auto Dealer	4	2	6	Unknown	Private	Customers
HTMI LLC	838 Rockville Pike	Office	4		4	Blink	Public	
Carver Educational Services	850 Hungerford Dr	County Public	4		4	Evsmart	Public	

Appendix E: EV-Pro Lite Methodology for Estimating future EV Charging Port Needs

The EVI-Pro Lite tool uses a set of variables to determine the amount of EVSE infrastructure needed to support EVs, including:

- Number of EVs that need support
- Vehicle mix of PHEVs and BEVs
- Support provided for PHEVs
- Percentage of drivers with access to home charging

The following EVI-Pro Lite assumptions were used for the City of Rockville's EVSE needs assessment:

- Vehicle mix
  - BEV Sedans: 42%
  - BEV C/SUVs: 39%
  - BEV Pickups: 13%
  - BEV Vans: 6%
  - PHEV Share of BEVs: 34%
- Full support provided for PHEVs
- Percent of drivers with access to home charging: 75%

The inputs above were all default assumptions from EVI-Pro Lite, except for support provided for PHEVs and the percentage of drivers with access to home charging.

EVI-Pro Lite assumes partial support for PHEVs and that 98% of EV drivers have access to home charging. This analysis assumes full support for PHEVs and that 75% of EV drivers have access to home charging to ensure sufficient support to meet anticipated charging demand. The results from the City of Rockville EV projection scenarios were applied to benchmark years 2025, 2030, 2035, 2040, and 2045 to determine the number of EVs deployed in the Rockville region.[81]

[81] As it is structured, EVI-Pro Lite will only be able to project EVSE needs for scenarios in which the EVs make up less than 10% of projected light duty vehicles for the area. In order to model EVSE needs for higher proportions of EVs, projected EV registration values were divided by 10 for a "small scale" projection input into EVI-Pro Lite. EVI-Pro Lite's projected "small scale" EVSE figures were then multiplied by 10 for a "full-scale projection" of EVSE needs. This type of adjustment is commonly done when the EVI-Pro Lite tool is used for local government EV infrastructure planning studies.

Appendix F: EV and EVSE Funding Resources and City of Rockville Participation Status

For up-to-date application timelines for federal programs, see Build.gov. At the time of the plan's publication, the future of federal incentives is uncertain.

Funding Entity	Relevant Eligible Entities	Program	Rockville Status[82]	Description
U.S. DOT	States, metropolitan planning organizations, local governments, political subdivisions	Alternative Fuel Corridor (AFC) Grants	*City of Rockville (COR) benefits indirectly*	U.S. DOT must establish a competitive grant program to strategically deploy publicly accessible electric vehicle charging and hydrogen, propane, and natural gas fueling infrastructure along designated DOT Federal Highway Administration AFCs. Awards may vary.
U.S. DOT FTA	State and local governments that allocate funds to or operate fixed-route bus services	Bus and Bus Facilities Grants	*Monitoring: COR may not be eligible*	To replace, rehabilitate, and purchase buses, vans, and related equipment, and to construct associated bus facilities, including low- or zero-emission vehicles or facilities. Additionally, funding may be requested for workforce development training or training at the National Transit Institute. Awards may vary.
U.S. DOT	State government	Carbon Reduction Program (CRP)	*COR awarded funding for four public charging station locations*	Eligible state funding activities include truck stop electrification, diesel engine retrofits, vehicle-to-infrastructure communications equipment, public transportation, port electrification, and deployment of alternative fuel vehicles, including charging or fueling infrastructure and the purchase or lease of zero emission vehicles. Funding can also be used to support the development of state carbon reduction strategies, in consultation with designated metropolitan planning organizations, by November 15, 2023. Awards may vary, estimated 5-year total funding for Maryland of $94,377,768.

[82] Status as of the publishing of this document.

Funding Entity	Relevant Eligible Entities	Program	Rockville Status[82]	Description
U.S. DOT	States, metropolitan planning organizations, local governments, and political subdivisions	Charging and Fueling Infrastructure Grants	*Applied with two partners in 2023; awarded 4 DCFC at Swim Center. Monitoring multi-unit charger opportunities.*	To fill gaps in publicly accessible electric vehicle charging and hydrogen, propane, and natural gas fueling infrastructure in community locations, such as parking facilities, public schools, public parks, or along public roads. Awards may vary, up to 80% of project costs for both development phase planning activities and the acquisition and installation of charging infrastructure.
U.S. EPA	School districts, state and local government programs, non-profit organizations, and eligible contractors	Clean School Bus	*COR benefits indirectly*	This program provides funding to eligible applicants for the replacement of existing school buses with clean, alternative fuel school buses or zero-emission school buses. EPA will prioritize funding for high-need local education agencies; low income, rural and tribal schools; and, applications that cost share through public-private partnerships, grants from other entities, or school bonds. Awards may vary, up to 100% of the cost of the replacement bus and charging equipment.
U.S. DOT	State departments of transportation (DOTs), local governments, and transit agencies	Congestion Mitigation and Air Quality (CMAQ) Improvement Program	*COR may benefit*	Eligible activities include transit improvements, travel demand management strategies, congestion relief efforts (such as high occupancy vehicle lanes), diesel retrofit projects, alternative fuel vehicles and infrastructure, and medium- or heavy-duty zero emission vehicles and related charging equipment. Projects supported with CMAQ funds must demonstrate emissions reductions, be located in or benefit a U.S. Environmental Protection Agency-designated nonattainment or maintenance area and be a transportation project. Awards may vary.
U.S. IRS	Residents	Electric Vehicle (EV) and Fuel Cell Electric Vehicle (FCEV) Tax Credit	*Community Opportunity*	Eligible vehicles must have a capacity of at least seven kilowatt-hours (kWh). The amount of the credit depends on whether the vehicle meets certain critical minerals ($3,750) and battery component requirements ($3,750) for a total possible tax credit of $7,500.

Funding Entity	Relevant Eligible Entities	Program	Rockville Status[82]	Description
U.S. IRS	Businesses and tax-exempt organizations	Commercial Electric Vehicle (EV) and Fuel Cell Electric Vehicle (FCEV) Tax Credit	*Community Opportunity*	Eligible vehicles with a gross vehicle weight rating (GVWR) below 14,000 pounds (lbs.) must have a battery capacity of at least seven kilowatt-hours (kWh) and vehicles with a GVWR above 14,000 lbs. must have a battery capacity of at least 15 kWh. Tax credit amount for EVs and FCEVs are 30% of the purchase price and may not exceed $7,500 for vehicles under 14,000 lbs. and $40,000 for vehicles above 14,000 lbs.
U.S. DOT	States, metropolitan planning organizations that serve urbanized areas with a population of more than 200,000 individuals, local governments, and political subdivisions	Freight Efficiency and Zero-Emission Vehicle Infrastructure Grants	*COR benefits indirectly*	Eligible projects include but are not limited to developing zero-emission vehicle infrastructure and supporting the installation of electric vehicle charging stations along the National Highways System. Awards may vary, $80M in total funding over 4 years
U.S. EPA	State governments, municipalities, and non-profit school transportation associations	Heavy-Duty Zero Emission Vehicle (ZEV) and Infrastructure Grants	*Monitoring for feasible models*	Eligible project costs include: - The incremental cost of a Class 6 or 7 electric vehicle - Capital, installation, operation, and maintenance costs of ZEV charging or refueling infrastructure - Workforce development and training programs to support the maintenance, charging, fueling, and operation of ZEVs - Planning and technical activities that support the adoption and deployment of ZEVs. Awards may vary, up to 100% of total project costs
U.S. DOT FTA	Local and state government entities	Low and Zero Emission Public Transportation Funding	*Rockville benefits indirectly*	For the purchase or lease of low- or zero-emission transit buses, in addition to the acquisition, construction, or lease of supporting facilities. Additionally, funding may be requested for workforce development training or training at the National Transit Institute. Awards may vary, $1.2 billion in total funding available for FY 2023

Funding Entity	Relevant Eligible Entities	Program	Rockville Status[82]	Description
U.S. Joint Office of Energy and Transportation	State government	National Electric Vehicle Infrastructure (NEVI) Formula Program	*Monitoring*	For EV chargers located along designated FHWA AFCs. Funding for the acquisition, installation, and network connection of EV charging stations to facilitate data collection, access, and reliability; proper operation and maintenance of EV charging stations; and long-term EV charging station data sharing. Awards up to 80% of project costs, $62,818,576 allocated to Maryland for FY 2022-2026
U.S. DOE	Public K-12 School Facilities	Public School Energy Program	*Rockville benefits indirectly*	Competitive grant program for energy improvements upgrades, including installation of alternative fuel vehicle (AFV) fueling or charging infrastructure on school grounds and purchase or lease AFVs. Awards up to $80M, $500M program total
U.S. DOT FTA	Local and state, government entities; public transportation providers; private and non-profit organizations; and higher education institutions	Public Transportation Research, Demonstration, and Deployment Funding	*Rockville benefits indirectly*	Research, demonstration, and deployment projects involving low or zero emission public transportation vehicles. Eligible vehicles must be designated for public transportation use and significantly reduce energy consumption or harmful emissions compared to a comparable standard or low emission vehicle. Awards may vary; $193M in total funding through 2026.
U.S. DOE	State government	State Carbon Reduction Program	*Monitoring*	For states to reduce transportation emissions with funding eligible for EVs, charging infrastructure and more.
U.S. DOE EERE	State government	State Energy Program (SEP) Funding	*Rockville benefits indirectly*	Eligible state funding activities include truck stop electrification, diesel engine retrofits, vehicle-to-infrastructure communications equipment, public transportation, port electrification, and deployment of alternative fuel vehicles, including charging or fueling infrastructure and the purchase or lease of EVs. Estimated 5-year total funding for Maryland of $94,377,768.
U.S DOE	U.S. territories, state, local, and tribal governments	Transportation Energy Efficiency Grants	*Monitoring*	Funding for zero-emission transportation and associated infrastructure financing programs. Awards may vary; $550M program total

Funding Entity	Relevant Eligible Entities	Program	Rockville Status[82]	Description
U.S. DOE	U.S. territories, state, local, and tribal governments	Energy Efficiency Community Block Grant	*COR installing solar at Lincoln Park CC and electric lawn equipment trailer*	The City of Rockville is eligible for up to $134,050 in formula funding to implement strategies to reduce energy use, cut carbon emissions, and improve energy efficiency. Through the equipment voucher program the city will receive rebates to install rooftop solar on Lincoln Park Community Center and to purchase a landscape trailer configured to charge electrified landscape equipment.
U.S. DOT	State and local governments, including transit agencies, metropolitan planning organizations, and other political subdivisions of state or local governments	Zero Emission Vehicle Infrastructure and Advanced Vehicle Grants	*Monitoring*	Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grant program provides federal financial assistance to eligible projects, including EVs and the installation of zero-emission vehicle infrastructure. Awards may vary, $1.5B in total funding
Maryland Department of Environment (MDE)	Non-profits, private companies, and government agencies	EV Workplace Charging Grant	*State funds expended*	For costs directly attributable to the design, installation, and operation of eligible workplace EV charging stations. Awards up to $4,500 per Level 2 EV charger and $600,000 per applicant.
Maryland Energy Administration (MEA)	School districts, nonprofits, commercial entities, corporations, and local and municipal governments	Alternative Fuel Vehicle (AFV) Grants	*COR monitoring*	For fleets for the retrofit or purchase of new AFVs. Awards may vary, may cover up to 100% of the incremental AFV cost.
MEA	Local governments	Clean Energy Grants	*COR awarded for fleet chargers at Rec Services and Police Station*	For the purchase of new EVs and EV charging stations. Awards up to $7,500 per vehicle and $6,000 per EV charging station, communities already participating in the MSEC program may receive a maximum award of $55,000 per project

Funding Entity	Relevant Eligible Entities	Program	Rockville Status[82]	Description
MEA	State, county, or Municipal government entities	Solar Canopy EV Infrastructure Grant	*Rockville awarded 2 grants in 2023*	For the planning and installation of solar arrays on existing public facilities and infrastructure. Awards up to $125,000.
MEA	Businesses, nonprofits, and units of state and local governments	Commercial EVSE Rebate	*Rebates received for 4 fleet chargers; continue to monitor*	Rebate for 40% of purchase and installation costs. Up to $4000 per charger. Rebates will be issued on a first-come, first-served basis as funds are available. This is a reimbursement program and rebate recipients must provide their own funding to cover expenses as they are incurred. Applications may be submitted to MEA only after the EVSE has been acquired, installed, is operational, and costs have been paid in full.
MEA	Local governments and municipal fleets	Clean Fuels Technical Assistance Program	*Rockville awarded in FY21*	Provides technical assistance for municipal fleets to evaluate alternative transportation fuel options.
Pepco	Small businesses and nonprofits	Workplace Charger Rebate	*Community opportunity*	50% rebate on the cost of equipment, warranty and installation for eligible Level 2 chargers. Up to $5,000 per L2 charger
Pepco	Multi-unit property owners and condo associations	Multi-unit Property Rebate	*Community opportunity*	100% of the cost of eligible Level 2 charging equipment and 100% of the installation costs up to $15,000 per charging station (limit of 2 charging stations).
Pepco	n/a	Public Charging Network	*2 chargers installed and 14 chargers planned in Rockville*	Partnership with Pepco on siting publicly accessible EV chargers

Funding Entity	Relevant Eligible Entities	Program	Rockville Status[82]	Description
Montgomery County EV Pledge and Purchasing Co-op	Residents	EV Purchasing Co-op	*Community opportunity – Rockville promotes*	Provides discounts through a partnership with dealerships in the area
Montgomery County Green Bank	Residents, commercial businesses, and property owners	Renewable Energy Financing	*Community opportunity – Rockville promotes*	Preferred interest rates of 5%, which are below the offering of the lenders in the market. Up to 100% project financing with no prepayment penalties. Two loan options: - Short term (12 to 18 month) – Loans to cover the 30% 2022 income tax credit-eligible portion of the project. This loan has no current payments and is designed to be repaid in full after the homeowner obtains its tax benefit. - Long term, fixed rate (12 and 15 year) – Loan to cover up to 74% of the project costs. This loan has level monthly payments for the term of the loan. Not a mortgage or equity line so no additional debt on the property.
Solar United Neighbors	Residents	Solar Co-op/Solar Switch	*Community opportunity- Rockville partners and promotes*	The Solar and EV Charger Co-op is available seasonally to residents of Montgomery County and allows residents to leverage bulk purchasing power for substantial discounts on solar, with battery storage and home EV charger options.

Appendix G: Planning Area Focused EV Charging Mapping Tool

Rockville's Comprehensive Plan recognizes the unique neighborhoods and districts that make up the city, provides a summary of their distinctive characteristics and key issues, and identifies area-specific policies and recommendations for zoning changes, city projects, and topics for additional study. An online mapping tool is being developed that will allow a user to Focus on smaller parts of the city allowing a finer-grained examination of topics. The tool will combine the analysis presented in Section 5: EV Charging Needs Assessment for each of the 17 planning areas in the Comprehensive Plan. This allows a more detailed geographic focus to summarize EV charging needs and opportunities to comprehensively serve housing, equity, workforce, destination and travel charging needs.

Under development, Beta version available at:
https://rockvillemd.maps.arcgis.com/home/item.html?id=76b1c74b0008472f9b9c73bcf2fd2024 .

The planning areas (PA) outlined in the Comprehensive Plan are as follows:

PA 1 Rockville Town Center
PA2 East Rockville
PA3 Hungerford, New Mark Commons and Lynfield
PA4 West End and Woodley Gardens East-West
PA5 Woodley Gardens and College Gardens
PA6 Lincoln Park
PA7 Montgomery College Area
PA8 Twinbrook and Twinbrook Forest
PA9 Rockville Pike
PA10 Montrose and North Farm
PA11 Woodmont
PA12 Tower Oaks
PA13 Potomac Woods, Orchard Ridge and Falls Ridge
PA14 Rockshire and Fallsmead
PA15 Fallsgrove and Research Boulevard
PA16 King Farm and Shady Grove
PA17 Southlawn and RedGate

Appendix H. Comprehensive City-Hosted EV Charger Planning Table (Updated 1/1/2025)

Status and Funding Sources of Fleet Charging and Public Charging at City-Owned Facilities and Rights of Way

Site Name	Address	Site Type	Site Description	Funding Sources/ Partnerships	Level 2 Ports	DCFC Ports	Category	Status
Water Treatment Plant	Potomac, MD	City Facility	Outside the city. Fleet vehicles.	CIP	1 portable		Fleet	Complete
City Hall/ Vinson St.	Vinson Street	Right-of-way	Near employment, destination and multi-unit residential developments	Pepco	2		Public	2 Complete
City Hall/ Fleet	111 Maryland Ave.	City Facility	High fleet use location	CIP	9		Fleet	3 Complete 6 Design
Rothgeb Maintenance Facility (Gude)	14625 Rothgeb Dr.	City Facility	City's Maintenance Facility, to serve light, medium, and heavy-duty City Fleet vehicles, employees, and the public	CIP + MEA	6	TBD	Fleet/Public	2 Complete 4+ Planning Part of Space Plans
Thomas Farm Community Center	700 Fallsgrove Drive	Community Facility	Located near multi-unit residential development	Pepco	2	2	Public	Complete
Mattie J.T. Stepanek Park	1800 Piccard Drive	Community Facility	Located near multi-unit residential development	Pepco	4		Public	Complete
Fallsgrove (Prettyman Drive)	312 Prettyman Dr	Right-of-way	Located near multi-unit residential development	Pepco	3		Public	Complete
Twinbrook Station (Bouic Ave.)	1800 Bouic Ave	Right-of-way	Located near multi-unit residential development	Pepco	4		Public	Complete
Recreation Services Building	Near Civic Center	City Facility	Serves recreation vehicles	CIP + MEA	4		Fleet	Design
Police Station	2 W Montgomery Ave.	City Facility	Serves Police vehicles	CIP	1		Fleet	Design
6 Taft Court	6 Taft Court	City Facility	Office building undergoing renovations will be future offices for emergency operations center, public works, and recreation and parks staff.	CIP + MEA	4-6		Fleet/Public	Design

Site Name	Address	Site Type	Site Description	Funding Sources/ Partnerships	Level 2 Ports	DCFC Ports	Category	Status
Rockville Swim and Fitness Center	355 Martins Lane	Community Facility	Located in the parking lot of a community recreational facility located within one mile of a highway exit of a designated Alternative Fuel Corridor	CFI Grant (corridor)		4	Public	Planning
Senior Center	115 Carnation Dr.	Community Facility	Located in the parking lot of a community recreational facility serving residents aged 60 and older. Chargers would serve members and visitors, and employees.	CIP + MDOT Carbon Reduction Grant + County	4		Fleet/Public	Planning
Blandford Street ROW	504 Blandford St.	Right-of-way	Located in right of way near Park Terrace Apartments, multi-unit apartment buildings.	CIP + MDOT Carbon Reduction Grant + County	2		Public	Planning
Rockville Civic Center Park	603 Edmonston Dr., Avery Rd.	Community Facility	Located in the parking lot of a community recreational and historic property and rental facility, a regional destination	CIP + MDOT Carbon Reduction Grant + County	4		Public	Planning
East Jefferson ROW	1647 E Jefferson St.	Right-of-way	Located on right of way near Rollins Park Apartments, a multifamily residential development	CIP + MDOT Carbon Reduction Grant + County	2		Public	Planning
Charles Street/MacArthur Dr. ROW	301 Charles St/McArthur Dr.	Right-of-way	Located in right of way near East Rockville neighborhood near several multi-unit apartment buildings.	CIP + MDOT Carbon Reduction Grant + County	2		Public	Planning
College Parkway/Yale Place ROW	438 College Parkway	Right-of-way	Located in right of way near Scarborough Square, a low-income residential development managed by Rockville Housing Enterprises.	CIP + MDOT Carbon Reduction Grant + County	2		Public	Planning
RHE David Scull Courts	1201 1st Street	Residential	A low-income housing development managed by Rockville Housing Enterprises	Citizen Energy/MCEC	4		Residents	Planning

Site Name	Address	Site Type	Site Description	Funding Sources/ Partnerships	Level 2 Ports	DCFC Ports	Category	Status
RedGate	14500 Avery Rd.	Community Facility	Destination charging in equity emphasis area	TBD	TBD		Public	Plan in park design
Parkside Landing Apartments	735 Monroe St.	Residential	A low-income housing development managed by Rockville Housing Enterprises	TBD			Residents	TBD
Lenmore Avenue ROW	708 Lenmore Ave.	Right-of-way	On right-of-way near historically Black Lincoln Park neighborhood to serve homes lacking driveways and garages.	TBD			Public	Evaluate feasibility
Twinbrook Community Recreation Center	12920 Twinbrook Parkway	Community Facility	Located in facility near multi-unit residential development and homes lacking driveways and garages.	TBD			Public	Evaluate feasibility – limited parking/conflict with utilities and trees
Croydon Creek Nature Center	852 Avery Rd.	Community Facility	Parking lot of environmental education facility.	TBD			Public	Evaluate feasibility – limited parking
Lincoln Park Community Center	357 Frederick Ave.	Community Facility	Located near the historically Black Lincoln Park neighborhood to serve employees, patrons, and nearby homes lacking driveways and garages.	TBD			Public	Evaluate feasibility - limited parking
Dogwood Park	800 Monroe St.	Community Facility	Recreational area that's a regional destination located in Equity Emphasis Area	TBD			Public	Evaluate feasibility
Elwood Smith Community Center	601 Harrington Rd.	Community Facility	Community facility that could supplement nearby homes without driveways.	TBD			Public	Evaluate feasibility
Montrose Community Center	451 Congressional Lane	Community Facility	Located near several multi-unit buildings.	TBD			Public	Evaluate feasibility – limited parking
Rockcrest Community Center	1331 Broadwood Dr.	Community Facility	Small community center in Twinbrook neighborhood.	TBD			Public	Evaluate feasibility – limited parking
Summary					**>44 ports**	**> 6 ports**	**6 fleet sites 10-25 public sites**	

Appendix I. Rockville EV Readiness Action Implementation Priorities

***Acronyms:**

CAO=City Attorney's Office
CMO=City Manager's Office
CPDS=Community Planning and Development Services
DPW=Department of Public Works
Finance= Department of Finance
HCD=Department of Housing and Community Development
HSAC=Human Services Advisory Commission
IT=Department of Information Technology
M&C=Mayor and Council
M.Co. = Montgomery County
MD=Maryland
MML=Maryland Municipal League
PIO=Public Information Office
R&P=Recreation and Parks
REC=Rockville Environment Commission
REDI=Rockville Economic Development Incorporated

Goal		Action	Target/Benefit					Implementation*				
			Housing Single-Unit	Housing Multi-Unit	Workplace/ Fleet	Destination	Travel	Estimated City Investment	Priority	Lead	Partners	Timeframe
EV Ready Codes, Policies and Procedures	1.1.1	Update Chapter 5, Building Code and Property Maintenance Regulations (Chapter 5)	+	+	+	+	+	Staff resources	Low	CPDS	DPW, CAO	Phase 1 completed 2024; future updates
	1.1.2	Update the Forest and Tree Preservation Ordinance (Chapter 10.5)		+	+	+	+	Staff resources	Medium	CPDS	DPW, CAO, R&P	Short-term (0-3 years)
	1.1.3	Update the Streets, Roads, Rights-of-Way, and Public Improvements Code (Chapter 21)	+	+				Staff resources	High	DPW	CPDS, CAO	Short-term (0-3 years)
	1.1.4	Update the Traffic Code (Chapter 23)		+	+	+	+	Staff resources	Medium	DPW	Police, CAO, CPDS, Finance	Short-term (0-3 years)
	1.1.5	Update the Zoning Ordinance (Chapter 25)		+	+	+	+	Staff + Consulting resources	High	CPDS	Consultant, DPW, CAO	Short- term (coordinate with Zoning Ordinance Rewrite)
	1.2.1	Develop a simplified EV charging application and guide to streamline plan review, permitting and inspections	+	+	+	+	+	Staff + Consulting resources + Software updates	High	CPDS	DPW, CAO R&P, IT	Phased in the short and medium term
	1.2.2	Develop right-of-way EV charging guidelines and a streamlined approval process to serve residents without access to garages, driveways or dedicated parking spaces	+	+				Staff + Consulting resources	High	DPW	CPDS, R&P	Phased in the short and medium term
	1.2.3	Establish design standards for public EV charging stations		+	+	+	+	Staff + Consulting resources	Medium	CPDS	DPW, Consultant	Medium term (3-5 years)
	1.3.1	Advocate for government and utility policies and programs to support e-mobility opportunities	+	+	+	+	+	Staff + Consulting	High	CMO, M&C	DPW, REC, MML, M.Co., MWCOG	Ongoing

Goal		Action	Target/Benefit					Implementation*				
			Housing Single-Unit	Housing Multi-Unit	Workplace/ Fleet	Destination	Travel	Estimated City Investment	Priority	Lead	Partners	Timeframe
Robust and Equitable Charging Network	2.1.1	Engage with residential properties (multi-unit property owners, HOAs, civic/neighborhood associations) to expand charging access	+	+				Staff + Partners	High	DPW	PIO, HCD, CPDS, Boards and Commissions (REC, HSAC), M.Co., community partners	Ongoing
	2.1.2	Engage with commercial properties, businesses, institutions, non-profit entities, places of worship, to expand access for workplace, fleet, and destination charging			+	+	+	Staff + Partners	Medium	DPW	CPDS, PIO, REDI, Chamber of Commerce, M.Co., Pepco	TBD
	2.1.3	Coordinate with M.Co. to expand public charging		+		+	+	Staff resources	High	DPW	M.Co., CPDS, CAO	Ongoing
	2.1.4	Coordinate with Pepco to expand charging infrastructure and ensure grid capacity		+	+	+	+	Staff resources	Medium	DPW	Pepco, CAO, R&P, CPDS	Ongoing
	2.1.5	Identify City-owned property and rights-of-way in gap areas and leverage outside funding and partnerships to expand public charging infrastructure	+	+	+	+		Staff resources + CIP Funding	High	DPW	R&P, Pepco, CPDS, Grant Partners	Ongoing
	2.1.6	Promote EV infrastructure to support other e-mobility opportunities, such as e-bikes, e-scooters, EV ride-hailing, or EV car-sharing services.	+	+				Staff resources + CIP-TD 21 Funding + Partners	Medium	DPW	PIO, M.Co., MWCOG, MD	TBD

Goal		Action	Target/Benefit					Implementation*				
			Housing Single-Unit	Housing Multi-Unit	Workplace/ Fleet	Destination	Travel	Estimated City Investment	Priority	Lead	Partners	Timeframe
Clean Municipal Fleet	3.1.1	Replace eligible non-emergency light-duty fleet with electric vehicles.			+			Operating fund for lease	High	DPW	All departments with fleet	Ongoing
	3.1.2	Monitor and pilot clean technologies for medium-duty and heavy-duty vehicles			+			Operating fund for purchase	Medium	DPW	R&P	Medium to Long Term
	3.1.3	Monitor and pilot clean vehicle technologies for police and emergency vehicles			+			Staff resources + Funding	Low	Police	DPW, R&P, CMO	Medium to Long Term
	3.1.4	Monitor and pilot clean technologies for off-road equipment			+			Staff resources + Funding	Medium	R&P	DPW	Initiated and Ongoing
	3.1.5	Coordinate an interdepartmental clean fleet team for training, management			+			Staff resources	High	DPW	EV Fleet drivers	Initiated and Ongoing
	3.2.1	Implement the Electric Vehicle Charging Infrastructure Capital Improvement Program (CIP GA23) to support phased electrification of light-duty and heavy-duty fleet		+	+	+		Staff resources + CIP Funding	High	DPW	R&P, CPDS	Initiated and Ongoing
	3.2.2	Leverage outside funding and resources to support fleet EV electrification and infrastructure planning, design and installation		+	+	+		Staff resources	High	DPW	R&P, CMO, Finance, CAO, grant partners	Initiated and Ongoing
	3.2.3	Operate, maintain and manage EV charging infrastructure		+	+	+		Staff + contractor resources	High	DPW	R&P. Contractors, Partners	Initiated and Ongoing
Inclusive Public Engagement and Oversight	4.1.1	Coordinate with community partners to conduct an inclusive public education and engagement campaign on electric vehicles and charging infrastructure	+	+	+	+	+	Staff resources+ materials	High	DPW	PIO, REC, M.Co., MWCOG, community partners	Initiated and Ongoing
	4.1.2	Promote the regional electric vehicle purchasing cooperative (EVPC) to increase the scale and rate of EV adoption	+	+				Staff resources + Partners	Low	Mont. County	DPW, PIO, REC	Initiated and Ongoing
	4.2.1	Monitor and report plan progress through the Climate Action Plan annual report	+	+	+	+	+	Staff resources	Low	DPW	City, M.Co, MWCOG, Pepco	Ongoing