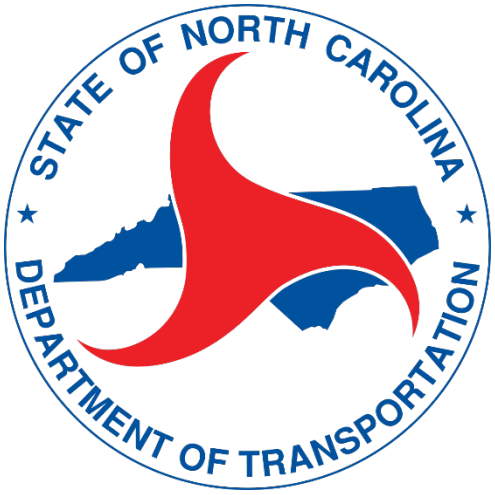

North Carolina Plan Update for Electric Vehicle (EV) Infrastructure Deployment

August 1, 2023

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01 Introduction

The North Carolina Electric Vehicle (EV) Infrastructure Deployment Plan (Plan) is part of the federal National Electric Vehicle Infrastructure (NEVI) program. The program's purpose is to expand access to convenient, reliable, affordable and equitable electric vehicle charging. The program will:

- Accelerate equitable adoption of EVs, including for those who cannot reliably charge at home.
- Reduce transportation-related greenhouse gas emissions and help put the U.S. on a path to 50 percent reduction in economy-wide net greenhouse gas pollution by 2030 (compared to a 2005 baseline) and net-zero emissions by 2050.
- Position U.S. industries to lead global transportation electrification efforts and help create family-sustaining jobs that cannot be outsourced.

The North Carolina EV Infrastructure Deployment Plan also advances statewide goals for clean transportation and EV adoption. In January of 2022, Gov. Roy Cooper signed Executive Order (EO) 246, "North Carolina's Transformation to a Clean, Equitable Economy." The goals of EO 246 are to:

- Reduce economy-wide greenhouse gas emissions to at least 50 percent below 2005 levels by 2030 and achieve net-zero emissions no later than 2050.
- Increase the number of registered, zero-emission vehicles (ZEVs) to at least 1,250,000 by 2030 and increase the sale of ZEVs so that 50 percent of in-state sales of new light-duty vehicles are zero-emission by 2030.

To meet both federal and state objectives, all North Carolinians and especially traditionally underserved communities will need access to publicly available EV chargers and zero-emission forms of transportation. The North Carolina EV Infrastructure Deployment Plan is the state's proposed roadmap to maximize the NEVI Formula Program investment to support an equitable and swift transition to zero-emission vehicles. This plan will continue to evolve based on feedback from ongoing and future public engagement opportunities.

NEVI program funds are apportioned from the Infrastructure Investment and Jobs Act, also referred to as the Bipartisan Infrastructure Law (BIL). This plan was developed using guidance provided by the NEVI program to create a framework to support the build out of the public electric vehicle charging network in the state.

Key Elements of NEVI Program in North Carolina are:

- Five-year program
- Estimated $109 million will be apportioned to North Carolina for build out of NEVI program
- North Carolina plans to utilize NEVI funds for community-based projects after receiving USDOT certification that the Alternative Fuel Corridors (AFCs) are fully built out according to NEVI program requirements (*Figure 1*)

The program will be implemented in two phases over five years in North Carolina. Phase 1 is focused on the build out of NEVI-compliant stations along the designated AFCs in North Carolina (*Figure 2*). The NEVI program requires electric vehicle charging stations located along AFCs in each state to have a spacing of 50 miles or less between stations and to be no further

than one mile from the corridor. The charging stations must be available at all times to the public for charging. The goal of Phase 1 is to provide reliable regional and interstate electric vehicle travel across the U.S. It is estimated that Phase 1 will take between two years and three years to complete.

Phase 2 will be focused on community-based public electric vehicle charging or other critical infrastructure needs. Criteria for site selection during this phase will be based on each community's input and priorities. NEVI program requirements for this phase are that a station must be on any public road or in other publicly accessible locations that are open to the public or to authorized commercial motor vehicle operators from more than one company. The focus for this phase will be on increasing access to electric vehicle charging and electric vehicle-related jobs, particularly in historically disadvantaged communities, and can include light-, medium- and heavy-duty charging infrastructure.

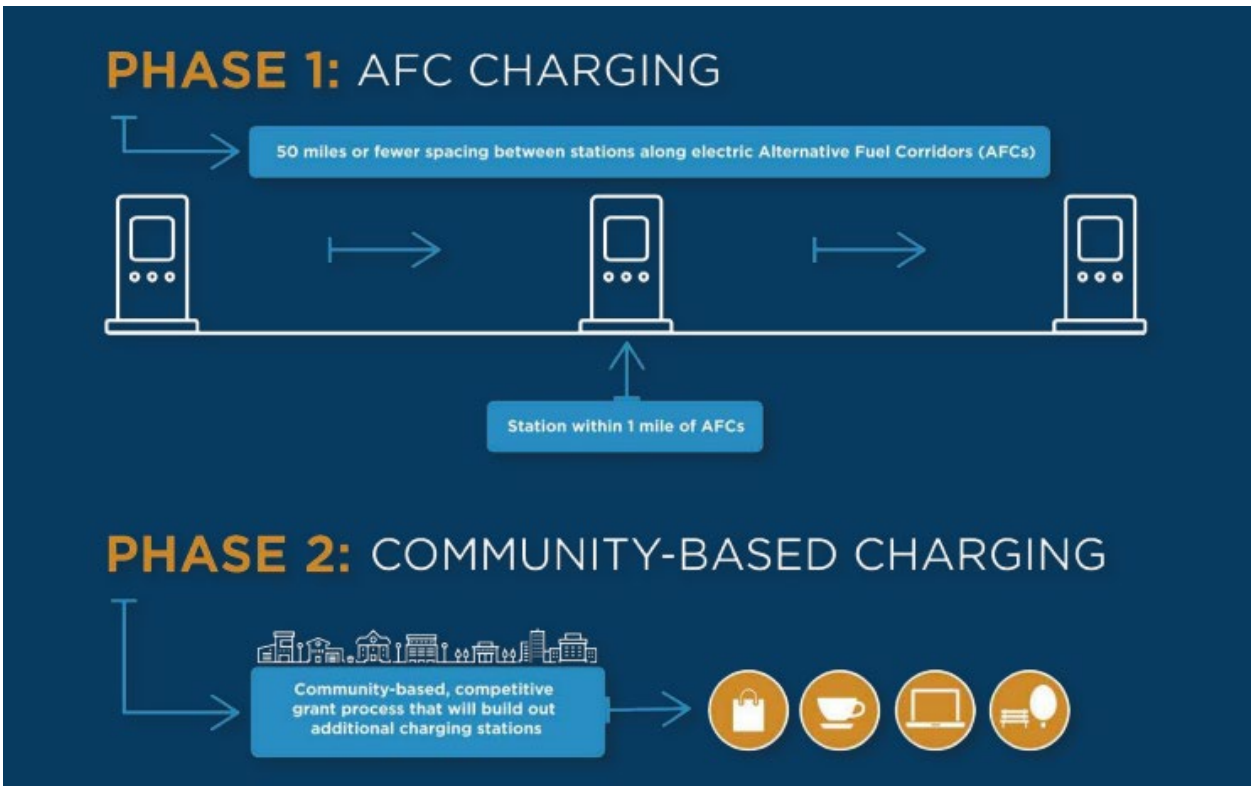


Figure 1. NCDOT NEVI Phases 1 and 2

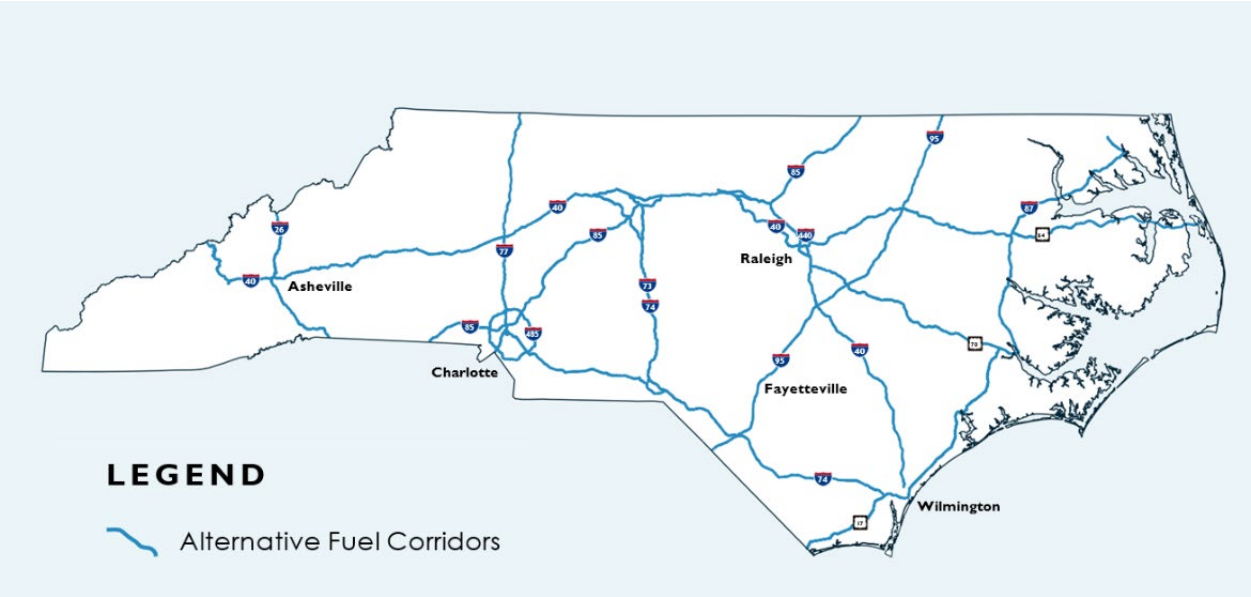


Figure 2. North Carolina Alternative Fuel Corridors

Updates from 2022 Plan

In North Carolina, NEVI program funds will be administered by the North Carolina Department of Transportation (NCDOT). The NEVI program requires each state to submit an annual EV Infrastructure Deployment Plan. This plan submitted August 1, 2023, satisfies this requirement for fiscal year (FY) 2023.

Each state plan must be reviewed by the Joint Office of Energy and Transportation (Joint Office) and approved by the Federal Highway Administration (FHWA) before NEVI funds can be distributed to a state. Each year during the five-year program, the Plan will be updated to document program progress in North Carolina, outline new priorities based on public engagement, and meet NEVI program requirements related to reporting. North Carolina has already received its FY 2022 and FY 2023 funding allocation.

This Plan Update is an update to the August 2022 NEVI Plan (link). NCDOT has made progress in the implementation of this plan, documented in the following sections:

- Public Engagement
- State Agency Coordination
- EV Charging Infrastructure Development
- Contracting

Table 1 highlights important schedule milestones between May 2022 and July 2023 of the North Carolina NEVI Program.

Anticipated Date	Milestone
January 2023 to July 2023	Began Engagement for Phase I, including: • Roundtable discussions with EVSE providers, utilities, site hosts, and the public across the state. • Development, release, and review of an RFI to inform RFP development. • Creation of a stakeholder database, and online stakeholder networking session. Existing Conditions Analysis: • Detailed mapping analysis to identify possible clusters of AFC interchanges and host locations to include in an RFP. Contracting: • Legislation submitted to NC General Assembly for NCDOT NEVI Program contracting authority. • Recommended best practices for contracting and procurement within the framework of 23CFR.
August 2023	NEVI Plan Updated Submitted to FHWA
Autumn - Winter 2023	First Round RFP is released
Early 2024	RFP responses are evaluated, and teams are selected

Table 1. Key Milestones and Dates, May 2022 – July 2023

02 Plan Vision and Goals

North Carolina has demonstrated a long-standing commitment in leading the transition to a clean energy economy that benefits the entire state and especially underserved communities. As part of this commitment, the State has several initiatives specific to the transportation sector that support equitably decarbonizing the transportation sector through a variety of strategies, including expanding access to electric vehicles. The NEVI program's goal is to grow a network of publicly accessible EV chargers to ensure equitable and convenient access across the state.

Three executive orders signed by Governor Cooper establish science-based goals and targets for greenhouse gas emissions and zero emissions vehicle adoption that successful implementation of the NEVI program will help achieve. (*Figure 3*).

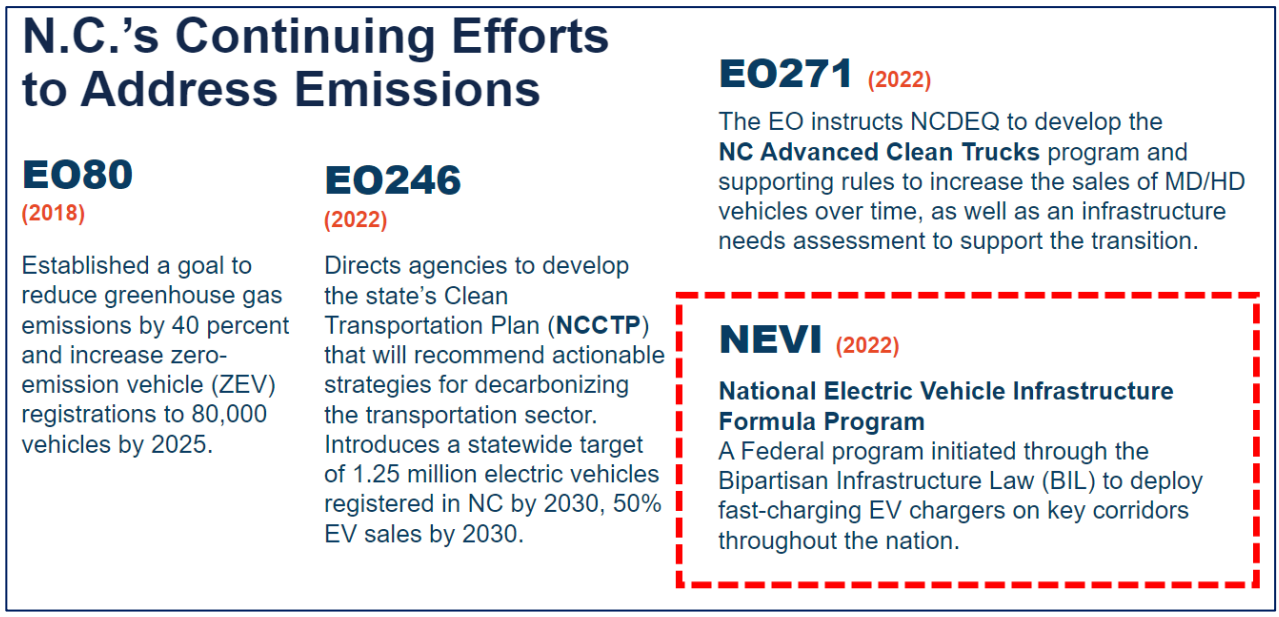


Figure 3. Executive Orders Setting NC's Climate Goals

The 2023 North Carolina Plan Update for Electric Vehicle (EV) Infrastructure Development was developed in coordination with the North Carolina Clean Transportation Plan (NCCTP) to help achieve clean transportation priorities. The North Carolina Clean Transportation Plan was completed in 2023 and is a guidance document that provides a coordinated strategy for accelerating decarbonization in the transportation sector. The NCCTP outlines how North Carolina can prepare for a clean transportation future and provide equitable outcomes for everyone. Both plans aim to increase EV usage in the state and emphasize the importance of environmental justice and equity as the state works to achieve this goal.

Proposed North Carolina NEVI Program Goals

These proposed goals for the North Carolina NEVI program have been informed by previous planning efforts, extensive public engagement, and an existing conditions analysis.

Build an Easily Accessible EV Charging Network
As part of the plan, corridors will be built out in segments to be immediately useful for travel and priority will be given to corridors which do not have existing chargers. As EV adoption and deployment grows in North Carolina, the State will work with stakeholders to continue creating a network of EV chargers that are accessible and connected.

Increase Overall Network Reliability
Through data collection requirements in the solicitation process, various performance metrics will be required to ensure the charging infrastructure is operational at least 97 percent of the time. The charger locations and real-time operational status will be available to drivers for seamless trip planning.

Ensure Equitable Location of EV Chargers, Particularly in Traditionally Underserved and Historically Disadvantaged Communities
For the entire five-year program, underserved communities and rural areas of the state will be prioritized for EV charging infrastructure deployment. Early and thorough engagement with community leaders and stakeholders will be necessary to ensure chargers are installed to meet the needs of communities that have been traditionally underserved.

Expand Access to Economic and Workforce Development Opportunities
A portion of the North Carolina NEVI program will focus on jobs skills training as well as business development investments to develop and train local workers, particularly individuals from traditionally underserved communities, in Electric Vehicle Supply Equipment (EVSE) construction and maintenance.

Reliability During Emergency Events
This plan prioritizes implementing EV infrastructure along evacuation routes to ensure safe evacuations in the event of emergencies.

03 Public Engagement

Public engagement is integral to the North Carolina NEVI program's success. The purpose of this section is to provide a blueprint for public engagement completed to date, along with a vision for public involvement throughout the course of the NEVI program. This blueprint is guiding the NEVI deployment process while remaining flexible enough to allow engagement to evolve with NEVI program development. The public engagement goals for this plan are:

- To provide the public with complete, timely, and frequent access to information.
- To create opportunities for the public to inform overall structure and implementation of the program, including prioritization of funding.
- To ensure that public input is heard, acknowledged, and incorporated into the plan as appropriate.
- To ensure public awareness of the opportunities, challenges and considerations with program implementation.
- To engage local communities, specifically traditionally underserved communities and communities that do not have adequate access to charging.

North Carolina NEVI Program Public Engagement Strategy

Robust public engagement is a critical component to the success of North Carolina's EV charging infrastructure deployment strategy, including the deployment of NEVI funds. NCDOT has existing relationships with many local and statewide organizations and intends to continue to foster new relationships with partners to expand engagement into local communities, specifically those that have previously been underserved.

Through the NCCTP stakeholder process and other targeted outreach, NCDOT has continued preliminary discussions with key stakeholders throughout the development of the NEVI plan. This includes outreach to:

- Clean Cities coalitions
- Environmental Advocates
- Metropolitan and Rural Planning Organizations
- Minority and women-owned small businesses
- Retail membership associations
- State agencies: N.C. Department of Environmental Quality, N.C. Department of Commerce, N.C. Department of Agriculture, N.C. Utilities Commission
- Utilities: Investor-owned utilities and electric membership cooperatives

NEVI Coordination with North Carolina Clean Transportation Plan (NCCTP)

The NCCTP involved a year-long planning effort to develop goals and strategies for a long-term path to a clean transportation future. The plan was completed in April 2023 and will serve as the roadmap for North Carolina's clean transportation future. The NEVI program supports the NCCTP's long-term goals by investing in and accelerating implementation of the publicly accessible EV charging network. The NCCTP included extensive statewide engagement with a variety of stakeholders.

Engagement Summary:

- Over 1,000 people completed the initial NCCTP survey
- Over 200 stakeholders participated across five technical stakeholder groups

- NCCTP work groups are Light-Duty Zero-Emission Vehicles, Medium and Heavy- Duty Zero-Emission Vehicles, Fleet Transition, Vehicle Miles Traveled (VMT) Reduction, and Clean Transportation Infrastructure
- Over 3,000 recommendations received from stakeholders for consideration
- The Final North Carolina Clean Transportation Plan (NCCTP) was published on April 6, 2023

NEVI program engagement will continue to be coordinated to support ongoing NCCTP implementation. NEVI and the NCCTP share the mutual goals of supporting the growth of EVs on North Carolina's roadways.

Below is a list of the agencies, organizations, and companies participating in the Clean Transportation Infrastructure work group.

- Advanced Energy Economy
- Alliance for Automotive Innovation
- Alliance for Transportation Electrification
- Associate Public Policy
- BETTY (TLG-Alpha)
- Blue Ridge Energy
- Boss Energy
- Brunswick EMC
- Centralina Clean Fuels Coalition
- Chargepoint
- City of Hendersonville Environmental Sustainability Board
- City of Kannapolis
- City of Raleigh
- City of Wilmington
- Cyclum Renewables
- Dominion Energy
- Duke Energy
- Enviro Spark Energy
- Four County EMC
- Generation180
- Haywood EMC
- High Country RPO
- HipHop Caucus
- Infosyarchitecture, LLC
- Institute for Transportation Research and Education (ITRE)
- International Brotherhood of Electrical Workers
- Koulomb
- Landis
- Metro Mayors
- N.C. Auto Dealers Association
- N.C. Clean Energy Technology Center
- N.C. Conservation Network
- N.C. Department of Administration
- N.C. Department of Environmental Quality
- N.C. Department of Transportation
- N.C. Governor's Office
- N.C. Justice Center

- N.C. Sustainable Energy Association
- NCEMC
- Piedmont Electric
- Pitstop for the Birds
- PlugIn NC
- PowerSmiths Socomec Group
- Rivian
- Roanoke Electric Cooperative
- Schneider Electric
- SELC
- Sheetz
- Sierra Club
- Southeast Energy Efficiency Alliance (SEEA)
- Stewart
- Strategic International
- Sunrun
- Surry Yadkin EMC
- Triangle J Council of Government
- Volvo
- Whitman, Requardt & Associates

Community Engagement Outcomes Report (2023 Update)

NCDOT hosted several public engagement events in 2023. This included a weeklong roundtable and listening tour with the public and key stakeholders across the state, multiple networking opportunities for potential NEVI applicants, and a detailed RFI to inform the development of the RFP. Key findings from DAC engagement can be found in Chapter 9. This engagement is summarized in *Table 2* below.

Engagement Summary-2023 NEVI Plan	
Event	**Objective**
Roundtable Discussions	Present NEVI program objectives, and learn challenges and opportunities from utilities, EVSE providers, potential site hosts, the public, and others.
Small Business Webinar	NCDOT provided an EV 101 to participants, including key terminology, and discussed common barriers to both EV adoption and the installation of EV infrastructure. NCDOT also presented information regarding plans and the timeline for NEVI deployment.
Stakeholder Networking	NCDOT facilitates a stakeholder database and hosted a networking event to ensure potential RFP respondents can identify team members and form teams prior to the RFP release.
RFI	NCDOT released a detailed RFI to inform the development of the RFP.

Table 2. Engagement Summary

In early 2023, NCDOT hosted five roundtable and open house events across the state to solicit feedback from stakeholders and the public. Input received during these events helped inform

DCFC deployment criteria including charging locations, site hosting amenities, utility collaboration opportunities, and equity considerations. The roundtable and open house events captured valuable feedback from stakeholders, such as developers, potential site hosts, utilities, and the general public, allowing NCDOT to better represent stakeholder and public interests moving forward, as well as address potential concerns. Participants were notified through a combination of mailing lists from NCDOT, the NC Office of Civil Rights, and through regional partners such as MPOs, clean cities coalitions, and EV enthusiast groups.

Roundtable events were held in the following locations:

Charlotte - Monday January 30, 2023
Utilities - 11:00 AM
EVSE Providers -1:00 PM
Site Hosts – 3:00 PM
Public Open House – 5:00 PM

Asheville - Tuesday, January 31, 2023
Utilities - 11:00 AM
EVSE Providers -1:00 PM
Site Hosts – 3:00 PM
Public Open House – 5:00 PM

Raleigh - Wednesday, February 1, 2023
Utilities - 11:00 AM
EVSE Providers -1:00 PM
Site Hosts – 3:00 PM
Public Open House – 5:00 PM

Greenville - Thursday, February 2, 2023
Utilities - 8:00 AM
Site Hosts – 9:00 AM
Public Open House – 10:00 AM

Wilmington: Thursday, February 2, 2023
Utilities – 2:30 PM
EVSE Providers -3:30 PM
Public Open House – 5:00 PM

Feedback from these NCDOT-hosted roundtable events included comments, questions, and concerns around the following topics:

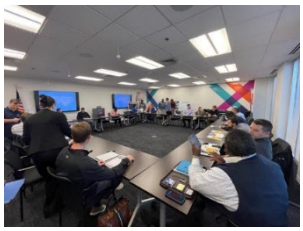
1. Equity and Flexibility within the RFP,
2. Resilience and Innovation Considerations,
3. Partnerships, and Geographic Considerations.

A detailed discussion of each topic follows.

Equity and Flexibility Within the RFP

The NEVI program represents a $109 million opportunity to leverage federal funding to expand workforce development programs and ensure equitable access to charging infrastructure across urban and rural areas. A variety of stakeholders endorsed an approach to issue an individual

RFP for each proposed DCFC cluster, as opposed to bundling multiple sites and requiring applicants to bid on projects simultaneously. This approach would allow smaller firms, who may otherwise be intimidated by securing the upfront capital required for constructing multiple charging stations, an increased opportunity to participate in the program. This flexibility is also appealing to utilities, who need to ensure that reliable power can be delivered to each individual site.



From top to bottom, NCDOT's roundtable engagement in Charlotte, Asheville, Wilmington, and Greensboro.

Resilience and Innovation Considerations

Multiple stakeholders discussed their concerns around both the availability and cost of electricity, specifically around the availability of three phase power[1] and demand charges[2]. Demand charges can potentially add thousands of dollars to monthly electricity bills. Stakeholders reiterated that an increased reliance on the electric grid for transportation will require attention to the resilience of the electric grid, or its ability to continue operating or recover from major events such as hurricanes. Battery storage and back-up power as well as microgrids were identified as key components that would support EV charging stations during power outages. These points were recommended for consideration in the NEVI scoring criteria.

Geographic Considerations

The viability of NEVI compliant stations in rural areas was frequently mentioned by utilities, potential site hosts, and EVSE providers. Stations need to be sited every 50 miles, per NEVI requirements, and stakeholders noted concerns around ensuring power delivery, higher demand charges, and interested site hosts. As a result of these discussions, NCDOT is considering the release of NEVI sites for bidding in two or more rounds. This would allow NCDOT to release a few rural sites for bidding in order to study the response of applicants and make any necessary changes to RFPs before releasing a larger number of rural sites.

Partnerships

Due to the alignment required between different parties including site hosts, EVSE suppliers, and utilities, several stakeholders requested networking opportunities. In response, NCDOT created a stakeholder database with organization information available to all participants and hosted an online stakeholder networking event to ensure all parties had an opportunity to make introductions to potential partners. The stakeholder networking opportunities would also allow smaller businesses and new participants the opportunity to meet other entities in the industry.

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[1]Access to three phase 480-volt power (typically 1000 amps, 660 kva) will be a typical standard in siting NEVI stations in North Carolina (See Section 6, siting standards). Typically, commercial and industrial users use three phase power, which can carry higher voltage, and deliver more power, than single phase power. Single-phase power is more commonly used in residential and small commercial applications.

[2] Demand Charges are fees applied to electric utility customers based on their maximum power draw over a specified time interval within a billing period. EV Charging and the Impacts of Electricity Demand Charges (nrel.gov)

Small Business Webinar

NCDOT held an orientation meeting in March 2023 to introduce the NEVI program to interested small and diverse businesses. NCDOT provided an "EV 101" to participants, including key terminology, and discussed common barriers to both EV adoption and the installation of EV infrastructure. NCDOT also presented information regarding plans and the timeline for NEVI deployment. Finally, the USDA State Director for North Carolina presented to the group. Coordination with rural stakeholders, including North Carolina's 26 locally owned and operated electric cooperatives, will be essential to building out the NEVI network in North Carolina.

Stakeholder Networking Event

Successful implementation of the NEVI program involves aligning the interests and expertise of site developers, site hosts, and EVSE providers. To help each of these entities prepare to respond to the procurement process, NCDOT facilitated two networking opportunities: an online stakeholder database and a networking event. Initial outreach was sent to 4,788 individuals to solicit interest in signing up for the stakeholder database and the online networking event. Stakeholders who signed up for the database, including site developers, EVSE providers, and site hosts, filled out a questionnaire with information made available to all other database participants. NCDOT encouraged potential proposers to consider working with in-state companies, as well as small and diverse business owners, since this will result in additional points given to the proposal during the selection process. Small and diverse businesses were able to self-identify in the database. The database will remain open until the RFP is issued. As of September 11, 2023, the database contains business contacts, including 54 EVSE providers, 18 site hosts, 40 site developers, and 27 who identified as other. Anecdotally, NCDOT has heard that the database is being used to contact potential team members.

The networking event was hosted virtually on May 9, 2023, and individuals pre-registered using a GoToWebinar event registration link. While in the event, individuals were able to briefly share their name, company, organization type, interest in the NEVI program, and partnership type their company is seeking. Participant totals are highlighted in *Table 3* below:

Participants	Total
Total Registrants	152
Total Attendees	110
Total Attendees Who Indicated 'Yes' for Presenting	64
Total Attendees Who Presented	**41**

Table 3. Stakeholder Networking Participation Counts

Broad representation across EVSE providers, site hosts and site developers was present, and the facilitation of this stakeholder group should encourage strong interdisciplinary teams to respond to the RFP.

RFI to Solicit Input from Potential Market Participants

NCDOT issued a Request for Information (RFI) in the spring of 2023 to solicit input from potential market participants across varying sectors regarding the planning, deployment,

operation, and maintenance of Direct Current Fast Charging (DCFC) Electric Vehicle Supply Equipment (EVSE).

Information requested from organizations included the following:

- Background and experience.
- Approach to siting and infrastructure network deployment.
- Experience with NEVI programs in other states – what components or considerations should NCDOT emulate or avoid?
- Opinion on the risks, challenges and opportunities associated with DCFC.
- What strategies can be implemented in the program design to meet the goals of Justice40 while removing the barriers to small business participation?
- What are the opportunities and constraints offered by the proposed contracting and delivery methods?
- What are typical costs associated with the operation and maintenance of your organization's DCFC stations.
- Do you believe North Carolina has the workforce required to install, operate, and maintain DCFC charging sites? Does your organization have experience providing workforce training?

In total, there were 161 total responses to the RFI, including 95 quality responses (i.e. those who provided their organization name, thoughtful responses, and filled out all applicable fields). Table 4 details types of responding entities and the number of responses from each.

Organization Type	Number of Responses
Government Entities	13
Site Developers	19
EVSE Providers	20
Site Hosts	8
Other (including non-profits, construction businesses, etc.)	35
Non-profits	15
Contractors	5
Manufacturers (OEM or otherwise)	22
Real Estate Related Agencies	7
Cybersecurity Groups	5
Project Management/Planning related groups	12

Table 4: RFI Respondents and Counts

Over 50% of all respondents had substantial EVSE experience. Respondents provided feedback on siting and infrastructure network deployment, program risks, challenges and opportunities, Justice40 and small businesses, contracting and delivery methods, as well as

operations and maintenance. Detailed descriptions of the feedback received follow. These responses are considered business confidential and are not publicly available.

Siting and Infrastructure Network Deployment

As noted in the small group roundtable events, stakeholders expressed a desire for NCDOT to hold a stakeholder networking event so that participants could identify potential project partners. Respondents expressed an interest in incentivizing site amenities, including Wi-Fi, bathrooms, lighting and security in the application process to focus on user experience. Finally, most respondents requested a clear line of communication with utility providers to ensure alignment on power needs at specific sites and realistic expectations around timelines and upgrades.

Risks, Challenges and Opportunities

Across industry participants, there was uniform thinking on the risks and challenges associated with successful implementation, including:

- **Supply chain and workforce availability**: Respondents want to ensure they can find the right partners and equipment. Supply chain challenges include long lead times for equipment procurement and limited availability of Buy-American compliant equipment (including utility equipment) required, as the domestic EVSE industry continues to scale up. Potential solutions include working with more than one equipment supplier, a government published list of established business partners, and deliberate investment in workforce training to help both build and maintain a workforce for infrastructure construction, operations, and repair.
- **Grid capacity and stability:** The installation of multiple DCFC stations at a single location, especially on already overburdened or under-prepared areas, has the potential to put a large strain on the local electrical distribution system. Solutions to this may include dispatching battery technology to lower demand for electricity at the site during simultaneous charging events.
- **Prioritizing urban vs. rural areas:** Urban areas may see more customer use, making these sites more cost-effective. Rural sites may require a larger O&M investment to increase their cost-effectiveness and ensure both accessibility and equity for charging in more rural or disadvantaged communities.
- **Accurate pricing for project costs and budget:** Companies will be bidding for projects based on current and forecasted costs. Availability and pricing of all items can change dramatically between bid time and installation. Contracts should be based on documented costs with sufficient contingency funding to cover potential overages.

Justice40 and Small Businesses

NCDOT is committed to meeting the intent of the Justice40 initiative. Respondents noted that NCDOT can have small business consultants work directly with underserved communities to ensure that 40 percent of benefits from the NEVI program flow to disadvantaged communities. There was uniformity amongst respondents on how the program could be structured to ensure North Carolina's small and diverse businesses have a role in the development and ongoing operations and maintenance of EV charging infrastructure. Suggestions included:

- **Community Stakeholder Engagement:** Ensuring the voices of a large majority of identified community stakeholders are heard so projects can be catered to community needs as best as possible.
- **Minority & Women-Owned Business Engagement:** Offering incentives for businesses that qualify as minority or woman-owned to ensure these businesses will have the ability to apply and receive funds to locate EV infrastructure in their communities.

- **Coordinating an outreach program:** Identify businesses that fall under these categories, as well as developing a local education effort, so all parties are informed about opportunities to get involved.

Contracting and Delivery Methods

Respondents requested that NCDOT be extremely clear in their expectations and thought process for state contracts tied to federal requirements, as many applicants have no prior experience with this. Recommendations included:

- Education for newcomers on the process, or a state-sponsored educational session, especially for small and diverse businesses.
- A designated and easily identifiable point of contact who can answer questions and provide support.
- Clear criteria that support state goals and priorities.
- NCDOT administration of federal requirements to help rural and underserved communities.
- Education and outreach programs, including quality investments into workforce and education.
- Prioritizing NC-based electrical, construction, and mechanical contractors.

Operations and Maintenance (O&M)

Half of respondents answered questions regarding O&M, but the overarching responses indicated that O&M was critical to the NEVI program's success. Additionally, respondents requested that NCDOT focus on:

- Including specific O&M program requirements to ensure the reliability and availability of DCFC stations.
- Established required uptime to ensure stations are fully operational and available.
- Recommend that O&M costs be eligible under North Carolina's funding or via customer funds.
- Recommend that NCDOT focus on outcomes vs. requirements.

Additionally, respondents requested an investment in workforce training programs focused around O&M, and most respondents indicated they had no experience providing workforce training programs.

Tribal Engagement (2023 Update)

NCDOT is also leading engagement efforts with Tribal Communities in conjunction with the Office of Civil Rights. While no federally recognized Tribal Communities have land adjacent to an AFC, Phase II of the program, relating to community-based charging and CFI grants, will include engagement with state-recognized Tribal Communities. Specific tribal engagement efforts will be developed once Phase II program planning has begun. NCDOT conducted a NEVI educational event with some of the state recognized tribes. The event was organized by the Coharie tribe and took place on May 23 from 11:00-3:00. The NEVI presentation was about 30 min and participants asked many questions about the program. There was also a presentation on NCDOT's workforce development efforts, some of which involve training that supports the NEVI program.

Utility Engagement

Alignment between NCDOT and electric utilities is a critical component to successful implementation of the NEVI program. At a weeklong small group roundtable event, NCDOT held five different listening sessions with utilities across the state to hear their feedback on the NEVI program, with geographic service areas of the utilities engaged being Asheville, Charlotte, Greenville, Raleigh and Wilmington.

One of the chief concerns amongst utilities across the state was planning for peak energy needs and the effect that demand charges may have on both customers and site hosts. Utilities also stressed the challenges in the current supply chain environment, specifically noting long-lead times for critical infrastructure, such as transformers and switchgear.

Utilities echoed other stakeholder requests across the state to consider a single site approach in the RFP, rather than bundling multiple sites into one RFP. The concerns expressed regarding bundling sites were that it may make the process more rigid and restrictive for utilities to provide the necessary power to support NEVI-compliant stations.

In addition to meetings held at the weeklong small group roundtable event, NCDOT and its consultant held a meeting with Duke Energy to preview the NEVI program and seek detailed feedback. NCDOT met with Duke Energy on 3/7/23 to discuss the agency's process and schedule around funding infrastructure for NEVI program as well as known issues. NCDOT held a second meeting with Duke Energy on 6/7/23 to discuss their support of site-specific power availability analysis to support the NEVI applicants with proposal development.

The following utilities attended workshops throughout the weeklong small group roundtable event.

- North Carolina Electric Cooperatives
- Haywood EMC
- Fayetteville Public Works Commission
- Roanoke Electric Cooperative (Electric/ Utility Cooperative)
- French Broad Electric Membership Corporation
- EnergyUnited Electric Membership Cooperative
- Roanoke Electric Membership Corporation
- Brunswick Electric Cooperative

04 State Agency Coordination

Interagency coordination is an integral part of North Carolina's path to success for the NEVI program. The NCDOT is leading NEVI program coordination in North Carolina and will work closely with other agencies to ensure all elements of the program are implemented efficiently and effectively in accordance with federal and state requirements, as well as community priorities.

Coordination with Other State Agencies

NCDOT is the lead agency administering the NEVI program. Responsibilities include receiving funds from the federal government, managing program administration, ensuring robust public engagement, and overseeing program compliance with federal and state requirements.

NCDOT is working closely with many North Carolina state agencies to ensure the coordination of EV charging deployment efforts. In particular, NCDOT is working with the North Carolina Department of Environmental Quality (NCDEQ) which includes the N.C. Division of Air Quality (NCDAQ) and the State Energy Office (NCSEO). NCDAQ leads the North Carolina VW Settlement program and has established a successful grant program for EV charger infrastructure deployment. NCDOT is currently using the best practices from the VW Settlement program, as well as the program's stakeholder list, to build partnerships for NEVI program implementation, as well as the scoring criteria for its own procurement process. The NCDAQ team has also established an extensive outreach program, specific to underserved counties. This outreach program will be used and tailored to the NEVI program.

NCDOT has also worked closely with NCDEQ's State Energy Office (NCSEO) to coordinate opportunities for EV charging infrastructure investment through the State Energy Program and other Department of Energy (DOE) funding opportunities. This coordination will continue with the NEVI program. These include the DOE funding available through IIJA that would accelerate the transition to clean energy through investments in transmission, distribution, and resilience. NCDOT has also met with the North Carolina Utilities Commission (NCUC) and will coordinate with utility partners across the state, including the state's regulated utilities, electric cooperatives, and municipal utilities. The focus will be on electrical grid investment coordination to support public EV charging stations across the state.

Lastly, NCDOT is consulting and will continue to work closely with other state agencies as the program moves into NEVI station deployment strategies. These include the N.C. Department of Information Technology (NCDIT) on cybersecurity, data integrity, and privacy, the N.C. Department of Commerce (NCDOC) on economic development and workforce training opportunities, and the N.C. Department of Administration (NCDOA) on procurement.

Interagency Working Group(s)

NCDOT has created an interagency steering committee for the NEVI program as well as any future EV charging infrastructure programs to coordinate program administration. The committee will review all applications (for NCDOT and NCDEQ programs) to ensure that the state deployment is being done in a strategic and coordinated way. This committee will build off current work of the NCCTP Clean Infrastructure work group and include representatives from the following state agencies:

- N.C. Governor's Office – Environmental Justice Lead
- NCDOT – Planning Division
- NCDOT – Office of Civil Rights
- NCDEQ - State Energy Office
- NCDEQ - Division of Air Quality

- N.C. Department of Commerce
- N.C. Department of Administration
- N.C. Department of Information Technology
- N.C. Utilities Commission

Coordinating with Neighboring States (2023 Update)

In 2023, NCDOT held three calls with neighboring states, Virginia, Tennessee, and South Carolina, to coordinate planning efforts along Alternative Fuel Corridors at state borders. Meeting dates and times with the three states were as follows:

Virginia: May 18, 2:00 p.m.
Tennessee: May 19, 2:30 p.m.
South Carolina: May 30, 4:00 p.m.

In each of these meetings, NCDOT presented preliminary plans for charging clusters located along AFCs in close proximity to the respective states, seeking review from state agencies. Further dialogue will continue to coordinate plans for stations at state borders in order to create a seamless and complete NEVI network within North Carolina and beyond its borders.
No MOUs have been made with neighboring states. Differing schedules for release of RFPs, can make coordination challenging. However, in examining neighboring state's tentative plans during discussions, NCDOT did not identify many opportunities for reducing redundancy of NEVI sites across state borders. Therefore, it was decided that formal MOUs were not needed at this time.

U.S.- Made Supply Equipment (2023 Update)

NCDOT is prepared to adhere to Buy America requirements following guidance of the FHWA and the Joint Office for the NEVI program. However, NCDOT also asks for continued focus on providing a flexible definition of Buy America. Given supply chain disruptions and the current marketplace production of EV chargers, using the current guidance for Buy America may delay deployment of infrastructure, limit competition, and increase program costs. NCDOT will continue to work with FHWA, DOE/DOT Joint Office, and state agency partners to comply with the latest program guidance over the five-year program. Charging infrastructure that has begun installation by October 1, 2024 qualifies for the Build America Buy America (BABA) waiver, and infrastructure that has begun installation after that date will need to meet the full requirements of BABA.

05 Existing and Future Conditions Analysis

This section of the plan analyzes existing and future conditions specific to North Carolina regarding EV infrastructure, state geography and climate conditions, and existing EV charging locations. Specific risks and challenges are also summarized.

EV ownership in the state has increased by 230% since 2018. According to the latest vehicle registration data available, there were over 46,000 ZEVs (battery-electric and plugin hybrid vehicles) registered in North Carolina in May 2023. *Figure 4* illustrates EV ownership growth in North Carolina.

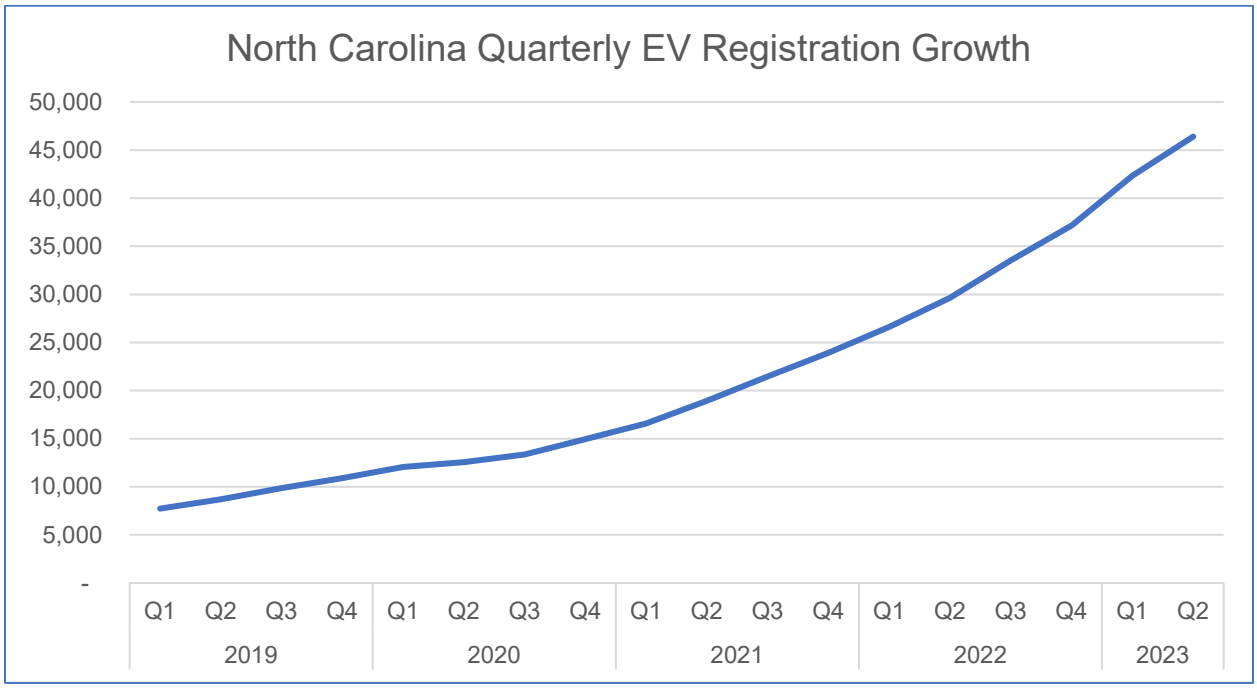

Figure 4: Zero Emission Vehicle (ZEV) Registrations in North Carolina

Existing Charging Stations

Based on the U.S. Department of Energy's Alternative Fuels Data Center, as of July of 2022, there are 718 stations and 1,408 chargers (or EVSE ports) publicly accessible in the state (*Table 5*).[3] Note that these numbers exclude Tesla chargers because the Tesla network is currently only available to Tesla owners. DCFC chargers, or Level III chargers, make up 12 percent of the public charging network in the state. Eighty- eight percent of the network is Level II chargers. Overall, the average number of chargers per public EV charging station in North Carolina is two.

Currently, 45 percent of public EV chargers (Level II and III) in North Carolina are within one mile of an AFC. However, NEVI program guidance requires stations to have four or more chargers with 150KW capacity within one mile of an AFC. In total, there are 10 stations that meet these requirements in North Carolina (*Figure 5*, *Table 6*).

[3] The term "chargers" refers to EVSE ports

Charging Level	Chargers Statewide	Chargers within 1 mile of AFCs	AFC chargers share of statewide chargers
Level II	1,241	517	42%
Level III	167	116	69%
Total	1,408	633	45%

Table 5. Existing Publicly Accessible EV Chargers in North Carolina

**Number of EV chargers in N.C. based on U.S. Department of Energy's Alternative Fuels Data Center, as of July 2022*

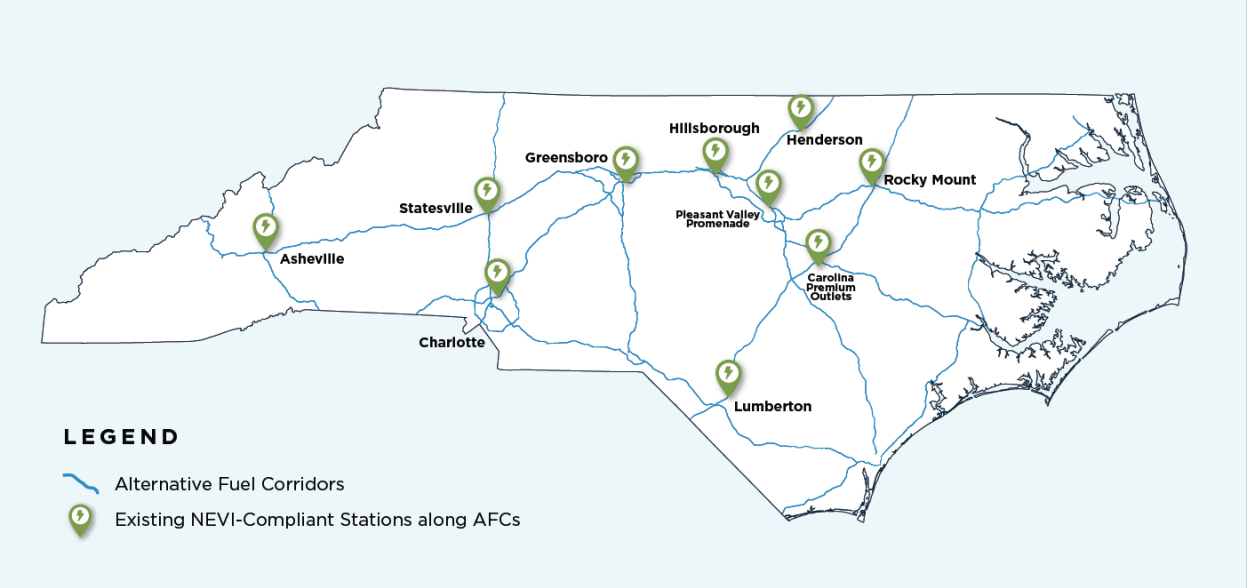

Figure 5: Existing NEVI Compliant Stations along AFCs

Unique Station ID	Charger Level	Route	Street Address	Number of Charging Ports	EV Network (if known)	Meets all 23 CFR 680 Requirements?	Intent to count toward fully built out determination?
167212	DCFC	I-95	1025 Outlet Center Dr. Smithfield, NC	4	Electrify America	No*	Yes
187907	DCFC	I-40	1000 Crossroads Dr. Statesville, NC	4	Electrify America	No*	Yes
121809	DCFC	US-70	6204 Glenwood Ave. Raleigh, NC	6	Electrify America	No*	Yes
167166	DCFC	I-240	645 Patton Ave. Asheville, NC	4	Electrify America	No*	Yes
166835	DCFC	US- 64	157 N Old Carriage Rd. Rocky Mount, NC	4	Electrify America	No*	Yes
168151	DCFC	I-85	1990 NC-86 Hillsborough, NC	4	Electrify America	No*	Yes
167147	DCFC	I-95	5070 Fayetteville Rd. Lumberton, NC	4	Electrify America	No*	Yes
168271	DCFC	I-85	7735 N Tryon St. Charlotte, NC	10	Electrify America	No*	Yes
170324	DCFC	I-85	200 N Cooper Dr. Henderson, NC	4	Electrify America	No*	Yes
167269	DCFC	I-85	121 W. Elmsley Street Greensboro, NC	8	Electrify America	No	Yes

Table 6. Existing NEVI Compliant EV Charger Stations (2023) along AFCs

*23 CFR 680 contains requirements that cannot be enforced upon existing private charging stations such as § 680.106 (L) Customer data privacy, § 680.112 Data submittal, § 680.116(b) Minimum uptime, § 680.118 Other Federal requirements. It is anticipated that, if any existing DCFC chargers will count toward full build-out (assuming they meet the power and location requirements), that FHWA will need to provide guidance for how these sections within CFR 680 are to be addressed.

Role of Electric Utilities

North Carolina's electric utilities will continue to be critical partners in the safe, reliable, affordable, and equitable deployment of charging infrastructure across the state. North Carolina is served by three investor-owned utilities: Dominion North Carolina Power, Duke Energy Carolinas, and Duke Energy Progress. According to a 2021 North Carolina Utilities Commission's annual report[4], Dominion North Carolina Power serves 122,000 customers in the northeast part of the state, Duke Energy Carolinas serves over 2 million customers in the western part of the state, and Duke Energy Progress serves over 1.4 million customers in the central part of the state and a small area in the western part of the state.

North Carolina is also served by 31 electric membership cooperatives, 26 of which are headquartered in the state and serve almost 1.1 million customers in 95 of the state's 100 counties. In addition to the electric cooperatives, there are 76 municipally owned utilities throughout the state, serving approximately 599,000 customers in North Carolina.

[4] https://www.ncuc.gov/reports/longrange21.pdf

In 2020, the North Carolina Utilities Commission (NCUC) approved Duke Energy's Electrification Transportation Pilot Program, including $26 million investment in EV charging infrastructure and electric school buses[5]. In 2022, North Carolina Utility Commission (NCUC) subsequently approved Duke Energy's electric vehicle Make Ready Credit Program, which will help to defray the upfront infrastructure costs for customers interested in installing charging stations.

Duke Energy Phase II Pilots

On January 6, 2023, Duke Energy filed its Report on Development of Phase II of the Electric Transportation Pilot Programs. This report discusses Duke Energy's efforts in developing its Phase II Pilot in conjunction with the Electric Transportation Stakeholder Group ("ETSG").

The proposed programs are listed below.

- Public L2 Phase II Pilot. Pilot is intended to develop and maintain publicly accessible L2 EV charging stations to support EV adoption and serve Duke's customers.
- For the L2 Phase II Pilot, the Companies had proposed 160 ports.
- Multi-Family Level 2 Phase II Pilot. Multi-family locations will include apartments, condominiums, and retirement homes. For this component of the Phase II Pilot, the Companies had proposed 160 ports.
- Highway Corridor Fast Charging. The Companies also intend to install 80 fast chargers for highway corridor fast charging across their service territories.
- EV School Bus Program. In Phase II, the Companies propose a deployment of approximately 4-6 buses at 10-15 sites for a total of 60 buses.

Duke Energy continues to support and track progress of the NC IIJA programs and available funding, including NCDOT's efforts regarding the NEVI program.

- On October 18, 2022, Duke Energy presented best practices and engagement for prospective market recipients of IIJA funding. This includes supply chain issues, securing contracts with site hosts, and driver education on charging stations.

- Duke Energy continue to engage with NC DOT on critical items such as designing efficient processes for NEVI site capacity inquiries.

Grid Capacity

According to the Federal Energy Regulatory Commission (FERC), North Carolina is part of the Southeast electricity market, a bilateral market that is vertically integrated and features large, investor- owned electric utilities. In 2021, according to the U.S. Energy Information Administration (EIA), nuclear energy provided 34 percent of the state's net electricity generation followed by natural gas, which provided 33 percent of electricity generation, and coal, which

[5] After stakeholder input, Duke Energy files Phase II electric transportation program in N.C. | Duke Energy | News Center (duke-energy.com)
ViewFile.aspx (ncuc.gov)

provided 17 percent of electricity generation. North Carolina has increased solar power production in recent years and currently ranks fourth in the nation for solar power generation. Sixteen percent of the state's electricity is provided by renewable energy, and the usage of renewable energy is expected to increase with the passage of HB 951, which aims to reduce North Carolina's carbon emissions by 70 percent by 2030 and to carbon neutrality by 2050.

Existing EV Market Potential

To understand potential demand and travel behavior across the state, a case study analysis of existing travel patterns and EV charging demand was done for this planning effort. A sample of 14 potential EV charging station locations along AFCs in North Carolina were selected for the analysis. These locations were selected to be within one mile of an AFC at locations with existing services and amenities to support an EV charging station. The case study analysis examined the types of trips, length of trips, and potential charging demand. Additionally, the analysis examined if travel patterns and EV charging needs are different in urban, suburban, and rural areas along the AFCs. The information gathered from this case study provides insight on current travel behavior and how EV charging can be more easily accommodated.

Data from StreetLight Data was used for this analysis. Their data combines anonymized location records from smart phones and navigation devices with other geographic data like parcel data and digital road network data. Data was used from 2021.

Key findings include:

- Across urban, suburban, and rural areas, about half of all daily trips at the case study sites are pass- through trips, while about half stop or start at the case study site.
- About 5% of trips stopping at case study sites in urban, suburban, and rural areas were of a distance of 50 miles or more. However, for trips passing through these sites, the percentage of trips 50 miles or more increased significantly between urban and rural areas. This makes sense given the fact people driving in rural areas typically have further distances to drive than people in urban areas.
- For trips not associated with commuting, the dwell time for trips that started and ended in urban areas was 2.8 hours, 1.4 hours in suburban areas, and 0.9 hours in rural areas. These dwell times already support the time typically needed to charge an EV using a DC Fast Charger, meaning that a travel behavior change would not be needed to accommodate EV charging. The typical time needed for a full battery charge using a DC Fast Charger is about 30 minutes.

  For the analysis, a scenario of 5% EVs on the road was used. This share is in line with projections for EVs on the road from the North Carolina ZEV Plan. If this 5% is applied to the average daily trips in the case study sites, the data shows:

  - There is greater demand for EV charging in more populated areas. More EV trips equal more potential trips needing a charge while traveling.
  - However, the average number of daily trips in urban, suburban, and rural areas that are greater than 50 miles are about the same.

  The information gathered from this case study analysis will be used to help guide the identification and implementation of Phase 1 and Phase 2 EV charging locations. *Table 7* below highlights the key metrics from the analysis.

	Urban	Suburban	Rural
Average Daily Travel Patterns Within 1 Miles of AFC			
Trips pass through station locations	108,615	117,564	52,681
Percent of Total Trips	49%	66%	51%
Trips starting or stopping in station locations	112,832	60,711	49,652
Percent of Total Trips	51%	34%	49%
Total Trips	221,447	178,275	102,333
Long-Distance Travel Patterns			
% of Trips 50 Miles or more (Pass Through)	16%	31%	57%
% of Trips 50 Miles or more (Non-Pass Through)	4%	5%	5%
Average Dwell Time and Potential EV Charging Demand			
Median Dwell Time (Day Time Hours)	2.8 hrs	1.4 hrs	0.9 hrs
Average EV Charging share of Total Trips (5%)	11,072	8,914	5,117
Average EV Charging share of Total Trips 50 Miles or more	1,095	1,974	1,626

Table 7. AFC EV Market Potential Case Studies in Urban, Suburban, and Rural Areas

Future Needs

Executive Order No. 246, signed by Governor Roy Cooper, created new statewide goals of having at least 1,250,000 registered ZEVs by 2030 and achieving a 50% ZEV sales share for new light-duty vehicles by that same year. These EO 246 goals complement previous commitments under the Medium- and Heavy- Duty (MHD) Memorandum of Understanding, signed by Governor Cooper in 2020, including increasing the sales of ZEVs so that 100% of new MHD vehicle sales are zero emission by 2050 and at least 30% of all new MHD vehicle sales are zero emission by 2030.

EO 246 also directed the development of a North Carolina Deep Decarbonization Analysis to better understand viable pathways to achieve net-zero GHG emissions statewide by 2050 and interim targets. This project will analyze various illustrative ZEV adoption scenarios to inform long-term decarbonization efforts.

Figure 6 illustrates the needed growth in EV ownership over the five-year NEVI program timeline to be on pace to meet the state's 2030 ZEV goal of 1,250,000 vehicles.
The NEVI investments in North Carolina will be a critical part of achieving the state's EV goals.

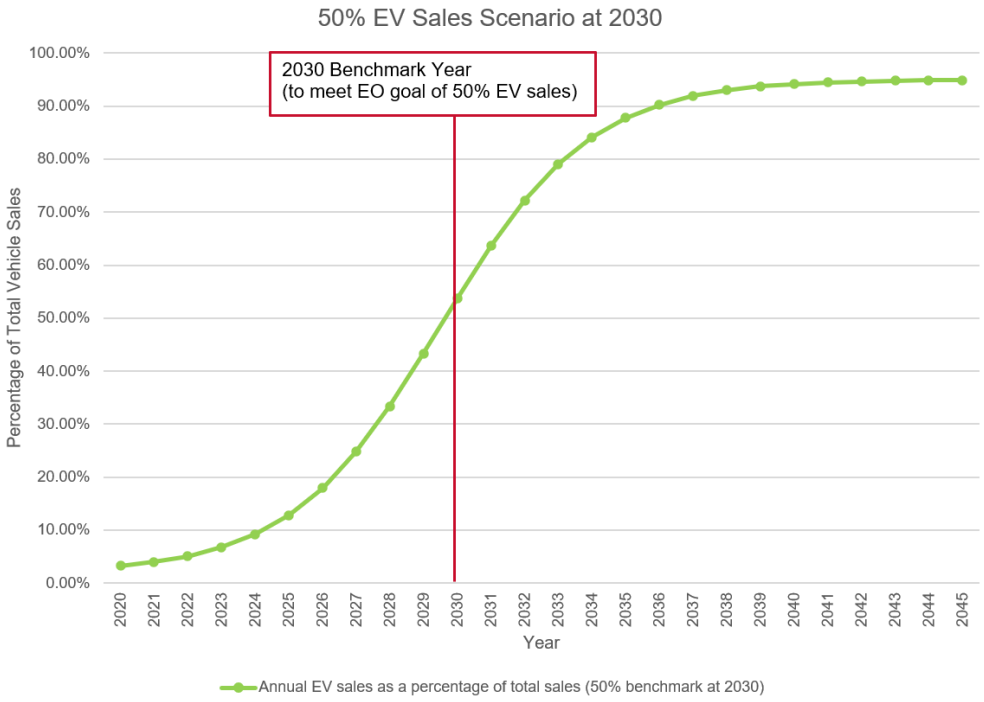

Figure 6: Future ZEV Sales Projections Needed to Reach Executive Order 246 Goal

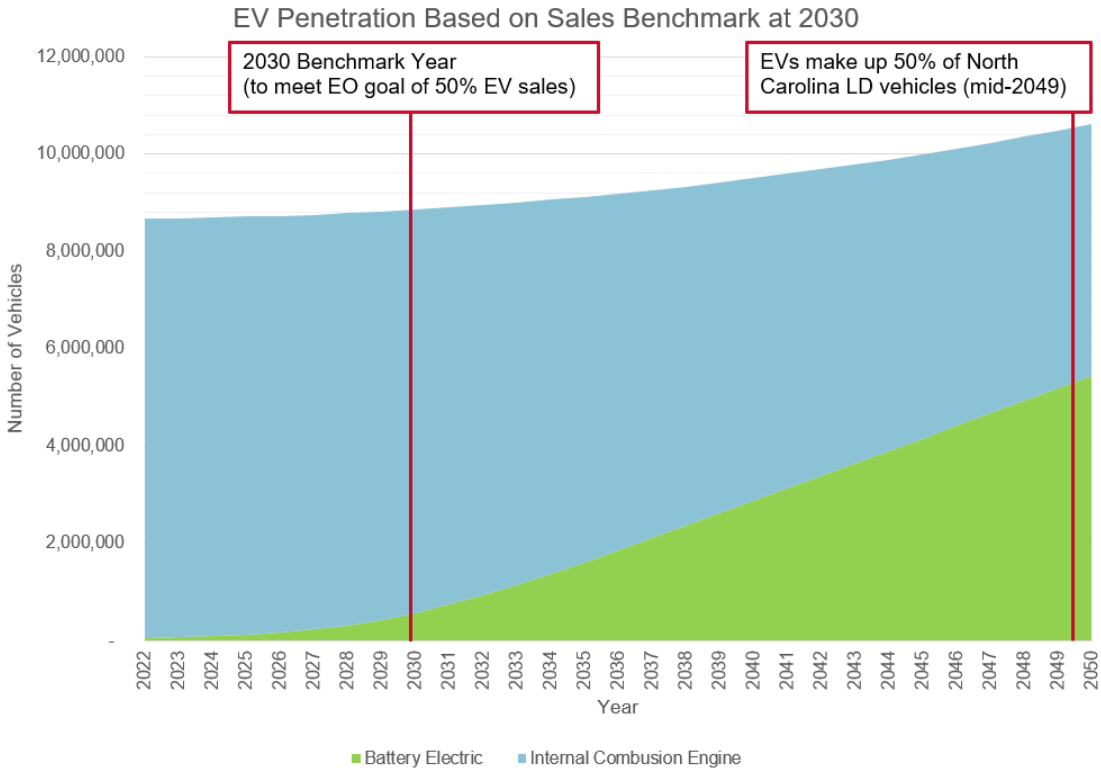

Figure 7. Future ZEV Ownership Projections Needed to Reach Executive Order 246 Goal

Alternative Fuel Corridors (AFC) Designations

The FHWA has created the AFCs program. The goal of the program is to create a national network of charging and fueling infrastructure along the national highway system.

Each state is responsible for nominating and managing AFC designation and implementation. In North Carolina, NCDOT is responsible for managing AFC designation and compliance. North Carolina has 3,831 miles of AFCs, 2,283 of which are pending corridors and 1,549 are ready corridors. Sixty-two percent are interstates, and thirty eight percent are U.S. routes.

For the purposes of identifying NEVI program requirements for station locations along the AFCs, AFCs designated during Rounds 1 through 6 were considered. These AFCs will form the basis of implementation tracking in the first and second fiscal year for NEVI implementation in North Carolina. NCDOT does not plan to nominate additional corridors in Round 7.

Table 8 describes the specific corridors and their designations as of July 2022.

Corridor	Miles	Start	End	Designation
I-240	8	I-40 Interchange	I-26 Interchange	Pending
I–26	26	Forks of Ivy	Tennessee Border (state line)	Pending
I-26	82	South Carolina Border (state line)	I-40 interchange	Ready
I-40	91	Tennessee Border (state line)	I-240 Interchange	Pending
I-40	36	Brookford	SR-9	Ready
I-40	120	SR-9	Brookford	Pending
I-40	356	Brookford	Raleigh	Ready
I-40	236	Raleigh	Kings Grant	Pending
I-277	9	I-77	Greenville	Ready
I–440	15	I – 87 Interchange	US - 70	Ready
I-485	131	Belmont	I – 85 Interchange	Ready
I–85	265	South Carolina Border (state line)	I – 40 Interchange	Ready
I–85	116	I – 40 Interchange	US-1 Interchange	Ready
I-85	31	US-1 Interchange	Virginia Border (state line)	Pending
I–74	39	SR – 41	US – 74 ALT	Pending
I–77	64	South Carolina border (state line)	Mt Mourne	Ready
I-77	147	Mt Mourne	Virginia border (state line)	Pending
I–87	26	I – 40 Interchange	US - 64	Ready
I-95	193	South Carolina border (state line)	US-70 Interchange	Pending
I-95	170	US-70 Interchange	Virginia border (state line)	Ready
US-13	39	SR - 11	US - 64	Pending
US-74 Bypass	37	Wingate	Stallings Rd	Ready
US-74	34	US-52	Wingate	Ready
US-74	29	E Independence Blvd	Charlotte	Ready
US-74	102	Alma	US-52	Pending
US–74	140	SR-41	Easy Hill	Pending

Corridor	Miles	Start	End	Designation
US–17	8	Easy Hill	Wilmington	Pending
US–17	13	US-17 Interchange	US-70 Interchange	Pending
US–52	3	Wade Mills	US-52	Ready
US–64	70	I-95 Interchange	Rolesville Rd	Ready
US-64	64	I-95 Interchange	US-13 Interchange	Pending
US-64	121	Manns Harbor	US-13 Interchange	Pending
US-64	1	Pirates Way	SR-345	Pending
US-64 Bypass	12	SR-345	Manns Harbor	Pending
US-70 Bypass	40	La Grange	Rosewood	Pending
US-70 Bypass	6	Pine Level	US-70 Interchange	Pending
US-70	1	James City	US-17	Pending
US-70	84	US-17 Interchange	La Grange	Pending
US-70	36	Rosewood	I-95 Interchange	Pending
US-70	39	I-95 Interchange	I-40 Interchange	Ready
US-70	32	I-40 Interchange	Glen Forest	Ready
US-19	29	Asheville	Forks of Ivy	Pending
US – 70	16	Mebane	I-85 Interchange	Ready
US-70	15	I-85 Interchange	Glenn Forest	Ready
I-73	14	I-40 Interchange	I-85 Interchange	Pending
I-73	144	US-220	I-85 Interchange	Pending
I-74	63	I-73 Interchange	I-40 Interchange	Pending
I-74 BUS	13	US-220	I-85 Interchange	Pending
US-220	11	I-73	US-1 S	Pending
US-17	88	South Carolina	Andrew Jackson Hwy	Pending
US-17	158	Wilmington	US-70	Pending
US-17	80	New Bern	US-13	Pending
US-13	25	Williamston	US-17	Pending
US-17	103	US-13	US-158 S	Pending

Table 8. AFC Ready and Pending

State Geography, Terrain, Climate, and Land Use Patterns

North Carolina is bordered by the Atlantic Ocean and numerous states: Virginia, South Carolina, Georgia and Tennessee. The state is divided into three regions: the Mountains, the Piedmont and the Coastal Plain. The state, in terms of terrain, is considered one of the wettest in the country and contains marshlands and numerous lakes. There are nearly 4,000 square miles of inland water, the largest such area of any state in the United States. The Coastal Plain comprises more than half of the state and extends 120 to 140 miles westward to the Piedmont Region which is characterized by rolling, forested hills.

North Carolina experiences a variety of climates, with cooler continental conditions in the mountain region to subtropical weather in the Coastal Plain. Based on the region, average annual temperatures, precipitation, and experience with natural events varies. Average annual temperatures range from 66 F in the eastern region, 60 F in the central region, and 55 F in the mountains. On average, annual precipitation ranges from 40 inches to 80 inches, with higher

precipitation levels occurring in the mountains. Severe storms are rare in the state and heavy snow is generally infrequent. Hurricanes bring heavy rain and winds to different parts of the state. Hurricanes occasionally occur along the eastern coast of the state, and there have been tornadoes historically inland. Floods can occur anywhere in the state, and they are most often caused by heavy rainfall or hurricanes. The state's most notable historical floods were consequences of hurricanes. According to the North Carolina Institute for Climate Studies, North Carolina can expect disruptive sea level rise, increasing temperatures, and extreme rainfall due to climate change. These expected changes will likely increase the frequency and severity of flooding in the state.

North Carolina's populations are concentrated in urban areas — about 60 percent of residents lived in an urban area, according to the 2010 census. Populations are concentrated across several cities including Asheville, Charlotte, Durham, Fayetteville, Greensboro, Greenville, Hickory, Raleigh and Wilmington. Despite the concentration of population in urban areas, North Carolina is still one of the most rural states in the United States — and ranked second in the 2010 Census among states with the largest rural population. Many of the state's urban areas are connected by interstates and state highways. The transportation system is critical in carrying people and goods statewide. Facilitating better access will continue to be a priority for the state as North Carolina's population is expected to continue to grow, with the most growth to continue in major urban areas.

NEVI program funds will help connect urban and rural areas of the state and support demand for public EV charging as the state grows. Additionally, the expanded charging network will help with emergency preparedness by expanding EV charging along evacuation routes.

State Travel Patterns, Freight, and Other Supply Chain Needs

NCDOT is aligned with NEVI program goals and is focusing on creating a reliable statewide network of EV chargers. Below is a summary of state travel patterns, freight needs, and supply chain considerations as they relate to EV charging network implementation in the state.

State Travel Patterns

According to NCDOT's 2019 Highway and Road Mileage Report, North Carolina has over 15,000 miles of primary highways and almost 65,000 miles of secondary roads. The state maintains about 80,000 miles of roadway. Based on the 2019 Vehicle Miles Traveled (VMT) Reduction Study conducted by NCDOT, VMT in the state was observed to be 123.1 billion miles in 2019. North Carolina surpassed the nationwide VMT per capita by nearly 2,000 (9,800 nationally vs. 11,600 for North Carolina), and much of that growth is from vehicles in urban areas. The North Carolina urban VMT grew by 3.4 percent per year versus rural VMT which grew 0.2 percent per year. Comparatively, in that same time frame, the nationwide urban and rural VMT grew by 1.9 percent and 0.2 percent per year, respectively. The deployment of EV infrastructure will need to consider the state's travel pattern travels and growth in population.

Public Transit Needs

Every county in North Carolina provides some level of public transit from demand response to fixed route. Many of the major transportation systems in the Triangle, Triad, and Metrolina regions are moving towards transit electrification.

Freight Needs
Based on the 2017 North Carolina Statewide Multimodal Freight Plan, most of the truck traffic in the state is carried by the Interstate System. I-40 and I-85 are the most heavily utilized freight corridors based on truck volumes. I-85 also continues to be an important corridor for freight movement, as many freight- intensive industries are on the corridor. In 2015, more than 400 million tons of cargo were carried through North Carolina' s highway system with about 50 percent of total truck tons originating and ending in North Carolina. By 2045, a nearly 50 percent increase in cargo moved by truck is expected.

Supply Chain Needs
During the COVID-19 pandemic, labor force participation became a challenge and has had difficulties recovering to pre-pandemic levels. This, in conjunction with ongoing supply chain issues and overall material shortages, will present challenges in implementation moving forward. NCDOT recognizes potential barriers that may influence the ultimate deployment in terms of speed and timeline. The agency will work with vendors and private-sector partners to encourage speedy installation and to mitigate as much of the risk associated with deployment as possible.

Known Risks and Challenges

Deployment of a program of this scope and scale has inherent risks and challenges. NCDOT is focused on four key risk and challenge factors. They are:

- **Site conditions –** Site conditions will vary across North Carolina. For example, in more rural areas of the state, there may be a need for utility grid upgrades and enhanced wireless cellular coverage needed for data transmission.
- **Supply chain–** Significant numbers of Electric Vehicle Supply Equipment (EVSE), along with electrical transformers and other components, will be needed to deploy this plan. Based on the statewide and nationwide deployment, significant delays in acquiring needed equipment may occur.
- **Skilled labor –** Labor shortages for supportive industries like electricians and installers could contribute to further delays of equipment installation. North Carolina is developing workforce programs to reduce this risk through NCDOT's Office of Civil Rights workforce program and Steps4Growth run by NC A&T University.
- **Safety risks and considerations –** There are certain safety-related risks during the installation of equipment or directly by users and the public. Ensuring safe deployment is a priority and can be a challenge.

06 EV Charging Infrastructure Deployment

To meet the goals and requirements of the NEVI program, NCDOT is working with public and private partners. The goal is to create a convenient and reliable public EV charging network that is accessible for visitors and residents in North Carolina.

Deployment of the NEVI funds for implementation is occurring in two phases. Phase 1 is building out EV charging stations along the AFCs as required by the NEVI guidance. It is estimated that this phase will require 39 stations (36 if exemptions are granted). Based on initial cost estimates, it is projected to require funding from FY 2022 through FY 2024 to fully build out the AFC network.

Phase 2 will focus on community-based charging. Site selection criteria will be based on NEVI requirements, statewide priorities, and public input.

Station Standards

In addition to any further guidance released by FHWA on NEVI charging station requirements or additional standards required by utilities, the typical standards for charging stations will include the following:

For stations funded as part of Phase 1, the typical standards will be:

- Four ports per station with 150-350kW Max Power for each port
- Access to three phase 480-volt power (typically 1000 amps, 660 kva)
- Site must include a minimum of four 150kW Level III/DCFC chargers with Combined Charging System (CCS) ports (three parking spaces for general use and one parking space that is ADA accessible). NCDOT will give priority to stations with specs that allow for retrofitting existing equipment to accommodate changing charging technology. Proposers may provide NACS connections as an option.

Additional standards for all stations will include:

- 45-minute charging time limit
- Idle fee after charging is complete/time limit exceeded
- Safety lighting, restrooms, Americans with Disabilities Act (ADA) accessibility
- Standard bollards and charger protection
- Open to public and accessible 24/7 to both chargers and amenities
- Plug to Charge preferred (payment handles by vehicle when plugging in) but payments by phone/ app/card will also be required
- Adequate signage to charger stations
- Spaces marked EV only
- Signs recommending charging to 80 percent
- Vendor required to make usage data per location available to NCDOT every six months
- Signage directing users to charging locations from the AFCs
- Real-time data sharing, including location, charger status, and fees available online. See Strategies for EVSE Data Collection & Sharing Section for additional data sharing requirements.
- Where economically feasible and in accordance with NEVI guidance and applicable state and federal laws, solar power can be used as electricity source.

For stations funded as part of Phase 2, the typical standards will be:

- J1772 Connector (industry standard)
- 6.6-19.2kW Max Power for Level II chargers
- 50kW-350kW Max Power for Level III chargers
- Same requirements for number of chargers, signage, markings, payment options and data sharing as Phase 1.

Funding Sources

An estimated $109,024,196 will be allocated to the North Carolina NEVI program over five years under the Bipartisan Infrastructure Law. It is estimated that 10 percent of the allocated funds will be applied to administrative costs. After these appropriations, North Carolina's NEVI program funding for EV station construction and operations and maintenance (O&M) costs is estimated to be $98,052,000.

Each project that receives NEVI funding is eligible to receive up to an 80 percent federal share of the project costs. The remaining cost share is to be funded by a non-federal funding match. For the North Carolina NEVI program, the cost share match will be the responsibility of applicants. The O&M of projects are eligible costs for federal funds. O&M costs will be covered for the first five years of station operations and may be funded as part of the 80 percent federal share of a project's costs.

Table 9 shows an estimated funding plan for the NC NEVI program. Site costs include site host coordination, design and permitting fees, utility coordination and upgrades, the EVSE, construction, and commissioning costs associated with building the station. Construction costs include the equipment and labor to install the EVSE, electrical panelboards, transformers, utility upgrades, trenching, site work, conduit, wires, bollards, safety lighting, signage, pavement marking, fencing if required, testing and commissioning, site as-builts, pictures, and closeout documentation.

O&M cost includes a five-year warranty on equipment and installation, monitoring of equipment to ensure guaranteed uptime/availability, maintenance of hardware and associated site appurtenances (including replacement of EVSE if necessary), data plan for network connectivity, reporting site metrics to the state, and annual site inspections.

	Estimated Project Cost (Capital and O&M)	Approximate Federal Share (80%)	Approximate Non-Federal Match (20%)
Phase 1	$73,500,000	$58,800,000	$14,700,000
Phase 2	$49,152,221	$ 39,321,776	$9,830,444
Admin		$10,902,420	
Total	**$122,652,221**	**$109,024,196**	**$24,530,444**

Table 9. NEVI Formula Program Funding Plan

Planned Charging Stations

To meet the NEVI station requirements, stations must have at least four 150kW Level III chargers. Additionally, the stations need to be within one mile of an AFC and spaced 50 miles or less. Based on these requirements, it is estimated that North Carolina will need at least 39 new NEVI-compliant stations. This is in addition to the existing 10 stations that are NEVI-compliant. The approximate location of proposed Phase 1 new charging stations are listed in *Table 10* and shown in *Figure 8.*

State EV Charging Location Unique ID	Route Name	Location	Number of Ports	Estimated Year Operational	Estimated Cost	NEVI Funding Sources	New Location or Upgrade?
17-1	US-17	Unknown	4	Unknown	Unknown	Undetermined at this time	New
17-2	US-17	Unknown	4	Unknown	Unknown	Undetermined at this time	New
17-3	US-17	Unknown	4	Unknown	Unknown	Undetermined at this time	New
17-4	US-17	Unknown	4	Unknown	Unknown	Undetermined at this time	New
17-5	US-17	Unknown	4	Unknown	Unknown	Undetermined at this time	New
26-1	I-26	Unknown	4	Unknown	Unknown	Undetermined at this time	New
26-2	I-26	Unknown	4	Unknown	Unknown	Undetermined at this time	New
40-1	I-40	Unknown	4	Unknown	Unknown	Undetermined at this time	New
40-2	I-40	Unknown	4	Unknown	Unknown	Undetermined at this time	New
40-3	I-40	Unknown	4	Unknown	Unknown	Undetermined at this time	New
40-4	I-40	Unknown	4	Unknown	Unknown	Undetermined at this time	New
40-5	I-40	Unknown	4	Unknown	Unknown	Undetermined at this time	New
40-6	I-40	Unknown	4	Unknown	Unknown	Undetermined at this time	New
40-7	I-40	Unknown	4	Unknown	Unknown	Undetermined at this time	New
40-8	I-40	Unknown	4	Unknown	Unknown	Undetermined at this time	New
40-9	I-40	Unknown	4	Unknown	Unknown	Undetermined at this time	New
64-1	US-64	Unknown	4	Unknown	Unknown	Undetermined at this time	New
64-2	US-64	Unknown	4	Unknown	Unknown	Undetermined at this time	New
64-3	US-64	Unknown	4	Unknown	Unknown	Undetermined at this time	New

State EV Charging Location Unique ID	Route Name	Location	Number of Ports	Estimated Year Operational	Estimated Cost	NEVI Funding Sources	New Location or Upgrade?
70-1	US-70	Unknown	4	Unknown	Unknown	Undetermined at this time	New
70-2	US-70	Unknown	4	Unknown	Unknown	Undetermined at this time	New
74-1	US-74	Unknown	4	Unknown	Unknown	Undetermined at this time	New
74-2	US-74	Unknown	4	Unknown	Unknown	Undetermined at this time	New
74-3	I-74	Unknown	4	Unknown	Unknown	Undetermined at this time	New
74-4	I-74	Unknown	4	Unknown	Unknown	Undetermined at this time	New
74-5	US-74	Unknown	4	Unknown	Unknown	Undetermined at this time	New
74-6	US-74	Unknown	4	Unknown	Unknown	Undetermined at this time	New
77-1	I-77	Unknown	4	Unknown	Unknown	Undetermined at this time	New
85-1	I-85	Unknown	4	Unknown	Unknown	Undetermined at this time	New
85-2	I-85	Unknown	4	Unknown	Unknown	Undetermined at this time	New
87-1	I-87	Unknown	4	Unknown	Unknown	Undetermined at this time	New
95-1	I-95	Unknown	4	Unknown	Unknown	Undetermined at this time	New
95-2	I-95	Unknown	4	Unknown	Unknown	Undetermined at this time	New
485-1	I-485	Unknown	4	Unknown	Unknown	Undetermined at this time	New
M-1	I-77, I-485	Unknown	4	Unknown	Unknown	Undetermined at this time	New
M-2	I-40, I-73	Unknown	4	Unknown	Unknown	Undetermined at this time	New
M-3	US-17, US-74	Unknown	4	Unknown	Unknown	Undetermined at this time	New
M-4	US-17, US-70	Unknown	4	Unknown	Unknown	Undetermined at this time	New
M-5	US 17, US-64	Unknown	4	Unknown	Unknown	Undetermined at this time	New

Table 10. Proposed EV Charging Stations Along AFCs

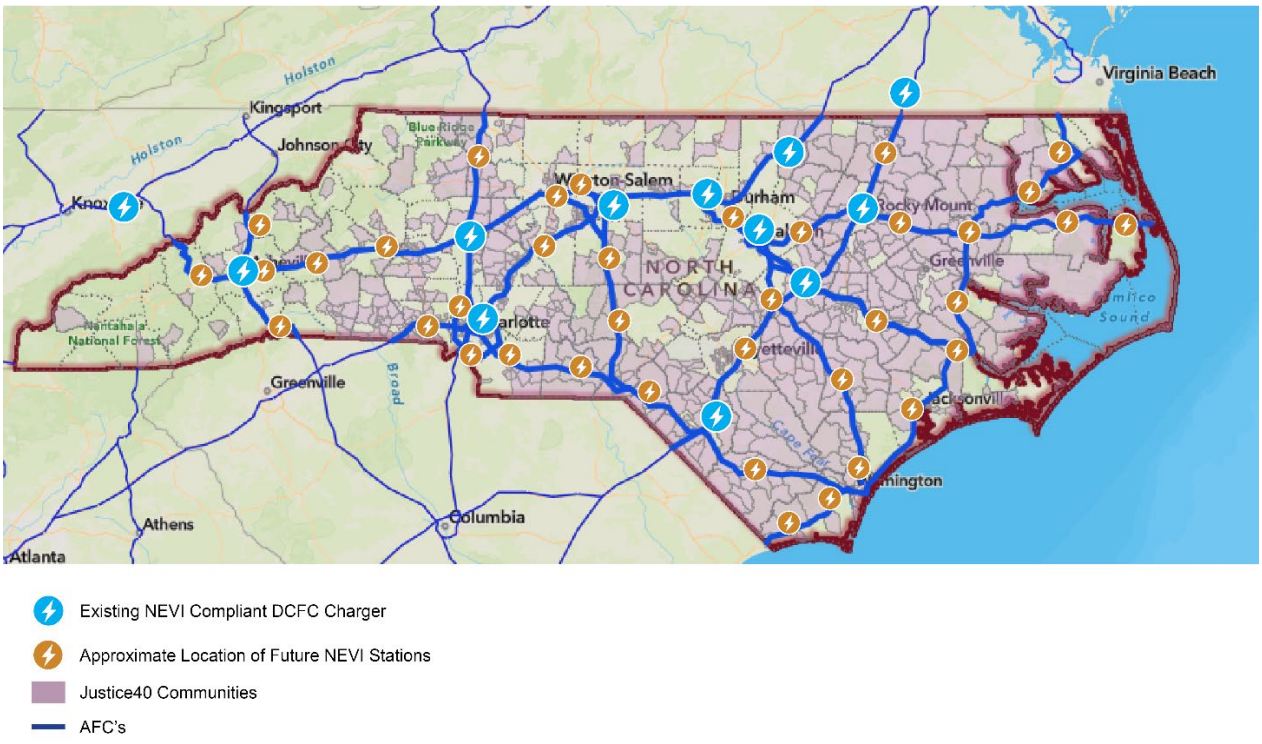

Figure 8. Existing and Approximate Locations of Future NEVI-Compliant EV Stations Along AFCs

Upgrades of Corridor Pending Designations to Corridor Ready Designations

North Carolina is including all Pending and Ready AFC corridors as approved by FHWA from Rounds 1 through 6 for the AFCs. NCDOT will continue to manage AFC designation and status with FHWA and incorporate any needed station additions to meet NEVI requirements over the five-year program. Currently, NCDOT has estimated some funds for each program fiscal year to accommodate future AFC designations and the need to address the 50-mile station spacing requirement along these future corridors. AFC designation and whether they meet NEVI requirements will be evaluated annually. If additional stations are needed, they will be incorporated into the funding cycle for that fiscal year.

Increases of Capacity/Redundancy Along Existing AFC

The charging time needed for EVs varies by the model's battery capacity, which is typically stated in kilowatt hours (kWh), the charging capability and age of the EV, the charger type (kW), and extreme temperatures. Chargers that will be installed as part of Phase 1 will be DC Fast Chargers and have a minimum of 150kW output. DC Fast chargers provide DC power directly to the battery, increasing the charging speed when compared to a Level 2 (AC power) charger. In general for DC Fast Charging, to determine the charge time, the EV battery capacity (kWh) is divided by the charger output (kW).

For example, the Chevrolet Bolt electric vehicle has a battery capacity of 65kWh, so it would take approximately 29 minutes to reach max charge using a 150kW charger. Another example, a Ford Mach-E with a standard range 68kWh battery capacity would take approximately 31 minutes to reach max charge using the same 150kW charger. The mileage range these vehicles

could reach on a full charge varies based on the car specifications. In this example, the Chevrolet Bolt would have a range of approximately 260 miles and the Ford Mach-E would have a range of approximately 230 miles. Many manufacturers recommend charging EV batteries to 80 percent rather than 100 percent, so the mileage ranges might be lower in practice.

This plan aims to build out the AFCs in North Carolina with EV charging infrastructure every 50 miles, so even vehicles with an approximate 150-mileage range could reach the next charging station on less than a full charge. The usage of existing stations will also be reviewed annually in order to make recommendations to increase capacity as needed in heavily trafficked areas.

Electric Vehicle Freight Considerations

After the NEVI Program requirements are met in Phase 1 of this plan, EV chargers for freight and other medium- and heavy-duty vehicles are eligible to apply for funding as part of the competitive process of Phase 2. More information will be given pending the FHWA's release of additional NEVI Formula Program requirements for EV freight chargers.

Public Transportation Considerations

Purchasing electric buses generally involves purchasing the necessary charging equipment as well. Electric buses have high power requirements and typically require separate charging infrastructure from personal EVs. The majority of charging for public transit and school bus fleets will take place at fleet facilities that are not open to the public for general use.

There may be opportunities and a need to support off-site charging for public transportation vehicles. Additionally, public transit agency fleet facilities may be ideal sites for shared commercial or public charging, such as at a park-and-ride lot, as long as chargers at these locations are publicly accessible. NCDOT will coordinate with public transit agencies and school districts during NEVI program engagement. If their projects meet the community goals and program requirements, they can be eligible and encouraged to participate in applying for NEVI funding in Phase 2.

FY22-26 Infrastructure Deployment

FY2022 and 2023 funds will be released to North Carolina with the approval of this plan by the Joint Office. Based on initial estimates, it is anticipated that Phase 1 of this plan will be implemented with at least 2.5 years of funding. Phase 2 of this plan will be implemented with any remaining funds through the year FY 2026.

State, Regional, and Local Policy

The North Carolina EV Infrastructure Deployment Plan and implementation of its recommendations continues to rely on partners across the state to coordinate and update policies. This section discusses short-term and ongoing policies that can support the deployment of EV infrastructure and NEVI program guidance. Final policy guidance will be informed by the NCCTP, which is being completed in coordination with a large group of stakeholders.

Short-Term

- Identify leads for program action items and include specific individuals and/or roles within an organization to implement actions.
- Strategically consider the deployment of EV in public properties (state, regional, and/or local) and collaborate with federal agencies where deployment would be beneficial (such as on federal lands).
- Work with NCDOT and local public works departments to identify and deploy consistent signage standards and labeling for EV infrastructure along the AFCs.
- Create an assistance program that is easily accessible on the internet that includes educational materials such as fact sheets. The educational materials should be easily accessible, easy to understand, and in multiple languages.
- Include EV considerations as a part of Metropolitan Planning Organization (MPO) long-range transportation plans. This step can help with regional EV network coordination.

Ongoing

- Work to streamline EV permitting at local jurisdictions. This can include the creation of permitting standards and guidelines, target timeframes for approval, and checklists. The development of website resources and electronic applications to speed up the permitting process is recommended.
- Work to ensure that once permitted, the installation of EV is speedy and efficient. This includes processes at the state, local, as well as private processes (e.g. utilities) and ensuring that site planning, permitting, and utility coordination are streamlined and expedited.
- Work to ensure that zoning ordinances and building codes are updated to support EV station construction. This should extend to site-specific requirements such as parking ordinances.
- Work with the North Carolina Utility Commission to develop EV rate designs and infrastructure programs that center affordability, reliability, and equity.
- Work with the North Carolina Utility Commission to streamline and monitor the interconnection process for EV charging.

Planning Towards a Fully Built Out Determination

NCDOT is working to finalize the charger locations along the state's AFC network. The approach uses "clusters," or groupings of multiple exits along an AFC that are within the bounds of meeting the 50-mile deployment requirement. A single NEVI charging station is anticipated to be built per cluster. The cluster approach was selected to allow a greater number of potential site hosts to participate in the program.

NCDOT is working to maximize the utility of public dollars to build out an efficient network of chargers while also ensuring an equitable distribution of federal funding. It is anticipated that without siting exceptions, a total of 39 additional chargers will need to be built. *Figure 9* identifies proposed AFCs and the general location of clusters in the state.

At this time, announcements by FHWA and Tesla charging infrastructure are not expected to impact these proposed clusters, as it is not known which existing Tesla stations are intended to be available for public use.

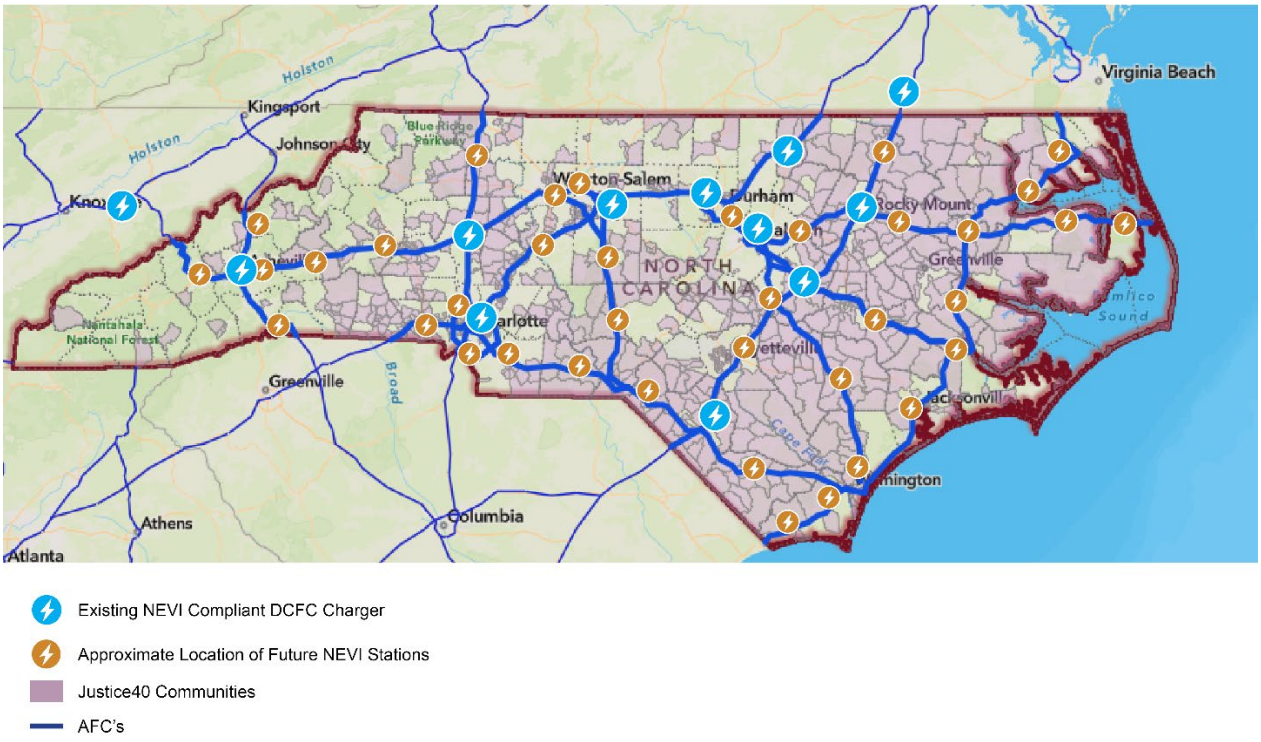

Figure 9. Proposed AFCs and Clusters in North Carolina

07 Contracting

Status of Contracting Process

NCDOT is currently exploring a competitive selection that aligns with a design-build process. As per the initial plan, the state intends to draft and release an RFP that aligns with design-build principles, including evaluation criteria for qualifications, technical proposal and cost proposal. This will be a competitive best-value selection. NCDOT is currently working with the State Legislature to secure the necessary authority to move forward with deploying the NCDOT's NEVI formula funding. In alignment and consultation with the North Carolina FHWA Division Office and DOT legal counsel, NCDOT is refining the competitive selection process and crafting the RFP documents.

Awarded Contracts

NCDOT anticipates releasing a draft RFP by the end of 2023, barring unforeseen circumstances with legislation.

Scoring Methodologies Utilized

NCDOT is currently developing scoring criteria to align with a best-value selection. Scoring criteria will allow for evaluations based upon qualifications, technical proposal and approach, as well as cost. The scoring methodology will be straightforward and quantifiable (similar to the approach used in North Carolina's VW Settlement grant program) that will provide clarity to both proposers and evaluators as applications are developed and evaluated. Applications will be evaluated for completeness and technical responsiveness to verify they conform to the requirements of the NEVI program.

NCDOT's approach focuses on lowering the barriers to entry for potential applicants. The scoring criteria will encourage equity and addressing Justice40 topics and requirements. Final scoring methodology will be released with the RFP package. However, it is expected that this criteria will consider site amenities, proximity to AFCs, Justice 40 impacts, and best value.

Plan for Compliance with Federal Requirements

NCDOT is currently drafting RFP documents that clearly outline the technical requirements, scope of work and deliverables, as well as the legal contract that contractors will be required to sign at award. The clarity and detail of the documents are a first step to ensuring contractors fully understand their obligations and requirements. In addition to the RFP documents, NCDOT will develop an internal program management manual that includes SOPs for how NCDOT will manage the program and ensure compliance.

08 Implementation

An important requirement of the public EV charging network in North Carolina is that it is reliable and easily accessible. This section covers topics that will be addressed over the five-year program to ensure EV stations funded by the NEVI program support this goal.

Strategies for EV Station Operations & Maintenance

Contract awardees under the NCDOT NEVI program will be required to provide a cost and implementation plan for five years of operations and maintenance. Operation and maintenance costs shares may differ for each station location. Operations and maintenance costs should include comprehensive warranties for the EV chargers and associated electrical equipment.

Monitoring of sites and individual ports will be required under this program. The station owners will be expected to report to the State regarding uptime availability of the individual ports, usage, and to explain any downtime greater than 3 percent.

NCDOT is developing a program policy and funding provisions that would make maintenance and operations funding contingent on meeting uptime requirements. For example, operations and maintenance funds may be distributed as a reimbursement at the end of each fiscal year. Station owners will be required to submit operations and maintenance reports documenting they met operation and performance requirements before operation and maintenance costs are refunded.

Strategies for Identifying EV Charger Service Providers and Station Owners

NCDOT is using existing solicitation methods for registered vendors to advertise, select, and award contracts for NEVI program applicants, and in Q1-Q2 of 2023, created a stakeholder database and hosting a stakeholder networking event to allow potential applicants to meet each other and begin forming teams. Further information is detailed in the public engagement section.

Strategies for EVSE Data Collection & Sharing

To ensure accountability and implement a data-driven program, NCDOT will require regular reporting of charger utilization and reliability. Data sharing and analysis will also incorporate consumer privacy strategies to ensure data is anonymized. Requirements will also be compliant with NEVI program requirements. NCDOT plans on utilizing the federally funded data collection tool EV-ChART for NEVI program data collection. Any state level data tracking, reporting, and sharing will be based on the EV-ChART data. NCDOT will coordinate with NCDIT on how to integrate the use of EV-ChART with any data needs specific to NCDOT. This reporting may include the following data points, collected quarterly or annually as required and submitted to NCDOT. This data will be shared with the United States Department of Transportation (USDOT) and the United States Department of Energy (USDOE) as required by NEVI formula program and FHWA guidance.

Summary Report per EV charging station:

- Location: Site name, EVSE ID number, address, city, zip, county
- Operational uptime
- Number of charge events
- Number of unique vehicles
- Average charge time per event (mins)
- Average kWh per charge event
- Total kWh consumed
- Gallons of gasoline and/or diesel fuel displaced
- Estimated cumulative miles driven from charge
- Estimated cumulative gallons of gasoline and/or diesel fuel displaced
- Total monthly cost of electricity for charging station operator
- Monthly maintenance and repair cost

Details per charging event:

- Location: Site name, EVSE ID number, address, city, zip, county,
- Charge event date time,
- Time charging,
- Length of time connected,
- kWh provided,
- Vehicle make and model year (on events where available).

Additional data to be reported

- EV charging station owners are required to share real-time data sharing on charger location, charger status, and fees publicly on online directories, including on the Alternative Fuel Data Center's Station Locator.

Strategies to Address Resilience, Emergency Evacuation, Snow Removal/Seasonal Needs

As reported in the U.S. Department of Energy's Energy Sector Risk Profile for North Carolina, between 2008 and 2017, the greatest number of electrical outages occurred in July, primarily due to weather or falling trees. On average, these outages affected 684,562 people. Hurricanes have been responsible for the greatest overall property loss, and all areas of the state have been impacted by hurricanes in the past 20 years. Due to the increasing frequency and severity of hurricanes, Governor Roy Cooper and other public figures have encouraged North Carolina residents to educate themselves about hurricane preparedness, including devising emergency evacuation plans. NCDOT has identified evacuation routes that coastal residents can take to reach I-95. I-95 is the nearest north-south interstate to the coastal regions, so it is a key evacuation roadway for the coastal areas and cross-border evacuations to nearby states. Ensuring access to EV chargers leading to and along I-95 is necessary for safe evacuations.

During hurricane evacuations, the performance, reliability, and accessibility of EV chargers are essential for people's safety. This Plan prioritizes implementing stations along evacuation routes, and future planning should ensure that EV charging stations located along evacuation routes are prepared to serve intense periods of increased demand and withstand extreme

weather conditions. Residents who own an EV should develop an evacuation plan that identifies multiple nearby charging sources, including sources that are not traditional charging stations.

EVs, EV chargers, and EV cables are designed to be weatherproof, especially regarding water. EV charging ports are designed to flush water and drain when they are charged, and EV chargers and cables are designed to protect users from electric shock. Additional steps during charger installation can maximize their resistance to severe weather, such as watertight covers on any outlets and plugs.

NCDOT will continuously explore opportunities to incorporate emergency preparedness into NEVI program planning and implementation. Examples include incorporation of EV stations along evacuation routes as a scoring criteria or promotion of battery storage (an eligible expense with NEVI funds) as part of station deployment and as a back-up electric power source. Reliability is a goal for the NEVI program in North Carolina. Reliability includes use of EV charging stations during emergency events.

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

The NCDOT Human Resources/Workforce Development, On-the-Job Training (OJT) and Supportive Services (SS), and Business Opportunity and Workforce Development (BOWD) units will lead workforce training initiatives related to the NEVI program. Additionally, NCDOT will work with other partners across the state to create a skilled workforce and create new opportunities for business and employment.

Executive Order No. 246, signed by Governor Roy Cooper, solidified North Carolina's commitment to developing a local workforce trained for clean energy-related careers such as those needed for EV charging infrastructure projects. The Clean Energy Youth Apprenticeship Program, created as part of this executive order, establish a partnership with educational institutions, particularly those that serve underrepresented communities, to create programs that develop graduates for clean energy careers. Workforce stakeholders including the NCWorks Commission (the state workforce development board), local workforce development boards, community colleges, and the NC Chamber of Commerce will be essential in collaborating to provide employers and employees with the necessary training to develop a skilled workforce for EV charging infrastructure installation.

Requirements for training certifications through the North Carolina EV deployment plan solicitation process can help ensure installation standards across EV charging infrastructure projects. The Electric Vehicle Infrastructure Training Program (EVITP) is one example of a training program that provides skill upgrades to help electricians meet the new demand for EV charging station installations. Partnerships with trade schools and community colleges, as well as state and local workforce development programs, particularly in disadvantaged communities, could provide training programs like this to NC workers at a low or no- cost. NCDOT's On-the-Job Training and Supportive Services (OJT/SS) programs – especially its Highway Construction Trade Academies — can also help to prepare skilled labor for the installation of the stations, particularly involving women, minorities, and disadvantaged individuals in the training and employment process.

Lastly, one of the goals of this Plan is to create opportunities for diverse businesses and workforce to participate in the construction of North Carolina's EV infrastructure. As part of the solicitation process for NEVI awards, diverse business and workforce (DBW) requirements will be included to ensure opportunities for them to participate with implementation.

09 Equity Considerations

Advancing equity is a priority for Governor Cooper's administration including the Department of Transportation. In 2020, Governor Cooper signed Executive Order No. 143, establishing the Andrea Harris Social, Economic, Environmental and Health Equity Task Force to address long-term disparities. Executive Order 246, signed in 2022, also prioritizes the importance of environmental justice and equity in the state's transition to a clean economy, directing agencies to take steps to elevate the consideration of environmental justice including by identifying a staff lead to serve as the point person for environmental justice efforts. Each agency will also develop a public participation plan ensure the public and especially underserved communities are meaningfully engaged in government decision-making. North Carolina is working closely with federal partners on a variety of equity initiatives, including the Justice40 Initiative which was created to deliver benefits of federal investments in climate and clean energy, including sustainable transportation, to disadvantaged communities. Signed as Executive Order 14008, Justice40 has a myriad of Justice40-covered programs that support this initiative, one of which is the NEVI program. As prioritized both in NEVI guidelines and Justice40, the plan prioritizes charging infrastructure that serves lower-income and disadvantaged communities.

Identification and Outreach to Disadvantaged Communities (DACs) in the State

NCDOT and the state are committed to effectively and equitably implementing the NEVI program throughout North Carolina and especially in underserved communities by following a decision-making process driven by clear performance metrics.

This Plan adopts Interim Guidance for Justice40 that was used to identify disadvantaged communities. The interim definition for DACs includes 22 indicators that are grouped into six categories of disadvantaged characteristics: transportation access health, environment, economic, resilience, and equity. The definition itself is consistent with the Office of Management and Budget and relevant statutory authorities. As of Summer 2022, a tool was developed by the United States Department of Transportation to indicate whether a proposed project is located in a Disadvantaged Community (DAC; https://usdot.maps.arcgis.com/apps/dashboards/d6f90dfcc8b44525b04c7ce748a3674a).

In North Carolina, 73 percent of the population lives in a Census tract designated as a Justice40 community (*Table 11*). Additionally, 46 percent of the state's population is within a Justice40 designated community and along an AFC (*Figure 10, Figure 11*). For Phase 1 and Phase 2 NEVI implementation in North Carolina, priority and focus will be given to ensuring job opportunities and infrastructure are located in Justice40 designated census tracts.

	Population	% of Statewide Population
Statewide Justice40 communities	7,533,476	72.5%
Alternative Fuel Corridor Justice40 communities	964,552 (within 2 miles of AFC)	9.3%

Table 11. Disadvantaged Communities and Relationship to AFCs

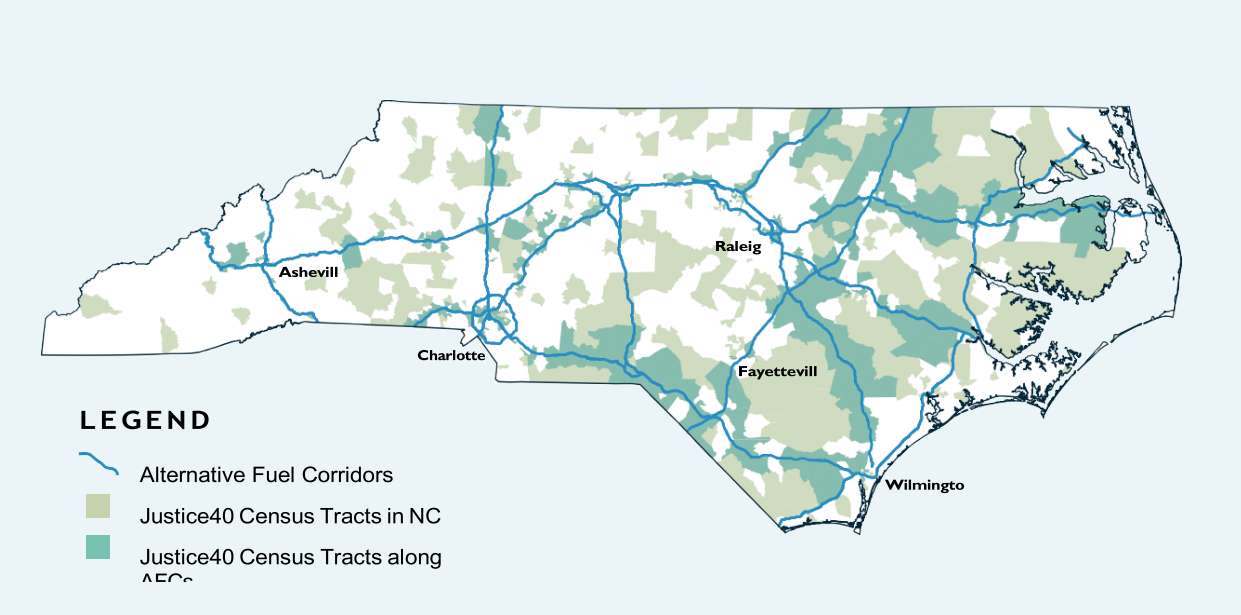

Figure 10. Justice40 Census Tracts and Relationships to AFCs

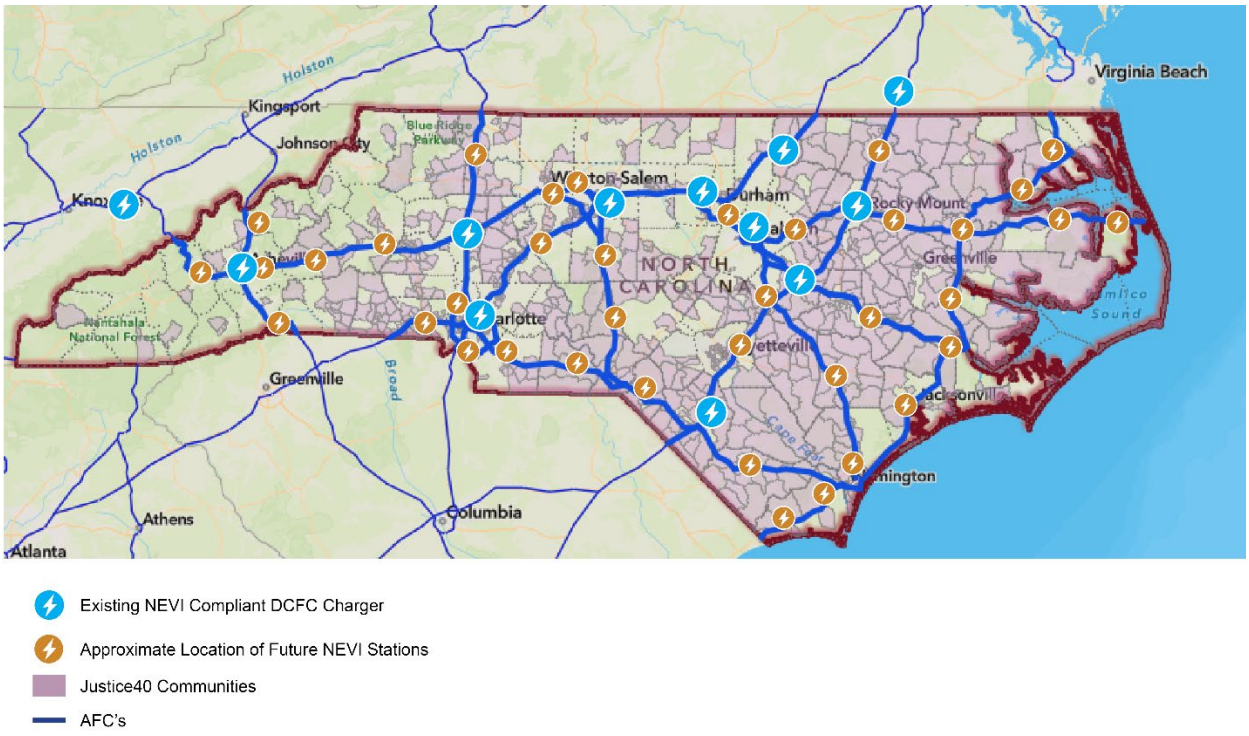

Figure 11. Disadvantaged Communities with Existing and Proposed Stations.

Process to Identify, Quantify, and Measure Benefits to DACs

The NCDOT Human Resources/Workforce Development, On-the-Job Training (OJT) and Supportive Services (SS), and Business Opportunity and Workforce Development (BOWD) units will lead workforce training initiatives related to the NEVI program. Additionally, NCDOT will work with other partners across the state to create a skilled workforce and create new opportunities for business and employment.

General Deployment and Access

As infrastructure is deployed, NCDOT will refine and update the analysis to identify where there may be network gaps and an implementation plan to address gaps that exist within DACs. Data and maps will be developed so the deployment can be actively updated. Information regarding the location, deployment type, charge capacity, and overall coverage (and coverage within DACs) will be tracked.

Funding

A critical piece to understanding the effects of EV deployment and DACs is provided through funding and financing. NCDOT will develop metrics to track whether investments are made in DACs and the community impact of these investments.

Air Quality

NCDOT will partner with NCDEQ to gather information from existing air quality monitoring stations in DACs over the five-year NEVI program. The goal is to improve air quality, particularly in DACs, across the state.

Creation of a Website and Materials specific for EV information and assistance

NCDOT will create, maintain, and update a repository of resources for those who are unfamiliar with EVs and will update regularly with feedback from community stakeholders. These materials will be in English as well as other common languages spoken in North Carolina. Online website clicks and resource downloads will be tracked as a measure to understand how communities are continuing to engage with the NEVI program.

Outreach to DACs (2023 Update)

Statewide Roundtables

For the public roundtable engagement, NCDOT utilized the contact list provided by the North Carolina Office of Civil Rights, as well as contact lists provided by the host MPOs in the region. Each of the roundtable events was intended to engage with the three key stakeholder groups that will be necessary for implementing the NEVI program, and an open house to give members of the public an opportunity to learn more about the program. In many of these events, members of disadvantaged businesses were in attendance, wanting to learn more about the program and offering suggestions for how the program can be structured to promote participation.

Key concerns included:

- Program structure that favors large national firms to the exclusion of North Carolina-based businesses and local disadvantaged businesses and property owners.
- Program could omit the participation of North Carolina workers and miss an opportunity for workforce development in a growing industry.
- Charging infrastructure is limited to construction only along AFCs, which limits its accessibility to many Justice40 communities.

How these concerns were addressed:

- The program was structured into the smallest project-level components, meaning a team can bid on each individual cluster. This is intended to minimize the exclusion of smaller businesses by keeping the projects smaller in size and lower in cost. It also eliminates any kind of interdependency between sites, where a team would need access to multiple properties in multiple sites in order to submit a proposal. Teams can bid on the clusters where they are competitive and bid on the number of clusters they have the ability to construct and operate.
- Focus on workforce development as a key program outcome. NCDOT recognizes that electrification will continue, and workforce needs will continue to be important. While NCDOT is still in the process of developing evaluation criteria, workforce development will be given priority. NCDOT is working with the NC Office of Civil Rights to integrate a workforce development program into the NEVI program and utilize North Carolina's many technical and trade schools as a conduit for workforce training. It is anticipated that workforce development and training of individuals from Justice40 communities and DACs will create a lasting and positive community impact.
- Phase II of the program will reach many of the communities not located near North Carolina's AFC network. With the NEVI program requirements of building only within one mile of an AFC and spaced 50 miles apart, the density and quantity of charging infrastructure in Justice40 communities will not be substantial. The need to quickly build out the AFC network in Phase I will allow a more targeted approach to charging infrastructure that can be placed directly into Justice40 communities where it can best serve community members.

Office of Civil Rights Webinar

The webinar was intended to communicate directly with disadvantaged businesses stakeholders that wanted to be involved or learn more about the program. The webinar was hosted by the North Carolina DOT Office of Civil Rights, with invitations to the event coordinated through OCR. The webinar featured the Director of NCDOT's Office of Civil Rights Tunya Smith, and North Carolina's State Director of Rural Development through the U.S. Department of Agriculture, Reginald Speight. The webinar was followed by a Q&A session with the speakers, and directed participants to sign up for the NEVI listserv and to register and attend the network session that was scheduled for early May, 2023.

DAC Engagement through the Clean Transportation Plan

As part of Governor Cooper's Executive Order (EO) 246, NCDOT developed the State's Clean Transportation Plan (NCCTP), which highlights North Carolina's roadmap to achieving the Governor's emission reduction targets. As part of the Plan, an engagement process with DACs and tribal communities was conducted in the spring of 2023. The advertisement of the meetings was coordinated through the NCCTP Statewide Stakeholder list, which includes minority and low-income organizations and advocates. For each of the engagements, content was presented for both the NCCTP and the NEVI programs, and participants had opportunity to learn more and comment about each. NCDOT performed outreach at the following locations as part of the engagement process:

First Christian Church – March 1, 2023 – (4) Participants
800 Beech St.
Elizabeth City
Percent of Disadvantaged Census Tracts in the Selected Project Area: 90%

Leland Cultural Arts Center – March 1, 2023 – (15) Participants
1212 Magnolia Village Way
Leland
Percent of Disadvantaged Census Tracts in the Selected Project Area: 10%

Morehead Recreation Center – March 2, 2023 – (4) Participants
101 Price St
High Point
Percent of Disadvantaged Census Tracts in the Selected Project Area: 37%

Lumber River Council of Governments – March 2, 2023 – (1) Participant
30 CJ Walker Rd
Pembroke
Percent of Disadvantaged Census Tracts in the Selected Project Area: 100%

Brushy Fork Baptist Church – March 6, 2023 – (7) Participants
3915 U.S. 421
Vilas
(Near Boone) with Percent of Disadvantaged Census Tracts in the Selected Project Area: 17%

City of Hendersonville Operations Center – March 6, 2023 – (19 Participants)
305 Williams St
Hendersonville
Percent of Disadvantaged Census Tracts in the Selected Project Area: 28%
Networking Event

Key Findings

Electricity
There were 29 responses received relating to electricity, specifically regarding:

- The electric grid's capability to handle the adoption of the targeted number of EVs and EV sales percentage.
- The fuels being used to generate the electricity, and vehicles being unclean or non-carbon-reducing.

EV Operation and Infrastructure
There were 9 responses received relating to concerns regarding EV batteries' cost and operational functions (e.g., limited range, long charging times, and reduced quality in performance in cold weather).

There were 109 responses received relating to EV charging infrastructure concerns. The majority of the comments expressed concern about the availability of EV charging stations. The types of comments received were as follows:

- There are not enough EV charging stations available for the different types of vehicles (light-, medium-, and heavy-duty), especially in rural areas and multi-unit dwellings.
- EV charging stations should be placed in state parks and historical sites.

- Free apprenticeship and workforce training programs for infrastructure maintenance and development should be available.

Environmental
There were 12 responses received relating to environmental concerns surrounding electric vehicles and the batteries used to operate them. Specifically repeated concerns covered the following:

- Reliance on internationally sourced materials, such as cobalt, to produce EV batteries.
- The potential for increased environmental pollution from battery disposal once a battery has reached the end of its lifespan.

Future Engagement

North Carolina DOT is in the process of identifying specific siting clusters along the AFC network, and outreach and engagement with both Justice40 communities and community leaders will be the next iteration of engagement once the clusters are identified.

Phase II of North Carolina's NEVI program will focus on community-based charging infrastructure, and significant engagement surrounding the development and implementation of Phase II of the program will be held.

10 Labor and Workforce Considerations

Access to clean energy jobs and workforce development programs is a key part of the North Carolina NEVI program. Additionally, creating opportunities for disadvantaged communities to participate and have access to these jobs is also a priority.

As noted previously, a portion of the North Carolina NEVI program will focus on jobs skills training as well as business development investments to develop and train local workers in Electric Vehicle Supply Equipment (EVSE) construction and maintenance.

NCDOT OCR is working to provide opportunities for diverse businesses to participate in the application process and working to support the development and utilization of a diverse workforce to construct, maintain, and install NEVI-funded infrastructure.

In addition, NCDOT's HR/Workforce Development and OCR OJT/SS units can help provide the necessary training and skills upgrades needed to mitigate potential labor shortages, especially for DEIA purposes, for supportive industries like installers, electricians, and station maintenance and repair personnel. NCDOT's HR/Workforce Development and OCR OJT/SS units can help provide the necessary training and skills upgrades, especially for DEIA purposes. On-the-Job Training and preregistered and registered apprenticeships, Highway Construction Trade Academies, Advanced Training, and career exposure, engagement and education development activities — both for youth and adults – can be provided for NEVI talent pipeline needs.

According to the FHWA, one workforce strategy that is important for highway construction programs and most infrastructure projects, including NEVI, is the expansion of Registered Apprenticeship and pathways that lead people into programs. Expanding preregistered and registered apprenticeship will help to ensure the next cohort of skilled tradespeople is being trained as NEVI projects are being delivered. At the same time, NC will take steps to make Registered Apprenticeship more accessible to populations that have been underrepresented in the infrastructure workforce including women, minorities, people with disabilities, and others. In fact, NCDOT units are major partners in a National Governors Association (NGA) Technical Assistance project to help develop opportunities for older youth and adults via funds from IIJA. NC Workforce Innovation and Opportunity Act (WIOA) and community college systems (including Apprenticeship NC), plus state public school systems, are likewise involved. Expanding the workforce for installing and maintaining electric vehicle chargers — from trenchers to electricians – is something State Departments of Transportation (such as NCDOT) are uniquely positioned to do with partners such as the university system, especially Institute for Transportation Research and Education (ITRE) at NC State here in NC.

The NCWorks and community college systems, together with community-based organizations and the state's school systems, will be key partners in these efforts. Additionally, both OCR units have pilot program resources to quickly provide training for specialized skills. These resources will also be leveraged to support skills acquisition that can be quickly applied during the five-year NEVI program.

For the North Carolina NEVI program, the Office of Civil Rights will create an annual report documenting labor and workforce activities.

The Office of Civil Rights, the Business Opportunity & Workforce Development (BOWD) and On-the Job Training Units will be responsible for utilizing diverse businesses, workforce development training, and career readiness. These units will combine job training programs and initiatives in partnership with nontraditional entities to include industry associations, career centers, school districts, and colleges and universities across the state to develop ways to leverage these partnerships for the NEVI program.

NCDOT's On-the-Job Training (OJT) and Supportive Services (SS), as well as Business Opportunity and Workforce Development (BOWD) Programs, are externally facing DEI workforce and disadvantaged enterprise development initiatives. Through training and education activities with private prime contractors at public Highway Trades Construction Trade Academies, and via new Transportation Summer Accelerators at participating high schools, OJT/SS provides a skilled and diverse labor supply for the industry. OJT and workforce development programs include registered pre-apprenticeships and continuing education programs for transportation, clean energy and electric vehicle charging station innovation.

BOWD provides supportive services to certified Disadvantaged Business Enterprise (DBE) firms through training, education, mentorship, incubator-based programming, and one-on-one technical assistance and other services in order to resource their work specialty related to the highway construction industry. Over the years, new subjects have been added to the respective curricula, and the installation, maintenance and repair of EV charging stations is in the process of being explored and developed for all talent development activities, course levels and participants.

NCDOT is exploring the use of DBE's to support its own deployment of Level 2 EV charging infrastructure at 3 NCDOT sites using funding provided by the NC Department of Environmental Quality's VW Mitigation grant program. This will provide valuable state contracting experience to support DBE's that may wish to apply for the NEVI funding. These contractors will provide the electrical design for the EV charging sites required under NC state contracts for EV charging equipment at state agencies.

Governor Roy Cooper has worked with several EV charging equipment companies to bring EV supply equipment manufacturing plants to North Carolina. In February 2023, Kempower Inc. committed to invest $41 million and hire 601 jobs for a plant to manufacture electric vehicle chargers. The plant will begin production by the end of 2023.

NCDOT is working with both the State Energy Office and the Steps4Growth program, a $23 million dollar, federally funded, workforce development program to train interns and apprentices at NC high schools and the NC Community College System. The program has 40 partner employers across the clean energy industry, including EV charging companies, who will train interns and apprentices on EV charging manufacturing and maintenance. Collectively, the 40 partner employers have committed to hiring 3,000 Steps4Growth trainees over four years, and then 1,500 trainees every year afterward. The program started training interns and apprentices at community colleges in the summer of 2023. Section 10, Labor and Workforce Conditions, highlights additional workforce training programs.

In compliance with 23 CFR 680.106(j) to ensure that the installation and maintenance of chargers is performed safely by a qualified and increasingly diverse workforce of licensed technicians and other laborers, all electricians installing, operating, or maintaining Electric Vehicle Supply Equipment must receive certification from the Electric Vehicle Infrastructure Training Program (EVITP) or a registered apprenticeship program for electricians that includes

charger-specific training developed as part of a national guideline standard approved by the Department of Labor in consultation with the Department of Transportation, if and when such programs are approved.

11 Civil Rights

There are two areas of focus for civil rights with the NEVI program. One area is the promotion and support of equal access to employment and business opportunities. The second area is enforcing federal and state laws and regulations that prohibit discrimination on the basis of race, religion, sex, sexual orientation, gender identity, color, national origin, age or disability.

The NCDOT Office of Civil Rights will be responsible for leading NEVI activities related to civil rights. Specific programs managed by the Office are:

- Americans with Disabilities Act (ADA) Program
- Business Opportunity & Workforce Development (BOWD) - Services for Certified Firms
- Contractor Utilization
- Environmental Justice and Equity/ Limited English Proficiency
- Equal Employment & Affirmative Action
- Equal Opportunity Contractor Compliance
- HBCU Administration
- Title VI Nondiscrimination
- Unified Certification Program
- Workforce Development and On-the-Job Training/ Supportive Services Program

The Office of Civil Rights plans to increase its capacity to coordinate civil rights-related activities for the NEVI program. This will include a focus on the education and promotion of business opportunities, the development and tracking of equity goals, and the coordination of compliance efforts with applicants and other agencies to ensure compliance with federal and state laws and regulations.

The Office of Civil Rights, in partnership with the Office of HBCU Outreach, will work with state HBCUs to explore workforce development and development of educational programs to fill supply chain gaps in skilled labor and contracting.

Section 10 highlights the approach to Civil Rights, including the role of externally facing DEI workforce and disadvantaged enterprise development initiatives. These programs will be critical to the implementation of the NEVI program. Site selection will be measured against publicly available tools, such as Argonne National Laboratory's EV Charging Justice40 map, to ensure NCDOT's NEVI program is meeting the goals of Justice40. In addition, station siting within Justice40 communities will be incentivized in the scoring criteria.

12 Physical Security & Cybersecurity

A critical part of creating a reliable public EV charging network is network reliability and data security. Today, data is not just information but a critical piece of infrastructure. The North Carolina NEVI program will work with the N.C. Department of Information Technology to identify and design security standards for data sharing and management to ensure the public EV charging network is secure and reliable.

As part of the North Carolina NEVI program, NCDOT will focus on five cybersecurity policy topics:

- **Asset, catalogue, and push asset data.**
  Cataloguing where chargers are located and pushing real-time data about charger availability is essential to ensure ease of travel, access, and reliability. NCDOT will require all awardees to participate in the latest national and industry open data specifications to ensure the traveling public has accurate and timely data about the public EV charging network in North Carolina.
- **Open data specifications and interoperability.**
  Hardware and software should be able to work for customers, regardless of the vendor or system. Open data standards will create a seamless marketplace for customers. NCDOT will work with FHWA, NCDIT, and industry partners to incorporate the latest open data specifications for the NEVI-funded EV network in North Carolina.
- **Data management.**
  Data management will be important for NCDOT and third-party providers building and operating EV chargers funded by the NEVI program. NCDOT and NCDIT will develop policies for the data it receives from station developers/hosts and also establish standards for data management, particularly as it relates to data security and privacy. NCDOT will also consider cybersecurity strategies such as addressing user identity and access management, intrusion and malware detection, event logging and reporting, management of software updates, and secure operation during communication outages.
- **Data capacity.**
  As part of applications, proposals will need to document EV charging providers have sufficient data capacity to meet operations and reporting requirements for the NEVI program. Additionally, NCDOT will create sufficient storage policies to ensure data collected is managed and maintained for the entire five-year program.
- **Data privacy.**
  NCDOT will require awardees to adopt and maintain a data privacy policy. The policy will confirm how customer private data is collected, stored, used and shared. Additionally, NCDOT will require that any data that is reported and shared as part of the NEVI program be anonymized. This requirement will ensure data can be used to analyze trends and performance while also protecting consumer privacy.

13 Program Evaluation

Reporting and monitoring progress will be a regular part of the North Carolina NEVI program. The purpose of program evaluation will be to document regulatory compliance, create public transparency about the benefits and impacts of the program, and improve and refine the program over time.

NCDOT will evaluate the North Carolina NEVI program annually. Performance measures will be developed in partnership with FHWA, state agencies, the business community, and community members. NCDOT will develop the key performance indicators (KPIs) for the five-year program. The indicators will be developed based on FHWA program guidance as well as public input. NCDOT will focus on four main topics:

Regulatory Compliance.

These KPIs will focus on documenting and reporting the federal and state regulatory and performance requirements for the NEVI program. Examples include the number of NEVI-compliant stations constructed each fiscal year and funding distributed each fiscal year.

Community Characteristics and Demographics.

These KPIs will document aggregate-level community characteristics about who is using the NEVI-funded charging network as well as access characteristics, like population within a certain distance of stations.

Economic Impact.

This topic will focus on how NEVI funds are supporting the North Carolina economy. Example KPIs include jobs created, people trained, and number of small business or diverse businesses supported by the NEVI program.

Equity.

In line with the Justice40 initiative at the federal level, this topic will focus on measuring the impacts and benefits of the NEVI program in historically disadvantaged communities (DACs). Example KPIs could include the number of stations and chargers installed in DACs and the number of people employed that live in DACs. Desired benefits and the associated KPI tracking metrics will be developed through a collaborative process with community partners within DACs. Public engagement activities as described in Section 3 of this plan will be leveraged to consistently solicit and incorporate the needs, priorities, and desires of DACs. The Office of Civil Rights will take a lead in the collaborative process used for developing and tracking these KPIs.

14 Discretionary Exceptions

North Carolina is a big and diverse state. NCDOT will focus on meeting the NEVI program requirements and ask for exceptions when deviations are needed to meet unique site, geographic, cost, or other technical conditions.

Over the course of the five-year NEVI program, there may be a need to adjust the federal NEVI program requirements for a particular site. NCDOT will work with the Joint Office to coordinate and receive approval for exceptions.

Currently, the Phase 1 strategy has identified station locations that meet the requirements of the 50-mile station spacing along the AFCs. During FY2023 and FY2024**, identified sites along the AFCs may need exceptions** due to grid capacity, geography, equity, or cost considerations especially in the state's rural areas. NCDOT will work with applicants and the Joint Office to identify exceptions as early in the implementation process as possible and submit required exception applications for approval. The appendix outlines NCDOT's planned exemption request.

Glossary of Terms

AADT – Annual Average Daily Traffic
ADA – American Disabilities Act
AFC –Alternative Fuel Corridors
BIL – Bipartisan Infrastructure Law
BOWD – Business Opportunity and Workforce Development
DAC – Disadvantaged Community
DBW – Diverse Business/Workforce
DCFC - Direct Current Fast Charging
EIA – U.S. Information Administration
EO – Executive Order
EV- Electric Vehicle
EVITP – Electric Vehicle Infrastructure Training Program
EVSE – Electric Vehicle Supply Equipment
FERC – Federal Energy Regulatory Commission
FHWA – Federal Highway Administration
IIJA - Infrastructure Investment and Jobs Act
Joint Office – Joint Office of Energy and Transportation
KPI – Key Performance Indicator
kWh – Kilowatt-hours
MPO – Metropolitan Planning Organization
NCCTP – North Carolina Clean Transportation Plan
NCDEQ – North Carolina Department of Environmental Quality
NCDOT – North Carolina Department of Transportation
NCSEO – NCDEQ's State Energy Office
NCUC – North Carolina Utility Commission
NEVI Formula Program – National Electric Vehicle Infrastructure Formula Program
SBE - Small Businesses Enterprise
USDOE – United States Department of Energy
USDOT – United States Department of Transportation
VMT – Vehicle Miles Traveled

Appendix: Proposed Exemptions

Figure 12 and Table 12 highlights the four proposed exemptions for NC, and a description and map for each follow.

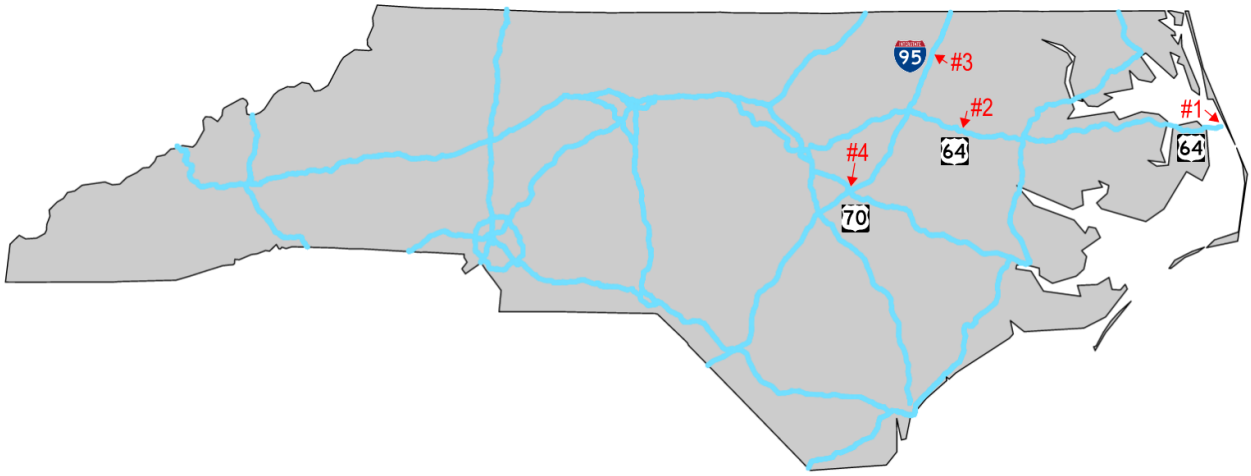

Figure 12. Proposed Exemptions, North Carolina NEVI Plan

Exception Number	Type	Distance of Deviation (mi)	Included in Round 6 AFC Nomination	Reason for Exception Request
1	50 Miles Apart	2	No	Geography & Grid Capacity
2	50 Miles Apart	3	No	Extraordinary Cost
3	50 Miles Apart	4	No	Extraordinary Cost
4	1 Mile From Exit	0.7	No	Extraordinary Cost

Table 12. Proposed Exemptions Summary

Exemption 1:
US-64 is utilized by a large proportion of tourists travelling to the Outer Banks region. NEVI 50 mile spacing requirements for siting would require a charging station to be located in a very rural area along U.S. 64 with limited transmission and power-generation infrastructure. This could result in underutilization by potential users by virtue of being located too far from tourist destinations – or extraordinary costs to increase grid capacity, threatening the economic viability of the charging station. It should be noted that high-voltage transmission lines owned by Virginia Electric & Power Company traverse the Outer Banks. By allowing for siting slightly greater than 50 miles from the charging station to the west, a charging station could be sited in the Outer Banks, greatly increasing available amenities, utility infrastructure, and potential use. (*Figure 13).*

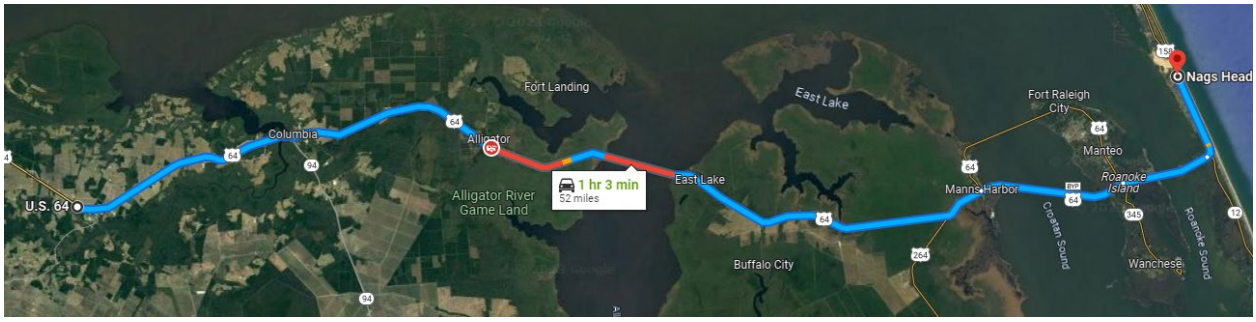

Figure 13. Proposed Exemption 1.

Exemption 2:
There is an existing NEVI-creditable charging station located at Sheetz #504 near the city of Rocky Mount that serves US-64. Optimal siting strategy places a proposed charging station near the town of Williamston, close enough to US-17 to serve both corridors with a single charging station. The distance between the existing and proposed charging sites is slightly more than 53 miles *(Figure 14).*
Siting the charger 3 miles to the east in the town of Williamston would provide several advantages:

- *Williamston is a rural town with a population of about 5,000 and may encourage EV adoption in this community.*
- Moving the station to the junction of US 64 and US 17 will make this station more sustainable, especially after the station is no longer federally funded.
- The station is closer to the heart of the town, giving more options for station amenities and amenities at adjoining businesses.
- The station is more secure during non-business hours if located closer to town and support services.
- Allowing for a 53-mile drive between existing and proposed charging sites would simplify North Carolina's proposed charger network without being particularly burdensome to travelers.

Figure 14. Proposed Exemption 2.

Exemption 3:
I-95 is served near the state borders of Virginia and North Carolina by a NEVI-creditable charger located at Walmart Supercenter #2805 in the city of Emporia, VA, only 12 miles from the North Carolina border. A non-NEVI compliant station with 20 DCFC ports is located along I-95 about 26 miles south of the Walmart in Halifax, NC. There is also a charging station located at Sheetz #504 near the city of Rocky Mount (the same charging station from Exemption #2) that is beyond the 1-mile buffer zone from I-95 and does not currently serve the corridor. However, a project to convert the Sunset Avenue overpass into an interchange will allow the Sheetz charging station to serve both corridors. When this project is completed, these two charging stations will be 54 miles apart.
NC DOT has 2 choices for the location of this I-95 NEVI site that would meet NEVI program criteria.

1. Placing the site in a very rural area between the cities of Rocky Mount and Roanoke Rapids. These towns have populations of less than 5,000. This location would meet the NEVI criteria, but the potential sites would have few amenities for customers and would be at risk for sustainability after federal funding is no longer available.
2. Placing a new NEVI charger near Roanoke Rapids or Rocky Mount. This would create competition potentially with the existing stations in Rocky Mount or Halifax and may even impact the station at Emporia, VA. With the added competition, these stations may not be as profitable.

Allowing for a 54-mile distance between the two existing charging stations at Emporium, VA and Rock Mount would simplify North Carolina's network without being particularly burdensome to travelers and ensures the program does not build a NEVI station in a location that is not sustainable or profitable, especially after the station is no longer federally funded. *(Figure 15).*

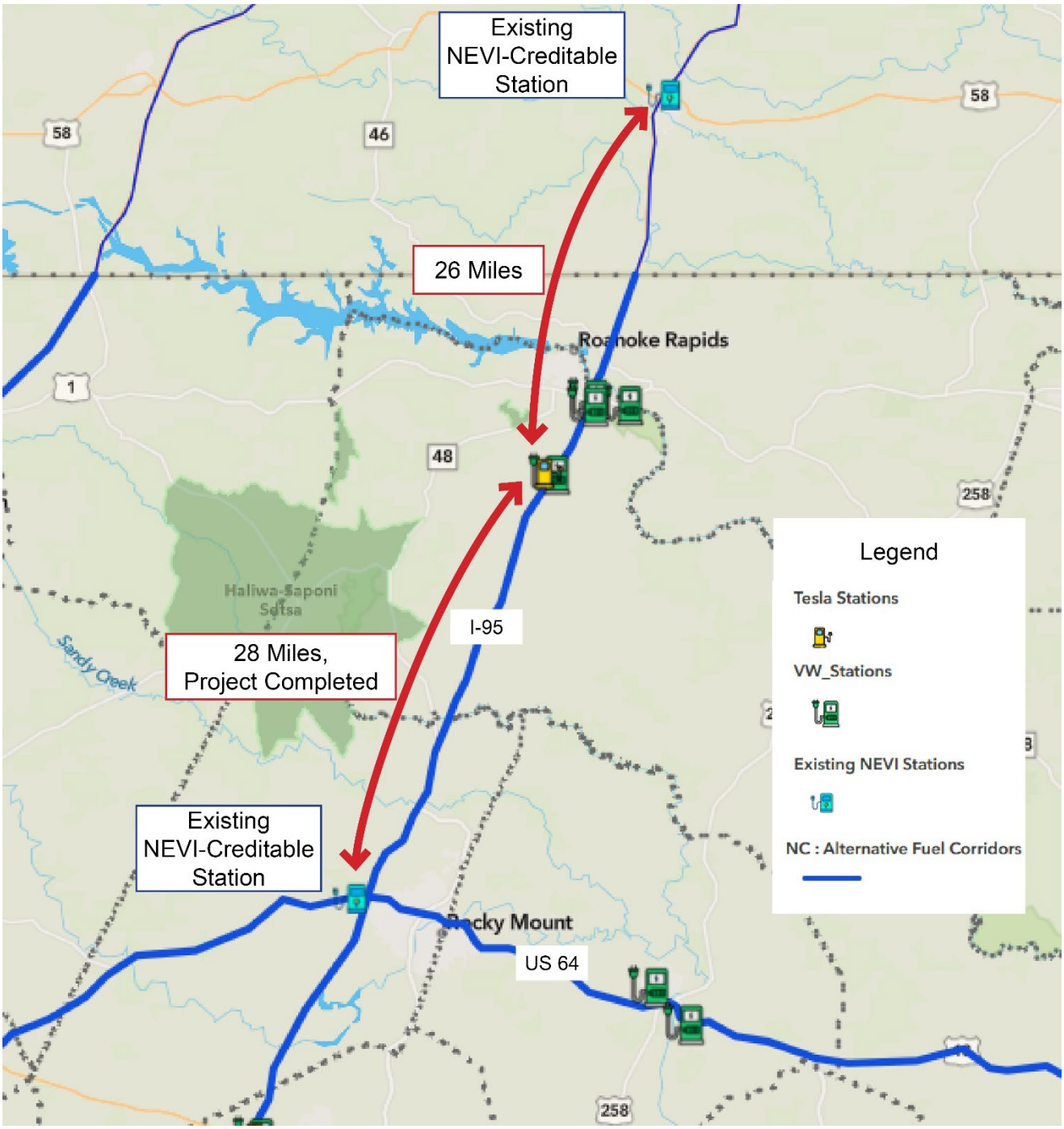

Figure 15. Proposed Exemption 3.

Exemption 4:
Two AFC's (I-95 and US-70) intersect near the town of Smithfield. I-95 is served by an existing Electrify America charging station located at the Carolina Premium Outlets. While the cost to install a charging station along US-70 may not be extraordinary, optimal siting strategy would require a charging station serving US-70 to be sited near the intersection of these two AFCs. The shortest distance from US-70 to the existing NEVI-creditable Electrify America charging station at the Carolina Premium Outlets is only 1.7 miles from the US-70 exit. The redundancy and ensuing inefficiencies of having two charging stations sited so close to one another may threaten the economic viability of operating either. An exemption to the 1-mile criteria to allow for the existing charging station at the Carolina Premium Outlets to simultaneously serve US-70 would simplify North Carolina's overall network without being significantly burdensome to travelers along US-70. *(Figure 16).*

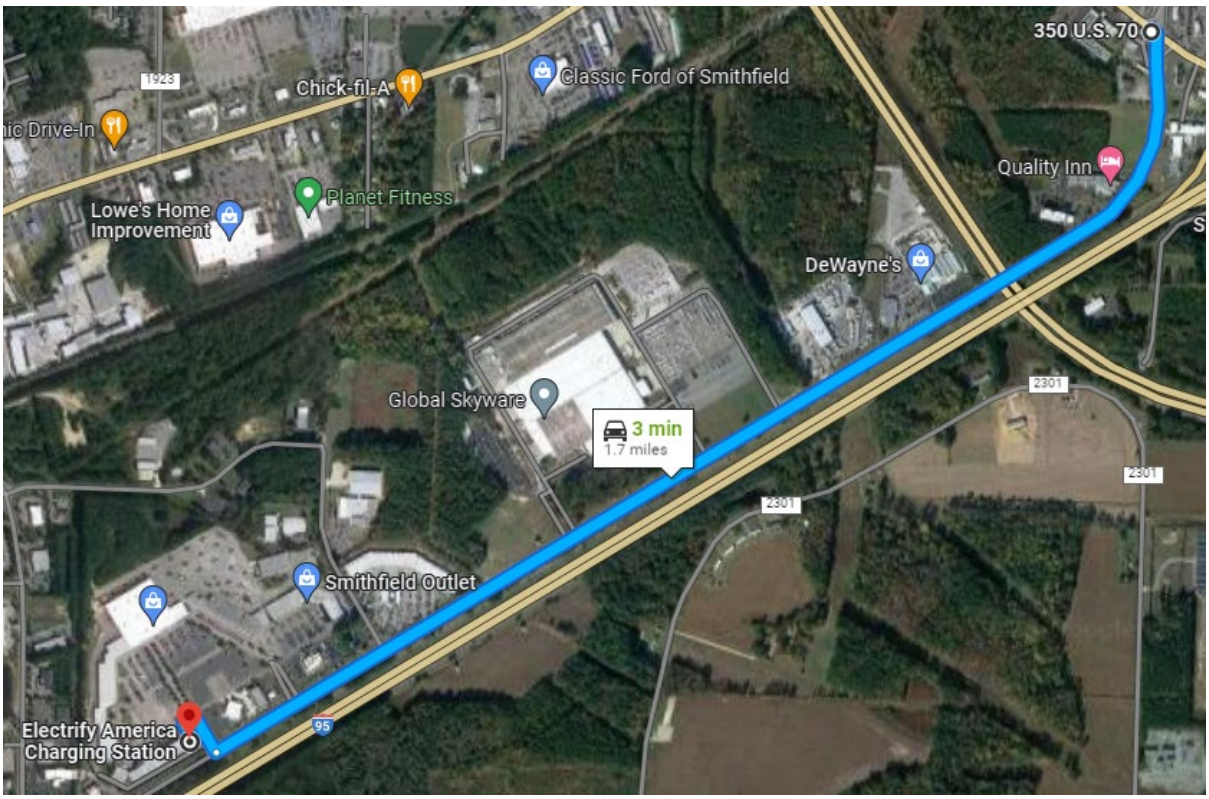

Figure 16. Proposed Exemption 4.

Equity Considerations:
North Carolina's NEVI plan is broken into two phases. Phase 1 is focused on building the network of NEVI-compliant charging stations along interstates and designated AFCs. Any potential remaining funding will be used for Phase 2, which is focused on community-based charging station sites within underserved Justice40 communities and neighborhoods. Any exemptions granted by FHWA that simplify the Phase 1 network and remove charging stations otherwise required under NEVI will allow for funds to be rolled into Phase 2 to serve Justice40 communities.