NEVI Implementation in Hawai‘i: Case Study

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Contents

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Introduction and Objective

The National Electric Vehicle Infrastructure (NEVI) Formula Program, under the Infrastructure Investments and Jobs Act (IIJA) is a $5 billion federal program with a primary investment in Direct Current Fast Chargers (DCFCs) along the nation's major highways and interstates. State Departments of Transportation (DOT) and State Energy Offices that administer the NEVI formula funds are implementing the program by soliciting project proposals, issuing contracts, monitoring the reliability and performance of the chargers, and other responsibilities to ensure the success of the program.

As states announce awards and issue contracts for the first round of NEVI funds, there is an opportunity for other states to learn from the successes and challenges of the NEVI program. The National Association of State Energy Officials (NASEO) and the American Association of State Highway and Transportation Officials (AASHTO) partnered with Atlas Public Policy to conduct a series of case studies with the first few states that have announced awards and issued contracts to NEVI recipients. The case studies are intended to delve deeper into the states' solicitation design and stakeholder process; outline the scoring rubric and application evaluation process; discuss the applicant pool variety and quality; highlight state, utility, and site host coordination; and illustrate the successes and challenges of the program. These case studies are part of a larger initiative led by NASEO and AASHTO and supported by the Joint Office of Energy and Transportation (JOET) to enhance coordination and collaboration between State Energy Offices and State DOTs to ensure that NEVI and other EV charger investments are made in a strategic, coordinated, efficient, and equitable manner.

OVERVIEW

The U.S. Federal government developed NEVI as a program intended to establish a nationwide, interconnected EV charging infrastructure network. As a remote state off the mainland with constrained transportation infrastructure and minimal corridor roadways, mountainous geography, an import-based economy, and limited grid capacity, Hawai‘i faces unique challenges to achieving the vision of the NEVI Program.

Motorists in similarly sized states on the mainland could still feasibly drive hundreds of miles at a time if they were travelling cross-country. However, motorists in Hawai‘i are not connected to the rest of the nationwide highway network. Additionally, each of Hawai‘i's islands are small—with the Big Island having a circumference of just over 200 miles. On average, most drivers do not travel more than 50 miles in a day in Hawai‘i. Nevertheless, HDOT has developed a strategy to implement NEVI in a manner that addresses both Hawai‘i's own state-level goals and the national NEVI objectives for reliable charging infrastructure.

Prior to the NEVI Program, HDOT contracted with Sustainability Partners (SP), a capital investment firm, to procure, maintain, and manage an electric vehicle (EV) fleet and accompanying charging infrastructure for the department. For NEVI, rather than engaging in a new competitive bid solicitation process, HDOT opted to work with SP to deploy NEVI sites across the islands of Hawai‘i, Maui, O‘ahu, and Kaua‘i. On July 27, 2023, HDOT announced its first two locations for NEVI charging sites—one on O‘ahu and one on Maui—and revealed their plans to add an additional 10 sites to fulfill AFC build out requirements. The first site on Maui was operational at the end of February 2024. The remaining stations will open in 2025.

HAWAIʻI'S CHALLENGES

Hawaiʻi is a remote state over 2,000 miles away from the U.S. mainland, composed of six major islands. While some states on the mainland may face supply chain challenges for NEVI-compliant charging hardware, Hawaiʻi faces unique supply challenges and higher costs related to importing necessary hardware. Hawaiʻi is committed to a holistic buildout of the EV charging system that leverages the NEVI program as a critical piece of statewide charging infrastructure requirements to support ubiquitous adoption of EVs and both leverage and support the transition to 100% renewable energy.

Challenges:

Hawaiʻi, like all states, will need to build out far more EV charging infrastructure than is practicable through NEVI formula funding. The National Renewable Energy Laboratory (NREL) recently completed a study "The 2030 National Charging Network: Estimating U.S. Light-Duty Demand for Electric Vehicle Charging Infrastructure" for the U.S. Joint Office of Energy and Transportation including a base EV forecast for Hawaiʻi of 170,000 EVs in 2030[1]. The NREL study identified a public EV charging infrastructure need of 2,600 level 2 chargers[2] and 700 fast chargers[3]. NREL estimates, however, do not distinguish the number of EV chargers needed by island.

Island Geography Issues

The mountainous geography of the islands constrains the development of transportation and energy infrastructure. Its terrain necessitates building ring roads around the circumference of the islands and restricts cross-island roadway development through narrow mountain passes or costly tunnelling projects. This presents similar challenges for utilities attempting to deliver power to communities across the islands, and the limited land area for energy infrastructure makes it difficult to build additional generating plants, expand grid capacity, and grow the transmission system. Even some inhabited parts of the islands and areas along major state roadways lack access to utility electricity.

Island Cost Issues

With direct current fast charging (DCFC) likely to elevate power demand across the state, local utilities face inordinately higher costs to purchase, construct, and install make-ready infrastructure necessary to serve increasing load at NEVI sites. HDOT estimates that each NEVI site will cost approximately $3.5 million to construct, install, and make operational. These projections total up to $52.5 million in necessary funding across 15 sites with four DCFC ports per site. However, Hawaiʻi has only been allocated approximately $17.6 million in funding through NEVI, which creates a challenging funding gap for HDOT to fill.

1 NREL Study - Table 9. State-Level Port Count Summary for the Simulated 2030 Public L2 Network
2 NREL Study - Table 9. State-Level Port Count Summary for the Simulated 2030 Public L2 Network (900 retail and 1,700 other)
3 NREL Study - Table 10. State-Level Port Count Summary for the Simulated 2030 Public DC Network

Island Specific Needs

Each of Hawai‘i’s islands are relatively small—with the Big Island having a circumference of just over 200 miles. Consequently, EV drivers will not travel enough in a day to fit the long-distance use case intended for NEVI sites. Instead, DCFCs will help fill gaps, mitigate range anxiety, and provide those without reliable access to home charging an alternative public charging option.

In terms of resilient charging, unlike the continental U.S. there are no corridors from which to evacuate an island. While on the continent corridors need to be developed to provide for evacuation routes, islands need to develop resilient charging that will be available in response to an event. In this case islands need to proactively think to the future to ensure that ZEVs that are being adopted can be fueled under both blue and grey skies.

PRE-NEVI EV CHARGING CONTRACT

In 2019, HDOT pledged to convert their fleet of 300 light-duty vehicles to EVs by the end of 2035 but had concerns about the upfront cost to purchase the new EVs and develop the necessary charging infrastructure[4]. Hawai‘i put together a Project Accelerator Team through the Rocky Mountain Institute’s Mobility Innovation Lab including local stakeholders Ulupono, Hawai‘i State Energy Office and HDOT. The team explored how to structure and implement innovative financing and procurement of EVs for Hawai‘i’s public fleets with the goal of of scaling these programs broadly across the public sector. They determined that a more cost-effective strategy would be to implement an “EV and charging infrastructure as a service” model, in which government agencies would only pay for the use of fleet vehicles and charging infrastructure on a usage basis. HDOT issued a Request for Proposal (RFP) in December 2019—before the NEVI Program was established—for a single service provider to procure, own, and operate both the EVs and the associated charging infrastructure for a regular “as-a-service” contract fee. The contract was awarded to Sustainability Partners (SP), a capital investment company that has numerous subcontractors to run the EV-and-charging-as-a-service operation. The State Procurement Office (SPO) reviewed and signed the cooperative purchasing agreements allowing State and county departments to utilize the contract.

Specifically for the NEVI program, SP purchased EV service equipment (EVSE) from Tritium and has committed to using Tritium charging infrastructure at the first eight NEVI sites. SP also chose EV Connect as the network provider. In accordance with the department’s local hiring preferences, SP worked with their primary construction partner, Hensel Phelps, to employ local contractors of Hawai‘i for site construction.

NEVI PROGRAM ROLLOUT

When devising their approach to NEVI, HDOT determined they could utilize their existing contract with SP to lead site development—including network and hardware procurement—in addition to EVSE ownership, management, and maintenance on behalf of the state. Consequently, they chose to designate SP as the primary contractor responsible for development of all NEVI sites in lieu of issuing a new formal competitive RFP.

4 Act 74 was signed into law on June 24, 2021establishing clean ground transportation goals for state agencies on a staggered basis, achieving a 100 percent passenger vehicle clean fleet by December 31, 2030. New purchases of light-duty motor vehicles are required to be zero-emission by January 1, 2022. The vehicle as a service contract mitigated concerns over vehicle acquisition.

CONTRACT DETAILS

HDOT utilized their existing contract with SP issuing service addenda to ensure that all sites the contractor will manage will meet federal NEVI statutory requirements and adhere to official guidance. In terms of the financial relationship, HDOT will pay for the Tritium charging hardware directly and disburse funding to SP upon NEVI site energization and commission, providing almost no upfront funding aside from the charging equipment until the location is ready for use. Once the sites are operational, HDOT will disburse NEVI funds to SP via monthly payments over the five years but will withhold funding if sites fail to meet federal uptime requirements.

This monthly disbursement will allow SP to recoup their upfront development, procurement, and construction costs, and will offset the cost of owning, operating, and maintaining the stations. While EV Connect will serve as the on-the-ground network operator for all Hawai'i NEVI sites, SP will be the single contractor on the state NEVI contract responsible for charger maintenance and performance, as well as payment to and management of all subcontractors (including EV Connect). According to department staff, NEVI sites will only charge costs to the public for electricity and associated transaction fees and taxes. EV Connect will collect the fees and transfer the revenue to HDOT, maintaining their own transaction fees. HDOT will use the revenue to pay for electrical costs.

ELECTRIC UTILITY ENGAGEMENT

Hawai'i has one major electric utility that provides power to most of the state on the islands of Hawai'i, Moloka'i, Lana'i, Maui, and O'ahu —Hawaiian Electric Company (HECO). HECO actively engages with state agencies as a willing partner to advance statewide transportation electrification across the state. HDOT aims to coordinate with the Kauai Island Utility Cooperative (KIUC) to support the development of NEVI stations on the island of Kaua'i. Both HECO and KIUC face grid capacity limitations, making it difficult to deliver sufficient power to support charging at NEVI sites. HDOT worked directly with HECO to assess potential sites for available capacity as a key part of its site identification and selection process. While the department led the initial coordination with HECO to make high-level assessments of potential site locations, they will require SP to formally submit power service requests when the department formally selects NEVI sites. HDOT participates in an EV working group with HECO and SP that serves to address mutual challenges and streamline decision-making.

PUBLIC ENGAGEMENT

HDOT conducted a stakeholder engagement campaign with the public and local advocacy groups to raise awareness and solicit feedback on the department's NEVI implementation plan. In the fall of 2022 and the summer of 2023, HDOT issued press releases and held news conferences informing the Hawaiian public of the department's progress on the NEVI program.

HDOT released a public survey on their NEVI webpage in July 2023 to gather input from local Hawaiians about their needs and expectations for public EV charging (see Table 1).

Table 1: HDOT Public Survey

Questions
1. Do you currently drive a plug-in EV? a. If yes, where do you charge your EV? b. If no, are you planning to buy or lease an EV within the next 12 months? c. If no, would having access to an EV charging station at one of the planned NEVI sites increase the likelihood that you would buy or lease an EV?
2. Please rank the following features of public EV charging sites in order of importance to you, with 1 being most important and 7 being least. a. Proximity to shopping b. Shade/Shelter c. 24-hour access d. Proximity to food/drink e. Security guard or surveillance system f. Lighting g. Restrooms
3. Would you rather pay a flat rate per 15-minute session or pay based on time of use? a. The flat rate is estimated at $0.40/kilowatt-hour. b. The Time of Use charge is estimated at $0.28/kilowatt-hour between 9 a.m. and 5 p.m. and $0.51/kilowatt-hour between 5 p.m. and 9 a.m. Note: The rate may be adjusted as price for electricity changes.
4. When would you be most likely to charge at a public EV charging station?

HDOT used the results of the survey to inform both their NEVI plan and support state-level EV charging initiatives. Most respondents with an EV reported they primarily charged at home, while over 70 percent of respondents without an EV said that access to public charging would make them more likely to consider buying or leasing an EV. Respondents also consistently ranked 24-hour charging access a top priority.

HDOT is also a member of Drive Electric Hawai‘i (DEH)—a coalition of local government, private-sector, and nonprofit stakeholders advocating for increased EV adoption—to collaborate on EV projects and applications and serves as a venue to keep stakeholders appraised of NEVI implementation.

SITE DESIGN, SELECTION, AND DEVELOPMENT

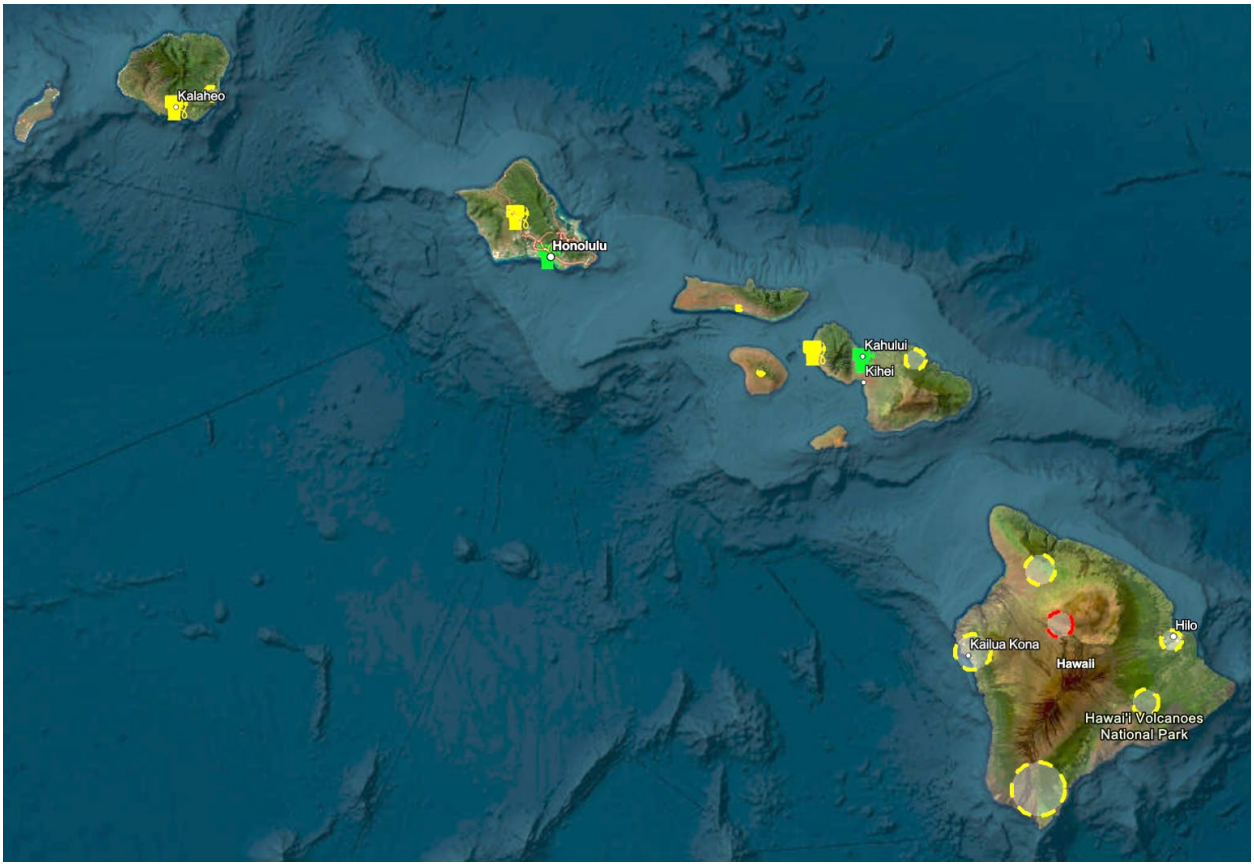
From the outset, HDOT prioritized the driver experience in selecting and designing NEVI sites. They conducted a public survey soliciting feedback on the amenities local Hawaiians considered most important for EV charging sites. Many respondents cited bathrooms as a critical amenity. The department also considered the presence of other amenities like nearby restaurants or other commercial operations, proper lighting, and security patrols.

However, HDOT also recognizes that Hawai‘i’s relatively small size means that few drivers will drive enough miles that they substantially drain their battery in a single day, which will reduce charging time. As such, priority amenities will focus on a shorter dwell time.

Due to grid capacity limitations, HDOT does not intend to install chargers more powerful than 150 kilowatts and at present plans to only meet the NEVI minimum requirement of four chargers per site.

The department began construction of the selected site on Maui and the site on O‘ahu in the first half of 2024. HDOT opened the first NEVI station on Maui in February 2024 at the Kahului Park and Ride. The O’ahu site should be completed by the end of 2024 with the rest of the stations to be completed by the end of 2025. See Figure 1 for a map of the confirmed and potential site locations for Hawai‘i.

Figure 1: Hawai‘i Site Locations



This map depicts both confirmed and pending charging sites identified by HDOT. Both green and yellow charging station icons are confirmed NEVI site locations; green icons indicate shovel-ready sites, whereas yellow station icons indicate those still in the planning and permitting phase. Circles indicate potential site areas. The red circles indicate site areas where HDOT has requested discretionary exceptions due to grid capacity limitations.

Source: Hawai‘i NEVI State Plan

When determining site location, HDOT prioritized properties owned by the department or other state or municipal properties. For instance, HDOT owns the property on which the first two sites will be built. For the remaining sites, they are actively considering public libraries and other government-owned properties. To supplement the funding gap for NEVI sites, HDOT, HECO, and the Hawai‘i State Public Libraries Systems (HSPLS) submitted a joint application to the Community Charging and Fueling Infrastructure (CFI) Grants Program for sites at municipal properties. The grant would fund up to nine public library sites with four chargers each. HDOT also submitted a CFI corridor application with HSEO for the installation and operation of a DCFC station (4-150 kW ports) on the island of Molokai, located just under one mile west of Route 450 (designated in 2016 as an Alternative Fuel Corridor prior to the establishment of the NEVI station requirements). As of January 2024, Hawai‘i received approximately $7,000,000 in EV Charger Reliability and Accessibility Accelerator funds to repair or replace 74 charging ports but has not received CFI grant funding to construct new sites.

Looking to the future Hawai‘i is investigating solutions for resilient charging. Through JOET’s Ride and Drive Electric Program HSEO partnered with HDOT, Hawai‘i Department of Accounting and General Services (DAGS), Hawai‘i Emergency Management Agency, and Hawai‘i Office of Homeland Security to identify sites and technological solutions for resilient charging to ensure operations of essential services during all hazard events and community access to charging. HSEO is collaborating with HECO to explore leveraging micro-grids for critical facilities funded under FEMA’s Building Resilient infrastructure and Communities program to host EV charging infrastructure. Resilient charging infrastructure compliments Hawai‘i’s commitment to convert the State’s light-duty fleet to 100% ZEV by 2035.

HDOT has requested five discretionary exceptions to FHWA for NEVI sites. Reasons include sites not having suitable locations that met the 50-mile requirement because they are entirely off-grid, face geographic limitations preventing construction, or either lack, or require material upgrades to, available power or necessary utility infrastructure. See Table 2 for an island-by-island breakdown of identified site locations identified and the discretionary exceptions requested. As of January 2024, the Federal Highway Administration (FHWA) has approved two of HDOT’s discretionary exception requests, as noted in FHWA’s approval letter.

Table 2: HDOT NEVI Discretionary Exception Requests as of July 2023

Island	Required Stations	Requested Exceptions	Exception Location	Charging Station Locations
Hawai‘i	6	2	Saddle Road	Hilo, Waimea, Kona, Oceanview, Volcano
Maui	3	1	Hana	Kahului, Lahaina
Lana‘i	1	1	Lana‘i City	N/A
Moloka‘i	1	1	Kaunakakai	N/A
O‘ahu	2	0	N/A	Honolulu, Mililani
Kaua‘i	2	0	N/A	Lihu‘e, Kalaheo
Total	**15**	**5**		

HDOT prefers to not install 4 x 150kW DC fast chargers with NEVI funding on Lana‘i or Moloka‘i at this time. The current adoption levels of these islands could be met through alternative solutions while prioritizing NEVI funding and sites where they can provide the greatest benefit. Unlike interconnected remote locations on the continent, isolated locations can have charging infrastructure rightsized based on their unique requirements.

KEY FINDINGS AND LESSONS LEARNED

While HDOT acknowledged that its approach to NEVI implementation differed substantially from that of other states, these key findings from Hawai'i's NEVI site selection and development efforts can provide insights for other states.

- Unlike most states, HDOT did not proceed with a competitive bid process, opting instead to expand an existing contract HDOT had with an EV fleet and charging service provider.
- If FHWA approves the four discretionary exceptions, HDOT anticipates it will only need to develop 11 NEVI-compliant sites to certify corridor buildout.
- NEVI funds alone are insufficient to meet Hawai'i's NEVI site requirements due to higher costs associated with shipping and grid capacity limitations.
- HDOT will attempt to secure supplemental funding for NEVI-compliant sites through other funding streams like the CFI grant program.
- HDOT coordinated closely with state utilities prior to finalizing site selection to ensure potential sites met grid capacity and power availability needs.
- HDOT does not intend to build out NEVI sites with more ports or power than the NEVI minimum requirements due to grid capacity limitations.
- HDOT opted to build NEVI sites on state-owned property (e.g., public libraries, and HDOT property), which will mitigate potential site host issues.
- HDOT intends to continue supporting NEVI sites beyond the five-year statutory period to meet state-wide transportation electrification goals.

ACHIEVING NEVI GOALS

Hawai‘i DOT continues to work closely with NASEO, AASHTO, and the Joint Office of Energy and Transportation to achieve NEVI program goals, participate in direct technical assistance to address challenges as they arise, and engage with peers from other states to share best practices and lessons learned.

While HDOT took a unique approach to NEVI implementation, the department made strides toward achieving NEVI program goals (see Table 3).

Table 3: Hawai‘i’s Actions to Meet NEVI Goals

NEVI Goal	State Action
Engage with relevant stakeholders in program design	• Chairs working group between grantee and utility • Assessed potential site locations with utility
Ensure positive driver experience	• Surveyed public on priority amenities • Chose sites with high-priority amenities
Establish a reliable charging network	• Will withhold payment if sites are noncompliant
Fill gaps across all geographies, including rural areas	• Identified all charging station locations needed to meet NEVI requirements • Will deploy Level 2 chargers at rural sites with insufficient power after achieving NEVI fully built-out status
Prioritize equity and engage disadvantaged communities	• Prioritized local labor • Sites located in DACs

These actions come from direct interviews with HDOT, as well as publicly available information. HDOT may have taken more actions to meet NEVI goals than listed in this table.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