

# **National Electric Vehicle Infrastructure (NEVI) Hawai'i State Plan**

**July 2022**

## Introduction

The National Electric Vehicle Infrastructure (NEVI) program is new under the Infrastructure Investment and Jobs Act/Bipartisan Infrastructure Law. Through the program, the Hawai‘i Department of Transportation (HDOT) receive formula funds to deploy electric vehicle charging infrastructure with the goal of building, operating, and maintaining a reliable, convenient, and accessible charging network across the state. The first phase of the NEVI program requires that fast charging facilities must be installed at 50-mile intervals along and within one-mile of all interstates and designated Alternate Fuel Corridors. Once this phase is complete, HDOT will receive a “fully built out” certification from the U.S. Joint Office of Energy and Transportation and may then use NEVI funds to install other charging facilities away from the interstates and Alternate Fuel Corridors, especially in communities needing such infrastructure or otherwise disadvantaged communities.

The following is the State Plan that maps out the overall vision and goals for the HDOT to deploy charging infrastructure under the NEVI program and to secure the “fully built out certification.” This plan is intended to guide HDOT activities over the next five years but heavily focuses on activities in the first two years.

In developing this State Plan, HDOT consulted with various stakeholders to collect information and understand rates of electric vehicle adoption, progress in electrification of transportation, demand for charging facilities, feasibility of infrastructure deployment under the NEVI requirements, and the landscape of planned charging projects over a five-year time horizon. HDOT values the Hawai‘i State Energy Office (HSEO) as a key partner and the state’s leader in achieving a resilient clean energy economy in the state. HDOT reviewed data collected by HSEO and other state agencies to complement the information gathered through the stakeholder meetings.

The following milestones reflect the past steps taken, projected actions, and schedule targets as we advance and implement this State Plan.

### **Dates of State Plan for Electric Vehicle Infrastructure Deployment Development and Adoption**

- Spring 2022 – Initial State Plan development; coordination meetings with HSEO, counties, power utilities, electric vehicle manufacturers; planning meetings with Sustainability Partners; review of the 90-day guidance; research and collection of plan inputs.
- Summer 2022 – State Plan drafting; continued coordination meetings.
- July 2022 – Final plan prepared and submitted.
- August - September 2022 – Site selection and secure site control for the first three locations.

- September 30, 2022 – Expected approval date of State Plan by Joint Office of Energy and Transportation.
- Fall 2022 – Complete planning phase and initiate design phase for the first three locations; coordinate design phase with power utility; order charging station equipment.
- Winter 2022 – Secure permits for the installation of the first charging station; begin installation work.
- Spring 2023 – Commission the first charging station; complete design phase for the remaining five locations; secure permits as needed; continue installation work; continue coordination meetings with all stakeholders to begin the update for the Year 2 State Plan; complete public engagement commitments for Year 1.
- Summer 2023 – Continue installation work; draft Year 2 State Plan.

## Terms and Acronyms

**Alternative Fuel Corridor** or **AFC** mean national electric vehicle charging and hydrogen, propane, and natural gas fueling corridors designated by FHWA pursuant to 23 U.S.C. 151.

**Charging Site** means a location where HDOT will or plans to install any charging infrastructure contemplated by this State Plan.

**Charging Station** means a charging facility that includes four 150 kW ports, as required under the NEVI program.

**Disadvantaged communities** or **DACs** mean census tracts or communities with common conditions identified by the U.S. Department of Transportation and the U.S. Department of Energy that consider appropriate data, indices, and screening tools to determine whether a specific community is disadvantaged based on a combination of variables that may include, but are not limited to, the following: low income, high and/or persistent poverty; high unemployment and underemployment; racial and ethnic residential segregation, particularly where the segregation stems from discrimination by government entities; linguistic isolation; high housing cost burden and substandard housing; distressed neighborhoods; high transportation cost burden and/or low transportation access; disproportionate environmental stressor burden and high cumulative impacts; limited water and sanitation access and affordability; disproportionate impacts from climate change; high energy cost burden and low energy access; jobs lost through the energy transition; and limited access to healthcare.

**EVSE** means Electric Vehicle Supply Equipment.

## State Agency Coordination

HDOT is the State's lead on the development and implementation of this State Plan and works in close partnership with the HSEO.

HDOT is a cabinet-level executive state agency charged with providing a safe, efficient, accessible, and sustainable inter-modal transportation system that ensures the mobility of people and goods, and enhances and/or preserves economic prosperity and the quality of life. The Highways Division focuses on the highways infrastructure components of the inter-modal system and aims to maximize available resources for the State Highway System to support economic vitality and livability in Hawai'i. HDOT is the recipient of apportioned federal-aid highway NEVI formula funds to the State of Hawai'i.

HSEO promotes energy efficiency, renewable energy, and clean transportation to help achieve a resilient clean energy economy. The HSEO is administratively attached to the Department of Business, Economic Development, and Tourism (DBEDT), another cabinet-level executive state agency. The Chief Energy Officer leads HSEO and is appointed by the Governor with the advice and consent of the Hawai'i State Senate. Through effective policies and innovative programs, HSEO has positioned Hawai'i as a leader in clean energy innovation, which will generate high-quality jobs, attract investment opportunities, and accelerate economic growth.

Both HDOT and HSEO collaborated on the nomination and designation of the State's Alternative Fuel Corridors (AFCs).

In the context of this State Plan, HDOT contributes its expertise in the planning, design, and construction of transportation infrastructure, as well as its experience in the electrification of transportation. HSEO complements HDOT's experience with its track-record in advancing clean transportation across Hawai'i, including facilitating the deployment of zero emission vehicles and associated charging infrastructure.

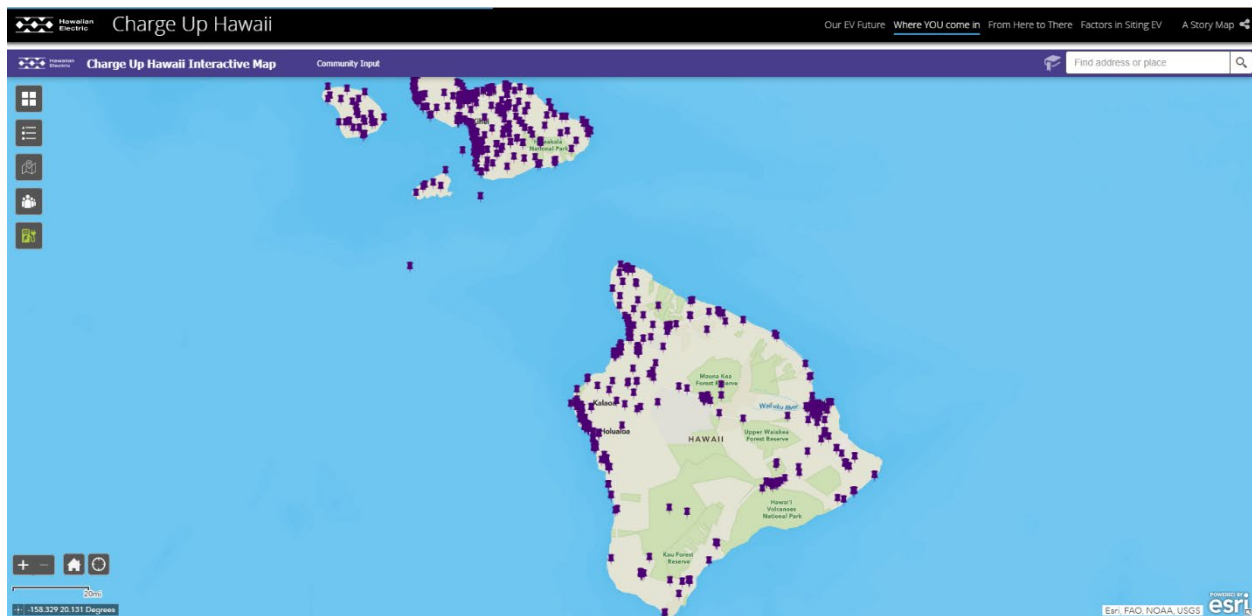
In the development of this State Plan, the executive leadership and staff of both HDOT and HSEO met several times over the past five months to discuss strategies to achieve the "fully built out" certification, prospective charging station sites, potential exceptions, and foreseen challenges and possible solutions in executing this plan. Both partners participated in coordination meetings with the two local power utilities, and jointly briefed Governor David Ige on the NEVI program and the status of our State Plan.

## Public Engagement

The State of Hawai‘i has a long and successful track record of supporting the widespread adoption of electric vehicles. This track record is possible because of robust public engagement by government agencies, state legislators, Hawaiian Electric Company, Kaua‘i Island Utility Cooperative, and private stakeholders including Drive Electric Hawai‘i, Elemental Excelsior, Hawai‘i Energy, Hawai‘i Automobile Dealers Association, and the Sustainable Transportation Coalition of Hawai‘i.

HDOT and HSEO are fortunate to build upon other engagement campaigns and efforts in the development of this State Plan. Examples of helpful efforts include the Hawaiian Electric Company’s “Charge Up Hawai‘i” online survey launched in August 2021 that seeks public input and suggestions on where additional charging stations are needed. The webtool poses guiding question about where drivers might spend most of their time when not at home, places frequented for shopping and recreation, and convenient locations along commuting routes. Figure 1 shows an example of the input collected through this survey. Each purple pin represents a community request for charging stations.

*Figure 1 – Screenshot of Hawaiian Electric Company’s “Charge Up Hawai‘i” Webtool Results*



## Stakeholders Involved in Plan Development

In preparing this State Plan, HDOT has held a series of consultation meetings with the following partners and stakeholders. These meetings included discussions with counties on planned projects involving charging infrastructure, assessments of power availability, and prospective partnership for additional charging facilities to supplement the work contemplated in this State Plan.

- Office of the Governor
- Members and staff of the Hawai‘i Congressional Delegation
- Hawai‘i State Energy Office

- County of Hawaii
- County of Maui
  - Maui Metropolitan Planning Organization
- City and County of Honolulu
  - O‘ahu Metropolitan Planning Organization
- County of Kauai
- Hawaiian Electric Company
- Kaua‘i Island Utility Cooperative
- Tesla
- Rivian
- Commercial centers
- Sustainability Partners

HDOT also participated in the Hawai‘i Energy Conference in May 2022, and presented high-level concepts on key components of the State Plan.

Going forward, HDOT will host community meetings, provide updates to and collect input from the Neighborhood Board meetings held on O‘ahu, and meet with area elected officials as components of the State Plan are executed.

### **Future Engagement Activities**

Once the State Plan is approved, HDOT plans on conducting the following activities:

#### **1. Website for Updates and Input**

A website for the State Plan will be created once the plan is approved. Content and structure of the update page will be similar to pages created to provide updates on HDOT’s fleet electrification (<https://hidot.hawaii.gov/highways/electric-vehicles/>) and Red-Light Safety Program (<https://hidot.hawaii.gov/highways/red-light-safety-program/>). Members of the public will be able to contact HDOT staff through the website or the HDOT Public Affairs Office.

#### **2. Socialization of the State Plan**

HDOT will socialize the State Plan through announcements on its website, social media, and through its public distribution list, which includes 52,426 subscribers. Additionally, HDOT plans on up to four meetings with area elected officials from the Hawai‘i State Legislature and county councils on the initial rollout of the State Plan.

#### **3. Public Meetings**

After circulation of the State Plan with stakeholders, HDOT will host a combination of virtual and in-person meetings in communities where the charging stations will be installed to explain the purpose of the program, explain how the charging sites were selected, and outline the public involvement process for future community charging sites.

## Plan Vision and Goals

The State of Hawai‘i is committed to meeting a zero emissions clean economy by 2045 and is aimed to mitigate greenhouse gas emissions by both reducing and sequestering atmospheric carbon and greenhouse gases produced within the State. The clean economy target is supportive of the State’s commitment to the Paris Agreement, and, of specific relevance to the transportation sector, Act 32 (Session Laws of Hawai‘i, 2017) which directs the State to “expand strategies and mechanisms to reduce the greenhouse gas emissions statewide through the reduction of energy use, adoption of renewable energy, and control of air pollution among all agencies, departments, industries, and sectors, including transportation.” Additionally, Act 38 (Session Laws of Hawai‘i, 2015) directs planning for the State’s facility systems to give due consideration to “the ultimate elimination of Hawai‘i’s dependence on imported fuels for electrical generation and ground transportation.” Material progress towards the elimination of fossil fuels in ground transportation will greatly reduce the total volume of local carbon sequestration projects that would need to be sited and funded to achieve the 2045 clean economy target.

HDOT and HSEO have developed this State Plan to build on this overarching 2045 clean economy goal and to achieve the following vision and goals:

**Vision: The people of the State of Hawai‘i have an accessible electric vehicle charging network of convenient, affordable, and safe charging stations that result in the transition of the majority of light-duty vehicles from internal combustion engines to electric vehicles by 2045.**

**Goal 1: To achieve the “fully built out” certification by the end of Year 2.**

**Goal 2: To facilitate partnerships with private entities to deploy DC Fast Chargers to supplement NEVI-funded charging stations.**

**Goal 3: To identify 10 candidate sites for Community Charging facilities and install Level 2 charging stations by the end of Year 5.**

The work under this State Plan will be completed to accomplish these goals and to achieve the following:

**Data Collection:** HDOT will work with its contractor Sustainability Partners to collect usage data for each charging port. HDOT will also conduct annual online surveys of electric vehicle drivers to collect qualitative feedback as to the reliability, convenience, affordability, and safety of the charging stations installed under this program. Adjustments to the network and future updates to this State Plan will be made as needed based on the data collected.

**Equitable Access:** HDOT commits to installing one NEVI-compliant charging station or a Community Charging facility in at least one disadvantaged community on each island. Outreach efforts will include translated materials if language is determined to be barrier for access.



Additionally, to reduce barriers to access the charging stations, HDOT does not plan to assess a fee for the charging services at this time. If a deployment partner, such as a property owner, requires the assessment of a reasonable fee for the cost of electricity, HDOT will consider the proposal against the adopted NEVI program administrative rules.

**Network Reliability:** Reliability of the network will be jeopardized by power availability, faulty equipment, vandalism, or extreme weather events. HDOT will work closely with the two power utilities in final site selection to ensure power supply is adequate to support 600 kW. The contract with Sustainability Partners includes maintenance and servicing, so any faulty equipment will be serviced and/or replaced timely to improve reliability. A significant consideration in site selection is safety and security. HDOT seeks sites with appropriate lighting and other similar considerations that will deter vandalism. Additionally, outreach and communications to the community will characterize the charging stations as a community asset. As part of HDOT's resilience planning, site selection for charging stations as with other transportation infrastructure will prioritize locations that are outside known flood zones and other areas likely to be impacted by tsunamis, coastal erosion, sea level rise, and landslides.

## **Contracting**

In December 2020, HDOT issued a Notice to Proceed for an Electric Vehicle and Charging Infrastructure service contract. To date, HDOT has accelerated the transition of its light-duty vehicle fleet and has acquired 43 electric vehicles and 47 Level 2 chargers that have been installed at HDOT baseyards. Over the next year, an additional 128 trucks and 20 sedans will be acquired along with 32 more Level 2 chargers.

This same contract allows HDOT to procure the electric vehicle charging infrastructure necessary to execute the requirements of the NEVI program and the goals set forth in this State Plan. Through this contract, HDOT will also be able to include the operation and maintenance activities for the duration and beyond the NEVI program. HDOT's contractor, Sustainability Partners, is committed to utilizing local small business in delivering the services of the contract. HDOT will work with the contractor to further identify available small businesses qualified to deliver the NEVI program.

To supplement this contract with Sustainability Partners, HDOT may issue a request for proposals for broader infrastructure services which may include electric vehicle charging stations. HDOT may also issue an invitation for bids for individual charging station installations. Both of these solicitations will include requirements to utilize small businesses to conduct appropriate community engagement activities throughout the duration of the project.

## Existing and Future Conditions Analysis

Over the past five years, Hawai‘i ranks highest among states in the adoption of electric vehicles. A combination of limited driving distances and supportive state and county policies contribute to this positive trend in the electrification of transportation. According to the State of Hawai‘i Department of Business, Economic Development and Tourism Monthly Energy Trends report for June 2022, there are 1,055,356 registered passenger vehicles in the state and 19,914 of those vehicles are electric. Compared to June 2021, the number of registered electric vehicles has increased by 4,700 or 30.9 percent.

In 2018, Hawaiian Electric Company projected in its Electrification of Transportation Strategic Roadmap([https://www.hawaiianelectric.com/documents/clean\\_energy\\_hawaii/electrification\\_of\\_transportation/201803\\_eot\\_roadmap.pdf](https://www.hawaiianelectric.com/documents/clean_energy_hawaii/electrification_of_transportation/201803_eot_roadmap.pdf)) that by 2045, 55 percent of personal light-duty vehicles operated in Hawai‘i will be electric and that a minimum of 2,200 public charging ports are needed to meet the demand for charging. Today, Hawai‘i has just 805 ports but this number steadily increases as more electric vehicles are purchased. Of the ports currently available, none meet the NEVI standard of a minimum of four 150 kW ports per station. Pearlridge Center on O‘ahu is home to the state’s only Tesla Supercharger with six ports, but the total power at this station is 250kW.

Through the implementation of this State Plan, HDOT and HSEO aim to address gaps in the state’s charging network to make charging electric vehicles cost effective and more convenient for owners, thereby sustaining Hawai‘i’s already high rate of electric vehicle adoption.

## State Geography, Terrain, Climate and Land Use Patterns

Hawai‘i, located 2,000 miles from the continental United States, is a volcanic archipelago of eight large islands and at least 130 much smaller atolls and islets that span 1,500 miles. The land area of all islands is 6,400 square miles, almost the size of Connecticut and Delaware combined. Seven of the eight large islands are inhabited, and six islands – Hawai‘i, Maui, Lāna‘i, Moloka‘i, O‘ahu, and Kaua‘i – are addressed in this State Plan.

The terrain across the islands is diverse and includes various volcanic, fluvial, and coastal landforms. The active volcanoes on Hawai‘i Island continue to shape and expand the island; lava fields, channels, and tubes, cinder cones, vents, craters, and fissures are commonly found and are apparent on this island. Radial drainage patterns have shaped the fluvial landforms over centuries. Presence of these landforms, classified into youthful and mature stages, generally correlate with the age of the islands. Hawai‘i Island is home to steep v-shaped valleys and plunge pools, whereas widened aging valleys and planezes are more likely to be found on O‘ahu. The evidence of mature erosion on O‘ahu and Kaua‘i can be seen in the vertical valleys, knife ridges, and fluted valley headwalls. In the lower-lying flat areas of each island, ocean erosion is dominant in shaping the terrain. Along the State’s 750 miles of coastline are coastal plains, sea cliffs, rocky headlands, and sandy beaches. Designing, developing, operating, and maintaining highways infrastructure in and on the varying terrains and in the different climate zones is a challenge, as is power supply and distribution.

The mountains and ranges of each island influence the weather and climate as they obstruct, deflect, and/or channel flow of air. Each island features a windward side that faces the

prevailing winds and tends to be moist with greater precipitation, and a leeward side that is down wind, protected, drier and receives more sun. Four of the five main climate groups of the Köppen-Geiger Climate Classification System are found in the Hawaiian Islands, including tropical, dry, temperate, and polar climates.

Weather in the islands is consistent throughout the year; a sea level the average daytime summer temperature is 85 degrees compared to the average daytime winter temperature of 78 degrees. Weather patterns are primarily impacted by high-pressure zones in the north Pacific Ocean that bring Hawai‘i’s trade winds and rains. Rainfall patterns are localized and diverse across the state with annual means ranging from eight inches to 404 inches. These patterns can be affected year to year by El Niño and La Niña cycles.

HDOT has developed a Climate Adaptation Action Plan to respond to increasing global temperatures, sea level rise, and extreme weather events, and to sustain the system’s resilience. In Hawai‘i, these changes mean inundated shorelines, accelerated coastal erosion, flooding, landslides, and wildfires. The same approaches historically used to maintain the State Highway System are inadequate today. The Climate Adaptation Action Plan is based on a climate exposure assessment of eight stressors: rockfalls and landslides; annual high wave flooding; sea level rise; coastal erosion; storm surge; tsunami; lava flow; and wildfire.

**Table 1: HDOT Highways Infrastructure Exposed to Climate Hazards (to 3.2 feet Sea Level Rise (based on the Hawai‘i Sea Level Rise Vulnerability and Adaptation Report, 2017)**

	Roads		Bridges		Culverts		Tunnels	
<i>Hazard</i>	<i>Miles</i>	<i>%</i>	<i>Units</i>	<i>%</i>	<i>Units</i>	<i>%</i>	<i>Units</i>	<i>%</i>
<b>Rockfall and landslide</b>	167.6	17%	126	32%	11	15%	6	100%
<b>Sea Level Rise</b>	9.4	1%	92	23%	7	10%	0	0%
<b>Annual high wave flooding</b>	23.9	2%	50	13%	6	8%	0	0%
<b>Coastal erosion</b>	23.7	2%	22	6%	2	3%	0	0%
<b>Storm surge</b>	74.1	8%	120	30%	9	12%	0	0%
<b>Tsunami</b>	178.1	18%	135	34%	15	21%	0	0%
<b>Wildfire</b>	139.2	14%	97	24%	18	25%	0	0%
<b>Lava flow</b>	151.8	16%	18	5%	15	21%	0	0%

In response, HDOT focuses on investing in effective design when considering climate change and a data-driven resilience program. In the context of this State Plan, HDOT considers design options to address future scenarios and to incorporate future uncertainties to ensure that all investments are effective. HDOT’s formal design methods and guidelines used in highway project development have been adapted to support system resilience measures.

## **State Travel Patterns, Public Transportation Needs, Freight and Other Supply Chain Needs**

Most of the major roadways that provide vehicular connectivity and mobility are constructed on the flatter coastline sections of each island. On Hawai‘i, Maui, and O‘ahu, roadway systems completely encircle the island, forming a belt road. For other islands, roadways systems may

encircle only a portion of the island, or roadways may continue along the coastline and end at some point, providing only one major method of access to communities. Unlike other parts of the U.S., the useable land area in Hawai‘i is very limited. Many of the roadways are confined by developments abutting the facilities or by natural topographic features. Expansion of existing facilities or constructing alternative routes are cost-prohibitive and come with significant environmental impacts. In addition, the high cost of construction is exacerbated by the limited resources (including materials and labor) on the islands. Each island has its own unique system, vital to that island.

The Hawai‘i Statewide Freight Plan (HSFP) was adopted in 2018 and builds on previous work completed, including the Hawai‘i Statewide Transportation Plan, Statewide and Regional Long-Range Land Transportation Plans, and other pertinent plans and studies that identify existing mobility conditions and issues for the state and major county road network in Hawai‘i.

This freight network is a major component of the State’s economic success as freight supports one-third of Hawai‘i’s economic output and jobs in businesses such as tourism, food service, retail trade and construction. These freight-dependent sectors of the economy employ nearly 350,000 people, representing 38 percent of the total employment in Hawai‘i. This is a multi-modal network as 80 percent of all goods consumed in the State are imported, and 98.6 percent of the imported goods enter the State through its commercial harbor system and 1.4 percent enter as air cargo. The highways facilities link the harbors and airports to support the movement of freight to the final destinations.

Through the HSFP, HDOT and its stakeholders identified the State’s National Highway Freight Network (NHFN), and the four components thereof: Primary Highway Freight System (PHFS), Critical Urban Freight Corridors (CUFC), Critical Rural Freight Corridors (CRFC), and additional freight corridors with high annual average daily traffic that help create a continuous freight network. There are 910 lane miles that make up the HDOT NHFN.

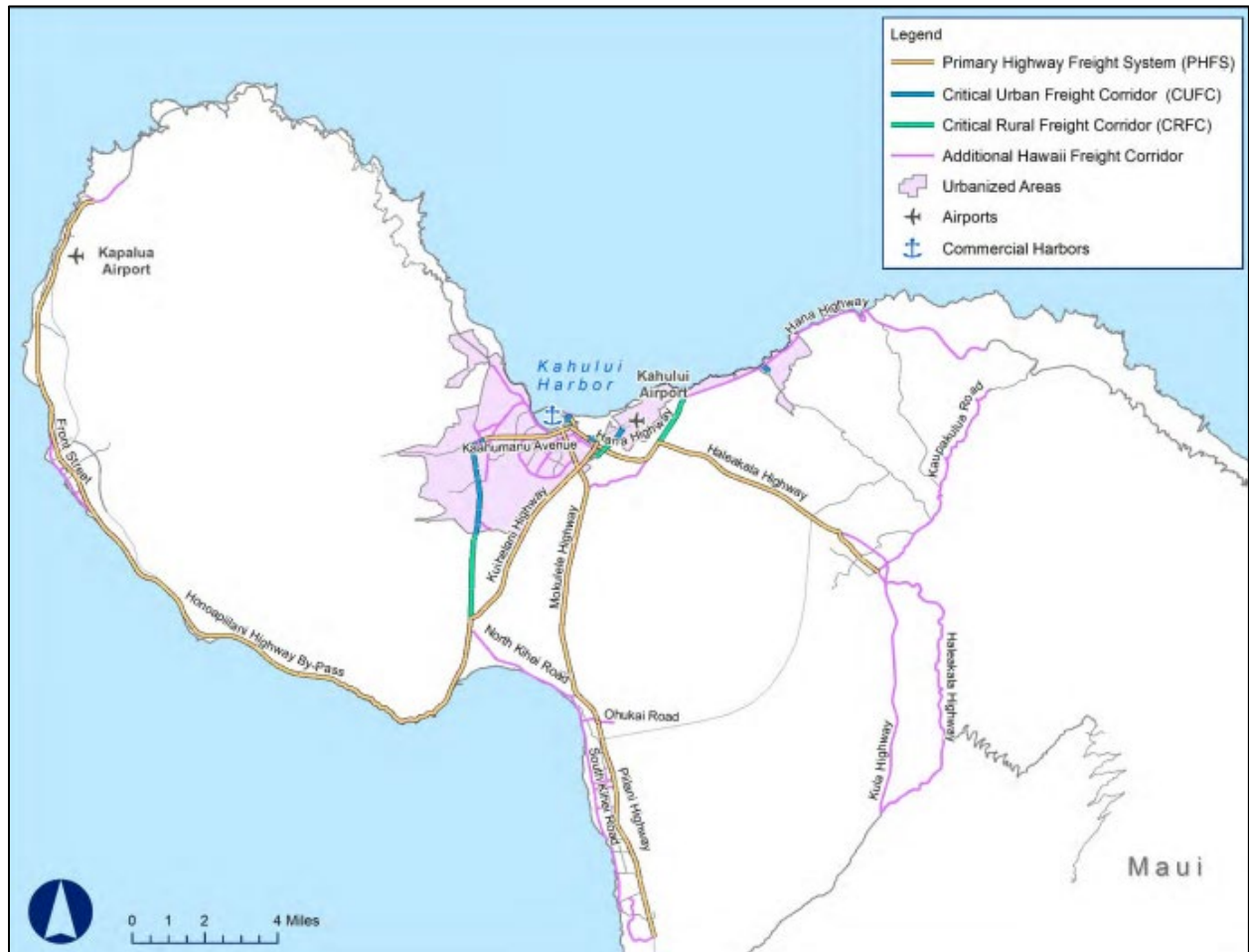
**Table 2: HDOT National Highway Freight Network**

Designation	Lane Miles				
	Hawai‘i	Maui	O‘ahu	Kaua‘i	Total
Primary Highway Freight System	111	58	90	17	277
Critical Urban Freight Corridors	122	4	19	4	150
Critical Rural Freight Corridors	0	4	71	0	75
<b>National Highway Freight Network</b>	<b>234</b>	<b>67</b>	<b>180</b>	<b>21</b>	<b>501</b>
Additional Hawai‘i Freight Corridor	63	71	185	90	409

**Figure 2: HDOT National Highway Freight Network – Hawai‘i Island**



**Figure 3: HDOT National Highway Freight Network – Maui**





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In Hawai‘i, each county operates a public transit system with both fixed route and paratransit services. The public transit systems generally use the same routes and corridors identified in the NHFN as well as county routes and facilities to connect passengers to desired destinations. The exception to this is the Honolulu rail system that is under construction and will run on a separate elevated guideway once operations commence later in 2022.

**Table 3: Public Transit Systems in Hawai‘i**

County	Transit System/ Paratransit	Routes	Website
County of Hawai‘i	Hele-On/Hele-On Kāko‘o	24	<a href="http://www.heleonbus.org">www.heleonbus.org</a>
County of Maui	Maui Bus Public Transit/ADA Paratransit	14	<a href="http://www.mauicounty.gov/609/Maui-Bus-Public-Transit-System">www.mauicounty.gov/609/Maui-Bus-Public-Transit-System</a>
City and County of Honolulu	TheBus/TheHandi-Van	107	<a href="http://www.thebus.org">www.thebus.org</a>
County of Kaua‘i	The Kaua‘i Bus/Paratransit Service	9	<a href="http://www.thekauaibus.com">www.thekauaibus.com</a>

## AFC - Corridor Networks

Since the first call for Alternative Fuel Corridors in 2016, HSEO has been the lead for the State of Hawai‘i in nominating interstates in routes. In Rounds 1, 2, and 5, HSEO was successful in designating nine AFC Ready Corridors and 18 AFC Pending Corridors for electric vehicles across six islands. The State of Hawai‘i did not nominate any additional corridors during the most recent Round 6 call for nominations.

**Table 4: Ready and Pending Alternative Fuel Corridors, Electric Vehicles**

Island	Interstate/Route	AFC Round	Status
Hawai‘i	HI-11	2	Pending
Hawai‘i	HI-19	2	Ready
Hawai‘i	HI-130	2	Pending
Hawai‘i	HI-190	2	Ready
Hawai‘i	HI-200	2	Pending
Hawai‘i	HI-250	2	Pending
Hawai‘i	HI-270	2	Pending
Maui	HI-30	1	Pending
Maui	HI-31	1	Ready
Maui	HI-32	1	Ready
Maui	HI-36	1	Pending
Maui	HI-37	1	Ready
Maui	HI-360	1	Pending
Maui	HI-3400	1	Pending
Lāna‘i	HI-440	1	Pending
Moloka‘i	HI-450	1	Pending
O‘ahu	H-1	1	Ready
O‘ahu	H-2	1	Ready
O‘ahu	H-3	1	Ready
O‘ahu	HI-61	1	Pending
O‘ahu	HI-72	1	Pending
O‘ahu	HI-83	1	Pending

O'ahu	HI-92	1	Pending
O'ahu	HI-99	1	Ready
Kaua'i	HI-50	5	Pending
Kaua'i	HI-56	5	Pending
Kaua'i	HI-560	5	Pending

**Figure 6: Ready and Pending Alternative Fuel Corridors, Electric Vehicles**



### Existing Locations of Charging Infrastructure Along AFCs

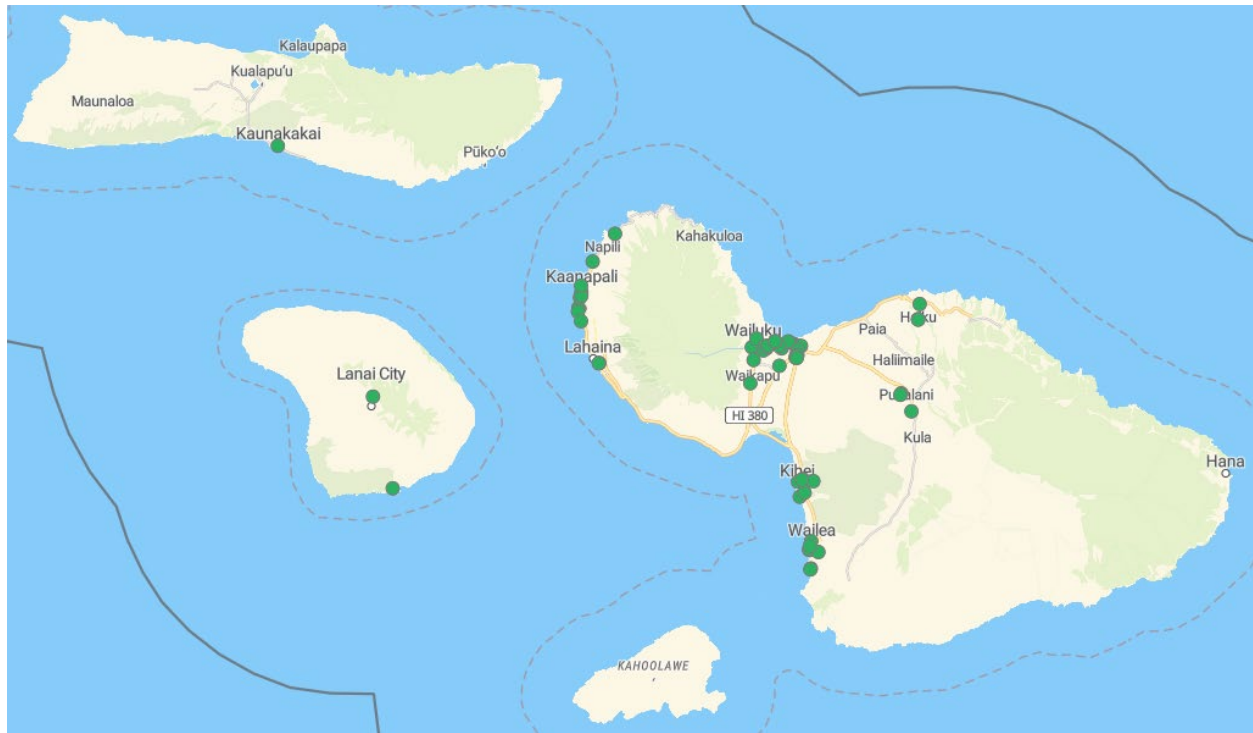
As of July 1, 2022, there are 368 electric vehicle charging locations and 805 EVSE ports that provide DC Fast or Level 2 charging across the State of Hawai'i. A complete listing of the locations is provided in Appendix A – Existing Charging Infrastructure.

A significant majority of the existing charging locations are along the designated AFCs, as depicted in Figures 7 through 10 below. Locations marked in green are located along an AFC and locations marked in red are located a distance greater than one mile from an AFC.

*Figure 7: Existing Chargers on Alternative Fuel Corridors, Hawai'i Island*



***Figure 8: Existing Chargers on Alternative Fuel Corridors, Maui County***

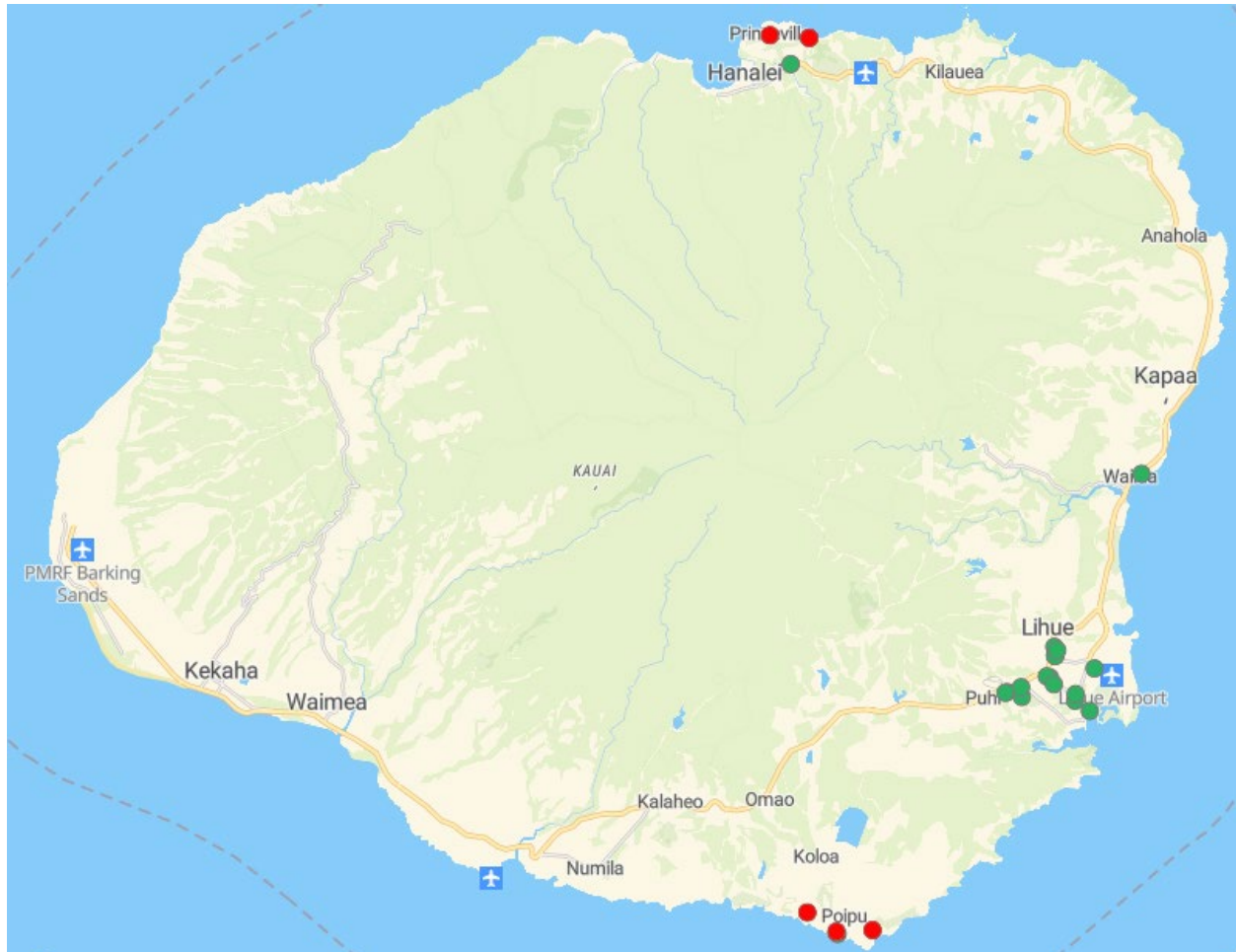


*Figure 9: Existing Chargers on Alternative Fuel Corridors, O'ahu*





*Figure 10: Existing Chargers on Alternative Fuel Corridors, Kaua'i*



## **Known Risks and Challenges**

There are three primary risks in the deployment of electric vehicle infrastructure: power availability, supply chain management and labor shortages, and site control.

In the development of this State Plan, both HDOT and HSEO consulted with the two power utilities that operate in Hawai‘i, Hawaiian Electric Company (including Hawaiian Electric Light Company and Maui Electric Company) and Kaua‘i Island Utility Cooperative. Both utilities confirmed that adequate power is available to support the number of NEVI-required four-port 150 kW charging stations along the interstates and AFC Ready Corridors. However, the power supply is inadequate to support such charging stations in areas along certain AFC Pending Corridors, especially those on the islands of Moloka‘i and Lāna‘i where the total peak load on each island is 6 MW. For example, a 600 kW demand is a significant percentage of the total power demand for the entire population of 7,345 people who reside on island of Moloka‘i.

The ongoing global supply chain crisis and labor shortage are expected to impact the projected timelines for the deployment of electric vehicle infrastructure. Over the past year, HDOT projects requiring specialized materials or equipment have experienced manufacturing and delivery times that are two to four times longer than normal. The high demand for electric vehicle charging equipment coupled with the NEVI Buy America requirements will limit the available supply of chargers and related materials. HDOT has already initiated discussions with its contractor Sustainability Partners to order charging equipment in an attempt to mitigate this risk. HDOT is also exploring labor availability to address the NEVI requirements for qualified technicians to install and operate the charging stations. As the local labor market is fluid and can be suddenly impacted by COVID-19 surges, it is difficult to determine exactly how this risk will impact this project or how to mitigate this risk.

Finally, the process of securing site control may also delay the deployment as rights of entry or other agreements with private landowners of prospective installation sites may require extensive negotiations and legal approvals. To avoid this risk to the greatest extent possible, HDOT will prioritize state and county owned sites for the installation of the charging stations. However, there are some cases in which locations that are considered convenient and/or safe for charging are not available.



## EV Charging Infrastructure Deployment

HDOT will need to install twelve charging stations along interstates and designated AFCs to satisfy the NEVI fully built out requirements. HDOT seeks exceptions for five of twelve stations due to limited power availability and grid capacity and plans to install a total of eight charging stations. See **Appendix B – State EV Deployment Plan Exception Requests**.

*Table 5: Summary of Planned NEVI Charging Stations*

Island	Required Stations	Requested Exceptions	Exception Location	Charging Station Locations
Hawai‘i	6	2	Saddle Road	Hilo, Waimea, Kona, Oceanview, Volcano
Maui	2	1	Hāna	Kahului
Lāna‘i	1	1	Lāna‘i City*	N/A
Moloka‘i	1	1	Kaunakakai*	N/A
O‘ahu	1	0	N/A	Honolulu
Kaua‘i	1	0	N/A	Līhu‘e
<b>TOTAL</b>	<b>12</b>	<b>5</b>		

\* - These locations are where HDOT would recommend installation of a charging station, but notes there are various locations on the island that would satisfy the requirements.

Notwithstanding the identified risks, HDOT expects it will be able to install and begin operating eight charging stations by the end of Year 2 and achieve Goal 1 of this State Plan. HDOT perceives the existing contract with Sustainability Partners as a critical advantage as it reduces implementation timelines because the procurement and contracting phase is already complete.

In the communities where power availability is limited, HDOT seeks to deploy a number of Level 2 chargers to meet charging demand. Over the course of the next five years, HDOT aims to identify ten Community Charging sites and will work closely with stakeholders in these areas to properly site the stations.

There are several infrastructure and charging projects in early planning stages that may supplement the network of eight chargers HDOT will pursue. For example, both the City and County of Honolulu and the County of Kaua‘i have received Congressionally Directed Spending grants for fast charging facilities. If these project timelines align with the proposed projects under this State Plan, HDOT will facilitate opportunities to use available resources to upgrade the county projects to meet the four-port 150 kW standard.

### Funding Sources

HDOT commits to providing the required non-federal match funding for projects implemented under this State Plan from operating funds appropriated to HDOT by the Hawai‘i State Legislature.

## 2022 Infrastructure Deployments/Upgrades

In Year 1 of this State Plan, HDOT proposes to install eight new charging stations noted in Table 6 below.

*Table 6 – Planned NEVI Infrastructure Deployments*

State EV Charging Location Unique ID	Route	Location	Anticipated EV Network	Utility Territories	Anticipated Station Ownership	FY22 Funding Amount	FY23-FY26 Funding Amount
NEVI1	HI-19	Hilo, Hawai‘i	TBD	HECO	Private	\$1.5 M	TBD
NEVI2	HI-19	Waimea, Hawai‘i	TBD	HECO	Private	\$1.5 M	TBD
NEVI3	HI-19	Kona, Hawai‘i	TBD	HECO	Private	\$1.5 M	TBD
NEVI4	HI-11	Oceanview, Hawai‘i	TBD	HECO	Private	\$1.5 M	TBD
NEVI5	HI-11	Volcano, Hawai‘i	TBD	HECO	Private	\$1.5 M	TBD
NEVI6	HI-36	Wailuku, Maui	TBD	HECO	Private	\$1.5 M	TBD
NEVI7	H-1	Honolulu, O‘ahu	TBD	HECO	Private	\$1.5 M	TBD
NEVI8	HI-56	Līhu‘e, Kaua‘i	TBD	KIUC	Private	\$1.5 M	TBD

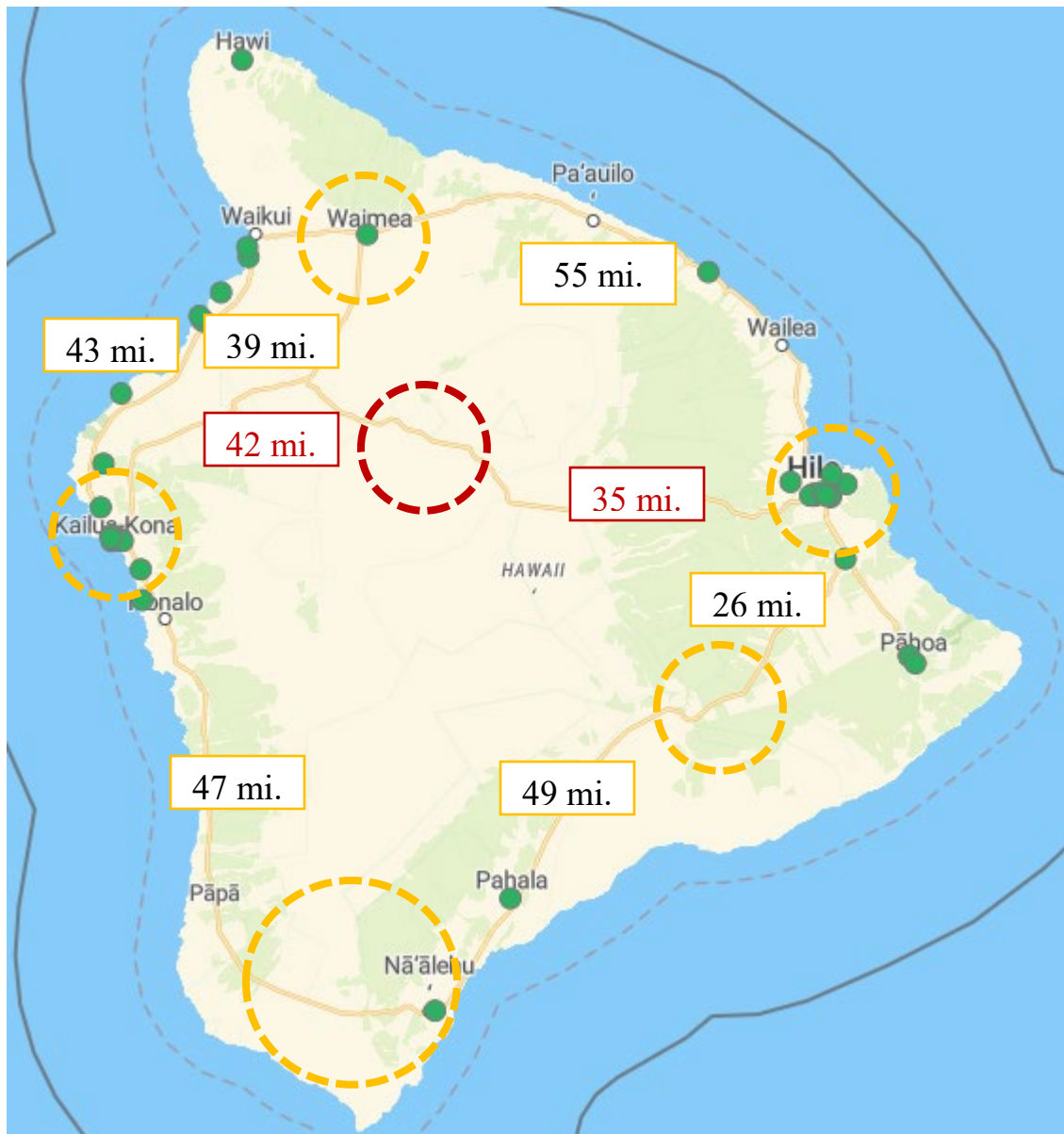
At least six stations are required on Hawai‘i Island to establish a network of NEVI-compliant fast chargers within 50 miles along each designated AFC. HDOT has not initiated site selection for the locations on this island; however, following discussions with County of Hawai‘i partners is considering county properties in both Hilo and Kona. The County of Hawai‘i is in the process of designing a Level 2 facility in the Kona Civic Center. If this project timeline aligns with the proposed projects under this State Plan, HDOT will facilitate opportunities to use available resources to upgrade the county projects to meet the four-port 150 kW standard. Alternately, HDOT may consider an installation at a nearby commercial center if a partnered project is determined to be infeasible.

Waimea is the natural mid-point in North Hawai‘i between Hilo and Kona, and is a suitable location for a charging site when considering convenience, safety, geography, and power availability. However, ideal locations for the charging station are approximately 55 miles along Route 19 from Hilo. HDOT seeks an exception for the five-mile variance for this station.

The Daniel K. Inouye Highway, also known as Saddle Road or Route 200, runs through the center of the island and also connects Hilo and Kona. The AFC along this route measures 77.4 miles. HDOT evaluated locations along this corridor for a charging site, but identified limited grid capacity. Photovoltaic panels to supply power are also infeasible. HDOT seeks an exception for this corridor and will plan to install a Level 2 charging station here.

The southernmost route to connect Kona to Hilo is along Route 11. South Point is located approximately 60 miles from Kona and 74 miles from Hilo. HDOT will identify two charging sites along this corridor and aims to install one in Oceanview, approximately 47 miles from Kona, and a second in Volcano, approximately 49 miles from Oceanview and 26 miles from Hilo.

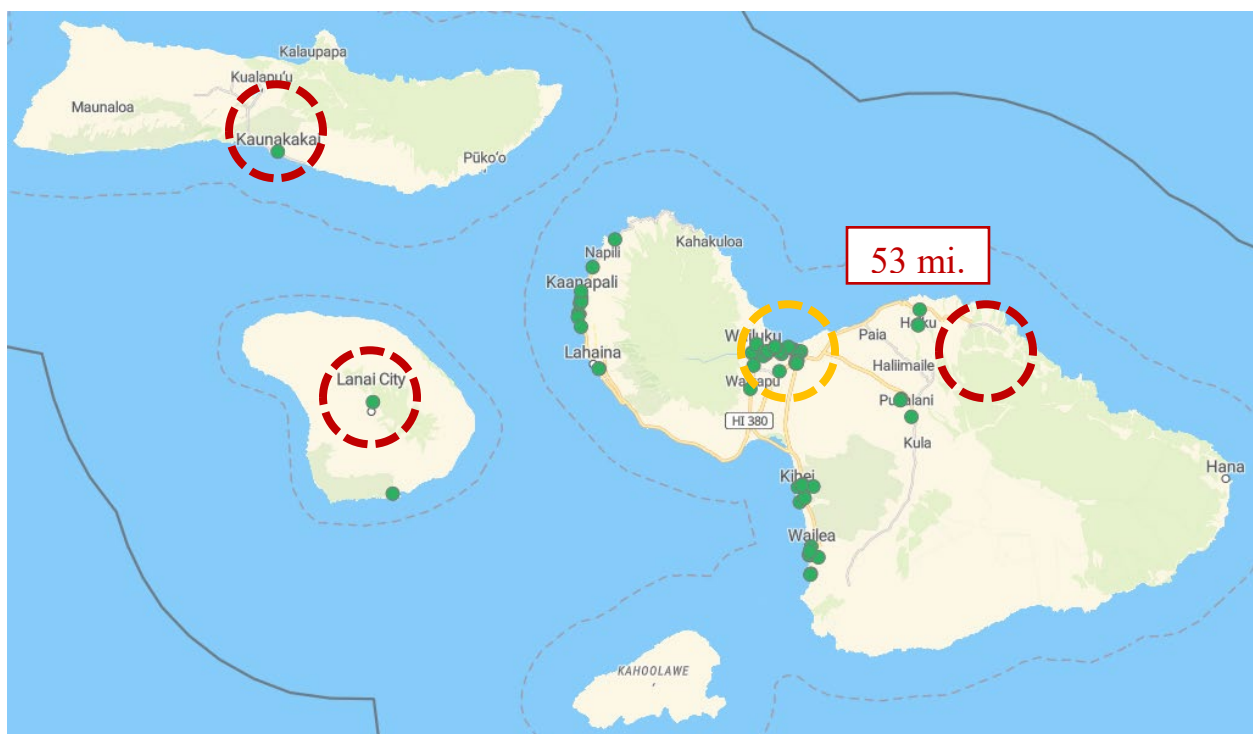
**Figure 11: FY 2022 NEVI Planned Deployment – Hawai‘i Island (Approximate location of planned charging sites shown in yellow dashed circles; locations for deployment exceptions shown in red dashed circle)**



HDOT will install a single charging station on the island of Maui in a park and ride lot owned and controlled by HDOT located in Wailuku. This location is within 50 miles of all AFCs on the island, with the exception of the terminus of the HI-360 Pending Corridor. The end of this corridor is 53 miles from the park and ride lot and HDOT seeks an exception due to limited power availability along this route.

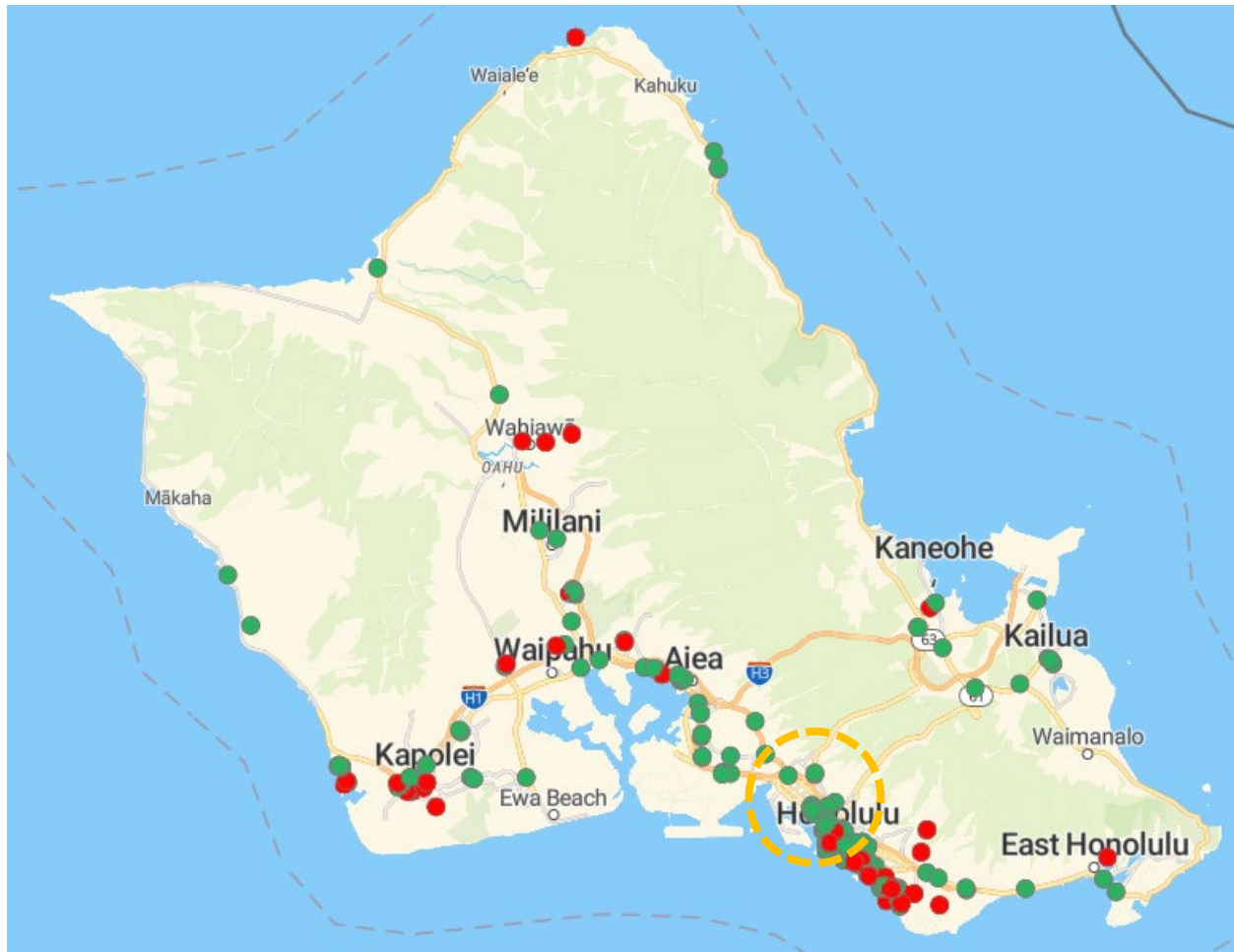
HDOT also seeks exceptions for the islands of Moloka'i and Lāna'i. The limited grid capacity on Moloka'i that serves its population of 7,345 cannot support a 600 kW charging station that would require nearly one-third of the island's current power demand. This is also the case for the island of Lāna'i and its population of 3,135. In place of a 600 kW charging station, HDOT will install Level 2 charging stations to meet the charging demands on both islands.

**Figure 12: FY 2022 NEVI Planned Deployment – County of Maui (Approximate location shown in yellow dashed circle; locations for deployment exceptions shown in red dashed circle)**



Similar to Maui, HDOT will install a single charging station on O‘ahu at a location within 50 miles of all AFCs on the island. HDOT is considering several sites in urban Honolulu and is prioritizing sites on properties controlled by state or county agencies with adequate power availability. HDOT is also considering existing charging stations that may be upgraded to the four-port 150 kW standard.

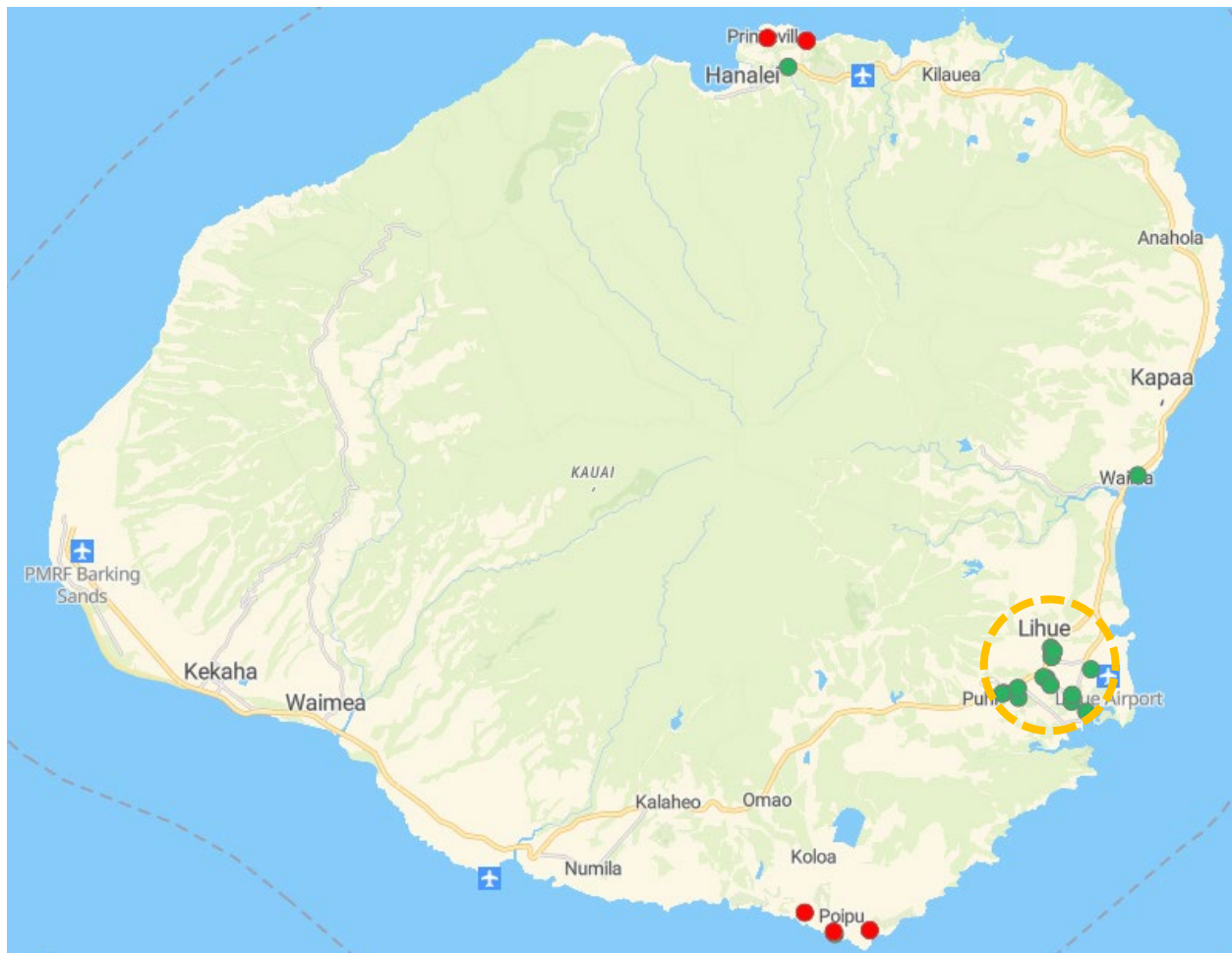
**Figure 13: FY 2022 NEVI Planned Deployment – O‘ahu (Approximate location shown in yellow dashed circle)**





A single charger is required to satisfy the fully built out standard to serve the AFCs on Kauaʻi. A centrally-located facility in Līhuʻe or Wailua will be within 50 miles of each AFC. HDOT is in discussions with the County of Kauaʻi to determine the timeline of the charging project funded by the Congressionally Directed Spending grant. Ideally, HDOT can partner with the county to develop a NEVI-compliant charging facility for Kauaʻi.

**Figure 14: FY 2022 NEVI Planned Deployment – Kauaʻi (Approximate location shown in yellow dashed circle)**



In the next five years, HDOT does not intend to upgrade any Pending Corridor designations. Upon the completion of this five-year State Plan, HDOT will evaluate project developments across the state, including those completed by counties, the power utilities, and other private stakeholders to determine whether any conditions to Pending Corridors have changed to the extent that an upgrade is warranted.

HDOT will continue to work with HSEO and the power utilities to determine the feasibility of increasing capacity and redundancy along the existing AFCs.

Adoption of electric vehicles that move freight is in its infancy in the State of Hawai‘i. HDOT will consult with stakeholder organizations including the Hawai‘i Transportation Association and the Local Teamsters 996 to determine the future of electric vehicles in freight transport. HDOT looks forward to including updates in future revisions to this State Plan.

Within the past two years, the public transit systems across the state’s four counties have begun to electrify their fixed route fleets. The City and County of Honolulu has an on-route charging facility in the planning phase. There may be opportunities in future years for HDOT to dovetail plans and co-locate NEVI-compliant charging stations with on-route transit charging to minimize the additional power infrastructure needed to support both. HDOT will continue to coordinate with the county transit system operators to identify the projects best suited for collaboration.

### **FY23-26 Infrastructure Deployments**

In developing this State Plan, HDOT focused on the immediate needs of the system to meet the “fully built out” certification requirements. In FY 2023, HDOT expects it will have completed the installation of at least half of the first six charging stations with the balance of the initial set of NEVI-compliant chargers to be completed by the end of Year 2.

Years 3 and 4 will focus on deployment of Community Charging projects as well as partnerships with private firms who are interested in supplementing the state charging network. Under Act 142 (Session Laws of Hawai‘i, 2019), rebates up to \$35,000 are available for new DC fast charging stations or up to \$28,000 for upgrades to DC fast chargers. The target locations for Years 3 and 4 activities will be disadvantaged communities following thorough engagement with leaders and members of these communities.

### **State, Regional, and Local Policy**

In addition to compliance with all applicable federal law, the installation of any charging infrastructure under this State Plan is subject to all state laws including Chapter 6E – Historic Preservation and Chapter 343 – Environmental Policy of the Hawai‘i Revised Statutes. HDOT expects the projects to fall under established categorical exclusions and will do the work necessary for compliance.

Permitting requirements will be determined during the design phase of each project. HDOT will coordinate with each county as needed when trenching or other permits are required.

All standard protocols for transportation projects, such as street usage permits and other road closure notices, will be followed as with all other transportation projects.

## **Implementation**

As described in previous sections of this State Plan, HDOT has an existing contract with Sustainability Partners and the conditions and scope of the contract form HDOT's implementation strategies. Several points set out below are also explained throughout this document.

### **Strategies for EVSE Operations & Maintenance**

The contract with Sustainability Partners includes EVSE maintenance, which will be effective for the operations and maintenance of the first eight charging stations installed in Years 1 and 2. If HDOT determines additional support for operation is necessary, it will procure the appropriate services.

### **Strategies for Identifying Electric Vehicle Charger Service Providers and Station Owners**

While Sustainability Partners is the service provider and will own the stations, HDOT will make decisions on which chargers will be installed under this project. Currently, HDOT is reviewing specifications for two types of chargers that appear to comply with the NEVI requirements: the Heliox Dual CSS 150 kW and the Tritium PKM 150 kW.

### **Strategies for EVSE Data Collection & Sharing**

Sustainability Partners will be responsible for collecting usage data for each charging port. HDOT has also initiated discussions with this contractor to plan for compliance with the requirements for periodic reporting and data sharing.

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

All projects completed under this State Plan will be subject to the planning and design standards developed through the HDOT Climate Adaptation Action Plan. These standards sustain the system's resilience. Site selection for charging stations as with other transportation infrastructure will prioritize locations that are outside known flood zones and other areas likely to be impacted by tsunamis, coastal erosion, sea level rise, and landslides. HDOT does not expect seasonal weather impacts would necessitate removal or other treatments to the charging stations or supporting infrastructure.

### **Strategies to Promote Strong Labor, Safety, Training, and Installation Standards**

HDOT will work with the State of Hawai'i Department of Labor and Department of Commerce and Consumer Affairs to determine the most effective strategies in funding training and workforce development opportunities to increase the number of technicians and electricians who are deemed qualified under the NEVI program.

Safety considerations for all HDOT projects are critically important. These projects are subject to all federal and state labor safety standards.



## **Civil Rights**

The HDOT Office of Civil Rights (OCR) is charged with the mission to eliminate and remedy unlawful discrimination against individuals in HDOT's services and activities, through civil rights programs that ensure departmental compliance with federal and state anti-discrimination laws, rules, regulations and executive orders. OCR aims to facilitate and achieve full compliance with federal and state civil rights regulations by providing technical assistance and guidance in the area of civil rights to the HDOT's statewide multi-modal transportation divisional programs and staff offices.

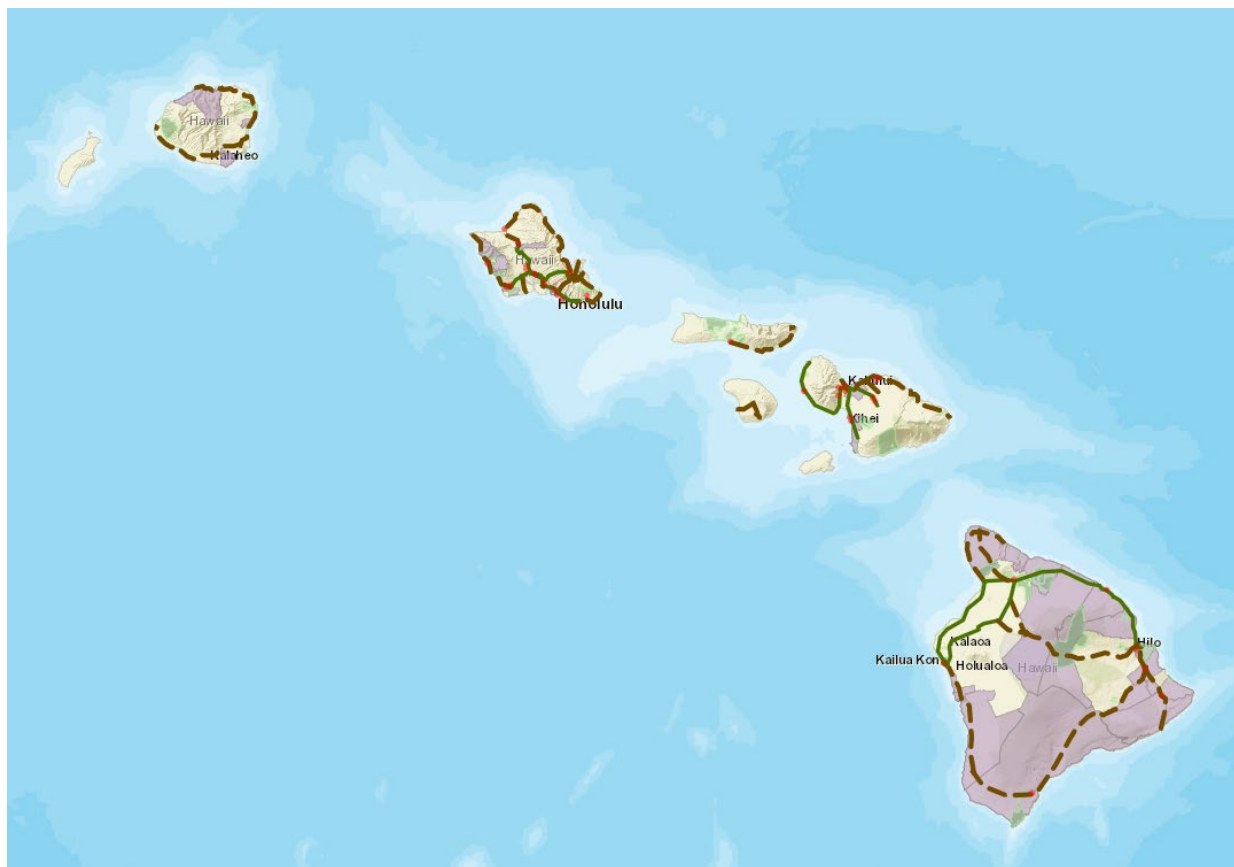
OCR oversees compliance with the following programs: Americans with Disabilities Act (ADA), Disadvantaged Business Enterprises (DBE), Equal Opportunity/Affirmative Action (EEO/AA) and Title VI/Environmental Justice. This office focuses on equal opportunity compliance activities and functions conducted through the multi-modal transportation divisional programs and staff offices statewide. All activities undertaken as part of this State Plan are subject to the requirements of the HDOT OCR program.

## Equity Considerations

Equity and delivery of benefits to disadvantaged communities (DACs) is and has been a driving factor in the development of this State Plan. HDOT commits to installing one NEVI-compliant charging station or a Community Charging facility in at least one DAC on each island.

Locations of the charging stations will be selected based on feedback through community engagement. DACs are identified in Figure 15 below and are shaded in purple. Similar to DACs, Hawaiian Home Lands (the equivalent of tribal designated lands in Hawai‘i) are shaded in green. Designated AFCs are also identified with Ready Corridors identified by a solid green line and Pending Corridors identified by a dashed maroon line.

*Figure 15: Disadvantaged Communities and Hawaiian Home Lands in Hawai‘i*



*Source: Electric Vehicle Charging Justice40 Map*

When charging stations and facilities are installed, outreach materials on the NEVI program and instructions for use of the facilities will be translated as necessary depending on languages spoken in the respective communities. Usage of the facilities in DACs and in Hawaiian Home Lands will be monitored closely and additional outreach efforts will be made if usage rates lag compared to stations sited outside DACs.

## **Labor and Workforce Considerations**

HDOT continues to investigate the labor availability of qualified technicians in the State of Hawai‘i that are either Electric Vehicle Infrastructure Training Program (EVITP) certified or have graduated from a Registered Apprenticeship Program for electricians that includes EVSE-specific training developed as a part of a national guideline standard approved by the U.S. Department of Labor in consultation with the Department of Transportation. As of July 1, 2022, only 14 local firms are listed as EVITP-certified.

HDOT will work with the State of Hawai‘i Department of Labor and Industrial Relations and Department of Commerce and Consumer Affairs to determine the most effective strategies in funding training and workforce development opportunities to increase the number of technicians and electricians who are deemed qualified under the NEVI program.

## **Cybersecurity**

HDOT will work with its contractor Sustainability Partners to ensure the charging stations and facilities installed under this State Plan have sufficient safeguards including, but not limited to, secure communications for processing payments, payment card industry compliance, remote asset monitoring, secure remote software updates, intrusion and malware detection, event logging and reporting, tamper-proof solutions, and the ability to take a charger offline in the event of a compromise.

Additionally, HDOT Computer Systems & Services Office (CSS) and the State of Hawai‘i Office of Enterprise Technology Services will provide guidance to verify that the facilities and infrastructure are secure. HDOT plans to use the Security Implementation Tool developed through NCHRP 20-124 to verify the security standards throughout the installation and implementation process.

## **Program Evaluation**

As HDOT implements the State Plan, it will monitor progress against the three stated goals. HDOT will collect qualitative and quantitative data through user surveys and usage data generated at each charging port.

HDOT will communicate updates and progress on its website ([hidot.hawaii.gov/highways](http://hidot.hawaii.gov/highways)) by adding the installation of the charging stations to the Highways Program Status Map.

HDOT proposes to use same approach in developing this State Plan to prepare the subsequent annual plan updates. Starting in April of each year, HDOT will coordinate meetings with each county and both power utilities to monitor project development and to determine how to partner when practical. On an ongoing and as needed basis, HDOT will meet with other stakeholders and the general public to identify areas of concern and/or gaps in the network that can be addressed through the NEVI program evaluate progress.

## **Appendix A: Existing Charging Infrastructure**

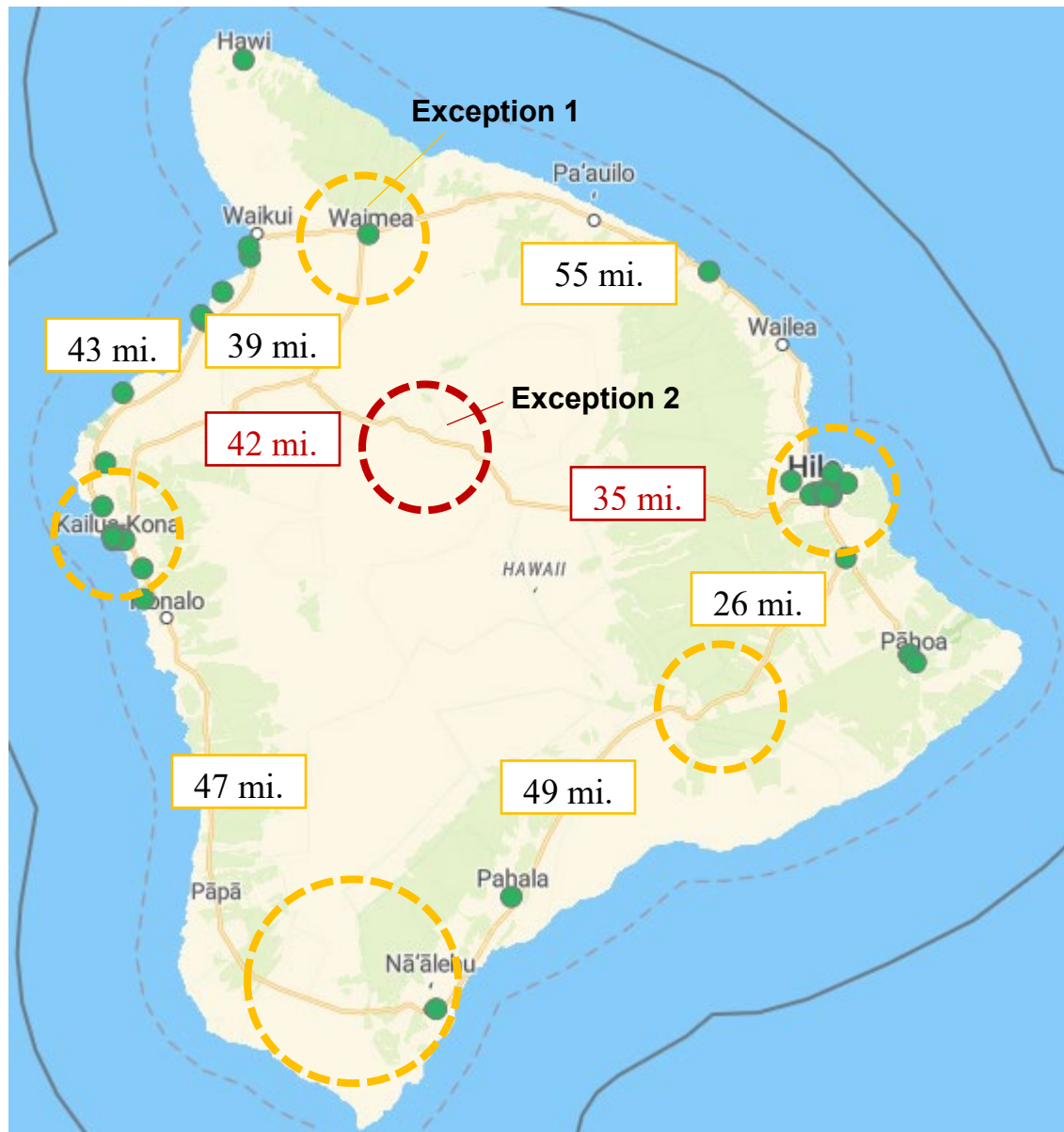
**[see separate PDF; will be incorporated into the final plan as a single document]**

## Appendix B: State EV Deployment Plan Exception Requests

HDOT submits the following requests for discretionary exceptions from the requirement that charging infrastructure is installed every 50 miles along and within one travel mile from each designated Alternative Fuel Corridor highway. These exceptions are based on grid capacity as there is insufficient power availability in areas where charging stations must be installed to satisfy the fully built out certification and delivering sufficient power requires significant upgrades to existing infrastructure. In evaluating the grid capacity, HDOT considered renewable energy sources, like photovoltaic panels, and has determined that this approach is also infeasible in supporting these charging facilities.

Exception #	Type	Distance of Deviation	Included in Round 6 AFC Nomination	Reason for Exception Request
1 Hawai'i Island Waimea	<input checked="" type="checkbox"/> 50 miles apart <input type="checkbox"/> 1 mile from exit	5 miles N/A miles	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Grid Capacity <input type="checkbox"/> Geography <input type="checkbox"/> Equity <input type="checkbox"/> Extraordinary Cost
2 Hawai'i Island Saddle Road	<input checked="" type="checkbox"/> 50 miles apart <input type="checkbox"/> 1 mile from exit	27 miles N/A miles	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Grid Capacity <input type="checkbox"/> Geography <input type="checkbox"/> Equity <input type="checkbox"/> Extraordinary Cost
3 Maui Hāna	<input checked="" type="checkbox"/> 50 miles apart <input type="checkbox"/> 1 mile from exit	3 miles N/A miles	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Grid Capacity <input type="checkbox"/> Geography <input type="checkbox"/> Equity <input type="checkbox"/> Extraordinary Cost
4 Lāna'i	<input checked="" type="checkbox"/> 50 miles apart <input checked="" type="checkbox"/> 1 mile from exit	N/A miles N/A miles	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Grid Capacity <input type="checkbox"/> Geography <input type="checkbox"/> Equity <input checked="" type="checkbox"/> Extraordinary Cost
5 Moloka'i	<input checked="" type="checkbox"/> 50 miles apart <input checked="" type="checkbox"/> 1 mile from exit	N/A miles N/A miles	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Grid Capacity <input type="checkbox"/> Geography <input type="checkbox"/> Equity <input checked="" type="checkbox"/> Extraordinary Cost

## Exceptions 1 and 2 – Hawai‘i Island



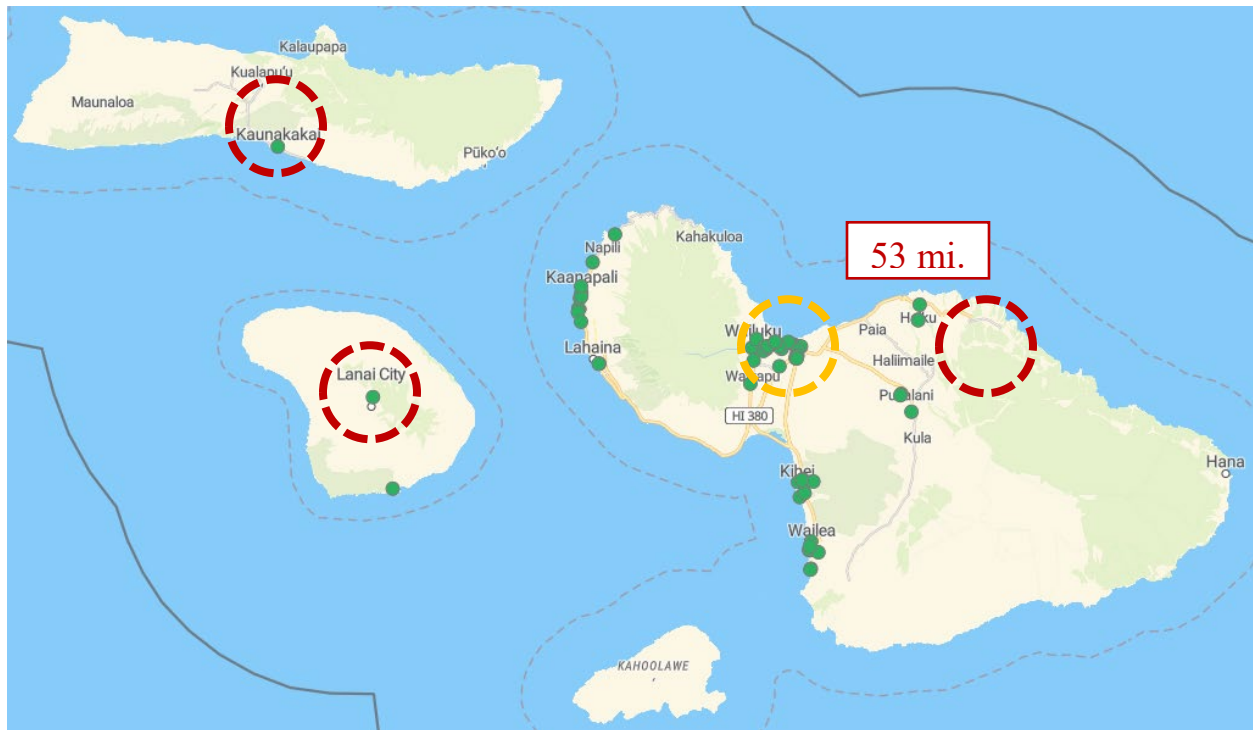
**Exception 1.** Waimea is natural mid-point in North Hawai‘i between Hilo and Kona, and is a suitable location for a charging site when considering convenience, safety, geography, and power availability. However, ideal locations for the charging station are approximately 55 miles along Route 19 from Hilo. HDOT seeks a reasonable exception for the five-mile variance for this station. Between Hilo and Waimea, there are coastal towns and expanses of ranch lands. Many households in these communities are off-grid and not connected to water or sewage utilities. The town of Waimea has the necessary area and amenities to support charging stations and will be considered a more convenient location for the traveling public.

**Exception 2.** The Daniel K. Inouye Highway, also known as Saddle Road or Route 200, runs



through the center of the island, and also connects Hilo and Kona. The AFC along this route measures 77.4 miles. HDOT evaluated multiple locations along this corridor for a charging site but identified limited grid capacity. Photovoltaic panels to supply power are also infeasible. HDOT seeks an exception for this corridor and will plan to install a Level 2 charging station here.

### Exceptions 3, 4, and 5 – County of Maui



**Exception 3.** HDOT will install a single charging station on the island of Maui in a park and ride lot owned and controlled by HDOT located in Wailuku. This location is within 50 miles of all AFCs on the island, with the exception of the terminus of the HI-360 Pending Corridor. The end of this corridor is 53 miles from the park and ride lot and HDOT seeks an exception for a three-mile variance due to limited power availability along the eastern end of this route. HDOT will consider the upgrade of existing charging facilities or the installation of new facilities in Hana in future years of this State Plan.

**Exceptions 4 and 5.** HDOT has determined it is infeasible and impractical to install 600 kW charging stations anywhere on the islands of Moloka'i and Lāna'i. The limited grid capacity on Moloka'i that serves its population of 7,345 cannot support a 600 kW charging station; this facility would require nearly one-third of the island's current power demand. This is also the case for the island of Lāna'i and its population of 3,135. In place of a 600 kW charging station, HDOT will install Level 2 charging stations to meet the community's charging needs on both islands.

## Appendix C: Sources

**Hawai'i Highways Climate Adaptation Action Plan: Strategies for a More Resilient Future**  
<https://hidot.hawaii.gov/wp-content/uploads/2021/07/HDOT-Climate-Resilience-Action-Plan-and-Appendices-May-2021.pdf>

**Hawai'i Statewide Freight Plan, December 2018**  
[https://hidot.hawaii.gov/highways/files/2019/03/HDOT\\_FreightPlan\\_FINAL.pdf](https://hidot.hawaii.gov/highways/files/2019/03/HDOT_FreightPlan_FINAL.pdf)

**Hawaiian Electric Company Charge Up Hawai'i Webtool**  
<https://www.arcgis.com/apps/Cascade/index.html?appid=5ffcaa556fbe4e18be2d5f5f7b5f74f1>

**Hawaiian Electric Company Electrification of Transportation Strategic Roadmap**  
[https://www.hawaiianelectric.com/documents/clean\\_energy\\_hawaii/electrification\\_of\\_transportation/201803\\_eot\\_roadmap.pdf](https://www.hawaiianelectric.com/documents/clean_energy_hawaii/electrification_of_transportation/201803_eot_roadmap.pdf)

**National Weather Service – Climate of Hawai'i**  
[https://www.weather.gov/hfo/climate\\_summary](https://www.weather.gov/hfo/climate_summary)

**State of Hawai'i Department of Business, Economic Development and Tourism Monthly Energy Trends, June 2022**  
[https://dbedt.hawaii.gov/economic/files/2022/07/Energy\\_Trend.pdf](https://dbedt.hawaii.gov/economic/files/2022/07/Energy_Trend.pdf)