

State of Vermont Electric Vehicle Infrastructure Deployment Plan 2024 (FFY2025) Update



Vermont Agency of Transportation
September 1, 2024



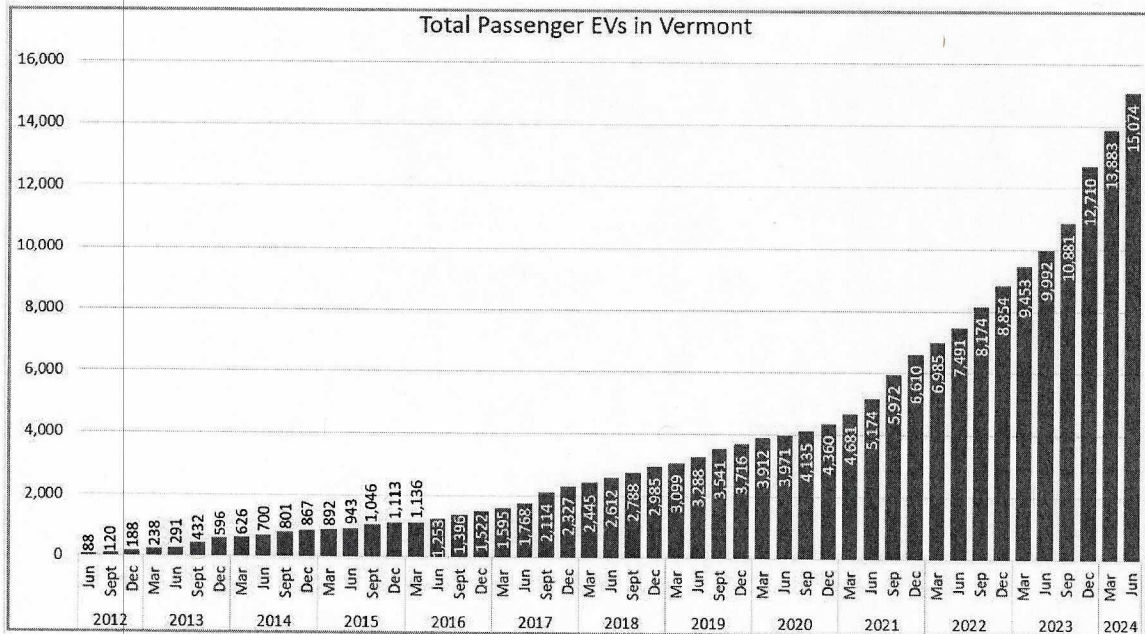
Introduction

Throughout 2024, news headlines in Vermont have been devastatingly repetitive as residents contend with yet another season of poor air quality from Canadian wildfires, beaches closed due heat-inspired algae blooms, increased prevalence of mosquito-borne illnesses at northern latitudes, and multiple fierce flooding events that once again ravaged homes and downtowns across the state. Our work to address our climate crisis has never been more urgent. The State of Vermont remains committed to reducing greenhouse gas emissions from the transportation sector and transition much of Vermont’s motor vehicle fleet to use electricity as a cleaner source of energy.

The Global Warming Solutions Act requires Vermont to reduce greenhouse gas pollution to 26% below 2005 levels by 2025, 40% below 1990 levels by 2030, and 80% below 1990 levels by 2050, and the steps to meet this requirement are detailed in the 2021 Vermont Climate Action Plan¹ (a 2025 update of the Plan is in progress) as well as climate action plans developed by local and regional partners across the state. The Climate Action Plan includes a priority of developing electric vehicle charging infrastructure to support transportation electrification.

As of July 2024, there were 15,074 plug-in passenger vehicles and light-duty trucks in the state, or approximately 2% of registered vehicles. This includes 6,331 plug-in hybrids and 8,743 all electric vehicles. To reach the state’s 2030 target of 126,000 PEVs by 2030, the Alternative Fuel Data Center’s Electric Vehicle Infrastructure Projection Tool (EVI-Pro) Lite² indicates Vermont would need 4,345 public Level 2 charging ports (351 at public recreation areas) and 384 public DCFC ports to support these vehicles. With 881 public Level 2 charging ports and 184 public fast charging ports currently in operation, that leaves a significant gap of 3,464 Level 2 and 200 DCFC ports to rapidly close.

Figure 1. Total Passenger EVs in Vermont as of June 2024



¹ Vermont Agency of Natural Resources. 2021. Initial Vermont Climate Action Plan.

<https://climatechange.vermont.gov/readtheplan>

² Alternative Fuels Data Center. 2024. Electric Vehicle Infrastructure Projection Tool (EVI-Pro) Lite.

<https://afd.energy.gov/evi-x-toolbox#/evi-pro-ports>

support from the utility that confirms the utility will provide required electric service that complies with NEVI requirements at the proposed site signed by the entity represented. Cost estimates for equipment upgrades and related services, along with conceptual plans are also encouraged in proposals.

Green Mountain Power (GMP) is the state's largest utility, serving over 80% of the state (more than 260,000 customers). GMP and several smaller and municipal electric departments are researching estimates for interconnection at state and national recreational sites across Vermont in preparation for our forthcoming proposal for CFI discretionary funds. Vermont's smaller utilities are assessing site readiness within territories in some of the state's most rural areas.

GMP administered the Charge Vermont program with state funds made available through the Vermont Agency of Commerce and Community Development (ACCD) for charging at workplaces, multiunit dwellings, and public attractions. GMP and ACCD provided program data demonstrating the unmet need from this oversubscribed program. VTrans is developing a component in our forthcoming CFI proposal to support workforce development activities that includes establishing a pathway for training new electricians to participate in the installations of Level 2 chargers at key sites at workplaces, including recreational areas, and at multiunit dwellings to support Vermont residents without existing access to home charging.

Utility representatives from all corners of the state continue to note ongoing supply chain shortages of transformers, switch gear, and related equipment needed for DC fast charging make ready infrastructure. In some cases, utilities are hearing potential delays of a year or more for certain components, placing additional urgency on the need to site and advance NEVI-funded installations quickly to minimize any further delays. For the upgrade to Vermont's first NEVI site in Bradford, VTrans worked with GMP to locate NEVI compliant equipment within its own inventory to ensure the site would be completed as quickly as possible. The Agency will continue to work with its utility partners to build cooperative and creative solutions to reduce lead times for equipment and improve procurement timing.

Transportation and Freight Logistics Industry

The Northeast and Mid-Atlantic region is a critical location for zero-emission freight truck infrastructure deployment. Vermont's planning efforts for medium and heavy-duty charging are supported through regional coordination, federal planning studies, and initial infrastructure investment commitments. The National Zero-Emission Freight Corridor Strategy⁸ identifies key sites in Vermont as priority locations where investments in charging infrastructure for zero-emission trucks are critical to meet the needs of an early growing market and well-positioned to catalyze broader public and private investment. The strategy moves through four progressive phases to promote zero-emission truck adoption from 2024 to 2027, 2027 to 2030, 2030 to 2035, and 2035 to 2040. The phased strategy prioritizes the sequencing of deploying zero-emission medium and heavy-duty vehicle (ZE-MHDV) charging infrastructure in and around key freight hubs and along freight corridors to support accelerated adoption of ZE-MHDVs and ultimately achieve a national zero-emission freight (ZEF) network. Vermont corridors are identified in phases 3 and 4 to expand and complete the network. During the initial years, while the strategy focus is on establishing regional ZEF hubs and initial corridor connections in phases 1 and 2, VTrans is laying the groundwork needed to support network expansion in later phases.

VTrans is participating in the Northeast Freight Corridors Charging Plan⁹, a regional study led by the

⁸ Joint Office of Energy and Transportation. 2024. National Zero-Emission Freight Corridor Strategy. <https://driveelectric.gov/files/zef-corridor-strategy.pdf>

⁹ National Grid. 2023. Readyng the Northeastern U.S. for Electric Trucks: National Grid to Build DOE Funded

electric utility National Grid with a \$1.2 million grant from the U.S. Department of Energy. The plan will put forth recommendations to strategically guide the deployment of truck charging infrastructure along 3,000 miles of highway corridors throughout the northeastern United States and key freight corridors that connect with the Port of New York and New Jersey. State transportation, energy, and environment agencies from nine states – Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont – are engaged in the project to provide input and guidance, along with utilities, clean cities coalitions, the National Renewable Energy Labs, the Rocky Mountain Institute, and other project partners.

A regional study currently underway is forecasting charging demand by zero-emission trucks at 130 potential sites through 2045 (5 in Vermont), using a modeling approach employed during the development of an earlier two-state plan. Using these forecasts and input from states and other participating stakeholders, the project will select priority sites for further utility analysis of necessary grid infrastructure upgrades and costs. VTrans and the Vermont Climate Action Office scored the 5 locations identified in Vermont along I-91 on the criteria of availability of physical space to accommodate truck parking, proximity to trucking fleets that could benefit from chargers, and in a location that serves both directions of highway traffic that is close to a highway exit. VTrans also considered sites identified in Vermont's NEVI plan as Chargehubs in its site prioritization. The results of this plan will likely inform future funding opportunities and serve as a model for other regions in the country. The final plan, due for completion in mid-2025, will identify critical near-term needs and priority areas for charging infrastructure, estimate the timing of future points of stress for the existing grid, and serve as a blueprint for large-scale infrastructure deployment for zero-emission trucks throughout the region.

VTrans began meeting with local and regional industry partners to build partnerships in identifying current and future electric equipment adoption and charging needs to inform the siting and design of medium and heavy-duty EVSE. One of Vermont's most iconic consumer brands is assisting VTrans with qualifying key locations that may be best suited for freight charging in conjunction with its freight carriers and trucking routes. VTrans plans to continue developing relationships with additional industry partners in the year ahead.

In addition to local and regional coordination efforts, VTrans is in regular communication with our counterparts at Quebec's Ministry of Transportation to exchange information about current and future charging plans for both sides of the border that support growing electric transboundary travel. This sharing of information informs siting considerations for Vermont's EVSE for both light duty passenger vehicle charging and medium and heavy-duty freight charging stations.

All of these efforts inform Vermont's pursuit of funding opportunities to deploy freight charging infrastructure and ready its corridors as the adoption of ZE-MHDVs expands. VTrans' proposal for CFI discretionary funds for corridor charging represents 5 counties with 5 key Chargehub locations along I-89 and I-91 identified in both the Northeast Freight Corridors Charging Plan and National Zero-Emission Freight Corridor Strategy. The CFI application is supported by leading state policies, coordinated planning, and investment for zero-emission freight trucks and infrastructure in the region. The Northeast and Mid-Atlantic states have been leaders for more than a decade in supporting rapid and equitable uptake of zero-emission light-, medium- and heavy-duty vehicles through actions such as the adoption of California's Advanced Clean Cars and Advanced Clean Trucks regulations, the development of multi-state action plans, the launch of zero-emission vehicle and infrastructure incentive programs, and implementation of other nationally leading policies and programs to accelerate market transformation. States in the region are working together to plan for and deploy charging infrastructure, including through

Roadmap. <https://www.nationalgridus.com/News/2023/10/Readying-the-Northeastern-U-S-for-Electric-Trucks-National-Grid-to-Build-DOE-Funded-Roadmap/>

regional planning and multi-state freight truck infrastructure deployment efforts. Two federally funded planning studies covering major corridors in the region will identify priority, cost-effective locations for charging infrastructure investment and solutions to address key barriers for zero-emission freight truck deployment. The CFI application will leverage regional planning efforts to strategically deploy charging infrastructure in locations that serve local fleet needs, support the build out of a regional network of freight truck charging infrastructure, and reduce emissions pollution in Vermont's rural and disadvantaged communities.

State Public Transportation Agencies

VTrans has a policy to transition the state's transit fleet of approximately 430 transit vehicles to zero-emission propulsion over the next few decades. Specifically, VTrans' plans call for 100 percent of the fleet to be powered by renewable energy by 2050. This decision has service and operations implications across the 7 transit agencies in the state: new infrastructure must be procured and installed, maintenance and training needs will change, and additional funding sources must be explored to meet the capital needs of the program. As of August 2024, nearly \$54 million in federal and state funds have brought Vermont's public transit fleet to just over 15% electric with 66 electric vehicles now in service or funded to become electric in the coming months. Vermont's Carbon Reduction Strategy further identified additional support (an initial \$2.9 million) for electric sprinter vans to provide on-demand mobility service to rural areas.

Vermont's transit system primarily serves disadvantaged persons, including economically disadvantaged, disabled, and underserved residents throughout Vermont. While challenges abound and the costs and efforts are significant, these electrification efforts will result in reduced GHG emissions, reduced maintenance costs, and reflect an equitable approach in Vermont's efforts to expand the use of electric vehicles.

Urban, Rural, Underserved, Disadvantaged Communities

Now in its 5th year, VTrans' Mobility and Transportation Innovations (MTI) grant program was enabled by the Vermont Legislature with the passage of the 2020 Transportation Bill ([Act 121](#)). The program is designed to support innovative strategies and projects that improve mobility and access to services for transit-dependent Vermonters, reduce the use of single occupancy vehicles, and reduce greenhouse gas emissions. In addition to funds provided through the authorization of the Transportation Bill, this year the program included funding from the federal Infrastructure Investment and Jobs Act (IIJA) Carbon Reduction Program (CRP). These additional CRP funds specifically support the expansion of travel demand management projects that encourage less carbon-intensive means of travel. The program is open to municipalities, local or regional planning agencies, transit agencies, school districts or schools, non-profit organizations, and citizen groups focused on providing public transportation resources.

While, this year's funding opportunity remains open, examples of previously funded projects include increased access to carsharing and transitioning shared fleets to electric. One such project area aimed at improving equity and access through carsharing. The recipient also received a state-funded Electrify Your Fleet grant award to add an all-electric Chevy Bolt to its fleet of 6 EVs. Their operations manager said, "The program gives us a clear path to steadily transition towards a majority-EV carsharing operation so we can provide our members with more choices without burning gas and also augment our efforts to reduce greenhouse gas emissions in our transportation system. Thanks for making this such a practical and transparent process!" This recipient also used the program to expand its service area to include additional communities where the need for mobility services is great, yet the limited availability of public transit and other factors necessitate a greater degree of subsidy to sustain a carsharing service there.

By supporting programs like these, VTrans aims to increase opportunities for the public to see and

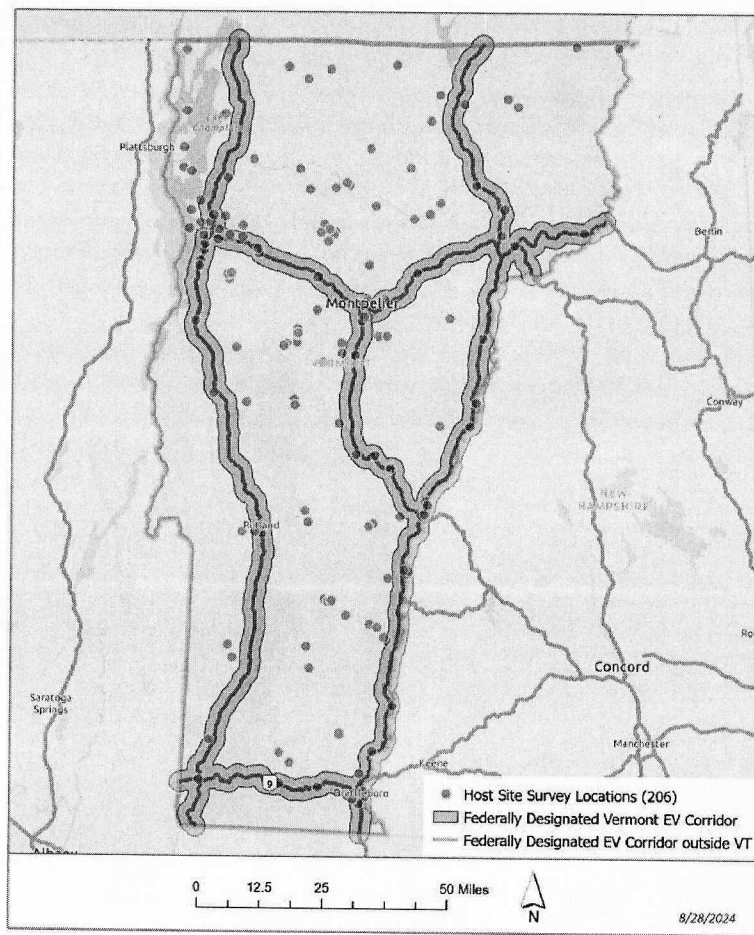
interact with electric vehicles of all sizes, model a clean transition with a variety of electric transportation options, and provide an entry point for people to learn more about how they, too, can participate in the transition.

Site-Specific Public Engagement

To identify potential host site locations for charging stations, VTrans and VEIC/Drive Electric Vermont released a survey targeted to property and business owners interested in supporting plug-in electric vehicle (PEV) charging or providing services associated with the installation and management of charging. Those interested in partnering with the State may fill out the survey at <https://arcg.is/DDeDT> [arcg.is] to offer their collaboration. The survey results will help identify opportunities for potential charging locations or EV charging services. Survey responses are shared to facilitate potential partnering discussions between property owners/managers, charging service providers, and installation contractors.

As of July 2024, the survey has collected approximately 206 responses, with 53 of the potential host sites identified located within two miles of proposed corridor fast charging priority areas across the state. The survey will remain open to continue collecting responses and streamline location siting processes for NEVI and CFI funded EVSE installations.

Figure 2. Potential EVSE Site Host Locations



For example, 11 sites located within roughly 1 mile of exits in or near the towns identified as NEVI priority sites were identified as possible site hosts for Vermont's first RFP. These sites expressed interest via the survey and agreed to have their locations and contact information included in the RFP for bidders to engage with while building their proposals.

For the Bradford station, Norwich Technologies worked with the Bradford Selectboard and the Town's energy committee to bring the project to fruition. VTrans' expectation is that providers will reach out to the communities in which they aim to locate charging.

Plan Vision and Goals

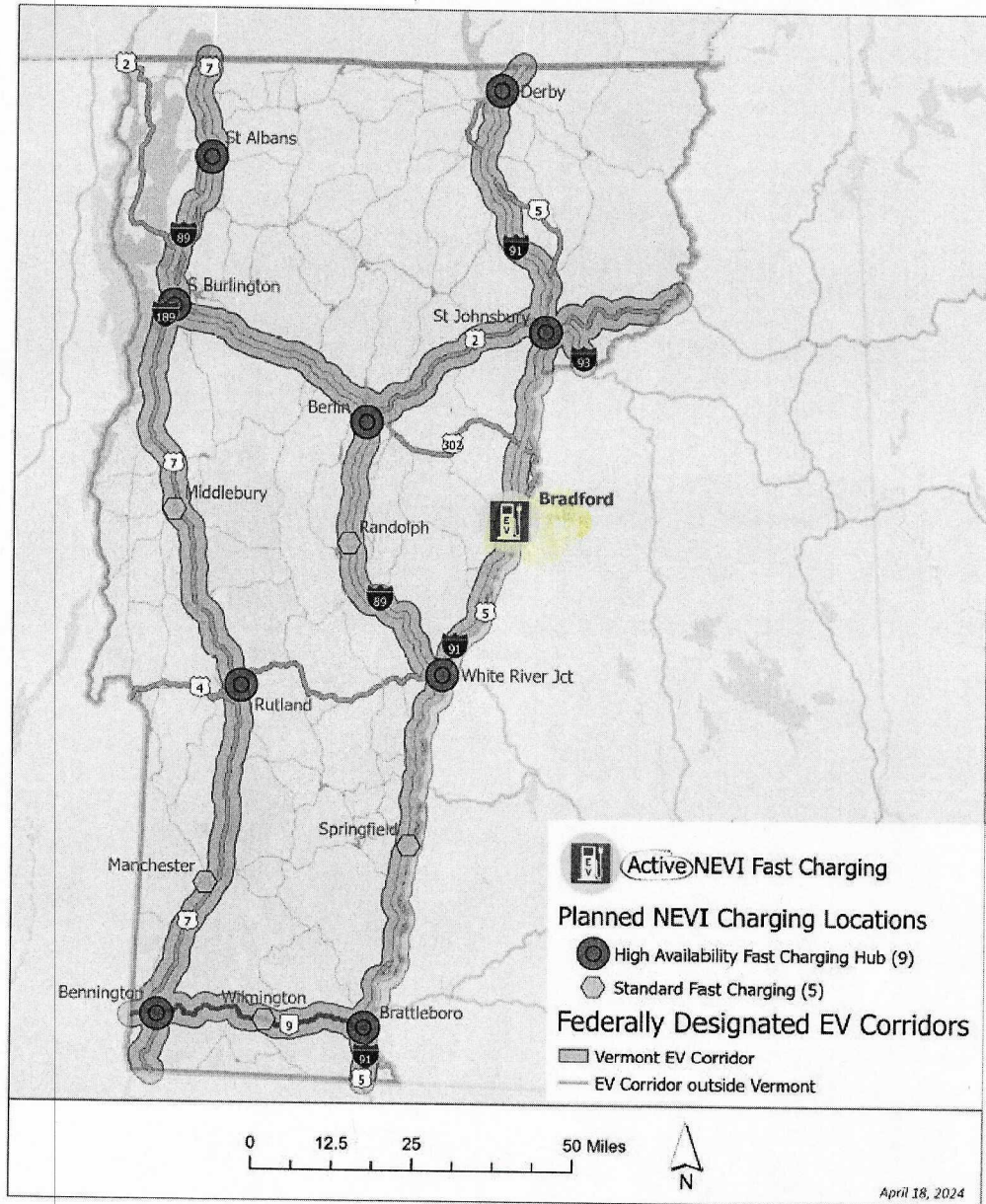
In the early stages of Vermont's NEVI roll out—with a focus on site selection, design, and future-proofing—it is also important to include considerations for medium- and heavy-duty freight and fleet electrification. After reaching "fully built-out" status, VTrans is looking toward building more redundancy at its NEVI locations with up to eight (8) ports, essentially doubling the infrastructure, with more 350kW stations at sites along EV freight corridors. In anticipation that future federal guidance will include minimum requirements for freight charging, VTrans submitted its Round 7 Alternative Fuel Corridors nominations for Electric Vehicle Freight Corridors with a focus on four National Highway System routes within the National Highway Freight Network for the new EV freight designation¹⁰.

Vermont put forth its application for the 2023 FHWA Charging and Fueling Infrastructure (CFI) discretionary grant program to further support the deployment of EVSE in community and corridor locations. The program garnered immense interest nationwide and was highly oversubscribed with quality applications. Ultimately, VTrans' proposal was not funded in the first round, however, the team is adjusting the scope for the 2024 Round 2 CFI funding opportunity with a sharper focus on preparing Vermont's AFCs for freight travel. Round 2 CFI-supported corridor charging sites were selected for their alignment with national, regional, and cross-border efforts to build out an electric freight corridor as well as with coordination with local fleets, existing freight infrastructure such as truck stops with ample space for EVSE and truck parking, and proximity to overburdened and underserved communities in a disadvantaged census tract. Each of these sites are in rural locations where private investment is less likely to support early EVSE installations without significant subsidies.

VTrans' proposal for CFI-supported community charging would further efforts to provide equitable charging across the state as quickly as possible in some of the state's most rural locations. These locations were identified to meet the three-tiered goal of supporting local economic development, workforce development, and those without access to home charging. VTrans proposes to leverage state and federally owned properties at state parks, and national parks, forests, and wildlife refuges to install Level 2 EVSE at locations that would increase charging availability in many rural areas of the state, enabling more EV travel and tourism in these areas along designated scenic byways. The proposal includes additional Level 2 EVSE installed at workplaces and multiunit dwellings intended to benefit folks who cannot install charging at home and who rely on charging at work. These community sites would serve as training grounds for interns and pre-apprentices interested in pursuing job opportunities in the electrical trade and provide inroads with labor organizations eager to support those interested in developing a career in the trades.

¹⁰ Federal Highway Administration. 2024. Freight Electric Vehicle (EV) Corridors. https://www.fhwa.dot.gov/environment/alternative_fuel_corridors/freight_ev_corridors/

Figure 3. Map of 14 NEVI Priority Locations Included in RFP



Plan for Compliance with Federal Requirements

VTrans is working with a third-party compliance consultant under an existing retainer contract to review design specifications and perform on-site testing to ensure the work performed in Bradford is compliant with federal and state requirements. VTrans is considering the need for additional consulting capabilities as the state's program progresses and whether that would be an extension of the work performed through the retainer or through a separate competitive procurement process.

While securing additional match funding for this work may be a barrier, Vermont has heard from other states that have benefited from outside assistance with the development and ongoing management of their NEVI programs. The third-party VTrans currently works with outlined several lessons learned from their work in Bradford that are now being incorporated into their work in other states. The ongoing sharing of lessons learned across state lines becomes a valuable educational opportunity for the entire industry leading to greater consistency from states in their management of their programs and from the private sector in their understanding the full scope of expectations related to NEVI and in their ability to execute projects in alignment with those expectations.

Civil Rights

As states make progress in achieving fully built-out status along the nation's AFCs, VTrans expects more EVSE providers to enter the market and gain experience with higher powered equipment and Title 23 requirements. It will become increasingly important to onramp additional EVSE providers to our shortlist of pre-qualified vendors that are capable of meeting state and federal requirements especially as Vermont begins issuing solicitations for community charging projects. Future bidding opportunities will be advertised directly to businesses listed in the Agency's Disadvantaged Business Enterprise (DBE) Directory.

In the meantime, VTrans' Office of Civil Rights will share updates with the DBE list through its bi-weekly newsletters about the results of the RFQ and additional details about the RFP so that registered DBEs could potentially participate on project teams as subcontractors or site hosts. The DBE directory was also shared in the RFP and the provided proposal template to encourage bidders to engage with this list while developing their proposals to seek out contracting opportunities with certified women and minority-owned businesses.

Existing and Future Conditions Analysis

Existing Charging Stations

Table 4. Existing Charging Stations as of September 1, 2024

State EV Charging Location Unique ID*	Route	Location (street address or AFC + mile marker)	Number of Charging Ports	EV Network (if known)	Meets all relevant requirements in 23 CFR 680?	Intent to count towards Fully Built Out determination?
14	VT 5	6 South Main St., Bradford, VT 05033	8 (4x 180kW NEVI funded ports,	Red E Charge	Yes	Yes

			2x 50kW state funded ports, 2x Level 2 state funded ports)			
22	US 7	113 Monkton Rd Vergennes VT 05491	12	Tesla	No	No
27	US 7	4993 Main St, Manchester Center, VT 05255	8	Livingston Energy	TBD	TBD

EV Charging Infrastructure Deployment

Planned Charging Stations

The following figures and tables outline the most recent status of charging along Vermont's 6 Alternative Fuel Corridors.

Table 5. Federally Designated Alternative Fuel EC Corridors in Vermont

Route	Designation
I-89 from NH border to Quebec border	Corridor-ready
I-91 from MA border to Quebec border	Portions corridor-ready and pending
I-93 from St Johnsbury to NH border	Portions corridor-ready and pending
US 2 from Montpelier to the NH border	Portions corridor-ready and pending
US 7 from MA border to S Burlington	Portions corridor-ready and pending
VT 9 from NH border to NY border	Corridor-ready

Table 6. Stations Included in 2024 RFP

State EV Charging Location Map ID	Route(s)	Location	Number of Ports	Funding Sources (Choose No NEVI, FFY22/FFY23, FFY24, FFY25, FFY26, or FFY27+)	Status
2	I-89	St Albans	Potential Chargehub up to 8 ports	FFY22/23, FFY24, FFY25	To be constructed
4	I-89	S Burlington	Potential Chargehub up to 8 ports	FFY22/23, FFY24, FFY25	To be constructed
7	I-89	Berlin	Potential Chargehub up to 8 ports	FFY22/23, FFY24, FFY25	To be constructed
8	I-89	Randolph	NEVI Standard 4 ports	FFY22/23, FFY24, FFY25, Eligible for additional ARPA funds	To be constructed
10	I-89 / I-91	White River Jct	Potential Chargehub up to 8 ports	FFY22/23, FFY24, FFY25	To be constructed
11	I-91	Derby	Potential Chargehub up to 8 ports	FFY22/23, FFY24, FFY25, Eligible for additional ARPA funds	Potential upgrade of current installation
13	I-91 / I-93 / US 2	St Johnsbury	Potential Chargehub up to 8 ports	FFY22/23, FFY24, FFY25, Eligible for additional ARPA funds	Potential upgrade of current installation
15	I-91	Springfield	NEVI Standard 4 ports	FFY22/23, FFY24, FFY25, Eligible for additional ARPA funds	Potential upgrade of current installation
17	I-91 / VT 9	Brattleboro	Potential Chargehub up to 8 ports	FFY22/23, FFY24, FFY25	To be constructed
23	US 7	Middlebury	NEVI Standard 4 ports	FFY22/23, FFY24, FFY25	To be constructed
25	US 7	Rutland	Potential Chargehub up to 8 ports	FFY22/23, FFY24, FFY25, Eligible for additional ARPA	Potential upgrade of current installation

					funds
27		US 7	Manchester	NEVI Standard 4 ports	FFY22/23, FFY24, FFY25 To be constructed
28		US 7 / VT 9	Bennington	Potential Chargehub up to 8 ports	FFY22/23, FFY24, FFY25 To be constructed

Table 7. Planned Vermont NEVI Priority Locations

State EV Charging Location Map ID	Route(s)	Location	Number of Ports	Anticipated Funding Sources (Choose No NEVI, FFY22/FY23, FY24, FY25, FY26, or FY27+)	Status
1	I-89	Swanton	NEVI Standard 4 ports	FY26 or FY27+	To be constructed
2	I-89	St Albans	Potential Chargehub up to 8 ports	FFY22/23, FFY24, FFY25	To be constructed
3	I-89	Winooski	NEVI Standard 4 ports	FY26 or FY27+	To be constructed
4	I-89	S Burlington	Potential Chargehub up to 8 ports	FFY22/23, FFY24, FFY25	To be constructed
5	I-89	Williston	NEVI Standard 4 ports	FY26 or FY27+	To be constructed
6	I-89	Waterbury	NEVI Standard 4 ports	FY26 or FY27+	To be constructed
7	I-89	Berlin	Potential Chargehub up to 8 ports	FFY22/23, FFY24, FFY25	To be constructed
8	I-89	Randolph	NEVI Standard 4 ports	FFY22/23, FFY24, FFY25, Eligible for additional ARPA funds	To be constructed
9	I-89	Sharon	NEVI Standard 4 ports	FY26 or FY27+	To be constructed
10	I-89 / I-91	White River Jct	Potential Chargehub up	FFY22/23, FFY24, FFY25	To be constructed