



PENNSYLVANIA STATE PLAN FOR ELECTRIC VEHICLE INFRASTRUCTURE DEPLOYMENT

National Electric Vehicle Infrastructure (NEVI)
Formula Program

VERSION FOR FFY 2022-2023 (SUBMITTED JULY 21, 2022)



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ACRONYMS AND ABBREVIATIONS

Acronym	Definition
ADA	Americans with Disabilities Act
AFC	Alternative Fuels Corridor
AFIG	Alternative Fuels Incentive Program
BIL	Bipartisan Infrastructure Law
DAC	Disadvantaged Community
DC	Direct Current
DCFC	Direct Current Fast Charger
DEP	Pennsylvania Department of Environmental Protection
EJ	Environmental Justice
EV	Electric Vehicle
EVSAC	Electric Vehicle Senior Advisory Committee
EVSE	Electric Vehicle Supply Equipment
EVITP	Electric Vehicle Infrastructure Training Program
EP-ACT	Eastern Pennsylvania Alliance for Clean Transportation
FFY	Federal fiscal year
FHWA	Federal Highway Administration
GHG	Greenhouse gas
HDV	Heavy-Duty Vehicle
MPO	Metropolitan Planning Organizations
MDV	Medium-Duty Vehicle
NEVI	National Electric Vehicle Infrastructure
OEM	Original Equipment Manufacturer
PennDOT	Pennsylvania Department of Transportation
PEP	Program Evaluation Plan
PRCC	Pittsburgh Region Clean Cities
RFP	Requests for Proposals
RPO	Rural Planning Organizations
TNC	Transportation Network Company
USDOT	United States Department of Transportation



Topic is linked to the website. Click to view.

INTRODUCTION

Background

On November 15, 2021, the Bipartisan Infrastructure Law (BIL) was enacted to provide funding for Federal-aid highways, safety, transit and other purposes. Included in the BIL is a new National Electric Vehicle Infrastructure (NEVI) Formula Program that provides Pennsylvania more than \$170 million over the next 5 years to support electric vehicle (EV) infrastructure. The program will be administered by the Pennsylvania Department of Transportation (PennDOT).



Purpose of NEVI Funding

The NEVI Formula Program provides dedicated funding to Pennsylvania and other states to strategically deploy EV charging infrastructure and establish an interconnected network to facilitate data collection, access, and reliability. Initially, funding under this program is directed to designated [Alternative Fuel Corridors](#) (AFCs) for build-out of a national EV charging network, particularly along the Interstate Highway System to support long distance travel. When the national network reaches full build-out, funding may be used on any public road or in other publicly accessible locations.

The program focuses on direct current fast charging (DCFC) stations that can charge an EV much faster than Level 1 (typically at household) and Level 2 (typically at work or public destinations) chargers. According to the [NEVI Formula Program Guidance](#) issued on February 10, 2022, a state's EV AFC network must meet the following criteria before the Federal Highway Administration (FHWA) will certify it has satisfied "full build-out":

- EV charging infrastructure is installed **every 50 miles** along the AFC system and **within 1 travel mile of an interstate exit or highway intersection along the AFC**, unless a discretionary exception has been granted
- EV charging infrastructure includes **at least four 150kW DCFCs** with **Combined Charging System** (CCS) ports capable of simultaneously DC charging four EVs
- EV charging infrastructure has minimum station power capability **at or above 600kW** and supports **at least 150kW per port** simultaneously across four ports for charging



On June 22, 2022, the FHWA published a [proposed rulemaking](#) (NPRM) that establishes regulations setting minimum standards and requirements for projects funded under the NEVI Formula Program. The standards and requirements proposed apply to the installation, operation, or maintenance of EV charging infrastructure. These standards are consistent with the NEVI Formula Program Guidance for DCFC stations but also require any Level 2 charging station funded through the program to also meet defined criteria including providing **at least 6 kW** of power per port and having a **J1772 connector**.

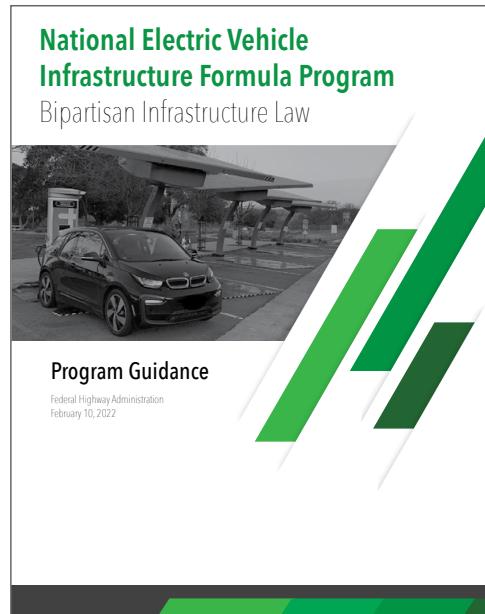
State Deployment Plan

Each state is required by the FHWA to submit a plan in accordance with the NEVI Formula Program by August 1, 2022. NEVI Formula Program funds cannot be obligated by a state until FHWA has approved the plan.

PennDOT worked with supporting state and local agencies as well as the federal Joint Office of Energy and Transportation (Joint Office) in developing the Pennsylvania State Plan for EV Infrastructure Deployment (NEVI State Plan).

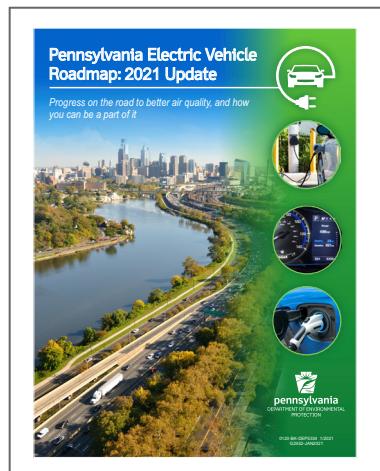
The NEVI State Plan highlights key vision and goals, stakeholder and public engagement activities, equity and workforce development strategies, focus areas for infrastructure implementation, and other key challenges in program implementation.

The plan is considered an **evolving document with a five-year vision** and will be **updated annually** to reflect changes to initiatives and focus areas. This plan version supports the allocation of federal funds for federal fiscal years (FFYs) 2022 and 2023. These funds do not have to be spent by any particular date as they do not expire. The next annual plan update will be needed for allocation of funds for FFY 2024.



Other Key EV Planning Initiatives and Resources

Pennsylvania's NEVI State Plan complements other planning, initiatives, grant programs and coordination efforts that either exist or are underway to support the expansion of EV infrastructure in Pennsylvania. These include:



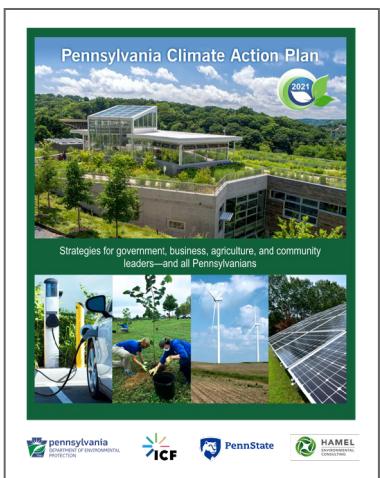
Pennsylvania Electric Vehicle Roadmap ↗

The PA Department of Environmental Protection (DEP) Energy Programs Office has partnered with stakeholders statewide to form the [Drive Electric PA Coalition](#). Jointly coordinated with PennDOT, the coalition develops strategies to increase use of EVs by state and local government agencies, businesses, industry, and individual consumers in Pennsylvania. These strategies are highlighted in the Pennsylvania Electric Vehicle Roadmap.



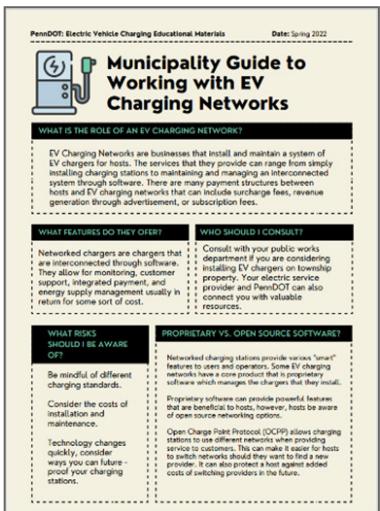
DEP Driving PA Forward ↗

The DEP Driving PA Forward program offers grants and rebates to help Pennsylvania drive the transition to cleaner vehicles, including EV infrastructure programs for both Level 2 and DCFC. For the DCFC and Hydrogen Fueling Grant Program, approximately \$8 million is being allocated over a five-year period to fund a competitive grant program for acquisition, installation, operation, and maintenance of EV charging equipment and hydrogen fuel cell vehicle supply equipment.



DEP Climate Action Plan ↗

DEP has the responsibility to create a Pennsylvania Climate Action Plan every three years, which outlines a comprehensive approach to reduce greenhouse gas (GHG) emissions across all sectors. The most recent plan, the 2021 Pennsylvania Climate Action plan, identifies EV adoption as a key strategy to reduce transportation emissions which comprise 24% of Pennsylvania's GHG emissions, the 2nd highest sector.



Electric Vehicle Model Ordinance Toolkit ↗

PennDOT coordinated with Temple University in the development of tools and resources to support EV infrastructure installation in Pennsylvania. These tools include model ordinances and other best practices to support local governments in managing the rising growth of EVs, facilitating infrastructure deployment, and mitigating the growing equity issues related to EVs.

PennDOT's Electric Vehicle Mobility Plan ↗

The EV Mobility Plan sets the groundwork for PennDOT's role in supporting the adoption of EVs across the Commonwealth. With a focus on mobility needs of EV drivers, it makes recommendations on the placement of EV charging infrastructure over the next five-years along key routes to support corridor, destination, and emergency travel needs. The plan is a key resource for informing the NEVI State Plan and associated initiatives.



**Alternative Fuels Deployment Plan
for I-81 and I-78 in Pennsylvania**
FHWA APPLIED RESEARCH PILOT STUDY

U.S. Department of Transportation
Federal Highway Administration

pennsylvania
commonwealth of pennsylvania

Michael Rutter
Administrator

PA
PennDOT

Alternative Fuels Deployment Plan for I-81 and I-78 ↗

The Alternative Fuels Deployment Plan developed a strategy for filling gaps for EV fast-charging and compressed natural gas (CNG) infrastructure along the 166-mile I-81/I-78 PA corridor that will satisfy FHWA criteria for a “Ready” designation. This includes ensuring that distances between stations be within 50 miles for EV and within 150 miles for CNG.

Pennsylvania EV Rate Design Project
Summary for the Drive Electric PA Coalition Meeting

April 21, 2022
Melissa Whited

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DEP Pennsylvania EV Rate Design Project ↗

The Pennsylvania EV Rate Design Study is expected to be finalized by the end of 2022 for DEP. The study will assess utility prices for EV charging and the impact on supporting further EV adoption, efficient grid management, and maximizing environmental benefits from EVs.

PENNSYLVANIA
2045 Long-Range Transportation Plan

PUB 349 (2-21)

PennDOT Long Range Transportation / Freight Movement Plans ↗

PennDOT's plans guide investment decisions over the next 20 years. These plans highlight the need to address the impacts of new vehicle technologies including EVs in safety, revenue and infrastructure planning. These plans establish the need for performance measures to track EV infrastructure investments and the role of EVs in supporting the statewide freight system.

PENNSYLVANIA
WORK SMART LIVE HAPPY

2020 STATE LAND USE AND GROWTH MANAGEMENT
REPORT

Commonwealth of Pennsylvania | Tom Wolf, Governor
PA Department of Community & Economic Development | Dennis H. Davis, Secretary | dced.pa.gov

2020 State Land Use and Growth Management Report ↗

The 2020 State Land Use and Growth Management Report contains data about land use and development in Pennsylvania from 2015 through 2020 and includes the anticipated impacts on Pennsylvania's transportation system based on the growth of EV sales and growing number of EV travelers in Pennsylvania.



Dates for NEVI Program Development and Implementation

The NEVI funding will be available for FFYs 2022-2026. Efforts in early 2022 have focused on coordination and outreach to a variety of stakeholders as discussed within this plan. PennDOT will continue to maintain a timeline that addresses key implementation dates for each program component.

11/2021	BIL Signed into law establishing the NEVI Formula Program
02/2022	FHWA Releases NEVI Formula Program Guidance
03/2022	05/2022 – PennDOT conducts stakeholder outreach on NEVI program
06/2022	FHWA Releases NEVI Technical Guidance
06/2022	PennDOT Draft NEVI State Plan Survey and Public Review & Comments
06/2022	PennDOT EV Mobility Plan finalized
07/2022	PennDOT Final NEVI State Plan Submittal to FHWA
08/2022	Due date for NEVI State Plans to FHWA
09/2022	Assign an EV PennDOT Project Manager
10/2022	PennDOT Announces NEVI State Plan Approval by FHWA
11/2022	PennDOT Announces Notice of Funding Opportunity
02/2023	Grant Applications Due
06/2023	PennDOT Announces Grant Awards
11/2023	PennDOT Approves Awardee Site Designs & Equipment
01/2024	PennDOT & Awardee Coordinate with Utility, Certify Installs, and Approve Fund Release
02/2024	PennDOT & Awardee Community Engagements for Site Installations
09/2024	Year 2 Funding Implementation
09/2024	Year 3 Funding Implementation
09/2024	Year 4 Funding Implementation
09/2024	Year 5 Funding Implementation
04/2024–02/2029	Ongoing Operation and Maintenance of Sites, Tracking and Data Collection
04/2024–02/2029	Annual Performance and Finance Reporting
04/2024–02/2029	Ongoing Community Engagement and EV Education

PennDOT's Alternative Fuels Website



Learn more about PennDOT's efforts related to EVs and alternative fuels at <https://www.penndot.pa.gov/EVs>. The website highlights the basics of EVs and charging infrastructure, trends in EV ownership, the latest maps of public EV charging locations, and the designated AFCs in Pennsylvania.

STATE AGENCY COORDINATION

The NEVI State Plan was developed by PennDOT in coordination with DEP, Clean Cities Coalition, the State Energy Office and the Joint Office. **These partners will continue to inform and support updates to the NEVI State Plan throughout the five-year funding program period.**

The Clean Cities Coalition is a valuable partner to PennDOT in supporting the NEVI program implementation. Clean Cities is a non-profit organization funded by the U.S. Department of Energy that focuses on the implementation of alternative fuels. Clean Cities provides technical assistance, information resources, and provides an extensive network of local stakeholders and public/private relationships that help inform the planning process. Pennsylvania is supported by two local coalitions: [Eastern Pennsylvania Alliance for Clean Transportation \(EP-ACT\)](#) and [Pittsburgh Region Clean Cities \(PRCC\)](#).



PennDOT also leads an EV Interagency Task Force with other state agencies which helps to inform the development of the NEVI State Plan and application of the funding program. The Task Force helped identify key goals and stakeholder outreach needed to support this plan. These agencies include:

Governor's Office	Department of Environmental Protection	Pennsylvania Department of Education	Department of General Services/GreenGov	Department of Community and Economic Development
Pennsylvania Utility Commission	Department of Conservation and Natural Resources	Department of Labor and Industry	Pennsylvania State Police	Pennsylvania Emergency Management Agency
Pennsylvania Infrastructure Investment Authority	Pennsylvania Department of Agriculture	Pennsylvania Turnpike Commission		

PennDOT has established an EV Senior Advisory Committee (EVSAC) to guide decision-making and to inform the NEVI program processes and procedures. The EVSAC focuses on the following key topic areas.



OUTREACH AND EDUCATION

Support outreach and education with an emphasis on EV technology, jobs and employment, EV charging infrastructure and locations, economic development, and mobility and safety.



PENNDOT FLEET TRANSITION

Identify fleet transition goals and timelines, fleet operator training, EV infrastructure goals and timelines for the fleet, and upgrades to the grid at fleet facilities.



EV & ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE) DEPLOYMENT

Address feasibility, evaluation of AFC designations and build-out, other public charging needs, integration of EV at transit facilities, pilot programs as well as business plans/practices and requirements/mandates.

PUBLIC AND STAKEHOLDER ENGAGEMENT

PennDOT has conducted extensive engagement on the development of the NEVI State Plan and other program components. This engagement will continue over the five-year NEVI program and be used to evaluate future updates to the NEVI State Plan, share NEVI competitive grant opportunities, evaluate program benefits, and share progress in addressing infrastructure gaps. Engagement is anticipated to include the following methods:



PennDOT Connects

During the NEVI program implementation, PennDOT will leverage [PennDOT Connects](#), which is a collaborative approach that includes requirements that incorporate local community needs in the planning process. The on-going public engagement efforts for the NEVI State Plan and associated projects will work with PennDOT Connects' District Planners to identify appropriate community and business stakeholders, including disadvantaged communities (DACs) near prioritized projects or other EV infrastructure gap areas. Engagement in these areas will focus on general EV education and collecting continued feedback on how these communities have been impacted by funded infrastructure. This engagement will evolve as projects are selected and awarded to include more details and to include a more collaborative process and responsibilities for the project awardees.

Engaging and Working with MPO/RPOs

Through a past [FHWA-pilot deployment study for the I-81/I-78 corridor](#), PennDOT has worked to formalize the role of regional Metropolitan Planning Organizations and Rural Planning Organizations (MPOs/RPOs) in supporting EV infrastructure deployment. Figure 1 highlights some of these key roles, which include coordination with local municipalities and chambers of commerce.

PennDOT has planned additional outreach on the

NEVI program with all of Pennsylvania's MPOs/RPOs through ongoing monthly status calls and other focused webinars. The NEVI program will be a key topic area discussed at the 2022 Fall Planning Partners Meeting to be held in October.

Coordinating with Other States and Organizations

PennDOT plans ongoing communication with other regional organizations across the eastern United States including the Northeast Association of State Transportation Officials (NASTO), the Eastern Transportation Coalition, and other state Departments of Transportation (DOTs).

In designating AFCs for Round 6, PennDOT coordinated with the Maryland, New York, New Jersey, Ohio, Delaware and West Virginia DOTs to ensure a consistent multi-state network of AFCs was created. These states plan to maintain coordination on changes to the AFC network. In addition, PennDOT is currently supporting a multi-state infrastructure deployment plan for I-80 from New Jersey to Iowa. This project has included coordination with multiple Clean Cities regions and DOTs with the goal of identifying needs and opportunities for new DCFC infrastructure along the corridor.

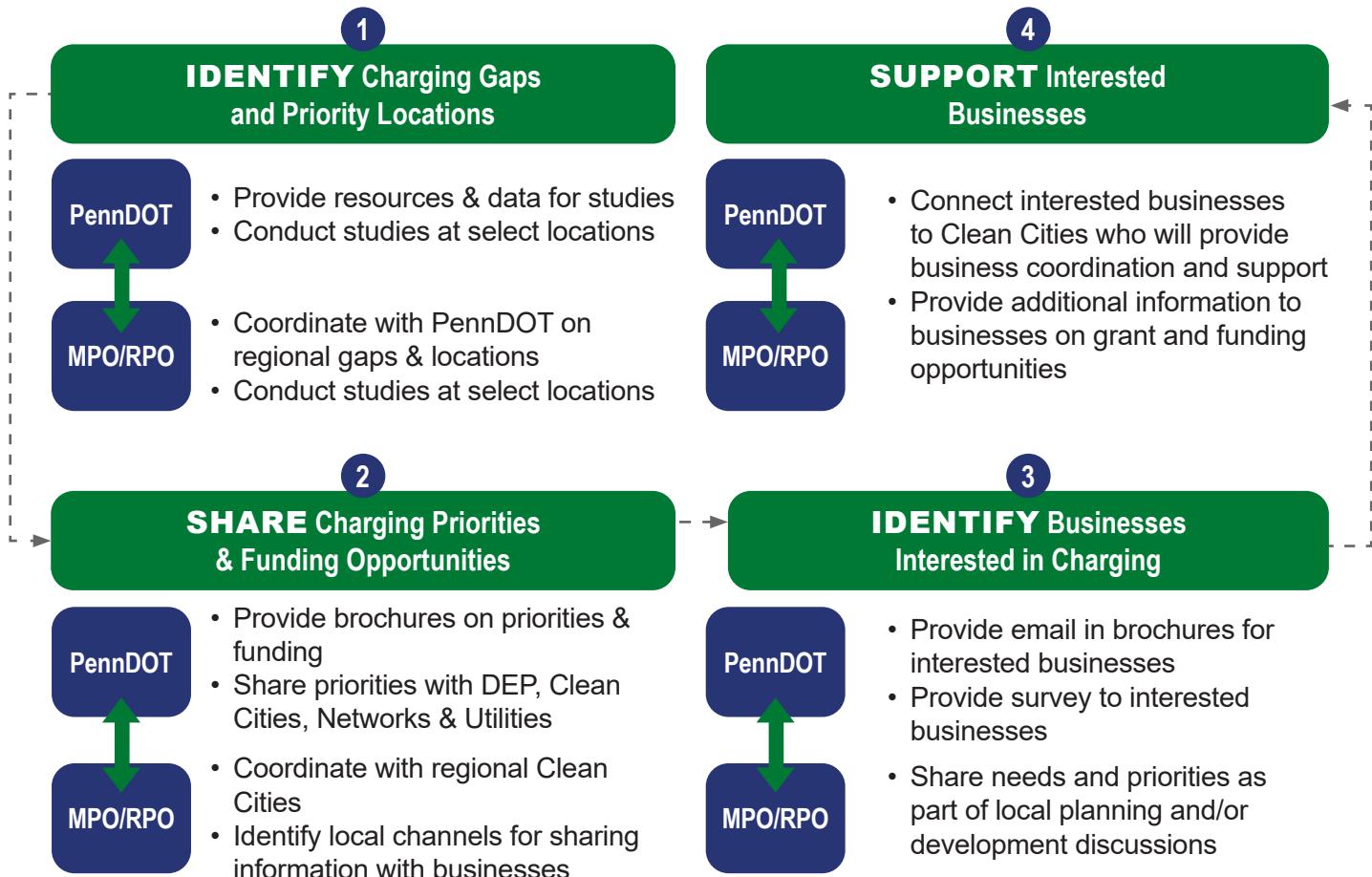
PennDOT has also coordinated outreach and planning sessions with the Appalachian Regional Commission, an economic development partnership agency of the federal government and 13 state governments that focuses on 423 counties across the Appalachian Region for their input and coordination assistance on EV charging programs.



Transportation Improvement Program (TIP)

PennDOT and its supporting MPO/RPOs engage the public on changes to their respective TIPs. Since the NEVI Formula Program utilizes federal transportation funds, future EV infrastructure projects are expected to be included on the statewide and regional TIPs. Outreach associated with the TIP will highlight the EV infrastructure projects and make the public aware of ongoing investments. Project descriptions will clearly indicate the location and funding details for each project.

Figure 1: Roles for PennDOT and MPOs/RPOs for Charging Deployment



NEVI State Plan Stakeholder and Public Engagement

Stakeholder and public participation play a critical role in the NEVI planning process. PennDOT's stakeholder outreach was vital to the development of this first NEVI State Plan version. The engagement obtained insights and feedback from industry leaders, EVSE charging companies, potential site hosts, and utilities. In addition, public education and outreach assisted in identifying some of the community needs and challenges.

Leading up to the NEVI State Plan, PennDOT conducted extensive outreach from January to June of 2022. The various engagement and outreach activities helped to inform and define NEVI goals and objectives; evaluate needs and gaps, identify funding priorities and strategies, assess funding administration, better understand challenges and barriers to infrastructure implementation, and evaluate ways to ensure funded infrastructure is applied in an equitable manner, providing benefits to all populations across Pennsylvania including rural and DACs. These insights were obtained through collaborative and interactive public meetings, stakeholder engagement session webinars, and interactive surveys. Table 1 provides a summary of the engagement conducted in support of the NEVI State Plan submittal in 2022. Bolded items highlight engagement that supported equity considerations.



Table 1: Summary of PennDOT Public and Stakeholder Engagement

59 Meetings between January 2022 and June 2022 including:		
	Advocacy/Equity	1
	Government Partners	24
	Environmental Partners	6
	EV Charging Infrastructure	11
	Utilities	4
	Labor/Education/Professional Associations	5
	Commercial (Potential Site Hosts)	2
	Transit	2
	Freight	1
	Original Equipment Manufacturers	3
14 Presentations		
	Government Partners	6
	Environmental Partners	2
	Local Government/Agency	3
	Utilities	1
	Labor/Education/Professional Associations	2
12 NEVI Stakeholder Engagement Sessions		
	Utilities	
	EVSE Network Providers	
	Food Merchants Association	
	Localities	
	Legislative Webinar	
	Public Webinar	
	Labor & Education	
	Airport & Transit Authorities	
	Destinations	
	Commercial/Freight Goods Partners	
	Environment	
	Equity & Advocacy Groups	

The **Stakeholder Engagement List Attachment** provides a detailed list of PennDOT outreach participants through the engagement activities outlined above. The stakeholder engagement session survey questions can be found in the **Stakeholder Meeting Questions Attachment**.

Figure 2 highlights a summary of key issues and topics raised at PennDOT's NEVI stakeholder engagement sessions. The sessions emphasized the importance of PennDOT keeping open lines of communication as the NEVI State Plan is developed and updated annually. In addition, communicating funding opportunities, application scoring criteria, and charging infrastructure gaps as early as possible will help private charging companies, businesses, and local governments plan for funding applications.



Figure 2: Highlights of PennDOT Stakeholder Engagement Sessions in 2022

EVSE Network Provider — Outreach Highlights	<ul style="list-style-type: none">• Majority of providers are applying for NEVI Formula funding and are prepared to provide at least a portion of the 20% match fund requirement.• Deployment barrier concerns included utility coordination, demand charges, procurement, permitting timelines, and the costs associated with load management and electrical/utility upgrade requirements to meet the high-powered charging mandate.• Increased and open communications between providers, utilities, and PennDOT on processes, timelines and issues in timely manner would be beneficial on collaboration and implementation.• Recommended that federal funding opportunities be created for workforce development to create training or apprenticeship opportunities to aid in growth of skilled workforce. Some providers are working with local educational institutions to develop localized certification or training programs or have done so within their organizations.
Utility Company — Outreach Highlights	<ul style="list-style-type: none">• Majority of utility company participants are in support of EV adoption and are interested in providing “pole and wire” investments. Most indicated that the 20% match would come from a variety of sources.• Grid upgrades tied to EV infrastructure will be made on a case-by-case basis and will be determined by the anticipated EV charging load and whether existing facilities can handle the kW increase. However, every utility indicated that should the site/project be feasible even if changes or upgrades are needed, they would not deny access to an EV charging location.• Utility companies would like to be incorporated in discussions on potential EV locations by EVSE network companies as early as possible; however, they are willing to work with third-party partners.• Data on usage and open collaboration between EV industry partners, Pennsylvania Utility Commission, and PennDOT are the two most important things as data is so new and relatively scarce on transportation electrification and open collaboration would assist in future deployments.• Capacity mapping and cost recovery are essential for utilities to meet new demand.• Equity is a major consideration and utilities may play a major role in equitable build-out.• PennDOT can partner with utilities by providing planning studies and EV density/adoption estimates.

Figure 2 continued on next page...



Figure 2 continued.

<p>Original Equipment Manufacturer (OEM)</p> <p>—</p> <p>Outreach Highlights</p>	<ul style="list-style-type: none">• OEM participants (representing vehicle manufacturers) recommend applying several principles in developing EV charging infrastructure programs which includes 1) simplicity, 2) urgency, 3) customer experience, 4) transparency, 5) flexibility, 6) collaboration, and 7) reliability.• Three key areas for more predictable EV charging infrastructure deployment include permitting, utility service connection timelines, and electricity rates.• Providing access to Level 2 charging where vehicles are already parked most of the day whether at home, work, or around town is the most cost effective and efficient way to ensure ubiquitous charging access. Therefore, to drive long-term EV adoption, the NEVI Formula Program focus on corridor fast charging must be complemented by supporting Level 2 charging access at key locations.• Evaluate mechanisms to support the cost-effective use of NEVI program funds while simultaneously supporting deployment for the highest use applications.<ul style="list-style-type: none">○ Utilize competitive solicitations as the main mechanism for disbursing program funds. The 20% match funding should be supported by the private sector EV charging providers and factored into the competitive solicitation process.○ Allow EV charging station developers to incur eligible costs prior to the award of funds once a window for an application request has opened as a way to accelerate station deployments. Prioritizing projects that are shovel-ready is important and those projects should not be impeded by restrictive program requirements such as requiring grant contracting to be completed prior to starting construction.• Anyone inspecting or servicing an EV should have high voltage training.• Key barriers impacting the speed and efficiency in which states can deploy charging infrastructure are permitting, grid capacity analysis, and utility interconnection.
<p>Food Merchants Association</p> <p>—</p> <p>Outreach Highlights</p>	<ul style="list-style-type: none">• Simplify application processes & support utility coordination.• Ensure safety and accessibility are promoted through deployment projects.• Identify desirable site amenities in project selection criteria.
<p>Local Government</p> <p>—</p> <p>Outreach Highlights</p>	<ul style="list-style-type: none">• Partner on planning, business outreach, and education efforts.• Support localities with communication and identifying priority EV site locations.

Figure 2 continued on next page...



Figure 2 continued.

Advocacy and Equity Groups — Outreach Highlights	<ul style="list-style-type: none">Majority of advocacy and equity groups have been involved in planning for EV charging infrastructure.Majority of small businesses were unsure if they would apply for grant funding if they were required to provide the 20% match.Advocacy and equity participants recommended splitting high-use areas and environmental justice (EJ) areas as locations of priorities after AFC build out, community meetings, public transit & micro mobility hubs in low-income communities, and small and disadvantaged business enterprise (SBE/DBE) requirements to include in the NEVI State Plan to address equity.Participants recommended goals for the plan to include allowing for small businesses to have access to funding, accurate electric consumption reporting and billing for consumer, a process to analyze outcomes to adjust plan on an annual basis, and to tie into other state plans for EV deployment, environmental improvements, and equitable development.Provide ample opportunities for community input.Leverage the federal Justice40 initiative to ensure benefits are shared equally by disadvantaged population.Ensure accessibility at all charging sites.
Environment Groups — Outreach Highlights	<ul style="list-style-type: none">Ensure open access and diverse payment options at stations.Consider on-site renewable energy (e.g. solar and other energy alternatives) and battery storage technologies.Encouraging EV adoption via signage, messaging campaigns, and social media.
Labor & Education Groups — Outreach Highlights	<ul style="list-style-type: none">Must identify knowledge, skills, and abilities necessary for workforce development.Apprenticeships and career & technical schools are great places to start.NEVI funds could support training with focus on transferable skills sets and outreach efforts to build job awareness.
Airport and Transit Authorities — Outreach Highlights	<ul style="list-style-type: none">Provide open data, transparency, and outreach to support electrification efforts.Charging infrastructure constraints, grid capacity, and range limitations identified as concerns for transit electrification.

Figure 2 continued on next page...



Figure 2 continued.

Destination Groups — Outreach Highlights	<ul style="list-style-type: none">Identify best practices for implementation, accessibility needs for EV charging, and coordination on grid capacity needs.Evaluate the role of NEVI funding for major events with a large influx of visitors that would require additional charging infrastructure, like mobile-ready charging units.Provide open communication on timelines and plan implementation, as well as best practices would assist in supporting electrification efforts.
Commercial/Freight Goods Partners — Outreach Highlights	<ul style="list-style-type: none">Prioritize EV freight corridors using data on truck average daily traffic on interstates and at company terminals.Anticipate medium and heavy-duty EV charging needs near interstates, commercial hubs, fleet hubs, regional distribution centers, and parking facilities.Evaluate ways to support workforce training and education as commercial vehicle diesel technicians will need to be EV certified.



Public and Stakeholder Survey on Plan Content

In addition to the stakeholder engagement sessions, PennDOT issued an online survey for stakeholders and the general public to share feedback on the goals, infrastructure-prioritization, and program-administration components of the draft NEVI State Plan in mid-June 2022. The survey received more than 4,400 responses. The survey responses assisted in the prioritization of the NEVI State Plan goals and objectives. In addition, the survey responses also provided key insights as to key amenities and services the general public would like at charging stations, with lighting/security/safety first, followed by, restrooms, and recreation destination/lodging. The responses from the survey will be further reviewed for additional insights and will be used to inform future NEVI State Plan updates and improvements. The abridged results of the survey can be viewed in the **Stakeholder and Public Survey Attachment** and online at www.penndot.pa.gov/EV (see the NEVI Formula Program page).



Using Engagement to Inform NEVI State Plan Development

The stakeholder engagement sessions and surveys were instrumental in shaping and defining the development of the NEVI State Plan and will be used to guide future plan revisions, program processes and procedures. Examples of how input from engagement was used within the current plan includes the following:

Session/Survey	Examples of How Engagement Used
EVSE Network Providers	<ul style="list-style-type: none">The plan was adapted to emphasize priority to ensuring a skilled workforce through workforce development and certifications.The plan highlights how localized communities could benefit from growing job opportunities through the work that will be available.
Utilities	<ul style="list-style-type: none">The plan acknowledges that grid capacity issues cannot be identified at this time. As a result, early planning and collaboration with utility companies will be needed for any new infrastructure projects.PennDOT continues to coordinate with utility companies to identify the best plan for collaboration moving forward.
OEM	<ul style="list-style-type: none">Assisted with defining some of the NEVI State Plan goals and provided feedback on what to consider for contracting and administration.
Advocacy and Equity	<ul style="list-style-type: none">The plan includes specific goals and objectives for equity that were developed with support of engagement input.The plan expanded discussion and emphasis on equitable development, outreach, and benefits, which are essential to the NEVI Program.PennDOT is working to further enhance ways to ensure small and disadvantaged business enterprises are aware of and have opportunities to compete for NEVI formula funding.
NEVI Engagement Online Survey	<ul style="list-style-type: none">The comments and feedback received via the open responses led to the development of an entirely new goal to address environmental benefits and considering multiple modes of transportation for electrification.In addition, the feedback received spurred additional consideration for first responder training in EV response, appropriate signage and location identification, ensuring small and diverse businesses are included as potential partners or sites, and ensured early utility coordination.



NEVI Public Engagement Framework Moving Forward

PennDOT will continue to conduct outreach during the five-year NEVI program period. A summary of this outreach will be provided in annual updates to the NEVI State Plan and may be integrated into a tracking dashboard. PennDOT is also working with their director of Equitable Transportation on a full EV public engagement plan.

PennDOT's public engagement strategy will include multiple phases to ensure we're reaching the right audiences at the right time for successful and meaningful outreach, engagement, education, and conversation. While a general education effort about the NEVI State Plan will be ongoing through the length of the project for all Pennsylvanians, stakeholders and partners, PennDOT will engage in targeted outreach for communities where projects will be deployed.

PHASE 1

AFC Build-out Focus on Neighboring Communities

- PennDOT will utilize available federal and state screening tools to identify DACs within a defined radius of the AFCs. The screening tools will specifically target communities with legacy pollution, clean transportation disadvantages, and climate change/clean energy disadvantages.
- PennDOT will leverage existing standards for engagement through the TIP process, PennDOT Connects and Publication 295: Project Level Public Involvement Handbook.
- Engagement sessions will include a variety of approaches to ensure inclusivity and accessibility. Some of these strategies may include virtual, in-person, online or phone engagement.

PHASE 2

Community-based Project Outreach

- PennDOT will utilize available federal and state screening tools to identify DACs within a defined radius of approved community projects.
- PennDOT will leverage existing standards through the TIP process, PennDOT Connects and Publication 295: Project Level Public Involvement Handbook.
- Engagement sessions will include a variety of approaches to ensure inclusivity and accessibility.

PHASE 3

Statewide & General Education and Outreach – Ongoing

- PennDOT will continue to educate the general public, stakeholders, and partners about EV programs, funding opportunities and regulations through various outreach methods, including virtual, online resources, and in-person meetings and presentations.

PennDOT welcomes comments on additional stakeholders, organizations or community groups to include in discussions regarding project prioritization, affordability, access, and program benefits.



PLAN VISION AND GOALS

PennDOT, in coordination with other state agencies, has developed a vision and goals for the NEVI program. These goals integrate key requirements outlined in the NEVI Program Guidance and goals provided in PennDOT's Mobility Plan to establish an interconnected and reliable EV network that benefits all populations in Pennsylvania. In addition, these goals will guide future investment decisions and be directly linked to the criteria and scoring of funding applications. During the five-year NEVI program period, the goals and objectives may be periodically revised based on changing needs or other priorities identified through funding implementation.



Electrification Vision

Strategically deploy a convenient, reliable, affordable, and equitable EV charging network to support range confidence for Pennsylvanians and visitors.



NEVI Electrification Program Goals

GOAL 1

Construct a consistent, robust charging network to enhance availability when and where people need to charge.

Objectives

Focus Area for
FFY22-23 Funding

- 1 Full build-out of all AFCs in Pennsylvania, locating DCFCs at least every 50-miles and within 1-mile of an interstate exit or highway intersection along designated AFCs. ✓
- 2 Build redundancy into the system with chargers along the AFCs and other routes of significance where high demand of charging is expected in the near term. ✓
- 3 Support PennDOT's overall electrification goal for 95% of Pennsylvanians to live within 15-miles of a public EV charging station and 50% of municipalities to have at least two Level 2 plugs open to the public 24/7 by 2027. ✓
- 4 Ensure the long-term viability or existence of all NEVI-funded charging stations. ✓

GOAL 2

Fund infrastructure that is safe and convenient for travelers.

Objectives

Focus Area for
FFY22-23 Funding

- 1 Ensure all funded stations meet minimum federally required standards for charging stations. ✓
- 2 Prioritize chargers at sites that allow drivers easy access to eat, shop, recreate, or rest. ✓

GOAL 3

Ensure EV infrastructure funding is distributed and applied in an equitable manner and provides benefits to all populations including underserved and rural communities.

Objectives

Focus Area for
FFY22-23 Funding

- 1 Ensure EV charging spending is in alignment with the federal government's Justice40 initiative. ✓
- 2 Require all EV charging sites have at least 1 EV plug(s) equipped for Americans with Disabilities Act (ADA) compliant parking. ✓
- 3 Conduct a minimum of 2 public meetings annually to elicit feedback and ensure all communities and entities are heard. ✓
- 4 Maintain PennDOT's EV website to share updates and information and provide the opportunity for comment. ✓



GOAL 4

Complement the NEVI formula program with proper training and diversity of the workforce to support economic growth, equity and safety.

Objectives

Focus Area for FFY22-23 Funding

- 1 Compliance with federal requirements and minimum standards for the NEVI program related to Buy America and Made in America. ✓
- 2 Require contractors and subcontractors to utilize Electric Vehicle Infrastructure Training Program (EVITP) certified electricians to install and maintain the EVSE funded by the NEVI program. ✓
- 3 Work with the Pennsylvania Department of Community and Economic Development, Department of Labor and Industry, local trade organizations, network companies, and other key stakeholders to understand the opportunities and challenges facing the workforce. ✓
- 4 Encourage investments that support Pennsylvania businesses including small, disadvantaged and diverse businesses. ✓

GOAL 5

Develop a charging network to support freight and goods movement through the Commonwealth.

Objectives

Focus Area for FFY22-23 Funding

- 1 Prioritize investments that include design considerations to accommodate larger vehicles including tractor trailers, recreational vehicles, and/or other vehicles with trailers. ✓
- 2 Continue to engage stakeholders to understand EV charging needs to support freight and goods movement. ✓
- 3 Re-evaluate objectives upon future release of federal guidance on addressing medium- and heavy-duty EVs. ✓

GOAL 6

Provide environmental benefits that can be shared by all of Pennsylvania's communities.

Objectives

Focus Area for FFY22-23 Funding

- 1 Prioritize investments that include clean, renewable energy sources and strategies. ✓
- 2 Invest in EV infrastructure that can support multiple modes of travel including public transportation as well as heavy and light micromobility options (mopeds, motorcycles, e-bikes, etc.). ✓
- 3 Ensure DACs share in environmental benefits through targeted investments and engagement with those communities. ✓

CONTRACTING

PennDOT anticipates that in most instances contracts will be established with private entities for the planning, installation, testing, and operation and/or maintenance of EV charging infrastructure funded in whole or in part through the NEVI program. PennDOT is currently working to define the contracting and program administration process. The process aims to support efficient and effective deployment of EV infrastructure that meets the vision and goals provided in this NEVI State Plan. PennDOT's contracting strategy is anticipated to include the following attributes:

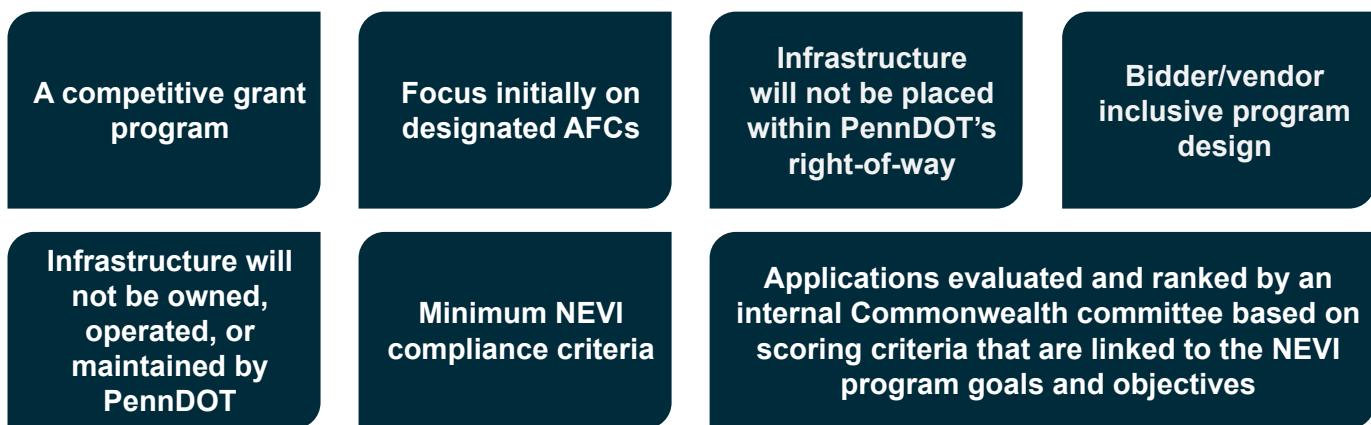


Figure 3 provides additional considerations for program and contract administration. PennDOT will work to ensure NEVI funds are distributed to private entities in an equitable manner. This may include balancing needs with efficient and effective deployment while ensuring both larger and smaller entities have access to funding.

Contracts with private entities may include requirements for community engagement, sharing of usage data, and other station characteristics to ensure that they are safe, accessible and convenient for all populations.

Minimum NEVI Standards and Requirements

As of June 2022, FHWA has issued a NPRM on draft regulations to prescribe minimum standards and requirements for projects funded under the NEVI Formula Program. When finalized, these standards and requirements will apply to all PennDOT contracts under the program and include the following topic areas:

- Procurement process transparency
- Number of chargers
- Connector type
- Power level
- Availability and accessibility
- Payment methods
- Equipment certification
- Security
- Long-term stewardship
- Qualified technician
- Customer service
- Customer data privacy
- Use of program income
- Signage standards
- Interoperability of charging infrastructure
- Data submittal and public sharing of information
- Community engagement reporting



Figure 3: Considerations for Contract and Program Administration

1. General Contract/Program <ul style="list-style-type: none">Entity Type Eligibility<ul style="list-style-type: none">Public, Private Property ownersSpecial categoriesSite Host Proof of Performance<ul style="list-style-type: none">DUNS, Bond/Credit Rating, etc.Past Project PerformanceEligible & Non-Eligible Costs	2. Vendor Prequalification <ul style="list-style-type: none">EVSE vendors<ul style="list-style-type: none">EVSE installersEVSE networksEVSE O&MOtherPrequalification Process / RequirementsOther
3. Eligible Project Locations <ul style="list-style-type: none">Interstate HighwaysUS / State RoutesRural Routes of SignificanceEquity Locations	4. Contract Timeframe <ul style="list-style-type: none">Performance PeriodOperational Date RequirementsExtended Terms (~5 Years)Expiration & Release of Terms
5. EVSE Hardware Minimum Requirements <ul style="list-style-type: none">Federal 180 Day FHWA GuidanceState RequirementsOther Program requirements	6. Design/Build Minimum Requirements <ul style="list-style-type: none">Federal 180 Day FHWA GuidanceState RequirementsLocal Jurisdiction/Utility/permitting
7. Site Host Agreements <ul style="list-style-type: none">Right of Way / Lease AgreementsEnvironmental Permitting	8. Labor / Workforce Requirements <ul style="list-style-type: none">Civil Rights / Prevailing wageDEI Requirements
9. Operational Minimum Requirements <ul style="list-style-type: none">HardwareNetwork/Data MonitoringO&M + UptimeSafety & Cybersecurity	10. Record Keeping & Reporting <ul style="list-style-type: none">Cadence (quarterly, annual, other)Required Content / DataFormat & Submission ProcessRecord Retention Types & Timeframes
11. Performance Evaluation <ul style="list-style-type: none">Performance Evaluation CriteriaEvaluation Process	12. Non-Performance & Penalties <ul style="list-style-type: none">Non-Performance NotificationPenalties and Liabilities



Application Request Framework

At this time, PennDOT has not fully defined how application requests will be conducted and is evaluating multiple approaches, including separate application requests for defined AFC corridor gaps. Requests may be for individual stations, multiple stations, or the “full build-out” of particular AFCs (each with specific sites proposed by the applicant). Prior to finalizing the approach, PennDOT will:

1. Encourages all stakeholders interested in pursuing NEVI Formula Program funds to provide feedback on what they would like to see in the application process when submitting comments on this draft plan.
2. Issue a Request for Information (RFI) to solicit formal feedback from industry and various stakeholders.

Once the program administration structure is developed, the project selection process will include **infrastructure, data and funding requirements** as well as **scoring criteria** that will be used to evaluate applications and to assess the need and priorities for future operations funding support. Initially, charging infrastructure requirements will most likely align with the FHWA AFC requirements related to power, connector types, number of connectors and distance from an AFC (i.e. within 1 mile). Following certification of the AFC network as “full build-out”, funds may be used for projects outside the AFC network, whereupon these requirements would no longer apply, and other criteria may be used to evaluate projects.

Project Scoring and Prioritization Criteria

PennDOT is considering a variety of project scoring and prioritization criteria that are tied to the NEVI goals and objectives. This criteria may be used to define priority locations (in NEVI State Plan updates or application requests) or distinguish between competing proposals. Such criteria may prioritize locations/projects that:

Scoring Criteria



- Fill a charging gap or provide redundancy along an AFC
- Are within a DAC area as defined by the Justice40 Initiative, or are able to directly serve low-income, minority or other disadvantaged populations
- Are in rural areas, where EV adoption may be low but could be spurred with infrastructure investment
- Require minimal operating assistance, due to immediate economic viability with capital funds
- Offer a higher percentage (>20%) of the non-federal funding match
- Already host EV charging infrastructure and only require upgrades to meet NEVI criteria
- Emphasize station safety, accessibility, and convenience
- Site design accommodations for larger trucks and recreational vehicles or trailers
- Provide additional power up to 350kw to support medium-duty vehicles (MDV)
- Serve corridors with higher traffic and truck volumes

EXISTING AND FUTURE CONDITIONS ANALYSIS

State Geography, Terrain, and Climate

Pennsylvania is 283 miles long, from east to west, and 160 miles wide at its most distant points and covers 46,058 square miles, making it the 33rd largest of the 50 states. Pennsylvania is bordered by New York and Lake Erie in the north; New York and New Jersey in the east; Delaware, Maryland, and West Virginia in the south; and West Virginia and Ohio in the west.

A large portion of Pennsylvania is covered by mountains as well as a series of rolling hills, plateaus, and ridges that are punctuated by valleys. About 50% of the state's land area is covered by forests and the only lowlands are situated in the extreme southeastern corner of the state. Pennsylvania's largest urbanized areas include (in order of population): Philadelphia, Pittsburgh, Allentown-Bethlehem, Harrisburg-Carlisle, Scranton-Wilkes-Barre, Lancaster, York-Hanover, Reading and Erie. These areas align where most of the EVs are registered within the state.



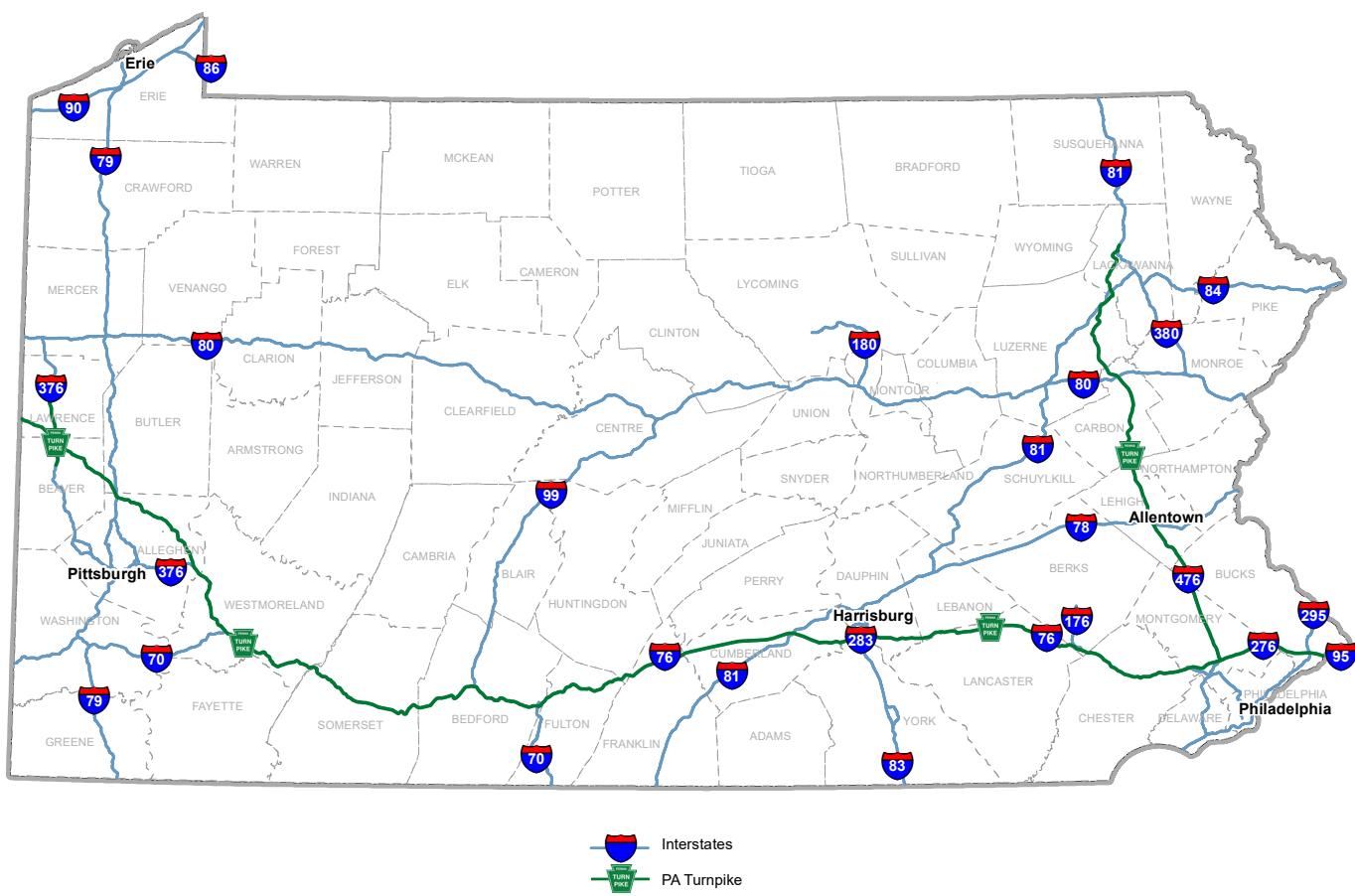
Source: Physical map of Pennsylvania (freeworldmaps.net)

The climate of Pennsylvania is diverse due to the multitude of geographic features found within the state. Straddling two major climate zones, the southeastern corner of Pennsylvania has the warmest climate. Pennsylvania DEP's [2021 Climate Impacts Assessment](#) projects increases to temperatures with more 95 degree and higher days, more frequent intense rainfall events, and increases to tidal influenced flooding in the Philadelphia region. These impacts will need to be addressed in planning for and designing new EV infrastructure.



State Transportation System

There are more than 120,000 linear miles of roadway in Pennsylvania—nearly 40,000 of which are owned, maintained, and operated by PennDOT; the rest of the extensive road network is primarily owned and maintained by local government. Pennsylvania is served by 1,870 linear miles of interstate highway—the fourth-largest network of interstates in the nation. Interstates will be a primary focus for new EV infrastructure in the first few years of the NEVI Formula Program. Interstates comprise only 6 percent of total state-owned roadway mileage yet accommodate 24 percent of all traffic volume. Pennsylvania's interstates also serve as important freight corridors and have significant truck traffic. Over 1,400 miles of state-owned highways (including the majority of interstates) are designated under the U.S. National Highway Freight Network (NHFN).



Opportunities for EV infrastructure will also be evaluated for other modes of transportation. All 67 Pennsylvania counties are served by public transportation, provided by 57 transit agencies. Both the Southeastern Pennsylvania Transportation Authority (SEPTA) and Pittsburgh Regional Transit are exploring and testing the use of electric buses. There are over 120 public-use airports (14 have commercial service) across Pennsylvania. With estimates of a near-doubling of passenger and cargo numbers by 2036, airport infrastructure improvements are needed, and can be expected to support airport job growth. Pennsylvania's three water ports (Philadelphia, Pittsburgh, and Erie) each function uniquely to move domestic and international commerce across deep water, inland, and Great Lakes waterways.



EV Ownership and Registrations

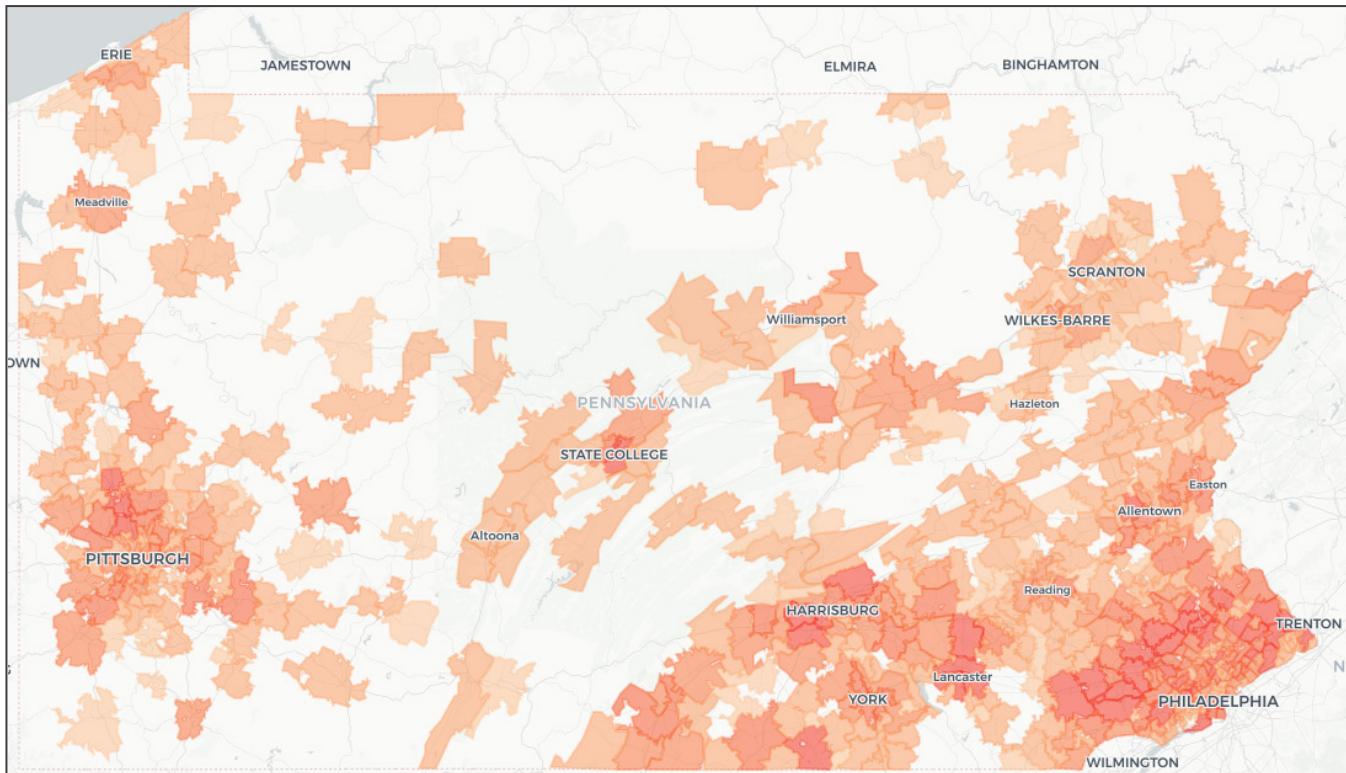
PennDOT tracks EV ownership through the Department of Motor Vehicles (DMV) registration database. Registrations for EVs can be extracted from annual reports provided on [PennDOT's DMV website](#). In 2021, there were nearly 23,500 battery EVs registered in the state, a nearly 55% increase from 2020. Since 2019 battery EVs have more than doubled. However, the total portion of EVs is still well less than 1% of the total fleet. Table 2 provides annual registrations of EVs and all types of hybrids since 2015.

Table 2: Summary of EV and Hybrid Vehicle Registrations by Year

Year	Registered EVs	Registered Hybrids	Total State Registrations
2015	2,773	24,053	10,373,977
2016	3,599	24,795	10,423,779
2017	4,364	26,772	10,192,351
2018	7,694	30,037	10,356,982
2019	10,875	35,406	10,300,995
2020	15,205	42,898	10,272,155
2021	23,487	57,689	10,324,483

PennDOT also continues to track EV registrations by zip code. Figure 4. shows how EV registrations relate to the Commonwealth's EV AFC network

Figure 4: Statewide EV Registrations, by Zip Code
(Darker Orange Areas indicate higher densities of EV registrations)





AFC Network

Since the AFC program began in 2016, PennDOT has successfully nominated all of PA's primary interstate highways as AFCs for EV charging, plus other additional freeways and U.S. routes. Figure 5 shows the Commonwealth's AFC EV corridors through six rounds of nominations (2016-2022). In May 2022, as part of its AFC Round 6 submission, PennDOT nominated two additional non-interstate U.S. Highways as EV AFCs: US-1; and US-422. These nominations were recently approved by USDOT on July 7, 2022.

Table 3 lists each EV AFC for Rounds 1-6, by route, mile marker, and nomination round. Importantly, NEVI Formula Program funds must be used for stations along these AFCs until all of them are certified as "full build-out", i.e., qualifying for a "Ready" designation under the new criteria.¹ Once PA certifies its EV AFC network, NEVI Formula Program funds may then be used for any public road or publicly accessible location.

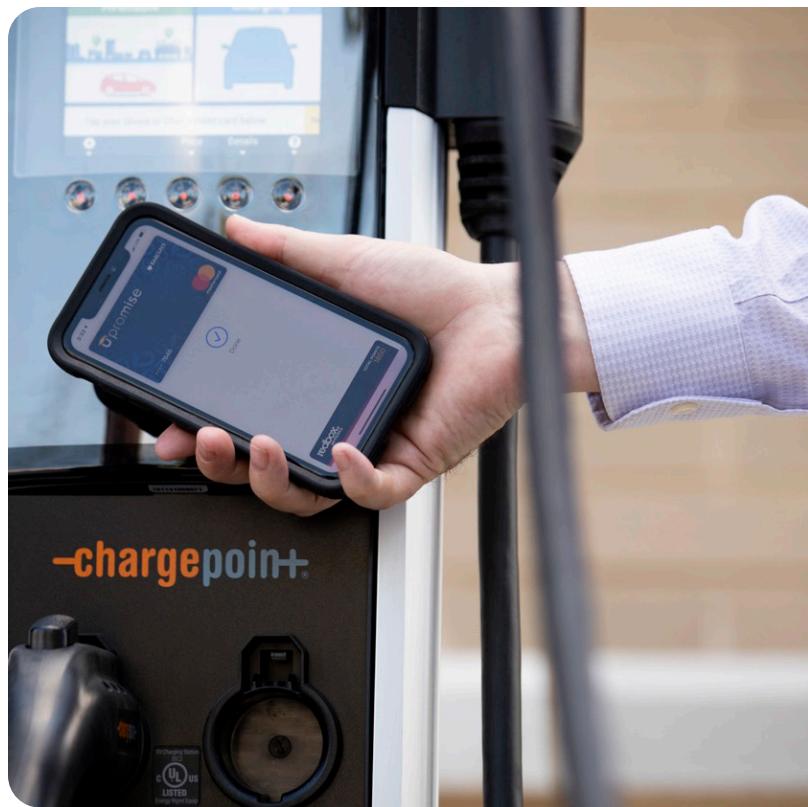
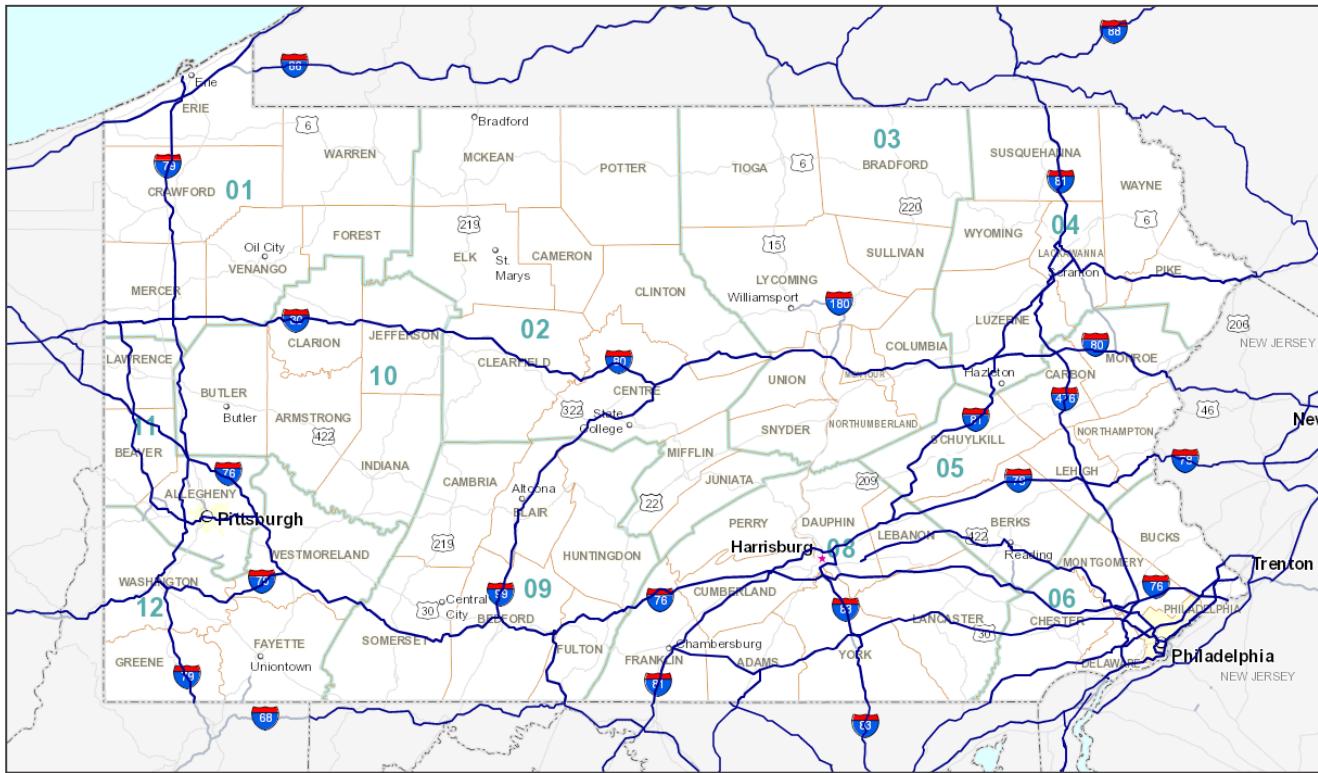


Figure 5: EV AFC Corridors, Rounds 1-6



¹ Note that the current EV AFC designations indicated in Table 3 were awarded under the old criteria for Rounds 1-5; if nominated today under the new criteria, all of PA's AFC corridors for EV charging would be considered "Pending" except for a few short segments of the PA Turnpike (I-76 and I-276) around Philadelphia.



EV AFC Corridors (as of July 2022)



Table 3: EV Corridor Designation Status, by Mile Marker

Route	Corridor Segment	Mile Marker	Round Nominated
I-276	King of Prussia (I-76 interchange) to PA/NJ border (I-95 interchange)	326-356	Round 1
I-376	West Middlesex (I-80 interchange) to Aliquippa	1-45	Round 2
	Aliquippa to Monroeville (I-76 interchange)	45-85	Round 2
I-476	Ridley (I-95 interchange) to Wilkes-Barre	1-105	Round 1
	Wilkes-Barre to Chinchilla (I-81 interchange)	105-131	Round 1
I-70	PA/WV border to Washington	1-20	2020 Refresh
	Washington to Hunker (I-76 interchange)	20-58	2020 Refresh
	Hunker (I-76 interchange) to Bedford	58-146	2020 Refresh
	Bedford to PA/MD border	146-170	2020 Refresh
I-76	PA/OH border to Hunker	1-77	Round 1
	Hunker to Mechanicsburg	77-236	Round 1
	Mechanicsburg to PA/NJ border	236-351	Round 1
I-78	Jonestown (I-81 interchange) to PA/NJ border	1-75	Round 3
	PA/WV border to Washington (I-70 interchange)	1-34	Round 2
I-79	Washington (I-70 interchange) to Slippery Rock	38-105	Round 2
	Slippery Rock to Erie (I-90 interchange)	105-178	Round 2
I-80	PA/OH border to Clarion	1-62	2020 Refresh
	Clarion to DuBois	62-101	2020 Refresh
	DuBois to PA/NJ border	101-310	2020 Refresh
I-81	PA/MD border to PA/NY border	1-232	Round 3
I-83	PA/MD border to New Cumberland (I-76 interchange)	1-39	Round 3
	New Cumberland (I-76 interchange) to Harrisburg (I-81 interchange)	39-51	Round 3
I-84	Dunmore (I-81 interchange) to PA/NY border	1-54	Round 3
I-90	PA/OH border to PA/NY border	1-46	Round 2
I-95	PA/DE border to PA/NJ border	1-43	Round 1
I-99	Bedford (I-76 interchange) to State College	1-71	Round 4
	State College to Bellefonte (I-80 interchange)	71-85	Round 4
US-30/ I-676	Chambersburg (I-81 interchange) to Gettysburg	188-212	Round 3
	Gettysburg to PA/NJ border	212-332	Round 3
US-1	PA/MD border to Philadelphia (I-76 interchange)	1-52	Round 6
US-422	Hummelstown (US-322 interchange) to Pottstown	113-180	Round 6
	Pottstown to King of Prussia (I-76 interchange)	180-196	Round 6



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Existing Locations of Charging Infrastructure Along AFCs

There are 2,855 charging ports at 1,203 public Level 2 and/or DCFC locations in PA.² As shown in Table 4, about two-thirds of DCFC locations are considered public by the FHWA (which have CCS and/or CHAdeMO ports), whereas about one-third are Tesla Superchargers (which can only charge Tesla vehicles). At the same time, there are about twice as many Tesla DCFC ports than non-Tesla DCFC ports—underscoring the key role Tesla stations play in the overall EV infrastructure network, despite not currently meeting current FHWA criteria for AFC public stations.

Table 4: Existing EV Charging Infrastructure, PA

Route	Locations	Ports	Max Ports, Single Location
DCFC	130	563	16
Public Non-Tesla (CCS and/or CHAdeMO)	84	189	9
Tesla	46	374	16
Level 2	1,093	2,292	16

SOURCE: U.S. Department of Energy, Alternative Fuels Data Center, <https://afdc.energy.gov/DATA/>, %20ACCESSED%205/19/22

² Total number of locations (1,203) is calculated as the sum of Level 2 and DCFC locations (1,223), minus 20 locations that include both Level 2 and DCFCs.



Figure 6 shows where the public DCFC, Tesla DCFC, and Level 2 charging stations are located in relation to PA's EV AFC corridors. In general, DCFCs are located along highway corridors, whereas Level 2 stations are more common in urban areas, such as around Philadelphia, Pittsburgh, Allentown, Harrisburg, Lancaster, and Reading.

Also shown on the map (in red) are the public DCFC that meet the updated AFC criteria for power capacity along "Ready" corridors, which requires that stations include four CCS connectors (simultaneously charging four EVs) with site power capability no less than 600 kW (supporting at least 150 kW per port simultaneously across 4 ports). There are 21 such stations in Pennsylvania. Of these 21 stations, 12 of them also meet the updated AFC criteria of being within 1-mile of an AFC exit location (whereas the previous AFC criteria was 5 miles).

Table 5 provides individual station details for the following EV charging sites:

- 12 locations that meet the FHWA NEVI requirement for site power capability and distance from the nearest exit (within 1-mile). These locations can count towards the certification of a corridor as "full build-out."
- 9 locations that meet the FHWA NEVI requirement for site power capability but are not within 1-mile of the nearest exit. These locations would need a discretionary exception to count towards the certification of a corridor as "full build-out."
- 2 locations that do not meet the FHWA NEVI requirement for site power capability, but do have the minimum number of ports (4) and are within 1-mile of the nearest exit. These locations would require upgrades to existing ports to count towards the certification of a corridor as "full build-out."



Figure 6: Existing EV Charging Infrastructure, PA

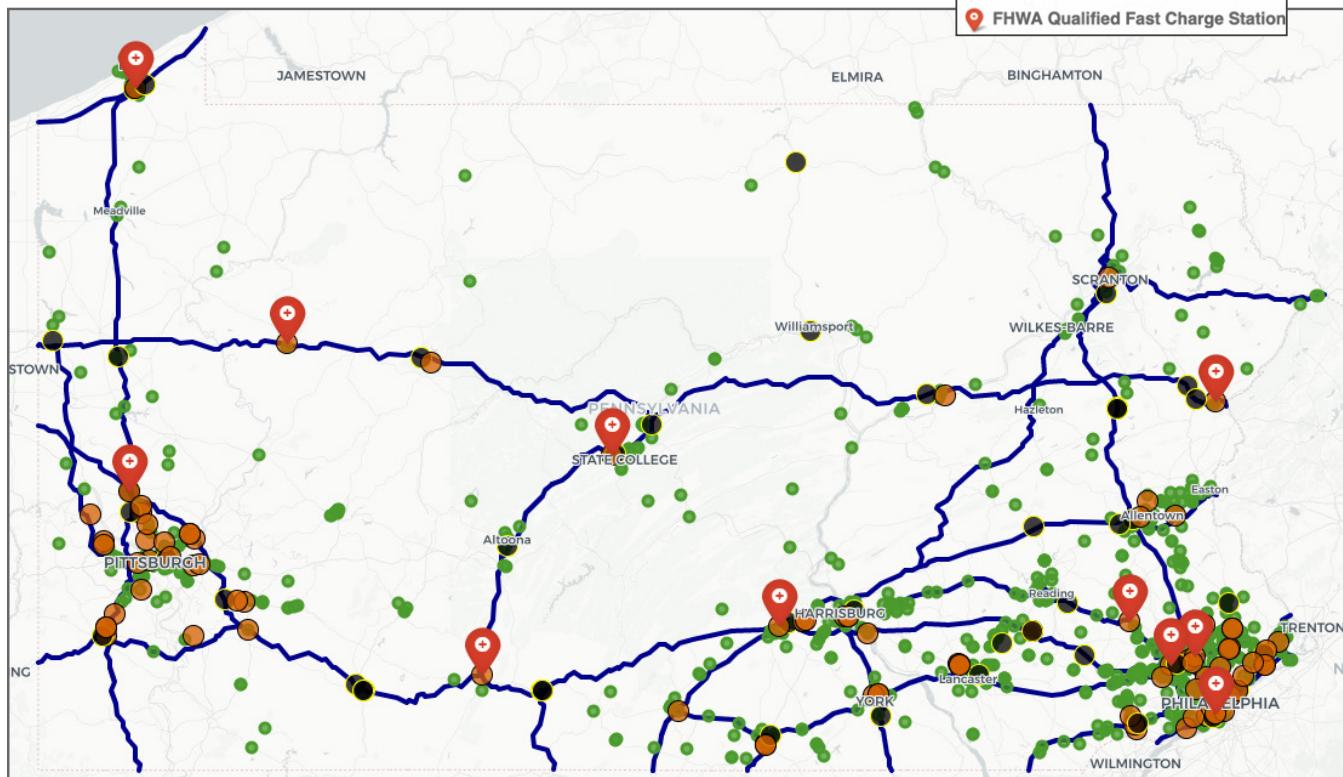




Table 5: Existing Locations of NEVI-Qualifying Charging Infrastructure Along AFCs

AFC Route (Mile)	Station Name	Address	Network	Distance from Exit	CCS 150+ kW Ports (Total Ports)	Qualifies for AFC "Build Out"
I-276 (333), I-476 (20)	PREIT Plymouth Meeting Mall	500 W Germantown Pike Plymouth Meeting, PA 19642	Electrify America	<1 mi. (I-276 & I-476)	4 (4)	✓ (I-276 & I-476)
I-76 (28), I-79 (78)	Sheetz 133	1329 Freedom Rd Cranberry Township, PA 16066	Electrify America	<1 mi. (I-76 & I-79)	4 (4)	✓ (I-76 & I-79)
I-76 (146), I-99 (1)	Sheetz 352	4354 Business 220 Bedford, PA 15522	Electrify America	<1 mi. (I-76 & I-99)	4 (4)	✓ (I-76 & I-99)
I-76 (226), I-81 (52)	Sheetz 191	1098 Harrisburg Pike Carlisle, PA 17013	Electrify America	<1mi. (I-76); <5 mi. (I-81)	4 (4)	✓ (I-76)
I-76 (328), I-276 (326), US-422 (196)	Simon King of Prussia Mall	160 N. Gulph Rd, Suite 2700 King of Prussia, PA 19406	Electrify America	<1 mi. (I-76 & US-422); <5 mi. (I-276)	6 (6)	✓ (I-76 & US-422)
I-76 (347)	Cedar Realty Quartermaster Plaza	2129 Oregon Ave Philadelphia, PA 19145	Electrify America	<1 mi.	4 (4)	✓ (I-76)
I-76 (347)	Quartermaster Plaza	2300 W Oregon Ave Philadelphia, PA 19145	eVgo Network	<1 mi.	4 (9)	✓ (I-76)
I-80 (308)	Walmart 2368	355 Lincoln Ave. East Stroudsburg, PA 18301	Electrify America	<1 mi.	4 (4)	✓ (I-80)
I-80 (62)	Walmart 2540	63 Perkins Rd. Clarion, PA 16214	Electrify America	<1 mi.	4 (4)	✓ (I-80)
I-90 (24), I-79 (178)	Walmart 2278	1825 Downs Drive Erie, PA 16509	Electrify America	<1 mi. (I-90); <5 mi. (I-79)	4 (4)	✓ (I-90)
I-99 (69)	Sheetz 287	101 Valley Vista Dr State College, PA 16803	Electrify America	<1 mi.	4 (4)	✓ (I-99)
US-422 (180)	Simon-PHL Premium Outlet	18 W Lightcap Rd Pottstown, PA 19464	Electrify America	<1 mi.	4 (4)	✓ (US-422)
I-76 (48)	Sheetz Pittsburgh #619	2871 Freeport Rd Pittsburgh, PA 15238	eVgo Network	<1 mi.	2 (6)	With upgrade
I-95 (27)	Wawa #8065	3995 Aramingo Ave Philadelphia, PA 19137	eVgo Network	<1 mi.	2 (6)	With upgrade
I-70 (46)	Sheetz 377	4692 Route 51 South Belle Vernon, PA 15012	Electrify America	<5 mi.	4 (4)	With exception
I-76 (338)	Brixmor Ivy Ridge	7162 Ridge Ave Philadelphia, PA 19128	Electrify America	<5 mi.	4 (4)	With exception
I-76 (340)	Shopcore Bakers Centre	2800 Fox Street Philadelphia, PA 19129	Electrify America	<5 mi.	4 (4)	With exception
I-276 (343)	PREIT Willow Grove Park	2500 W. Moreland Dr Willow Grove, PA 19090	Electrify America	<5 mi.	4 (4)	With exception
I-78 (51/53), I-476 (56)	Brixmor Village West	3100 Tilghman St Allentown, PA 18104	Electrify America	<5 mi.	4 (4)	With exception
I-80 (101)	Walmart 1769	20 industrial Drive DuBois, PA 15801	Electrify America	<5 mi.	4 (4)	With exception
I-80 (236)	Sheetz 213	2511 New Berwick Hwy Bloomsburg, PA 17815	Electrify America	<5 mi.	4 (4)	With exception
I-81 (184)	Sheetz 662	454 N 8th Ave Scranton, PA 18503	Electrify America	<5 mi.	4 (4)	With exception
I-95 (35)	Simon-PHL Mills	55 Franklin Mills Cir Philadelphia, PA 19154	Electrify America	<5 mi.	4 (4)	With exception

EV CHARGING INFRASTRUCTURE DEPLOYMENT

Funding Sources

Pennsylvania will have access to \$171.5 million in NEVI formula funds for FFYs 2022-2026, including \$25.4 million in FFY 2022. These funds will be able to cover up to 80% of the cost of each EV charging infrastructure project, which may be used for acquisition, installation, operations and maintenance for up to 5 years, and other planning/development activities related to station deployment and operations as identified in the February 2022 NEVI Guidance.

PennDOT will develop a funding program where third-parties, such as site hosts and/or EV network companies, fund the non-federal cost-share and collect revenue generated from EV drivers using the charging stations. Depending on the structure of the program and cost proposals of third-parties, PennDOT estimates **at least 150 new DCFC stations** meeting NEVI Formula Program standards could be deployed from 2022-2026 with NEVI Formula Program funding. However, AFC build-out and the designation of new AFCs will ultimately determine the number of DCFC deployed and whether funding may also be used for less costly Level 2 chargers or other charging alternatives.



Deployment Focus Areas and Funding Strategy

Building upon the goals and objectives established in this plan as well as PennDOT's supporting Mobility Plan, EV infrastructure deployment under the NEVI program is anticipated to include the following key focus areas in order of priority:

Build out of the current and future AFC network (DCFC)

01

Ensure charging capacity and redundancy on the AFC network (DCFC)

02

Expand charging to other non-interstate routes that may or may not be designated as AFCs and that may serve disadvantaged communities or as emergency routes (DCFC)

03

Provide mobile charging or towing services to support emergency response to motorists (DCFC, Level 2 or other power source options)

04

Provide charging at key public destinations including those that can be accessed by underserved or disadvantaged population (DCFC or Level 2 charging)

05

Provide charging at mobility hubs, which are typically located around transit stations and key neighborhood locations. Mobility hubs offer a density of travel options combined with public, commercial, or residential amenities. (DCFC or Level 2 charging)

06

Provide charging infrastructure to support heavy and medium-duty freight movement including regional travel, rural deliveries or emergency travel (DCFC)

07



Figure 7 shows a high-level framework for how PennDOT will fund new stations over time. At the start of the program, 100% of new stations will be funded at locations within AFC gaps, since nearly the entire AFC network is currently considered as having gaps. As more stations are deployed, the AFC gap mileage will decrease, and more funds can be applied to AFC roadways where “redundancy” may be needed to meet charging demand—such as multiple stations at one particularly busy exit location, stations within 20- or 30-miles apart as compared to the required 50-miles, or stations that may be over 1-mile from an AFC but still easily accessible from the interstate. Once AFC “build out” is completed (i.e. all AFC gaps have been filled), then NEVI Formula funds may be used for any public location (non-AFC), while any new AFC station funded would be for the purpose of providing redundancy.

Figure 7: General Phasing of Stations Receiving NEVI Formula Funds

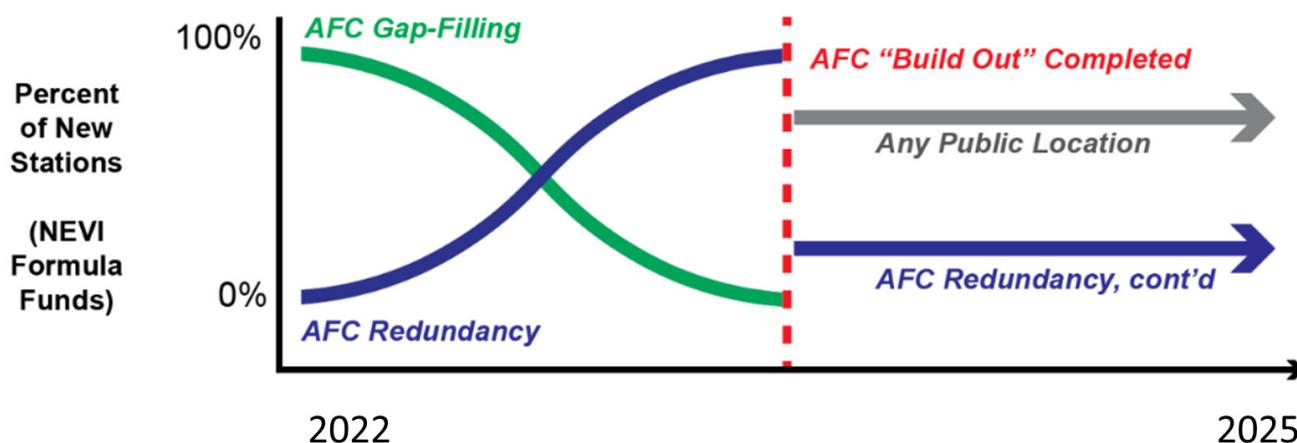
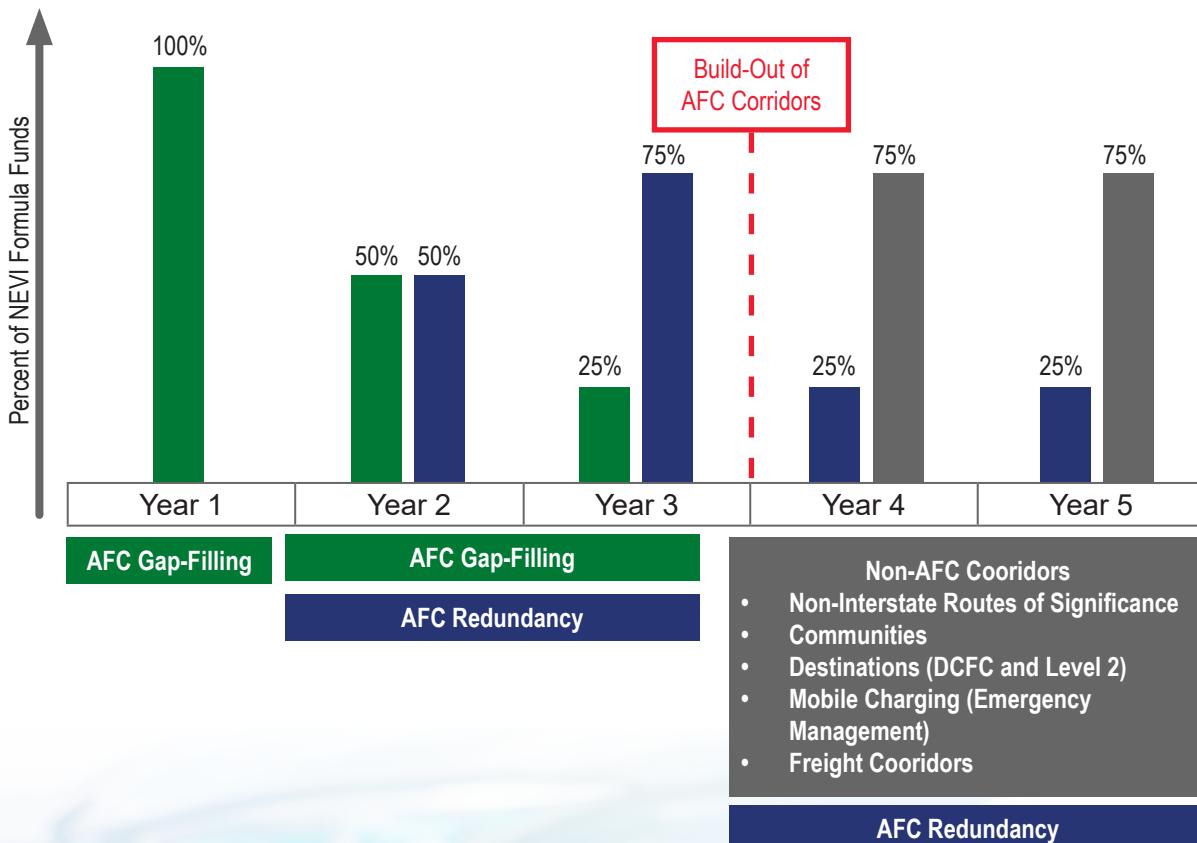




Figure 8 shows how this framework may be applied to annual funding cycles. This plan version supports the allocation of federal funds for FFYs 2022 and 2023 (e.g. Year 1 and Year 2 in figure). Note that while the FFY 2022-2023 percentage reflects PennDOT's objectives for the initial round of NEVI funds, the percentages listed for Years 3-5 represent only a conceptual framework for envisioning how funds may be distributed. Each year, PennDOT will update this plan and annual targets based on how far along the AFC network is to "full build-out". It is also important to highlight that **funding carries over from one year to the next**.

PennDOT will follow Justice40 guidelines throughout the program, reporting on how 40% of NEVI funds benefit DACs, but PennDOT will specifically focus on siting stations in DACs in 2025-2026 program years to specifically solve for additional equity priorities.

Figure 8: Phasing of Stations Receiving NEVI Formula Funds, by Funding Cycle





Approach to Building Out AFC Network

According to the February 2022 NEVI Guidance, NEVI Formula Program funding must be used for EV charging infrastructure that is located **only along designated AFCs** until the FHWA certifies that the entire AFC network is “full build-out.” This means that all of Pennsylvania’s designated EV “Ready” and EV-“Pending” corridors must have AFC-qualifying charging stations along them every 50-miles or less and within 1-mile of an exit or highway intersection.

From 2016-2021, a “Ready” designation was assigned to AFC corridors based on older requirements that have since been revised by USDOT. For example, originally, a qualifying charging station could be within 5-miles of an interstate or highway intersection. The updated requirements now indicate AFC-qualifying stations must be within 1 mile of the corridor and have at least four ports of 150 kW each. As such, many stations that previously qualified no longer do, and most “Ready” corridors now contain gaps of more than 50-miles between qualifying stations. In fact, of the approximately 2,000 miles roadway

designated as EV AFCs from 2016-2021, all of them are located within a gap of greater than 50-miles between qualifying stations, except for a 20-mile segment along I-76 in Philadelphia—meaning that **99% of the existing AFC network in PA would now be considered “Pending” under the new criteria**. Since there are gaps of greater than 50-miles between qualifying stations on both “Ready” and “Pending” AFCs, PennDOT is prioritizing filling gaps on both using the same approach, rather than prioritizing one designation type over the other.

Table 6 details the extent of all **27 gaps, totaling 2,081 miles** in the EV AFC network, including Round 6 nominated corridors. Deploying new stations within these gaps is **PennDOT’s top priority for distributing NEVI Formula funds**—and will remain so until all gaps are filled. Each year, as PennDOT updates its NEVI State Plan, this table will be updated in turn, to clearly identify PennDOT’s top NEVI priorities for program participants, planning partners, and other interested stakeholders.

EV AFC Gaps (as of July 2022)



Table 6: Gaps in Charging Infrastructure Along AFCs: PennDOT NEVI Priorities for 2022-2023

Corridor	Gap Limits	Current EV AFC Stations	PA Miles	Mile Markers	Additional Gap Details
I-70	WV border to Bedford station	1	128	1-146**	190 mi. from Bedford to next station WB in Cambridge, OH
	Bedford station to MD border	1	42	146-170**	70 mi. from Bedford to next station EB in Hagerstown, MD
I-76*	OH border to Cranberry station	1	28	1-28	194 mi. from Cranberry to next station WB in Genoa, OH (along I-80)
	Cranberry station to Bedford station	2	118	28-146	-
	Bedford station to Carlisle station	2	80	124-226	-
	Carlisle station to King of Prussia station	2	102	226-328	-
I-78	I-81/I-78 interchange to NJ border	0	77	1-77	No qualifying stations WB along I-81 in PA; no qualifying stations EB along corridor in NJ
I-79	WV border to Cranberry station	1	78	1-78	No qualifying stations from Cranberry SB along corridor in WV
	Cranberry station to I-90 interchange	1	100	78-178	103 mi. from Cranberry to next station NB in Erie (along I-90)

Table 6 continued on next page...



Table 6 continued.

Corridor	Gap Limits	Current EV AFC Stations	PA Miles	Mile Markers	Additional Gap Details
I-80	OH border to Clarion station	1	62	1-62	74 mi. from Clarion to next station WB in Girard, OH
	Clarion station to East Stroudsburg station	2	246	62-308	-
I-81	MD border to NY border	0	232	1-232	335 mi. from station in Woodstock, VA to station in Binghamton, NY
I-83	I-81/I-83 interchange to MD border	0	51	1-51	No qualifying stations SB along corridor in MD; no qualifying stations NB along I-81 in PA
I-84	I-81/I-84 interchange to NY border	0	54	1-54	No qualifying stations SB along I-81 in PA; no qualifying stations EB along corridor in NY
I-90	OH border to Erie station	1	24	1-24	120 mi. from Erie to next station WB in Sheffield, OH
	Erie station to NY border	1	22	24-46	51 mi. from Erie to next station EB in Fredonia, NY
I-95	DE border to NJ border	0	43	1-43	56 mi. from DE border SB to station in Abingdon, MD; no qualifying stations NB along corridor in NJ
I-99	Bedford station to State College station	2	69	1-69	-
	State College station to I-80 interchange	1w	16	69-85	163 mi. from State College to next station NB in East Stroudsburg (along I-80)
I-276*	I-76 interchange to Plymouth Meeting station	1	17	326-343	20 mi. from Plymouth Meeting to next station WB in King of Prussia (along I-76)
	Plymouth Meeting station to I-95 interchange	1	13	343-356	No qualifying stations from Plymouth Meeting EB along corridor or I-95 in NJ
I-376*	I-80 interchange to I-76 interchange	0	85	1-85	16 mi. from I-80 interchange WB to next station in Girard, OH; 89 mi. from I-76 interchange EB to next station in Bedford, PA
I-476*	I-95 interchange to Plymouth Meeting station	1	20	1-20	85 mi. from Plymouth Meeting SB to next station in Abingdon, MD (along I-95)
	Plymouth Meeting station to I-81 interchange	1	111	20-131	168 mi. from Plymouth Meeting NB to next station in Binghamton, NY (along I-81)
US-30/I-676	I-81 interchange to NJ border	0	144	188-332	No qualifying stations EB along I-676 corridor in NJ; no qualifying stations WB along US-30 corridor in PA or OH
New Nominated Corridors for AFC Round 6					
US-1	MD border to I-76 interchange	0	52	1-52	2 mi. from I-76 interchange NB to next station in Philadelphia, PA; no qualifying stations SB along corridor in MD
US-422	Pottstown station to US-322 interchange	1	67	113-180	No qualifying stations from Pottstown WB along corridor or US-322

*I-76, I-276, I-376, and I-476 are all operated by Pennsylvania Turnpike Commission (PTC). It should be noted that PTC is actively planning to deploy stations along this corridor and is eligible for the NEVI Formula Program funds. PennDOT is coordinating with the PTC on issues related to the application of federal funds on the Turnpike. PennDOT is also evaluating infrastructure opportunities at exits off the Turnpike right-of-way.

**Mile markers for section of I-70 refers to I-76/I-70/PA Turnpike Exit.



In future updates, as AFC gap mileage decreases, **PennDOT may also identify priority exit locations where a single new station could be deployed to fill a gap**. However, in Year 1 of the NEVI Formula program, with 99% of the AFC network considered “gap” mileage, PennDOT will provide flexibility to the third-party entities (who will be covering the non-federal cost-share of the new stations) to select the locations that address corridor build-out while supporting the most efficient operation, maintenance, and profit in the long-term.

As AFC gaps are filled, **PennDOT may also identify priority exit locations for AFC redundancy**, including DACs, rural areas, key interchanges, and areas where there may be untapped demand due to a large percentage of people living in multi-family housing without home-charging access.



Other Deployment Target Areas After AFC Build-Out

OTHER CORRIDORS FOR CHARGING DEPLOYMENT

The primary objective in using NEVI Formula funds is to reach “full build-out” for existing AFC corridors. Once this is completed, then any public location may become eligible for funding. Because of this, there is a built-in incentive not to nominate new corridors as AFC; **the sooner existing AFCs are completed, the more flexibility that PennDOT will have to fund any eligible location**. However, it is important to strike a balance between the objective of achieving “full build-out” and the AFC objective of establishing a national network to ensure a convenient, reliable, affordable, and equitable charging experience for all users. In other words, the benefits of growing a network of AFC-designated corridors to inspire range confidence in drivers should not be sacrificed in pursuit of an expedited “full build-out” FHWA certification. Furthermore, while nominating additional AFCs could in theory slow down “full build-out”, it would also immediately make these corridors eligible for NEVI funding. For these reasons, PennDOT will continue to consider the nomination of additional corridors as AFCs, soliciting the input of stakeholders such as Clean Cities, MPOs, other planning partners and the public.

All evaluations of additional corridors for future deployment will include coordination with state, regional, and local stakeholders. PennDOT has coordinated with adjacent states in past AFC nomination rounds and will continue those

discussions throughout the NEVI Formula Program period. PennDOT also holds regular meetings with MPOs/RPOs throughout the state to identify regional and local priorities for charging infrastructure.

Currently, all of Pennsylvania’s interstates are designated as AFCs and will be the primary focus for new infrastructure during the first several years of the NEVI program. However, **PennDOT is also starting to assess DCFC charging needs beyond the interstate system**, with an initial focus on non-interstate corridors where new infrastructure can potentially spur EV ownership in smaller urban and rural areas across the state. Table 7 identifies several key corridors that have been identified as candidates for future AFC nominations. This list will continue to evolve through discussions with stakeholders and planning partners, and will be updated annually along with the rest of the NEVI State Plan. Recent public comments have noted additional routes for consideration including PA 100 (Allentown), PA 28 (near Pittsburgh) and extending US 30 from Chambersburg west. Even if not nominated formally as an AFC in future Rounds, these corridors can also serve as priority non-AFC locations for new DCFC infrastructure under the NEVI Formula program once “full build-out” certification is achieved.



Potential New AFC Corridors



Table 7: Sample of Potential Corridors for AFC Designation or Charging Deployment

Route Corridor	From	To	Mileage	Population Centers Included	Existing Public DCFC or Tesla Station Near Corridor	Reason
US 222	MD Border (Lancaster County)	I-78 (Lehigh County)	88	Lancaster, Reading, Allentown	No Stations	Links key cities that do not have direct interstate connection
US 22 / US 322	I-81 (Dauphin County)	I-99 (Centre County)	84	Harrisburg, Lewistown, State College	No Stations	Provides connection between Harrisburg and State College (supports events at Penn State)
PA 6	US 11 (Lackawanna County)	US 19 (Erie County)	270	Towanda, Mansfield, Wellsboro, Warren	1 Tesla	PA Scenic Route supporting long distance travel
US 15	MD Border (Adams County)	I-76 (Cumberland County)	43	Gettysburg, Mechanicsburg	2 Public DCFC 1 Tesla	Key north-south corridor serving longer distance travel including freight movement. US 15 through Harrisburg is not included since serves more local travel.
	US 22/322 (Dauphin County)	CSVT (Snyder County)	32	Harrisburg, Selinsgrove	No Stations	
	I-180 (Lycoming County)	NY Border (Tioga County)	62	Williamsport, Mansfield	1 Tesla	
I-180	CSVT (Northumberland County)	US 15 (Lycoming County)	47	Shamokin Dam, Milton, Williamsport	1 Tesla	When combined with CSVT completion will complement the US 15 corridor for regional travel.
US 219	MD Border (Somerset County)	NY Border (McKean County)	197	Somerset, Johnstown, Dubois	1 Tesla	Key north-south rural corridor serving longer distance travel.
US 22	I-99 (Blair County)	I-76 (Allegheny County)	76	Altoona, Blairsville, Monroeville	No Stations	Provides longer distance connection from Altoona to Pittsburgh and serves rural areas.

EMERGENCY MANAGEMENT

Dealing with emergencies is another area where vehicle owners have anxiety around switching to EVs. PennDOT is exploring the use of NEVI Formula Program for two different emergency scenarios for light-duty vehicles: mobile charging and towing for disabled vehicles and charging support along emergency routes.



Mobile Charging / Towing

There are many situations where charging demand will fluctuate, and charging may be needed in additional locations. Major events such as large athletic events, festivals, and other special events occur infrequently throughout the year in locations that otherwise have sufficient charging infrastructure in place. Pennsylvania is also known for some nationally recognized events, such as Groundhog's Day in Punxsutawney and the Little League World Series in Williamsport, that bring an influx of visitors to the state.

To support these situations, it is recommended that mobile charging units can be quickly deployed regionally as needed for events and emergencies. For special events, these can generally be treated similar to destination travel and Level 2-type charging should be sufficient.

Additionally, motorists may run out of charge while driving on the highway. For stranded drivers, the best option is to have a mobile charging unit come to their location and provide enough charge to get to an EVSE station. Many of the current solutions involve the use of a fossil fuel generator, which still supports the incentive to purchase an EV, but reduces the environmental benefits of EVs. Future EV models will also be able to charge other EVs using their own battery. For example, Ford's F-150 Lightning can provide a car with a 2.4 kw charge that can provide approximately 9 miles of range per hour of charging. Future models may provide even higher charging power that provide more vehicle range. Portable DC

fast charging units will likely be most needed in rural areas where the closest charging station is more likely to be farther away.

For stranded vehicles, other viable short-term alternatives may include increases to tow service options to transfer the vehicle to the nearest EVSE station. In the future, as demand for EVs grows and charging capability improves, this equation will begin to shift in favor of mobile charging. It is recommended that PennDOT pilot a mobile charging program in strategic areas across the state as part of efforts to improve charging availability.

Emergency Routes

Emergency travel demand can create an increased need for charging in areas that typically do not see that level of need. It is important to address mobility both into and within Pennsylvania during emergencies, in particular winter weather events, storm evacuation, and emergency closures.

There are three methods PennDOT can use to support charging for emergency routes. The first is to integrate emergency route criteria when selecting corridors for DCFC deployment so that both of these needs are accomplished in tandem. The second is to specifically target these routes for additional EVSE where additional needs can also be met. The third is to address these needs with mobile charging infrastructure as mentioned in the previous subsection. PennDOT is currently evaluating the best method and ways to factor emergency routes into NEVI build out.

DESTINATIONS

Although the statewide network is growing, significant gaps exist in the electric EVSE network when considering regional and destination travel across Pennsylvania. Due to a focus on equity and a desire to promote additional charging opportunities in communities not along highway systems, PennDOT continues to assess additional locations for their potential to support DCFC or Level 2 charging.

PennDOT's EV Mobility Plan has identified public parks, including federal, state, county, and municipal units along with related public-owned destinations, such as colleges, fairs, and public sporting venues for possible application of NEVI Formula Program funding. Ensuring access for DACs may be best accomplished by increasing charging access at community locations such as grocery stores or other shopping centers. In addition, public charging stations at other destinations including airports, train stations, and freight ports will be evaluated for destination charging.

Additional consideration is also being given to non-profit and privately owned destinations across Pennsylvania that draw large crowds including residents and visitors. These sites can include amusement parks, zoos, museums, racetracks, villages, expo centers, private sporting venues, and private colleges.





FREIGHT

Although electrification of MDVs and heavy-duty vehicles (HDVs) is currently in pilot phases, there is no doubt that these types of vehicles will become more common over the next several decades.

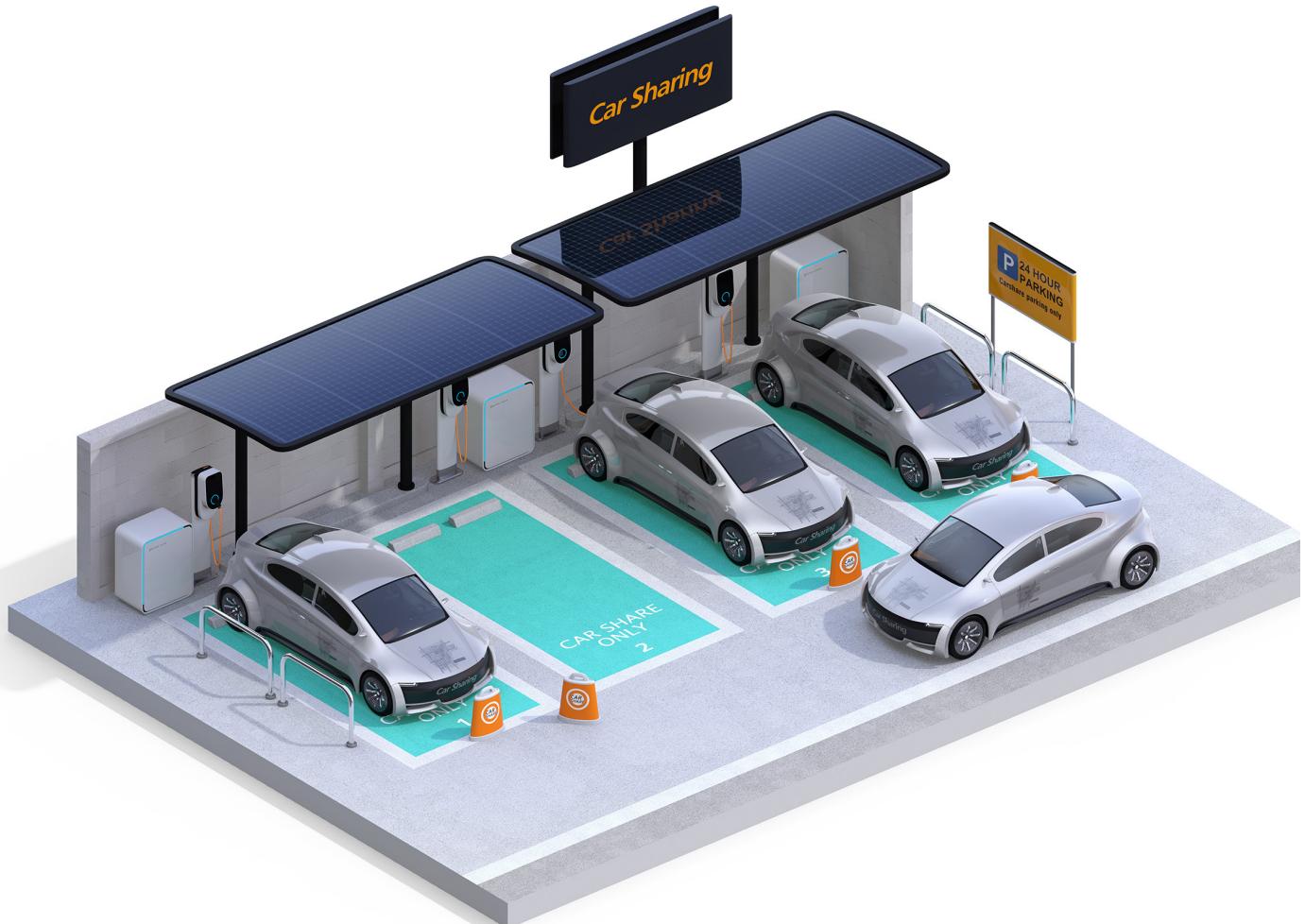
PennDOT may explore the use of NEVI Formula Program funding to support MDVs/HDVs if opportunities arise over the five-year program period. Additional guidance is expected from FHWA on developing freight priorities and initiatives for EV charging. Charging locations for trucks will require additional power and land area for access. These systems will have many limitations on placement and could easily put a strain on the power generation and distribution system. Additionally, many MDV/HDV fleets may prefer to rely on their own private chargers at depots. As smaller fleets explore EVs for their operations, they will more likely be interested in shared charging locations.

PennDOT continues to coordinate with freight providers and stakeholders in identifying opportunities and priorities for charging infrastructure that support commercial motor vehicle operators from more than one company. PennDOT has identified three areas for exploration related to truck charging: Interstate and regional travel, rural deliveries, and emergency travel.



INFRASTRUCTURE SUPPORTING MULTI-MODAL TRAVEL

Supporting other models of travel will be important to ensuring that environmental and equity goals are addressed for the NEVI program. PennDOT will evaluate EV infrastructure options for providing charging infrastructure that can support transit fleets and/or other multi-modal options. This may include EV charging at defined mobility hubs and park and ride facilities to encourage a reduction in single-occupant vehicle travel. Mobility hubs at passenger rail stations, commuter lots, and airports may be viable in larger urban areas to support charging of both passenger and transit vehicles. Charging infrastructure that can support other carsharing programs will also be evaluated within the program. Although not a primary focus of the NEVI Formula Program, charging for other active transportation modes like electric bikes will be evaluated, especially if they can be shared with other vehicle or fleet charging systems.





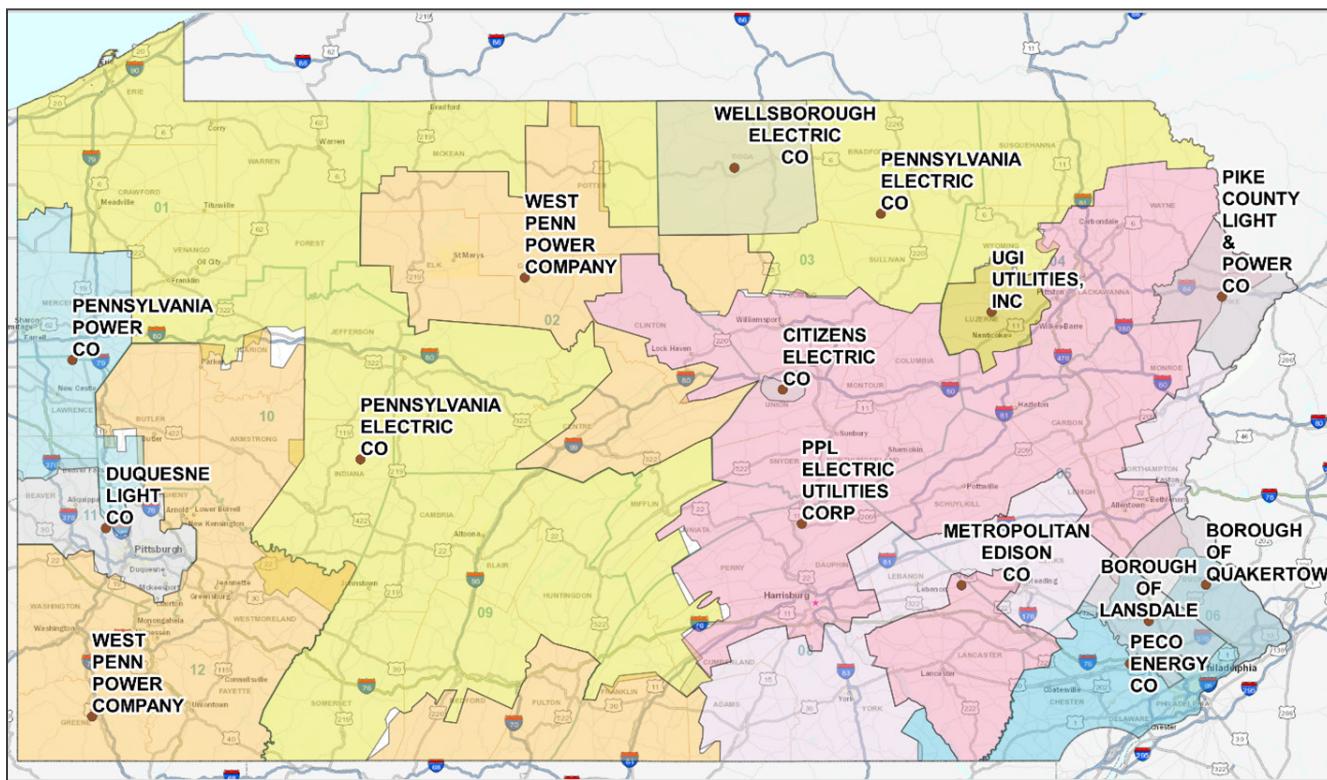
Coordination with Utilities

For DCFC, AC-DC power conversion takes place at the charging station location, allowing for a high voltage DC line to shorten vehicle charging times. Most charging stations will require access to three-phase distribution lines.

If a proposed charging station is too far away from a three-phase distribution line, typically a half-mile or more, the connection to the three-phased line may become cost-prohibitive. At these locations, battery storage or other equipment that turns single-phase into three-phase power may serve as options. As a result, the evaluation of electric grid infrastructure is a key step in planning for and implementing a charging station.

PennDOT has coordinated with Pennsylvania's utility providers as part of the NEVI State Plan outreach. At this time, three-phase power distribution line and/or service area mapping is not publicly available. As a result, any station planned for development will require early coordination with the utility provider in the service area. The utility provider can perform a site analysis to estimate costs and options for power access. Figure 9 provides a summary of the utility companies in Pennsylvania that should be contacted as stations are proposed. **Ideally this contact should occur before applying for NEVI funds from PennDOT and included in the application.**

Figure 9: PA Utility Service Territories



SOURCE: DHS Electric Retail Service Territories



Risks and Challenges in Infrastructure Deployment

There are a number of challenges that will need to be evaluated and addressed in deployment of the NEVI Formula Program. This section outlines these challenges and begins to evaluate potential program strategies and procedures that help meet them. These procedures and strategies will continue to be defined in the first few years of the program through continued public and stakeholder engagement. **PennDOT recommends that applicants address these or other identified challenges in their response to application requests for electric charging infrastructure, if applicable.** Addressing these challenges will be key to meeting the program goals and objectives.



PROFITABILITY/SUSTAINABILITY OF INFRASTRUCTURE IN RURAL COMMUNITIES

Pennsylvania's diverse geography and population densities create unique challenges in implementing a comprehensive network of EV charging stations. The Center for Rural Pennsylvania defines 48 of Pennsylvania's 67 counties as rural with nearly 26% of the state's 13 million residents living in rural counties. Trends indicate the growth in EV registrations are much smaller in these rural areas as compared to the urbanized areas like Philadelphia and Pittsburgh.

New EV infrastructure in rural communities can aim to increase interest and ownership of EVs. However, the financial viability/profitability of rural charging locations may serve as a barrier to applications for funding. Ensuring stations that are funded remain in operation for the long-term will also be an important goal that may require operating financial support until more EVs are purchased. Ensuring stations that are funded remain in operation for the long-term will also be an important goal that may require operating financial support until more EVs are purchased.



DISADVANTAGED AND UNDERSERVED POPULATIONS

In 2020, about 12 percent of Pennsylvania's population lived below the poverty line. Many poverty areas extend beyond the urbanized areas and may be part of rural communities. Considering disadvantaged or underserved population needs will be a challenge that must be addressed in funding decisions to ensure all populations share in the benefits of new infrastructure. PennDOT

will focus on integrating underserved needs in the prioritization and selection of projects for funding. In later years of the NEVI program, PennDOT may have more flexibility to address local charging needs in these communities including funding that may support EV infrastructure for transit agencies, mobility as a service, car share programs and other transportation systems that support disadvantaged and underserved populations.



CAPACITY AND VEHICLE SIZE ACCOMMODATIONS

Pennsylvania's interstate system provides important travel connections within the northeast for both long-distance passenger and freight travel. Due to E-commerce and other emerging trends in freight movement, the charging network will need to address capacity, reliability, and truck size requirements. Other recreational size considerations may need to be addressed including the larger number of motor homes and camping trailers that utilize the interstate system.



LAND USE

Pennsylvania has 67 counties and 2,560 municipalities that make land use decisions based on the Municipalities Planning Code. Local governments are starting to seek guidance to help plan for new EV infrastructure through model ordinances that aim to ensure that such infrastructure is equitable and sustainable. The lack of engagement from municipalities in addressing EV infrastructure could put those areas at risk of prohibiting access and/or limiting future funding opportunities. Resources like the [Model Ordinance Toolkit](#) have been developed to provide local governments tools to address and plan for new charging infrastructure.



CHANGING CLIMATE

Pennsylvania's climate continues to change as highlighted in DEP's [2021 Climate Impacts Assessment](#). The changes include the potential for more extreme temperatures and increased rainfall from storm events. New charging infrastructure will need to ensure that it is resilient to more extreme conditions, and infrastructure site planning will need to consider extreme weather impacts both historically and in the future. PennDOT has conducted [extreme weather and risk assessment studies](#) that can provide an important resource for evaluating these impacts and risks.



EMERGENCY MANAGEMENT AND RESPONSE

Emergency management and response must be considered as part of the NEVI State Plan. By incorporating focus areas from PA's EV Mobility Plan which includes mobile chargers that allow for fast deployment to areas in need, the NEVI State Plan can ensure security in times of high travel or charging demand in an evacuation or extreme weather event that prevents access to established charging locations.



PUBLIC EDUCATION AND FAMILIARITY WITH EVS AND CHARGING

It is critical that the public understand EV technology, charging locations for travel planning, and the NEVI State Plan for continued input on future priorities and public needs alignment. PennDOT will continue to develop educational and outreach programs to engage and inform the public on EV infrastructure and planning. PennDOT will also continue to expand the information and resources available on <http://www.penndot.pa.gov/EV> and [511](#) to provide accessible information to the public and partners throughout the NEVI State Plan deployment and future EV mobility implementation.



COST TO CHARGE

One of the main selling points for EVs is that it is cheaper to charge an EV than it is to refuel a traditional gas-powered vehicle. In addition, often public Level 2 stations located at businesses are offered as amenities free of charge to customers. As more DCFCs are deployed, ensuring reasonable charging costs will be a key challenge that may require purchase rebates and/or additional programs to reduce rates for low-income customers. Roles and responsibilities among state and local agencies, utilities, and other stakeholders will need to be defined. With support of utility companies and the Joint Office, PennDOT will continue to explore ways that demand charges can be better addressed within the NEVI Formula Program. DEP's EV Rate Design Study, currently in development, will help assess what rate design modifications are required to drive further EV adoption to use the electric grid efficiently, increase availability of EV charging stations and maximize environmental benefits from EVs.



WORKFORCE

The increased production, installation, and maintenance of EVs and EV charging infrastructure will create good-paying jobs in clean energy industries, and across various sectors of the economy such as research, raw materials extraction, manufacturing, technology, maintenance and services, and other supporting industries. PennDOT is committed to providing EV awareness, education, and technical capacity to our partners, especially to support EV industry job skills, local small business development and educational opportunities for all job-levels.

Electrical construction, particularly the installation of EV charging infrastructure is an extremely safety-sensitive endeavor. Utilization of an inadequately trained workforce in the buildup of EVSE has the potential to be catastrophic, resulting in loss of life, injury, and significant property loss. Without proper training, workers in this high-hazard industry run the risk of electrical shocks, burns and/or electrification, which is the third leading cause of death in construction. Proper and specific training is also a key factor in reducing EV-related structure fires, which have been reported in several states.



ACCESSIBILITY

The NEVI Formula Program guidance stresses accessibility as a key attribute and criteria for new infrastructure. The term accessibility is broad and addresses access for all populations. PennDOT will need to consider locations at or immediately adjacent to land uses with publicly accessible restrooms, appropriate lighting, and sheltered seating areas such as travel centers, food retailers, convenience stores, visitor centers on Federal lands, small businesses with an Americans with Disabilities Act (ADA) accessible pathway between the EV charging infrastructure and the front door of the identified establishment, and other comparable facilities.



UTILITY INFRASTRUCTURE

Building out Pennsylvania's AFC network will require new stations in rural areas where utility infrastructure upgrades may be needed. In evaluating proposed locations for infrastructure, PennDOT will ensure that utility companies are brought in early to assess site feasibility and help determine if and what utility upgrades would be needed. PennDOT has also heard through stakeholder outreach that utility demand charges continue to be a barrier for the more rapid deployment of economically self-sustaining DCFC stations. Demand charges help utility companies address the increased resources needed to maintain electric grid infrastructure for businesses that require high power capacity.



TRANSIT

Pennsylvania's largest transit agencies, both SEPTA and the Pittsburgh Regional Transit, continue to experiment and test the integration of electric-powered buses. Challenges including not meeting performance expectations, costs, limited range and long charging times have prevented those and other agencies from making significant investments at this time. As a result, investments in transit using the NEVI Formula Program may be limited over the five-year period but may provide opportunities for future pilot projects. Other investments in charging may be needed to ensure those that park and use public transportation have opportunities to charge their vehicle. These may include park and ride lots or other transit station facilities.



OTHER NATIONAL ISSUES

Challenges in EV infrastructure deployment will also extend beyond Pennsylvania's geography, land use, and transportation system. Current national issues with supply chains and labor shortages may impact the ability to fund and construct new charging infrastructure in a timely manner. In the short term there may not be enough suppliers to address infrastructure construction demands that may increase procurement times. "Buy America" requirements may also be difficult to address in light of the above issues.

IMPLEMENTATION

PennDOT is currently defining contracting procedures and processes to help ensure long-term sustainability of the stations funded through the NEVI program. This section highlights key strategies and requirements for program implementation.

Program Management and Procurement

PennDOT is planning to implement a competitive grant program to award and disburse NEVI Formula funds. This program will include a request for applications for private or public entities interested in receiving NEVI funding to install, own, and operate electric charging infrastructure in Pennsylvania. Contracts will include both federal and state legal terms and conditions.

PennDOT will establish a NEVI management program to ensure contracted parties meet federal and state compliance requirements, federal minimum standards, and established program goals.

Application and Testing of Planning Assessment Tools

PennDOT will continue evaluation of charging needs and deployment strategies using several tools recently released by the U.S. Department of Energy (DOE). These include the Electric Vehicle Infrastructure Projection Tool (EVI-Pro) Lite and the Energy Zones Mapping Tool (EZMT).

EVI-Pro Lite projects the number of charging station needed to meet projected demand, as well as how electricity load (demand) profiles change as a result of increased vehicle charging. EVI-Pro Lite can be a valuable resource for PennDOT, utilities, and applicants determining infrastructure needs to support vehicle adoption projections and state goals, and assessing the impact on electrical load.

The EZMT is a free, public web-based mapping tool. It includes a large database of mapping layers, such as energy resources and infrastructure, and a modeling capability that is designed to screen and identify areas meeting user-selected criteria. The variety of resource maps and data allows users to prioritize specific considerations, such as equity, proximity to electricity infrastructure, local air quality pollutants, or corridor designations. The tool can help decision makers to determine the suitability of potential locations for EV charging stations based on both technical and social factors by selecting different map layers. For example, an area that has existing grid infrastructure and is on a transportation corridor that passes through a disadvantaged community may signal a compelling opportunity for a new EV charging site. Figure 10 highlights some initial testing for the rural suitability of charging infrastructure.

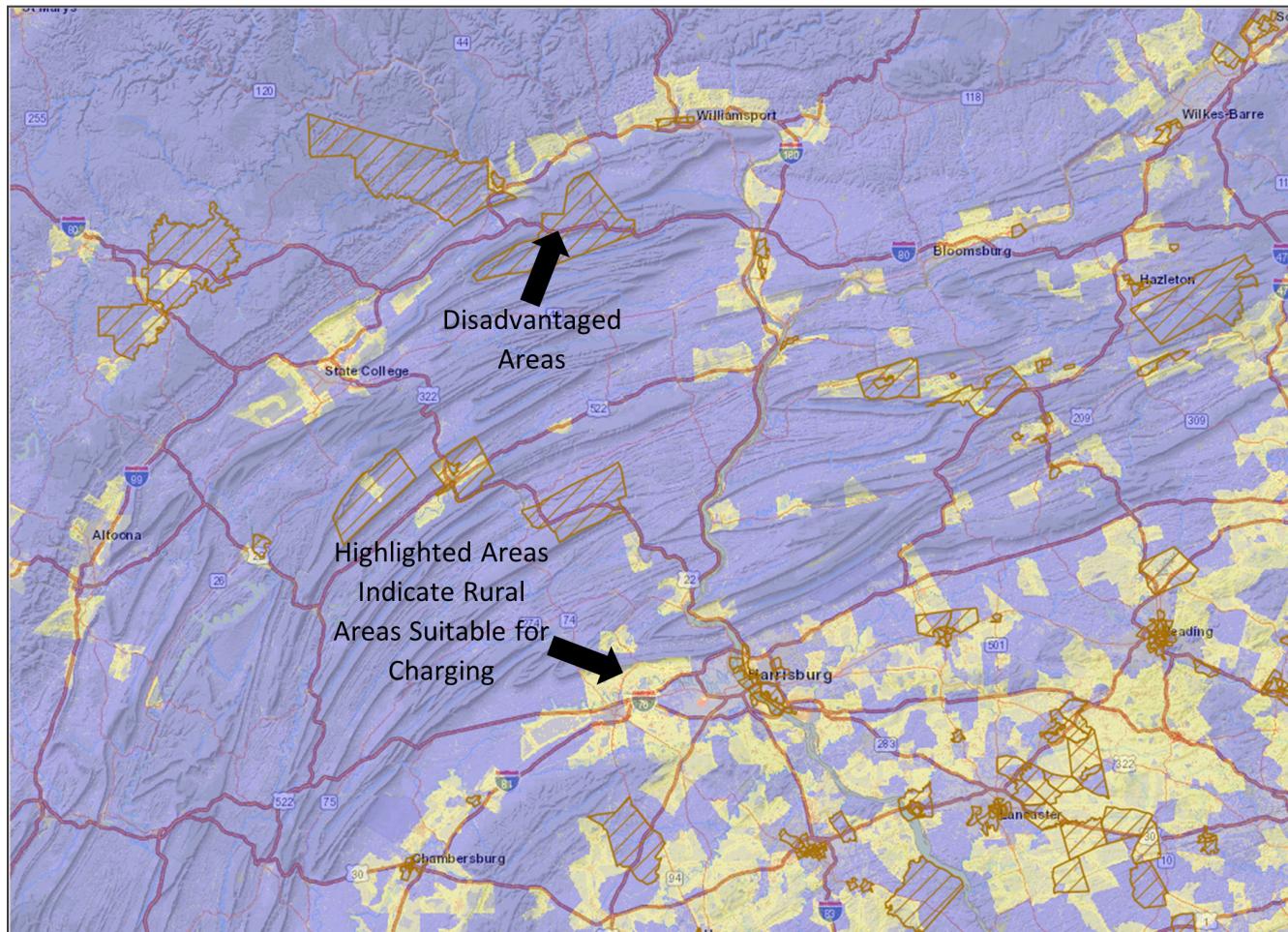




Identifying EV Charging Service Providers and Station Owners

PennDOT will follow approaches used for other state competitive grant programs to notify businesses of NEVI formula program application requests. PennDOT has defined roles for Pennsylvania's MPO/RPOs in providing assistance in the distribution of information brochures highlighting funding opportunities for businesses along key AFC gaps. Figure 11 highlights an example brochure that can be updated to reflect the NEVI funding opportunities. In addition, our regional Clean Cities will support coordination with EVSE providers on funding opportunities.

Figure 10: Example Application of EZMT Tool in Pennsylvania (Rural Suitability for Charging)



Planning Studies

PennDOT is considering allocating a portion of NEVI Formula Program funding for EV infrastructure planning. These studies may focus on corridor planning to identify specific business partners and opportunities or other regional or community planning studies to address infrastructure needs and priorities that may leverage NEVI funding. A process has not currently been defined for selecting planning studies for funding, though the selection could include a competitive process.



Operations and Maintenance

PennDOT's contract agreements under the NEVI programs will address standards for the operations and maintenance of the funded infrastructure. These standards will be determined through the future contract administration process and FHWA's final minimum standards and requirements for projects funded under the NEVI Formula Program. These standards will address:

- Continuous operation even when network connectivity is not available
- Support charging sessions for "walk up" consumers who do not have prior memberships
- Ensure a defined network uptime anticipated to be greater than 97%
- Proactive monitoring for maintenance needs and notify for corrective actions
- Charging performance for the typical temperature and humidity ranges

Figure 11: Draft Brochure for Businesses on Funding Opportunities (To be Revised)

The brochure is titled "ELECTRIC VEHICLE FAST-CHARGING FAQS & FUNDING OPPORTUNITIES". It features the Pennsylvania Department of Transportation logo and a graphic of an electric vehicle being charged.

What Businesses Need to Know

What Is DC Fast Charging?
Direct current (DC) fast chargers are game-changers for electric vehicles (EVs). While many EV owners rely on home-charging overnight, **DC fast chargers can charge an EV in only 20 to 30 minutes**. In PA, over 100 locations – most of them businesses – currently have at least one DC fast charger installed in their parking lots.

Why Is Pennsylvania Investing?
One challenge to more rapid adoption of EVs is the lack of public DC fast chargers. By providing funding for fast charge projects in strategic locations – such as along highways and in underserved metro areas – Pennsylvania aims to increase drivers' confidence in the availability of public EV chargers, slow down climate change, and improve public health.

Which Businesses Are the Best Locations?
The best **types of businesses** for hosting DC fast chargers are restaurants, gas/convenience stores, truck stops, grocery stores, shopping centers, or any interested business with available parking spaces where an EV driver could shop and use amenities during the 20-30 min of charging time. Businesses that are 24/7 and offer food and restrooms are ideal. The best **locations for businesses** interested in hosting fast chargers are near interstate exits along major travel corridors for commuter and recreational travel needs.

What Are the Benefits to Businesses?

- Attract customers looking to stop at a location that offers fast charging
- Increase customer spending at site amenities
- Minimize costs by choosing from a range of business models offered by EV charging hardware & network companies
- Gain customer recognition as a leader in reducing carbon emissions

Is Your Business Located Near an Alternative Fuel Corridor?
The Pennsylvania Department of Transportation (PennDOT) is looking to facilitate the build-out of EV DC fast charging infrastructure across the Commonwealth, including on our designated [Alternative Fuel Corridors \(AFCs\)](#), which include Pennsylvania's interstates and other select highways. If you are interested in a project consultation on fast-charging options and applying for competitive grant funding for a property located within 1-mile of any AFC corridor, please contact:

RA-PDEVCorridors@pa.gov

YOUR BUSINESS MAY BE ELIGIBLE FOR GRANTS

National Electric Vehicle Infrastructure (NEVI) Formula Program

The NEVI Formula Program provides dedicated funding to Pennsylvania and other states to strategically deploy EV charging infrastructure and establish an interconnected network to facilitate data collection, access, and reliability. Program funding and eligibility details include:

- EV charging infrastructure is installed **within 1 travel mile** of the AFC
- EV charging infrastructure includes at least **four 150kW Direct Current Fast Chargers (DCFCs)** with Combined Charging System (CCS) ports capable of simultaneously DC charging four EVs
- EV charging infrastructure has minimum station **power capability at or above 600kW** and supports at least 150kW per port simultaneously across four ports for charging

Application Request Open:
Late 2022 – Early 2023

Web Link:
[PennDOT NEVI Program](#)

Pennsylvania is Committed to Supporting Growth in EV Vehicles. See the Pennsylvania NEVI State Plan: Forthcoming



Operation and maintenance costs may be provided through the NEVI Formula Program for select stations based on application needs and location of station (e.g. rural and equity). This will be outlined in the contract administration section.

PennDOT will conduct follow-up contacts with all NEVI-funded stations to identify challenges or needs in maintenance and operation. PennDOT will work with funding recipients to identify ways to minimize down times for EV infrastructure. PennDOT's planning of EV infrastructure locations will focus on ensuring redundancy by funding other stations nearby on corridors with high volumes of long-distance travel.

Data Collection and Sharing

PennDOT will provide protocols and agreements for the collection and tracking of usage data for up to five-years to better support future planning of NEVI fund usage and successes. Station developers will be encouraged to partner with EVSE manufacturers to get data from their charging infrastructure including usage, wait times, home state location, and other key data to help improve modeling and find targeted areas for improvements and capacity increases. PennDOT will collect, maintain and submit data on an annual basis in a manner prescribed by the FHWA for each charging station.

The June 2022 draft rulemaking on minimum standards and requirements for projects funded under the NEVI Formula Program provides specific data that must be collected and monitored from charging infrastructure. Examples of this data are highlighted in the Program Evaluation section of this plan. In addition, PennDOT is planning to evaluate additional data and resources to inform contracting requirements including:

- A draft EV Charging Use Data Specification that Northeast States for Coordinated Air Use Management is working on with Atlas Public Policy, which was released in its first version in May 2022. The reporting metrics may be included in future updates to the plan.
- Additional data that may be useful for monitoring including the type of vehicle plugged in (car vs light-duty vehicle truck vs MDV/HDV, etc.) and make/model, which the

EVSE should be able to read from the vehicle.

PennDOT must provide information on EVSE locations, pricing, real-time availability, and accessibility to the public through websites and other mapping applications. To support these requirements, PennDOT plans to develop a dashboard to track EV deployment each year. This would include the amount of dollars obligated, the number of chargers, routes where gaps have been reduced or eliminated, and chargers in underserved and rural areas. The dashboard can be included as part of the NEVI State Plan future versions.

In addition, PennDOT must make publicly available, in a manner to be prescribed by the FHWA, an annual report describing the community engagement activities conducted as part of the development and approval of the most recently-submitted NEVI State Plan, including engagement with DACs. This report should include community engagement type, date, number of attendees, communities represented by attendees, and how information on that engagement was reflected in the NEVI State Plan.

Resilience, Emergency Evacuation, and Seasonal Needs

PennDOT will continue to support agreements at locations that are resilient to future changes in climate. PennDOT will coordinate with applicants for any new infrastructure planned near locations that have historically flooded, as reported in [PennDOT's Extreme Weather Vulnerability Study](#) to identify design considerations to improve resiliency. In addition, PennDOT will continue to evaluate ways to promote EVSE owner-operators to include resiliency technology to their charging site such as battery storage, backup power generation, or renewable power generation such as solar.

Emergency evacuation routes not currently designated as AFCs will be considered for future infrastructure implementation priority. PennDOT also plans to coordinate with other states on evacuation routes that may utilize Pennsylvania's roadways. PennDOT continues to evaluate this as a potential criteria within the application request process.

Along the AFCs, seasonal impacts on travel have primarily been related to snowfall. EVSE providers will be required to maintain charging stations during weather events. PennDOT will require stations maintain the minimum uptime and accessibility standards established by FHWA as part of any contracts.

Labor, Safety, Training and Installation Standards

FHWA's minimum standards provides specific requirements for EVSE training and certification, hardware, and American Disabilities Act (ADA) requirements. These requirements will be included in future contracts for projects funded under the NEVI Formula Program. More specific PennDOT actions related to workforce education and training are provided later in this plan.

First Responders Safety Training for EVs has been established by the National Fire Protection Association (NFPA) to educate 1st responders, specifically for firefighters. The training includes classification of types of EV's, including hybrids, plug-in hybrids, and battery electric vehicles. The course also covers basic electric concepts and hazards; vehicle EV systems and safety features including types of current carrying cables and locations. The course continues on to the initial response procedures, techniques and proper procedures for addressing the EV and shutting down of the electrical system. Clean Cities has trained over 50 1st responders. PennDOT is working with Clean Cities to evaluate expansion of this course to all of Pennsylvania's 1st responders through regional or county-wide classes.





CIVIL RIGHTS

PennDOT recognizes that the identification of traditionally disadvantaged and underserved populations is important because these populations often have specific and unique transportation needs to be considered, planned for, built, and maintained. Underserved and disadvantaged populations may be found in urban, suburban, and rural areas and are commonly referred to as environmental justice (EJ) populations. They are protected under Title VI of the Civil Rights Act as amended, as well as under executive orders and other legislation.

PennDOT will ensure that the NEVI program is compliant with state and federal civil rights laws, including Title VI of the Civil Rights Act and accompanying United States Department of Transportation (USDOT) regulations, the ADA, and Section 504 of the Rehabilitation Act. PennDOT processes and procedures under the NEVI program will follow established resources including PennDOT's Public Participation Plan, Title VI Compliance and Implementation Plan, and Every Voice Counts: Environmental Justice Moving Forward.

The NEVI Formula Program will focus on charging infrastructure along Pennsylvania's designated AFCs to support long-distance travel and other emergency needs. To address disadvantaged

areas, PennDOT has nominated several new corridors that provide access to urbanized areas off the interstate system. Once the AFC goals are met, PennDOT will have more flexibility to address other charging needs that may better support disadvantaged and underserved communities. Throughout the program, PennDOT is working to ensure:

- Public outreach addresses all communities and populations
- Equity is a key criteria in project evaluation and focus corridors for investment
- All populations can share in the benefits of projects funded under the NEVI Formula Program
- Evaluate use of future year NEVI funding for other charging needs that may benefit disadvantaged/underserved populations include select Level 2 charging at public community locations or support investments in transit and other shared mobility options.

Ensuring that public stations are accessible to all populations – include this as specific criteria for contracts and in prioritization of applications.



PennDOT's Title VI website
and resource listings: Title VI
(pa.gov)



EQUITY CONSIDERATIONS

The NEVI Formula Program must be developed and implemented in coordination with rural communities and DACs. This coordination focuses on supporting the Justice40 Initiative as part of [Executive Order 14008](#), which has a goal of delivering 40 percent of the benefits of federal investments in climate and clean energy to DACs.

PennDOT is working to address equity and Justice40 through the following NEVI Formula Program action items. These equity action items will continue and be enhanced throughout the five-year NEVI program period.

1 DEVELOP AND MAINTAIN EV EQUITY PRINCIPLES TO INFORM AND GUIDE NEVI PROGRAM DECISIONS

In February 2022, PennDOT released its key [EV Equity Guiding Principles](#), aimed at making EVs more affordable and accessible for all communities in Pennsylvania. These principles guide PennDOT's planning efforts for the buildup of the EV charging network under the NEVI program. PennDOT aims to increase accessibility to the infrastructure and maximize benefits for all Pennsylvanians.

A Make EVs More Affordable

1. Ensure availability of EV purchase incentives and payment options targeted to underserved, low-income, persons of color, disabled and otherwise vulnerable consumers.
2. Verify effectiveness of EV purchase incentive programs at local and state levels by tracking the appropriate metrics (EV registrations, income levels, incentives leveraged, etc.) and adjusting incentive structures as needed.

B Make EV Charging More Accessible

3. Ensure sufficient public charging and electrical grid infrastructure in underserved, low-income, persons of color, disabled and otherwise vulnerable communities, especially in areas with low home-charging access (i.e. high percentage of multifamily dwelling units) and a lack of public transit options.
4. Support sufficient public charging infrastructure along major highway corridors, including in rural locations that are necessary to fill gaps in the statewide EV charging network, but may not have the critical mass (e.g., of traffic volume, EV registrations, etc.) to be financially feasible in the short-term without public funding.
5. Certify public charging investments address the ADA standards and includes safety and security accommodations.
 - Consider a standard of amenities including sufficient lighting, regular staffing, security on site, and steady foot traffic that allow comfortable access for persons with disabilities and people with personal safety concerns.
6. Ensure equal access to EVSE funding opportunities for all businesses that are interested in hosting public EVSE on their property.
 - Focus on small and diverse businesses where appropriate.
 - Support a variety of charging station business models.



7. Reduce financial barriers for businesses (e.g., demand charges) who are interested in hosting public EVSEs on their property by working with electric utility companies to make EV charging both affordable and beneficial to the local distribution networks.
8. Expand payment options to accommodate drivers that do not have access to a personal banking account, credit cards, and other cashless options (e.g., offering a pre-paid card to charge EVs).

C Invest in Fleet Electrification

9. Support fleet electrification funding programs are accessible to transit authorities and school districts that serve predominantly underserved, low-income, minority and otherwise vulnerable population.

D Invest in Traditionally Underserved, Low-income, Persons of Color and Otherwise Vulnerable Population Areas

10. Reduce GHG emissions and improve air quality in communities located near interstates by facilitating the adoption of EVs and support the build-out of an EV charging network statewide.
11. Commit 40 percent of the overall benefits from EVSE goes towards projects in underserved, low-income, persons of color, disabled and otherwise vulnerable population areas.
12. Track and report data demonstrating the type and amount of investments in underserved, low-income, communities of color, disabled and otherwise vulnerable communities.
13. Confirm that EJ metrics are included as part of the scoring system in all EVSE state funding programs.
14. Partner with other state, regional, and local agencies, academia and community-based organizations to draw EV-related industry and workforce to the Commonwealth. Support EV industry job skills, local small business development and educational opportunities for all job-levels.
15. Engage with other state, regional, and local agencies, academia and community-based organizations to draw EV-related industry and workforce to the Commonwealth. Support EV industry job skills, local small business development and educational opportunities for all job-levels.

E Increase EV Awareness, Education and Technical Capacity

16. Provide timely communication and easy-to-use resources about EV/EVSE to the general public, members of the General Assembly, consumers, businesses, planning agencies, EJ advocacy groups, and community-based organizations.
17. Craft consistent signage and messaging related to EV/EVSE.
18. Design and publicly disseminate meaningful opportunities and resources for diverse groups of audiences to participate in the EV infrastructure and policy planning process, including underserved, low-income, persons of color, disabled and otherwise vulnerable populations.



2 COORDINATE WITH EQUITY AND ADVOCACY GROUPS FOR DEVELOPMENT OF THE NEVI STATE PLAN

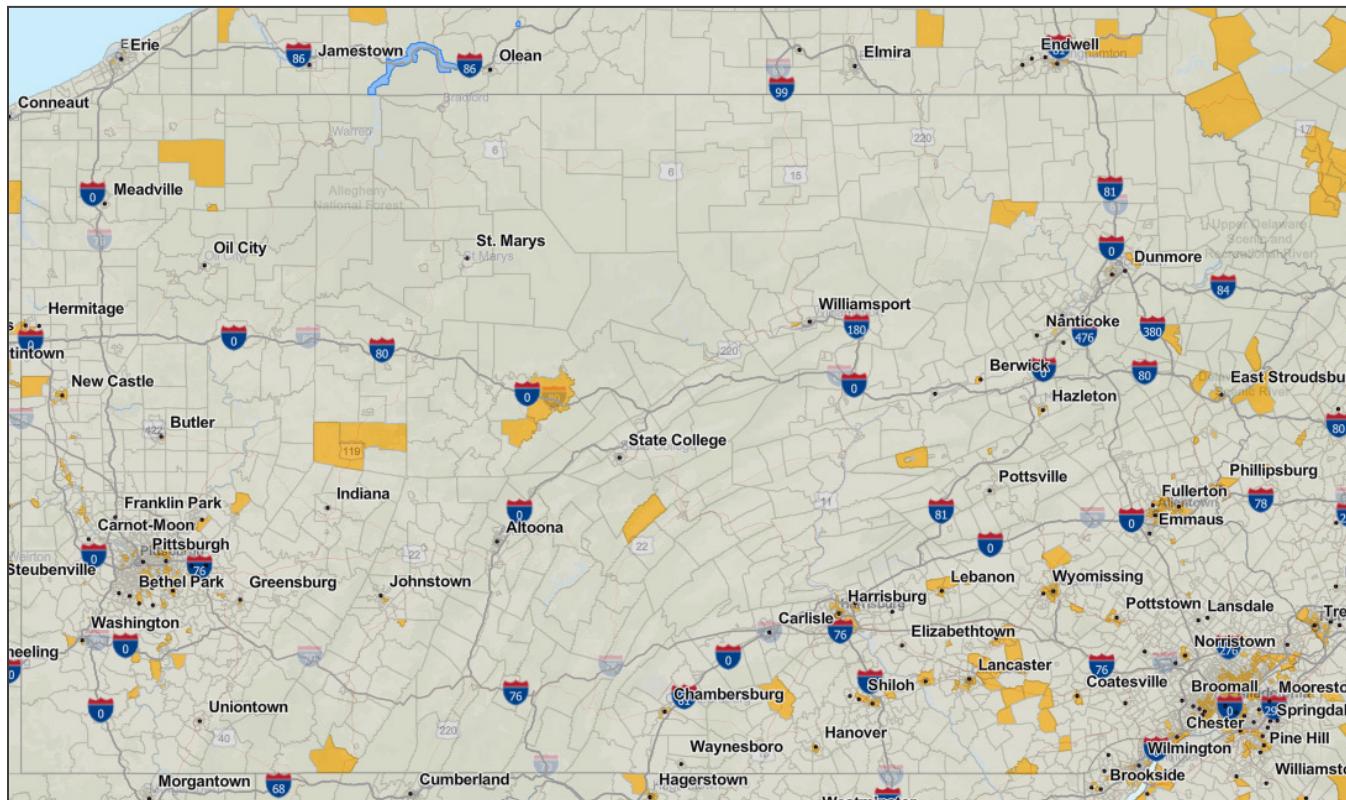
To date, PennDOT has conducted a stakeholder engagement session with equity and advocacy groups as provided in the [Attachment Stakeholder Engagement List](#). This session shared the equity principles and evaluated other equity needs and issues related to electric vehicles and how those needs might be addressed in the NEVI Formula Program. This coordination will continue for each annual update to the NEVI State Plan.

3 IDENTIFY LOCAL DACS WITHIN PENNSYLVANIA AND INTEGRATE INFORMATION INTO PROGRAM PROCESSES

The USDOT developed an interim definition for DACs and the [EV Charging Justice40 Mapping Tool](#). PennDOT has integrated this layer into the layers mapped on their electric vehicles website and has used the data to inform the selection of new corridors for the Round 6 AFC nominations. The data will also support future scoring criteria for prioritizing applications for funding and guide targeted outreach efforts. Figure 12 shows the Justice40 EJ areas, AFCs, and public DCFC in Pennsylvania, according to this mapping tool.

Figure 12: PA EJ Areas (USDOT/Justice40)

Note: Highlighted Areas represent USDOT defined disadvantaged communities (DACS)



SOURCE: USDOT, EV Charging Justice40 Mapping Tool



There are also a number of additional resources that PennDOT uses in identifying EJ areas. The PA DEP defines an EJ Area as any census tract where 20% or more individuals live at or below the federal poverty line, and/or 30% or more of the population identifies as a non-white minority, based on data from the U.S. Census Bureau and the federal guidelines for poverty.

EJ Areas are mapped on DEP's [EJ Areas Viewer](#) and allows users to add map layers, view EJ data at the block-group level, and enter an address, municipality, or county in the search bar to zoom in to that exact location. Several MPOs also have published web maps for identifying EJ and equity areas, including [Delaware Valley Regional Planning Commission's Indicators of Potential Disadvantage](#), and [Lehigh Valley Planning Commission's Equity Analysis](#). PennDOT will work with DEP and its planning partners to achieve the goals of the Justice40 initiative and prioritize investment in EJ areas when awarding NEVI funds.

4 IDENTIFY AND TARGET INTERSTATE AND NON-INTERSTATE CORRIDORS OR DESTINATIONS THAT SERVE DACS

The initial focus of the NEVI Formula Program will be on building out EV infrastructure on Pennsylvania's interstate system, most of which are designated as AFCs. Some portions of these interstates do pass through or near DACs; however, they may not provide sufficient access and visibility for those communities. As a result, PennDOT has begun to target other non-interstate corridors that provide more access for these communities. Both US 422 and US 1 were recently nominated as AFC corridors as they each intersect with DACs. Other corridors will be evaluated based on stakeholder and public comments and through PennDOT assessments. Once the AFC corridors are build-out, PennDOT will also have more flexibility to fund DCFC or Level 2 charging in DACs, which may include key destinations in those areas. Community input will be valuable in determining those locations.

5 PROVIDE OPPORTUNITIES FOR FUNDING TO SMALL OR DISADVANTAGED BUSINESSES

PennDOT continues to identify the program and contract management procedures for the NEVI Formula Program. PennDOT has established goals to ensure that small and disadvantaged businesses have opportunities to apply and receive funds for EV infrastructure. These considerations will be included in application scoring and will guide additional outreach. PennDOT will work with the local planning partners and Chambers of Commerce to share funding opportunities through brochures, social media, and other websites.

6 INTEGRATE EQUITY CRITERIA INTO THE PROJECT PRIORITIZATION AND SELECTION PROCESS

PennDOT anticipates the integration of specific equity criteria within the application prioritization and selection process to ensure businesses in DACs or other businesses noted above have opportunities for EV infrastructure funding under the NEVI Formula Program. These criteria are still under development but will use the DACs from the USDOT tool as a resource.



7 EXPAND ENGAGEMENT TO EQUITY GROUPS TO BETTER UNDERSTAND NEEDS AND OPPORTUNITIES AND BENEFITS RECEIVED FROM THE NEVI PROGRAM

PennDOT is integrating equity considerations throughout the program design and implementation and continues to work to identify ways to ensure these benefits are received either directly or indirectly by DACs. The potential benefits from EV charging infrastructure are anticipated to include:

- Improving clean transportation access through the location of charging stations;
- Decreasing the transportation energy cost burden by enabling reliable access to affordable charging;
- Reducing environmental exposures to transportation emissions;
- Increasing parity in clean energy technology access and adoption;
- Increasing access to low-cost capital to increase equitable adoption of more costly, clean energy technologies like EV charging;
- Increasing the clean energy job pipeline, job training, and enterprise creation in disadvantaged communities;
- Increasing energy resilience;
- Providing charging infrastructure that can serve transit and shared-ride vehicles;
- Increasing equitable access to the electric grid; and
- Minimizing gentrification-induced displacement resulting from EV charging infrastructure.

Realizing and assessing these benefits will require continued coordination with DACs through the public engagement process. **PennDOT has developed an internal agency team to define an equity engagement strategy.** This team will be working over the next year to enhance the engagement process to address the needs and goals established for the NEVI Formula Program. This may include the development of an equity working group or committee made up of key stakeholders and public representatives from DAC communities. In addition, engagement activities and strategies will be coordinated with an existing interagency EJ working group.

As PennDOT works to engage DACs, engagement should include simple messaging to make sure concepts and priorities are well understood and include listening sessions to obtain feedback from communities and local governments on the needs and benefits related to EV infrastructure.

8 DEVELOP A MONITORING DASHBOARD TO TRACK AND REPORT HOW NEVI INVESTMENTS ADDRESS DACS

Sharing progress with the public on NEVI investments is an important action item that addresses federal disclosure requirements and provides opportunities to evaluate and modify program priorities throughout the five-year program. PennDOT is planning to include an equity dashboard that tracks the number and the amount of investments to DACs and to small and disadvantaged businesses. The dashboard will also highlight PennDOT's engagement activities with these communities. PennDOT will continue to evaluate other specific criteria or measures to be monitored and reported as part of the annual community engagement outcomes report.



9 SUPPORT WORKFORCE DEVELOPMENT FOR LOW-INCOME AND MINORITY WORKERS

As highlighted in the following section, PennDOT is working with the Clean Cities organizations and the International Brotherhood of Electrical Workers (IBEW) to support labor and workforce development related to EV infrastructure. PennDOT plans to utilize NEVI Formula Program funding to make investments in work force development and give preference to contractors or subcontractors that are affiliated with apprenticeship programs that target historically marginalized and underrepresented populations.

10 ADDRESS TITLE VI, ADA AND SECTION 504 CONSIDERATIONS

Addressing Civil Rights considerations, the ADA and Section 504 is required for federal funding programs. PennDOT plans to conduct meaningful public participation and engagement to ensure funding recipients are adequately informed about how programs or activities will potentially impact affected communities, and that diverse views are heard and considered throughout all stages of the consultation, planning and decision-making process.

PennDOT will require that EV charging stations comply with ADA and Section 504 requirements and be accessible and usable by individuals with disabilities, including those using wheelchairs or other assistive equipment. Specifically, designs for EV charging stations must:

- Ensure adequate space for exiting and entering the vehicle
- Unobstructed access to the EV charging stations
- Free movement around the EV charging stations and connection point on the vehicle
- Clear paths and close proximity to any building entrances
- Interface for EV chargers must be accessible and usable by people with disabilities

LABOR AND WORKFORCE CONSIDERATIONS

The NEVI Formula Program provides funding to grow and diversify the local workforce that supports the installation, operation and maintenance of electric vehicle charging infrastructure. PennDOT is coordinating with Clean Cities, IBEW, and other stakeholders and educational agencies/institutions to better identify educational needs and opportunities related to electric vehicle infrastructure.

Requirements for Qualified Technicians

A draft Notice of Proposed Rulemaking (NPRM) was released in June 2022 identifying requirements for qualified technicians responsible for the installation, operation and maintenance of electric vehicle charging infrastructure through the NEVI Formula Program. PennDOT must ensure that NEVI funded charging infrastructure is installed, maintained and operated by a diverse workforce with appropriate licenses, certifications and training. Specific requirements include:

All electricians must have a certification from the EVITP or have graduated from a Registered Apprenticeship Program for electricians that includes EVSE-specific training and is developed as part of a national guideline standard approved by the Department of Labor in consultation with the Department of Transportation.

For projects requiring more than one electrician, at least one electrician must meet the requirements above, and at least one electrician must be enrolled in an electrical registered apprenticeship program.

All other onsite, non-electrical workers directly involved in the installation, operation, and maintenance of EVSE must have graduated from a registered apprenticeship program or have appropriate licenses, certifications, and training as required by the State.

Workforce Needs

In support of the NEVI State Plan, PennDOT has conducted outreach to identify education needs, opportunities, and strategies. Insights obtained from the outreach efforts conducted to date have indicated that there is currently a sufficient skilled workforce that can support the increase demands for the construction and installation of EV chargers. However, the skill sets for the operation and maintenance of EV charging infrastructure must be developed over the coming years to ensure a convenient and reliable charging network. Operating and maintaining EV chargers often requires non-electrician skillsets that may also share requirements and knowledge with other skills related to renewable energy generation and solar power. A summary of the key workforce needs of EV charging infrastructure are shown below:

- Construction and installation:
 - General contractors
 - Electricians
 - Engineers - mechanical, electrical and computer hardware engineers
- Operation and maintenance:
 - Technological skillsets in complex internet of things (IoT) devices
 - Knowledge and capabilities related to networking, configuration, and communication issues
 - Knowledge of industry standards, which are currently being developed
 - Development of curricula specifically related to DCFC deployment



Actions to Develop and Educate Workforce

ENGAGEMENT WITH EDUCATION INSTITUTIONS

PennDOT will utilize the resources of our two local Clean Cities Coalitions, EP-ACT and PRCC, to provide assistance, education and outreach for EV workforce development. EP-ACT and PRCC propose methods that include working initially with their stakeholder community colleges (Community College of Philadelphia, and Allegheny County Community College). They will engage these institutions of higher education developing a protocol, course offerings and syllabus to offer potential students within this developing industry. The development of both a vehicle and infrastructure curriculum is envisioned.

Concurrently, EP-ACT and PRCC will be working with the Department of Education on developing programs that can be shared with other community-based colleges and career development centers throughout Pennsylvania. There are over 80 trade and technical schools that would provide the building blocks of a new EV workforce.

EDUCATIONAL WORKSHOPS

Additionally, Clean Cities will assist in the development and provision of educational workshops in six regions of Pennsylvania that coincides with the Department of Education's Career and Technical Education divisions: South Central; Central/North; Southwest; Southeast; Northeast and Northwest.

Clean Cities' network of stakeholders will enable them to work with both OEM (i.e. auto company) and EVSE manufacturers bringing together firsthand knowledge and best practices developing

a diverse and technically savvy workforce to the educational institutions. This work will include:

- Outreach to educational institutions
- Curriculum development areas
 - Design
 - Electrical
 - Construction
 - Installation
 - Maintenance/Inspection
(both vehicles and chargers)
 - IP Protocol
 - Cybersecurity
- Introductions and best practices for OEM vehicles
- Introductions and best practices for EVSE manufacturers
- Workshops for educational institutions
- Development of marketing materials for program development
- Technical assistance

SUPPORT FOR TRAINING PROGRAMS

PennDOT has been in coordination with organizations to evaluate the possible use of NEVI Formula Program funding to support training programs related to hybrid and electric vehicle maintenance and repair. The programs aim to educate automotive technicians across the state on the proper diagnosis of electric vehicle issues, safety, and how to confidently carry out informed conversations with customers on EV technology. PennDOT will continue to evaluate other training support requests and their role within the NEVI program.



Equity Considerations

PennDOT will give preference to contractors and subcontractors that are affiliated with Registered Apprenticeship Programs affiliated with pre-apprenticeship programs that target historically marginalized and underrepresented populations, including, but not limited to:

- Women
- People of color
- Formerly incarcerated or individuals with a criminal record
- Individuals emancipated from the foster care system
- Veterans
- Individuals from low-income communities
- Single custodial parents
- Workers suffering from chronic unemployment
- Individuals displaced from employment in the fossil fuel industry
- Unhoused individuals

To qualify for this preference, pre-apprenticeship programs must also:

1. Include an evaluation of pre-apprentice deficiencies in core subject areas through standardized assessment instruments and individualized instruction;
2. Provide assistance to help prepare pre-apprentices for the rigors of a Registered Apprenticeship Program, and maintain at least one documented partnership with a Registered Apprenticeship program; and
3. Have a curriculum that involves basic electrical-industry standards and job-readiness skills and offers on-the-job work training to prepare pre-apprentices for entry into Registered Apprenticeship Programs.

Contracting Considerations

PennDOT continues to develop and define contracting considerations with support of key stakeholders including IBEW. In contracting with private entities, including small businesses, PennDOT is evaluating the adoption of additional requirements to ensure that EV infrastructure is developed by responsible companies that have sufficient qualifications, resources, and personnel needed for successful project delivery. These may include:

Labor standards compliance self-certification and exclusion of serial law violators: project owner/contractor and subcontractors must attest, under penalty of perjury, that they have had no project defaults or law violations of any kind that have resulted in penalties, back pay, etc. over \$5,000 within the last three (3) years

Use of Registered Apprenticeship Programs: contractors will be required to utilize registered apprentices to ensure that the next generation of workers for EVSE projects are appropriately skilled and trained personnel, leading to successful and timely project delivery

Self-certification by project owner/contractor and subcontractors that they possess all necessary licenses, registrations, certificates or permits as required by applicable state or local law

Self-certification by project owner/contractor that they possess all technical and industry-specific qualifications, equipment, financial resources and personnel needed to complete the project successfully

Monitoring and enforcement provisions, including disqualification/debarment and penalties for those that submit false or inaccurate information

In addition, by ensuring that EV developers have the proper certifications to perform work in a given jurisdiction, this policy will also have the added effect of increasing local workforce participation.

CYBERSECURITY

PennDOT will continue to work with contracted entities to identify cybersecurity considerations and standards that should be met in all contracts using NEVI program funds. FHWA will also be defining network connectivity requirements for charger network communication that are anticipated to help address cybersecurity concerns while mitigating against stranded assets (whereby any provider abandons operations at a particular charging station).

At this time, PennDOT has determined the following cybersecurity requirements for EV charging stations funded through the NEVI Formula Program. These requirements will be revisited and assessed during the annual NEVI state plan update cycle. Future requirements will integrate final FHWA rulemaking on minimum standards and other insights and considerations obtained through coordination with applicants and national best practices.



PENNDOT CYBERSECURITY REQUIREMENTS FOR EV CHARGING STATIONS

1. Organizations shall utilize payment card technologies and/or service providers that comply with the Payment Card Industry Data Security Standard (PCI-DSS).
2. Organizations shall ensure system monitoring and audit logging are enabled on systems that store or process citizen information.
 - Verbose recommended
 - Ability to correlate events and create security alerts
 - Maintain reports online for a minimum of 90 days and archive for a minimum of 1 year
 - Reports should be easily accessible and in a readable format



3. Organizations shall provide and manage security controls to identify attacks, identify changes to files, protect against malware, protect user web services, data loss prevention (DLP), and provide for forensic analysis.
 - File Monitoring Controls
 - Antivirus Controls
 - Intrusion Detection System (IDS)/Intrusion Prevention System (IPS) Controls
 - Data Loss Prevention (DLP) Controls
 - Forensic Controls
 - Advanced Persistent Threat (APT) Controls
4. Organizations shall provide technical controls for authenticating users, provisioning and deprovisioning users, identity interaction and nonrepudiation needs for admins, internet users, and internal users.
 - User authentication methods must provide adequate controls to prevent unauthorized access to citizen data or use of citizen credentials.
 - Systems must utilize adequate controls to maintain confidentiality and integrity of citizen information.
5. Organizations shall ensure software and operating system security patches are applied regularly and in a timely manner after they are made available by the publisher.
6. Organizations shall encrypt all citizen data in transit using TLS v1.2 or greater, and at rest using AES-256 or greater.
7. Organizations shall maintain the ability to perform a complete restoration in the event of a disaster, and shall maintain a business continuity plan that addresses the following:
 - Data/Database Recovery
 - Application Recovery
 - Operating System Recovery
 - Infrastructure Recovery
8. Organizations shall maintain an incident response plan that clearly defines roles and responsibilities and outlines the procedures for handling of security-related incidents.
9. Organizations shall take measures to ensure data protection controls remain in force during communications outages.

PROGRAM EVALUATION

To ensure accountability and program success, PennDOT will implement a robust evaluation program that is directly tied to the NEVI program goals and objectives provided within this plan. In addition, program evaluation will address the requirements to be defined in future FHWA regulations setting minimum standards and requirements for projects funded under the program.

Program Evaluation Plan

Upon approval of the NEVI State Plan and prior to first award, PennDOT will develop a formal Program Evaluation Plan (PEP). The primary objective of the PEP is to document a process to evaluate the success of Pennsylvania's program through quantifying and assessing the benefits and impacts of investments. A set of rigorously defined performance measures will be developed to help PennDOT and others assess and understand the impacts of the ongoing project efforts. This includes definitions of the performance measures, as well as plans for collecting data and reporting on the performance and evaluation process.

The PEP will serve to satisfy three elements —performance measurement, performance monitoring, and performance evaluation.

PERFORMANCE MEASUREMENT	<p>Performance measurement is the means of assessing the progress made towards achieving targeted outcomes. It answers the question, "Is the program collecting the right data, in a timely manner, in a way that the data can be used for later steps?"</p>
PERFORMANCE MONITORING	<p>Performance monitoring tracks performance to assess if outcomes have been, or are likely to be, met. Performance monitoring attempts to answer the following question, "Is the process for collecting data working as expected?"</p>
PERFORMANCE EVALUATION	<p>Performance evaluation is the systematic and objective examination of measures and outcomes to understand the impacts of investments and policies, thus improving current and future planning and investment decisions. It is typically conducted as objectively as possible, ideally with results that can be verified by an independent party who has no vested interest or stake in the project. The evaluation answers the following question, "Were the goals achieved, or not?"</p>



Upon completion, PennDOT will implement the PEP – pulling data from both EVSEs (operational data) and from PennDOT (administrative data). Data-driven assessments will occur on a periodical basis. This will include information on charging usage, reliability, customer satisfaction, and a Justice40 benefits.

In addition, to ensure compliance with federal requirements and to ensure consumer confidence, PennDOT plans to hire consultant support to perform routine audits of awarded sites over the five-year program. Post-construction audits will be used to complement available data in evaluating the effectiveness of charging infrastructure and operations. In the future, possibly before the end of the NEVI program, these audits will transition to the Pennsylvania Department of Agriculture's Division of Weights and Measures.

Public transparency is a key cornerstone of Pennsylvania's Evaluation Program as it naturally supports and improves other aspects of the NEVI State Plan. Information obtained through program evaluation will be shared with the Joint Office and the public through future updates of the NEVI State Plan, PennDOT's EV website, and through custom "dashboards" that may be developed to share NEVI program projects and performance. In addition, PennDOT will conduct periodic public surveys to gauge public satisfaction.

Regulations for Sharing Charging Infrastructure Data

A draft NPRM was released in June 2022 identifying standards for data collection, reporting and sharing. The draft NPRM includes the following required data for public reporting:

- Charging station details on location and ownership
- Base price of electric charge in \$/kWh and associated pricing structures including other fees
- Percentage of time (i.e. uptime) charging ports are available for charging
- Payment methods accepted
- Types of vehicles that can be accommodated
- Number of ports accessible to persons with disabilities

When finalized, PennDOT will incorporate these and other referenced standards into the PEP and associated data dashboards.

DISCRETIONARY EXCEPTIONS

At this time, PennDOT is not including any specific discretionary exceptions in the NEVI State Plan. PennDOT will continue to assess the need for exceptions and include them in future updates to the plan, if needed. The Joint Office has indicated that exceptions should be requested on a limited basis and will be approved through the NEVI State Plan approval.

A State may apply for an exception to the requirement that charging infrastructure is installed every 50 miles and within 1 travel mile of an interstate exit or highway intersection along a designated AFC. At this time exceptions may only be requested for the following reasons:

- **Grid Capacity**
Delivering sufficient power to the charging site requires major upgrades to existing infrastructure
- **Geography**
Lack of necessary services or access to the site significantly compromise accessibility and/or functionality (e.g., roadway exits, necessary amenities)
- **Equity**
An alternate location that would still service travelers on the interstate or AFC would better support providing benefits to a disadvantaged community
- **Extraordinary Cost**
Costs to locate and operate a station at a given site prevent its economic viability even with federal funding through NEVI or other sources

A template for requesting such discretionary exceptions has been developed and is available on the Joint Office website at <https://driveelectric.gov/technical-assistance/>.



PennDOT will evaluate the need for discretionary exceptions during each year of the NEVI Formula Program and coordinate with FHWA and the Joint Office if issues or challenges are encountered in meeting the AFC build-out requirements. The identification of exceptions can also be determined through coordination with applicants during the application request process. At that time, PennDOT can facilitate communication with the Joint Office on requested exceptions and additional information that may be needed for approvals.

Unless otherwise specified, all applicable requirements under Chapter 1 of title 23, U.S.C., apply to the use of NEVI Formula Program funds and funds made available under title 23, U.S.C. for projects for the construction of publicly accessible EV chargers, including **Buy America** requirements at 23 U.S.C.313. At this time, States cannot obtain discretionary exceptions for these criteria. The FHWA and Joint Office will continue the review and assessment of these criteria and may update guidance or regulations, as appropriate.



Future Exception Considerations

PennDOT has identified several possible discretionary exceptions that will continue to be evaluated and discussed with the Joint Office and FHWA's Pennsylvania Division. These include:

- The Pennsylvania Turnpike is currently designated as an AFC and includes several infrastructure gaps that must be addressed to satisfy FHWA's build-out requirements. The Pennsylvania Turnpike Commission (PTC) is currently working with Applegreen Electric on plans to add new DCFC that meet NEVI requirements at service plazas along the Turnpike. However, several concerns have been identified regarding the implications of using federal funds for infrastructure on the Turnpike. These implications will be discussed in the next few months and could prevent the NEVI Formula Program funds being used for this facility. If so, there are significant concerns whether the Turnpike can fund infrastructure in a timely manner to support build-out in the next few years. In addition, PennDOT is concerned of the feasibility of funding EV infrastructure at exit locations (outside of the Turnpike right-of-way) as they are less accessible than the service plazas.
- PennDOT is concerned whether demand charges at full 600kW power will be affordable to small and mid-sized businesses. PennDOT will continue to evaluate whether exceptions may be needed to allow power sharing at certain site locations to support PennDOT's equity goals.
- There are currently 5 DCFC that meet the NEVI power and connector requirements but are between 1-2 miles from an interstate exit. PennDOT is currently evaluating whether there may be options closer to the exit. If this is deemed prohibitive, then discretionary exceptions may be requested. These locations include:

Station Name	Interstate	Distance from Interstate
Walmart 1769 (Dubois, PA)	I-80	1.9 mi
Sheetz 213 (Bloomsburg, PA)	I-80	1.8 mi
Brixmor Ivy Ridge (Philadelphia, PA)	I-76	1.9 mi
Shopcore Bakers Center (Philadelphia, PA)	I-76	1.3 mi
Simon Philadelphia Mills (Philadelphia, PA)	I-95	1.2 mi

ATTACHMENT

Stakeholder Engagement List

**PENNSYLVANIA STATE PLAN FOR
ELECTRIC VEHICLE
INFRASTRUCTURE DEPLOYMENT**

National Electric Vehicle Infrastructure (NEVI) Formula Program

Invited and/or Participated in NEVI Plan Engagement Meetings and Presentations

STATE/FEDERAL GOVERNMENT AGENCY/ASSOCIATION

Municipal Advisory Committee
 Transportation Research Board (TRB)
 EV Interagency Working Group
 Eastern Transportation Coalition (TETC)
 State Planning Board
 Joint Office of Energy and Transportation
 Legislative Webinar
 Drive Electric PA Coalition (DEPA)
 Transportation Advisory Committee
 National Resources Defense Council (NRDC)
 EC State Fleet Cohort Series: 2022
 Pennsylvania Department of Environmental Protection
 PA Turnpike Commission (PTC)
 USDOT/FHWA
 Transportation and Climate Initiative (TCI)
 Interagency team meeting
 Ohio Department of Transportation
 Maryland Department of Transportation
 New York Department of Transportation
 West Virginia Department of Transportation
 PA Department of Education
 FHWA/DOE I-80 AFC Team

ADVOCACY/EQUITY/ENVIRONMENTAL

ChargEVC PA
 Electrification Coalition
 Mobilify Southwestern Pennsylvania
 Plug In America
 NESCAUM
 PA Governor's Advisory Commission on Latino Affairs (GACLA)
 PA Governor's Advisory Commission on Asian Pacific America Affairs (GACAPAA)
 PA Governor's Advisory Commission on LGBTQ Affairs (GAC-LGBTQ Affairs)
 PA Governor's Advisory Commission on African American Affairs (GACAAA)
 AARP
 NAACP
 Pennsylvania Advocacy and Resources for Autism and Intellectual Disability
 Pennsylvania Developmental Disabilities Council
 Pennsylvania Economic Development Association
 The African American Chamber of Commerce of Western Pennsylvania
 The Watson Organization, Inc.
 US EPA Environmental Justice Working Group
 Voices for Independence
 Pennsylvania Petroleum Association
 PA Department of Environmental Protection
 Eastern Pennsylvania Alliance for Clean Transportation
 Pittsburgh Region Clean Cities
 NRDC
 Sierra Club
 Clean Air Council
 PennEnvironment
 PennFuture
 Nature Conservancy
 Pennsylvania Environmental Council (PEC)
 Energy Foundation
 Mom's Clean Air Force
 Pennsylvania Automotive Association (PAA)

UTILITIES

PECO
PPL Electric
FirstEnergy
Duquesne Light
UGI Gas and Electric
Corning Gas (Pike County Light & Power)
Citizens' Electric
Wellsboro Electric
Energy Association of Pennsylvania
Pennsylvania Rural Electric Association
NRG
Adams Electric Cooperative
C&T Enterprises (rural utility co-op)
Citizens' Electric
Sullivan County REC
Central Electric Cooperative
United Electric Cooperative
Claverack REC
Wellsboro Electric
REA Energy Cooperative, Inc.
Allegheny Electric Cooperative
New Enterprise REC
PA Municipal Electric Association
PECO Transportation Electrification Working Group

LABOR/EDUCATION/PROFESSIONAL ASSOCIATIONS

IBEW local 98
PA School Bus Association
Greater Johnstown Career & Technology Center (CTC)
Central Pennsylvania Institute of Science and Technology
York School of Technology
University of Pittsburgh
Unionville-Chadds Ford School District
PA AFL-CIO
Philadelphia Chamber of Commerce
Teamsters 776 (Harrisburg)
Teamsters 429 (Wyomissing)
Delaware County Workforce Development Board
Lower Merion School District
County of Bucks, Department of Workforce and Economic Development
PA Chamber of Commerce
Workforce Development Board, Lackawanna
Partner4Work
PA Association of School Business Officials
Pennsylvania School Boards Association (PSBA)
Philadelphia Works
PA Department of Environmental Protection
PA Department of Labor & Industry
PA Department of Education
Pennsylvania Automotive Association (PAA)
Pennsylvania Society of Professional Engineers
Commercial/Freight Goods partners
Association of Independent Colleges & Universities of Pennsylvania

EV CHARGING INFRASTRUCTURE

Greenlots
FreeWire
FLO
Electrify America
Blink
EVgo
ChargePoint
7-Eleven
Applegreen
Sema Connect
Mike Fix
Don Steele
DEP
PennDOT
L&I
ChargEVC
Tesla
The Ray
John Lowmaster
Green Edge Tech

LOCAL GOVERNMENT/PLANNING PARTNER/ASSOCIATION

Airport Corridor Transportation Association (ACTA-TMA)
Transportation Management Association Bucks (TMA Bucks))
Central Philadelphia Transportation Management Association (CPTMA)
Transportation Management Association of Chester County (TMACC)
Delaware County Transportation Management Association (DCTMA)
Oakland Transportation Management Association (OTMA)
The Partnership Transportation Management Association of Montgomery County (PTMA)
Pittsburgh Downtown Partnership Transportation Management Association (PDP TMA))
Greater Valley Forge -Transportation Management Association (GFV-TMA)
University City District Transportation Management Association (UCD- TMA))
Eastern Pennsylvania Alliance for Clean Transportation
Pittsburgh Region Clean Cities
PA State Association of Boroughs (PSABS)
PA State Association of Township Supervisors (PSATS)
County Commissioners Association of PA
PA Municipal League
Milford Borough
Planning Partners (MPOs/RPOs)

AIRPORTS & TRANSIT AGENCIES

Airports and Transit Authorities	Indiana County/Jimmy Stewart Field Airport	Venango Regional Airport
Allegheny County Airport	Jake Arner Memorial Airport	Washington County Airport
Allentown Queen City Municipal Airport	John Murtha Johnstown-Cambria Airport	Wilkes-Barre Wyoming Valley Airport
Altoona-Blair County Airport	Joseph A Hardy Connellsville Airport	Wilkes-Barre/Scranton International Airport
Arnold Palmer Regional Airport	Lancaster Airport	William T Piper Memorial Airport
Beaver County Airport	Lehigh Valley International Airport	Williamsport Regional Airport
Bedford County Airport	Mid-state Airport	Wings Field Airport
Bedford County Airport	Mifflin County Airport	York Airport
Bellefonte Airport	New Castle Municipal Airport	Zelienople Municipal Airport
Bloomsburg Municipal Airport	New Garden Airport	Southeastern Pennsylvania Transportation Authority - SEPTA
Braden Airpark	Northeast Philadelphia Airport	Altoona Metro Transit - AMTRAN (representing urban providers)
Bradford County Airport	Northumberland County Airport	Area Transit Authority of Central Pennsylvania - ATA (representing rural providers)
Bradford Regional Airport	Penn Valley Airport	Freedom Transit (representing shared-ride providers)
Brandywine Regional Airport	Philadelphia International Airport	Pennsylvania Public Transportation Association
Capital City Airport	Pittsburgh International Airport	Luzerne County Transit Authority
Carlisle Airport	Pittsburg/Butler Regional Airport	Port Authority of Allegheny County
Chester County G O Carlson Airport	Pocono Mountains Municipal Airport	PennDOT
Clarion County Airport	Port Meadville Airport	Helicopter Association International
Clearfield-Lawrence Airport	Pottstown Municipal Airport	Aviation Council of PA
Corry-Lawrence Airport	Punxsutawney Municipal Airport	PA Drone Association
Doylestown Airport	Quakertown Airport	National Business Aviation Association
Dubois Regional Airport	Reading Regional Carl A Spaatz Field Airport	Aircraft Owners and Pilots Association
Ebensburg Airport	Rostraver Airport	Association for Unmanned Vehicle Systems International PA/NJ Chapter
Erie International/Tom Ridge Field	Schuylkill County Joe Zerbey Airport	
Franklin County Regional Airport	Somerset County Airport	
Gettysburg Regional Airport	St Mary's Municipal Airport	
Grand Canyon Regional Airport	Titusville Airport	
Grove City Airport	University Park Airport	
Harrisburg International Airport		
Hazleton Airport		
Heritage Field Airport		

TRANSPORTATION NETWORK COMPANIES

LYFT

POTENTIAL SITE HOSTS

Pump N Pantry
Wawa
Sheetz
McAneny Brothers
Weis Markets
County Fair
Giant Eagle
Peapod
Beaver Stadium
Bryce Jordan Center
Citizens Bank Park
Giant Center
Acrisure Stadium
Hersheypark Stadium
Lincoln Financial Field
Penn's Landing
Pennsylvania Farm Show Complex and Expo Center
Petersen Events Center
PNC Park
PPG Paints Arena
PPL Center
Santander Arena
Stage AE
The Pavilion
Wells Fargo Center
Mohegan Sun Arena
Subaru Park Philadelphia Union
1st Summit Arena War Memorial
North Central Recreation Center
Sargent's Stadium at the Point
Erie Insurance Arena
UPMC Park
Bayfront Convention Center

ERIEBANK Sports Park/Erie Sports Center

Presque Isle State Park

David L. Lawrence Convention Center

Presque Isle Downs & Casino

Rivers Casino

Highmark Stadium

UPMC Cooper Fieldhouse (Duquesne University)

UPMC Events Center (Robert Morris University)

PA Association of Realtors

Pennsylvania Restaurant & Lodging Association

C&S Companies

PA Builders Association

Pennsylvania Parking Association

Lancaster Parking Authority

OEMS

Rivian

Volvo

General Motors

Ford

BMW

Tesla

FREIGHT/GOODS

Amazon

PA Towing Association

PA Automotive Association (PAA)

AAA

PA Association of Automotive Service Providers

Pennsylvania Motor Truck Association (PMTA)

Penske

TransEdge Truck Center

Navistar

PortErie

PhilaPort

PortPitt

C&S Companies

American Car Rental Association

ATTACHMENT

Stakeholder Meeting Questions

**PENNSYLVANIA STATE PLAN FOR
ELECTRIC VEHICLE
INFRASTRUCTURE DEPLOYMENT**

National Electric Vehicle Infrastructure (NEVI) Formula Program

Utilities Stakeholder Questions

*Do you prefer are any of these questions to be discussed one-on-one?

FUNDING/INCENTIVES

1. Are the utilities willing/able to come up with any portion of the 20% local match for the utility upgrades needed?
2. Are you considering load balances (variable pricing scheme) encouraging charging during off-peak times?
3. Are you aware of any pilot programs or plans to reduce demand charges for EVSE DCFCs? If programs have been implemented, how have they been faring?

SITE INSTALLATION/CONNECTION

4. What part of the grid upgrades needed are tied to the EV infrastructure?
 - Needs to be closely tied to the EV infrastructure.
5. How much work and investment are needed to upgrade the wattage?
 - Going from 200 kw to 600 kw – is that difficult?
6. If additional expansion to the electric grid required, would you ever deny access to a EV charging location? Or would the EVSE need to pay for the upgrades needed?
 - Would additional lines be added on utility poles to support EV efforts?
7. When a new DCFC is being planned, at what stage does the utility company typically get involved? Is the coordination with the property owner (i.e. business establishment) or the third-party EVSE company that typically installs and operates the station?

COMMUNICATION/COORDINATION

8. What communication from EVSE owners would you like to see?
 - What else do you want from the EVSE companies?
9. What information do you want from PennDOT?
10. What are other ways to further improve collaboration between DOTs, network companies, businesses and the utility companies?
11. What ways can future initiatives and priorities be coordinated between the DOT and utility companies? For example, SB 435 includes requirements for utility companies to submit a transportation electrification development plan. These planning efforts should be coordinated with DOT efforts (and vice versa).

NEW LEGISLATION IMPLICATIONS

12. What are your thoughts on SB 435? And how would this impact your planning for upgrades?
 - Utility-owned EV charging stations. Are the utilities interested in entering this space and would that require PUC action?
13. Have utility companies begun efforts to plan for the BIL programs related to Rural Energy Infrastructure and ways to establish more affordable rates for EV charging? Have specific plans been outlined for target areas of infrastructure expansion?

14. Per the guidance for administering NEVI formula funding, (from the BIL), the State Plan “should include the best available information regarding the State’s [among other items] … grid capacity necessary to support additional EV infrastructure.” What information could utilities provide that PennDOT can include in its Plan, to evaluate grid capacity in different areas of the state?

DATA/MAPS

15. Are there maps that identify three-phase power in your areas?
16. Are there areas/pockets of the state where three-phase power is not cost effective (feasible vs reasonable)?
 - We may need to submit exceptions

EQUITY AND EJ

17. How do you consider equity in your planning work?
 - Do you plan to have a Justice40 campaign (from the BIL) or program to serve EJ communities in your region?

ENERGY GENERATION

18. Do you see a linkage between EV infrastructure programs and innovative /renewable energy resources?
 - Generation of the electricity
 - Microgrids
 - Storage Solutions

STRATEGIC OR LONG-TERM PLANNING

19. How are we allowing for expansion for demand and higher power levels (future-proofing)?
 - Are you considering the development of energy/battery storage devices?
 - Are you considering the possibility of Vehicle-To-Grid (V2G) capabilities for EVs?
20. How does resiliency play into your planning (weather related)?
21. Are you planning to improve any processes to accommodate this new need?
 - Anything we/Commonwealth can do to help?

OTHER

22. How do you envision your role in order to fulfill the plan’s vision and goals (convenient, affordable, reliable, equitable and safety)?
23. Is your workforce prepared for the upgrades needed?
 - Do you anticipate any supply chain issues?
 - It appears that the utility company’s contribution to date related to EV charging is primarily focused on the power distribution network, transformers, and metering. Is there interest in utility companies becoming more active in the EV charging infrastructure market including maintaining charging equipment (this appears to be the case in other states like Massachusetts, Oregon, and California)?

OEM Stakeholder Questions

1. Is there specific training that is needed to inspect and maintain your EV models?
2. What challenges have you experienced related to workforce and/or training programs?
3. What support could help overcome those challenges, or assist in expanding training opportunities?
4. Do you plan to transition all your vehicles to electric?
 - If so, what is your timeline for doing so?
5. What do you think the average driving range of EVs will be in the next 5 years?
6. Do you anticipate ongoing supply chain issues?
 - What resources or support can help to alleviate these challenges?
7. What are some barriers to the deployment of EV charging infrastructure?
8. Outside of the AFC/NEVI Program criteria (50 miles between charging stations, within 1 mile of the corridor), what locations and/or levels of charging infrastructure do you think would be most impactful in spurring EV sales?
9. Have you adjusted your business strategy or product specifications in response to NEVI?
10. What feedback have you received from EV drivers related to charging experiences and challenges?
11. What ways would like to continue to partner with PennDOT on transportation electrification?

EVSE Network Provider Follow-up Questions

Do you prefer are any of these questions to be discussed one-on-one?

FUNDING/INCENTIVES

1. Do you plan on applying for NEVI formula funding in Pennsylvania?
2. Are the EV charging network providers willing/able to come up with any portion of the 20% match for NEVI funding?
3. What's your preferred contracting method for fund disbursement? (grants for individual sites, grants for groups of sites, rebate program, RFP, P3, etc.)
4. Are you familiar with all the requirements to use federal funds?

SITE INSTALLATION/CONNECTION

5. What are some barriers to implementing DCFCs?
6. How can PennDOT alleviate or eliminate some of those barriers?
7. How do your sites promote safety? (lighting, cameras, fire protection, emergency call buttons, etc.?)
8. Does your site planning follow any design best practice guidelines or standards? Do these exist?
9. What are the required and desirable amenities at your sites? (restrooms, shared mobility hubs, package pickup lockers, etc.)
10. What is your typical O&M needs for a charging station? What all factors make up this cost?
11. How are you planning for the future needs of EV in shared mobility solutions (micro-transit, transportation network companies, etc.)
12. How are you modifying station designs to accommodate medium-/heavy-duty trucks in the future? (station size and power levels)
13. How much extra power should be designed into sites to allow for future expansion?

COMMUNICATION/COORDINATION

14. What communication from utilities would you like to see?
15. What else do you want from the utility companies?
16. What information do you want from PennDOT?
17. What are other ways to further improve collaboration between DOTs, network companies, businesses and the utility companies?
18. What are your pain points and areas that slow down the permitting and approval process? What improvements are required to get to 6 months between obligating funding and completing permitting and environmental review?
19. What types of conversations have you been having with other PA government and market entities (i.e., utilities, municipalities, etc.) to prepare for NEVI funding?

NEW LEGISLATION IMPLICATIONS

20. In what ways have you adjusted your planning efforts since the release of the NEVI guidance?

DATA/MAPS

21. What datasets would we able to access about the EVSE after its installed?
22. Are we able to access any datasets for installations that aren't completed as part of a grant program?
23. What cyber security standards/frameworks does your network use? (PCI DSS, SOC2, ISO 27001, NERC 1300, ISA/IEC 62443, CCPA, GDPR, etc.)
24. Do your stations use open protocols to allow the stations to be switched to a different network if required?
25. Which open protocols and standards for network connectivity do you use to allow for interoperability between stations and networks?

EQUITY AND EJ

26. Do you consider equity in your planning work? If so, how?
27. Do your site installations comply with the ADA requirements for gas stations? (Attendant on site to help with fueling assistance, all operable pump parts lower than 48", etc.)
28. What minimum number of ADA parking spots should be required to have EV plugs?
29. What community outreach activities do you perform prior to finalizing a selected site?

STRATEGIC OR LONG-TERM PLANNING

30. How are you preparing for future expansion of the network and potential redundancy at sites (i.e., future-proofing)?
31. How does resiliency play into your planning (emergency and weather related)?

WORKFORCE

32. Do you do all maintenance in house, or do you contract that out to partners in the region?
33. How are you helping to prepare the workforce for EVSE installation, operation, and maintenance needs?
34. What training programs do the maintenance and operations staff go through?
35. What programs could be implemented to better prepare the workforce? Do you anticipate any supply chain issues?

Stakeholder Meeting Questions

Utilities: March 28th 10:00-11:00 am

36. Are you planning or having conversations about EVs?
 - a. Yes
 - b. No
 - c. Unsure
37. Are the utilities willing/able to come up with any portion of the 20% local match for the utility upgrades needed?
 - a. Yes
 - b. No
 - c. Unsure
38. Do you see a linkage between EV infrastructure programs and innovative/renewable energy resources?
 - a. Generation of the electricity
 - b. Microgrids
 - c. Storage Solutions
39. How are you as utilities preparing for NEVI funding?
40. What are some barriers to implementing DCFCs?
41. How do you consider equity in your planning work?
42. How are we allowing for expansion for demand and higher power levels (futureproofing)?

Local: April 4th 11:00-12:00 pm

1. Has your agency been involved in planning for EV charging?
 - a. Yes
 - b. No
 - c. Unsure
2. Has (or would) your agency provide funding or other incentives for public EV charging infrastructure?
 - a. Yes
 - b. No
 - c. Unsure

3. Would you help promote NEVI funding opportunities to businesses within your area?
 - a. Yes
 - b. No
 - c. Unsure
4. What other roles do you think local agencies can play in the implementation of NEVI funding?
5. What barriers do you foresee in constructing new public DCFCs or Level 2 chargers in your communities?
6. How should PennDOT best consider the rural and equity requirements of the NEVI formula program?
7. What ideas do you have for good places for DCFC or Level 2 public charging in your communities? PennDOT can provide additional correspondence if you have more information to share.
8. How can PennDOT best support your efforts to deploy charging infrastructure in jurisdictions you represent?
9. PennDOT has partnered with Temple University to develop an EV local model ordinance for municipalities. Two key barriers uncovered concern zoning and permitting processes. Have you considered streamlining these processes for EVSE deployment? If yes, what have you thought of implementing? If no, would you consider it?

EVSE Network Companies & Site Hosts: April 4th 3:00-4:00 pm

1. What type of business model is most characteristic of your charging stations?
 - a. EV company-own/operate
 - b. Site host-own/operate
 - c. Hybrid ownership/operation
 - d. Other
2. About how many of your planned chargers will be at stations that meet FHWA's new AFC criteria for charger locations and capacity (4 chargers, 600 kW capacity)?
 - a. 75% or more
 - b. 50 to 75%
 - c. 25 to 50%
 - d. 1 to 25%
 - e. None
 - f. Unsure
3. Do any of these in the previous question fall within one mile of a current AFC?
 - a. Yes
 - b. No
 - c. Unsure
4. Would you be willing to share with PennDOT your planned stations for the next 2 years?
 - a. Yes
 - b. No
 - c. Unsure
5. In what ways have you adjusted your planning efforts since the release of the NEVI guidance?

6. Are the EV charging network providers willing/able to come up with any portion of the 20% match for NEVI funding?
 - a. Yes
 - b. No
 - c. Unsure
7. What barriers do you foresee related to the implementation of the NEVI formula funding program (these may relate to contracting with state DOTs, capacity limitations of network providers, operating assistance beyond the initial station construction, or addressing the equity and rural goals addressed in the NEVI guidance)?
8. How can PennDOT alleviate or eliminate some of those barriers noted in the previous question?
9. Are there any other non-interstate corridors the EVSE network providers would be interested in seeing nominated as AFCs? If yes, which corridors?
10. How can PennDOT best support your efforts to deploy charging infrastructure?

Environment: April 6th 1:00-2:00 pm

1. How can we improve the environmental permitting process to expedite the approval of the EV sites? (Required to be less than 6 months between when funds are obligated to a project and the project permits and environmental review are approved)
2. Are there any permitting issues that are made frequently?
3. Has your group been involved in planning for EV charging?
 - a. Yes
 - b. No
 - c. Unsure
4. Has your group had conversations about NEVI funding?
 - a. Yes
 - b. No
 - c. Unsure
5. What types of strategies or policies are you advocating related to EV infrastructure?
6. What environmental goals and/or objectives should PennDOT consider for the NEVI State Plan?
7. What specific messaging should be conveyed in Pennsylvania's NEVI State Plan regarding environmental benefits of charging infrastructure?
8. How should PennDOT best consider the rural and EJ requirements of the NEVI formula program?

Advocacy / Equity: April 6th 2:00-3:00 pm

1. Has your group been involved in planning for EV charging?
 - a. Yes
 - b. No
 - c. Unsure

2. Would small businesses attempt to apply for grant funding if they were required to fund the 20% match?
 - a. Yes
 - b. No
 - c. Unsure
3. How should PennDOT best consider the rural and equity requirements of the NEVI formula program? Please note ideas related to both DCFC and Level 2 charging.
4. What specific goals or objectives would you like to see included for the NEVI formula program?
5. How can PennDOT generate interest from small businesses in applying for NEVI funding?
6. How should safety be promoted at the sites? (Lighting, cameras, fire protection, emergency call buttons, etc.?)
7. How should PennDOT consider EJ in funding EV infrastructure along interstates?
8. How should accessibility be promoted at the sites (ADA, hours of operation, etc.)?
9. What are the required and desirable amenities at the sites?

Food Merchants Association: April 6th 9:30 – 10:00 am

1. Has your business/group been involved in planning for EV charging?
 - a. Yes
 - b. No
 - c. Unsure
2. Has business/group had conversations about NEVI funding?
 - a. Yes
 - b. No
 - c. Unsure
3. Does your group/business plan to apply for any of the federal EV funding?
 - a. Yes
 - b. No
 - c. Unsure
4. How can PennDOT generate interest from small businesses in applying for NEVI funding?
5. How should safety be promoted at the sites? (Lighting, cameras, fire protection, emergency call buttons, etc.?)
6. How should accessibility be promoted at the sites (ADA, hours of operation, etc.)?
7. What are the required and desirable amenities at the sites?
8. How can PennDOT best support your efforts to deploy charging infrastructure?

Education / Labor: April 7th 9:00-10:00 am

Note: workforce related, not specific to EV school bus funding

1. Have workers or students associated with your agency/advocacy group expressed interest in jobs related to transportation electrification?
 - a. Yes
 - b. No
 - c. Unsure
2. Is there sufficient qualified workforce to install all the EV chargers required for NEVI? Are there training programs related to this expertise? Has a study been conducted to see if the workforce is sufficient?
3. What are some opportunities for workforce development that you see with transportation electrification?
4. Is the current workforce sufficient to install all the EV chargers required for NEVI?
5. How can NEVI funds be used to grow the local workforce required for EVSE installation, maintenance, and operations?
6. How can NEVI funds be used to encourage underrepresented group to get involved in the trades required for EVSE installation, maintenance and operations?
7. How can PennDOT support workforce development?

Commercial/Freight: May 17th 9-10 AM

AAA, PA Automotive Association, PA Towing Association, PA Motor Truck Association, Amazon

1. Has your organization had conversations about EVs?
 - a. Yes
 - b. No
 - c. Unsure
2. Has your organization had conversations around NEVI and other federal funding opportunities?
 - a. Yes
 - b. No
 - c. Unsure
3. Does your organization plan to apply for any of the federal EV funding?
 - a. Yes
 - b. No
 - c. Unsure
4. Are there any interstates or routes of significance that you think should be prioritized for EV freight corridors?
5. What are some EV-specific challenges that need to be considered related to evacuation routes and emergency roadside assistance?
6. Do you have electrification plans for your fleet vehicles and associated charging infrastructure to support it?

7. Do you have any plans to include mobile EV chargers on your roadside assistance vehicles?
8. Where do you see most of the medium and heavy-duty charging taking place?
9. How can PennDOT support workforce development related to EVs within the MHD sector?
10. What design considerations are needed for MHD EV charging infrastructure?
11. Are there other alternative fuel types that you're considering for your fleet?

Airports and Transit Agencies: May 23rd 10-11 AM

1. Has your organization had conversations about EVs?
 - a. Yes
 - b. No
 - c. Unsure
2. Does your organization have any plans for installing EV charging at your locations?
 - a. Personal fleet vehicles
 - b. Customer parking facilities
 - c. Cell phone/pick-up lots
 - d. Buses/other airport transportation vehicles
 - e. TNCs
 - f. Rental cars
 - g. Other
3. If Yes above, has your organization coordinated with utilities regarding grid needs or capacity and potential rate designs?
4. Does your organization plan to apply for any of the federal EV funding?
 - a. Yes
 - b. No
 - c. Unsure
5. How do you see your organizations helping electrify the transportation sector?
6. Has there been any consideration for a concierge-like service for EV charging (I.e., for long-term parking, rotating vehicles in and out of charging spaces, or mobile charging solutions)?
7. When community funding becomes available, would your organizations be interested in applying for Level 1, 2, and/or 3 charging infrastructure?
8. Has your organization identified any concerns, barriers or limitations of transit electrification including grid capacity, vehicle costs, maintenance, reliability, workforce expertise, battery mileage limitation, charging infrastructure constraints, etc.

Destinations: May 24th 3-4 PM

PA Realtors Association, PA Restaurant and Lodging Association, PA Parking Association, PA Builders Association

1. Has your organization had conversations about EV charging infrastructure at homes and business locations?
 - a. Yes
 - b. No
 - c. Unsure
2. Has your organization had conversations around NEVI and other federal funding opportunities?
 - a. Yes
 - b. No
 - c. Unsure
3. What ways is your industry preparing for EV charging infrastructure?
4. The NEVI formula program is for publicly accessible charging stations. Publicly accessible means the equipment is available to the public without restriction. A station that is not maintained or restricts access only to customers, tenants, employees, or other consumers is not publicly accessible. Do you see this requirement as a barrier to the use of NEVI funds at many destinations?
5. What are some EV-specific challenges that need to be considered related destination-specific travel?
6. Do you have electrification plans for your customers and associated charging infrastructure to support it? If yes, have you had any discussions on the choice between Level 2 and Level 3 (DCFC) options? (Please include your organization in your response, since answers may depend on industry)
7. For destinations that have already installed EV chargers, what are the pros, cons and challenges related to the charging infrastructure?
8. Are there any major events at your venues that would require additional charging infrastructure like mobile-ready charging units?

ATTACHMENT

Stakeholder and Public Survey

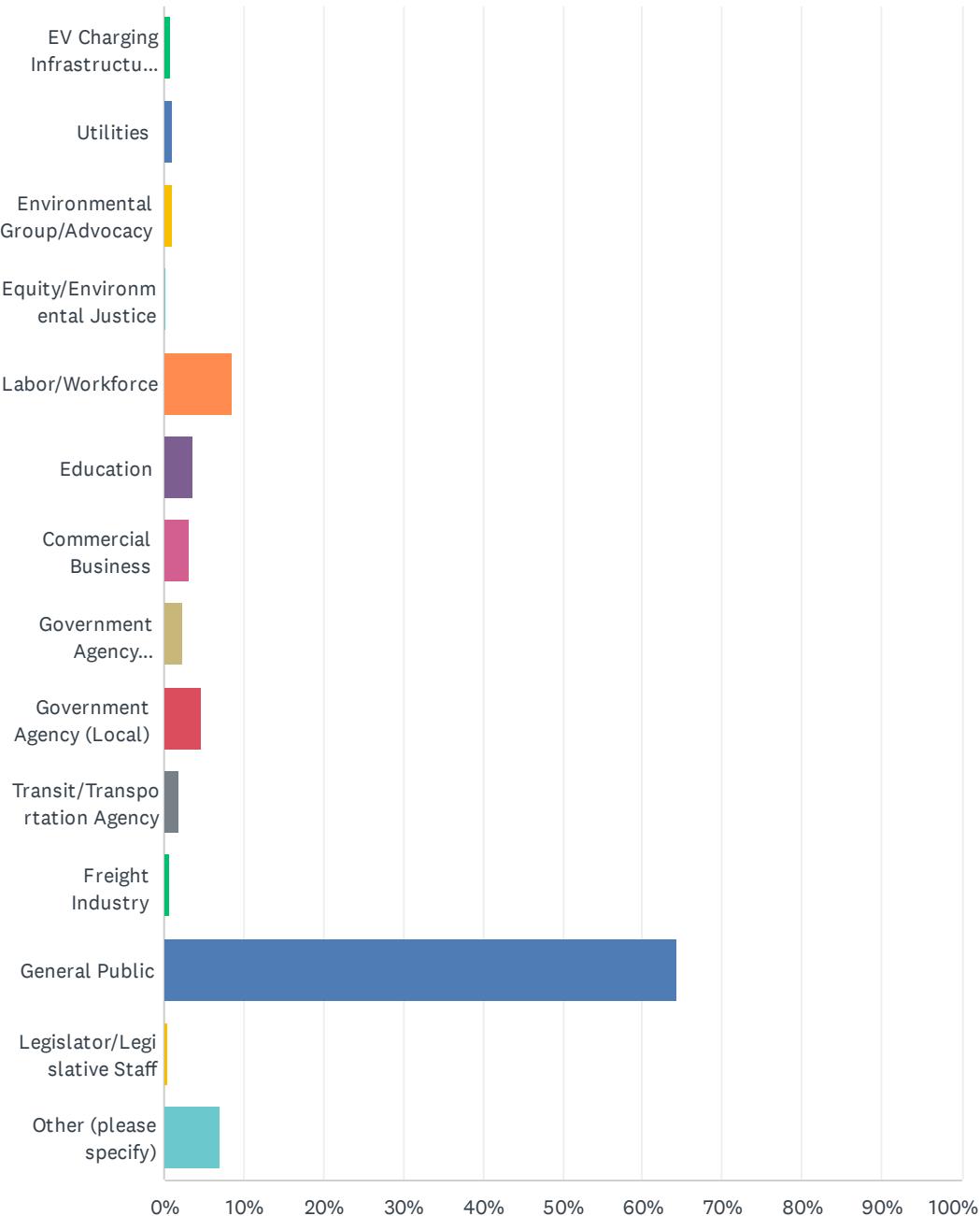
**PENNSYLVANIA STATE PLAN FOR
ELECTRIC VEHICLE
INFRASTRUCTURE DEPLOYMENT**

National Electric Vehicle Infrastructure (NEVI) Formula Program

Note: Open-ended questions and responses are not included in this summary, please refer to abridged Comment Analysis on PennDOT's EV web page for an overview of comments received.

Q1 What organization best describes you?

Answered: 4,384 Skipped: 90

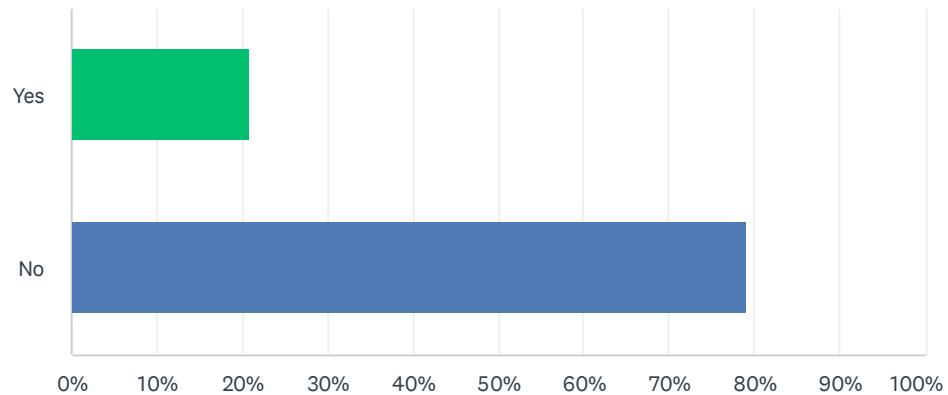


State NEVI Plan - Stakeholder Comment Survey

ANSWER CHOICES	RESPONSES
EV Charging Infrastructure Company	0.87% 38
Utilities	1.12% 49
Environmental Group/Advocacy	1.09% 48
Equity/Environmental Justice	0.25% 11
Labor/Workforce	8.60% 377
Education	3.70% 162
Commercial Business	3.24% 142
Government Agency (State/Federal)	2.33% 102
Government Agency (Local)	4.68% 205
Transit/Transportation Agency	1.82% 80
Freight Industry	0.57% 25
General Public	64.37% 2,822
Legislator/Legislative Staff	0.41% 18
Other (please specify)	6.96% 305
TOTAL	4,384

Q2 Do you currently drive an EV?

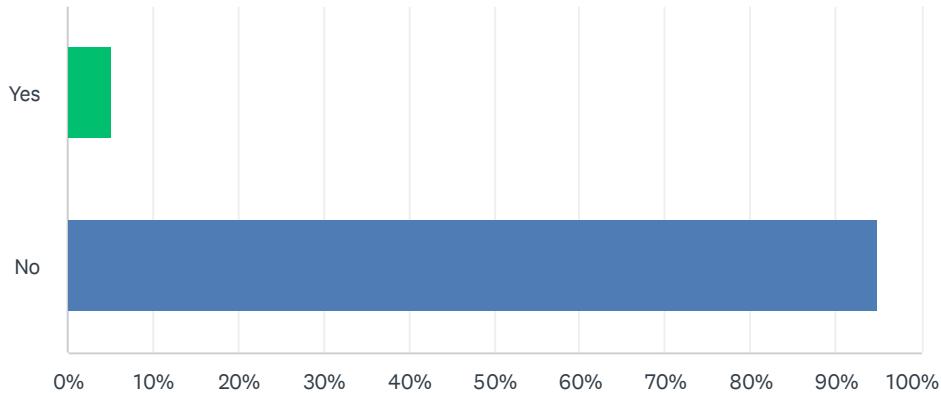
Answered: 4,474 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	20.94%	937
No	79.06%	3,537
TOTAL		4,474

Q3 Did you attend a PennDOT stakeholder session in development or discussion of the NEVI State Plan?

Answered: 4,474 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	5.14%	230
No	94.86%	4,244
TOTAL		4,474

Q4 Zip code

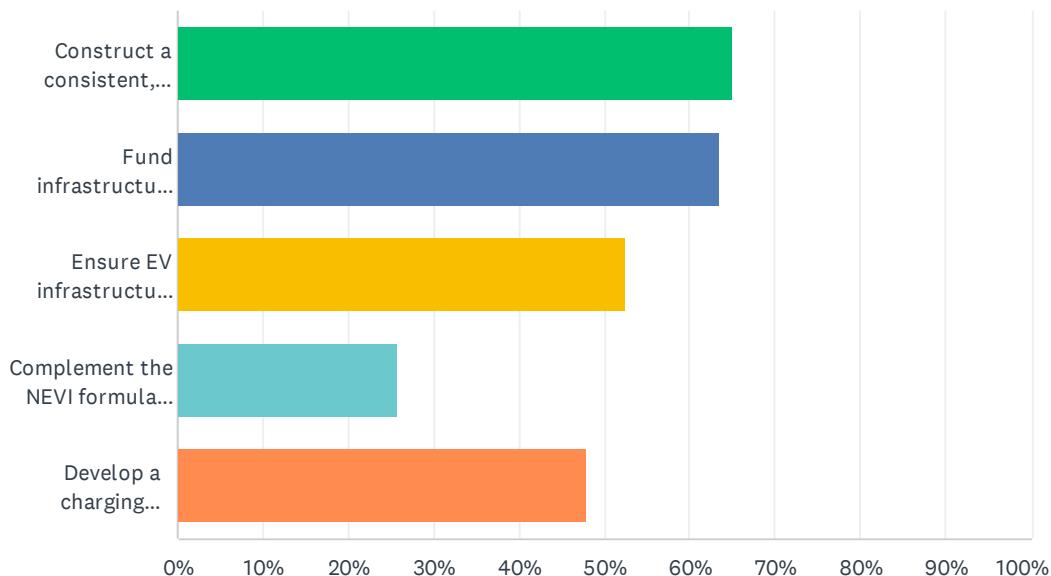
Answered: 4,408 Skipped: 66

**Q5 Do you have any feedback on PA's NEVI State Plan Vision Statement:
"Strategically deploy a convenient, reliable, affordable, and equitable EV
charging network to support range confidence for Pennsylvanians and
visitors"?**

Answered: 2,301 Skipped: 2,173

Q6 Program Goals: Select the priorities most important for the program. Check all that apply.

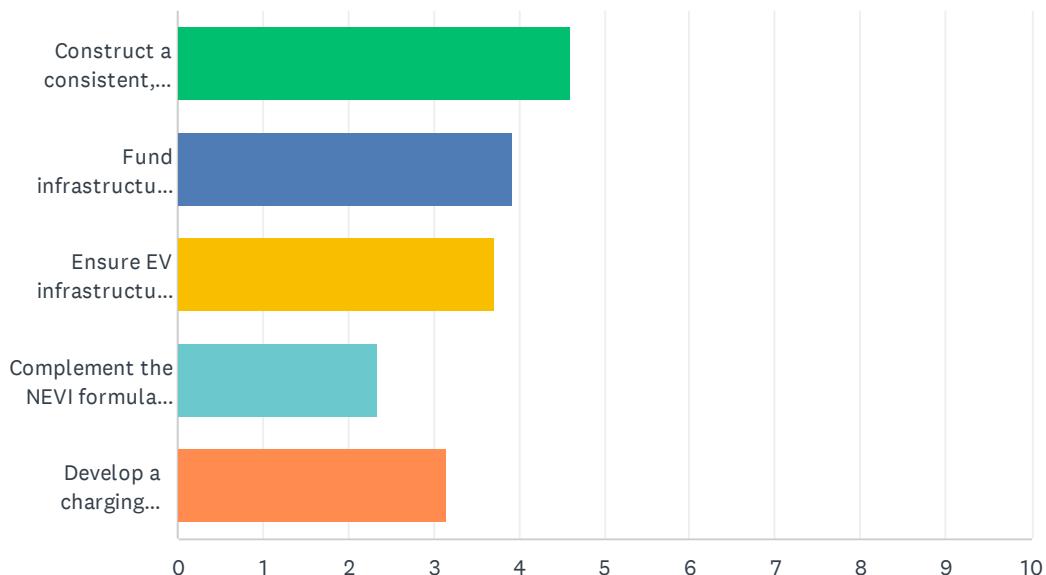
Answered: 3,541 Skipped: 933



ANSWER CHOICES	RESPONSES
Construct a consistent, robust charging network to enhance availability when and where people need to charge.	64.98% 2,301
Fund infrastructure that is safe and convenient for travelers.	63.60% 2,252
Ensure EV infrastructure funding is distributed and applied in an equitable manner and provides benefits to all populations including underserved and rural communities.	52.50% 1,859
Complement the NEVI formula program with proper training and diversity of the workforce and job impacts.	25.70% 910
Develop a charging network to support freight and goods movement through the Commonwealth.	48.01% 1,700
Total Respondents: 3,541	

Q7 Please rank the priorities you selected, with 1 being the highest priority.

Answered: 2,947 Skipped: 1,527



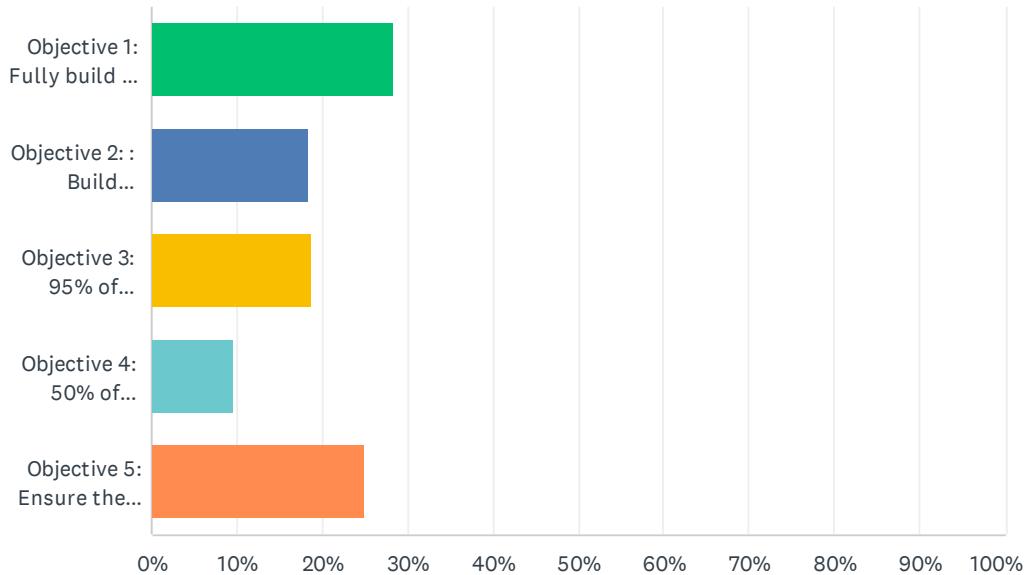
	1	2	3	4	5	TOTAL	SCORE
Construct a consistent, robust charging network to enhance availability when and where people need to charge.	72.71% 1,516	18.56% 387	6.38% 133	1.63% 34	0.72% 15	2,085	4.61
Fund infrastructure that is safe and convenient for travelers.	34.27% 661	34.94% 674	21.72% 419	6.27% 121	2.80% 54	1,929	3.92
Ensure EV infrastructure funding is distributed and applied in an equitable manner and provides benefits to all populations including underserved and rural communities.	26.89% 452	33.91% 570	24.33% 409	11.66% 196	3.21% 54	1,681	3.70
Complement the NEVI formula program with proper training and diversity of the workforce and job impacts.	7.96% 65	9.91% 81	19.71% 161	32.56% 266	29.87% 244	817	2.34
Develop a charging network to support freight and goods movement through the Commonwealth.	16.46% 249	25.05% 379	29.68% 449	16.13% 244	12.69% 192	1,513	3.16

Q8 Are there any comments or additions to the goals being considered for PA's NEVI State Plan?

Answered: 1,507 Skipped: 2,967

Q9 Goal 1: Construct a consistent, robust charging network to enhance availability when and where people need to charge. Objectives:

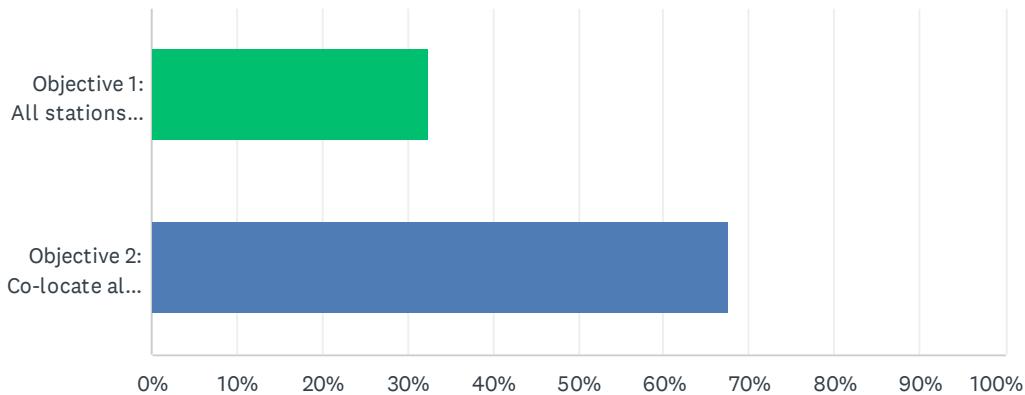
Answered: 2,721 Skipped: 1,753



ANSWER CHOICES	RESPONSES	
Objective 1: Fully build out all AFCs in PA, locating DCFCs at least every 50 miles along designated AFCs within 1 mile of the corridor.	28.41%	773
Objective 2: Build redundancy into the system with chargers along the AFCs and other routes of significance for corridors where high demand of charging is expected in the near term.	18.34%	499
Objective 3: 95% of Pennsylvanians will live within 15 miles of a DCFC station by 2027	18.78%	511
Objective 4: 50% of municipalities have at least two Level 2 plugs open to the public 24/7.	9.59%	261
Objective 5: Ensure the long-term viability or existence of the charging station	24.88%	677
TOTAL	2,721	

Q10 Goal 2: Fund infrastructure that is safe and convenient for travelers. Objectives:

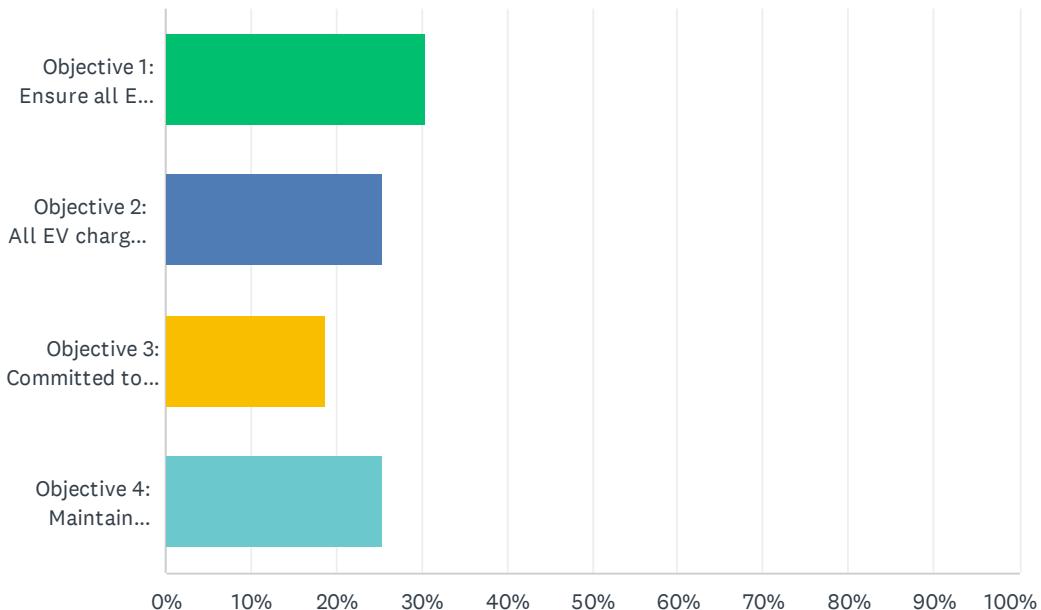
Answered: 2,721 Skipped: 1,753



ANSWER CHOICES	RESPONSES	
Objective 1: All stations meet minimum federally required standards for charging stations.	32.49%	884
Objective 2: Co-locate all chargers at sites that allow travelers to eat, shop, recreate, or rest.	67.51%	1,837
TOTAL	2,721	

Q11 Goal 3: Ensure EV infrastructure funding is distributed and applied in an equitable manner and provides benefits to all populations including underserved and rural communities. Objectives:

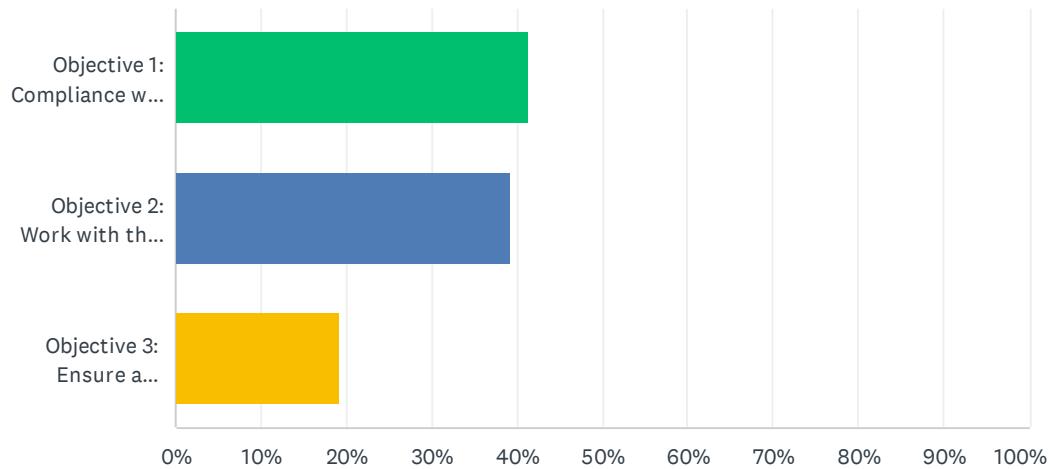
Answered: 2,721 Skipped: 1,753



ANSWER CHOICES	RESPONSES	
Objective 1: Ensure all EV charging funding is in alignment with the federal government's Justice40 initiative.	30.43%	828
Objective 2: All EV charging sites have at least 1 EV plug(s) equipped for Americans with Disabilities Act (ADA) compliant parking.	25.40%	691
Objective 3: Committed to holding 2 public meetings annually to elicit feedback and ensure all communities and entities are heard.	18.74%	510
Objective 4: Maintain PennDOT's EV website to share updates and information and provide the opportunity for comment.	25.43%	692
TOTAL		2,721

Q12 Goal 4: Complement the NEVI formula program with proper training and diversity of the workforce and job impacts. Objectives:

Answered: 2,721 Skipped: 1,753



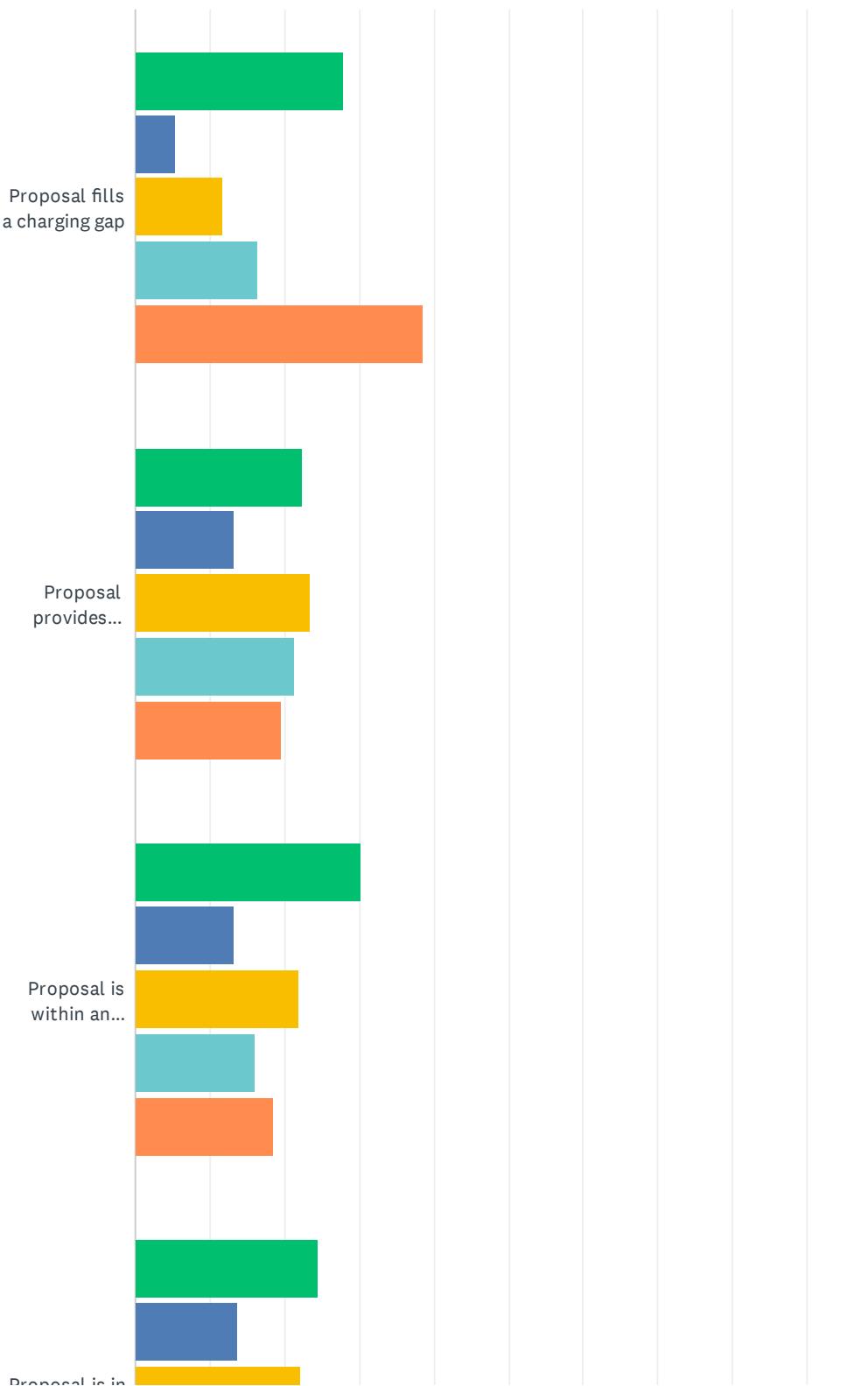
ANSWER CHOICES	RESPONSES
Objective 1: Compliance with Buy America and Made in America	41.38% 1,126
Objective 2: Work with the Pennsylvania Department of Community and Economic Development, Department of Labor and Industry, local trade organizations, network companies, and other key stakeholders to understand the opportunities and challenges facing the workforce.	39.32% 1,070
Objective 3: Ensure a plurality of NEVI funds go to support Pennsylvania businesses.	19.29% 525
TOTAL	2,721

Q13 Are there any comments or additions to the objectives that should be considered for PA's NEVI State Plan?

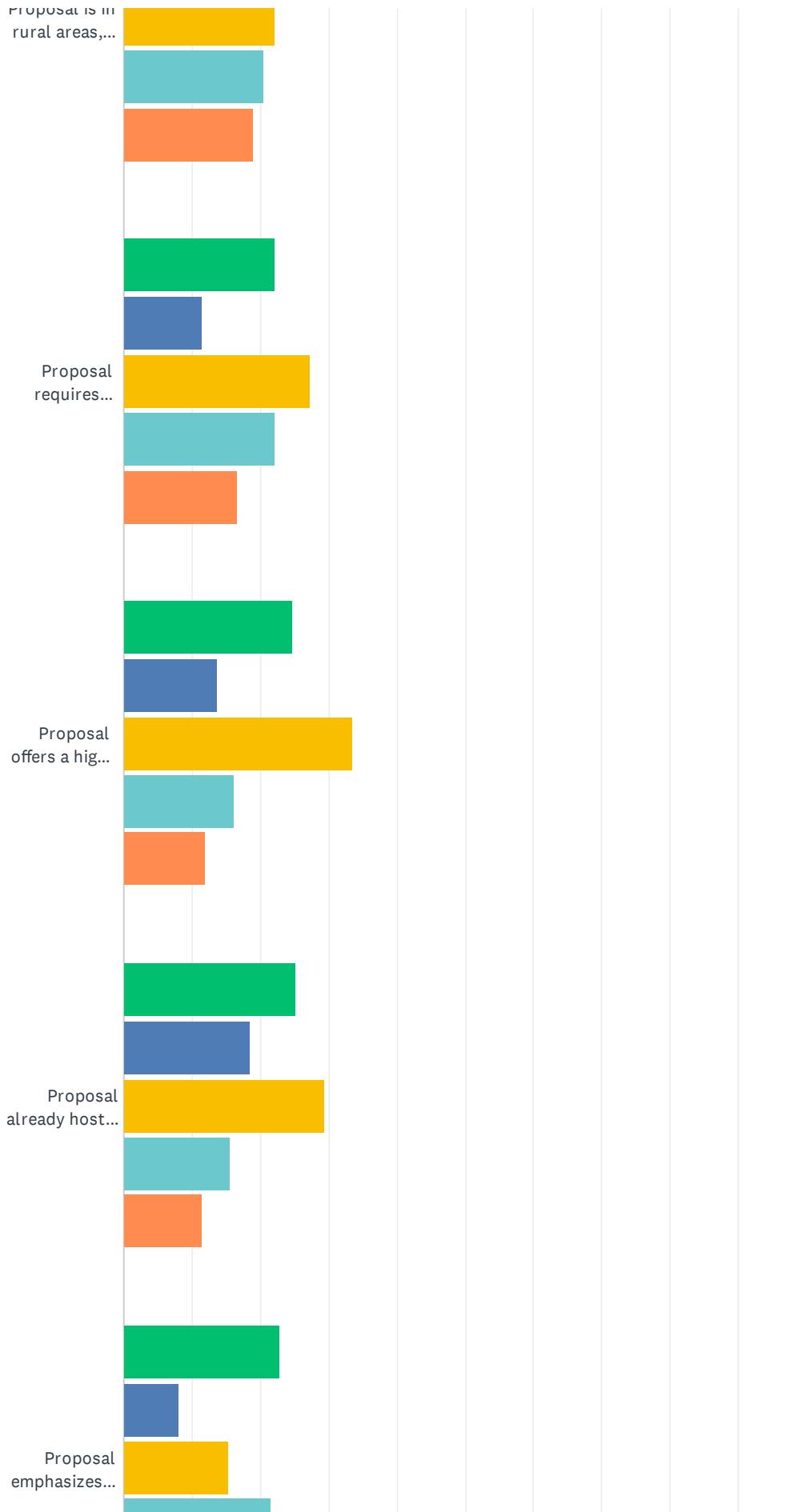
Answered: 831 Skipped: 3,643

Q14 Potential Evaluation Criteria (matrix rating scale 1-5) Rank by level of importance to you, 1 being least important and 5 being of most importance in evaluation criteria.

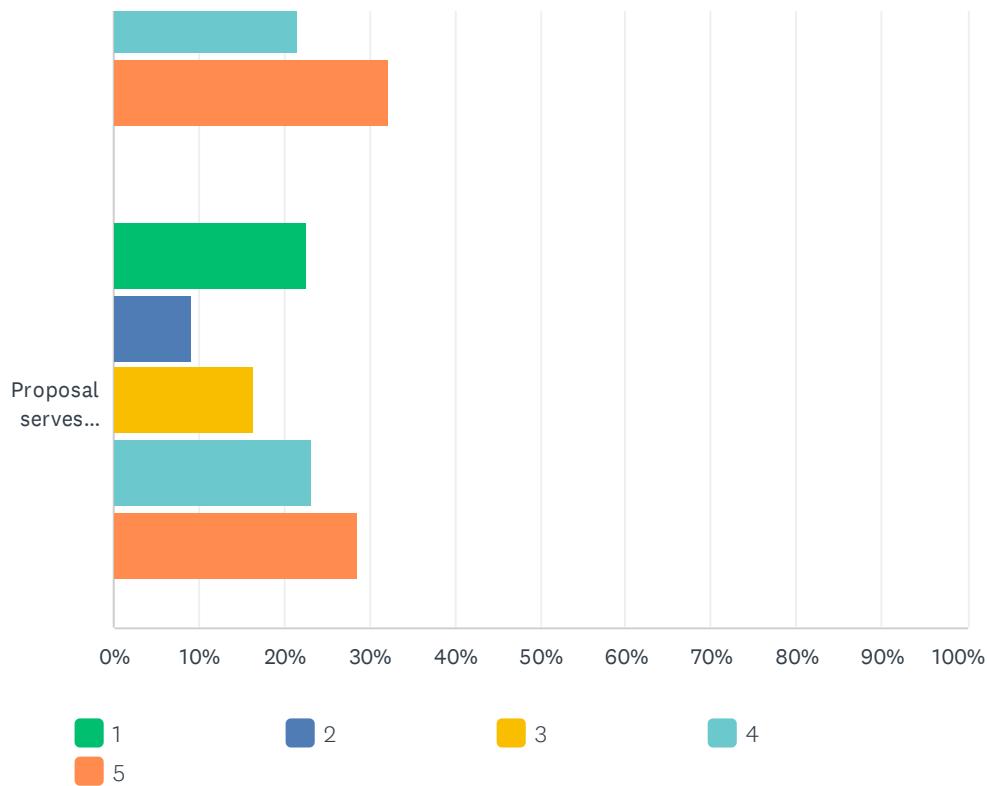
Answered: 2,446 Skipped: 2,028



State NEVI Plan - Stakeholder Comment Survey



State NEVI Plan - Stakeholder Comment Survey



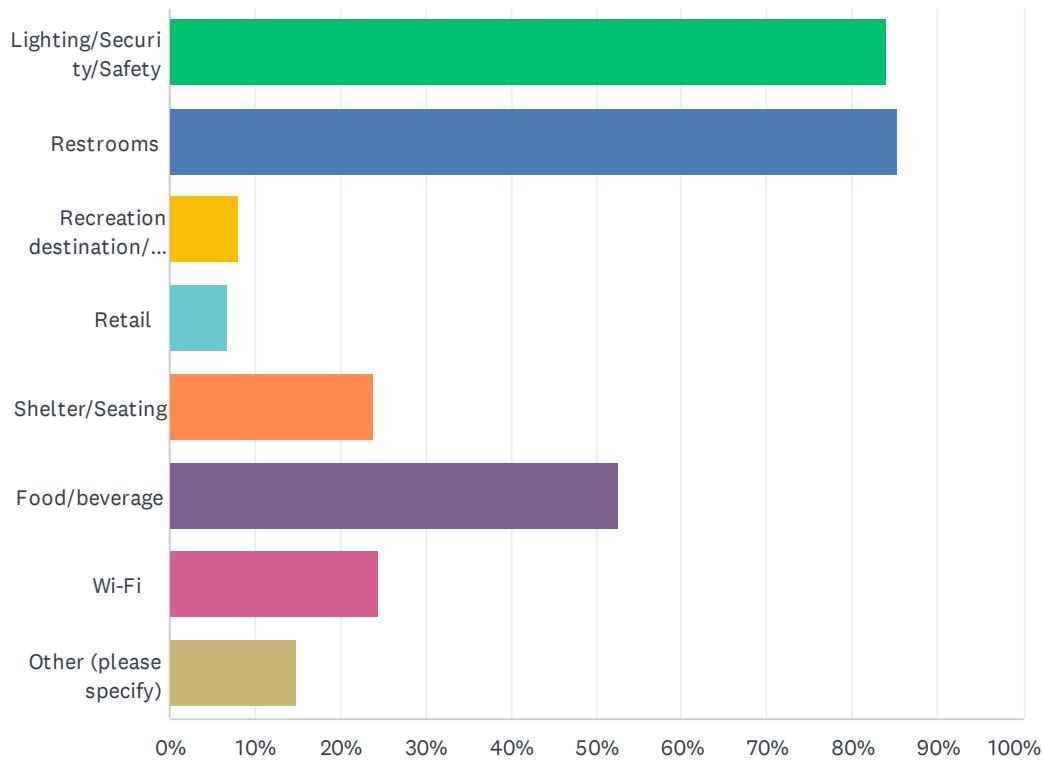
	1	2	3	4	5	TOTAL	WEIGHTED AVERAGE
Proposal fills a charging gap	28.00% 661	5.29% 125	11.65% 275	16.43% 388	38.63% 912	2,361	3.32
Proposal provides “redundancy” along an AFC (i.e., does not fill a gap, but provides added AFC infrastructure in area of high charging demand)	22.37% 532	13.25% 315	23.51% 559	21.36% 508	19.51% 464	2,378	3.02
Proposal is within an environmental justice (EJ) area as defined by the Justice40 Initiative, or are able to directly serve low-income, minority or other disadvantaged populations	30.38% 721	13.27% 315	21.87% 519	15.89% 377	18.58% 441	2,373	2.79
Proposal is in rural areas, where EV adoption may be low but could be spurred with infrastructure investment	24.61% 588	13.56% 324	22.23% 531	20.55% 491	19.05% 455	2,389	2.96
Proposal requires minimal operating assistance, due to immediate economic viability with capital funds	22.12% 520	11.57% 272	27.35% 643	22.25% 523	16.72% 393	2,351	3.00
Proposal offers a higher percentage (>20%) of the non-federal funding match	24.79% 574	13.65% 316	33.39% 773	16.20% 375	11.97% 277	2,315	2.77
Proposal already hosts EV charging infrastructure and only require upgrades to meet NEVI criteria	25.12% 578	18.47% 425	29.47% 678	15.51% 357	11.43% 263	2,301	2.70
Proposal emphasizes station safety, accessibility, and convenience	22.82% 544	8.01% 191	15.44% 368	21.43% 511	32.30% 770	2,384	3.32
Proposal serves corridors with higher traffic and truck volumes	22.58% 534	9.22% 218	16.41% 388	23.30% 551	28.50% 674	2,365	3.26

Q15 Are there any additional evaluation criteria that should be considered for PA's NEVI State Plan?

Answered: 653 Skipped: 3,821

Q16 What amenities/services are most important to you for a charging station? (Select top three.)

Answered: 2,446 Skipped: 2,028



ANSWER CHOICES	RESPONSES
Lighting/Security/Safety	84.01% 2,055
Restrooms	85.24% 2,085
Recreation destination/Lodging	8.14% 199
Retail	6.75% 165
Shelter/Seating	23.83% 583
Food/beverage	52.70% 1,289
Wi-Fi	24.49% 599
Other (please specify)	14.84% 363
Total Respondents: 2,446	

Q17 Do you have any comments on the potential AFC corridors listed above or any other corridors you would like PennDOT to consider for future nominations?

Answered: 1,021 Skipped: 3,453

Q18 Any additional feedback, recommendations, or considerations for the PA NEVI State Plan?

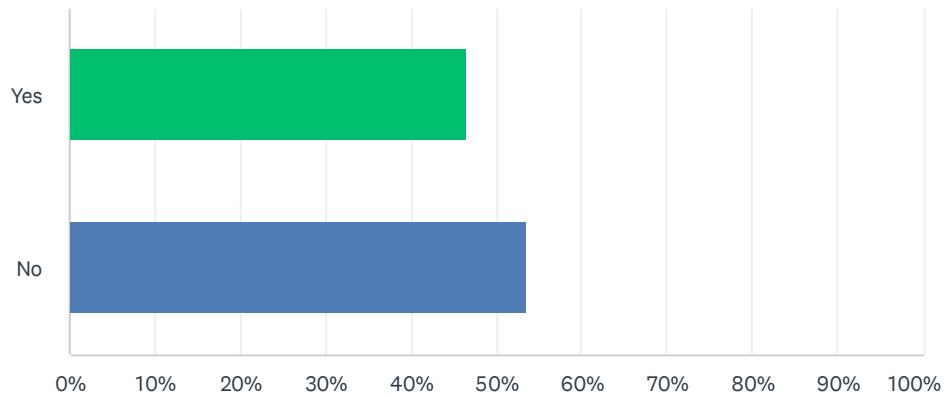
Answered: 606 Skipped: 3,868

Q19 If interested in pursuing NEVI Formula Program funds, what RFP or contracting process would you prefer?

Answered: 407 Skipped: 4,067

Q20 Are you interested in receiving information and updates about PA's NEVI State Plan?

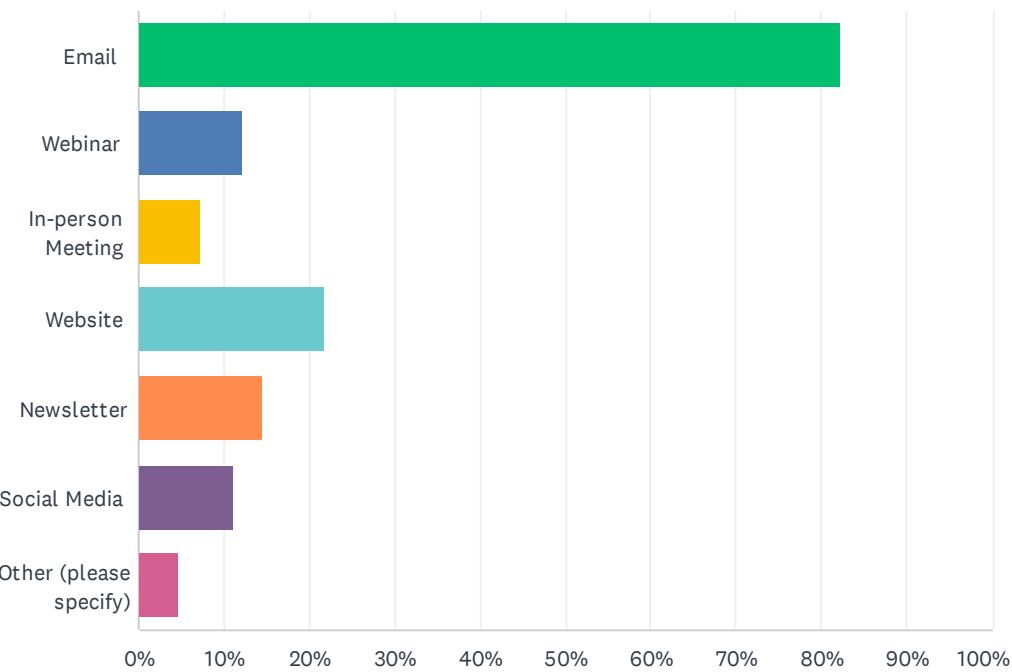
Answered: 2,414 Skipped: 2,060



ANSWER CHOICES	RESPONSES	
Yes	46.40%	1,120
No	53.60%	1,294
TOTAL		2,414

Q21 If yes, how:

Answered: 1,125 Skipped: 3,349



ANSWER CHOICES	RESPONSES
Email	82.40%
Webinar	12.09%
In-person Meeting	7.20%
Website	21.78%
Newsletter	14.40%
Social Media	11.02%
Other (please specify)	4.71%
Total Respondents: 1,125	

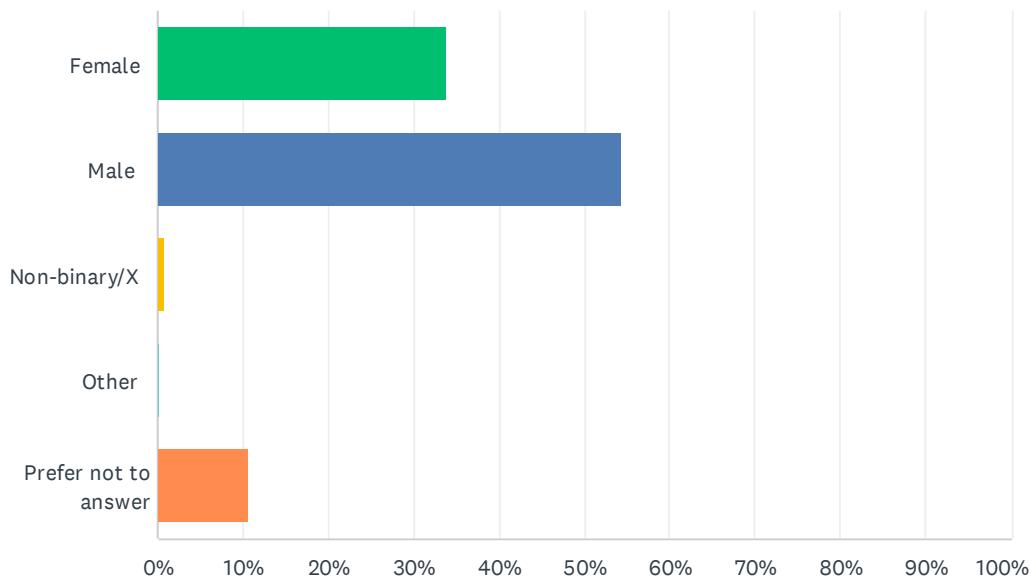
Q22 Contact Information (optional)

Answered: 1,110 Skipped: 3,364

ANSWER CHOICES	RESPONSES
Name	92.61% 1,028
Company	40.27% 447
Address	0.00% 0
Address 2	0.00% 0
City/Town	0.00% 0
State/Province	0.00% 0
ZIP/Postal Code	0.00% 0
Country	0.00% 0
Email Address	97.03% 1,077
Phone Number	0.00% 0

Q23 What is your gender?

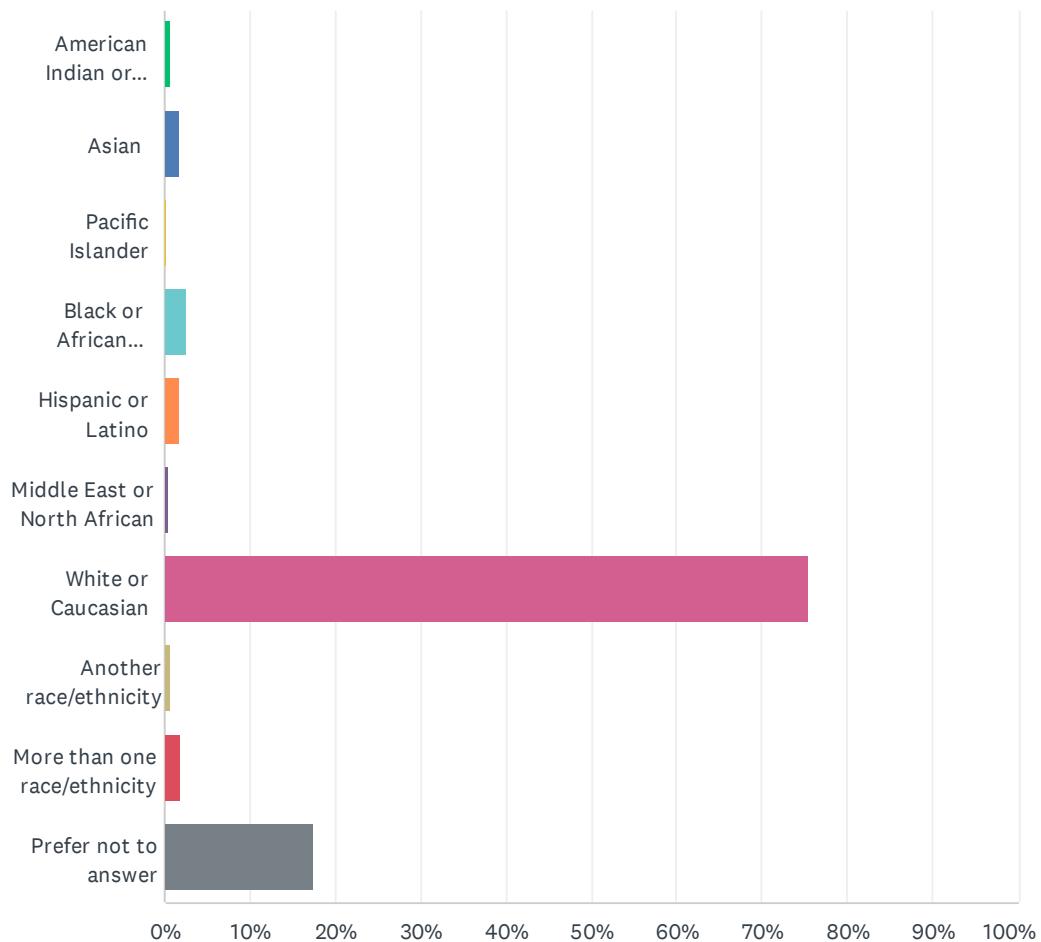
Answered: 2,304 Skipped: 2,170



ANSWER CHOICES	RESPONSES	
Female	33.85%	780
Male	54.38%	1,253
Non-binary/X	0.78%	18
Other	0.26%	6
Prefer not to answer	10.72%	247
TOTAL		2,304

Q24 What race and/or ethnicity do you consider yourself? (You may select more than one)

Answered: 2,300 Skipped: 2,174

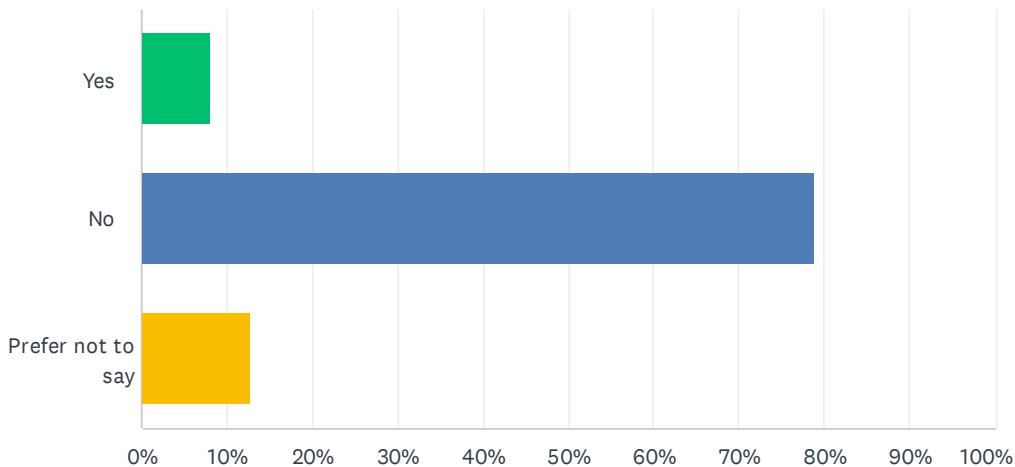


State NEVI Plan - Stakeholder Comment Survey

ANSWER CHOICES	RESPONSES
American Indian or Alaska Indian	0.70% 16
Asian	1.78% 41
Pacific Islander	0.17% 4
Black or African American	2.48% 57
Hispanic or Latino	1.61% 37
Middle East or North African	0.52% 12
White or Caucasian	75.48% 1,736
Another race/ethnicity	0.65% 15
More than one race/ethnicity	2.00% 46
Prefer not to answer	17.48% 402
Total Respondents: 2,300	

Q25 Do you identify as having a disability? An individual with a disability, as defined by the Americans with Disabilities Act, is a person who has a physical or mental impairment that substantially limits one or more major life activities, a person who has a history or record of such an impairment, or a person who is perceived by others as having such an impairment.

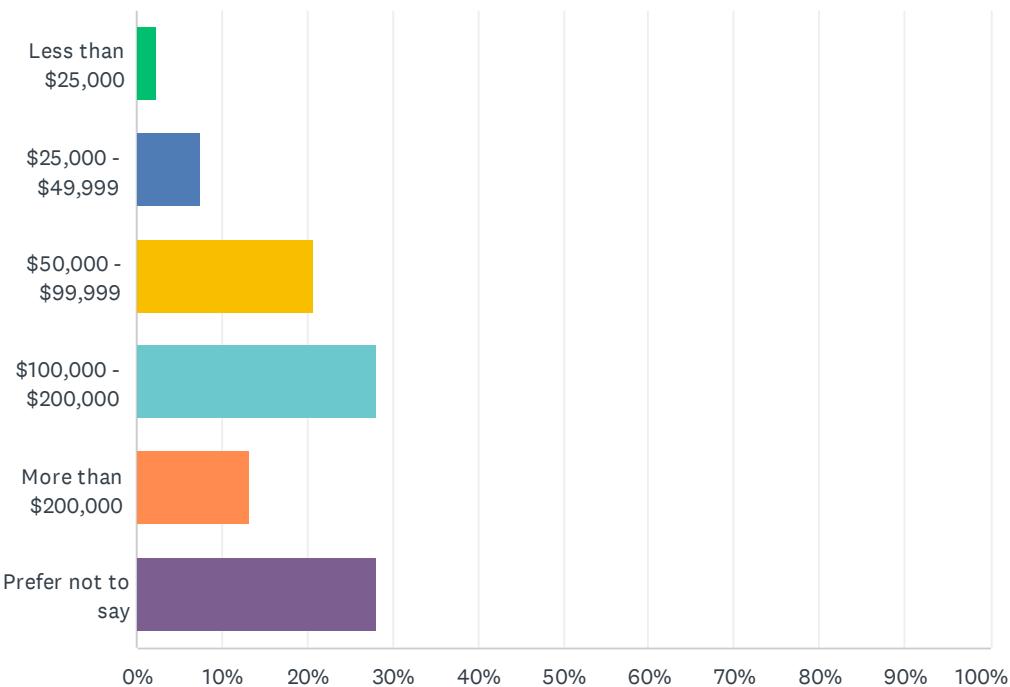
Answered: 2,303 Skipped: 2,171



ANSWER CHOICES	RESPONSES	
Yes	8.21%	189
No	78.98%	1,819
Prefer not to say	12.81%	295
TOTAL	2,303	

Q26 What is your household income?

Answered: 2,296 Skipped: 2,178

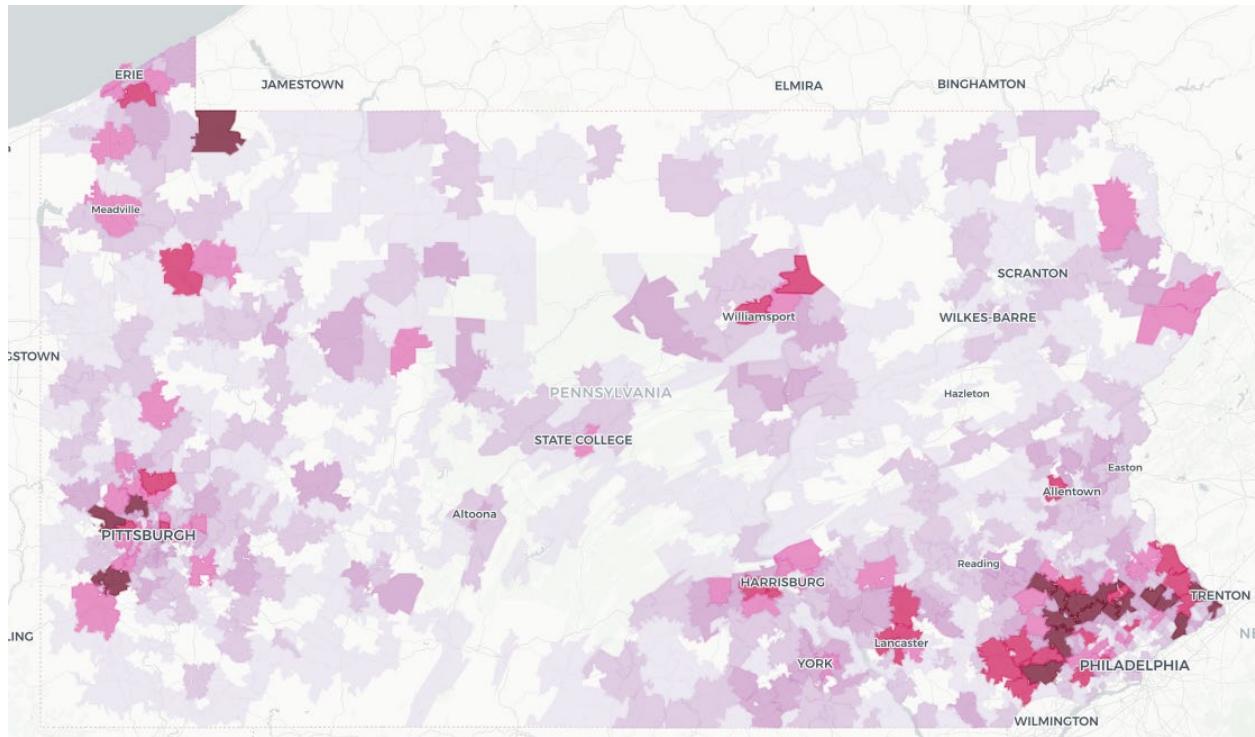


ANSWER CHOICES	RESPONSES	
Less than \$25,000	2.44%	56
\$25,000 - \$49,999	7.45%	171
\$50,000 - \$99,999	20.69%	475
\$100,000 - \$200,000	28.05%	644
More than \$200,000	13.15%	302
Prefer not to say	28.22%	648
TOTAL		2,296

Pennsylvania NEVI State Plan – Stakeholder Comment Response Map

Respondents by Zip Code Area

(Darker Reds indicate higher numbers of responses from those zip code areas)



Total Respondents = 4,474



GO
clean &
Green
In Pennsylvania



PENNSYLVANIA STATE PLAN FOR
ELECTRIC VEHICLE
INFRASTRUCTURE DEPLOYMENT



National Electric Vehicle Infrastructure (NEVI) Formula Program

Email: ra-pdevcorridors@pa.gov

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