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## **Ohio NEVI Plan Implementation**

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### **Executive Summary**

The National Electric Vehicle Infrastructure Program (“NEVI Formula”) is providing funding to states to strategically deploy a nationwide network of 500,000 electric vehicle (EV) chargers by 2030. The State of Ohio’s approved NEVI Plan, led by the Ohio Department of Transportation (ODOT), enables Ohio to receive an estimated \$140 million over 5 years to install EV charging infrastructure. This comes at a time when global supply chain for electrical power transformers, Electric Vehicle Supply Equipment (EVSE), and the workforce needed to install, operate and maintain this electrical equipment, is already strained. This paper presents the learning experiences that Ohio encountered as the first state to procure NEVI-compliant EVSE along their Alternative Fuel Corridors (AFCs) in a way that ensures affordable, reliable, and equitable access to EV charging for all users.

*Keywords: Charging, Government, Deployment, Electric Vehicle Supply Equipment, Infrastructure*

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## **1 NEVI Program**

The NEVI program is a federal initiative designed to accelerate the deployment of electric vehicle infrastructure across the United States. The \$7.5 billion investment in EV infrastructure is subdivided between a \$5 billion formula program and \$2.5 billion discretionary grant program. Ohio, shown in Fig. 1, has received a total allocation of about \$140 million to support the installation of EV charging infrastructure.

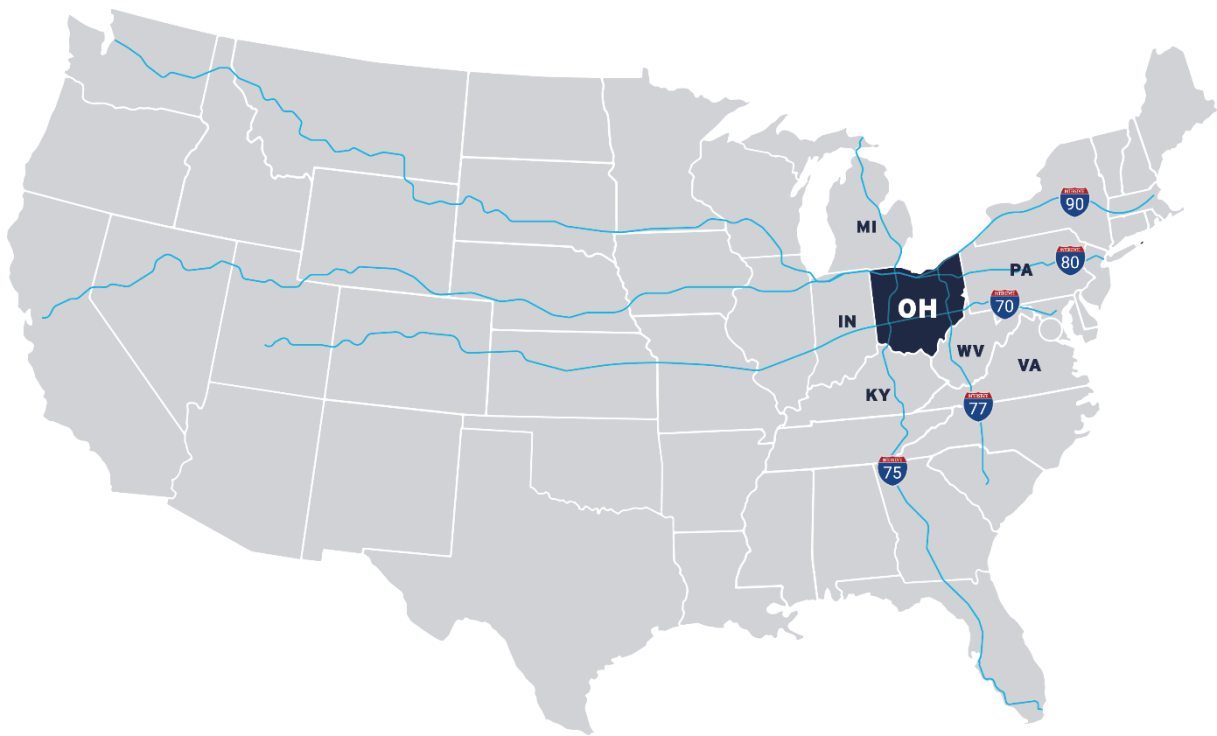


Figure 1: Map of the United States, with Ohio Highlighted

Ohio has witnessed a steady increase in the adoption of alternative fuel vehicles, as shown in Fig. 2, taken from the Alternative Fuel Vehicle Registration dashboard [1] that ODOT developed to track EV market adoption trends for the state of Ohio. The ‘Percent EVs’ line shows the increasing trend from around 0.7% in January 2020 to about 2.5% in December 2022, which suggests that Ohioans are increasingly purchasing and driving EVs.

Ohio's New Passenger Car Monthly Alternative Fuel Vehicle Registrations 2020-2022

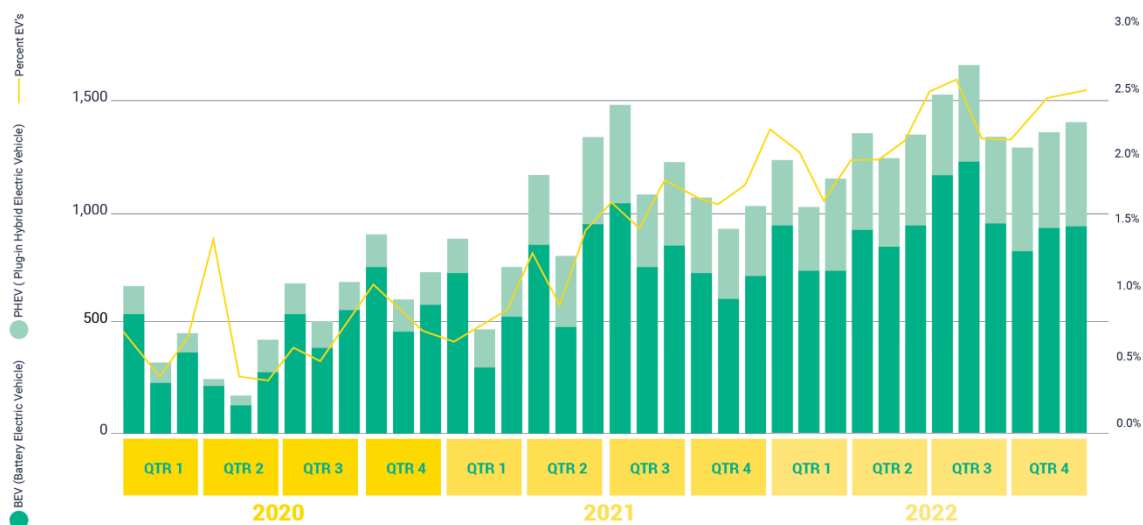


Figure 2: Ohio Alternative Fuel Vehicle Dashboard

The NEVI program's primary goal is to ensure that EV drivers have access to reliable and convenient charging options, no matter where they are driving. To achieve this goal, the program has set forth certain requirements for the installation of charging stations. In particular, charging stations must be installed at least every 50 miles along major transportation corridors, with a minimum requirement of four (4) Combined Charging System (CCS) ports per station with a capacity of at least 150 kW each, and the capability to charge 4 vehicles at these power levels simultaneously.

Before the NEVI program funds can be used for other public direct current fast charging (DCFC) and Level 2 charging stations, Ohio must first build out its 1854 miles of EV alternative fuel corridors (AFCs). These corridors refer to a future network of alternative fueling stations that will provide a seamless and convenient travel experience for drivers of alternative fuel vehicles, including EVs. This requirement is set to ensure that EV drivers have access to a network of charging stations that cover the entire state, and that they can easily find these stations and use them to recharge their vehicles.

The anticipated milestones for the administration of the Ohio NEVI funding are shown in Fig. 3. The EVSE deployments will follow a four-phase approach. The first two phases are aimed at full buildout of the AFCs, with the first phase targeting Ohio Interstate highways, and the second phase targeting any remaining interstate gaps and the Ohio US and State routes. Phase III will add charging stations informed by the 2020 Ohio Electric Vehicle Charging Study [2], and the last phase will target additional Ohio priority sites.

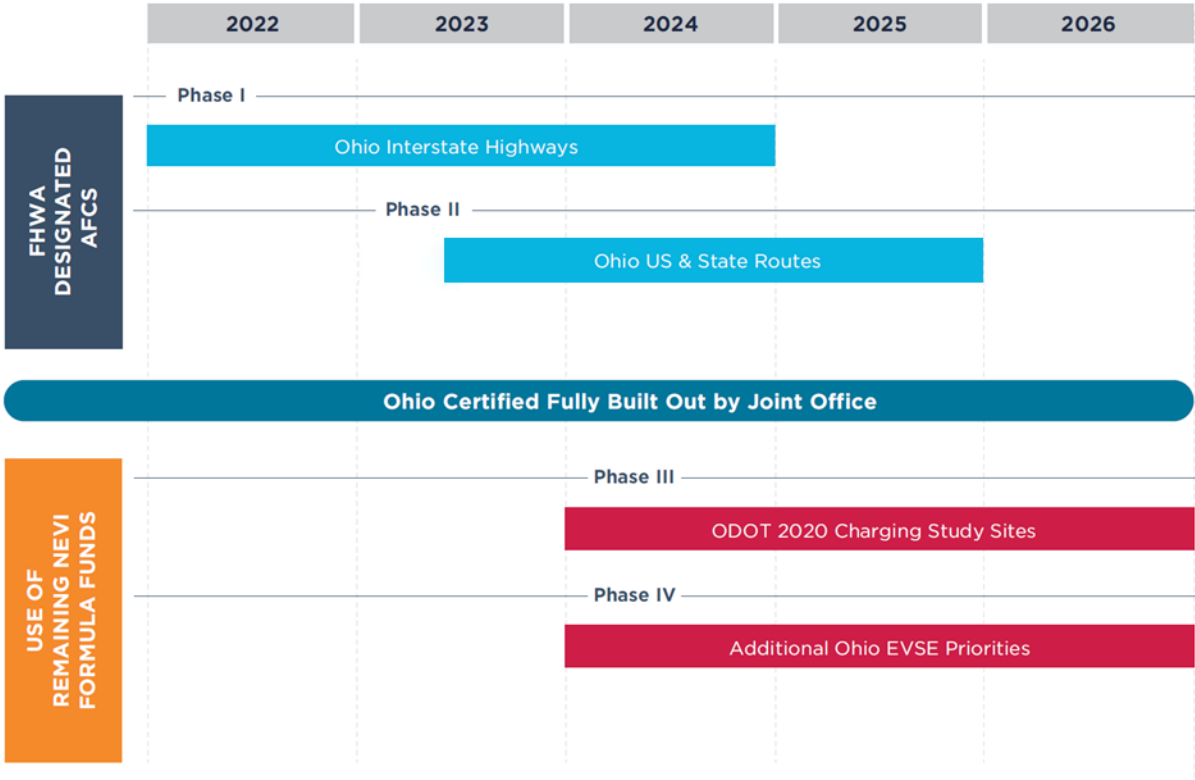


Figure 3. Timeline for the Ohio NEVI Deployment

Fig. 4 shows the EV designated AFCs in Ohio, the existing NEVI-compliant DCFC sites, and representative candidate sites for the first three phases of Ohio’s NEVI Plan over the 5-year period between 2022 and 2026. In total, the first three phases will add at least 48 additional NEVI-compliant chargers.

## Approximate Priority Locations

General Representation of Candidate Sites

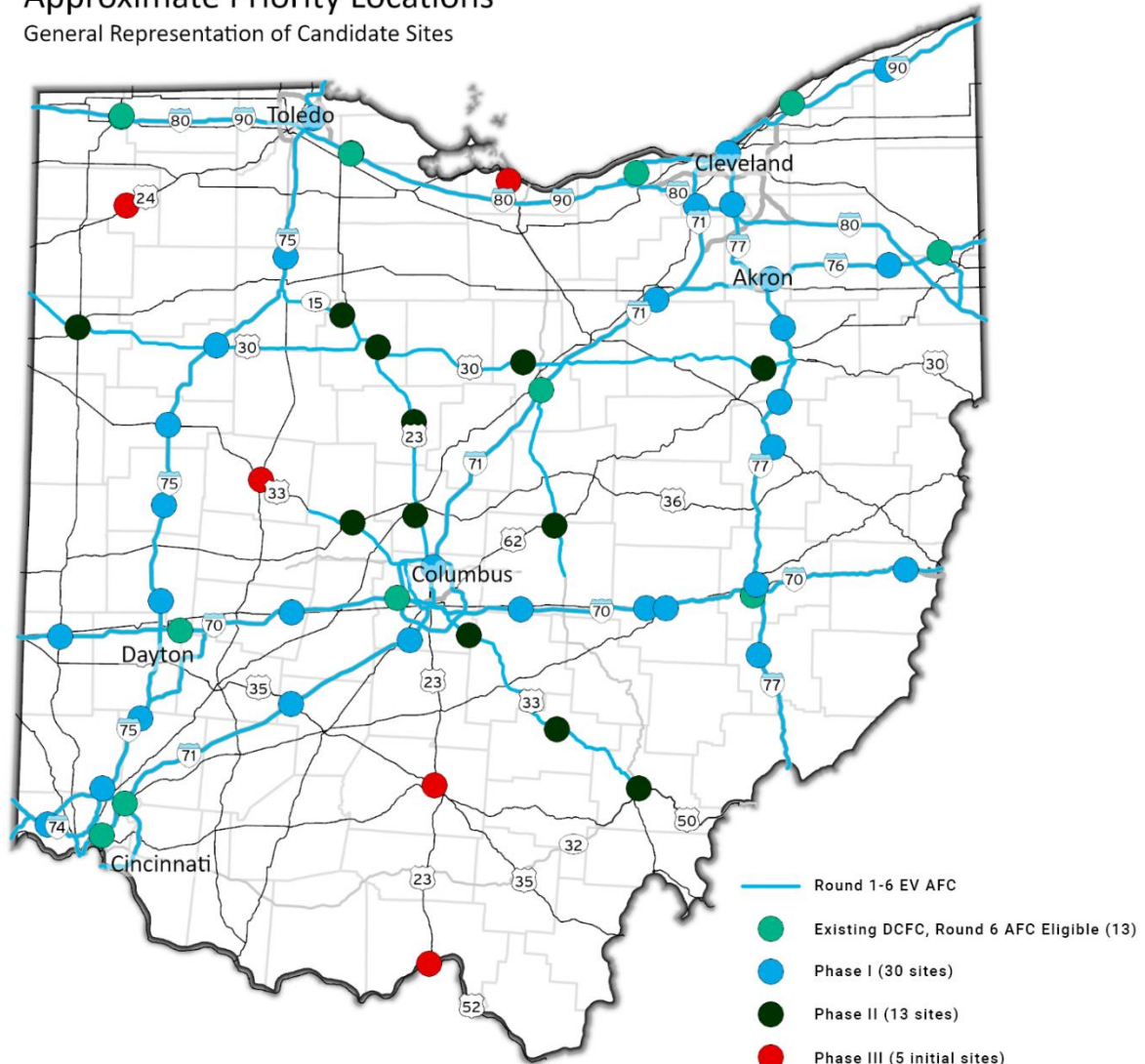


Figure 4: Preliminary Phase I, II, and III NEVI-Compliant Charging Locations

The NEVI program represents a significant investment in EV infrastructure in Ohio and will greatly expand the availability and convenience of EV charging options for drivers across the state. As with any large-scale infrastructure initiative, challenges and opportunities arise with its implementation. The rest of this paper will delve into the take-aways from this journey, along with Ohio's approach to outreach, workforce development, procurement, and equity in the deployment of EV infrastructure. It will also examine the support and resources provided to locals, as well as the next steps Ohio has planned to further the success of the NEVI program.

## 2 Key Elements of the Ohio NEVI Plan

The Ohio NEVI Plan is comprised of several key elements, each of which plays a critical role in the success of the initiative. In this section, we will examine the outreach, workforce, procurement, equity, and the support for locals components, and explore how each of them contributes to the overall effectiveness of the Ohio NEVI Plan.

**2.1 Outreach Approach**

For the larger NEVI program, to inform, educate, and gather robust feedback from the public, ODOT conducted numerous online and in-person listening sessions and public meetings.

Table 1. Stakeholder outreach conducted

Audience	Select Outreach Conducted
Public	<p>ODOT conducted web meetings with five Drive Electric Coalitions across the state.</p> <p>ODOT conducted equity focus groups to ensure that underserved communities had their input heard.</p> <p>ODOT partnered with Metropolitan Planning Organizations (MPOs) to hold in-person public meetings across Ohio, where electric vehicles were showcased.</p>
Other State Agencies	<p>The Ohio EPA was administering DCFC grants utilizing Volkswagon (VW) Mitigation Trust Fund monies and served as a good resource.</p>
Private Sector	<p>Utilities (noted above)</p> <p>One-on-one meetings were conducted with vendors to discuss comments and answer questions on the Phase I Request for Information (RFI).</p>

Through these efforts, ODOT aimed to engage with a broad range of stakeholders and ensure that the program's goals were aligned with the needs of the communities it serves.

In support of the procurement, ODOT sought to understand the perspective of the electric utility providers in the state by coordinating with the investor-owned utilities, municipal power providers, and electric cooperatives. Each of the potential locations identified in the initial screening process for the Phase I locations along the Interstates were vetted by the utilities to determine if three-phase power was available, and if so, if there was adequate electrical capacity to support a 600kW or greater charging site. Locations that did not meet this criterion were removed from the list of potential locations available for bidders. Each of the utilities also had a chance to offer input on the utility request form that was part of the Request for Proposal to ensure that site specific electrical information, particularly cost estimates for site upgrades, could be captured for each potential site. For Phase II locations along US and State routes, ODOT is following a similar approach by coordinating with utilities, and incorporating their feedback in the planning process.

**2.2 Workforce Approach**

The Ohio NEVI program involves collaborating workforce development activities across multiple state agencies. To achieve this, ODOT is working with the Governor's Office of Workforce Transformation and the Department of Development to provide additional financial support for the Electric Vehicle Infrastructure Training Program (EVITP), the comprehensive training program for the installation of EV supply equipment that is required as part of the NEVI rules.

One example is the state's TechCred program that helps individuals acquire new skills and helps employers build a stronger workforce for the technology-infused economy. It offers technology-focused credentials that take a year or less to complete and prepare current and future employees for technology jobs in Ohio. Under the TechCred program, employers can be reimbursed up to \$2,000 per credential for eligible technology-focused credentials completed by current or prospective employees, up to \$180,000 per year. With EVITP now incorporated into the TechCred program, Ohio is taking a strategic step to develop a skilled EV workforce, making the training more accessible and affordable for individuals and companies alike.

## 2.3 Procurement

Two goals drove ODOT's decisions as they developed their procurement process and documents:

- **First to Market:** The "first to market" approach is driven by the desire to minimize the impacts of the supply chain disruptions that currently exist for electrical transformers and electric vehicle supply equipment (EVSE), as well as by the workforce shortages for electricians driven by solar, data center, and EV industry expansion.
- **Market Driven Charging Locations:** The second goal is to let the market decide where corridor charging is most appropriate. Unlike several states that are restricting the interchanges available for bidding to optimize for 50-miles spacing, ODOT allowed bids within 1 mile of *any* interchange with 3-phase power outside of a NEVI-compliant geography (assumed to be 25 miles in either direction along on existing AFC from a compliant charger).

Together these goals are aimed at generating the following outcomes 1) maximum market participation and thereby a strong bidding environment and 2) minimum length of time before ownership, operations and maintenance is completely turned over to the private sector.

ODOT started the Phase I procurement process by issuing an RFI on September 7, 2022, seeking feedback from EVSE vendors on their proposed Request for Proposal (RFP). ODOT provided the public and prospective bidders with an online mapping tool [3], shown in Fig. 5. The tool shows the existing EV infrastructure and electric utility provider information, along with 1-mile polygonal areas that meet the federal guidelines for eligibility for bidders to make informed decisions about potential charging sites.

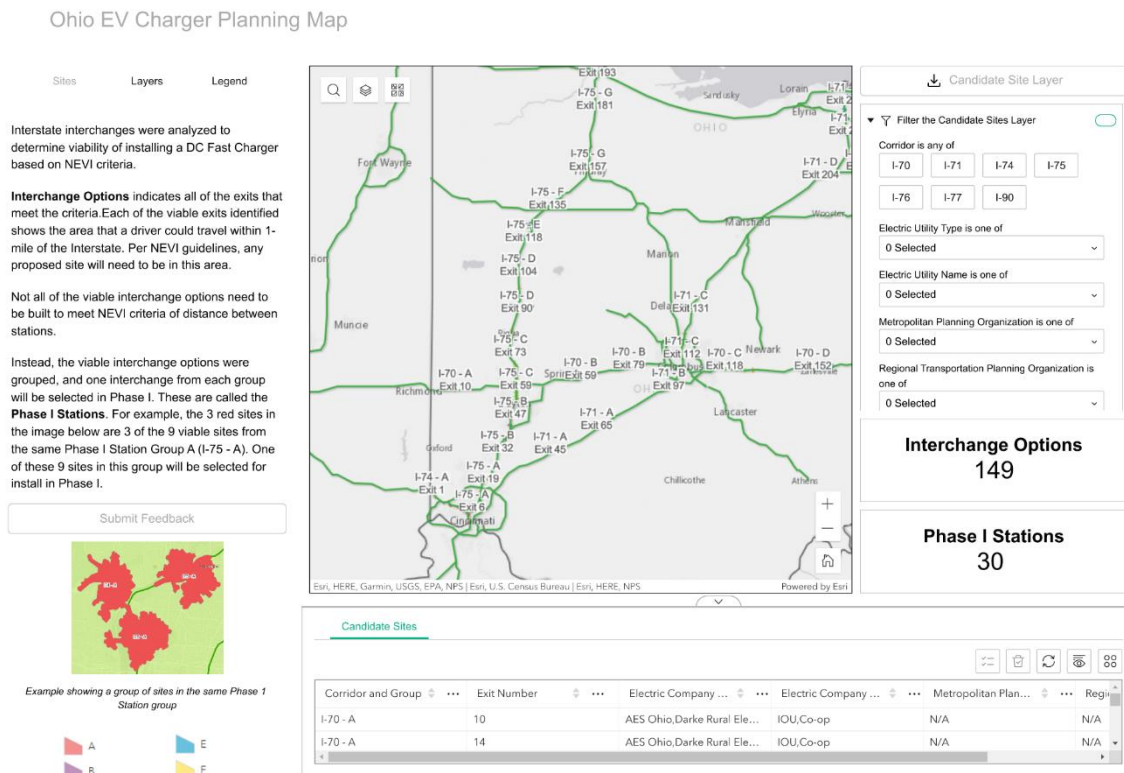


Figure 5: Ohio EV Charger Planning Map

The procurement process for the Ohio NEVI Plan was designed to be transparent and competitive, with the goal of selecting the best vendors to implement the program. ODOT is utilizing a public-private partnership

(P3) delivery method. The P3 approach allows ODOT to leverage the expertise and resources of private sector partners to maximize the value of the NEVI program.

To ensure that the procurement process was inclusive and responsive to industry input, ODOT held a series of meetings with 33 interested parties from September 19<sup>th</sup> to September 30<sup>th</sup>, 2022. During these meetings, ODOT received valuable feedback on the proposed procurement documents. The most common concerns expressed by EVSE vendors were related to supply chain delays, utility coordination, Buy America requirements, the scoring approach, Title 23 and National Environmental Policy Act (NEPA) requirements.

ODOT responded to these concerns by making changes to the proposal requirements and scoring criteria. ODOT also provided guidance to EVSE vendors on how to comply with Title 23 and NEPA requirements. The final RFP was issued on October 31, 2022.

ODOT received a significant number of proposals from a variety of companies. The proposals covered almost all the candidate sites in Ohio, indicating that the EVSE vendors are highly motivated to participate in the NEVI plan and deploy EV charging infrastructure throughout the state. These proposals also revealed a number of partnerships between EVSE vendors and site hosts, including retail businesses, hotels, restaurants, and gas stations.

Overall, the procurement process for the Ohio NEVI program was a critical component of the program's success. By actively soliciting feedback from stakeholders and making changes to the RFP based on that feedback, ODOT was able to identify and address the main concerns faced by EVSE vendors. The high number of proposals received by ODOT highlights the interest of EVSE vendors in partnering with the state to deploy charging infrastructure along Ohio's AFCs. The partnerships between EVSE vendors and site hosts indicate a potential for further collaboration and innovation in the EV charging space, setting an example for other states to follow in the future.

**2.4 Equity Focused Approach**

ODOT recognizes that Ohio is home to a population of urban, suburban, and rural communities comprising a wide variety of socio-economic, ethnic, and other demographic categories [4] as briefly summarized in Table 2.

Table 2: Demographic Indicators in Ohio, US Census Bureau, 2022

Key Indicator	Value
Population	11,756,058
Percent of Overall Population in Poverty	13.4%
Percent of Black/African American Population	13.2%
Persons 65+	17.8%
Owner-Occupied Housing Rate	66.6%
Mean Travel Time to Work	23.7 min.

To ensure equity in transportation decision-making, ODOT will be tracking several metrics and utilizing various tools to gather and analyze data. The following are the equity benefits that will be tracked:

- Improved clean transportation access through the location of chargers
- Reduced environmental exposures to transportation emissions through the shift from internal combustion engine vehicles (ICEVs) to EVs
- Provision of charging infrastructure for shared-ride vehicles
- Increased community cohesion through program design and public involvement
- Establishment of community-based partnerships
- Increased clean energy job pipeline, job training, and enterprise creation in disadvantaged communities

To track these metrics, ODOT will utilize various data sources, including the U.S. Census Bureau’s American Community Survey [5], Climate and Economic Justice Screening Tool [6], and the U.S. Department of

Transportation's Equitable Transportation Community Explorer [7]. Additionally, ODOT will utilize the PublicInput platform [8] to increase public engagement and collaboration, streamlining the process of gathering community input and feedback to make data-driven decisions. The Community Intelligence Toolkit, developed by HNTB, will provide long-range planning tools to track equity metrics and overcome common challenges, such as differences in methodology and overwhelming amounts of data from various sources. By leveraging these tools and data sources, ODOT will prioritize equity and ensure that the benefits of the project are distributed equitably to all communities.

## 2.5 Support for Locals

ODOT is committed to supporting local communities in their efforts to transition to electric transportation. To do so, ODOT has created the EVSE Local Deployment Guide to help governments and organizations fund their electric transportation projects. This guide provides technical guidance on the installation and operation of EVSE in local communities. The guide includes information on selecting the right EVSE, installation requirements, and maintenance tips to ensure that the equipment remains operational and efficient.

In addition to the EVSE Local Deployment Guide, ODOT is also supporting communities with the \$2.5B roll-out of discretionary grant funding from the USDOT through the development of tools to guide potential applicants as they submit applications for funding. ODOT is providing [resources](#) to help locals navigate the recently released Notice of Funding Opportunity (NOFO) for Charging and Fueling Infrastructure (\$700M) with an application deadline of May 30, 2023.

One of these tools is the Grant Process Guide. This document provides a comprehensive guide on how to apply for grants for electric vehicle charging infrastructure and other related projects. The Grant Process Guide is a document provided by ODOT to support local communities in securing funding for electric vehicle infrastructure projects. This guide is designed to provide step-by-step instructions on how to apply for grants and other funding opportunities, including information on eligibility criteria, application requirements, and deadlines. By following the guidance outlined in the Grant Process Guide, local communities can improve their chances of receiving funding for EV infrastructure projects, such as the installation of EV charging stations. This document can be a valuable resource for communities looking to take advantage of funding opportunities to support the growth of EV infrastructure in their area. An overview of the grant process is presented in Fig. 6.





Figure 6: Overview of the Grant Process Guide

Additionally, ODOT hosts webinars and other events to educate local communities about the benefits of electric transportation and how they can take advantage of the resources available to them. These events provide an opportunity for local governments, businesses, and organizations to learn about the latest trends in electric transportation and to network with others in the industry.

By providing resources like the Grant Process Guide and the EVSE Local Deployment Guide, as well as hosting educational events, ODOT is helping to support local communities in their transition to electric transportation. With this support, local governments and organizations can take advantage of the benefits of electric transportation, including reduced emissions, lower fuel costs, and increased energy independence.

### 3 Learning Experiences

Development of the NEVI program and first NEVI procurement for the installation of EV chargers served as a great learning experience. The following are a few of the areas that necessitated the most careful consideration and planning.

- Evolving Federal and Industry Landscape:** ODOT chose to face the challenge of releasing their RFP before the NEVI final rules and Buy America waiver were released. Despite the uncertainty, ODOT was proactive in anticipating potential changes and had already taken them into account in their planning process. ODOT actively engaged with FHWA and the Joint Office of Energy and Transportation to take into account any new information as it became available.

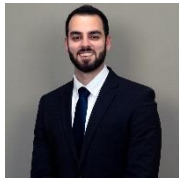
- **Considering Market Impacts:** The global supply chain disruptions have resulted in challenges in procuring necessary equipment and materials, which was anticipated to affect the timely deployment of charging infrastructure in Ohio. While ODOT has little control over the supply chain, being first to market will helpfully mitigate some of these adverse effects. This early market entry allows Ohio to attract suppliers' attention and potentially secure priority access to equipment and materials as they become available. This is something that will need to be continually monitored through open communication with suppliers and stakeholders to manage expectations and adapt as the program progresses.
- **Early and Ongoing Outreach:** By working with the utility companies early, some of them decided to change their workflow to be able to more efficiently triage applications for new service or service upgrades related to ODOT's Phase I EV Charging procurement. Through conversations with the Ohio EPA which is administering another DCFC program, and vendors and site hosts, ODOT was able to shape their procurement in a way that resulted in a significant number of bidders. By meeting with equity stakeholders and Drive Electric Coalitions, ODOT was able to better shape and hone their overall messaging to best serve Ohioans. Each of these examples demonstrate the value of early and ongoing outreach in crafting and delivering a more successful program.
- **Flexibility to Define Equity Target Areas:** Although tools and guidance were provided, the federal government allowed states to choose how they define disadvantaged communities within their jurisdictions. ODOT chose to develop a performance measures plan that defines how they will track and report on equity metrics throughout the life of the program. The performance measures plan is designed to align with the broader objectives of promoting social equity and ensuring that disadvantaged and underrepresented communities benefit from the electric vehicle transition. The plan outlines specific equity-related metrics and data sources that ODOT will utilize to track progress and make data-driven decisions.

These examples spotlight the elevated importance of open communication needed when working in emerging markets where the rules and market dynamics and public understanding are quickly evolving.

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## Presenter Biography



Paul El Asmar is a Transportation Engineer with experience in data analytics, travel demand modelling, and intelligent transportation systems. His current work with HNTB focuses on smart cities, electrification, and advanced air mobility, with the goals of improving equity and reducing greenhouse gas emissions. Paul lives in Columbus, Ohio and is originally from Lebanon.