Electric Vehicle (EV)
Inventory & Preliminary New Location Study

August 2024

Abbreviations

AC	Alternating Current
BEBs	Battery Electric Buses
BEVs	Battery Electric Vehicles
DACs	Disadvantaged Communities
DC	Direct Current
DCFC	Direct Current Fast Charing
ESBs	Electric School Buses
ETC	Equitable Transportation Community
EV	Electric Vehicles
EVI-Pro	Electric Vehicle Infrastructure Projection Tool
FHWA	Federal Highway Administration
FCEVs	Fuel Cell Electric Vehicles
IMC	In-motion Charging
kW	kilowatts
MMMPO	Morgantown Monongalia Metropolitan Planning Organization
NREL	National Renewable Energy Laboratory
PHEVs	Plug-in Hybrid Electric Vehicles
US DOE	United State Department of Energy
US DOT	United State Department of Transportation

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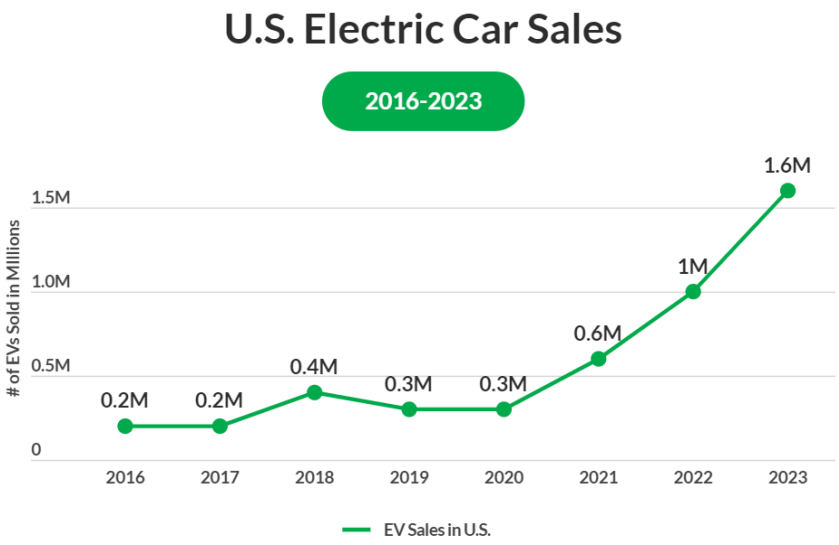
Introduction

This document is a starting point for a discussion on Electric Vehicles (EV) readiness in the Morgantown urban area, providing a preliminary understanding of the current status of and the future need for electric vehicle charging stations. It also provides information about the fundamentals of EV charging stations and related federal regulations.

Why are we doing this study?

The MMMPO is focused on creating an equitable and sustainable transportation environment for our area. Electric vehicles are becoming increasingly popular, offering a more sustainable and cost-effective way to travel.

“Electric car sales have taken off in the U.S. since 2020. About 1.6 million EVs were sold in the U.S. in 2023 — a 60% increase from the 1 million sold nationwide in 2022. The U.S. accounted for 9.7% of all new EV registrations worldwide in 2022. Globally, EV sales topped 10 million for the first time in 2022. In the first quarter of 2023, over 2.3 million electric vehicles were sold worldwide, a roughly 25% year-over-year increase.” Refer to the graphic below.



Data source: IEA.org

**from marketwatch.com based on iea.org*

Based on these stats MMMPO staff is seeing a rising need for accessibility to charging stations. We want to provide preliminary analysis so individuals have access to charging stations as they are needed. But to make the switch to electricity truly convenient, we need a robust charging station network. To be at the forefront of a sustainable transportation future, the MPO developed this study with the following in mind:

- **Environmental Benefits**: EVs produce significantly fewer emissions compared to gasoline vehicles. By understanding our charging needs, we can encourage wider EV adoption, leading to cleaner air and a healthier environment.
- **Energy Independence**: EVs rely on electricity, which can be sourced from renewable sources like solar or wind. This reduces our dependence on fossil fuels and fosters energy security.
- **Economic Growth**: The EV industry is rapidly growing. By building a robust charging infrastructure, we can attract EV-oriented businesses and create new job opportunities in the MMMPO area.

What is the purpose?

By assessing the current state of EVs and charging stations in Monongalia County, the primary purpose of this study is to forecast future demand and strategically plan for new infrastructure. Future forecasts in this study were calculated by using the Electric Vehicle Infrastructure Projection Tool (EVI-Pro) Lite provided by the U.S. Department of Energy Alternative Fuels Data Center.This ensures we have a charging network to accommodate the growing number of EVs on the road. Another purpose of this study is to provide basic information regarding EV charging stations and pertinent federal regulations.

Methodology

The recommendations made by this study fall into three categories that complement each other and provide a comprehensive view for future public EV charging station development in the MMMPO area.

EVI-Pro Analysis

The study collected data on existing EV charging stations and estimated the number of EV registrations in Monongalia County. This data was used in a needs analysis with the Electric Vehicle Infrastructure Projection Tool (EVI-Pro) Lite, an online tool from the U.S. Department of Energy's Alternative Fuels Data Center. The needs analysis was based on the local profile of Monongalia County, including cities, and categorized location types as retail, recreation centers, healthcare facilities, educational facilities, community centers, transportation facilities, neighborhoods, and offices. Future needs (2030) were projected using a similar method, with a 12% increase based on the National Renewable Energy Laboratory (NREL) national electric vehicle infrastructure needs assessment. A deficiency analysis was conducted to compare the needs with existing conditions, and locations were identified based on the deficiency analysis.

Equity Priority Locations
The study utilized online mapping tools from the USDOT and the White House Council on Environmental Quality to estimate EV charging station needs for transportation equity in Monongalia County at the census tract and block group levels. These tools included the Equitable Transportation Community (ETC) Explorer, the Electric Vehicle Charging Justice40 Map, and the Climate and Economic Justice Screening Tool.

Community Preference Locations
MPO staff identified ideal locations for public EV charging station development based on population density, housing types, and adjacent land use.

What is included?
The study includes three sections.

- Section one - EV Charging Infrastructure Basics - covers EV education, charging infrastructure, strategic location selections, and federal standards.

- Section two - Status and Need Assessment - delves into the current status of EVs and charging ports in Monongalia County, presenting data on existing infrastructure while forecasting future needs using US DOT and US DOE tools.

- Section three - Preliminary Recommendations - identifies potential locations for new charging ports to meet the rising demand for electric mobility.

In a commitment to inclusive planning, the document underscores the incorporation of public input, positioning it as a collaborative resource for ongoing research or project development in the MMMPO area. Public Input is listed in Appendix C. Staff hosted a Virtual Open House on June 25th and July 1st, and created a public survey.

EV Charging Infrastructure Basics

Vehicles and Charging Ports

Vehicle Type

Currently, there are three types of electric vehicles on the market. This Readiness Plan focuses on BEVs and PHEVs.

Battery Electric Vehicles (BEVs)

- Run on electricity only and are recharged from an external power source.
- BEVs include battery electric buses (BEBs) and electric school buses (ESBs).
- It is also referred to as an “all-electric vehicle”.

Plug-in Hybrid Electric Vehicles (PHEVs)

- Run on electricity and are recharged from an external power source.
- Incorporate a smaller internal combustion engine that can recharge the battery. When electricity is unavailable, PHEVs can run on gasoline alone.

Fuel Cell Electric Vehicles (FCEVs)

- Use the electrochemical process to convert hydrogen into electricity.
- No recharging its battery from an external source.

Charging Port Type

Level 1

- Common residential 120V alternating current (AC) outlet
- 40-50 hours to charge a light-duty BEV
- 5-6 hours to charge a PHEV
- Typical location: Home

Level 2

- 240V (in residential applications) or 208V (in commercial applications)
- 4-10 hours to charge a light-duty BEV
- 1-2 hours to charge a PHEV
- Typical location: Home, Workplace, and Public

DCFC (Direct Current Fast Charging)

- Common for heavy-traffic corridors
- 20 minutes - 1 hour to charge a light-duty BEV (80%)
- 5 - 30 minutes to charge a light-duty PHEV (80%)
- Most PHEVs currently on the market are not capable of using DCFCs.
- Typical location: Public

Electric Bus Basics

Electric buses, including BEBs and ESBs, run on electricity only and require recharging their onboard battery packs from an external power source. A type of BEB, ESBs tend to have smaller battery packs as they often operate on shorter routes with a midday break during school hours for charging.

There are three types of charging ports for BEBs. They can be installed at the storage facility or on-route.

- **Plug-in charging**: Slowest option (AC/DC, 40-350 kW), ideal for overnight depot charging due to long charge times. Faster options are emerging.

- **Wireless inductive charging**: Uses floor pads and magnetic fields (50-250 kW), offers convenience but is less common.
- **Overhead conductive (pantograph) charging**: Fastest option (165-600 kW), connects via a pantograph for quick stops at depots (5-20 min). Also used for in-motion charging (IMC) trolleybuses on limited routes.

Key considerations:

- Charging speed varies depending on technology and power level.
- Depot charging is common for slow to medium-speed options.
- Faster options like pantograph or high-power plug-in are ideal for route charging.
- Consider battery size, route lengths, and charging needs when choosing infrastructure.

Location Selections

General Considerations

The following are major factors to consider when choosing locations for public EV charging locations.

- Land availability and cost: Finding suitable land with the necessary infrastructure can be challenging in some areas. Ideal locations often have the following characteristics:
    - Areas or locations with underserved communities
    - Proximity to public transportation and travel corridors
    - Proximity to local public services
    - Proximity to local businesses
    - Proximity to nearby multifamily housing
    - Availability of parking

- Electric grid capacity: Upgrading the grid may be necessary to support the increased demand for electricity from EV charging stations.

- Community needs and preferences: Engaging with the community is crucial to ensure that EV charging stations are placed in locations that are most beneficial to residents.

- Equity Considerations (see section below)

Level 2 Stations

Workplace parking lots: Employers are increasingly installing Level 2 chargers to attract and retain employees who drive EVs.

Retail centers: Shopping malls, grocery stores, and other businesses with long dwell times are ideal locations for Level 2 chargers, as customers can top up their batteries while shopping or running errands.

Apartment complexes: To cater to residents who don't have access to home charging, apartment complexes are installing Level 2 chargers in designated parking areas.

Community centers and libraries: Public buildings with ample parking can offer Level 2 charging as a convenience to residents.

Curbside parking: On-street parking spaces with Level 2 chargers can be a good option in dense urban areas where off-street parking is limited.

Rest stops and travel plazas: Level 2 chargers at rest stops and travel plazas can help address range anxiety for EV drivers on long trips.

DCFC Stations

High-traffic corridors: Busy roads and highways are ideal locations for DCFC stations, as they can help reduce range anxiety for EV drivers on short trips.

Convenience stores and gas stations: Convenience stores and gas stations with ample parking can attract customers by offering DCFC stations.

Public transportation hubs: Train stations, bus terminals, and airports can offer DCFC stations for travelers who need a quick charge before their trip.

Equity Considerations

Project benefits and costs should be fairly distributed across the community, making sure to consider low-income, minority, and disabled populations. Equity concerns that might arise include a project’s affordability, accessibility, reliability, location, safety, and related employment and economic opportunities.
According to National Electric Vehicle Infrastructure Standards and Requirments, disadvantaged communities (DACs) mean

> *Census tracts or communities with common conditions identified by the U.S. Department of Transportation and the U.S. Department of Energy that consider appropriate data, indices, and screening tools to determine whether a specific community is disadvantaged based on a combination of variables that may include, but are not limited to, the following: low income, high and/or persistent poverty; high unemployment and underemployment; racial and ethnic residential segregation, particularly where the*

segregation stems from discrimination by government entities; linguistic isolation; high housing cost burden and substandard housing; distressed neighborhoods; high transportation cost burden and/or low transportation access; disproportionate environmental stressor burden and high cumulative impacts; limited water and sanitation access and affordability; disproportionate impacts from climate change; high energy cost burden and low energy access; jobs lost through the energy transition; and limited access to healthcare.

(23 CFR 680.104 "Disadvantaged communities (DACs)")

Equity Data

USDOT Equitable Transportation Community (ETC) Explorer
https://experience.arcgis.com/experience/0920984aa80a4362b8778d779b090723/page/ETC-Explorer---Homepage/

USDOT Electric Vehicle Charging Justice40 Map
https://anl.maps.arcgis.com/apps/webappviewer/index.html?id=33f3e1fc30bf476099923224a1c1b3ee

The White House Council on Environmental Quality: Climate and Economic Justice Screen Tool
https://screeningtool.geoplatform.gov/en/#11.4/39.6257/-79.9679

Federal Standards and Requirements

The Federal Highway Administration (FHWA) issued new national standards for federally funded EV chargers in February 2023. These new standards aim to ensure that charging is a predictable and reliable experience for EV drivers. This section includes the part of the requirements that are most relevant to EV charging station planning at the community level. For full information on the standards and requirements, please consult 23 CFR Part 680 National Electric Vehicle Infrastructure Standards and Requirements.

Except where noted, these regulations apply to all National Electric Vehicle Infrastructure (NEVI) Formula Program projects as well as projects for the construction of publicly accessible EV chargers that are funded with funds made available under Title 23, United States Code, including any EV charging infrastructure project funded with Federal funds that is treated as a project on a Federal-aid highway.

Number of charging ports

When including DCFCs located along and designed to serve users of designated AFCs, charging stations must have at **least four** network-connected DCFC charging ports and be capable of simultaneously charging at least four EVs.

In other locations, EV charging stations must have at **least four network-connected (either DCFC or AC Level 2 or a combination of DCFC and AC Level 2)** charging ports and be capable of simultaneously charging at least four EVs.

More information in 23 CFR 680.106(b)

Power level

DCFC charging ports must support output voltages between 250 volts DC and 920 volts DC. DCFCs located along and designed to serve users of designated AFCs must have a continuous power delivery rating of at least 150 kilowatts (kW) and supply power according to an EV's power delivery request up to 150 kW, simultaneously from each charging port at a charging station. These corridor-serving DCFC charging stations may conduct power sharing so long as each charging port continues to meet an EV's request for power up to 150 kW.

Each AC Level 2 charging port must have a continuous power delivery rating of at least 6 kW and the charging station must be capable of providing at least 6 kW per port simultaneously across all AC ports. AC Level 2 chargers may conduct power sharing and/or participate in smart charge management programs so long as each charging port continues to meet an EV's demand for power up to 6 kW unless the EV charging customer consents to accepting a lower power level.

More information in 23 CFR 680.106(d)

Availability

Charging stations located along and designed to serve users of designated Alternative Fuel Corridors must be available for use and sited at locations physically accessible to the public 24 hours per day, 7 days per week, year-round. Charging stations not located along or not designed to serve users of designated Alternative Fuel Corridors must be available for use and accessible to the public at least as frequently as the business operating hours of the site host.

More information in 23 CFR 680.106(e)

Security

States or other direct recipients must implement physical strategies to protect the charging station including

- Lighting;
- Siting and station design to ensure visibility from onlookers;
- Driver and vehicle safety;
- Video surveillance;
- Emergency call boxes;
- Fire prevention;
- Charger locks;
- Strategies to prevent tampering and illegal surveillance of payment devices.

More information in 23 CFR 680.106(h)

Community Engagement

States must include in the State EV Infrastructure Deployment Plan a description of the community engagement activities conducted as part of the development and approval of their most recently submitted State EV Infrastructure Deployment Plan, including engagement with disadvantaged communities (DACs). This only applies to the NEVI Formula Program projects

More information in 23 CFR 680.112(d)

Other Federal Laws

The American with Disabilities Act of 1990 (ADA), and its implementing regulations, apply to EV charger projects. (23 CFR 680.118(c))

The Uniform Relocation Assistance and Real Property Acquisition Act applies to EV charger projects. (23 CFR 680.118(g))

The National Environmental Policy Act of 1969 (NEPA) applies to EV charger projects. (23 CFR 680.118.(h))

Status and Need Assessment

Current Stations

Current EV charging stations in the Morgantown Monongalia MPO area:

Location Name	Type	Ports	Network	Access	Address
City of Morgantown Farmers Market	Level 2	1	None	Public, 24/7	415 Spruce St
University Motor	Level 2	2	ChargePoint	Public, 24/7	58 Don Knotts Blvd
University Motor	DC Fast	1	ChargePoint	Public, 24/7	58 Don Knotts Blvd
Subaru of Morgantown	Level 2	1	Blink	Public, 24/7	1730 Mileground Road
Sheetz-Tesla Supercharger	DC Fast	8	Tesla Supercharger	Public, 24/7	1901 Earl L Core Road
Hampton Inn & Suites Morgantown / University Town Centre	Level 2	2	None	Hotel customer use only	325 Granville Square
Black Bear Village	Level 2	3	Blink	Public, 24/7	380 Richard Harrison Way
Triple S Harley-Davidson	DC Fast	1	ChargePoint	Public, 24/7	7300 Willie G Ave Westover, WV 26501
Premier Chevrolet Buick GMC	Level 2	2	None	Public / Business Hours	5392 University Town Centre Dr
Sheetz - Tesla Supercharger	DC Fast	8	Tesla Supercharger	Public, 24/7	21 Asturias Lane

Data source: US DOE Alternative Fuels Data Center:
https://afdc.energy.gov/stations/#/find/nearest?fuel=ELEC

EV Registration Estimation

Estimation of EV registered by year in West Virginia and neighboring states.

	EV Registered by Year per 10,000 People					Average Annual Increase
	2018	2019	2020	2021	2022	
West Virginia	1	2	3	6	11	83%
Pennsylvania	6	9	13	21	37	58%
Ohio	5	9	12	18	29	56%
Virginia	12	18	24	36	65	53%
Four State Average	**6**	**10**	**13**	**20**	**36**	**63%**

Source: U.S. DOE Alternative Fuels Data Center - TransAltas

Considering that the MPO area is relatively urban compared with the rest of West Virginia and that urban areas generally tend to have higher EV ownership rates compared to rural areas due to factors like charging infrastructure, shorter commutes, and higher environmental awareness. For this reason, this readiness plan uses the **four state average number for the number of EV registered by year per 10,000 people in the Morgantown Monongalia area**.

Estimation of EV registered by year in the MPO area.

	EV Registered by Year					Total
	2018	2019	2020	2021	2022	
Per 10,000 population	6	10	13	20	36	
Actual EV*	60	95	130	203	355	843

**Population in the Morgantown Monongalia MPO Area ≈ 100,000*
Source: US Department of Energy

Estimation of the number of EVs in the MPO area

Vehicles added from 2018 to 2022 ≈ 850
Vehicles added before 2018 ≈ 300
Vehicles added in 2023 ≈ 450
Vehicles purchased in out-of-state ≈ 400
Total EV in the MPO area ≈ 2,000

Current Need

The following needs assessment was calculated by using the Electric Vehicle Infrastructure Projection Tool (EVI-Pro) Lite provided by the U.S. Department of Energy Alternative Fuels Data Center. More information about the tool can be found at https://afdc.energy.gov/evi-pro-lite

Assumption

Parameter	Value
EVs to support	2,000 (existing condition as of 2023) 10,884 (2030)
Vehicle Mix (system default)	• PEV Sedans: 25% • PEV C/SUVs: 47% • PEV Pickups: 25% • PEV Vans: 3%
How much support do you want to provide for plug-in hybrid electric vehicles(PHEVs)?	Partial support: Calculate using half of the full support assumption.
Home Charging Access	99% (assumed)

Results - Level 2 Ports

65 Public Level 2 Charging Ports		
# of Ports	Location Type	Description
6	Retail	Ports collocated with shopping (e.g., groceries, clothes, appliances) or dining amenities
4	Recreation Center	Ports collocated with recreational (e.g., parks, movies, bars, museums) or exercise activities
8	Healthcare Facility	Ports located at healthcare facilities such as hospitals, clinics, dental, or therapy
4	Education Facility	Ports located at educational facilities such as schools and universities
3	Community Center	Ports located at religious and community gathering centers
3	Transportation Facility	Ports located at transport hubs including park-and-rides, railway stations, and airports

29	Neighborhood	Publicly accessible ports located curbside near where people live
8	Office	Publicly accessible ports collocated with offices or business parks

Results - DC Fast Charging Ports

10 Public Level 2 Charging Ports		
# of Ports	Location Type	Description
5	Retail - 150 kW	Ports collocated with shopping (e.g., groceries, clothes, appliances) or dining amenities
1	Retail - 250 kW	Same above
3	Recreation Center - 150 kW	Ports collocated with recreational (e.g., parks, movies, bars, museums) or exercise activities
1	Recreation Center - 250 kW	Same above

Future Need (2030)

Based on the National Renewable Energy Laboratory (NREL) national electric vehicle infrastructure needs assessment, 12% of light-duty vehicles on the road could be plug-in electric vehicles by 2030. Applied to Morgantown that would mean **10,884** vehicles are plug-in electric vehicles. (source: U.S. Department of Energy Alternative Fuels Data Center - Electric Vehicle Infrastructure Projection Tool)

Results - Level 2 Ports

253 Public Level 2 Charging Ports		
# of Ports	Location Type	Description
30	Retail	Ports collocated with shopping (e.g., groceries, clothes, appliances) or dining amenities
13	Recreation Center	Ports collocated with recreational (e.g., parks, movies, bars, museums) or exercise activities
22	Healthcare Facility	Ports located at healthcare facilities such as hospitals, clinics, dental, or therapy
13	Education Facility	Ports located at educational facilities such as

		schools and universities
10	Community Center	Ports located at religious and community gathering centers
19	Transportation Facility	Ports located at transport hubs including park-and-rides, railway stations, and airports
109	Neighborhood	Publicly accessible ports located curbside near where people live
37	Office	Publicly accessible ports collocated with offices or business parks

Results - DC Fast Charging Ports

22 Public Level 2 Charging Ports		
# of Ports	Location Type	Description
6	Retail - 150 kW	Ports collocated with shopping (e.g., groceries, clothes, appliances) or dining amenities
3	Retail - 250 kW	Same above
5	Retail - 350+ kW	Same above
4	Recreation Center - 150 kW	Ports collocated with recreational (e.g., parks, movies, bars, museums) or exercise activities
2	Recreation Center - 250 kW	Same above
3	Recreation Center - 350+ kW	Same above

Deficiency Analysis

The following table compares the current stations and the results of the needs analysis (current and future) from the sections above.

Location Type		Current Condition		Current Need		Future Needs (2030)	
		Port Type	Port # (Deficiency)	Level 2	DC Fast	Level 2	DC Fast
Public	Retail	–	0 (6)	6	6	30	14
	Recreation Center	–	0 (4)	4	5	13	9
	Healthcare Facility	–	0 (8)	8	–	22	–
	Education Facility	–	0 (4)	4	–	13	–
	Community Center	Level 2	1 (2)	3	–	10	–
	Transportation Facility	–	0 (3)	3	–	19	–
	Neighborhood	–	0 (29)	29	–	109	–
	Office	–	0 (8)	8	–	37	–
Other	Gas station	DC Fast	16	–	–	–	–
	Car / Motorcycle Dealer	Level 2	5	–	–	–	–
		DC Fast	2	–	–	–	–
	Multi-Unit Dwelling	Level 2	5	–	–	–	–

Preliminary Recommendations[1]

Focus Areas (Non-Neighborhood)

Location Type	Location Description (map ID)	Charger Types (# of Ports)
Retail	University Towncenter (1)	Level 2 (20) DC Fast (10)
	SuncrestTowncenter (2)	Level 2 (10) DC Fast (4)
Recreation / Community Center	Marilla Park (3)	Level 2 (8) DC Fast (2)
	Hazel Ruby McQuain Park (4)	Level 2 (4) DC Fast (2)
	Start City Riverfront Park (5)	Level 2 (4) DC Fast (2)
	Westover City Park (6)	Level 2 (4) DC Fast (2)
	Caperton Trail Park (7)	Level 2 (4)
Healthcare Facility	Ruby Memorial Hospital (8)	Level 2 (10)
	Mon Health Medical Center (9)	Level 2 (10)
	WVU Medicine - University Towncenter (10)	Level 2 (4)
Education Facility	WVU Parking Falling Run Rd/University Ave Area (11)	Level 2 (4)
	WVU Parking Colisuem (12)	Level 2 (8)
	WVU Rec Center (13)	Level 2 (4)
Transportation	Morgantown Airport (14)	Level 2 (4)

[1] The study focuses on local public EV charging station needs. However, the actual demand for public EV charging might be higher than recommended, considering out-of-state travel demand and seasonal visitors to West Virginia University.

	Mountain Line Westover Terminal / Westover Park and Ride (15)	Level 2 (4)
	I-68/US43 Park and Ride (N/A)	Level 2 (4)
	Brookhaven Park and Right (16)	Level 2 (4)
	WVU Parking PRT-Mountain Station (17)	Level 2 (8)
Office	Spruce Street Garage (18)	Level 2 (6)
	University Ave Garage (19)	Level 2 (6)
	City Fayette St Parking (20)	Level 2 (4)
	Mountainlair Garage (21)	Level 2 (6)
	Mon County Schools Admin Office (22)	Level 2 (4)
	Downtown Farmers Market (23)	Level 2 (4)
	WVU Medical School Campus Area (24)	Level 2 (10)

Focus Areas (Neighborhood)

Equity Priority Location

The following areas are identified as high-priority locations for EV infrastructure investment in terms of equity and economic justice. The tools used to identify those locations are USDOT Equitable Transportation Community (ETC) Explorer, USDOT Electric Vehicle Charging Justice40 Map, and the White House Council on Environmental Quality - Climate and Economic Justice Screen Tool.

Location Name (map ID)	**Primary Streets**
Woodburn (A)	Snider St, Monongalia Ave, Richwood Ave
Sabraton (B)	Richwood Ave
Main Street - Granville (C)	Main Street
Morgan Height - Westover (D)	Riverview Ave, Columbus St, Fairmont Dr
Sunnyside (E)	Grant Ave, McLane Ave

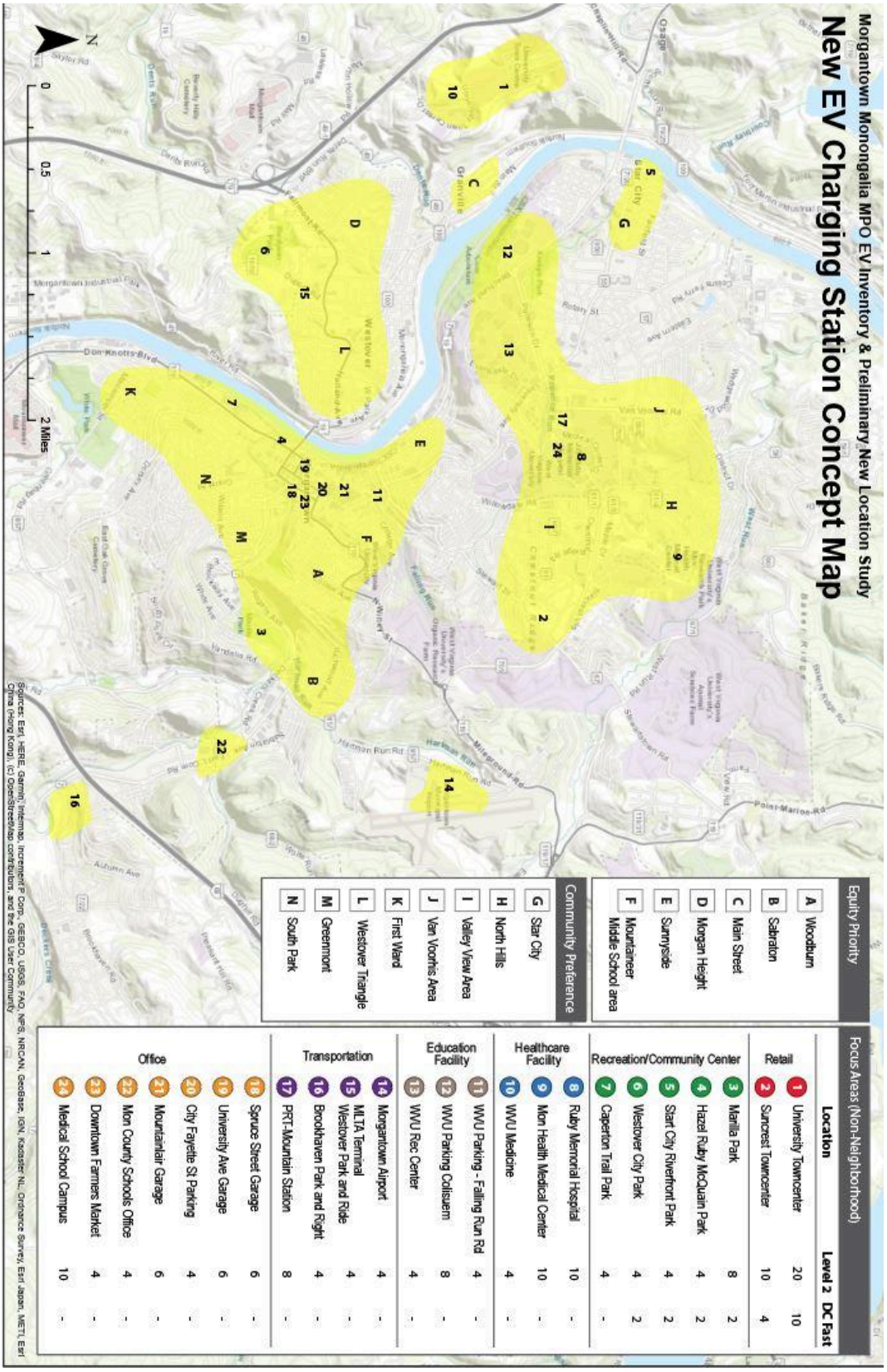
Mountaineer Middle School area (F)	Cornell Ave, Price St

Community Preference Locations

The following areas are not identified as the equity and economic justice priority locations, but they are identified as community preference locations considering the population density, housing types, and adjacent land use.

Location Name (map ID)	**Primary Streets**
Star City (G)	Stafford St, Congress Ave
North Hills (H)	Pineview Dr, Headlee Ave
Apartments in Valley View Area (I)	Valley View Ave
Apartments in Van Voorhis Area (J)	Van Voorhis Rd
First Ward (K)	West Virginia Ave, Madigan Ave, Mississippi St
Triangle - Westover (L)	Holland Ave, Dunkard Ave
Greenmont (M)	Coburn Ave, Kingwood St
South Park (N)	Park St, Grand St, Wilson Ave

Recommendation Map



Appendix A - EV Funding for Urban Area

*Unsure if localities include MPOs. MPOs will be highlighted.

Program Name	**Program Description**	**Eligible Parties**	**What funding can be used for.**
Build to Scale Program *Grant (Discretionary)*	Provides funds for organizations to aid companies in developing the next generation of tech-based economic development initiatives, including commercial EV technology implementation.	Localities	Commercial Charging, Workforce Development
FY2020 EDA Public Works and Economic Adjustment Assistance Program *Grant (Discretionary)*	Provides investments that support construction, non-construction, technical assistance, and revolving loan fund projects designed to leverage existing regional assets and support the implementation of economic development strategies that advance new ideas and creative approaches to advance economic prosperity in distressed communities.	Localities	LDV Charging, Commercial Charging, Infrastructure Planning, Workforce Development
Planning and Local Technical Assistance Program *Grant (Discretionary)*	Awards funding to eligible recipients (within Economic Development Districts) to create and implement regional economic development plans designed to build capacity and guide the economic prosperity and resiliency of an area or region.	Localities	Infrastructure Planning, Workforce Development
Research and National Technical Assistance *Grant (Discretionary)*	Supports research and technical assistance projects designed to leverage existing regional assets and support the implementation of economic development strategies that advance new ideas and creative approaches to advance economic prosperity in distressed communities.	Localities	Infrastructure Planning
Advanced Technology Vehicles Manufacturing (ATVM) *Loan Program Loan (Innovative Finance)*	Finance) Supports the manufacture of eligible light-duty vehicles and qualifying components under the ATVM Loan Program.	Localities	LVD Charging
Title XVII Innovative Clean Energy Loan Guarantees *Loan Guarantee (Innovative Finance)*	Provides loan guarantees for innovative renewable energy and energy efficiency projects. Only projects that bring an innovation to market—specifically innovations that have been deployed three or fewer times in last five years—are eligible. For example, the addition of grid services or new software and hardware components to a charging site deployment may support eligibility.	Localities	LDV Charging, Infrastructure Planning
Vehicle Technologies Office Funding Opportunities *Various*	Supports high-impact projects that can significantly advance its mission to reduce petroleum reliance by developing and deploying more energy efficient and	Localities	LDV Charging, Transit Charging, Commercial Charging, Infrastructure Planning, Workforce

	sustainable transportation technologies. VTO regularly updates its FOAs with information on available VTO grant opportunities.		Development, Vehicle Acquisition
Energy Efficiency and Conservation Block Grant (EECBG) Program *Grant (Formula and Discretionary)*	Designed to assist states, local governments, and Tribes in implementing strategies to reduce energy use, to reduce fossil fuel emissions, and to improve energy efficiency. Through the Bipartisan Infrastructure Law (BIL), EECBG Program funding recipients can now use their allocations for zero emission transportation and/or associated infrastructure.	Localities	LDV Charging, Transit Charging, Commercial Charging, Infrastructure Planning
Airport Zero Emissions Vehicle and Infrastructure Pilot Program *Grant (Discretionary)*	Improves airport air quality and facilitates use of zero emissions technologies at airports by funding the purchase of Zero Emission Vehicles (ZEV) and to construct or modify infrastructure needed to use ZEVs. Eligible parties must be airport sponsors that are in the National Plan of Integrated Airport Systems (NPIAS)	Localities	LDV Charging, Transit Charging, Infrastructure Planning, Vehicle Acquisition
Voluntary Airport Low Emissions Program *Grant (Discretionary)*	Improves airport air quality and provides air quality credits for future airport development, airport sponsors can use funds to finance low-emission vehicles, refueling and recharging stations, gate electrification, and other airport air quality improvements. Eligible parties must be Commercial airport sponsors that are in the NPIAS and located in areas that do not meet National Ambient Air Quality Standards.	Localities	LDV Charging, Transit Charging, Infrastructure Planning, Vehicle Acquisition
Advanced Transportation and Congestion Management Technologies Deployment *Grant (Discretionary)*	This program provides grants to eligible entities to develop model deployment sites for largescale installation and operation of advanced transportation technologies to improve safety, efficiency, system performance, and infrastructure return on investment. Demonstration projects could include EV charging infrastructure integrated with intelligent transportation systems with the Smart Grid and other energy distribution and charging systems or associated with advanced mobility and access technologies such as dynamic ridesharing.	Localities	LDV Charging
Charging and Fueling Infrastructure Grant Program *Grant (Discretionary)*	This program will strategically deploy publicly accessible EV charging infrastructure and hydrogen, propane, and natural gas fueling infrastructure along Alternative Fuel Corridors and in community locations such as parking facilities, public schools, public parks, or along public roads.	Localities & MPOs	LDV Charging, Transit Charging, Commercial Charging, Infrastructure Planning
Congestion Mitigation & Air Quality	Provides a flexible funding source to State and Localities for transportation projects and	Localities	LDV Charging, Transit Charging, Commercial

Improvement Program *Grant (Formula)*	programs to help meet the requirements of the Clean Air Act. Funding is available to reduce congestion and improve air quality for areas that do not meet the National Ambient Air Quality Standards.		Charging, Micromobility
Federal Land Access Program *Grant (Formula)*	Aims to improve transportation to and within Federal lands by improving transportation facilities that provide access to, are adjacent to, or are located within Federal lands.	Localities	LDV Charging, Transit Charging, Commercial Charging
Nationally Significant Federal Lands and Tribal Projects Program *Grant (Discretionary)*	Provides funding for the construction, reconstruction, and rehabilitation of nationally significant projects within, adjacent to, or accessing Federal and Tribal lands. This Program provides an opportunity to address significant challenges across the Nation for transportation facilities that serve Federal and Tribal lands.	Localities	LDV Charging
Reduction of Truck Emissions at Port Facilities *Grant (Discretionary)*	Provides discretionary grants to fund projects that reduce emissions at ports, including through the advancement of port electrification, with projects subject to requirements as if on a Federal-aid highway	Localities & MPOs	Commercial Charging
Transportation Alternatives (set aside of Surface Transportation Block Grant program) *Grant (Formula)*	The Transportation Alternatives (TA) Set-Aside from the Surface Transportation Block Grant (STBG) Program provides funding for a variety of generally smaller-scale transportation projects such as pedestrian and bicycle facilities, construction of turnouts, overlooks, and viewing areas, community improvements such as historic preservation and vegetation management, environmental mitigation related to stormwater and habitat connectivity, recreational trails, safe routes to school projects, and vulnerable road user safety assessments.	Localities & MPOs	LDV Charging, Transit Charging, Commercial Charging, Infrastructure Planning, Workforce Development
Accelerating Innovative Mobility *Grant (Discretionary)*	Promotes forward-thinking approaches to improve transit financing, planning, system design, and service. Program also supports innovative approaches to advance strategies that promote accessibility, including equitable and equivalent accessibility for all travelers.	Localities	Micromobility
Area of Persistent Poverty Program *Grant (Discretionary)*	Supports planning, engineering and technical studies, or financial planning to improve transit services in areas experiencing long-term economic distress.	Localities	LDV Charging, Transit Charging, Infrastructure Planning
Grants for Buses and Bus Facilities Discretionary Program *Grant (Discretionary)*	Makes Federal resources available to replace, rehabilitate, and purchase buses and related equipment and to construct bus-related facilities, including technological changes or innovations to modify low- or no-emission vehicles or facilities.	Localities	Transit Charging, Workforce Development, Vehicle Acquisition

Grants for Buses and Bus Facilities Formula Program *Grant (Formula)*	Provides funding to States, local governmental authorities, and transit agencies through a statutory formula to replace, rehabilitate, and purchase buses and related equipment and to construct bus-related facilities. Subrecipients: public agencies or private nonprofit organizations engaged in public transportation.	Localities	Transit Charging, Workforce Development, Vehicle Acquisition
Integrated Mobility Innovation *Grant (Discretionary)*	Supports the transit industry's ability to leverage and integrate mobility innovations with existing services, while examining the impact of innovations on agency operations and the traveler experience.	Localities	Transit Charging, Micromobility, Infrastructure Planning
Low or No Emission Vehicle Program *Grant (Discretionary)*	Provides funding to States, local authorities, and Indian Tribes for the purchase or lease of zero-emission and low-emission transit buses, as well as acquisition, construction, and leasing of required supporting facilities.	Localities	Transit Charging, Workforce Development, Vehicle Acquisition
Public Transportation Innovation *Grant (Discretionary)*	Provides funding to develop innovative products and services assisting transit agencies in better meeting the needs of their customers.	Localities	Infrastructure Planning
Urbanized Area Formula Funding *Grant (Formula)*	Provides capital, planning, and operating assistance to urbanized areas and to governors for transit capital and operating assistance in urbanized areas and for transportation-related planning. An urbanized area is an incorporated area with a population of 50,000 or more that is designated as such by the U.S. Department of Commerce, Bureau of the Census. Funding can support rural areas if the service provided also impacts a rural area.	Localities	Transit Charging, Infrastructure Planning, Workforce Development, Vehicle Acquisition
America's Marine Highway Program *Grant (Discretionary)*	Funds previously designated Marine Highway Projects that support the development and expansion of documented vessels or port and landside infrastructure.	Localities	LDV Charging, Commercial Charging, Infrastructure Planning, Vehicle Acquisition
Rebuilding American Infrastructure with Sustainability and Equity *Grant (Discretionary)*	Provides a unique opportunity for the USDOT to invest in road, rail, transit, and port projects that achieve national objectives. Starting in FY21, RAISE has substantially increased program focus on ZEV infrastructure, including EV charging.	Localities	LDV Charging, Transit Charging, Commercial Charging, Infrastructure Planning
Strengthening Mobility and Revolutionizing Transportation (SMART) Grants *Grant (Discretionary)*	The Office of the Secretary's Strengthening Mobility and Revolutionizing Transportation Grant program provides supplemental funding grants to rural, midsized, and large communities to conduct demonstration projects focused on advanced smart city or community technologies and systems in a variety of communities to improve transportation efficiency and safety.	Localities & MPOs	N/A
Infrastructure for Rebuilding America (INFRA)	Advances the Administration's priorities of rebuilding America's infrastructure and creating jobs by funding highway and rail	Localities	LDV Charging, Commercial Charging, Infrastructure Planning

Grant (Discretionary)	projects of regional and national economic significance that position America to win the 21st century.		
National Grants: Diesel Emissions Reduction Act *Grant (Discretionary)*	Awards funding to eligible government agencies and nonprofits for eligible diesel emissions reduction solutions, including the replacement of heavy-duty diesel vehicles with EVs.	Localities	Transit Charging, Commercial Charging, Vehicle Acquisition
School Bus Rebates: Diesel Emissions Reduction Act *Grant (Discretionary)*	Awards funding to public and private fleet owners for the replacement of old diesel school buses with cleaner buses, including EVs. Anticipated: rebates for electric school bus replacements in underserved communities.	Localities	Transit Charging, Vehicle Acquisition
Urban Agriculture and Innovative Production *Grant (Discretionary)*	Assists eligible entities with projects that support the development of urban agriculture and innovative production.	Localities	LDV Charging, Commercial Charging, Infrastructure Planning

Appendix B - EV Funding for Rural Area

*Unsure if localities include MPOs. MPOs will be highlighted.

Program Name	Program Description	Eligible Parties	What funding can be used for.
Build to Scale Program *Grant (Discretionary)*	Provides funds for organizations to aid companies in developing the next generation of tech-based economic development initiatives, including commercial EV technology implementation.	Localities	Commercial charging & workforce development
FY2020 EDA Public Works and Economic Adjustment Assistance Program *Grant (Discretionary)*	Provides investments that support construction, non-construction, technical assistance, and revolving loan fund projects designed to leverage existing regional assets and support the implementation of economic development strategies that advance new ideas and creative approaches to advance economic prosperity in distressed communities.	Localities	LDV Charging, Commercial Charging, infrastructure planning, workforce development
Planning and Local Technical Assistance Program *Grant (Discretionary)*	Awards funding to eligible recipients (within Economic Development Districts) to create and implement regional economic development plans designed to build capacity and guide the economic prosperity and resiliency of an area or region.	Localities	Infrastructure planning and workforce development
Research and National Technical Assistance *Grant (Discretionary)*	Supports research and technical assistance projects designed to leverage existing regional assets and support the implementation of economic development strategies that advance new ideas and creative approaches to advance economic prosperity in distressed communities.	Localities	Infrastructure planning
Advanced Technology Vehicles Manufacturing (ATVM) Loan Program *Loan (Innovative Finance)*	Supports the manufacture of eligible light-duty vehicles and qualifying components under the ATVM Loan Program.	Localities	LDV Charging, Vehicle acquisition
Title XVII Innovative Clean Energy Loan Guarantees *Loan Guarantee (Innovative Finance)*	Provides loan guarantees for innovative renewable energy and energy efficiency projects. Only projects that bring an innovation to market—specifically innovations that have been deployed three or fewer times in last five years—are eligible. For example, the addition of grid services or new software and hardware components to a charging site deployment may support eligibility.	Localities	LDV Charging, Infrastructure Planning
Energy Improvement in Rural and Remote Areas *Cooperative Agreement, Discretionary*	Provide financial assistance to Industry Partners, Utilities, National Laboratories, Universities, State and Localities, Community Based Organizations, Tribal, and Environmental Groups to increase environmental protection from the impacts	Localities	Infrastructure Planning

	of energy use and improve resilience, reliability, safety, and availability of energy in rural or remote areas, including "siting or upgrading transmission and distribution lines," "providing or modernizing electric generation facilities," "developing microgrids.		
Vehicle Technologies Office Funding Opportunities *Various*	Supports high-impact projects that can significantly advance its mission to reduce petroleum reliance by developing and deploying more energy efficient and sustainable transportation technologies. VTO regularly updates its FOAs with information on available VTO grant opportunities.	Localities	LDV Charging, Transit Charging, Commercial Charging, Infrastructure Planning, Workforce Development, Vehicle Acquisition
Workforce Opportunity for Rural Communities *Grant (Discretionary)*	Funds projects that demonstrate alignment of regionally driven, comprehensive approaches to addressing economic distress and the necessary workforce development activities to ensure dislocated and other workers in the regions are capable of succeeding in current and future job opportunities.	Localities	Workforce Development
Airport Zero Emission Vehicle and Infrastructure Pilot Program *Grant (Discretionary)*	Improves airport air quality and facilitates use of zero emissions technologies at airports by funding the purchase of Zero Emission Vehicles (ZEV) and to construct or modify infrastructure needed to use ZEVs. Eligible parties must be airport sponsors that are in the National Plan of Integrated Airport Systems (NPIAS).	Localities	LDV Charging, Transit Charging, Infrastructure Planning, Vehicle Acquisition
Voluntary Airport Low Emissions Program *Grant (Discretionary)*	Improves airport air quality and provides air quality credits for future airport development, airport sponsors can use funds to finance low emission vehicles, refueling and recharging stations, gate electrification, and other airport air quality improvements. Eligible parties must be commercial airport sponsors that are in the NPIAS and located in areas that do not meet National Ambient Air Quality Standards.	Localities	LDV Charging, Transit Charging, Infrastructure Planning, Vehicle Acquisition
Charging and Fueling Infrastructure Grant Program *Grant (Discretionary)*	This program will strategically deploy publicly accessible EV charging infrastructure and hydrogen, propane, and natural gas fueling infrastructure in along Alternative Fuel corridors and in community locations such as parking facilities, public schools, public parks, or along public roads.	Localities & MPOs	LDV Charging, Transit Charging, Commercial Charging, Micromobility, Infrastructure Planning
Reduction of Truck Emissions at Port Facilities *Grant (Discretionary)*	The Reduction of Truck Emissions at Port Facilities Program provides discretionary grants to fund projects that reduce emissions at ports, including through the advancement of port electrification, with projects subject to requirements as if on a Federal-aid highway.	Localities & MPOs	Commercial Charging

Transportation Alternatives (set aside of Surface Transportation Block Grant program) *Grant (Formula)*	The Transportation Alternatives (TA) Set-Aside from the Surface Transportation Block Grant (STBG) Program provides funding for a variety of generally smaller-scale transportation projects such as pedestrian and bicycle facilities, construction of turnouts, overlooks, and viewing areas, community improvements such as historic preservation and vegetation management, environmental mitigation related to stormwater and habitat connectivity, recreational trails, safe routes to school projects, and vulnerable road user safety assessments.	Localities & MPOs	Micromobility
Advanced Transportation and Congestion Management Technologies Deployment *Grant (Discretionary)*	This program provides grants to eligible entities to develop model deployment sites for large scale installation and operation of advanced transportation technologies to improve safety, efficiency, system performance, and infrastructure return on investment. Demonstration projects could include EV charging infrastructure integrated with intelligent transportation systems with the Smart Grid and other energy distribution and charging systems or associated with advanced mobility and access technologies such as dynamic ridesharing.	Localities	LDV Charging, Transit Charging
Federal Land Access Program *Grant (Formula)*	Aims to improve transportation to and within Federal lands by improving transportation facilities that provide access to, are adjacent to, or are located within Federal lands.	Localities	LDV Charging, Transit Charging, Commercial Charging, Infrastructure Planning, Workforce Development, Vehicle Acquisition
Nationally Significant Federal Lands and Tribal Projects Program: Tribal High Priority Projects Program *Grant (Discretionary)*	Electric vehicle charging infrastructure installed using funds provided under this title shall provide, at a minimum— (A) non-proprietary charging connectors that meet applicable industry safety standards, and (B) open access to payment methods that are available to all members of the public to ensure secure, convenient, and equal access to the electric vehicle charging infrastructure that shall not be limited by membership to a particular payment provider	Localities	LDV Charging
Electric or Low-Emitting Ferry Grant Program *Grant (Discretionary)*	The Bipartisan Infrastructure Law establishes an Electric or Low-Emitting Ferry Pilot Program that makes Federal funding available to support the transition of passenger ferries to low or zero emission technologies.	Localities	Vehicle Acquisition
Accelerating Innovative Mobility *Grant (Discretionary)*	Promotes forward-thinking approaches to improve transit financing, planning, system design, and service. Program also supports	Localities	LDV Charging, Transit Charging, Infrastructure Planning

	innovative approaches to advance strategies that promote accessibility, including equitable and equivalent accessibility for all travelers.		
Area of Persistent Poverty Program *Grant (Discretionary)*	Supports planning, engineering and technical studies, or financial planning to improve transit services in areas experiencing long-term economic distress.	Localities	Infrastructure Planning
Grants for Buses and Bus Facilities Discretionary Program *Grant (Discretionary)*	Provides funding to States and transit agencies through a statutory formula to replace, rehabilitate, and purchase buses and related equipment and to construct bus-related facilities. Subrecipients: public agencies or private nonprofit organizations engaged in public transportation.	Localities	Transit Charging, Workforce Development, Vehicle Acquisition
Integrated Mobility Innovation *Grant (Discretionary)*	Supports the transit industry's ability to leverage and integrate mobility innovations with existing services, while examining the impact of innovations on agency operations and the traveler experience.	Localities	Transit Charging, Micromobility, Infrastructure Planning
Low- or No-Emission Vehicle Program *Grant (Discretionary)*	Provides funding to State and Local authorities for the purchase or lease of zero-emission and low-emission transit buses, as well as acquisition, construction, and leasing of required supporting facilities.	Localities	Transit Charging, Workforce Development, Vehicle Acquisition
Public Transportation Innovation *Grant (Discretionary)*	Provides funding to develop innovative products and services assisting transit agencies in better meeting the needs of their customers.	Localities	Infrastructure Planning
Rural Transportation Assistance Program *Grant (Formula)*	Provides a source of funding to assist in the design and implementation of training and technical assistance projects and other support services tailored to meet the needs of transit operators in nonurbanized areas.	Localities	Infrastructure Planning, Workforce Development
Urbanized Area Formula Funding *Grant (Formula)*	Provides capital, planning, and operating assistance to urbanized areas and to governors for transit capital and operating assistance in urbanized areas and for transportation-related planning. An urbanized area is an incorporated area with a population of 50,000 or more that is designated as such by the U.S. Department of Commerce, Bureau of the Census. Funding can support rural areas if the service provided also impacts a rural area.	Localities	Transit Charging, Infrastructure Planning, Workforce Development, Vehicle Acquisition
America's Marine Highway Program *Grant (Discretionary)*	Funds previously designated Marine Highway Projects that support the development and expansion of documented vessels or port and landside infrastructure.	Localities	LDV Charging, Commercial Charging, Infrastructure Planning, Vehicle Acquisition
National Infrastructure Project Assistance Program *Grant (Discretionary)*	Also known as "Mega Grants," the program supports large, complex projects that are difficult to fund by other means and likely to generate national or regional economic, mobility, or safety benefits.	Localities	LDV Charging, Commercial Charging, Infrastructure Planning

Rural Surface Transportation Grant Program Grant (Discretionary)	The Rural Surface Transportation Grant Program funds competitive grants to improve and expand the surface transportation infrastructure in rural areas by increasing connectivity, improving the safety and reliability of the movement of people and freight, and generating regional economic growth and improving quality of life.	Localities	LDV Charging, Transit Charging, Commercial Charging, Infrastructure Planning, Workforce Development
Strengthening Mobility and Revolutionizing Transportation (SMART) Grants *Grant (Discretionary)*	The Office of the Secretary's Strengthening Mobility and Revolutionizing Transportation Grant program provides supplemental funding grants to rural, midsized, and large communities to conduct demonstration projects focused on advanced smart city or community technologies and systems in a variety of communities to improve transportation efficiency and safety.	Localities& MPOs	LDV Charging, Transit Charging, Commercial Charging, Infrastructure Planning
Rebuilding American Infrastructure with Sustainability and Equity *Grant (Discretionary)*	Provides a unique opportunity for the USDOT to invest in road, rail, transit, and port projects that achieve national objectives. Starting in FY21, RAISE has substantially increased program focus on ZEV infrastructure, including EV charging	Localities	LDV Charging, Transit Charging, Commercial Charging, Infrastructure Planning
Infrastructure for Rebuilding America *Grant (Discretionary)*	Advances the Administration's priorities of rebuilding America's infrastructure and creating jobs by funding highway and rail projects of regional and national economic significance that position America to win the 21st century.	Localities	LDV Charging, Commercial Charging, Infrastructure Planning
National Grants: Diesel Emissions Reduction Act *Grant (Discretionary)*	Awards funding to eligible government agencies and nonprofits for eligible diesel emissions reduction solutions, including the replacement of heavy-duty diesel vehicles with EVs.	Localities	Transit Charging, Commercial Charging, Vehicle Acquisition
School Bus Rebates: Diesel Emissions Reduction Act *Grant (Discretionary)*	Awards funding to public and private fleet owners for the replacement of old diesel school buses with cleaner buses, including EVs. Anticipated: rebates for electric school bus replacements in underserved communities.	Localities	Transit Charging, Vehicle Acquisition
Conservation Innovation Grants *Grant (Discretionary)*	Supports the development of new tools, approaches, practices, and technologies to further natural resource conservation on private lands.	Localities	LDV Charging, Commercial Charging
Urban Agriculture and Innovative Production *Grant (Discretionary)*	Assists eligible entities with projects that support the development of urban agriculture and innovative production.	Localities	LDV Charging, Commercial Charging, Infrastructure Planning
Business & Industry Loan Guarantees *Loan Guarantee (Innovative Finance)*	Offers loan guarantees to lenders for their loans to rural businesses.	Localities	LDV Charging, Infrastructure Planning, Workforce Development
Community Facilities Direct Loan Program *Loan*	Provides affordable funding to develop essential community facilities in rural areas. An essential community facility is defined	Localities	LDV Charging, Transit Charging, Infrastructure

	as a facility that provides an essential service to the locality's community for the orderly development of the community in a primarily rural area.		Planning, Workforce Development
Community Facilities Grant Program *Grant (Discretionary)*	Provides affordable funding to develop essential community facilities in rural areas. Essential community facility: a facility that provides an essential service to the locality's community for the orderly development of the community in a primarily rural area.	Localities	LDV Charging, Infrastructure Planning, Vehicle Acquisition
Intermediary Relending Program *Loan (Revolving Fund)*	Provides 1 percent low-interest loans to Localities lenders or "intermediaries" that re-lend to businesses to improve economic conditions and create jobs in rural communities. Intermediaries relending the capital to other parties with a maximum loan of $250k or 75 percent of total project.	Localities	LDV Charging, Commercial Charging, Infrastructure Planning, Workforce Development
Renewable Energy Development Assistance *Grant (Discretionary)*	Assists rural small businesses and agricultural producers by conducting and promoting energy audits and providing Renewable Energy Development Assistance.	Localities	Infrastructure Planning
Rural Business Development Grants *Grant (Discretionary)*	Provides technical assistance and training for small rural businesses for activities related to rural transportation improvement, technology-based economic development, and more.	Localities	LDV Charging, Commercial Charging, Infrastructure Panning, Workforce Development
Rural Economic Development Grant Program *Grant (Discretionary)*	Provides zero-interest loans to Localities' utilities, which they use to establish a revolving loan fund to pass funding through to local businesses (i.e., the ultimate recipients) for projects that create and retain employment in rural areas.	Localities	LDV Charging, Commercial Charging, Infrastructure Panning, Workforce Development
Rural Economic Development Loan Program *Loan*	Provides zero interest loans to local utilities, which they, in turn, pass through to local businesses (ultimate recipients), for projects that will create and retain employment in rural areas. The ultimate recipients repay the lending utility directly. The utility is responsible for repayment to the USDA.	Localities	LDV Charging, Commercial Charging, Infrastructure Panning, Workforce Development
Rural Placemaking Innovation Challenge *Cooperative Agreement*	Helps rural communities create plans to enhance capacity for broadband access, preserve cultural and historic structures, and support the development of transportation, housing, and recreational spaces.	Localities	LDV Charging, Transit Charging, Infrastructure Planning, Workforce Development
Denali Commission High Energy Cost Grants *Grant (Discretionary)*	Assists the Denali Commission in lowering the cost of energy for families and Individuals in areas with extremely high per-household energy costs. Eligible projects improve energy facilities serving communities with extremely high energy costs, partly by implementing energy efficient technology and practices.	Localities	LDV Charging, Infrastructure Planning
Distributed Generation Energy Project Financing	Provides loans and loan guarantees to energy project developers for distributed energy projects including renewables that	Localities	LDV Charging, Infrastructure Planning

Loan/Loan Guarantee (Innovative Finance)	provide wholesale or retail electricity to existing Electric Program borrowers or to rural communities served by other utilities. Applicants must be utilities and/or energy distributors.		
Electric Infrastructure Loan & Loan Guarantee Program *Loan/Loan Guarantee (Innovative Finance)*	Makes insured loans and loan guarantees to finance the construction of electric distribution, transmission, and generation facilities, including system improvements and replacements required to furnish and improve electric service in rural areas, as well as demand side management, energy conservation programs, and on-grid and off-grid renewable energy systems. Applicants must be retail or power supply providers.	Localities	LDV Charging, Infrastructure Planning
Energy Efficiency and Conservation Loan Program *Loan*	Provides loans to finance energy efficiency and conservation projects for commercial, industrial, and residential consumers. Applicants must be utilities and/or energy distributors.	Localities	LDV Charging, Infrastructure Planning
High Energy Cost Grants *Grant (Discretionary)*	Assists energy providers and other eligible entities in lowering energy costs for families and Individuals in areas with extremely high per-household energy costs.	Localities	LDV Charging, Infrastructure Planning
Rural Energy Savings Program *Loan*	Provides loans to energy efficiency service providers to relend for energy efficiency projects, including EV chargers and the infrastructure to supply EV chargers, in rural areas.	Localities	LDV Charging, Infrastructure Planning
Electric Infrastructure Loans and Loan Guarantees *Loan/Loan Guarantee (Innovative Finance)*	The electric program makes insured loans and loan guarantees to nonprofit and cooperative associations, public bodies, and other utilities. Insured loans primarily finance the construction of electric distribution facilities in rural areas. The guaranteed loan program has been expanded and is now available to finance generation, transmission, and distribution facilities. The loans and loan guarantees finance the construction of electric distribution, transmission, and generation facilities, including system improvements and replacement required to furnish and improve electric service in rural areas, as well as demand side management, energy conservation programs, and on-grid and off-grid renewable energy systems.	Localities	Vehicle Acquisition

Appendix C - Public Comments

Open House Comments

- Putting chargers in areas of business such as parks (Cooper's Rock).
- When travelling, especially in rural areas, it is difficult to find charging stations. With all of the tourism from WVU Parents, it would be smart to have chargers they can use to explore Morgantown.
- Finding a group of people who have EV's to get advice.
- Fire safety could be an issue, especially for DC Fast charging ports.
- Questions: How EV charging stations recommended in this plan will be maintained?

Comments submitted through the online survey

Participant #1

- Residence: Yes
- EV Owner: Yes
- Which public EV charging station locations are most important for you?
    - Retail stores
    - Recreation / community center
    - Transit station, airport, park & ride
- Comments:Morgantown's lack of charging infrastructure makes me embarrassed to live here.

Participant #2

- Residence: No
- EV Owner: No
- Which public EV charging station locations are most important for you?
    - Retail stores
    - Recreation / community center
    - Hospital / doctor office
    - Schools / WVU campus
    - Transit station, airport, park & ride
    - Office, employment center
- Comments: I have reviewed the Draft EV Study for the MMMPO and I approve and support the findings in the document.

Participant #3

- Residence: Yes
- EV Owner: Yes
- Which public EV charging station locations are most important for you?
    - Retail stores
    - Recreation / community center
    - Hospital / doctor office
    - Schools / WVU campus
    - Office, employment center
- Comments: Thank you for the informative report and online seminar. You've done a great job quantifying the needs of BEV/PHEV owners on the actual locations and types of charging stations. As noted in the meeting, the actual number of BEV/PHEV's in the area is under-represented by the government's data set. Just anecdotal information based on visual observation tells us there are many Tesla owners in our part of Morgantown and a smaller number of Jeep PHEVs, Hyundai IoniQ, Tucson, and Santa Fe's. We've seen a few Mercedes EQE's. This brings forth the question of the type of charging stations needed. Another success of your study – the understanding that charging stations have to be different numbers of Level 2 and Level 3 chargers. The required electric load calculations will be critical to success. Even though you don't see many fire suppression systems around charging stations, there should be some thought given to at least extinguishers in some confined areas. Then there is the maintenance of the charging station itself. A few suppliers of these systems allow remote monitoring. If you've traveled about the nation looking for a charging station that is available for charging, it can be a challenge due to reliability concerns. Many business owners are reluctant to participate in the maintenance of the charging station, so thought should be given to using a plan that includes a maintenance plan. Then there will be a need to manage the charging availability. Quite often you will find that EV owners will not move their car once charging is completed. This has been resolved by some charging stations that give you a hour to move your vehicle, after your car is completely charged, before they begin to charge a high per/hour rate. The most valuable part of your meeting was the idea to have another meeting of EV owners to gather input. Thank you for your effort.

Participant #4

- Residence: Yes
- EV Owner: Yes
- Which public EV charging station locations are most important for you?
    - Transit station, airport, park & ride
- Comments: I have owned a Chevy Bolt for seven years. So far I have only charged it in my garage. Personally I won't ever need a charging station in Morgantown. However, I would like public charging stations in places where I might make a long distance trip, like Pittsburgh. Therefore I expect there are visitors from elsewhere who would be more

likely to visit Morgantown if there were public charging stations at places they would stop, like the waterfront. The other group that needs charging stations are apartment dwellers who don't have garages. They could use stations where they work or go to school.

Participant #5

- Residence: Yes
- EV Owner: Yes
- Which public EV charging station locations are most important for you?
    - Retail stores
    - Recreation / community center
    - Hospital / doctor office
    - Schools / WVU campus
    - Transit station, airport, park & ride
    - Office, employment center
- Comments: Morgantown needs this! We need this! Tourists and students need this! This is the future! EVs exist and the community needs charging stations!

Participant #6

- Residence: Yes
- EV Owner: Yes
- Which public EV charging station locations are most important for you?
    - Retail stores
    - Recreation / community center
    - Transit station, airport, park & ride

Discussion Summary

The following is the summary of a discussion with Hailin Li about the EV charging station development in the MMMPO area. Lailin Li is a professor of the Department of Mechanical and Aerospace Engineering, West Virginia University.

- Fast charging requires a high electricity capacity and may require significant electric infrastructure upgrades.
- Fast charging is not optical for the battery and is more likely to cause hazards.
- Fast charging increases the capacity charge/fee from energy providers.
- Install fast charging stations where necessary, such as on interstate corridors.
- An effective way to reduce EV charging costs is to decrease peak-hour demand and increase use during low-demand hours.

- School bus most charging at night (electric is cheaper at night). School bus charging stations/garages can install public charging ports to take advantage of the unused electricity during the day.
- Install charging stations (level 2) at locations with facilities to improve public health, such as trails and gyms.
- In the neighborhood, mainly focus on Level 2 stations and avoid unnecessary fast charge ports.
- Use the charging station apps, such as ChargePoint, EVgo, and Electrify America, to help residents book charging ports in their neighborhood.
- Require appropriate electric capacity in high-density residential areas to prepare for potential EV charging stations.
- Installing a Level 2 station should not require major infrastructure upgrades in most cases.