

VIRGINIA ELECTRIC VEHICLE INFRASTRUCTURE DEPLOYMENT PLAN

AUGUST 2023



Table of Contents

Updates from Prior Plan	1
Introduction	2
Dates of State Plan and Adoption	3
State Agency Coordination	4
Public Engagement	5
Stakeholder Engagement.....	6
Community Engagement Outcomes Report	6
Public Outreach.....	8
Plan Principles, Vision, and Goals	10
Contracting	11
Status of Contracting Process.....	11
Funding Awards	12
Scoring Methodologies Utilized.....	12
Plan for Compliance with Federal Requirements	12
Civil Rights	12
Existing and Future Conditions Analysis	13
Future Power System Needs & Capabilities	14
Analysis of Utility Infrastructure.....	16
State Geography, Terrain, Climate and Land Use Patterns	16
Travel Patterns, Public Transportation, Freight and Other Needs.....	17
AFC – Corridor Networks	17
Existing Locations of Charging Infrastructure Along AFCs.....	19
Known Risks and Challenges	22
EV Charging Infrastructure Deployment	24
2022 & 2023 Infrastructure Deployments/Upgrades.....	24
FY24-26 Infrastructure Deployments	29
State, Regional, and Local Policy	29
Implementation	31
Strategies for EVSE Operations & Maintenance	31
Strategies for Identifying EV Service Providers and Station Owners	31
Strategies for EVSE Data Collection & Sharing.....	32
Strategies to Address Resilience, Evacuations, Seasonal Needs.....	32
Strategies to Promote Labor, Safety, Training, and Installation Standards.....	32
Equity Considerations	33
Identification and Outreach to Disadvantaged Communities.....	33
Process to Identify, Quantify, and Measure Benefits to Disadvantaged Communities.....	34

Benefits to Disadvantaged Communities through the Plan	35
Labor and Workforce Considerations	36
Physical Security & Cybersecurity	36
Program Evaluation	37
Discretionary Exceptions	37
Figure 1: Anticipated NEVI Timeline	4
Figure 2: NEVI Outreach Map	10
Figure 3: Virginia NEVI Program Goals	11
Figure 4: Electric Service Territories	15
Figure 5: Existing AFCs and Nominated Routes	18
Figure 6: NEVI-Compliant Stations in Virginia	22
Figure 7: Focus Areas for Initial Charging Infrastructure Deployment.....	27
Figure 8: Implementation Strategies.....	31
Figure 9: EV Charging Justice40 Map.....	34
Table 1: Cross-Agency Coordination Participating Agencies/Entities	5
Table 2: AFC Round Seven Proposed Corridor-Pending Designations.....	18
Table 3: Existing Charging Infrastructure	19
Table 4: Planned Charging Stations in Request for Applications	25
Table 5: Stations Under Construction	27

Acronym Listing

ADA	Americans with Disabilities Act
AFC	Alternative Fuel Corridor
BEB	Battery-Electric Bus
BEV	Battery-Electric Vehicle
DBE	Disadvantaged Business Enterprise
DCFC	Direct Current Fast Charger
DEQ	Department of Environmental Quality
DRPT	Department of Rail and Public Transportation
EV	Electric Vehicle
EVSE	Electric Vehicle Supply Equipment
FBO	Fully Built Out
FHWA	Federal Highway Administration
IIJA	Infrastructure Investment and Jobs Act
LEV	Low-Emission Vehicle
MPO	Metropolitan Planning Organization
NEVI	National Electric Vehicle Infrastructure
O&M	Operations and Maintenance
PDC	Planning District Commission
RFA	Request for Applications
SCC	Virginia State Corporation Commission
VCC	Virginia Clean Cities
VCCS	Virginia Community College System
VDOT	Virginia Department of Transportation
ZEV	Zero-Emissions Vehicles

Updates from Prior Plan

Beginning in 2023, the National Electric Vehicle Infrastructure (NEVI) Program Guidance permits state Departments of Transportation to submit an updated annual Electric Vehicle (EV) Infrastructure Deployment Plan (Deployment Plan) that incorporates and identifies relevant additions and modifications made since the prior year's Plan, with changes made to a particular section clearly identified. Changes made since the Virginia Department of Transportation's (VDOT's) 2022 EV Infrastructure Deployment Plan are summarized below.

- **Introduction** – Updated to provide high-level summary of changes to 2022 Deployment Plan and updated timelines.
- **State Agency Coordination** – Updated to reflect additional and ongoing coordination with state agencies.
- **Public Engagement** – Updated to provide summary of engagement activities and outcomes since the 2022 Deployment Plan.
- **Plan Vision and Goals** – Updated to include Alternative Fuel Corridor (AFC) Round 7 nominations.
- **Contracting** – Updated to include new required sections, Request for Applications (RFA) timeline, and summary of evaluation and scoring criteria.
- **Civil Rights** – Section moved to align with Deployment Plan Template and updated to incorporate compliance information from RFA.
- **Existing and Future Conditions Analysis** – Updated references, data, maps, and tables to reflect AFC Round 7 nominations.
- **EV Charging Infrastructure Deployment** – Updated maps and corresponding text to reflect Plan progress and updated Public Transportation Section
- **Implementation** – Updated to reflect RFA status and details.
- **Equity Considerations** – Updated to include revised maps, corresponding data, and details reflecting AFC Round 7 nominations, and RFA equity evaluation.
- **Labor and Workforce** – Updated to reflect relevant RFA details.
- **Physical Security and Cybersecurity** – Updated to reflect relevant RFA details.
- **Program Evaluation** – Updated to include evaluation reporting requirements in NEVI Standards.
- **Discretionary Exceptions** – Updated to reflect that no discretionary exceptions were requested in 2023 Deployment Plan.

Introduction

On November 15, 2021, the Infrastructure Investment and Jobs Act (IIJA) (Public Law 117-58) was signed into law. IIJA includes a total of up to \$5 billion in dedicated funding for the NEVI program, and \$2.5 billion for a discretionary Charging and Fueling Infrastructure grant program. These two programs seek to advance the deployment of EV infrastructure throughout the country, enable a convenient, reliable, and equitable charging experience for all users, and set the United States on a path to a nationwide network of 500,000 EV chargers by 2030. The Commonwealth of Virginia is expected to receive approximately \$106 million over 5 years under the NEVI program and is eligible to apply for additional funding under the \$2.5 billion discretionary grant program.

Under the NEVI program, each state is required to submit a Deployment Plan that describes how it intends to use its NEVI program funds. These plans are required to be updated annually with this document serving as an update to Virginia's initial 2022 NEVI plan. Annual plan updates will follow throughout the program. The Federal Highway Administration (FHWA) published initial NEVI Formula Program Guidance (NEVI Guidance) in February 2022 and issued updated guidance in June 2023 to assist in developing a Deployment Plan that meets federal requirements and the needs and goals of the state. The NEVI Guidance indicates that states should prioritize the use of NEVI program funding for EV charging infrastructure along AFCs within the interstate highway system. To date, Virginia has 12 designated AFCs throughout the Commonwealth to foster a convenient and reliable charging network. When Virginia's AFCs achieve fully built out (FBO) status, funding may be used on any public road or in other publicly accessible locations.



<https://m.styleweekly.com/richmond/a-new-age/Content?oid=17343055>

To meet NEVI program requirements, Virginia intends to use its initial funding to prioritize achieving FBO status for its AFCs. FBO designation requires EV charging infrastructure: (1) be installed at least every 50 miles along the AFCs and within 1 travel mile of the AFCs unless a discretionary exception has been granted; (2) include at least four 150 kilowatt (kW) Direct Current (DC) fast chargers capable of simultaneously charging four EVs; (3) have minimum station power capacity at or above 600 kW and supports at least 150 kW per port simultaneously and (4) per June 2023 NEVI Guidance, have stations located within at least 25 miles of a corridor terminus.

Virginia's primary vision for this Deployment Plan is to spur economic development and enable seamless EV travel across the Commonwealth for all. Through its competitive funding opportunity, the Commonwealth will identify prudent and reasonable investments in DC fast charging infrastructure along its existing AFCs. The NEVI funding will offset up to 80 percent of the costs of new public EV charging stations, upgrades to existing stations, ancillary expenses such as connections to the electricity source, and operations and maintenance of the station.

To meet NEVI program requirements, the Commonwealth will concentrate on funding projects directly related to the charging of an EV that are accessible to the public or authorized commercial motor vehicle operators from more than one company. According to the NEVI Guidance, publicly accessible means that the equipment is available to the public without restriction, and may include public parking facilities, parking at public buildings, public transportation stations, Park-and-Rides, public schools, public parks, private parking facilities available for public use, and visitor centers

and other public locations on federal lands. Chargers collocated at gas stations and other commercial establishments are considered publicly accessible so long as the charger is regularly maintained and the business does not restrict access to the charger to just customers, tenants, employees, or other affiliates of the business.

In developing this Deployment Plan, VDOT participated in numerous stakeholder sessions with public agencies, utilities, developers, non-profit organizations, and others to better understand the existing EV charging infrastructure landscape in the Commonwealth. For example, VDOT led a Cross-Agency Coordination meeting in April 2022 to provide background on the initial Deployment Plan, solicited feedback through an EV questionnaire, and responded to agency questions and concerns. Since VDOT submitted the first NEVI Deployment Plan in August 2022, ongoing outreach and engagement activities have been conducted. This outreach is summarized in Section 3: Public Engagement. VDOT continued to leverage the VDOT public NEVI web portal (<https://publicinput.com/VirginiaNEVI>) to provide background on NEVI and the Deployment Plan, to solicit feedback from stakeholders, and to host an online survey about barriers and opportunities for increased EV adoption. In addition, the portal shares resources for public education and awareness, including information regarding purchasing and charging an EV. The EV resources link on the portal includes information on EV fueling station locations, the U.S. Joint Office of Energy and Transportation (Joint Office), the Electric Vehicle Charging Justice40 Map, and links to other relevant resources. VDOT has also designated a NEVI email address for information requests, comments, and other inquiries at NEVI@vdot.virginia.gov.

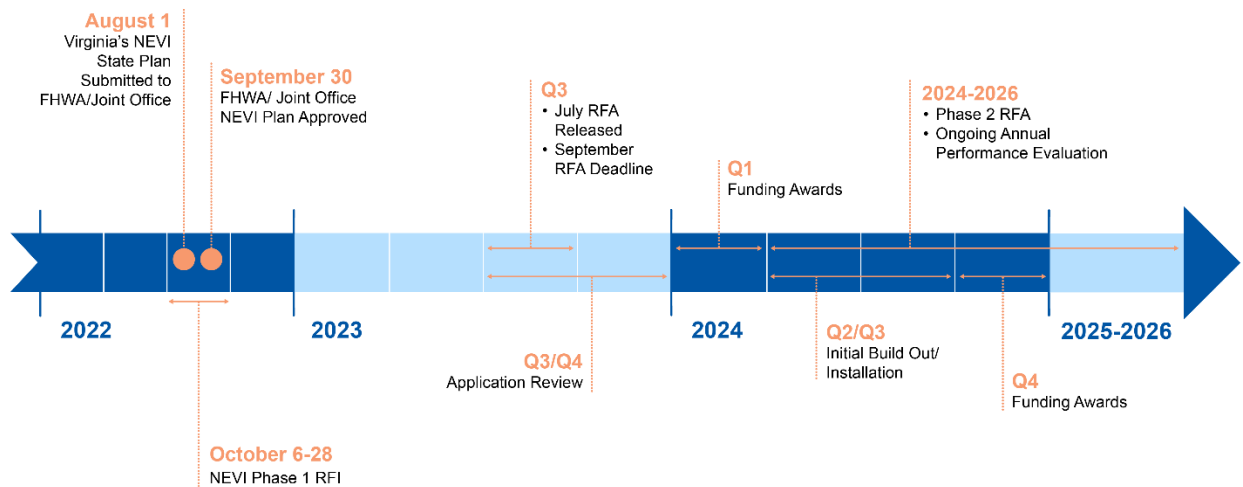
This Deployment Plan is a living document that will be updated at least annually, and VDOT will continue its outreach strategies throughout the 5-year NEVI program duration to solicit further stakeholder input, refine and adjust strategies, and evaluate whether Commonwealth and national goals are being achieved. The dynamic and rapidly evolving nature of the EV industry requires regular reappraisal of program goals and outcomes to match the reality on the ground. This is particularly important because the business rationale for developing an EV charging station as a stand-alone commercial venture is uncertain in some locations due to the limited demand for EV chargers and the uncertainty in predicting future EV adoption rates. VDOT will participate in ongoing engagement and outreach to regularly adjust the Deployment Plan to reflect the market outlook, recent performance of existing stations, best practices throughout the country, new or revised federal guidance, technological developments in the industry, and progress in achieving program objectives.

Dates of State Plan and Adoption

Following the initial FHWA release of the NEVI Guidance on February 10, 2022, VDOT commenced the development of the Deployment Plan and other ancillary planning documents, and extensive stakeholder and internal agency coordination efforts. VDOT submitted the Deployment Plan to the Joint Office on August 1, 2022, and received approval from FHWA in September 2022. Activities throughout the remainder of 2022 targeted stakeholder outreach and the release of a Request for Information (RFI) to secure feedback from EV charger developers, potential site hosts, and other interested parties. VDOT also initiated plans to develop a competitive funding opportunity, details about which can be found in the Contracting section of this document. VDOT is using the Commonwealth's procurement marketplace portal (www.eva.virginia.gov) to advertise and promote NEVI competitive funding opportunities. The initial RFA was issued July 21, 2023, with a closing date of October 20, 2023, with evaluation to be conducted in the third quarter of 2023, followed by an awarding process continuing through the first quarter of 2024. The initial build out of EV charging infrastructure along AFCs is anticipated to start in the second quarter of 2024. During the years 2024 to 2026, VDOT anticipates seeking projects for Phase 2 NEVI formula funding focused on reaching a fully built

out status and then expanding the charging network beyond AFCs to community charging, deploying stations at public locations near where drivers live and work. Community charging stations will be sited at public buildings, public schools, public parks, or in publicly accessible parking facilities owned or managed by a private entity. Annual performance evaluations will also be ongoing during both phases of charging station deployment. VDOT is guided by the overarching goals of speed and quality, and seeks to support construction, installation, or upgrading of EV charging infrastructure within six months of reaching agreement with developers and vendors, although dates may be impacted by supply chain constraints, site permitting and interconnection complexities, and needed infrastructure upgrade work.

Figure 1: Anticipated NEVI Timeline



* NEVI Phase 1 = building out AFCs. Phase 2 = building out additional corridors and communities.

State Agency Coordination

VDOT understands the importance of statewide coordination and has conducted extensive efforts to that effect during the Deployment Plan's development. To begin this effort, VDOT led a Cross-Agency Coordination meeting in April 2022 to provide background on the NEVI Plan, solicit feedback through an EV questionnaire, and address any EV infrastructure related comments and concerns. Respondents reported that a variety of funding sources have already been used to deploy EV supply equipment (EVSE) in Virginia, including several public-private partnerships involving cost-sharing agreements with developers. Respondents also recommended that the Commonwealth strengthen coordination with utilities to ease the EV charging station deployment process and drew attention to the need to "future-proof" and increase standardization for charging stations amidst rapidly changing market conditions and technological advancement. Below is a list of participating agencies included in the Cross-Agency Coordination meeting.

Table 1: Cross-Agency Coordination Participating Agencies/Entities

List of Participating Agencies/Entities			
Central Virginia Community College	James Madison University	Virginia Clean Cities at James Madison University	Virginia Office of Intermodal Planning and Investment
College of William & Mary	Office of the Secretary of Administration	Virginia Department of Conservation and Recreation	Virginia Spaceport Authority
Community College Workforce Alliance	Office of the Secretary of Commerce and Trade	Virginia Department of Emergency Management	Virginia State Parks
Department for the Blind and Vision Impaired	Office of the Secretary of Transportation	Virginia Department of Environmental Quality	Virginia State Police
Department of General Services	Patrick and Henry Community College	Virginia Department of Health	Virginia Tourism Corporation
Department of Housing and Community Development	Port of Virginia	Virginia Department of Motor Vehicles	Virginia Transit Association
Department of Rail and Public Transportation	Southwest Virginia Community College	Virginia Department of Energy	
Eastern Shore Community College	Tidewater Community College	Virginia Museum of Natural History	

VDOT also conducted targeted agency collaboration with the Virginia Department of Energy (Virginia Energy) and the Virginia Department of Environmental Quality (DEQ), drawing on the experience of both agencies in planning and implementing EV charging programs and soliciting feedback on VDOT's Deployment Plan. VDOT has continued to coordinate with DEQ in its role as administrator of the Commonwealth's \$93 million Volkswagen Environmental Mitigation Trust (VW Trust), including with regard to the siting of any charging stations deployed pursuant to settlement funding. DEQ held several meetings through program planning with interested stakeholders and the public to gather more information on the best use of the settlement funds and received over one hundred written comments. DEQ continues to seek public input for plan revisions and provides various documents on its VW Trust website, including draft and final plans, timelines, solicitation requirements, semi-annual reports, and DEQ contact information (<https://www.deq.virginia.gov/topics-of-interest/volkswagen-settlement-agreement>).

VDOT will continue to conduct outreach to state agencies throughout the duration of the NEVI program. VDOT will continue to work closely with Virginia Energy, Virginia Clean Cities, DEQ, Virginia Department of Rail and Public Transportation (DRPT), the Virginia Community College System (VCCS), and other State agency partners.

Public Engagement

Virginia has engaged with a variety of groups during the Deployment Plan's development, including the general public, government agencies, non-profits, and industry representatives. Coordinated planning across private and public investments is necessary to facilitate the identification of market challenges and opportunities and to ultimately provide a convenient, reliable, and equitable charging network. Virginia held public engagement activities, including with the VDOT Environmental Stakeholder Engagement Group and the Commonwealth

Transportation Board, and the State Cross-Agency Coordination meeting. Virginia anticipates additional engagement and outreach throughout the Deployment Plan's implementation to build awareness the NEVI Program, as well as the Charging and Fueling Infrastructure Discretionary Grant Program. Annual online surveys and public outreach will assess the outcomes and impacts of the Deployment Plan's implementation. VDOT will schedule public meetings and listening sessions as needed to gauge customer satisfaction and guide future charger deployment. After NEVI's 5-year duration is over, the Virginia NEVI website will continue to provide information on the Commonwealth's EV charging infrastructure and applicable programs after all NEVI funding has been obligated.

Stakeholder Engagement

Since the passage of the IIJA in November 2021, VDOT has been conducting ongoing outreach with stakeholders, including local agencies, regional planning organizations, private sector groups, utilities, advocacy groups, community-based organizations, and other interested parties. During these meetings, stakeholders have had the opportunity to ask questions about VDOT's approach to the NEVI program, provide suggestions for program planning and implementation, and share lessons learned from their previous experience. Many of these groups have also provided valuable input and feedback on NEVI's Justice40 requirements. The section below provides more detail on these groups and activities.

Community Engagement Outcomes Report

Since the approval of the 2022 Deployment Plan in September 2022, VDOT has continued to engage with key stakeholders and the public, through a variety of methods, including presentations at various meetings, email alerts, the Virginia NEVI web portal, surveys, and briefings to local governments, utilities, regional planning organizations, and other state agencies. Input collected during these engagements have been incorporated into program plans.

VDOT's approach to community engagement has focused on providing education about the NEVI formula funding program and the approach that VDOT has taken to develop the program, deploy EV charging station infrastructure, and how VDOT intends to meet the NEVI Standards and Requirements (NEVI Standards) (23 CFR Part 680) and NEVI Guidance. Through regular public engagement, VDOT has received feedback that has informed further development of the program and implementation of the Deployment Plan. Common questions VDOT has received throughout community engagement include:

- Can VDOT locate EV charging stations off the AFCs?
- How soon can VDOT locate EV charging stations in my community?
- How can local governments and community groups get involved?
- How will VDOT ensure that NEVI-funded stations are reliable?

This feedback supports VDOT's goal to reach an FBO status and begin using NEVI formula funds to install reliable EV charging stations that serve communities where they are.

Utility Engagement

VDOT has coordinated through NEVI program planning and implementation with Virginia utilities and related organization, including Dominion Energy, Appalachian Power (APCo), Old Dominion Electric Cooperative (ODEC), the Virginia, Maryland, Delaware Association of Electric Cooperatives (VMDAEC). During the first quarter of 2023 VDOT staff conducted coordination meetings with Investor-Owned Utilities and Electric Co-operatives. These sessions focused on information sharing with utilities to ensure coordination regarding the publication of the RFA and

the competitive process that will be used to select EV charging station sites, including VDOT seeking utility provider feedback on the utility coordination form included in the RFA. VDOT expects that engagement with utilities will continue throughout the duration of the NEVI program.

VDOT Environmental Stakeholder Engagement Group

This group includes leaders across the Commonwealth that are regularly consulted to identify, represent, and disseminate information to smaller or more regionally focused groups. The group is composed of non-governmental organizations, advocacy groups, tribes (federally recognized and state-recognized), and government agencies who have expressed interest in environmental concerns. VDOT staff presented to the group on May 13, 2022, to share Virginia's approach to the planning and deployment of EV charging infrastructure and solicit feedback on the NEVI program.

Regional Planning Organizations

VDOT has also engaged with Metropolitan Planning Organizations (MPOs) and Planning District Commissions (PDCs) across the Commonwealth. These organizations provide representation for large geographic areas and are uniquely suited to solicit and receive citizen-level input and relay information back to the citizens they represent through regular public outreach and organization meetings. VDOT has received feedback specific to the geographic areas of the organizations that will assist in defining how the agency can better serve the EV charging infrastructure needs and wishes of communities. Discussions with these groups focused on locating EV charging within communities, NEVI formula program specifics, VDOT's role in the administration of the Virginia's NEVI program, the differences between NEVI and the Charging and Fueling Infrastructure Discretionary Funding Programs.

Commonwealth Transportation Board

The Commonwealth Transportation Board consists of 17 members appointed by the governor, and establishes policy and allocates funds to VDOT & DRPT for transportation projects and programs, and initiatives for the Commonwealth of Virginia. The board holds public meetings on the third Tuesday and Wednesday of most months to discuss topics of interest within Virginia's transportation agencies. Members of the public can attend in person and provide public comments, and meeting presentations and minutes are publicly available following the meeting. VDOT staff presented to the Board in September 2022 and again in June 2023. Both presentations focused on the development progress of the overall NEVI program as well as the plans to deploy NEVI formula funding.

The Commonwealth Transportation Board also includes an Environmental Subcommittee. The Subcommittee also meets regularly to discuss environmental topics of interest within Virginia's transportation Agencies. VDOT staff initially presented to the subcommittee on June 21, 2022, to address Virginia's approach to the planning and deployment of EV charging infrastructure, solicit feedback, and respond to questions from Subcommittee members. VDOT staff will be presenting to the Subcommittee again in Fall 2023 to update on the progress VDOT has made to deploy EV charging infrastructure across the Commonwealth.

Prior Outreach

VDOT is also drawing from other prior stakeholder outreach efforts to inform the Deployment Plan. For example, the January 2021 Virginia Transportation Electric Vehicle Readiness Study was developed to prepare Virginia for various future EV deployment scenarios and ensure it remains a leader in EVSE deployment. The study included conducting research, surveying existing and prospective EV owners, and holding stakeholder meetings with various public agencies, industry representatives, and environmental advocates on EV deployment.

Stakeholders provided information regarding EV barriers and Virginia's current level of EV readiness. The study also included a consumer survey to better understand the perceptions of current and future EV owners, which revealed the differences related to charging infrastructure and the costs and benefits of ownership. Stakeholder groups that participated in the study included:

- Alliance for Automotive Innovation
- Electrification Coalition
- Electrify America
- Nissan
- Southern Environmental Law Center
- Virginia Association of Counties
- Virginia Center for Inclusive Communities
- Virginia Clean Cities
- Virginia DEQ, Virginia Energy, Department of Motor Vehicles, DRPT, and Office of Intermodal Planning and Investment
- Volkswagen

Virginia Clean Cities (VCC) has long served as a leader in engaging and collaborating with EV stakeholder groups and communities throughout Virginia. On November 27, 2017, the VCC requested information from municipalities through an online survey on their current permitting process for EV charging installations to support Virginia's Volkswagen Settlement allocation. The information requested included:

- The type of permit required for installing level 2 or DC fast chargers
- Any incentives or expedited permit processes for installing EVSE
- The length of time from an inspection request to having an inspector on site

Lessons from this outreach will continue to inform EVSE deployment in Virginia. VCC also hosted the Inaugural Drive Electric Virginia Forum on November 17, 2021, to raise awareness of available resources to help support the deployment of EV chargers in the Commonwealth. State agencies and other entities like Drive Electric Richmond, EVNoire, Rappahannock Electric Cooperative, and Dominion Energy, spoke at the forum. EVNoire, for example, provided resources on how to engage disadvantaged communities in the transition to EVs.

Public Outreach

VDOT has developed the resources described below for the public and other stakeholders to provide input and receive information on the NEVI Program, the Deployment Plan and EV in general. VDOT will continue to promote the Deployment Plan through stakeholder meetings, public presentations, and other methods to ensure that the NEVI funding efficiently spurs economic development, enables seamless EV travel, and provides a convenient, reliable, and equitable charging experience for all Virginians. Since the initial Deployment Plan approval, VDOT has presented on the NEVI program at 17 local meetings, 14 statewide meetings, and a national industry conference. As shown in Figure 2 below, the outreach audience of VDOT's surveys, webinars, and events captures communities across the Commonwealth. VDOT has identified gaps in engagement and will continue to work to target these areas in ongoing outreach.

NEVI Web Portal

For the 2022 Deployment Plan, VDOT developed a NEVI web portal to provide the public with background on the NEVI program, the Deployment Plan, and to share resources to build public

awareness. The portal has remained open throughout the past year and will continue to serve as an information hub for NEVI updates. Stakeholders and interested parties can also sign up for NEVI program updates through the portal. As of July 26, 2023, the NEVI webpage has 16,281 views.

Public Surveys

The NEVI portal has also hosted several public surveys to solicit public feedback, targeting both EV and non-EV drivers, urban, rural, and underserved or disadvantaged communities, private businesses with an interest in hosting EV charging stations, and the general public.

A public survey regarding potential AFC nominations was open for one week in early June following the release of the Round 7 AFC Request for Nominations by FHWA. This survey garnered 336 responses, with 96 percent of the respondents being residents of Virginia. Those who took the survey were able to rank their preference of corridor by level of priority for VDOT to consider nominating as an AFC. VDOT included the top three ranked corridors in the AFC nomination submitted to FHWA.

The 2023 Deployment Plan survey was released on July 10, 2023, and closed on July 24, 2023. VDOT received 503 responses, including respondent preferences for public EV charger locations, charging habits, site design, and barriers to EV adoption. Respondents also encouraged VDOT to engage community organizations in determining appropriate sites, to build chargers in or near urban, rural, and underserved or disadvantaged communities, and to hire minority and women-owned organizations for EV-related work. Respondents expressed a variety of concerns including accessibility of charging stations, charging speed, the high price of EVs, and a lack of familiarity with EVs and charging technology.

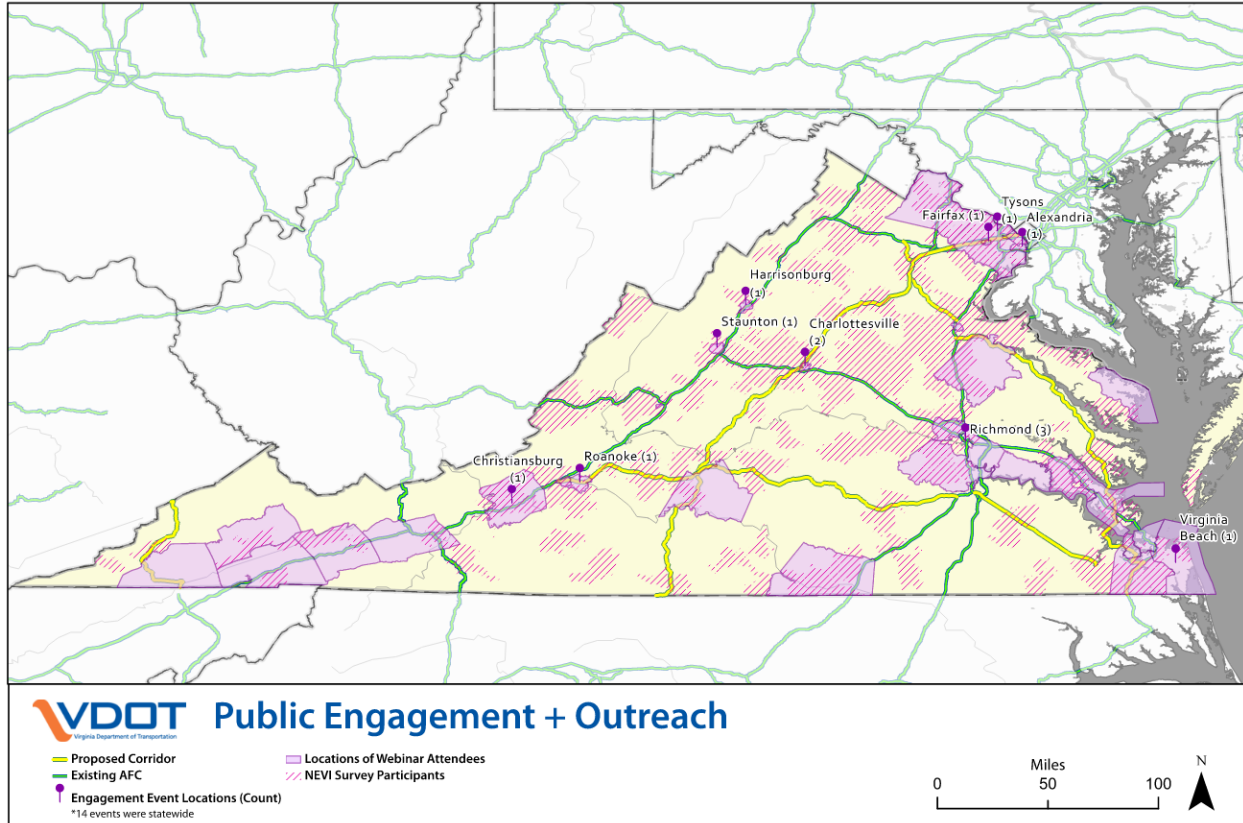
Public Webinars

On July 10, 2023, VDOT hosted two public webinars to discuss updates on the 2023 Deployment Plan. The first webinar was held at 1:00pm EST and the second webinar was held at 7:00pm EST, to accommodate viewers with different schedules and maximize attendance. The webinars were well attended, with 127 guests across both sessions, representing 46 zip codes in 33 counties. A key aspect of these webinars was the Q&A section that gave attendees the opportunity to ask VDOT staff questions during the webinar. Attendees inquired about a variety of topics, including electrical grid capacity planning, future-proofing, AFC nominations, funding levels, outreach, and education. A webinar recording has been posted on the NEVI web portal for those who were unable to join.

Email

VDOT designated a NEVI email for inquiries and comments to which VDOT staff respond regularly (NEVI@vdot.virginia.gov).

Figure 2: NEVI Outreach Map

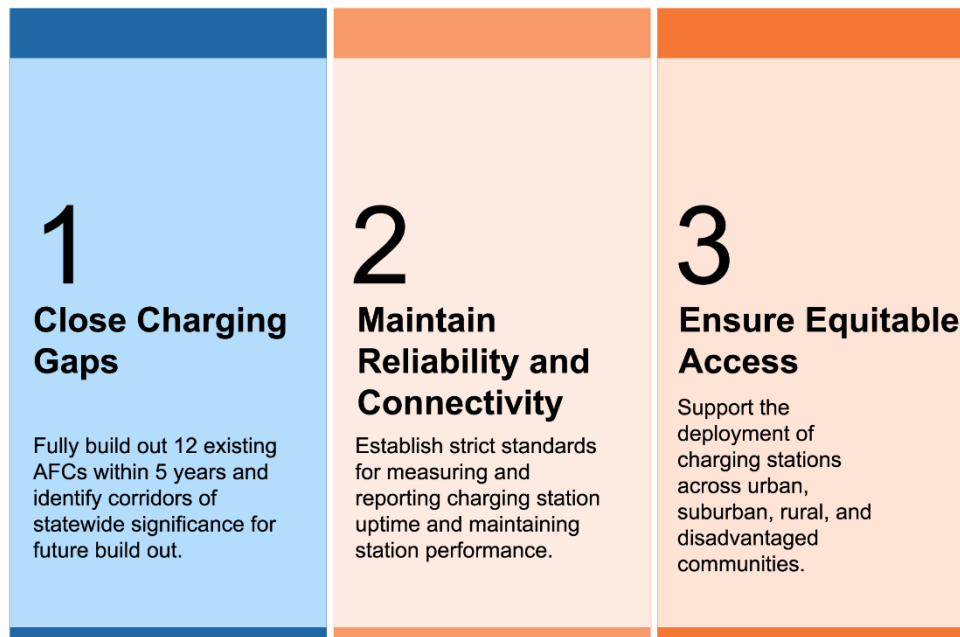


Plan Principles, Vision, and Goals

Virginia envisions an EV charger network that facilitates convenient, reliable, and equitable access to fast charging stations throughout the Commonwealth, while spurring growth in this promising industry. The Commonwealth will identify prudent and reasonable investments in new DC fast charging stations or upgrades of existing infrastructure along the Commonwealth's AFCs to enable an interconnected network and seamless customer experience for all EV users. This vision requires a statewide EV infrastructure network that will connect Virginia's major population centers and rural areas with charging stations at least every 50 miles along interstate highways.

In support of this vision, the Commonwealth has identified the following program goals that will drive NEVI planning and implementation:

Figure 3: Virginia NEVI Program Goals



Contracting

The purpose of federal NEVI funding is to encourage additional private investment in EVSE that will fill gaps in the statewide EV charging network, with the ultimate goal of providing a convenient, reliable, and equitable EV driving experience for all. Third parties will be used for the acquisition, installation, upgrading, and operations and maintenance of publicly accessible EV charging infrastructure under the program. VDOT has developed an initial competitive funding opportunity that seeks developers to install or upgrade DC fast charging infrastructure along Virginia's AFCs in accordance with federal guidelines. Future funding opportunities will be focused on installations beyond the AFCs. NEVI program funds will offset up to 80 percent of project costs while the third-party entity will be responsible for the non-federal share.

Status of Contracting Process

VDOT issued its initial NEVI RFA on July 21, 2023. The intent of the RFA is to establish awards to one or more recipients to provide for the installation, operation, and maintenance of one or more EV charging stations along Virginia's interstate highway AFCs. Applications are due October 20, 2023, with tentative award notifications issued in early 2024.

Applicants will be responsible for identifying and securing specific installation sites within the AFCs that meet the requirements defined in the RFA. Applicants may also propose upgrading existing charging stations that do not currently meet NEVI program guidelines. VDOT will require that contractors are engaged in communities where EV charging infrastructure is expected to be installed by requiring prospective developers to outline their engagement strategy. Small businesses will be afforded equal and fair opportunities to participate in Virginia contracting, consulting, and procurement opportunities, as provided in 23 U.S.C. 304. Ownership of the EV charging infrastructure is not intended to revert to the Commonwealth after the five-year duration of the program expires.

Funding Awards

Funding award notifications are expected in early 2024 with Notices to Proceed following Award Agreement execution.

Scoring Methodologies Utilized

The Evaluation Committee for VDOT's RFA submittals will include staff from the Environmental Division, including the Office of Transportation Sustainability Director and the Decarbonization Lead. The evaluation of applications is divided into two parts: Mandatory Application Criteria based on the NEVI Guidance and NEVI Standards, and Ranked Scoring.

Mandatory Application Criteria encompass a comprehensive list of requirements for application eligibility, including complete administrative application and pricing schedules, geographical and technical specifications for proposed EV charging stations, operational specifications, details of customer service, data privacy, and regulatory compliance, among others as required in 23 CFR Part 680. If any requirement is not fulfilled or is incomplete, the application may be deemed ineligible for additional evaluation and funding award.

The required scoring methodology evaluates applications on various project provisions identified in the NEVI Guidance, such as the pricing schedule, user experience, qualifications and experience of the EVSE operator and installation team, and alignment with the Justice40 initiative.. Other considerations include future-proofing utility capacity, provision of pull-through spaces, incorporation of on-site renewable energy, and preference for previously disturbed sites.

An Evaluation Worksheet is provided as an attachment to the RFA for applicants' reference when developing their application. The requirements of the Mandatory Application Criteria and Ranked Scoring will form the basis of the evaluation and award of the project.

Plan for Compliance with Federal Requirements

VDOT has established a systematic approach to ensure comprehensive compliance with federal requirements, VDOT will require monthly progress reports and project schedule updates from RFA Award Recipients throughout the planning, permitting, and construction process until awarded EV charging stations become operational. Once operational, VDOT will also require RFA Award Recipients to submit required data on a quarterly and annual basis in compliance with 23 CFR Part 680.

In addition to these compliance strategies, VDOT will monitor RFA Award Recipients for adherence to the stated federal guidelines. Regular audits and inspections form an important part of this compliance monitoring process. Any instances of non-compliance will be promptly identified and remedied through completion of a Corrective Action Plan to ensure all operations remain within the federal and state statutory framework. Through these measures, VDOT upholds its commitment to ensure compliance with all federal requirements and fostering a reliable, well-connected EV charging network for the Commonwealth of Virginia.

Civil Rights

VDOT is an existing direct recipient of Federal financial assistance and therefore can ensure compliance with state and federal civil rights laws by following existing program plans for Title VI of the Civil Rights Act of 1964 and accompanying Department of Transportation regulations, the Americans with Disabilities Act (ADA), and Section 504 of the Rehabilitation Act of 1973. Additionally, VDOT has incorporated these requirements into the RFA and will require all selected

contractors to comply. Below is a list of some of the ADA compliant requirements applicable to EV charging stations:

- Accessibility
- Ease of use
- Disabled drivers' safety
- Adequate spacing between vehicles and charging stations
- Open access to the charging stations
- Number of spaces

Existing and Future Conditions Analysis

A number of state agencies and organizations have worked to expand EV charging in Virginia over the past decade. VCC, in partnership with Virginia Energy, nominated the first AFCs in Virginia in 2016, accelerating efforts to build a statewide EV charging network and providing ongoing coordination and support to stakeholders and the public. In 2018, DEQ contracted with EVgo to leverage \$14 million in funding from Virginia's Volkswagen Diesel Emissions Environmental Mitigation Trust to install Direct Current Fast Charger (DCFC) stations along heavily traveled roads, with 44 sites now operational. These sites were made ready to accommodate additional charging ports and faster charging speeds and will be candidates for upgrades as part of the Deployment Plan. In 2021, VCC, in partnership with DEQ and Virginia Energy, launched Drive Electric Virginia, a statewide initiative to increase EV awareness and availability, and expand EV infrastructure. As of July 2023, Virginia ranked 13th in the nation for total number of EV charging stations, with 1,194 public stations providing 3,237 charging ports across all charging speeds.¹ The 2021 State Transportation Electrification Scorecard published by the American Council for an Energy Efficient Economy named Virginia as the leader in the southeast for efforts to incentivize, integrate, and reduce the impacts of EVs by decarbonizing the grid.

As of December 31, 2021, 30,660 battery-electric vehicles (BEVs) were registered in Virginia. As of December 31, 2022, there are 61,121 BEVs registered in Virginia accounting for approximately two percent of the 2,978,391 total automobile registrations.² In 2021, Virginia was ranked 13th in the nation by total number of registered EVs and was ranked 18th in the percentage of registered EVs in total registrations. EV registrations are currently more heavily concentrated in urban parts of the state, primarily Northern Virginia but also Richmond and the Virginia Beach area.³ A 2019

¹ <https://afdc.energy.gov/stations/states>

² US Dept of Energy (2021); Automobile registrations by state: US Dept of Transportation, Federal Highway Administration (2021).

³ https://driveelectricva.org/why-drive-electric/ev-dashboard/#/analyze?region=US-VA&show_map=true&country=US&access=public&access=private&fuel=ELEC&pg_secondary=true&hy_nonretail=true&ev_levels=all

Transportation Funding Sustainability report conducted by the Virginia Secretary of Transportation predicted that EVs may represent 12 percent of annual new car sales by 2030.⁴ A 2023 report from the National Renewable Energy Lab projected that Virginia could have 950,000 EVs by 2030.⁵ Virginia has passed a number of policies supporting the adoption of EVs in recent years, summarized in the State, Regional, and Local Policy section below.

Future Power System Needs & Capabilities

EV charging stations across the Commonwealth are powered by both investor-owned and cooperative utilities. APCo covers much of the southwest region of the state while Dominion Energy serves parts of the eastern section. Electric co-ops serve much of the rest of the Commonwealth. A variety of EV charging providers, including Tesla, EVgo, and Electrify America, service the existing public DCFC stations across Virginia.

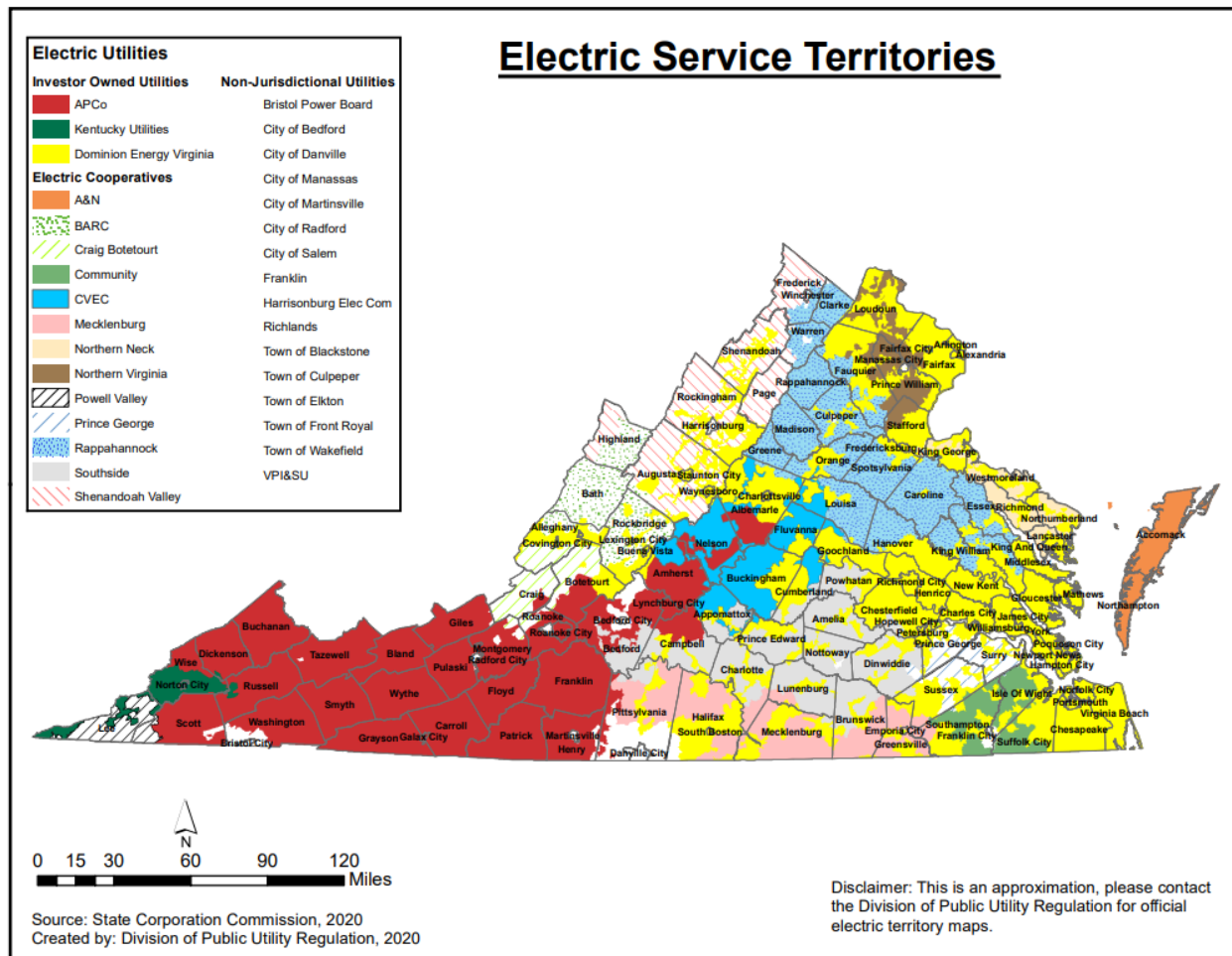
Coordination between power generation, transmission, and distribution planning will become increasingly important as EV adoption rates rise in Virginia and power demands increase. VDOT has been collaborating with Virginia's utility companies and other stakeholders to evaluate the implications of the NEVI program on the power sector. VDOT is working with these stakeholders to review the Commonwealth's existing and planned power supply infrastructure, including identifying gaps in the grid architecture that could impact both the cost and timing of NEVI Program deployments.

VDOT expects the scaling up of the EV market to add momentum to Virginia's ongoing grid modernization strategy. By planning for a high level of future power and transport system integration, Virginia will be able to reduce emissions, lower renewable energy curtailment, and manage system demand for future infrastructure investments across the Commonwealth. Planning and implementation of the infrastructure needed for a more capable and flexible transport and energy system will require the full participation of all utilities. This transition will also create the need for new functions and services which will offer new opportunities for small businesses to create high-skilled jobs across Virginia. With integrated planning efforts such as these, Virginia's power grid can serve the Commonwealth's future EV load reliably, with resilience and at a reasonable cost.

⁴ Virginia Office of Intermodal Planning and Investment (2019); Transportation Funding Sustainability (2019).

⁵ National Renewable Energy Lab (2023); The 2030 National Charging Network: Estimating U.S. Light-Duty Demand for Electric Vehicle Charging Infrastructure (2023).

Figure 4: Electric Service Territories



Chapter 268 of the 2021 Virginia Acts of Assembly directs the Virginia State Corporation Commission (SCC) to file a report recommending policy proposals to accelerate widespread transportation electrification in the Commonwealth. The SCC conducted five stakeholder meetings involving approximately 85 stakeholders to assist in the preparation of the report. Participants had expertise on issues relevant to utility regulation and transportation electrification, including EV technologies, utility rate and policy design, renewable energy and energy storage, and specific transportation sectors. On April 29, 2022, the SCC published the “Report: Policy Proposals Governing Public Electric Utility Programs to Accelerate Widespread Transportation Electrification in the Commonwealth Pursuant to Chapter 268 of the 2021 Virginia Acts of Assembly (Special Session I) (HB 2282)” (SCC Electrification Report) which recommends, among other things, that regulated utilities file transportation electrification plans regularly with the SCC detailing its forecasts, potential impacts, planned utility offerings, anonymized transportation electrification data, and potential rate structures.⁶ The SCC requires, from 2023 onward, that

⁶ <https://www.scc.virginia.gov/getattachment/94cafe4e-3091-4e53-ae30-29d469a013a0/2022-APR-Report-on-Transportation-Electrification.pdf>

regulated utilities file transportation electrification plans that include how the utility efforts complement private sector charging infrastructure.

Analysis of Utility Infrastructure

Throughout the development of Virginia's NEVI program, VDOT has met and collaborated with Dominion, APCo, ODEC, VMDAEC, and others to understand and assess their expectations for future infrastructure needs to support EV charging. From January to July of 2023 VDOT held four meetings with various utilities to solicit feedback on the development of VDOT's initial RFA, including the utility form required for all applications to document utility coordination on power capacity at proposed sites. As part of this process, VDOT is also learning more details about the utilities' EV programs and any grid modernization initiatives that will support the emergence of the integrated power and mobility infrastructure Virginia will require with widescale EV adoption. This process will communicate to Virginia's utilities and businesses the need to invest in EV technology and consumer behavior-based products to address potential grid impact issues. Virginia's utilities have emphasized the need to manage future EV load in a way that reduces upward pressure on power costs.

Although state regulation does not presently require utilities to include EV forecasts in their long-term resource plans until 2023, Dominion and the larger electric co-ops have been incorporating EV projections into their proprietary load models. However, no long-term formal EV forecasts are currently available in the public domain. VDOT will coordinate with utilities and other stakeholders to assess and incorporate projections as they become available to inform planning efforts.

State Geography, Terrain, Climate and Land Use Patterns

The Commonwealth has a diverse terrain that includes mountains, cities, beaches, and approximately 40,000 square miles of land. The Commonwealth is the 35th largest state in the United States with a humid, subtropical environment with four distinct seasons and five distinct climate regions: tidewater, piedmont, northern Virginia, western mountain, and southwestern mountain.⁷ The tidewater region, which is in the southeastern part of the state and includes coastal land, experiences temperatures that are approximately 10 degrees warmer than the piedmont region in the middle of the state and the northern region.⁸ Conversely, the western mountain and southwestern mountain regions experience temperatures that are approximately 10 degrees cooler than the piedmont and northern Virginia regions.

Precipitation patterns follow similar regional distributions. The southwestern mountain region gets the most annual precipitation, averaging 47.33 inches.⁹ Piedmont averages 43.37 inches,

⁷ <https://www.virginia.org/plan-your-trip/seasons-and-climate/#:~:text=Virginia%27s%20weather%20has%20been%20described,region%20due%20to%20winter%20frost>

⁸ <https://planthardiness.ars.usda.gov/>

⁹ <https://www.virginia.org/plan-your-trip/seasons-and-climate/#:~:text=Virginia%27s%20weather%20has%20been%20described,region%20due%20to%20winter%20frost>

followed by tidewater and the western mountain region, which average 41.31 and 40.74 annual inches, respectively. Northern Virginia gets the least annual precipitation, with 38.29 annual inches. The tidewater region experiences some hurricanes, but the northern latitude and cooler coast water (compared to southern coastal states) quells the intensity of the storms. However, rising sea levels may increase storm surges and subsequent flood damage in the Chesapeake Bay area, which presents uncertain climate risks to the area.¹⁰ More broadly, an increase in variable weather events threatens to erode beaches, submerge lowlands, and increase coastal flooding in Virginia.¹¹ Increased saltwater intrusion could negatively impact agriculture, wells, and septic systems in coastal rural areas.¹² Taken together, these evolving disruptions in historical weather and climate patterns present significant risks to the existing economy and community.

Travel Patterns, Public Transportation, Freight and Other Needs

Virginia has the third largest state-maintained highway system in the country behind only North Carolina and Texas.¹³ Its 57,867 miles of highways are divided into four main categories: interstate, primary, secondary, and frontage. The 1,118 miles of interstate highway includes four-to-ten lane roads that connect states and major cities. The 8,111 miles of primary two-to-six lane roads connect cities and towns with each other and with interstates. The 48,305 miles of secondary roads include local connector or county roads. Finally, the 333 frontage roads run parallel to higher-speed, limited-access roads. In addition to the major roads, VDOT is also responsible for nearly 12,000 bridges and 7,550 culverts, six underwater crossings and two mountain tunnels, three toll roads, and one toll bridge. VDOT also operates three ferry services and maintains 43 safety rest areas, four welcome centers, and over 100 commuter parking lots.

DRPT operates all freight and passenger rail services in the State. DRPT works with the two major Class I railroads operating in Virginia, CSX and Norfolk Southern, in addition to the nine short line railroads that provide local and switching services across the state. Rail passengers in Virginia are served by Amtrak and Virginia Railway Express.

AFC – Corridor Networks

The Commonwealth views its interstate highways as the backbone of a robust network serving communities and commerce to facilitate strong interconnectedness across industry, sectors, and people. Strengthening our ability to serve the growing EV driver-base is a critical step to ensuring that the broader economy continues to thrive and evolve. As such, the Commonwealth views EV infrastructure investment as a facilitator of increased growth of trade and commerce, with the private sector driving the evolution and direction of the ultimate network. The economic outcome-driven approach to leveraging these public investments frames our overall strategy on the buildout of Virginia's AFC network, which is to achieve FBO status as early as possible. As of the conclusion of AFC Round 7, Virginia has 12 designated or nominated AFCs that are either corridor-ready or corridor-pending. They include over 1,734 miles of interstate along I-64, I-66, I-77, I-81, I-85, I-95, I-295, and I-495 in addition to US 17, US 23, US 29, and US 460 nominated

¹⁰ <https://ascelibrary.org/doi/10.1061/%28ASCE%29NH.1527-6996.0000505>

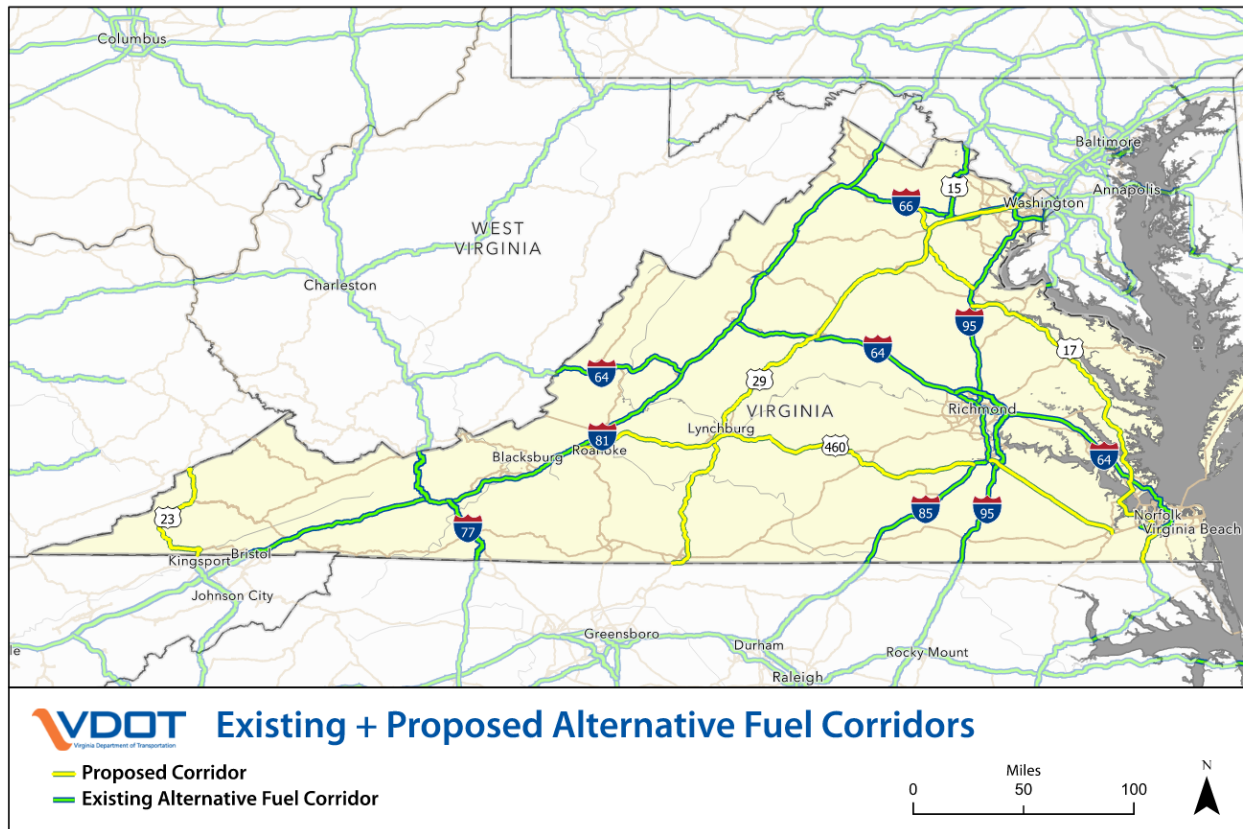
¹¹ <https://19january2017snapshot.epa.gov/sites/production/files/2016-09/documents/climate-change-va.pdf>

¹² https://www.vasem.org/assets/docs/VASEM_VirginiasCoastalAreasReport_FINAL.pdf

¹³ https://www.virginiadot.org/about/vdot_hgwy_sys.asp

in Round 7 as shown in Figure 5 below.

Figure 5: Existing AFCs and Nominated Routes



VDOT submitted to FHWA four additional highway segments under the June 2023 AFC Round 7 nomination process. The nominated segments are listed below in Table 2: AFC Round 7 Corridor-Pending Designations. These nominations were based on planned investments in EV charging infrastructure allocated through NEVI funds, aimed at expanding EV infrastructure across the Commonwealth to new areas including urban, suburban, rural, and disadvantaged communities. These AFC nominations were informed by a public survey conducted by VDOT in June 2023, which sought input from the public regarding which highway segments should be included in VDOT's Round 7 nomination package.

Table 2: AFC Round Seven Proposed Corridor-Pending Designations

US Route Number	Fuel	Corridor	Segment Distance (miles)	Justice40 (miles)	Designation Request
17	EV	North Carolina border to I-66 connection	216.8	40.6	Corridor Pending
23	EV	Tennessee border to Kentucky border	61	53.6	Corridor Pending

US Route Number	Fuel	Corridor	Segment Distance (miles)	Justice40 (miles)	Designation Request
29	EV	North Carolina border to northernmost point	247.3	62.7	Corridor Pending
460	EV	From I-81 to US-58 in Suffolk	223.8	75	Corridor Pending

The initial focus of the Commonwealth's allocation of NEVI funds will be dedicated to building out station access to fill the identified gaps along its AFCs. To ensure adequate coverage, VDOT will adhere to the requirement that charging stations should be sited at least every 50 miles and within 1 mile of an exit. Specific rules apply to corridor termini, with stations required within 25 miles, including corridors ending at state borders where no AFC exists in the adjacent state. If a designated corridor extends beyond a state's border into an adjacent state, the 50-mile spacing must be maintained along the designated corridor. In such cases, one state may have a station greater than 25 miles from their border if the adjacent state has a station along that same corridor less than 25 miles from their border in a manner that maintains the overall 50-mile spacing. A change in corridor names or highway designation along the corridor does not designate it as a corridor terminus.

Once these requirements are fulfilled, VDOT will pursue statewide FBO certification from FHWA. The identification of specific locations will be driven by market demands and third parties. The NEVI funds will be allocated according to the criteria of the program to broadly identify areas of potential, with the private sector developing specific options within those parameters. The potential private sector operators will have the flexibility to propose specific sites based on business acumen and market forces.

Existing Locations of Charging Infrastructure Along AFCs

VDOT's analysis of the existing network of 238 public charging stations equipped with DC fast charging capacity in Virginia has revealed that just 18 locations may meet the NEVI. These stations are the foundation for the Commonwealth's efforts to achieve FBO status in the first years of the NEVI program. Table 3: Existing Charging Infrastructure below provides more detailed information on these 18 stations.

Table 3: Existing Charging Infrastructure*

State EV Charging Location Unique ID**	Charger Level	Route	Location	Number of Ports	EV Network	Meets all relevant requirements in 23 CFR 680	Intent to count towards Fully Built Out determination?
169947	DCFC	I-64	12401 Jefferson Ave, Newport News, VA 23602	10	Electrify America	Yes	Yes

State EV Charging Location Unique ID**	Charger Level	Route	Location	Number of Ports	EV Network	Meets all relevant requirements in 23 CFR 680	Intent to count towards Fully Built Out determination?
167049	DCFC	I-64	135 Market St, Zion Crossroads, VA 22942	4	Electrify America	Yes	Yes
155888	DCFC	I-66	6530 Trading Square Haymarket, VA 201690	4	Electrify America	Yes	Yes
228341	DCFC	I-66	3713 Langston Rd Arlington, VA 22207	4	EVgo	Yes	Yes
171423	DCFC	I-66	11190 Main St, Fairfax, VA 22030	4	Electrify America	Yes	Yes
147079	DCFC	I-66	6100 Arlington Blvd, Falls Church, VA 22044	6	Electrify America	Yes	Yes
167892	DCFC	I-81	1028 Richmond Ave C Staunton, VA 24401	4	Electrify America	Yes	Yes
122837	DCFC	I-81	13249 Lee Highway Bristol, VA 24202	4	Electrify America	Yes	Yes
168007	DCFC	I-81	1340 North Fourth St. Wytheville, VA 24382	4	Electrify America	Yes	Yes
259997	DCFC	I-81	2622 E Lee Hwy Wytheville, VA 24382	4	Circle K	Yes	Yes
170318	DCFC	I-81	345 Brughs Mill Rd. Fincastle, VA 24090	4	Electrify America	Yes	Yes

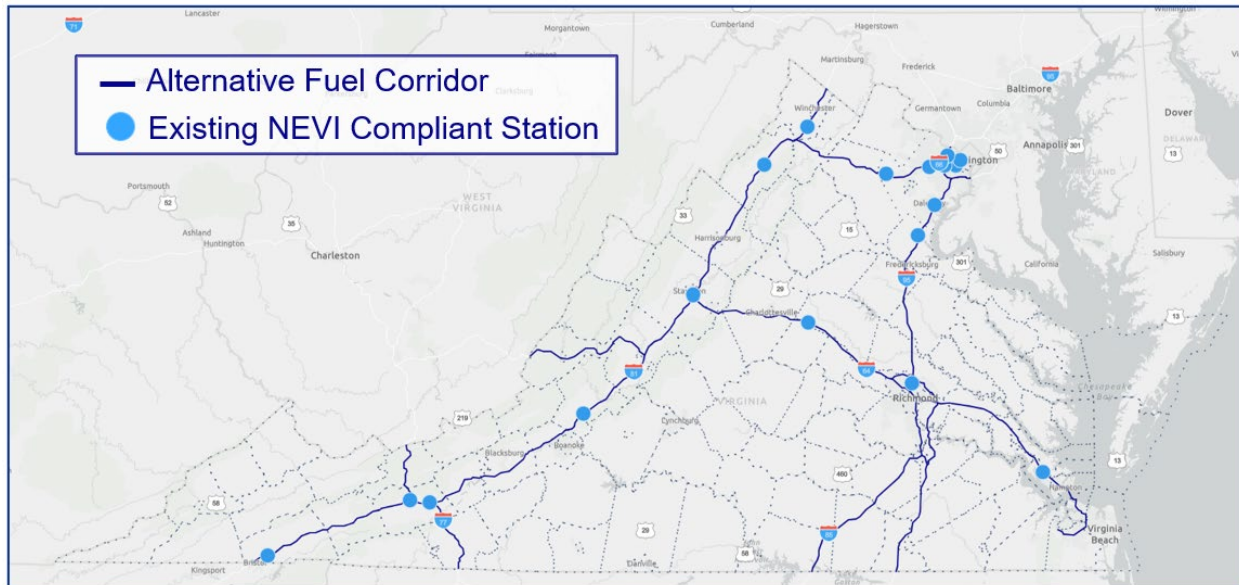
State EV Charging Location Unique ID**	Charger Level	Route	Location	Number of Ports	EV Network	Meets all relevant requirements in 23 CFR 680	Intent to count towards Fully Built Out determination?
167891	DCFC	I-81	747 Fairfax St, Stephens City, VA 22655	4	Electrify America	Yes	Yes
168490	DCFC	I-81	461 W. Reservoir Rd Woodstock, VA 22664	4	Electrify America	Yes	Yes
166857	DCFC	I-95	7901 Brook Rd Richmond, VA 23227	8	Electrify America	Yes	Yes
167503	DCFC	I-95	217 Garrisonville Rd Stafford, VA 22554	10	Electrify America	Yes	Yes
190762	DCFC	I-95	2700 Potomac Mills Circle Woodbridge, VA 22192	4	Electrify America	Yes	Yes
198185	DCFC	I-495	8130 Arlington Blvd, Falls Church, VA 22042	4	EVgo	Yes	Yes
228713	DCFC	I-495	1688 Anderson Rd, McLean, VA 22102	4	EVgo	Yes	Yes

* As of 07/24/2023

** Defined by AFDC.

As Figure 6: NEVI-Compliant Stations in Virginia indicates, there exists a series of FBO-compliant stations serving the I-81, I-64, and I-95 corridors. The Northeast section of the Commonwealth presents four clusters of stations that also meet this criterion. The cluster of two stations in the northernmost tip of Virginia are two stations meeting FBO criteria that serve I-81. The cluster of three stations closest to Washington DC serve I-495 and I-66 respectively. The cluster of two stations just south of the DC cluster serves I-66 and I-495, while the cluster of two stations south of the DC cluster serves the I-95 corridor.

Figure 6: NEVI-Compliant Stations in Virginia



Known Risks and Challenges

Recognizing risks and identifying potential mitigation strategies during the development and refinement of the Deployment Plan will be vital to the long-term success of Virginia's NEVI program. VDOT will monitor and document risks related to the location and geography of charging infrastructure, operations and maintenance, grid limitations, power supply, and cybersecurity, among others. Identified risks will be validated with relevant stakeholders and will be assessed for the ability of stakeholders to respond to and mitigate them. A few of the most important risks are outlined below.

Hardware Risks

Because DC fast charging is a relatively new technology, hardware has a short track record and few standards. The past decade has been filled with examples of global manufacturing companies entering and exiting the EVSE space to satisfy its burgeoning demand. DC fast charging is prone to malfunctions, in part because of surging power levels that stress the components, rough handling by users of the equipment, and exposure to the elements. Equipment previously installed privately in Virginia has had a high failure rate shown in user comments and reports on social media tools like PlugShare. The cooling systems are complex, whether air-based with a series of fans and filters, or liquid-based with pumps, reservoirs, and fluids. Spare parts and trained technicians, along with a robust supply chain, are essential to operating a reliable network of chargers. Even compatibility with credit card readers has been unexpectedly complicated. Finally, the charger manufacturers must perform integration testing with every new vehicle that comes to market to ensure reliability for all drivers and predict future market changes like larger batteries. VDOT will seek continued federal guidance on approved equipment and further evaluate proposed EVSE manufacturers and equipment to assess whether NEVI investments will last through the full expected service life of the equipment.

Proprietary Hardware or Software

As required by the IIJA, open standards and interoperability are critical to the success of NEVI because they foster competition, protect consumers' investments by preventing vendor-lock, and reduce overall EV ownership costs. There is currently a lack of agreement in the industry over

standardization. If operators can agree upon a standardized approach to provide universal access to charging stations, the range anxiety that limits consumer's interest in EVs will lessen because drivers can rely on more public stations as a charging source. When drivers are uncertain whether all public chargers along their route work for their vehicle, their trust in the network is eroded. Standardization could also reduce the costs of station construction and maintenance.

VDOT will require developers to comply with all applicable standards promulgated by the U.S. Department of Transportation, including the NEVI Standards, to establish minimum standards for EV charging infrastructure, including interoperability, traffic control devices or on-premises signage, data, and network connectivity. The NEVI Standards require that all non-proprietary charging connectors must meet applicable industry standards, and that each DCFC charging port must have a permanently attached Combined Charging System (CCS) Type 1 connector and must charge any CCS-compliant vehicle. In response to recent changes in EV market dynamics, VDOT's initial RFA allows for the inclusion of NACS connectors in addition to the required CCS connectors. VDOT will continue to monitor hardware developments to ensure that station deployment meets federal requirements and the needs of Virginia EV drivers.

The NEVI Standards also require chargers to conform to ISO 15118 to communicate with CCS-compliant vehicles that have implemented ISO 15118, and have the ability to receive and implement secure, remote software updates and conduct real-time protocol translation, encryption and decryption, authentication, and authorization in their communication with charging networks. Charging networks must perform and chargers must support remote charger monitoring, diagnostics, control, and smart charge management, and securely measure, communicate, store, and report energy and power dispensed, real-time charging-port status, real-time price to the customer, and historical charging-port uptime. Chargers must also be capable of using Open Charge Point Protocol to communicate with any network provider.

Financial Stability and Commitment to the U.S. Market

EV charging is a nascent market with an uncertain demand trajectory. Even large charging companies have, in recent years, left the U.S. market due to this uncertainty. There will inevitably be continued churn amongst manufacturers and service providers until an equilibrium is established between the supply of EV chargers and the demand from EV drivers.

Real Estate

EV chargers are typically deployed at retail commercial locations due to the presence of amenities such as food, shopping, and restrooms. However, due to issues such as the high value of parking spaces, limited access to power, future development at a site, minimum parking ratios, and no-build zones, some locations are relatively undesirable for charging from planners' or drivers' perspectives.

Operations and Maintenance

A reliable EVSE network requires routine maintenance and technicians trained in EV specialties. Because chargers are spread widely but generally with little density, repair technicians must cover large service areas. Establishing a network of qualified individuals and a system for distributing parts quickly is critical to ensuring a reliable EV charger network.

Utility Costs

The costs of the utility equipment needed to supply EV chargers and the rates charged for the electricity are major components of the EV charger business case and its future viability. Extending the grid to supply an EV charging station would likely entail a major up-front expense for a developer unless the utility subsidizes such requests. Rates for electricity usage can also

hamper the profitability of a charging station. Demand charges, which are billed based on the peak usage of a facility over a certain time period, threaten the viability of stations with low-utilization rates, which currently includes most of the existing EV charging stations in Virginia. Charging stations' demand for electricity is unpredictable and volatile, which could lead to high demand charges that would need to be recovered from few customers, at least early on.

Stranded Assets

Because EV chargers have a challenging business case presently, NEVI funds used to purchase EVSE may be allocated inefficiently if a developer is unable to continue the business through the equipment's service life. Such stranded assets would reduce the overall effectiveness of the NEVI program.

EV Charging Infrastructure Deployment

The Commonwealth is committed to a private sector-driven approach that funds new stations in high-demand areas, fosters the growth of industry opportunities in urban, rural, and underserved and disadvantaged communities, and builds out a resilient, broad-reaching EV charger network. While the NEVI criteria explicitly mandate the build-out of the interstate highways within the pre-existing AFC network, Virginia seeks to meet that criterion as early as possible in order to maximize the flexibility of funding allocations. It is the Commonwealth's goal that these NEVI funds be directed by the evolution of the private sector in its mission to support the growth of a strong and competitive market for EVs. It is the goal of this plan that these federal funds act as a private sector stimulant for the growth of the overall EV industry and its ancillary markets.

2022 & 2023 Infrastructure Deployments/Upgrades

VDOT's analysis of the existing DC fast charging stations that may currently meet NEVI criteria has revealed several gaps in interstate coverage, with an additional 18 EV charging stations needed in Phase I NEVI Deployment. VDOT therefore plans to deploy FY22 and FY23 NEVI formula program funding through the initial RFA to support the construction of 18 new or upgraded stations along several interstates: I-64, I-77, I-81, I-85, I-95, and I-295. Two interstate corridors, I-66 and I-495, appear to have already met the FBO criteria. Analysis of stations along I-66 has identified no gaps, with four stations (ID 155888, 228341, 171423, and 147079) providing the minimum service for EV drivers along this corridor. Stations 228713 and 198185 bring I-495 into FBO compliance.

Interstate 64 runs east to west across the Commonwealth, starting in the southeast corner of the state in the Hampton Roads region and ending in the Allegheny Highlands region along the Virginia/West Virginia state line. It is currently served by two stations that meet the NEVI criteria (ID 169947 and ID 167049). Our analysis has identified five distinct gaps in coverage. The first gap providing potential station sites is within 25 miles of the West Virginia border with the second gap in the Lexington area near the intersection with I-81. Moving east, the remaining three gaps are located near the intersection with I-295, the New Kent area, and in Hampton Roads within 25 miles of the terminus of I-64 in the City of Chesapeake.

Interstate 77 is a short span of road approximately 65 miles long in the western region of the Commonwealth. There are currently no stations serving this corridor and it is forecasted that two stations will be deployed, each within 25 miles of the borders with West Virginia and North Carolina.

Interstate 81 runs south to north for approximately 320 miles across the Commonwealth beginning in Bristol and ending at the northernmost tip of Virginia at the West Virginia border near

Martinsburg, West Virginia. It is currently served by seven stations (IDs 167891, 170318, 168007, 122837, 167892, 168490, and 259997) that are FBO-compliant with four gaps of 50 miles or more where the construction of an additional charging station should be funded. Those four gaps center around the areas of Chillhowie, Christiansburg, Natural Bridge/Lexington/Raphine, and Weyers Cave/Harrisonburg/New Market.

Interstate 85 begins at the North Carolina state line running about 70 miles north to Petersburg, with no NEVI-compliant stations along this route. Gaps for new or upgraded stations are located within 25 miles of the border with North Carolina and in Dinwiddie County.

Interstate 95 runs roughly north to south for about 170 miles from the Maryland border to the North Carolina border. The route is currently served by three NEVI-compliant stations (IDs 190762, 167503, and 166857) with three identified gaps. The first gap is in the Greeneville County/City of Emporia area. A previously included station in the 2022 Deployment Plan Table 3 is no longer NEVI-compliant following the release of the NEVI Standards, however, the station may be upgraded. The second gap is a station-less segment between Sussex County extending north into the Colonial Heights area south of Richmond with potential siting options on exits in multiple locations along this route. The third gap exists between Richmond north to the Fredericksburg area. A previously included station in the 2022 Deployment Plan Table 3 is no longer NEVI-compliant following the release of the NEVI Standards, however the station may be upgraded.

Interstate 295 is a short span of road measuring approximately 20 miles that serves as an eastern bypass of Petersburg and Richmond for I-95 and a northern bypass for I-64, with no NEVI-compliant DCFCs along this route. Two gaps are identified along the corridor. The first gap begins at the split from I-95 headed north to Varina and the second gap begins in Mechanicsville and extends to the intersection with I-64 to the west of I-95.

Table 4: Planned Charging Stations in Request for Applications below identifies the exits within Target Areas identified in the RFA to meet NEVI Guidance distance requirements for proposed stations. VDOT will continue to update the tables reflecting new or upgraded NEVI-compliant stations as they become operational. The VDOT NEVI GIS mapping tool that details the Target Areas and exits is available for the public here: <https://publicinput.com/VirginiaNEVI#1>.

Table 4: Planned Charging Stations in Request for Applications

State EV Charging Location Unique ID*	Route**	Exit Options***	Number of Ports	Estimated Year Operational	Est. Cost	NEVI Funding Source	New Location or Upgrade
TBD	I-64	10, 14, 16	TBD	TBD	TBD	FY22 / FY23	TBD
TBD	I-64	50, 55	TBD	TBD	TBD	FY22 / FY23	TBD
TBD	I-64	173, 177, 178, 180, 181, 183, 185	TBD	TBD	TBD	FY22 / FY23	TBD

State EV Charging Location Unique ID*	Route**	Exit Options***	Number of Ports	Estimated Year Operational	Est. Cost	NEVI Funding Source	New Location or Upgrade
TBD	I-64	205, 211, 214, 220	TBD	TBD	TBD	FY22 / FY23	TBD
TBD	I-64	286, 289, 290, 291, 292	TBD	TBD	TBD	FY22 / FY23	TBD
TBD	I-77	1, 8, 14, 19, 24	TBD	TBD	TBD	FY22 / FY23	TBD
TBD	I-77	41, 47, 52, 58, 62, 64, 66	TBD	TBD	TBD	FY22 / FY23	TBD
TBD	I-81	22, 24, 26, 29, 32, 35, 39, 44, 45, 47, 54	TBD	TBD	TBD	FY22 / FY23	TBD
TBD	I-81	105, 109, 114, 118, 128	TBD	TBD	TBD	FY22 / FY23	TBD
TBD	I-81	175, 180, 188, 195, 200, 205	TBD	TBD	TBD	FY22 / FY23	TBD
TBD	I-81	235, 240, 243, 245, 247, 251, 257, 264, 269	TBD	TBD	TBD	FY22 / FY23	TBD
TBD	I-85	12, 15, 24	TBD	TBD	TBD	FY22 / FY23	TBD
TBD	I-85	39, 42, 48, 53, 61	TBD	TBD	TBD	FY22 / FY23	TBD
TBD	I-95	4, 8, 11, 12, 17, 20	TBD	TBD	TBD	FY22 / FY23	TBD
TBD	I-95	41, 45, 46, 47, 48, 50, 51, 52, 53, 54	TBD	TBD	TBD	FY22 / FY23	TBD
TBD	I-95	104, 110, 118, 126, 130	TBD	TBD	TBD	FY22 / FY23	TBD
TBD	I-295	3, 9, 15, 22	TBD	TBD	TBD	FY22 / FY23	TBD
TBD	I-295	37, 38, 41, 43, 45, 49, 51, 5	TBD	TBD	TBD	FY22 / FY23	TBD

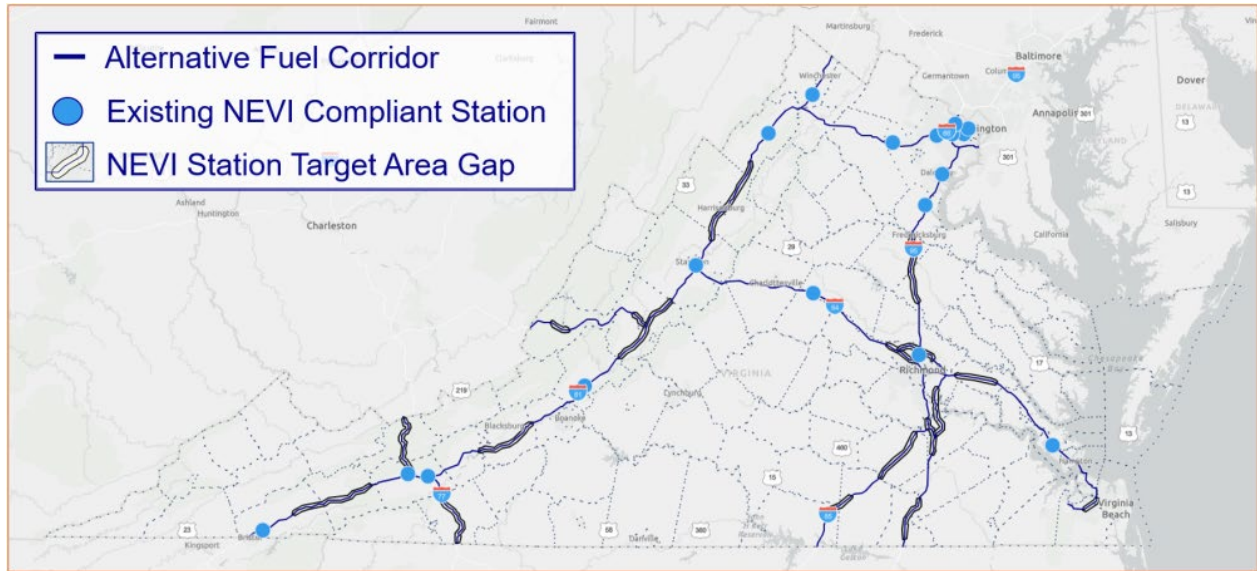
*Defined in AFDC.

**All routes shown are AFCs.

***Required Location column will be added once sites are finalized.

Figure 7: Focus Areas for Initial Charging Infrastructure Deployment below illustrates the combination of stations that currently meet the NEVI criteria as well as the Target Areas to locate new or upgraded stations. Locations in blue indicate the existing stations that meet NEVI criteria while the gaps in pale yellow indicate the potential station upgrades/new construction areas that would bring the Commonwealth's AFC corridors to FBO status.

Figure 7: Focus Areas for Initial Charging Infrastructure Deployment



Note that the proposed locations of upgrades and new construction projects are illustrative only and merely identify broadly where gaps exist in AFC corridors. The RFA interactive mapping provides exit-level charging station target areas.

Table 5: Stations Under Construction below will be updated in future VDOT NEVI Deployment Plans as no stations are yet under construction at the time of this Plan update.

Table 5: Stations Under Construction

State EV Charging Location Unique ID	Route (note if AFC)	Location (street address, if known)	Number of Ports	Estimated Year Operational	Estimated Cost	NEVI Funding Sources	New Location or Upgrade?
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Increases of Capacity/Redundancy along Existing AFC

Increasing EV charger capacity and redundancy along existing AFC corridors will be critical in Virginia's plan to build a robust network of charging infrastructure. The Commonwealth has evaluated baseline data around EV registration trends and potential patterns and plans to act responsively to determine the need for redundancy along AFC corridors to minimize the effects

on existing stations with low utilization rates. In many areas, the minimum requirements to achieve FBO status along the Commonwealth's AFC corridors, including the need to have sufficient power to charge four 150 kW chargers simultaneously, may be insufficient to meet forecasted future demand. Many regions in the Commonwealth presently have strong inter- and intra-regional commuting patterns that signal the likely potential for strong EV charger demand in the future. Coupled with the forecasted EV price decline trajectory and the regular cycle of car replacements among consumers, increasing EV charger capacity and redundancy may be warranted in certain areas with higher levels of current and projected adoption. The Commonwealth will incentivize the future-proofing of new and upgraded EV charging stations by requiring the designing of new and upgraded stations to allow for future upgrades and updates to power levels and number of chargers, to the extent possible and within reason. NEVI Guidance encourages the installation of chargers with higher power levels where appropriate to support industry efforts to ensure a consumer's time to charge is at least comparable to filling a gas tank. The Joint Office is expected to publish best practices for EV charging infrastructure construction that will seek to allow flexibility in future upgrades, which VDOT will consider for possible incorporation into future solicitation requirements.

Electric Vehicle Freight Considerations

Heavy-duty and rail vehicles are responsible for 26 percent of the state's transportation-related greenhouse gas emissions.¹⁴ Low income and minority communities are more likely to be located near transportation facilities like bus depots that are a major source of air pollution. To decrease the emissions of these vehicles, in 2021 Virginia signed onto the Multi-State Medium- and Heavy-Duty Zero Emission Vehicle Memorandum of Understanding. This agreement pledged that at least 30 percent of all new trucks and buses sold in the Commonwealth will be zero-emission vehicles by 2030 and 100 percent by 2050. According to the American Lung Association, the agreement would result in annual estimated savings of \$1.3 billion in health costs in Virginia by 2050, as well as preventing over 1,700 asthma attacks and over 8,000 lost workdays per year.

Public Transportation Considerations

NEVI funded initiatives will augment those already in progress, like the Federal Transit Administration's Low or No Emission Vehicle Program (Low-No), which will distribute \$5.5 billion over five years to assist transit agencies in the purchase or lease of U.S.-built low or no emission vehicles. Several Virginia Transit agencies have received federal discretionary money to accelerate their zero-emission fleet transitions. Alexandria DASH received \$23.9 million in federal funding to purchase 13 battery-electric buses (BEBs) and charging equipment, perform utility upgrades, and provide workforce training for the new technology. Hampton Roads Transit (HRT) received \$25 million in federal funding for the renovation of an obsolete bus operations and maintenance depot in Virginia Beach. When completed, the depot will accommodate over 100 buses and 14 seasonal trolleys and will be central to HRT's bus electrification plan.

DRPT and local transit authorities have initiatives to electrify public transit that VDOT will also consider when making NEVI decisions. There are currently 26 BEBs operating in Virginia, with an additional 55 BEBs that have approved funding. Blacksburg Transit, Fairfax Department of Transportation, and Greater Roanoke Transit Company are also using VW Trust funds to replace 24 diesel public transit buses with BEBs. Similarly, HRT recently added six BEBs to its fleet. Fourteen (14) battery-electric buses were approved in DRPTs 2024 Six-Year-Improvement Program (SYIP) for Arlington County, Blacksburg Transit, Charlottesville Area Transit Authority,

¹⁴ <https://www.deq.virginia.gov/home/showpublisheddocument/12633/637725680592630000>

and Fairfax Department of Transportation. In the coming years, ten Virginia transit agencies will have at least two BEBs in their fleet.

DRPT has also begun the Modernizing Transit Fleets project, which aims to create a comprehensive resource guide and toolkit for Virginia's transit agencies that wish to transition their fleets to low- and zero-emission vehicles. This project builds on the analysis conducted through the Transit Equity and Modernization Study and addresses identified needs to advance the transition to low- and zero-emission buses throughout the Commonwealth. The project explores a variety of topics related to low- and zero-emissions bus deployment and heavily engages with industry, utility, and agency stakeholders. The project is motivated by continued interest from partner agencies to transition to low- and zero-emission fleets and Federal Transit Administration's (FTA) ongoing funding opportunities. VDOT will continue to coordinate with DRPT to take advantage of shared electrification opportunities and address shared challenges.

FY24-26 Infrastructure Deployments

The initial priority of the Commonwealth will be to achieve the baseline FBO status along designated alternative fuel corridors. Recognizing that the Commonwealth has a head start on achieving FBO status, Virginia plans to maximize the impact of these infrastructure investments across all five years of the program. This plan includes building out a resilient, broad-reaching charger network, investing in community-driven stations that meet rising demand, and fostering the growth of industry opportunities in urban, rural, and underserved or disadvantaged communities. However, the ability to achieve these goals is dependent upon the achievement and timing of FBO status.

State, Regional, and Local Policy

Virginia is a leader in promoting the widespread adoption of alternative fuel vehicles, having enacted several policies in recent years to support increased adoption of EVs. Virginia Code § 45.2-1727 establishes the Electric Vehicle Rebate Program, which provides a purchaser or lessee of a new or used EV with a \$2,500 rebate (the program is currently unfunded). A customer with an annual household income that does not exceed 300 percent of the federal poverty level would be entitled to an additional \$2,000 rebate for a new EV and \$500 for a used EV, beginning in tax year 2022.¹⁵ Virginia Code § 10.1-1307 directs the State Air Pollution Control Board to create both a low-emissions vehicle (LEV) and zero-emissions vehicle (ZEV) program for new cars beginning in model year 2025.¹⁶ ZEV regulations will require manufacturers to ensure that an increasing proportion of the light- and medium-duty vehicles they sell to Virginia dealers are electric, fuel cell or plug-in hybrid. Among the southeastern states, Virginia is the first state to adopt such standards. Virginia Code § 46.2-1219.3 prohibits non-EVs from parking in a space clearly marked for EV charging, and imposes penalties on violators.¹⁷ Finally, Virginia Code § 2.2-1176.2 requires the Department of General Services to utilize a total cost of ownership calculator prior to purchasing or leasing light-duty vehicles and to purchase EVs unless the calculator clearly

¹⁵ <https://law.lis.virginia.gov/vacode/title45.2/chapter17/section45.2-1727/>

¹⁶ <https://law.lis.virginia.gov/vacode/10.1-1307/>

¹⁷ <https://law.lis.virginia.gov/vacode/46.2-1219.3/>

indicates that an internal combustion-engine vehicle has a lower cost of ownership.¹⁸

VDOT is working closely with regional and local entities to ensure that NEVI funding supports existing policies and programs. For example, the DRPT Making Efficient and Responsible Investments in Transit (MERIT) program provides funding for various capital improvement projects, including the purchase or lease of new electric, hybrid, or propane vehicles. As part of the MERIT program, the Clean Transportation Voucher Program offers grants of up to 100 percent of the incremental cost for transit agencies to replace model year 2009 or older Class 7 and 8 diesel transit buses with all-electric buses and to purchase the associated charging infrastructure.

Alternative fuel vehicles displaying the Virginia Clean Special Fuel license plate may use High Occupancy Vehicle lanes on a number of major highways. The Virginia Port Authority, the Virginia Department of Agriculture and Consumer Services, and the Virginia Department of Taxation also offer incentive programs to encourage alternative fuel adoption. Many local utilities also offer incentives like EV charging station rebates to multi-family, workplace, and transit customers purchasing Level 2 and DC fast chargers, and preferential rate structures like time of use rates that encourage charging at certain times of the day.

A statewide EV charging network will also support existing Commonwealth emissions and air quality policies and goals, including the following:

Clean Energy Policy

Establishes the goal of reaching net zero emissions by 2045 across all sectors in all sectors, including the electric power, transportation, industrial, agricultural, building, and infrastructure.

Establishes that it is the policy of the Commonwealth to promote zero-emission vehicles and infrastructure, decrease the carbon intensity of the transportation sector, encourage alternative transportation options, and increase the efficiency of motor vehicles operating on Virginia's roads; (<https://lis.virginia.gov/cgi-bin/legp604.exe?212+ful+CHAP0327>)

Virginia's Transportation Plan (VTrans) Goal E

Support a variety of community types promoting local economies and healthy lifestyles that provide travel options, while preserving agricultural, natural, historic, and cultural resources. Reduce transportation related nitrogen oxides, volatile organic compounds, particulate matter, and carbon monoxide emissions.

(https://vtrans.org/resources/VTrans_Policy_Guide_v6.pdf)

¹⁸ <https://law.lis.virginia.gov/vacode/2.2-1176.2/>

Implementation

VDOT's overall implementation strategy is to require station owners and operators to adhere to NEVI Standards. VDOT will incorporate NEVI requirements in project agreements, including requirements on the operations and maintenance (O&M) of EV charging stations and for data collection and sharing.

Strategies for EVSE Operations & Maintenance

A reliable EV charging network requires routine maintenance as well as technicians trained in EV infrastructure. VDOT will use the NEVI Standards and Requirements detailed in 23 CFR Part 680 to establish minimum performance criteria and will expect station owners to reflect NEVI requirements in any agreements signed with third party vendors. VDOT will utilize usage data reported by station owners and operators to monitor station uptime and will use its NEVI web portal to solicit information from EV owners about their experiences using charging infrastructure deployed using NEVI funds.

Developers will be required to submit an O&M plan indicating how they will perform both planned and unplanned EV charging station maintenance to ensure compliance with uptime requirements. The goal of this plan will be to maintain reliability for the public as well as reduce unnecessary costs for the operator. The plan will describe the components of operations, maintenance, and inspection of the EV charging stations, and include maintenance processes and minimal repair downtime, to meet the 97% station uptime requirement established by the NEVI Standards. The plan will identify the party responsible for the maintenance of charging stations, utility companies within the vicinity, and the third party responsible for operating costs. As part of the RFA application process, applicants are also required to provide a list of qualified technicians that meet the workforce requirements of 23 CFR Part 680.

Strategies for Identifying EV Service Providers and Station Owners

VDOT is using multiple strategies to identify EV service providers and potential hosts in order to create an environment that is conducive to competitive bidding. These initiatives include:

- Speaking with EV charger service providers who already have assets in Virginia to learn about their experiences and perspectives and glean any information that VDOT can use to create competitive funding opportunities.
- Soliciting initial interest from possible site hosts on VDOT's NEVI web portal (<https://publicinput.com/VirginiaNEVI>).
- Releasing an RFI to secure feedback from EV service providers, site hosts, and other interested parties on NEVI procurements.

Figure 8: Implementation Strategies



At the time of this Plan update, VDOT has issued an RFA to identify EV service providers, station owners, and other applicants proposing to build EV charging stations in VDOT's identified target areas. VDOT is using its existing procurement portal to advertise and promote NEVI opportunities and to post competitive funding opportunities (www.eva.virginia.gov).

Strategies for EVSE Data Collection & Sharing

VDOT is cognizant of the value EVSE data can provide, both for users and for program managers looking to maximize NEVI's impact. VDOT will increase awareness of NEVI-funded charging infrastructure by requiring charging network providers to share data describing charging station location, type of equipment available, price (to the extent possible), status, and other useful information via an Application Programming Interface. VDOT will require EV service providers and station owners to provide useful, non-personally identifiable information available to third parties, including government entities, in accordance with the NEVI Standards for data sharing. VDOT will also require site owners or hosts to upload pertinent data to the Department of Energy's Alternative Fuel Data Center's Station Locator. VDOT will require EVSE companies to provide data required by 23 CFR Part 680 and will share this data with the U.S. Department of Transportation and Department of Energy. VDOT will use data management system as defined by the Joint Office.

Strategies to Address Resilience, Evacuations, Seasonal Needs

It is essential that EV infrastructure is resilient to natural disasters and extreme weather events in order to remain accessible and reliable for continued travel and aids in facilitating emergency evacuations. According to the U.S. Environmental Protection Agency, Virginia's climate is changing, with most of the state having warmed about one degree (F) in the last century, and sea level rising one to two inches every decade. Higher water levels are eroding beaches, submerging lowlands, exacerbating coastal flooding, and increasing the salinity of estuaries and aquifers. As such, EVSE may be vulnerable to different forms of flooding due to high tides and coastal flooding, and river and surface water flooding, among other natural threats and hazards. To increase EVSE resilience and minimize the disruption caused by extreme weather, consideration should be paid to the risks associated with locating EVSE in floodplains, as required by FHWA regulations at 23 CFR 650 Subpart A. Other siting considerations such as proper weatherization and proper height installation of EVSE should be made. For existing infrastructure located in such areas, the operators shall provide and clearly outline appropriate mitigation and recovery measures to address these risks.

VDOT is also considering further measures to support maximum uptime and availability of its charging networks so EV drivers have access to reliable charging, including:

- Mandating performance specifications that mitigate common reasons for charger downtime.
- Encouraging bidders to consider co-locating photovoltaic systems and battery energy storage systems with EVSE capable of operating in "islanded mode", or when the grid is off-line.
- Evaluating the potential business cases for mobile charging stations.

Strategies to Promote Labor, Safety, Training, and Installation Standards

VDOT promotes strong labor, safety, training, and installation standards for all its programs and projects. VDOT is particularly focused on these issues across the EVSE industry, as effective strategies in each area can lower the cost of EV ownership. The Commonwealth will engage with small, disadvantaged, and minority EVSE business enterprises, and encourage developers to work with small, disadvantaged, and minority businesses. The NEVI Standards established minimum requirements for EV charging infrastructure, including interoperability, traffic control

devices or on-premises signage, data, and network connectivity. VDOT will enforce these requirements and standards and will implement them in the competitive funding opportunities. VDOT is also reviewing the Open Charge Point Protocol, which is an application protocol used to communicate between EV charging stations network and a network management system.

VCCS oversees a network of 23 community college campuses across the Commonwealth and offers multiple accredited electrical programs as well as continuing education at several campuses. VDOT has been working with VCCS to assist in identifying how EV charging classes could be incorporated into the existing electrical programs offered by VCCS. Students could gain both training as electricians as well as meet the accreditation required to install and/or service EVSE in Virginia. Incorporating EV charging curricula into existing programs within VCCS provides training in an established workforce development-focused agency. In addition, several private entities in Virginia are interested in expanding training programs to facilitate widespread workforce development opportunities across the Commonwealth. VDOT will continue to engage entities focused on EV workforce development to support the successful deployment, operation, and maintenance of EV charging station infrastructure.

Equity Considerations

The recent introduction of Justice40 (J40) has challenged state and federal agencies to carefully consider how to equitably serve communities by broadening the focus from focusing strictly on what benefits are provided to also estimating where those benefits accrue. NEVI is a “covered program” under J40, which establishes a goal that at least 40% of the investment from the program flows to disadvantaged communities. VDOT is committed to allocating NEVI program funds toward the construction of an economical and resilient network of EV charging stations in a manner that engages urban, rural, underserved or disadvantaged communities and fosters opportunities for minority and disadvantaged businesses to compete in the procurement process such that benefits accrue to these communities.

Increasing access to charging infrastructure should increase access to EVs, with direct and indirect benefits for disadvantaged communities. These include increasing access to transportation options and new economic opportunities and decreasing the negative environmental impacts of local air pollution and the likelihood of negative health outcomes such as asthma, heart disease, and short-term infections. Potential health and workforce benefits resulting from EVSE investments can facilitate local economic growth and decrease social inequities for rural, underserved, and disadvantaged communities. Specific benefit measurements include but are not limited to improved local air quality, increased job/economic growth, the higher incidence of local business formation, increased sales tax revenues in rural charging locations from new customer bases, and decreased transportation costs for EV drivers.

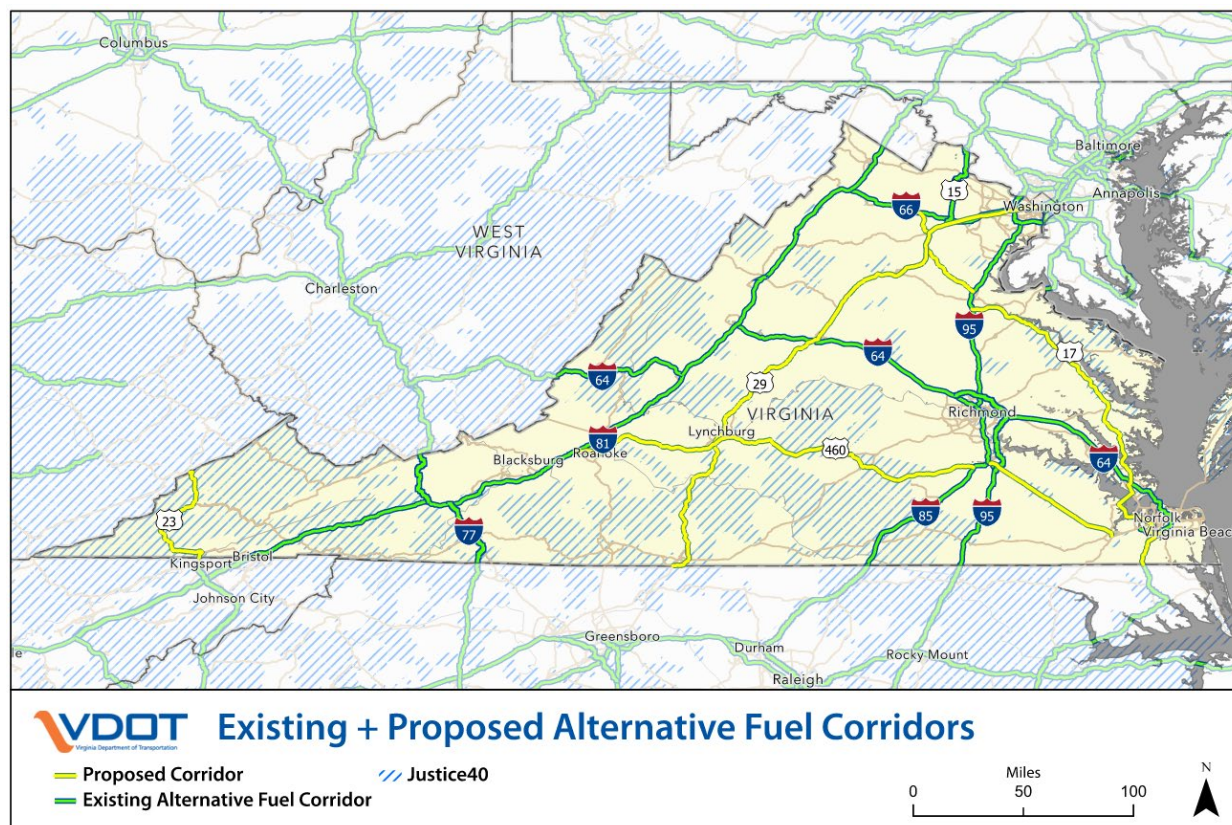
Identification and Outreach to Disadvantaged Communities

VDOT will continue to partner with state agencies, stakeholder groups, and community organizations to identify disadvantaged communities and plan and implement meaningful public outreach. To support these efforts, VDOT will leverage ongoing collaborations, such as the inter-agency Community Outreach and Engagement Coordination Group and the connections of partner organizations such as VCC. Program information and funding opportunities will be widely disseminated to all communities of the Commonwealth through existing stakeholder networks and public engagement tools. VDOT aims to achieve FBO status as soon as possible, in order to expand charging station deployment into communities. As this second phase of NEVI implementation approaches, VDOT will increase outreach to communities identified in the EV Charging Justice40 Map developed by the Department of Energy’s Argonne National Laboratory.

Process to Identify, Quantify, and Measure Benefits to Disadvantaged Communities

VDOT will continue to use the EV Charging Justice40 Map to identify disadvantaged communities to measure and support the equitable distribution of benefits in line with the J40 goals. Figure 9 below shows J40 communities overlayed with existing and proposed AFCs in the Commonwealth.

Figure 9: EV Charging Justice40 Map



Many disadvantaged areas of Virginia lack charging and a well-designed network that could service both the local and traveling public. The majority of AFCs run through or adjacent to disadvantaged communities, including I-64, I-77, I-81, and I-85 as well as the four AFC segments nominated in Round 7 (see Table 2: AFC Round 7 Proposed Corridor-Pending Designations). Of the total 748.9 miles in the four AFC segments nominated in Round 7, approximately 31 percent (231.9) have been identified as J40 miles. VDOT will explore the potential to locate charging stations in these communities and the potential benefits that could result. As required by the NEVI Guidance, VDOT will continue measure the distribution of benefits to communities across the Commonwealth, including disadvantaged communities, and will evaluate the percentage of AFC mileage that travels through these communities, the percent of charging stations deployed, estimated air quality benefits from charging stations deployed, and other metrics identified through community outreach.

Potential locations and benefits to urban, rural, and underserved or disadvantaged communities will be further clarified through dialogue with those communities, and may not include the direct placement of a DCFC EV charger. VDOT will solicit input on what a reasonable service area is for an EV charging station, a crucial issue in determining the equitable distribution of benefits.

The accrual of benefits from a charging station are not restricted to the property lines of the charger itself, but the range of benefit accrual beyond those borders is currently unclear. A standardized, data-driven consensus as to the size and scope of the footprint a station is expected to serve will support the development of a procurement process aligned with the J40 goals by accurately planning for and measuring the accrual of EV charging station benefits to targeted communities. VDOT will update methods for identifying, quantifying, and measuring benefits of the NEVI program based on updated Office of Management and Budget (OMB) and FHWA guidance, as outlined in the Interim Implementation Guidance for the Justice40 Initiative.¹⁹

Benefits to Disadvantaged Communities through the Plan

VDOT will measure the distribution of benefits of charging infrastructure deployment in accordance with the 2021 OMB guidance on the J40 Initiative and awaits additional guidance from FHWA on the metrics to be used to measure covered program benefits and the methodology for calculating the benefits accruing to disadvantaged communities. As previously mentioned, benefits can be accrued directly as a result of investments and can include increased access to transportation options, decreased transportation cost burden and travel time, reduced community health costs from respiratory ailments related to local air pollution, and less noise pollution for local communities. Indirect benefits may include a higher incidence of business formation near charging sites which in turn, raise local property values and sales tax revenues while facilitating an expansion of jobs in industries supporting the development of this tech-driven industry. Local communities that provide a voice in the decision-making process also ensure that the benefits accrued in rural, underserved, and disadvantaged communities reflect their priorities and the march of the economy while promoting stronger community cohesion and resilience.

One of Virginia's primary concerns in the procurement process is the economic risk charging stations will face. NEVI formula funds are intended to build charging stations in anticipation of a mature EV consumer market. In economic terms, this means that supply will come before demand. The economic risks of this are low utilization of NEVI-funded charging stations overall, and even lower utilization of NEVI-funded charging stations in urban, rural, and underserved or disadvantaged communities due to historical wealth and income inequalities. Low charger utilization rates result in low charging station revenues. This risk is pronounced in urban, rural, and underserved or disadvantaged communities which could limit the private sector's interest in these critical areas and could undermine the convenience and resilience of the overall charging network.

According to NEVI Guidance, state DOTs may not establish Disadvantaged Business Enterprise (DBE) goals for NEVI-funded projects nor count race-neutral DBE participation on such projects toward the achievement of the state's overall DBE goal. VDOT will continue to explore methods for outreach to DBE firms to make them aware of the opportunities to potentially participate in the NEVI program, and engage in outreach to potential applicants to increase awareness that DBE firms may participate in or compete for NEVI awards and encourage potential applicants to work with DBE firms. Through the RFA process, VDOT will score applications based on details about how the proposed site's physical security will be addressed to enhance driver and vehicle safety and incentivize the inclusion of overhead safety lighting in the EV charging station area, addressing safety concerns that have been highlighted by disadvantaged communities. VDOT will continue to work with stakeholders to explore what additional benefits to disadvantaged

¹⁹ <https://www.whitehouse.gov/wp-content/uploads/2021/07/M-21-28.pdf>

communities may be potentially delivered through the NEVI program.

Labor and Workforce Considerations

Installing, operating, and maintaining EV charging infrastructure will create new opportunities for workers in the electrical and other construction trades, while also creating work for the skilled incumbent workforce. As is required in the 2023 RFA, VDOT will ensure that the workforce installing, maintaining, and operating the chargers have the requisite licensure, certifications, and training. This aligns with § 680.106 (j) requirements, ensuring the installation and maintenance of EV charging stations comply with all standards. VDOT will continue to work with VCCS and private partners to assist in identifying how NEVI workforce requirements can be incorporated into workforce development training programs in the Commonwealth.

A 2020 analysis of clean vehicle jobs found that Virginia is in the top 10 states of clean energy employment overall (with Richmond a top metro area), with 5,245 clean vehicle jobs (EVs, hydrogen, plug-ins, fuel cell, and natural gas).²⁰ According to the Virginia Economic Development Partnership, “Virginia’s 179 automotive companies employ over 21,500 people in Virginia, and its top-ranked educational institutions offer world-class engineering programs that are training the workforce of the future to provide a pipeline of skilled workers to the automotive industry.”²¹ Many of the current workers in the EVSE sector have worked in similar roles with internal combustion engine vehicles. Specialized training and unique skillsets are crucial to continue to expand this workforce as EVs become more prevalent. High quality national certifications like the Electric Vehicle Infrastructure Training Program (EVITP) have been developed to support these efforts. VDOT will coordinate with the Virginia Board of Workforce Development to explore including EVSE-related roles in the list of high-demand Virginia occupations. VDOT will also identify opportunities for the Virginia Community College System to include EVSE certifications in the Fast Forward program, which meets growing workforce demand by providing trainings targeted to working adults.

Physical Security & Cybersecurity

As EV charging grows more technologically advanced and interconnected, exploitable cyber vulnerabilities are a greater threat to networked charging station operations. Physical or remote tampering with charging stations could cause disrupted operations at stations, unauthorized access to administrative systems, financial fraud (including billing manipulation and leakage of banking information), firmware manipulation and bot recruitment, and theft of charging data and records. the Phase I NEVI RFA requires that developers present a cybersecurity plan detailing the strategies for securing user information, ensuring encryption and support for various encryption keys (cryptographic agility and multiple PKIs [Public Key Infrastructure]), monitoring activities, handling potential incidents, managing software updates, and ensuring operational continuity during network disruptions.

Developers will also be required to describe how charging stations will protect consumers against skimming and how financial and personally identifiable information will be collected and protected.

²⁰ <https://e2.org/wp-content/uploads/2020/04/E2-Clean-Jobs-America-2020.pdf>

²¹ <https://www.electrificationcoalition.org/wp-content/uploads/2021/07/Virginia-EV-Policy-Landscape-Dec-2020.pdf>

Strategies may address intrusion and malware detection, event logging and reporting, identity and access management, and secure operational plans during communication outages.

Funding recipients will be expected to periodically refresh their plans to reflect changing best practices and available security measures. Awardees will also be required to comply with all Commonwealth cybersecurity policies, including that all data must reside in the U.S. Awardees will be required to comply with both the Code of Virginia Breach of Personal Information requirements (<https://law.lis.virginia.gov/vacode/18.2-186.6/>) and NIST 800 series standards (<https://csrc.nist.gov/publications/sp800>) before, during, and after completion of NEVI station construction.

VDOT will explore the potential of implementing cybersecurity testing to ensure protection. This examination may include fuzz testing, penetration testing, code and binary analysis, and conduction of a vulnerability assessment. VDOT will comply with all further guidance regarding cybersecurity measures upon issuance by the Joint Office.

In terms of physical security, developers are required to outline how they intend to enhance driver and vehicle safety at the charging sites through the RFA Application process. This may include provisions for overhead safety lighting, security cameras, fire prevention and safety measures, protection against EV charging station tampering (including charger and payment devices), and EV charger locking mechanisms.

Program Evaluation

This Deployment Plan is a living document, with VDOT continuing its outreach strategies through the 5-year NEVI program duration to further solicit stakeholder input, refine and adjust strategies, and evaluate whether Commonwealth and national goals are being achieved. The evolving EV industry necessitates regular reappraisal of program goals and outcomes to match the reality on the ground. This is particularly relevant because the business rationale for developing an EV charging station as a stand-alone commercial venture is uncertain due to the limited demand for EV chargers and the lack of visibility in the EV adoption rate going forward. VDOT will participate in ongoing engagement and outreach to regularly adjust the Deployment Plan to reflect recent performance, best practices, new or revised federal guidance, and developments in the industry to ensure that program objectives are being accomplished.

Virginia will annually evaluate the implementation of the Deployment Plan to assess the performance in achieving the Commonwealth's goals, including monitoring performance metrics such as EV charging infrastructure usage, EV charging infrastructure reliability, customer satisfaction, and equitable distribution and access to EV charging infrastructure. Such metrics will be reported to the Joint Office on a quarterly and annual basis. This data-driven program evaluation will ensure accountability and program success and will include an evaluation of the Commonwealth's efficient use of federal funding as measured by the amount of charging leveraged per federal dollar. Virginia will also monitor the progress of EV charger construction through status meetings, monthly progress reporting requirements, and invoices and will monitor the performance of installed EV chargers, including tracking reliability metrics required in the NEVI Standards. The performance of contractors will be monitored and evaluated to inform future solicitations and ensure the efficient use of federal funds.

Discretionary Exceptions

VDOT is not requesting any discretionary exceptions for 2023.