



March 30, 2022

The Honorable Chair and Members of the
Hawai'i Public Utilities Commission
Kekuaanoa Building, First Floor
465 South King Street
Honolulu, Hawai'i 96813

Dear Commissioners:

Subject: Docket No. 2018-0135 Electrification of Transportation
Docket No. 2018-0422 Schedule EV-MAUI Tariff
Transmittal No. 13-07 (non-docketed) – Schedule EV-F and EV-U
Hawaiian Electric's Annual Report

Pursuant to Ordering Paragraph 1.C of Decision and Order No. 31338, filed July 1, 2013 in regard to Transmittal Nos. 13-07 and 13-08 (consolidated), as modified by Decision and Order No. 34592, filed June 2, 2017 in Docket No. 2016-0168, Hawaiian Electric¹ respectfully submits its *Annual Report on the Progress and Status of the Commercial Public Electric Vehicle Charging Service Pilot Rates*.

Included in this filing is the EV-MAUI Tariff Annual Report, consistent with the Company's representations in Docket No. 2018-0422, *Maui Electric's Revised Schedule EV-Maui Tariff*, Exhibit 2, page 5 of 15, footnote 13, filed on August 30, 2019.

Sincerely,

/s/ Kevin M. Katsura

Kevin M. Katsura
Director
Regulatory Non-Rate Proceedings

Attachment

cc: Consumer Advocate (w/attachment)

¹ Hawaiian Electric Company, Inc., Maui Electric Company, Limited, and Hawai'i Electric Light Company, Inc. are each doing business as "Hawaiian Electric" and have jointly registered "Hawaiian Electric" as a trade name with the State of Hawai'i Department of Commerce and Consumer Affairs.

Hawaiian Electric's Electric Vehicle Rates Report

Annual Reports on the Progress and Status of the Commercial Public Electric Vehicle Charging Service Pilot Rates EV-U and EV-F (Transmittal 13-07), and the Electric Vehicle Charging Service Rate EV-MAUI (Dkt No. 2018-0422)

March 30, 2022

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Executive Summary¹

In 2021, Hawaiian Electric continued to build upon its growing momentum in electrification of transportation (“EoT”), with the development of programs and actions keeping pace with the growing population of electric vehicle (“EV”) drivers.² The Company’s various efforts align with the 2018 *Electrification of Transportation Strategic Roadmap* (“Roadmap”),³ which provides key near-term steps, benefit and cost analyses, and ten EoT Initiatives. These initiatives will contribute to the State’s clean energy vision and create economic benefits for all customers.

Hawaiian Electric’s *Critical Backbone Study: Planning Methodology* (“Backbone Study”) filed on July 30, 2019, further informs the development of charging infrastructure to support the adoption of EVs.⁴ The Company’s public charging efforts align with “Initiative # 7 – Expand availability of public charging,” in the Roadmap, which recommends accelerating the buildout of charging infrastructure to provide “a critical backbone of reliable, public utility-owned charge stations as the launching point from which the broader electric transportation and third-party charging market in Hawai’i can expand and solidify.”⁵ All Company-owned sites and installations moving forward since January 2020, are supported by the Backbone Study showing a need for chargers in those locations.

On October 29, 2021, the Company filed its *Public Electric Vehicle Charger Expansion Project* in Docket No. 2021-0173 which requests a dramatic expansion of the Company’s public charging offering by constructing an additional 150 single-port direct-current fast charging (“DCFC”) and 150 dual-port level 2 charging stations across the Company service territories between 2023 and 2030. Also proposed is a suite of changes to the existing public charging programs, including revised EV-U tariffs designed to be roughly cost-competitive with gasoline and which encourage charging during the middle of the day when solar is abundant. The application requests the termination of EV-MAUI with the goal of providing customers consistency in pricing for fast charging on each island and re-affirms the Company’s intent to close EV-F to new enrollment on O’ahu, Hawai’i Island, and Maui⁶ in favor of implementing recently approved revised rate structures Schedule EV-J and EV-P.⁷

Executing on the Roadmap Initiative #7, additional key highlights in 2021 include:

- Expanded the Company’s DCFC network by two additional charging stations on O’ahu.

¹ This joint filing covers the annual reporting requirements for Dkt. No. 2018-0135 and Dkt No. 2018-0422 and is being filed in both dockets for the convenience of the reader.

² Hawaiian Electric Company, Inc., Hawai’i Electric Light Company, Inc., and Maui Electric Company, Limited are collectively referred to herein as “Hawaiian Electric” or the “Company.”

³ Filed initially on March 29, 2018 in Docket No. 2016-0168, refiled on June 18, 2018 in Docket No. 2018-0135, and updated on November 29, 2018 in Docket No. 2018-0135.

⁴ *Electrification of Transportation Electric Vehicle Critical Backbone Study: Planning Methodology* filed July 30, 2019 in Docket No. 2018-0135.

⁵ Docket No. 2018-0135, *Electrification of Transportation Strategic Roadmap* filed March 29, 2018 at 7.

⁶ Transmittal No. 18-06 filed December 19, 2018.

⁷ The Company did not seek closure of EV-F for customers on the islands of Moloka’i and Lana’i.

⁷ Hawaiian Electric proposed a successor to EV-F in its *Application For Approval to Establish Electric Vehicle Tariffs for Schedule EV-J – Electric Vehicle Charging Service – Demand and Schedule EV-P – Electric Vehicle Charging Service – Large Demand, on a Pilot Basis*, filed on September 30, 2020 in Docket No. 2020-0152, in an effort to encourage charging during the day and provide demand charges lower than existing commercial electric rates.

- Overall EV-U utilization increased from 2020 to 2021, reflecting a 91 percent increase in amount of energy consumed for a total of 785,203 kWh over 42,660 sessions.⁸
- EV-MAUI completed its first full calendar year (second program year), with overall utilization amounting to 161,309 kWh over 11,577 sessions.
- Overall 54% of the energy provided through Schedule EV-U in 2021 occurred during the Mid-Day period of 9 AM to 5 PM.
- Overall 65% of the energy provided through Schedule EV-MAUI in 2021 occurred during the Mid-Day period of 9 AM to 5 PM.

In the State of Hawai'i Public Utilities Commission ("Commission") Order No. 38082 filed on November 22, 2021 in Docket No. 2018-0088, the Commission noted that it agrees with the Companies' proposal to consolidate EoT Annual Reports currently reflected in Docket Nos. 2018-0422, 2016-0168, and Transmittal Nos. 13-07, 13-08, and 18-06 into a single report, and ordered the Companies to submit a proposed modified version. The Companies provided a sample of a proposed consolidated report on March 8, 2022 in Docket No. 2018-0088. Pending Commission review of that proposed consolidated report,⁹ the Companies will continue to submit reports in the separate dockets. The following report provides year ending December 31, 2021 information on the status of all Company-owned public Direct Current Fast Charging ("DCFC") stations implemented through Schedule EV- U: Commercial Public Electric Vehicle Charging Service and Electric Vehicle Charging Service EV-MAUI Tariff¹⁰, as well as information on the status of Schedule EV-F: Commercial Public Electric Vehicle Facility Charging Service Pilot.¹¹

⁸ 2020 utilization: 412,017 kWh over 27,734 total sessions.

⁹ In their letter filed on March 8, 2022 in Docket No. 2018-0088, the Companies noted that upon further review, they discovered that they inadvertently proposed to consolidate the EOT Annual Report into Docket No. 2018-0422, instead of Docket No. 2018-0135 which is the appropriate repository. The Companies therefore proposed to file the consolidated Annual Report in Docket No. 2018-0135 going forward.

¹⁰ Consistent with the Company's representations in Docket No. 2018-0422, Maui Electric's Revised Schedule EV-MAUI Tariff ("Revised Schedule EV-MAUI Tariff"), Exhibit 2, page 5 of 15, footnote 13, filed on August 30, 2019.

¹¹ In accordance with Ordering Paragraph 1.C. of Decision and Order No. 31338, filed July 1, 2013 in Transmittal Nos. 13-07 and 13-08 (consolidated), as explicitly modified by Decision and Order No. 34592 ("D&O 34592"), filed June 2, 2017 in Docket No. 2016-0168.

Introduction

Despite the ongoing COVID-19 pandemic, EV usage continued to grow in 2021, with the adoption of passenger EVs increasing by 32 percent in the Company’s service territory as shown in Figure 1 below.¹² Despite this growth, EVs still only represent slightly less than two percent of the overall passenger vehicles registered in the State. The EV market is anticipated to experience tremendous growth in the next few decades based on the Company forecast that one in every two vehicles will be electric by 2045.¹³

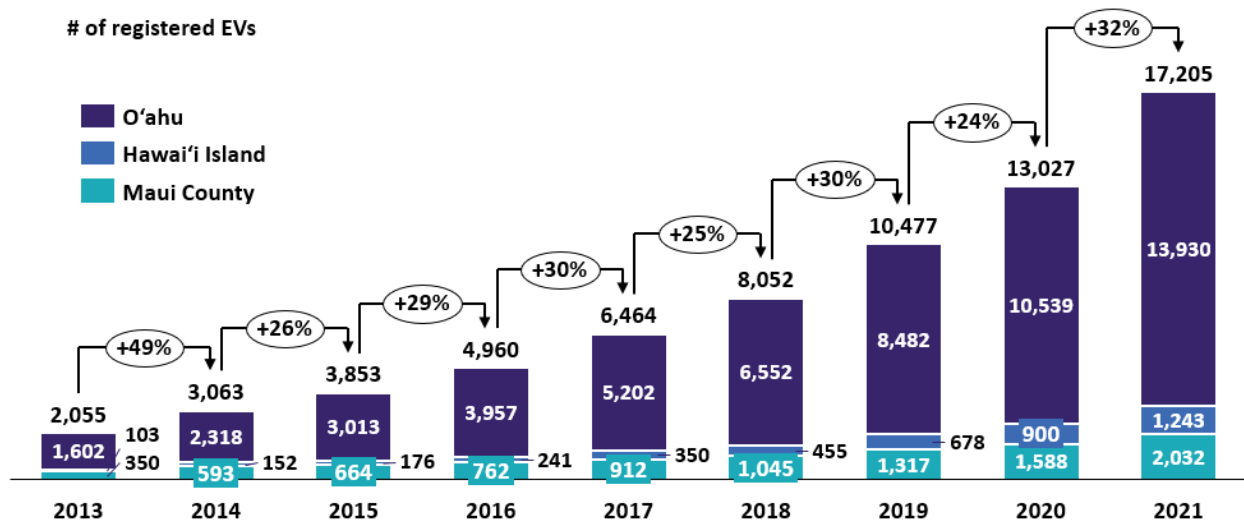


Figure 1: Electric Vehicle Adoption in the Company’s Service Territory Since Pilot Program Inception

Schedule EV-U Tariff

Background

2021 was the eighth full year of the public DCFC pilot program.¹⁴ The introduction of Schedule EV-U in 2013 was intended to support the EV market by allowing the Company to install and operate public EV charging facilities in strategic locations to address range anxiety, support the rental EV market, and increase EV acceptance by residents in multi-unit dwellings (“MUDs”). Schedule EV-F, simultaneously introduced in 2013, was intended to support clean energy goals by encouraging “the development of

¹² Source is based upon estimated corrected data from <http://dbedt.hawaii.gov/economic/energy-trends-2/>. The Energy Trends data had vehicle registration issues for the months of October 2019 to December 2019. The estimated corrections were based upon calculated linear incremental EV adoption between September 2019 and January 2020.

¹³ Docket No. 2018-0135, Electrification of Transportation Strategic Roadmap filed June 18, 2018 at 34.

¹⁴ On July 3, 2013, in accordance with D&O. 31338, Hawaiian Electric filed its commercial rates Schedule EV-F and Schedule EV-U to be effective July 4, 2013.

public EV charging facilities by pricing electricity at levels that are lower than Schedule EV-C¹⁵ and Schedule J at lower energy consumption levels for start-up EV public charging operators.”¹⁶

In mid-2016, the Company requested to extend the termination date of the pilot program.¹⁷ A year later,¹⁸ the Commission approved a five-year extension of the pilot program and request to convert the EV-U rate from a fixed fee to volumetric on the condition that the Company submit revised rate structures for Schedule EV-U and Schedule EV-F within ninety days and comply with applicable requirements.¹⁹ On December 12, 2017, the Company implemented the revised rate structure for Schedules EV-U and EV-F for all participating accounts. Rate Schedules EV-F and EV-U currently provide lower energy cost during the Mid-Day period.²⁰ The time-of-use (“TOU”) periods are currently defined as follows: Off-Peak: 10 PM to 9 AM; Mid-Day: 9 AM to 5 PM; On-Peak: 5 PM to 10 PM.

Schedule EV-U is a variable rate based on electricity consumption, and includes incremental costs for network fees, non-labor operations and maintenance (“O&M”) and customer surcharges.²¹ The intent of the rate structure is to charge customers based on their actual electricity consumption, align to a TOU structure that reflects system needs, and incorporate additional pilot costs, alleviating some of the cost shift between participating EV customers and the Company’s broader customer base as a whole.

Status of Schedule EV-U Tariff

As displayed in Figure 1 below, the Company has installed and operated 84 percent of the 25 metered DCFC accounts allowed in the pilot program, including two new additions on O’ahu in 2021, one at Salt Lake Shopping Center and one at Waipio Shopping Center. This brings the total number of EV-U metered accounts to 21. The Company is targeting installation of the remaining four approved metered accounts in 2022, located on Oahu at Mililani Town Center, Bishop Museum, Waikiki-Kapahulu Library, and Kailua Foodland Marketplace, which will add an additional seven charging stations to the pilot.

¹⁵ By D&O 33165, issued on September 25, 2015 in Docket No. 2015-0242, the Commission approved “the Companies’ request to terminate Schedule EV-C, as of October 1, 2015.”

¹⁶ Transmittal No. 13-07 at 22.

¹⁷ On June 27, 2016, the Company filed a non-docketed transmittal requesting to extend the termination date for Schedule EV-F and Schedule EV-U from June 30, 2018 to June 30, 2028. On July 5, 2016, the Commission issued Order No. 33783 and opened Docket No. 2016-0168 for the purpose of reviewing the Company’s request. On September 15, 2016, the Commission issued Order No. 33918, establishing the procedural schedule. On November 18, 2016, the Company filed its Reply Statement of Position thereby completing the procedural schedule.

¹⁸ On June 2, 2017, the Commission issued D&O 34592 in Docket No. 2016-0168, approving a five-year extension of the pilot.

¹⁹ The Commission provided further guidance that the revised rate structures for Schedule EV-F and Schedule EV-U should (1) align Schedule EV-F and Schedule EV-U to TOU rates developed within Docket No. 2014-0192, (2) “incorporate lessons learned from time-of-use rates and demand response initiatives” into the revised rate structures, (3) contemplate various business and EV charging models that may be facilitated through various technologies, and (4) be “proactive in proposing revised rate structures and tariffs as research, technology, and market-related changes occur.” The Commission also required the Company to include discussion on efforts to forecast anticipated utilization in subsequent EV charging deployments and how costs for EV charging deployments have been and are anticipated to be recovered from customers. On September 5, 2017, the Company submitted revised rate structures and accompanying tariff sheets for Schedules EV-F and EV-U. On October 13, 2017, the Commission issued Order No. 34867 filed in Docket No. 2016-0168, approving the Company’s revised tariff sheets for Schedules EV-F and EV-U, to be implemented within 60 days.

²⁰ In alignment with guidance provided by the Commission in D&O 34592.

²¹ See Revised Rate Structures for Schedules EV-F and EV-U, filed on September 5, 2017 Attachment 1 at 8-9.

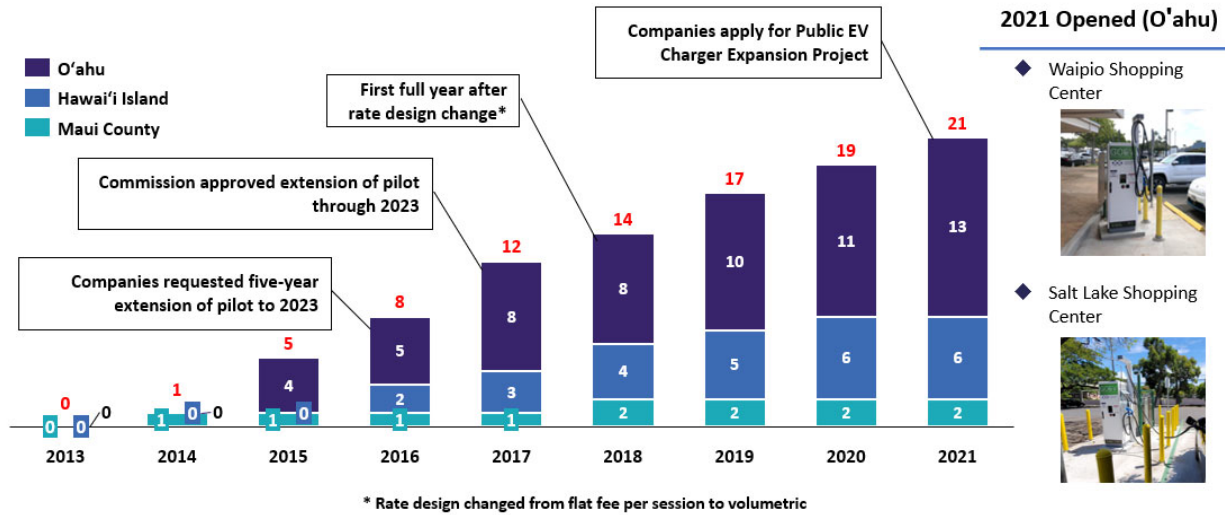


Figure 1: Cumulative Installed DCFC Metered Accounts Over Time

Figure 3 displays the annual DCFC installations on each island from program inception through 2021.

	2013	2014	2015	2016	2017	2018	2019	2020	2021
O'ahu			<ul style="list-style-type: none"> Dole Koolau Kapolei Hawaii-Kai 	<ul style="list-style-type: none"> Ward 1 	<ul style="list-style-type: none"> Ward 2 Waianae Dillingham 		<ul style="list-style-type: none"> Times Square SC Haleiwa Town Center 	<ul style="list-style-type: none"> Kapolei SC 	<ul style="list-style-type: none"> Waipio SC Salt Lake SC
Hawai'i Island				<ul style="list-style-type: none"> HELCO-Hilo HELCO-Kona 	<ul style="list-style-type: none"> Waimea 	<ul style="list-style-type: none"> Shops at Mauna Lani 	<ul style="list-style-type: none"> Punaluu 	<ul style="list-style-type: none"> Puna Kai Shopping Center 	
Maui		<ul style="list-style-type: none"> MECO-Kahului 							
Moloka'i						<ul style="list-style-type: none"> Kaunakakai 			

Figure 2: History of DCFC Site Installations

Since the release of the Company's Backbone Study in July 2019²², specific areas of Hawai'i shown to have a high need for charging stations were targeted starting in January 2020, and available locations for new stations prioritized accordingly.

Utilization across the Company's Service Territory

In 2021, the effects of the COVID pandemic on EV charging growth had lessened yet still remained, due to the continuation of work-from-home and less need for DCFC charging for daily commutes. However, aided in part by the addition of two DCFC at the beginning of the year, overall charging utilization for the

²² Docket No. 2018-0315, Electrification of Transportation Electric Vehicle Critical Backbone Study: Planning Methodology filed July 30, 2019.

pilot increased dramatically in 2021. As shown in Figure 4 below, total energy consumption for EV charging across all DCFCs in the pilot increased by 90.6% from the year prior.

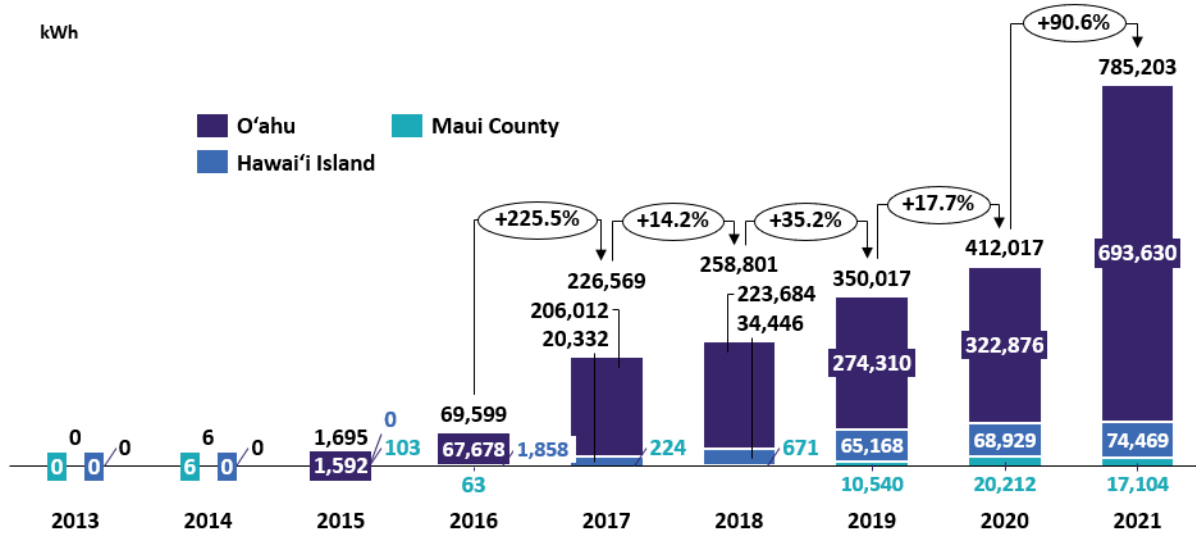


Figure 4: Annual Utilization for EV-U Pilot Through 2021 by Energy Consumption (kWh)

Figure 5 breaks down the number of charging sessions that occurred across the territory by month and service territory.

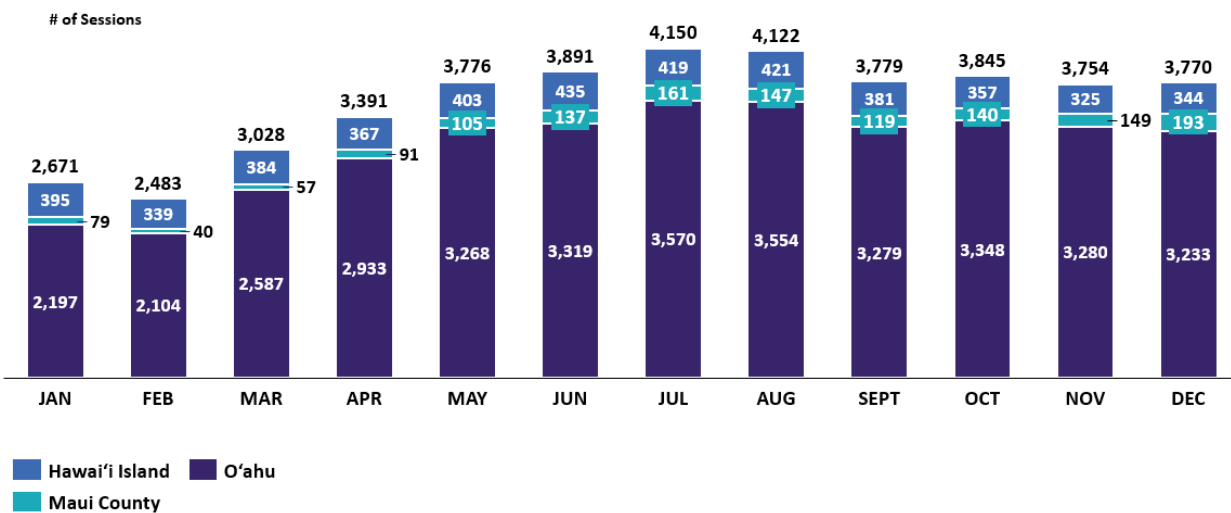


Figure 5: Monthly Utilization in 2021 by Number of Sessions

Utilization on O’ahu

Two additional charging stations were installed on O’ahu in 2021 at Waipio Shopping Center and Salt Lake Shopping Center. Both stations became available to the public in February 2021. The monthly overall utilization for the EV-U DCFC sites on O’ahu is shown below, by number of sessions in Figure 6 and by energy consumption in Figure 7.

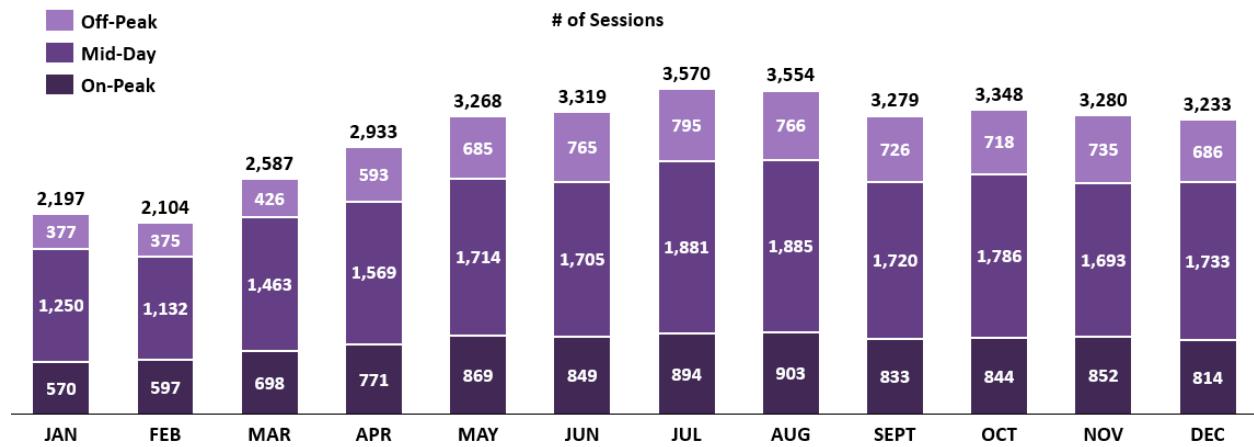


Figure 6: Monthly Number of Sessions in 2021 by TOU for O’ahu DCFC Sites

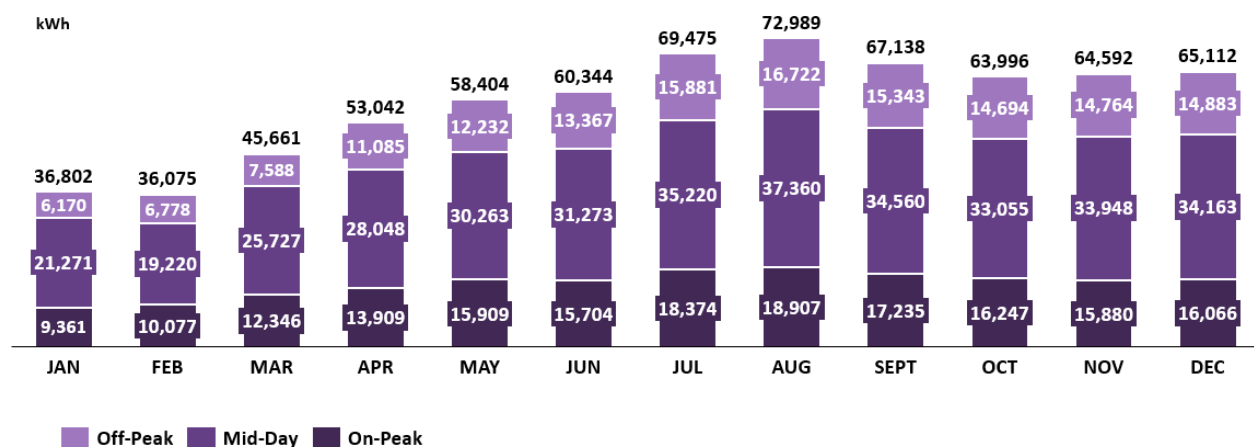


Figure 7: Monthly Energy Consumption (kWh) in 2021 by TOU for O’ahu DCFC Sites

In 2021, the O’ahu fast charging stations, which represent 62 percent of all stations in the pilot, accounted for 88 percent of all charging usage in the pilot. This reflects the preponderance of EVs in the City and County of Honolulu, which comprised 81 percent of all the EVs registered in the Company’s service territory at the end of 2021.

Co-located chargers Ward 1 and Ward 2, located in the heart of downtown Honolulu, continue to be the highest utilized stations on O’ahu. The overall utilization for the EV-U DCFC sites on O’ahu is shown below, by number of sessions in Figure 8 and by energy consumption in Figure 9.

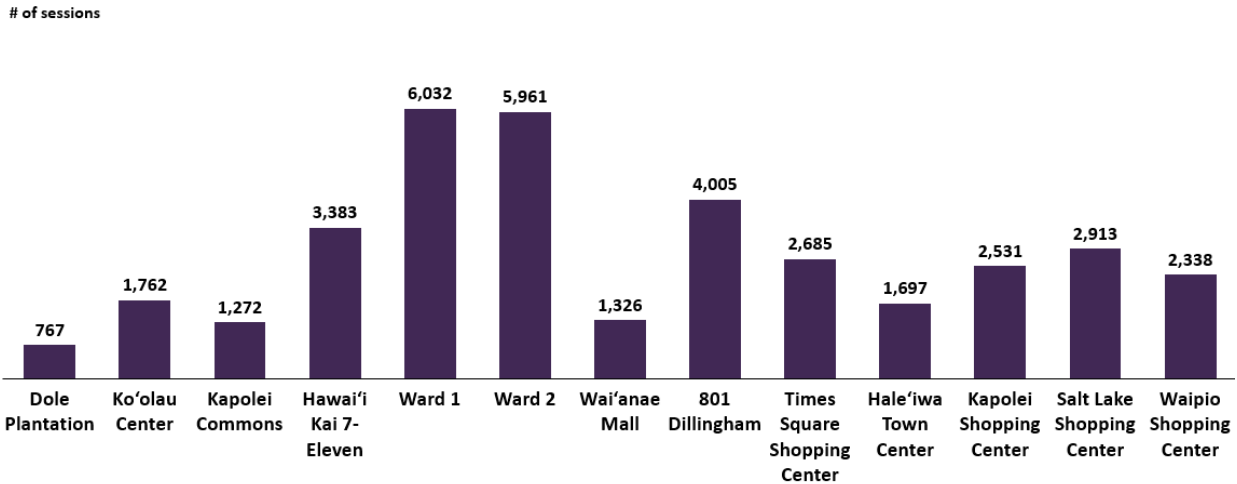


Figure 8: Number of Sessions by DCFC Site on O’ahu in 2021

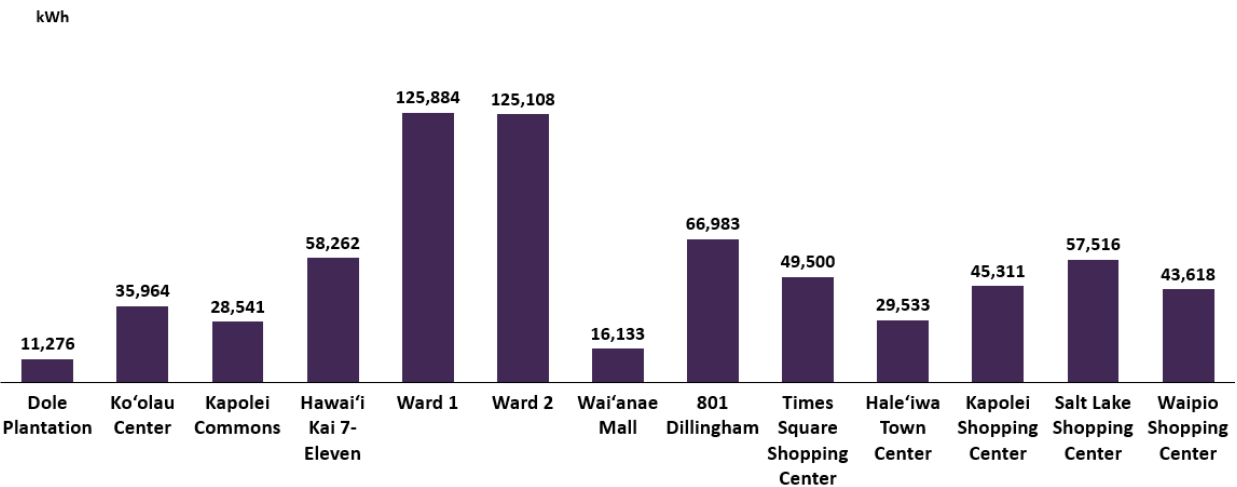


Figure 9: Energy Consumption by DCFC Site on O’ahu in 2021

A summary of key metrics for all EV-U DCFC on O’ahu is provided in Figure 10 below, with time period utilization calculated using energy consumption (kWh) data for charging sessions initiated within the

specified period. Following the table are individual discussions on the context and status of each charging station location.

	Dole Plantation	Ko'olau Center	Kapolei Commons	Hawai'i Kai 7-Eleven	Ward 1	Ward 2	Wai'anae Mall	801 Dillingham	Times Square Shopping Center	Hale'iwa Town Center	Kapolei Shopping Center	Salt Lake Shopping Center	Waipio Shopping Center
% Utilization													
Off-Peak	4%	15%	13%	27%	26%	27%	13%	17%	18%	11%	22%	19%	25%
Mid-Day	92%	57%	57%	48%	47%	47%	62%	57%	54%	64%	51%	57%	50%
On-Peak	4%	28%	30%	25%	26%	26%	24%	26%	28%	25%	27%	25%	26%
Avg Energy/Session (kWh)													
Off-Peak	15	19	23	17	21	22	11	16	18	18	21	19	20
Mid-Day	15	20	21	16	21	21	12	17	18	18	18	20	19
On-Peak	11	21	25	19	21	21	13	16	19	16	16	20	17
Avg Revenue/Session (\$)													
Off-Peak	\$8.36	\$10.43	\$12.36	\$9.36	\$11.40	\$11.82	\$6.01	\$8.89	\$9.90	\$9.54	\$11.09	\$10.19	\$10.86
Mid-Day	\$7.29	\$10.02	\$10.32	\$8.08	\$10.17	\$10.06	\$5.95	\$8.37	\$8.81	\$8.80	\$8.76	\$9.87	\$9.26
On-Peak	\$6.40	\$11.98	\$14.49	\$10.65	\$11.88	\$11.94	\$7.34	\$9.22	\$11.09	\$9.14	\$9.27	\$11.13	\$9.71
Avg Time/Session (min)													
Off-Peak	28	35	39	37	38	39	25	34	34	34	35	35	37
Mid-Day	30	37	38	35	38	39	24	34	34	36	32	37	35
On-Peak	21	37	43	38	38	38	23	34	37	32	30	36	35

Figure 10: Summary of Key Metrics for EV-U DCFC on Oahu²³

Dole Plantation

While the DCFC station at Dole Plantation is not located near residential neighborhoods, this strategic tourist location is one of the major thoroughfares to the North Shore of O’ahu, which has little availability of public EV charging.

Utilization data shows that the bulk of charging at this location continues to be during the Mid-Day period. In 2021, Mid-Day energy consumption comprised 92 percent of total energy consumption, which is the highest percentage of all charging stations on O’ahu. This result is likely attributed to Dole Plantation’s business hours of 9:30 AM to 4:30 PM, although access to this charge station is sometimes extended beyond normal business hours. Off-Peak and On-Peak periods each saw 4 percent of charging usage.

Ko’olau Center

Similar to Dole Plantation, the Ko’olau Center DCFC is on a thoroughfare that provides access to the north side of O’ahu where there are limited public charging options. Situated in Kaneohe, Ko’olau Center is a small shopping center that includes a Times supermarket.

²³ Due to rounding of percentages to the nearest whole number, the sum for each charging station will not always equal 100 percent.

In 2021, 57 percent of charging usage for this station was initiated during the Mid-Day period, 15 percent during the Off-Peak, and 28 percent during the On-Peak.

Kapolei Commons

The DCFC at Kapolei Commons is situated in a shopping center in close proximity to large residential neighborhoods along a major highway thoroughfare. This shopping center also provides Level 2 charging from other third-party operators. Previously, this station had provided only a CHAdeMO connector. In 2020, the Company installed a new charging station which included a CCS connector in addition to a CHAdeMO connector and expanded support to a wider variety of EV drivers. The new charging station became available to the public in January 2021.

In 2021, 57 percent of charging usage for this station was initiated during the Mid-Day period, 13 percent during the Off-Peak, and 30 percent during the On-Peak.

Hawai'i Kai 7-Eleven

The Hawai'i Kai 7-Eleven DCFC is located amongst residential homes and condominiums. Its proximity to condominiums may contribute to its continued high utilization. EV owners living in condominiums and townhouses without a garage often need to rely on public charging stations, such as this one, for their vehicle charging needs.

In 2021, 48 percent of charging usage for this station was initiated during the Mid-Day period, 27 percent during the Off-Peak, and 25 percent during the On-Peak.

Ward 1 and Ward 2

DCFC stations Ward 1 and Ward 2 are co-located at the Hawaiian Electric building on Ward Avenue. This location is situated near the growing density of high-rise condominiums, many office buildings, and the downtown Honolulu district. Ward 1 and Ward 2 DCFCs are the two most highly utilized charging stations in the pilot across all islands.

The location and increased reliability of the co-located DCFC stations may account for their high utilization. Combined, they make up 36 percent of usage for charging stations on O'ahu and 32 percent of usage for all stations in this DCFC pilot based on 2021 data. However, in 2021, Ward 1 and Ward 2 had the lowest percentage of utilization during Mid-Day with each station having 47 percent of usage occurring during this period.

Due to the immense popularity of this charging location and available excess capacity, Ward Avenue is a priority for adding an additional (third) charging station by 2023. The additional charging station will relieve wait times that are sometimes endured by EV drivers at this location before they are able to charge their vehicle.

Wai'anae Mall

The Wai'anae Mall DCFC is located at a shopping center amongst restaurants and stores, and near residential neighborhoods along a highway thoroughfare. It is currently the westernmost public charging station of any type along Farrington Highway on the west side of the island. This location

provides EV drivers assurance they can travel to and from the leeward coast and encourages EV adoption in this important area.

This charging station has relatively high Mid-Day utilization, which may in part be due to its convenient shopping center location. In 2021, 62 percent of charging usage was initiated during the Mid-Day, 13 percent during the Off-Peak, and 24 percent during the On-Peak.

801 Dillingham

The DCFC at 801 Dillingham is the third most utilized station on O’ahu, behind Ward 1 and Ward 2, which is likely due to its central location in the urban core of Honolulu. This station is located near the Iwilei Costco and is adjacent to many other shops and restaurants, making it an ideal place for convenient charging while running errands.

In 2021, 57 percent of charging usage was initiated during the Mid-Day, 17 percent during the Off-Peak, and 26 percent during the On-Peak.

Times Square Shopping Center

The Waimalu Times Square Shopping Center DCFC opened to the public in January 2019. This location was selected due to its population density, high penetration of MUDs, resident commuters, jobs, and traffic density. While one dual-standard 50 kW DCFC was installed, the underlying electrical infrastructure was designed to support 150 kW. The Company employed this approach to enable flexibility when technology or customer needs change. Planning for the future with additional capacity enables the Company to easily install additional fast charge stations or upgrade to a higher powered DCFC station if deemed appropriate.

In 2021, 54 percent of charging usage was initiated during the Mid-Day, 18 percent during the Off-Peak, and 28 percent during the On-Peak.

Haleiwa Town Center

The Haleiwa Town Center DCFC opened to the public in June 2019. This strategic location is expected to alleviate range anxiety as there is currently only one public charging station within a ten-mile drive of this location, the Hawaiian Electric DCFC at Dole Plantation. This DCFC station also supports residents and tourists driving to and from the North Shore area of the island.

In 2021, 64 percent of charging usage was initiated during the Mid-Day, the second highest percentage of all EV-U DCFC on O’ahu. 11 percent of charging was initiated during the Off-Peak, and 25 percent during the On-Peak.

Kapolei Shopping Center

The Kapolei Shopping Center DCFC opened to the public in January 2020. While one dual-standard 50 kW DCFC was installed, the underlying electrical infrastructure was designed to support 150 kW. The Company employed this approach to enable flexibility when technology or customer needs change.

Planning for the future with additional capacity enables the Company to easily install additional fast charge stations or upgrade to a higher powered DCFC station if deemed appropriate.

In 2021, 51 percent of charging usage was initiated during the Mid-Day, 22 percent during the Off-Peak, and 27 percent during the On-Peak.

Salt Lake Shopping Center

The DCFC at Salt Lake Shopping Center opened to the public in February 2021. This strategic location, the first in the Salt Lake area, is located directly across from the Honolulu International Airport and is expected to support electrification of the car rental market. While one dual-standard 50 kW DCFC was installed, the underlying electrical infrastructure was designed to support 150 kW. The Company employed this approach to enable flexibility when technology or customer needs change. Planning for the future with additional capacity enables the Company to easily install additional fast charge stations or upgrade to a higher powered DCFC station if deemed appropriate.

In 2021, 57 percent of charging usage was initiated during the Mid-Day, 19 percent during the Off-Peak, and 25 percent during the On-Peak.

Waipio Shopping Center

The Waipio Shopping Center DCFC became available to the public in February 2021. This station is located at a shopping center amongst restaurants and stores, adjacent to a residential neighborhood along a highway thoroughfare. While one dual-standard 50 kW DCFC was installed, the underlying electrical infrastructure was designed to support 150 kW. The Company employed this approach to enable flexibility when technology or customer needs change. Planning for the future with additional capacity enables the Company to easily install additional fast charge stations or upgrade to a higher powered DCFC station if deemed appropriate.

In 2021, 50 percent of charging usage was initiated during the Mid-Day, 25 percent during the Off-Peak, and 26 percent during the On-Peak.

Utilization on Hawai'i Island

In 2021, the DCFC stations on Hawai'i Island, which represent 28 percent of all stations in the pilot, accounted for almost 10 percent of all sessions in the pilot. As of the end of 2021, Hawai'i Island had about seven percent of all the EVs registered in the Company's territory. Longer driving distances on the island make public DCFCs an essential resource for Hawai'i Island EV drivers.

The DCFC at Hawaiian Electric's office in Kailua-Kona was the highest utilized charging station on the island, and is ranked tenth for energy consumption in the pilot as a whole (ninth by number of sessions). The monthly overall utilization for the EV-U DCFC sites on Hawai'i Island is shown below, by number of sessions in Figure 11 and by energy consumption in Figure 12.

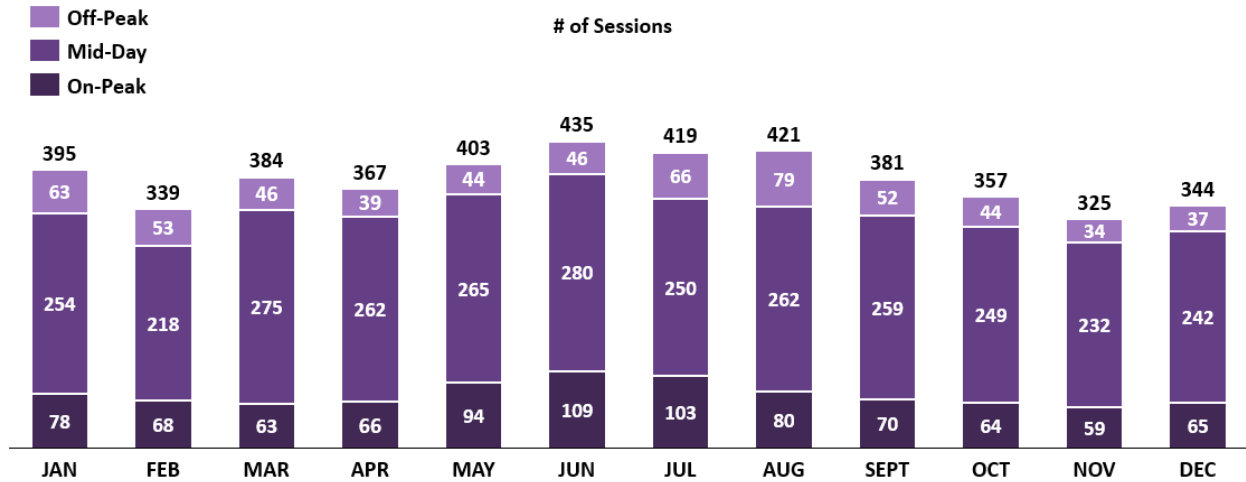


Figure 11: Monthly Number of Sessions in 2021 by TOU for Hawai'i Island DCFC Sites

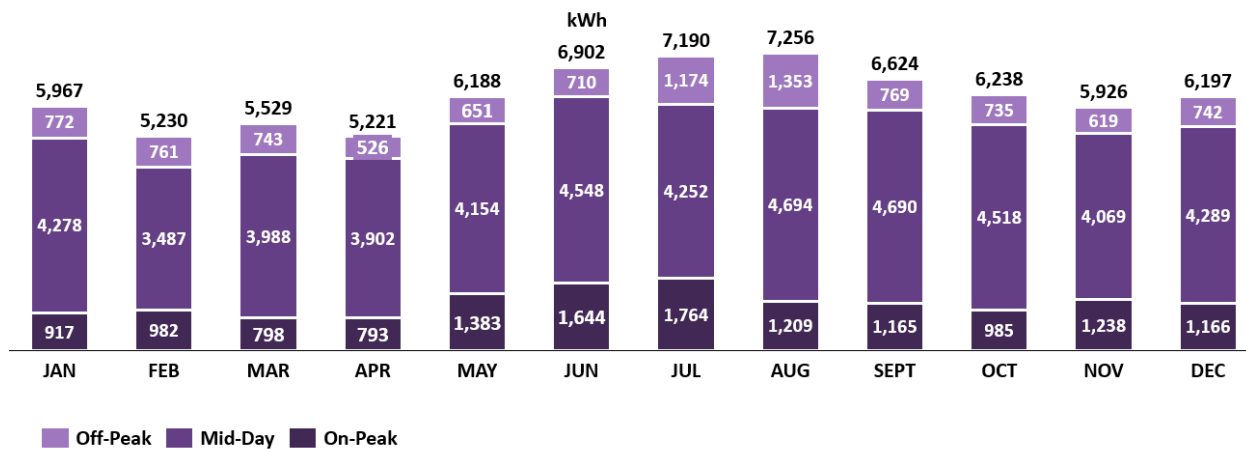


Figure 12: Monthly Energy Consumption (kWh) in 2021 by TOU for Hawai'i Island DCFC Sites

Repair and maintenance issues plagued several of the six DCFC on Hawai'i Island in 2021 resulting in lower than expected charging utilization compared to the year prior. Supply chain issues for replacement parts were a factor in the ability to complete timely repairs, among other challenges. Lessons learned include the need for stronger service level agreements with vendors and contractors, an increase in internal resources available for immediate dispatches, and streamlined processes that improve communication and efficiency. In order to increase reliability and charging availability, the Company is targeting certain sites on Hawai'i Island with available capacity to add a second DCFC in 2022 and 2023.

The monthly overall utilization for the EV-U DCFC sites on Hawai'i Island is shown below, by number of sessions in Figure 13 and by energy consumption in Figure 14.

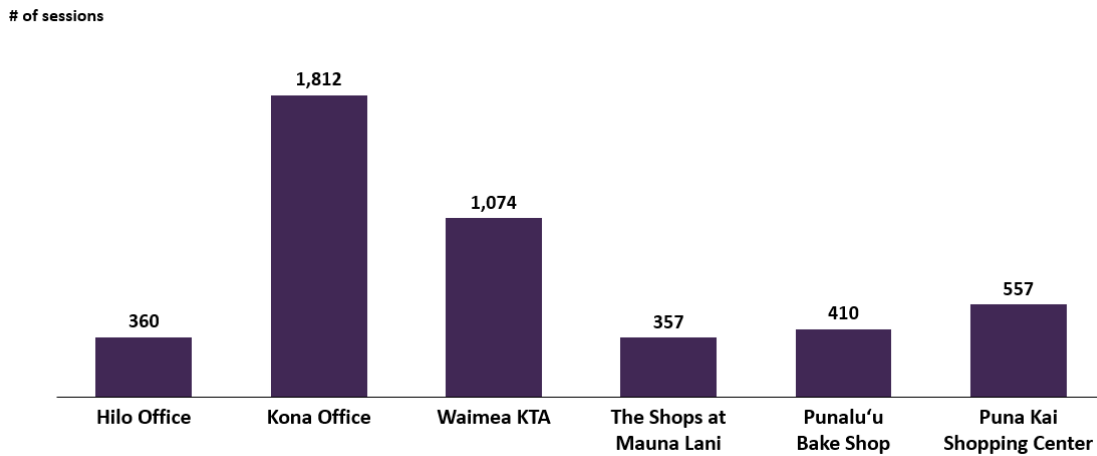


Figure 13: Number of Sessions by DCFC Site on Hawai'i Island for 2021

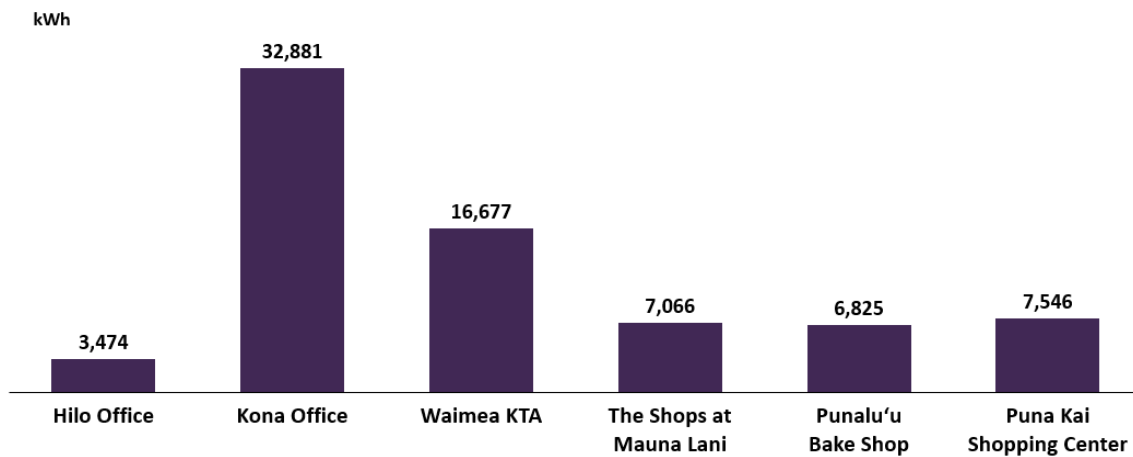


Figure 14: Energy Consumption by DCFC Site on Hawai'i Island in 2021

A summary of key metrics for all EV-U DCFC on Hawai'i Island is provided in Figure 15 below, with time period utilization calculated using energy consumption (kWh) data for charging sessions initiated within the specified period. Following the table are individual discussions on the context and status of each charging station location.

	Hilo Office	Kona Office	Waimea KTA	The Shops at Mauna Lani	Punalu'u Bake Shop	Puna Kai Shopping Center
% Utilization						
Off-Peak	15%	15%	11%	7%	12%	13%
Mid-Day	64%	65%	72%	67%	80%	68%
On-Peak	21%	21%	17%	26%	8%	19%
Avg Energy/Session (kWh)						
Off-Peak	9	17	14	24	17	16
Mid-Day	9	18	17	22	16	13
On-Peak	11	18	12	16	18	13
Avg Revenue/Session (\$)						
Off-Peak	\$5.77	\$10.43	\$8.47	\$14.41	\$10.42	\$9.93
Mid-Day	\$4.74	\$9.35	\$8.66	\$10.98	\$8.40	\$6.75
On-Peak	\$6.96	\$11.59	\$7.57	\$9.92	\$11.22	\$8.26
Avg Time/Session (min)						
Off-Peak	32	32	28	37	30	41
Mid-Day	30	33	32	35	33	34
On-Peak	30	33	24	26	30	28

Figure 15: Summary of Key Metrics for EV-U DCFC on Hawai'i Island in 2021²⁴

Hilo Office

This station is located at Hawaiian Electric's main Hawai'i Island office in Hilo. While no retail stores share the parking lot, there are some shops and eateries within a short walking distance. In 2020, this location had the highest energy consumption on Hawai'i Island, however, repair issues caused this station to be out of commission for at least four months of 2021 resulting in its place at the bottom of the rankings for the year. The strategic location of this site, its popularity, and the availability of excess capacity within the electrical infrastructure make this site a top priority for the addition of a second charging station by 2023. The addition of a second charging station will increase charging availability in the Hilo area and improve the reliability of this location as a charging hub for long distance travel or local errands.

In 2021, 64 percent of charging usage was initiated during the Mid-Day, 15 percent during the Off-Peak, and 21 percent during the On-Peak.

²⁴ Due to rounding of percentages to the nearest whole number, the sum for each charging station will not always equal 100 percent.

Kona Office

This station is located at Hawaiian Electric's office in Kailua-Kona and is the only DCFC in the area. The site is near many commercial businesses with some markets and restaurants a few blocks away. In 2021, this DCFC had the highest utilization of all stations on Hawai'i Island and is ranked tenth in the pilot as a whole for energy consumption (ninth by number of sessions). The strategic location of this site, its popularity, and the availability of excess capacity within the electrical infrastructure make this site a top priority for the addition of a second charging station by 2023.

In 2021, 65 percent of charging usage was initiated during the Mid-Day, 15 percent during the Off-Peak, and 21 percent during the On-Peak.

Waimea KTA

This charging station is located at a grocery store in Waimea in the northwest portion of Hawai'i Island, near other retail businesses. The closest DCFC to this station is Hawaiian Electric's DCFC at The Shops at Mauna Lani which is 18 miles away. The charging station at Waimea KTA was out of commission from October through the end of the year for repair.

In 2021, 72 percent of its charge sessions started during the Mid-Day, 11 percent of all sessions started during the Off-Peak, and 17 percent of all sessions started during the On-Peak.

The Shops at Mauna Lani

This station is located in a shopping area in a resort destination along the Kohala coast and continues to support EV drivers between Waimea and Kona, including those bound for the Kona Airport. The charging station at The Shops at Mauna Lani had intermittent maintenance issue throughout the year and went out of commission in October through the end of the year. This station is an older model that was installed originally by a different company and later taken over by Hawaiian Electric. The age of the station and recent decision by the manufacturer to sunset their support makes this charging station a current priority for replacement.

In 2021, 67 percent of charging usage was initiated during the Mid-Day, seven percent during the Off-Peak, and 26 percent during the On-Peak.

Punalu'u Bake Shop

The Punalu'u Bake Shop and Visitor Center DCFC in Na'ālehu opened to the public in March 2019. This location was chosen to alleviate range anxiety due to the fact that there are no other DCFC stations on the south side of the island, which in turn is expected to support EV adoption. A fast charging station in this area is important to provide residents and tourists the confidence to travel to destinations within and through the southern side of the island.

In 2021, this charging station had the highest percentage of utilization starting in the Mid-Day period at 80 percent. 12 percent of charging usage was initiated during the Off-Peak, and only eight percent during the On-Peak.

Puna Kai Shopping Center

A fast charging station was constructed at Puna Kai Shopping Center in Pahoia and opened to the public in August 2020. This location is expected to alleviate range anxiety and support EV adoption.

In 2021, 68 percent of its charge sessions started during the Mid-Day, 13 percent of all sessions started during the Off-Peak, and 19 percent of all sessions started during the On-Peak.

Utilization in Maui County

After the EVohana program came to a close on July 31, 2020, Maui EV drivers went from having 15 DCFC sites to two, one at Hawaiian Electric’s Kahului Office under EV-U and one at the Haiku Marketplace under private ownership. As a result, utilization of the Kahului Office EV-U charging station increased dramatically. As detailed further in the *Schedule EV-MAUI Tariff* section of this report, four EV-MAUI chargers were installed later that year, thereby increasing the DCFC stations available to Maui residents to six. The first station opened in August 2020 with the other three stations becoming available in December 2020, including one located at Queen Ka’ahumanu Center, just a half mile away from the Kahului DCFC station. The increase in charging availability coupled with lower EV-MAUI pricing directly impacted the overall utilization of EV-U charging in Maui, which can be clearly seen at the beginning of the year.

In 2021, the Company Schedule EV-U stations in Maui County accounted for close to 10 percent of all DCFC stations in the pilot and only two percent of charging usage. This utilization percentage is lower than the four percent from 2020 most likely due to the availability of the new EV-MAUI charging stations which offer lower pricing. Maui County has 12 percent of the EVs registered in the Company’s territory.

The monthly overall utilization for the EV-U DCFC sites on Maui is shown below, by number of sessions in Figure 16 and by energy consumption in Figure 17.

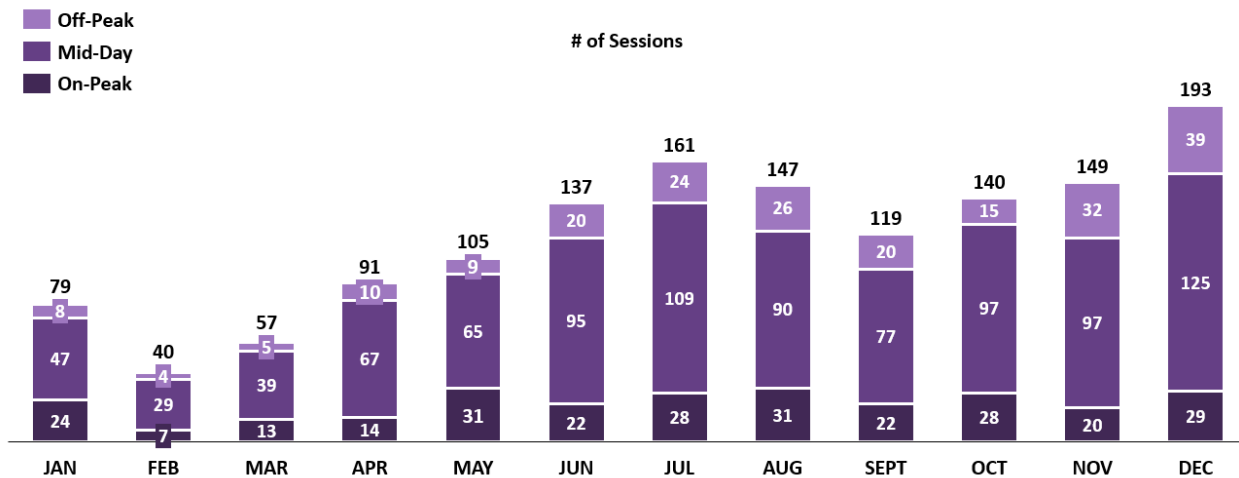


Figure 16: Monthly Number of Sessions in 2021 by TOU for Maui County DCFC Sites

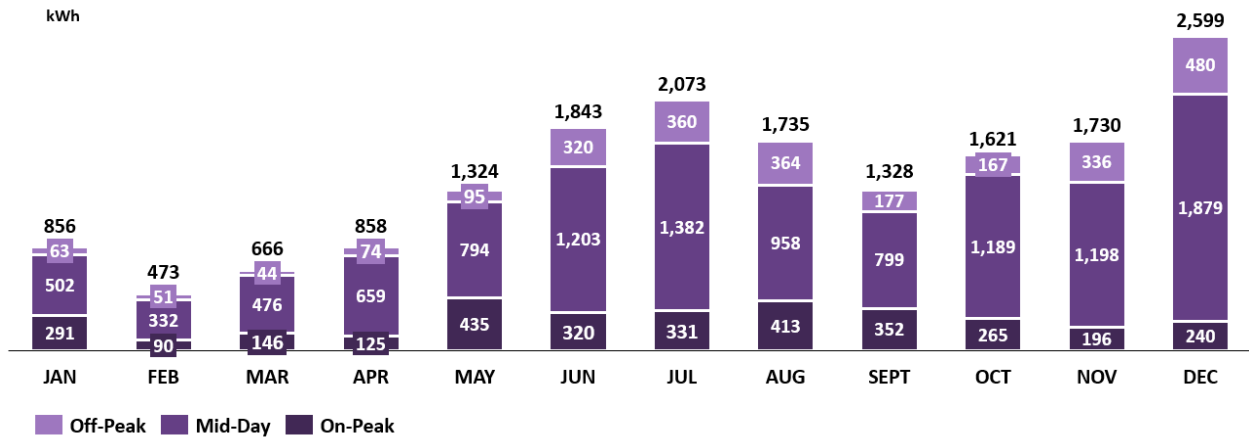


Figure 17: Monthly Energy Consumption (kWh) in 2021 by TOU for Maui County DCFC Sites

The overall utilization for individual sites in Maui County under Schedule EV-U is shown by number of sessions in Figure 18 and by energy consumption in Figure 19 below.

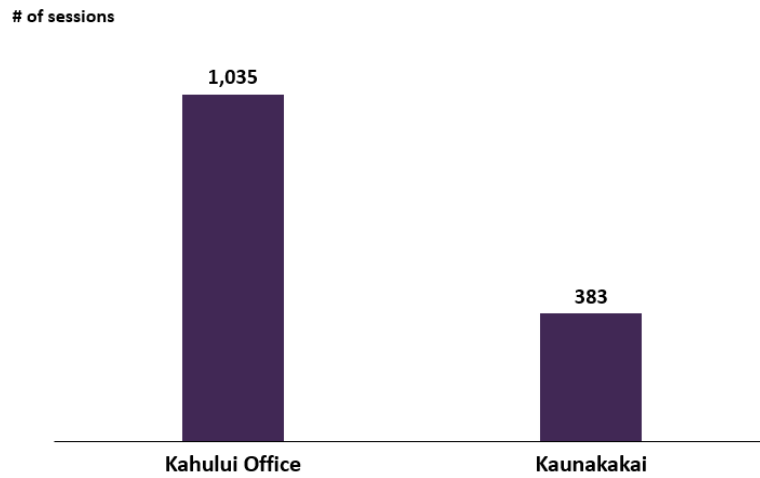


Figure 18: Number of Sessions by DCFC Site in Maui County for 2021

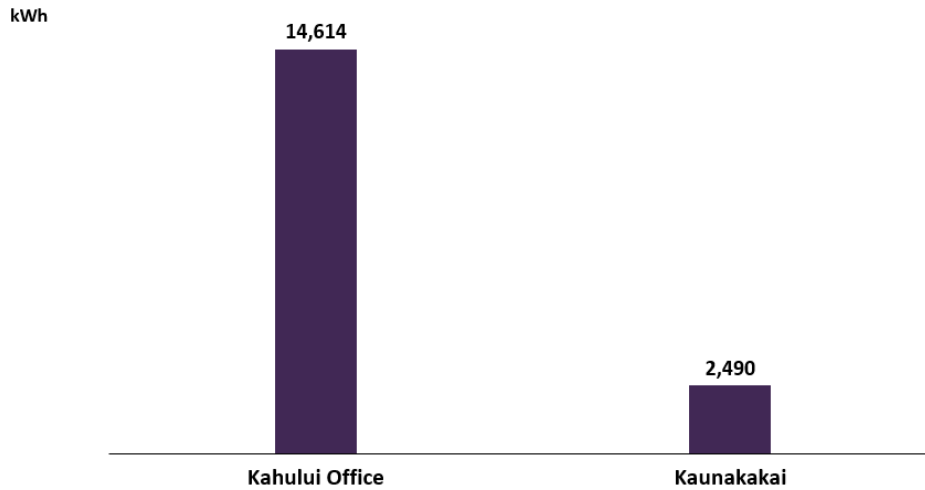


Figure 19: Energy Consumption by DCFC Site in Maui County in 2021

A summary of key metrics for all EV-U DCFC in Maui County is provided in Figure 20 below, with time period utilization calculated using energy consumption (kWh) data for charging sessions initiated within the specified period. Following the table are individual discussions on the context and status of each charging station location.

	Kahului Office	Kaunakakai
% Utilization		
Off-Peak	14%	20%
Mid-Day	65%	73%
On-Peak	21%	7%
Avg Energy/Session (kWh)		
Off-Peak	15	6
Mid-Day	14	7
On-Peak	13	6
Avg Revenue/Session (\$)		
Off-Peak	\$9.15	\$4.06
Mid-Day	\$7.07	\$3.57
On-Peak	\$7.84	\$3.96
Avg Time/Session (min)		
Off-Peak	31	26
Mid-Day	30	19
On-Peak	28	14

Figure 20: Summary of Key Metrics for EV-U DCFC in Maui County in 2021²⁵

Kahului Office

While the charging station at Hawaiian Electric’s Kahului Headquarters is not co-located with retail businesses, shopping centers and restaurants are nearby.

In 2021, 65 percent of its charging usage was initiated during the Mid-Day, 14 percent during the Off-Peak, and 21 percent during the On-Peak.

Kaunakakai

In 2018, Maui Electric installed a new fast charging station on Ala Malama Avenue in Kaunakakai fronting restaurants and retail shops. This charger remains the only public charging station on the island of Moloka’i and is centrally located to provide fast charging service to those driving to and from Kaunakakai, the main location of commerce on the island. Interestingly, while this charger is the only publicly available charger on Moloka’i, it has the lowest average kWh/session utilization. The most

²⁵ Due to rounding of percentages to the nearest whole number, the sum for each charging station will not always equal 100 percent.

probable reason for this may be that the EV drivers on Moloka‘i needing the charge are observed to be lower capacity and older model EVs. Also, most of the population on Moloka‘i resides near to the charger keeping driving distances relatively short.

In 2021, 73 percent of charging usage was initiated during the Mid-Day, 20 percent during the Off-Peak, and seven percent during the On-Peak.

2022 EV-U Site Development

The Company is currently in construction on the final four EV-U DCFC metered sites which will add another seven DCFC stations to the pilot, all on O‘ahu. The sites are Mililani Town Center (two charging stations), Bishop Museum (two charging stations), Waikiki-Kapahulu Library (one charging station) and Kailua Foodland Marketplace (two charging stations).

Additionally, the Company is currently evaluating nine existing sites with available capacity to add additional charging stations to existing Company metered accounts. This is a means of increasing charging availability faster and at lower cost given that much of the electrical infrastructure is already in place. As seen with Ward 1 and Ward 2 on O‘ahu, co-located charging stations are very popular as they provide more charging opportunities and increase the chances of a port being available at those locations.

Analysis of EV-U rate

Figure 21 below provides aggregate energy consumption by TOU period²⁶ for each utility. As shown below, the Mid-Day period continues to be the most utilized charging period that is in-line with the lowest charging rates for each island.

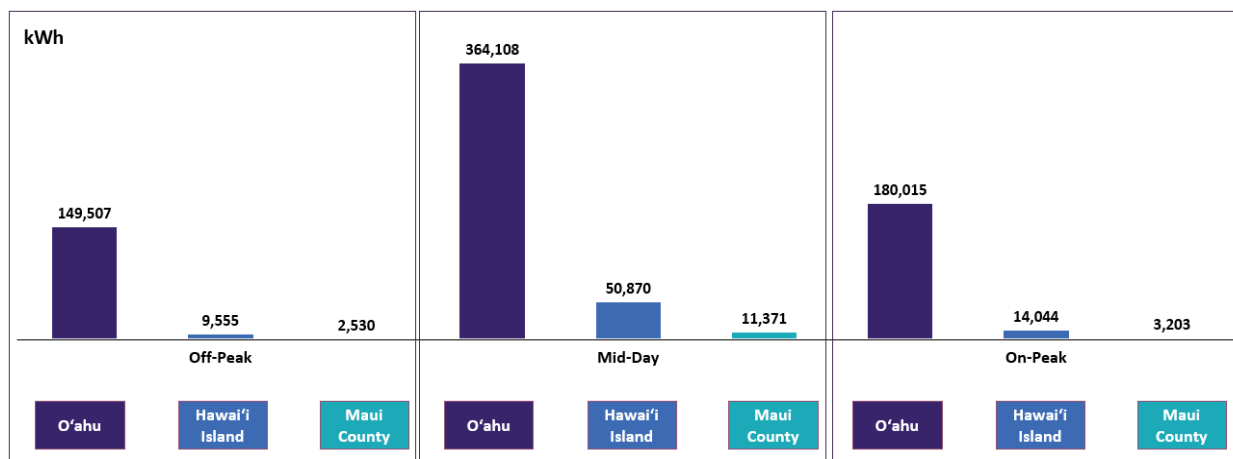


Figure 21: EV-U Energy Consumption by TOU Period for Each Service Territory in 2021

²⁶ Off-Peak occurs from 10 PM to 9 AM, Mid-Day occurs from 9 AM to 5 PM, and On-Peak occurs from 5 PM to 10 PM.

Figure 22 below shows the percent share of charging energy consumption by TOU period for each service territory, again indicating that the Mid-Day time period is the most utilized, and in aggregate represents 54% of all energy consumed at the EV-U chargers in 2021.

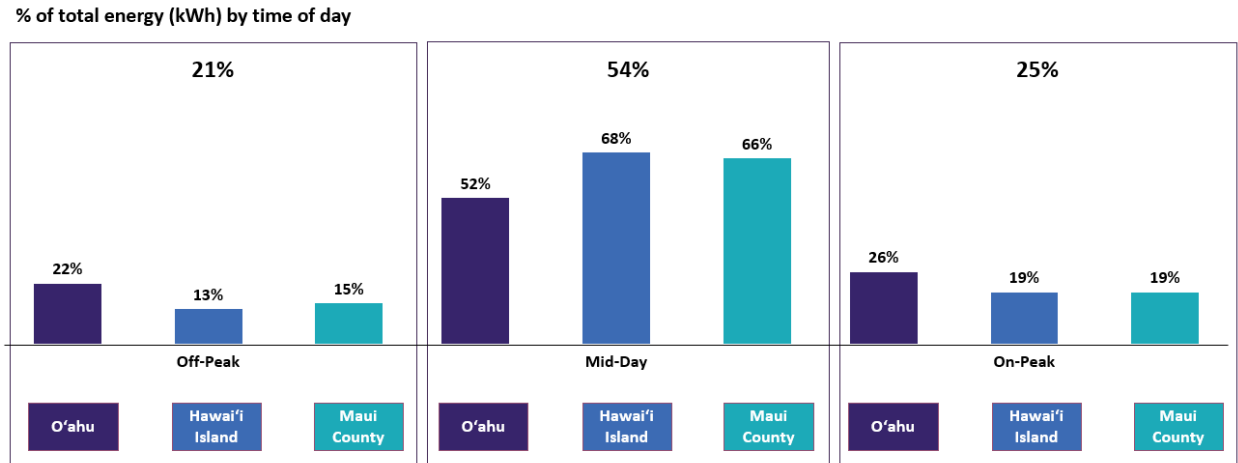


Figure 22: EV-U Share of Energy Consumption by TOU Period for Each Service Territory in 2021

Figure 23 below provides the aggregate number of sessions by TOU period for each service territory. The largest number of sessions for O'ahu, Hawai'i Island and Maui occurred during the Mid-Day period.

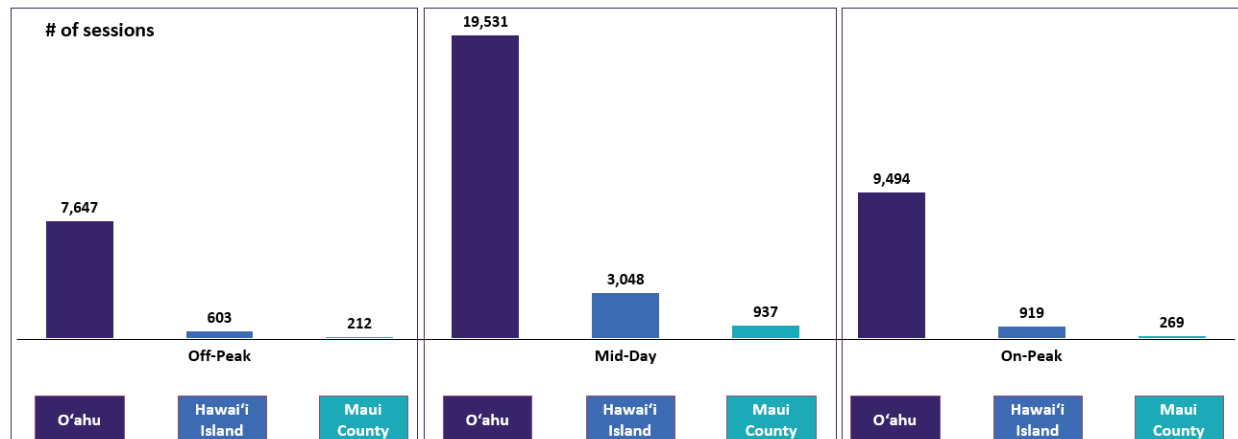


Figure 23: EV-U Sessions by Service Territory and TOU Period in 2021

The percentage of sessions by TOU period for 2021 is shown in Figure 24 below. The Mid-Day time period is the most utilized by each service territory and on aggregate is 55% of all charging sessions in 2021.

% of sessions by time of day

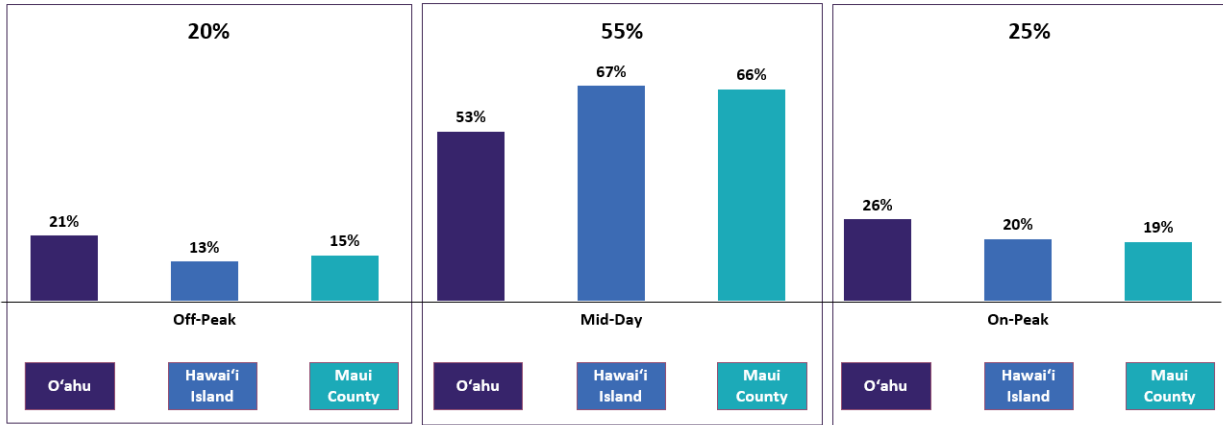


Figure 24: EV-U Share of Charging Sessions by TOU for Each Service Territory in 2021

Figure 25 below shows the average time duration per session for all time periods for all EV-U charging stations in 2021.

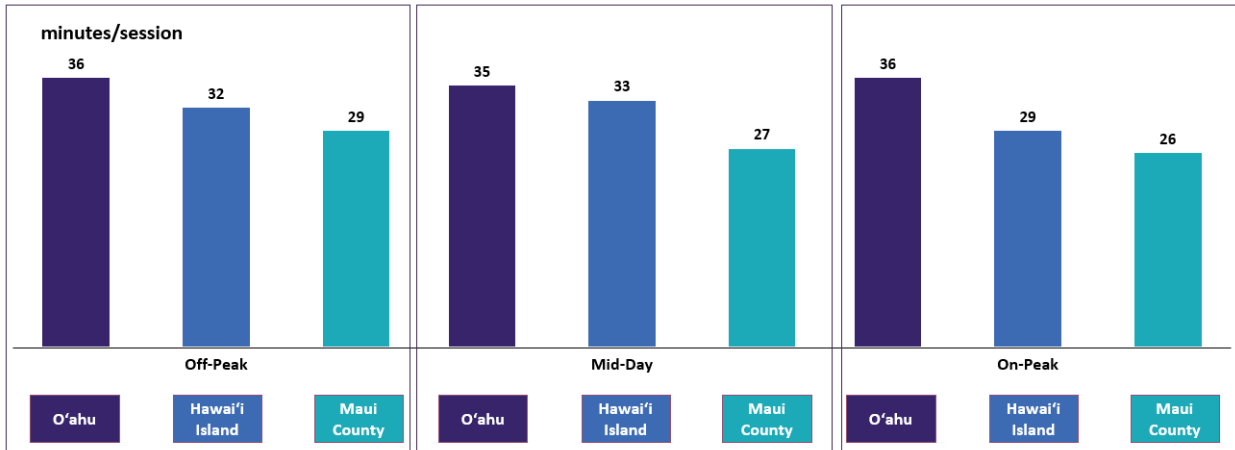


Figure 25: EV-U Average Time per Session by TOU for Each Service Territory in 2021

Figure 26 below illustrates the average energy consumption per session by time period.

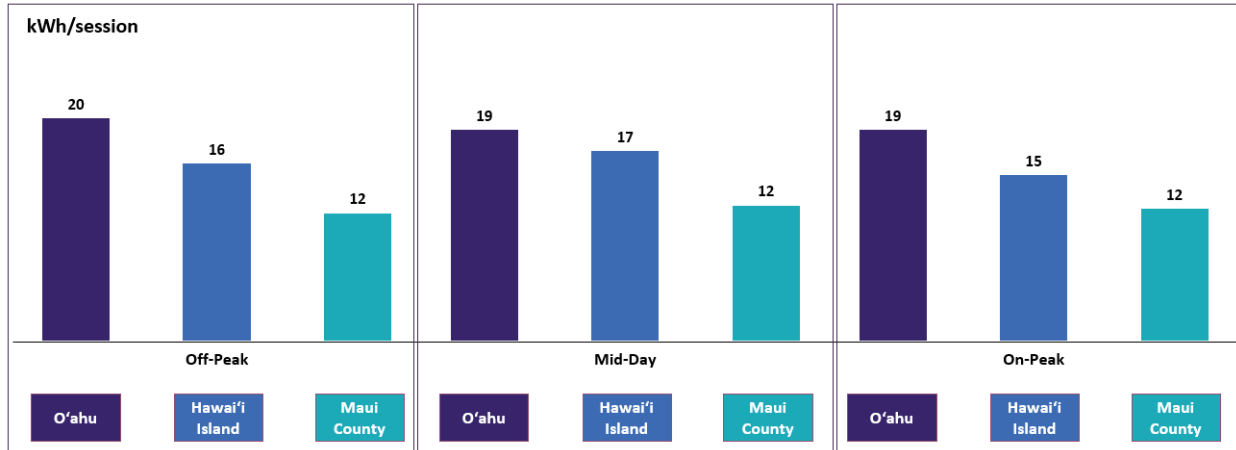


Figure 26: EV-U Average Energy Usage per Session by TOU for Each Service Territory in 2021

Summary of Cost and Revenue²⁷

In Decision and Order No. (“D&O”) 34592, the Commission ordered the Company to provide “a discussion of how and to what extent the costs for each DCFC facility have been and/or are proposed to be recovered from ratepayers.”²⁸ The recovery of capital and operating and maintenance (“O&M”) costs for Company-owned and operated DCFC stations is discussed herein.

Revenue and Operating and Maintenance Expenses

In the early stages of the EV-U/EV-F pilot program development, there were stakeholder concerns regarding the Company’s influence on the EV charging market and competitive fairness. As a result, the Company took steps to be transparent when reporting O&M costs by reflecting incurred costs in a similar fashion to a third-party charge station operator. Therefore, the equivalent cost of electricity associated with charging station use is included in reported O&M costs per site in this section of the report. In October 2017, the Commission approved the proposed Schedule EV-U rate change “to provide greater alignment with charging session costs (moving Schedule EV-U rates from a fixed charging session rate to volumetric rate), system costs (incorporating certain program costs into Schedule EV-U rates), and system needs by adopting the Schedule TOU-RI time periods and structuring rates so that they are directionally consistent with the availability of photovoltaic generation and difference in generation costs.”²⁹ Therefore, site operating expenses also include volumetric transactional fees. While the equivalent cost of electrical service is included as a cost of operation in this section, it is not included as a cost to the overall program or as part of the Company’s electrical sales, since the Company cannot report revenue of electric sales to itself. Therefore, a reverse energy charge is applied to the program costs reported in Appendix B.

²⁷ Details of Revenues, Expenses, and Capital from inception of the program can be found in Appendix B.

²⁸ D&O 34592, filed June 2, 2017 in Docket 2016-0167, at 68.

²⁹ D&O 34867, filed October 13, 2017 in Docket 2016-0168, at 11. The new rates became effective December 12, 2017.

Figure 27 below illustrates the net values (revenue³⁰ less expenses)³¹ for each charging station, alongside site utilization ranking for 2021 for DCFC sites on O’ahu. The highest utilized station on O’ahu and corresponding highest net revenue for 2021 is the Ward 1 DCFC. These costs do not include general program expenses. There is a net expense of \$98,238 in aggregate for O’ahu once program expenses are accounted for, as shown in Figure 28.

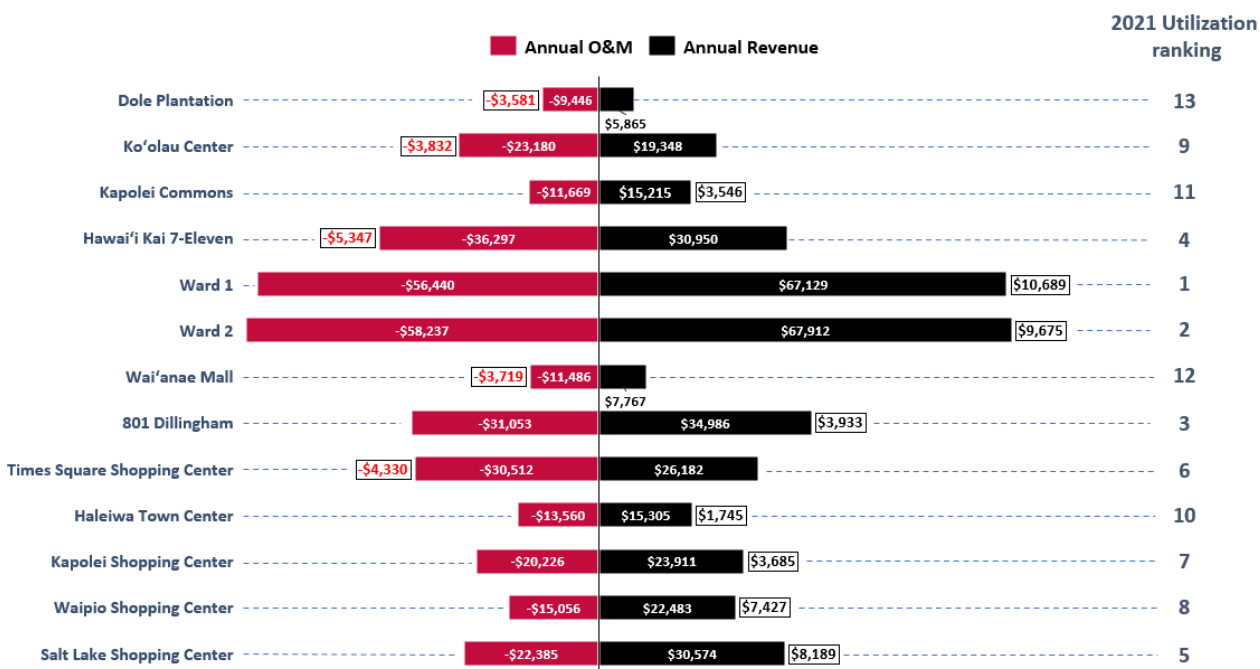


Figure 27: 2021 Annual Revenue, O&M, Net Values, and Utilization rank for O’ahu DCFC

³⁰ On a monthly basis, the Company undergoes a reconciliation process to assess net revenue owed by the DCFC network providers who collect payment from customers. The network provider submits a monthly report of session data including energy usage, billed amounts, and transaction fees. The Company then validates the data to determine actual amounts of revenue and fees. Accounting requires monthly data to be provided by the first business day following each month, so to meet such requirements, estimated monthly revenue and transaction fees based upon the previous month’s usage are accrued and then adjusted the following month when actuals are available.

³¹ A net positive effect occurs when revenues exceed O&M. A net negative effect occurs when revenues are less than O&M.

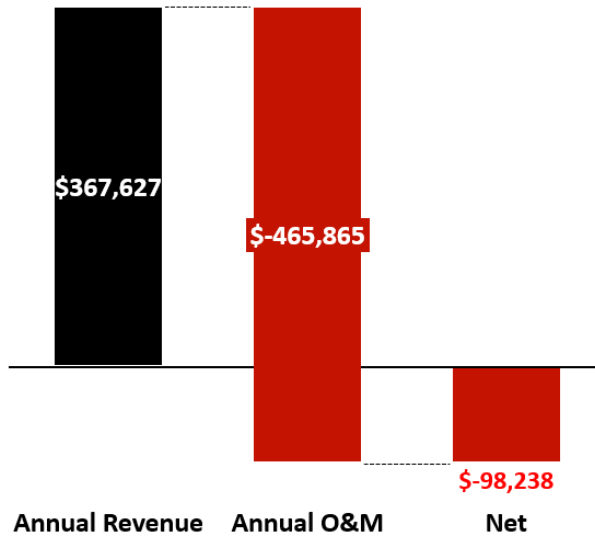


Figure 28: 2021 Aggregate Annual Revenue Results for O’ahu DCFC

Figure 29 illustrates the net values (revenue less expenses) for each charging station, alongside site utilization ranking for 2021 for DCFC sites on Hawai’i Island. These costs do not include general program expenses. There is a net expense of \$37,347 in aggregate once program expenses are accounted for, as shown in Figure 30.

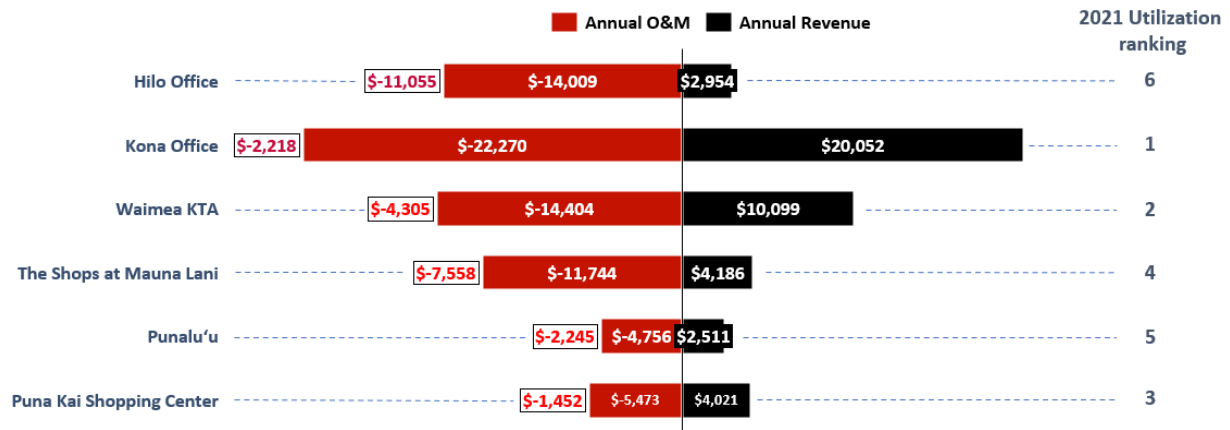


Figure 29: 2021 Annual Revenue, O&M, Net Values, and Utilization rank for Hawai’i Island DCFC

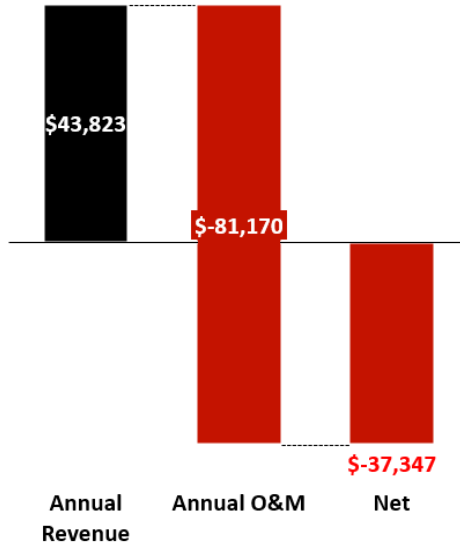


Figure 30: 2021 Aggregate Annual Revenue Results for Hawai'i Island DCFC

Figure 31 illustrates the net values (revenue less expenses) for each charging station for 2021 for DCFC sites in Maui County. These costs do not include general program expenses. There is a net expense of \$17,919 in aggregate once program expenses are accounted for, as shown in Figure 32.

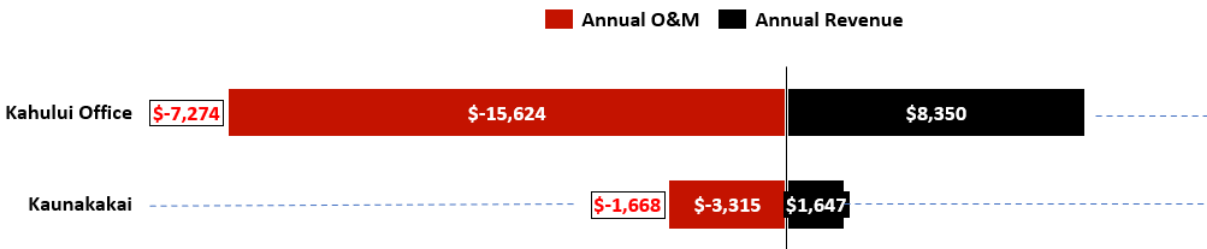


Figure 31: 2021 Annual Revenue, O&M, and Net Values for Maui County

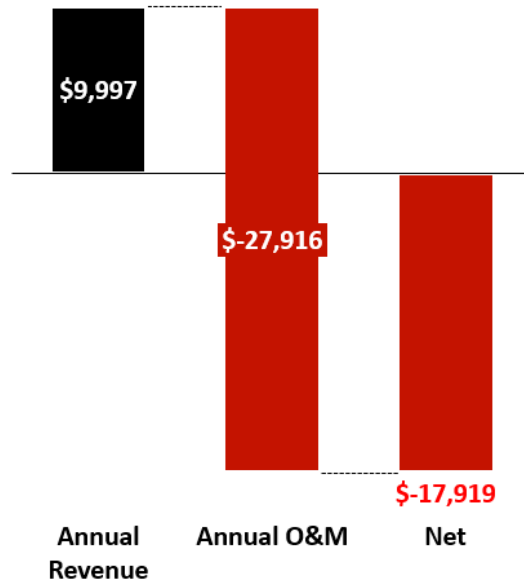


Figure 32: 2021 Maui County Aggregate Annual Results

For further details regarding costs and revenues for 2021 and the program, see Appendix B.

Capital Costs

Figure 33 below provides the capital costs of each DCFC site as they were chronologically placed in operation. Average capital cost for the Company is \$175,068 per installed DCFC site. The average capital cost after factoring in Contribution In Aid of Construction (“CIAC”) is \$167,283 per site³². While the Company identifies locations at a site to minimize construction costs, the overall development costs largely vary based upon the site’s location, the availability of existing electrical infrastructure, condition of the existing parking space, and site host’s desired location on their property. Also, of note, construction costs generally tend to vary by island as well.

In 2021, two new DCFC stations were made available to the public, one at Salt Lake Shopping Center and one at Waipio Shopping Center which both opened in February. Despite missing one month of usage, both stations saw significant utilization in their first year of service coming in at fifth (Salt Lake) and eighth (Waipio) most utilized in the pilot. No additional EV-U sites were added on Hawai’i Island or Maui County in 2021.

³² A CIAC of \$163,486 was provided by Electric Research Power Institute (“EPRI”) for the original battery-tied experimental DCFC station at Kapolei Commons.

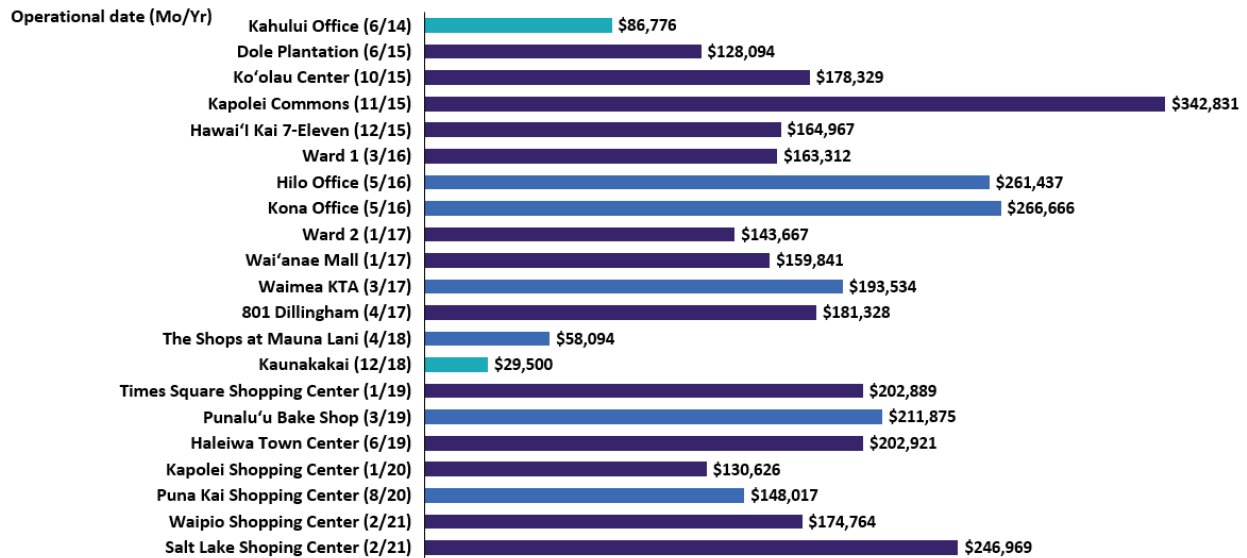


Figure 33: Capital Cost Associated with Active DCFC in Chronological Order of Operational Date³³

Subsidization by non-participating customers

As indicated previously, several of the charging stations on O'ahu showed net positive (revenues exceed expenses) results in 2021 due to increased utilization. Until utilization increases such that revenues exceed expenses, it is important to note that a key consideration in developing EV rates and programs is to reduce barriers to the adoption of EVs for customers. Because the EV market is still nascent in Hawai'i and EV proliferation is regarded as a State policy goal, it is prudent to provide a rate that will support the development of public EV charging infrastructure. The Company maintains that EV customers using charging stations in the EV-U pilot should not necessarily be characterized as benefitting from a subsidy in isolation, when that customer's EV load is incremental discretionary load that needs to be served by the system in general. Therefore, Schedule EV-F and EV-U rates that support this incremental load should not entirely be characterized as being subsidized by other customers. Further, the revenues collected by the incremental discretionary load of EV charging would not contribute to overall Company profits, but instead would constitute contributions to fixed costs and support the State's transition to cleaner transportation. With continued EV growth, the long-term impact of aggregate growth of EVs in the State will also serve to eliminate any subsidization by non-EV drivers. As identified in the *Roadmap*, the Company anticipates that the electrification of transportation will provide long-term economic benefits for the Company's customers, as increased energy demanded by EV drivers to charge their vehicles creates net benefits for all the Company's customers – not just for EV drivers. This is because as EV drivers demand more energy, the utility's fixed costs for generating and distributing energy are spread across more kWh units, thereby creating net benefits for all customers.

³³ The capital cost incurred for Kapolei Commons includes a replacement DCFC station which was installed in 2020. Additionally, the cost shown does not include the offset of a \$163,486 CIAC from EPRI. If CIAC is subtracted from the Kapolei Commons original battery-tied experimental charge station, the net capital cost is \$179,345.

2021 marked the first year of the pilot where EV-U revenue exceeded the potential revenue generated if the charging facility were billed under each Company’s respective Schedule J. Figure 34 below summarizes the total annual revenue from Schedule EV-U compared to the potential revenue from Schedule J. This illustrates that the total EV-U earned revenue is approximately 11% percent greater than the potential Schedule J³⁴ revenue for 2021.³⁵

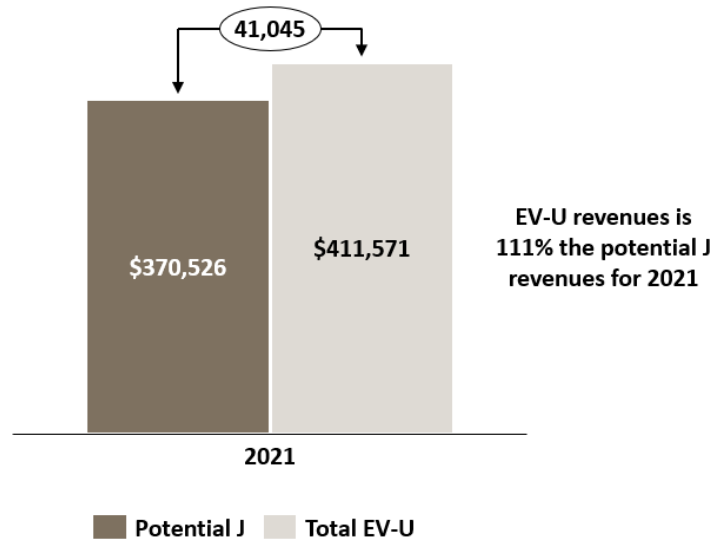


Figure 34: Difference Between Potential Schedule J and Actual EV-U Revenue for 2021

Schedule EV-F Tariff

Background

Schedule EV-F was implemented to alleviate potential demand charges whereby “the absence of a demand charge and the inclusion of TOU rates serve to encourage the development of public EV charging facilities by keeping electricity costs low for new, start-up public EV charging facilities.”³⁶ Globally, public EV charging facilities continue to show increasing signs of technological maturity. Companies such as Electrify America are installing DCFC facilities with “charging speeds of up to 150kW” and are now locating “charging power levels up to 350kW”³⁷ in North America. However, profit margins are still relatively slim due to the higher installation, equipment, and maintenance costs. These difficult business prospects have limited the development of non-utility fast charging facilities in the State.

³⁴ The potential Schedule J revenues were based upon the reported monthly kWh energy provided to charge EVs under Schedule EV-U and an assumed 47.5 kW billing demand. A typical EV will fast charge at power up to 50 kW but will reduce power as the battery state of charge increases.

³⁵ Earned revenue of \$411,571 differs from booked revenue of \$421,447 due to accrual of estimates based on prior month usage which is done to meet accounting deadlines and results in a one month lag from actuals.

³⁶ Transmittal No. 12-05 at 23.

³⁷ <https://www.electrifyamerica.com/our-plan>

Adoption of Schedule EV-F Tariff

Schedule EV-F allows relief of demand charges for commercial customers providing public charging facilities for electric service up to 100kW. Adoption of Schedule EV-F remains low as investment of DCFC infrastructure in Hawai'i remains low. Public fast charging installations outside of Hawai'i are including high-capacity charging stations above 100kW as well as multiple stations installed at charging hubs. State and Counties have policies and procurement plans to convert their fleets to electric. Electric conversion of private fleets will increase the electrical demand at charging locations and are not eligible for enrollment under Schedule EV-F.

No new customers were added to schedule EV-F in 2021. There is currently only one EV-F metered account on Maui at the Haiku Marketplace which serves a DCFC owned and operated by Greenlots. On Hawai'i Island there are three Schedule EV-F accounts, and there are none on O'ahu. Figure 35 below illustrates the adoption of the EV-F rate from inception through 2021. Further details of the 2021 statistics for EV-F adoption are provided in Appendix C.

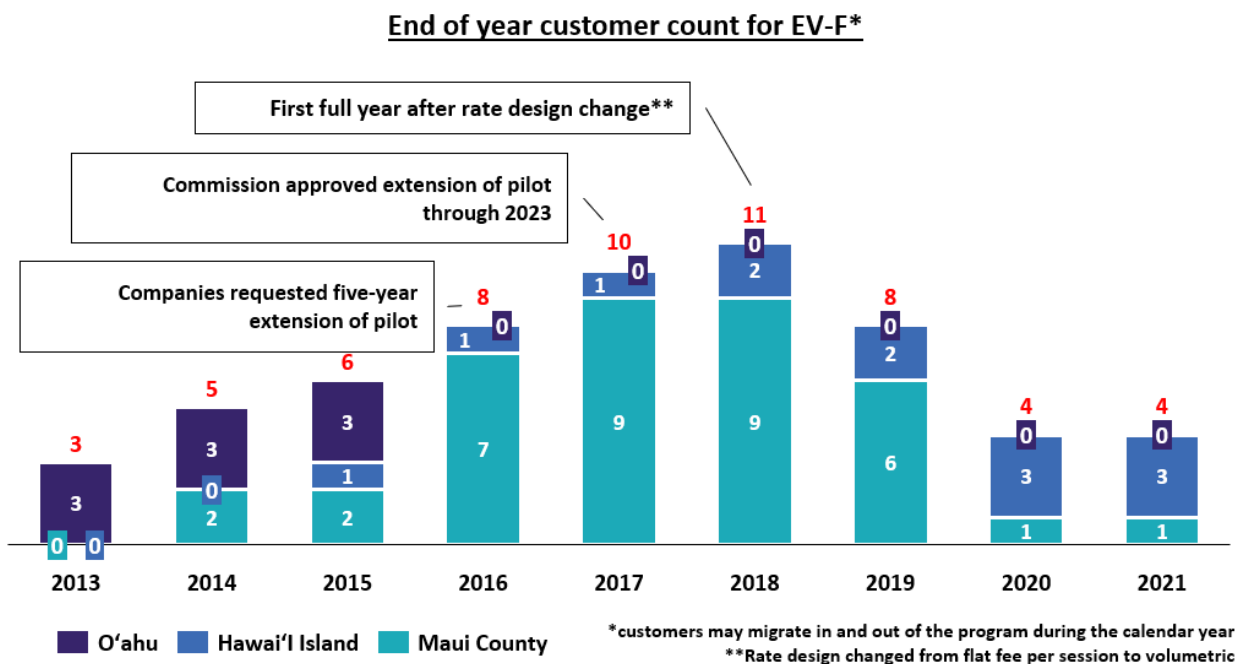


Figure 35: End of Year Customer Count for EV-F Pilot from Program Inception Through 2021

Despite the low adoption of Schedule EV-F, the Company continues to receive multiple inquiries from organizations interested in installing charging infrastructure in the State. These organizations have stated an interest in rate designs that can help alleviate demand charges for a period of time in order to facilitate the investment in infrastructure, especially high capacity charging that may be greater than 100 kW service. Taking action to meet market needs, Hawaiian Electric proposed a successor to EV-F in its *Application For Approval to Establish Electric Vehicle Tariffs for Schedule EV-J – Electric Vehicle Charging Service – Demand and Schedule EV-P – Electric Vehicle Charging Service – Large Demand, on a*

Pilot Basis submitted on September 30, 2020. In the application, the Company requested that upon approval of Schedules EV-J and EV-P, the Commission close EV-F to new enrollment on O’ahu, Hawai’i Island, and Maui³⁸ and allow existing EV-F customers to continue service under EV-F until the rate’s pilot period expires, or they transition to another rate, whichever comes first³⁹. The Commission approved Schedules EV-J and EV-P on a pilot basis on December 30, 2021⁴⁰ and the rates became effective March 18, 2022. Schedules EV-J and EV-P are discussed further in the *Recommendations of Revisions to Rate Structures* section of this report.

Summary of Cost and Revenue

In Figure 36 below, the revenue generated each month from Schedule EV-F for Hawaiian Electric’s three operating utilities is illustrated (O’ahu has no customers on Schedule EV-F). In 2021, \$28,483 in revenue was generated from customers under the Schedule EV-F program. Incremental costs to support the Schedule EV-F program, including the cost to enroll and bill customers, are minimal.

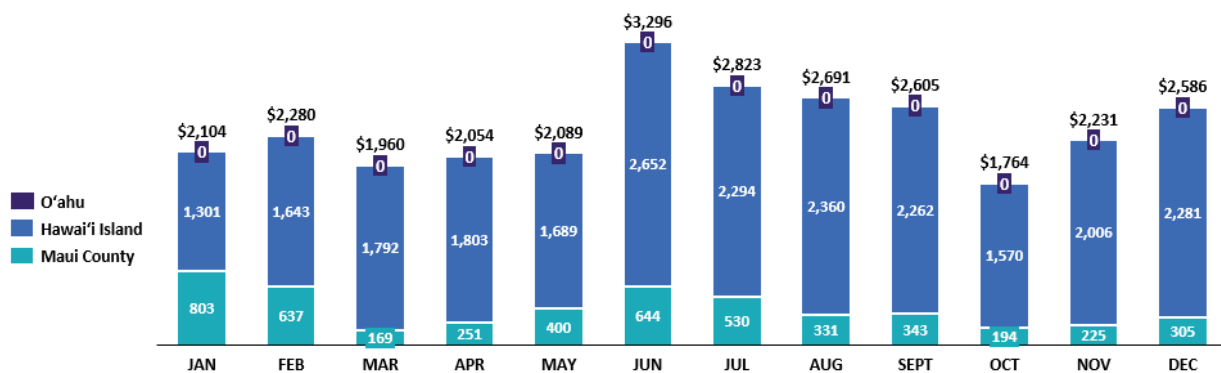


Figure 36: Revenues Collected from EV-F Customers in 2021

Subsidization by non-participating customers

Figure 37 below summarizes the total annual revenue from Schedule EV-F compared to the potential revenue generated if the charging facilities were billed under each utility’s respective Schedule J.⁴¹ The potential revenue under Schedule J for the year 2021 was \$23,310 higher than revenues from Schedule EV-F.

Schedule EV-F is a TOU rate with the lowest rate during the Mid-Day to incentivize charging during the peak solar generation hours of 9 AM to 5 PM. As this Mid-Day utilization increases in comparison to the

³⁸ The Company did not seek closure of EV-F for customers on the islands of Moloka’i and Lanai.

³⁹ Docket No. 2020-0152, Application For Approval to Establish Electric Vehicle Tariffs for Schedule EV-J – Electric Vehicle Charging Service – Demand and Schedule EV-P – Electric Vehicle Charging Service – Large Demand, on a Pilot Basis filed September 30, 2020 at 10.

⁴⁰ See Decision and Order No. 38157, issued on December 30, 2021 in Docket No. 2020-0152 (“D&O 38157”).

⁴¹ General Service Demand rate applicable to general light and/or power loads that exceed 5,000 kWh per month or exceed 25 kW three times within a twelve-month period but are less than 300 kW per month and supplied through a single meter.

On-Peak and Off-Peak hours, the difference between total Schedule EV-F revenue and the potential Schedule J revenue will widen. In 2021, 47 percent of all energy provided by Schedule EV-F was consumed during the Mid-Day, 26 percent during On-Peak and 27 percent during Off-Peak.

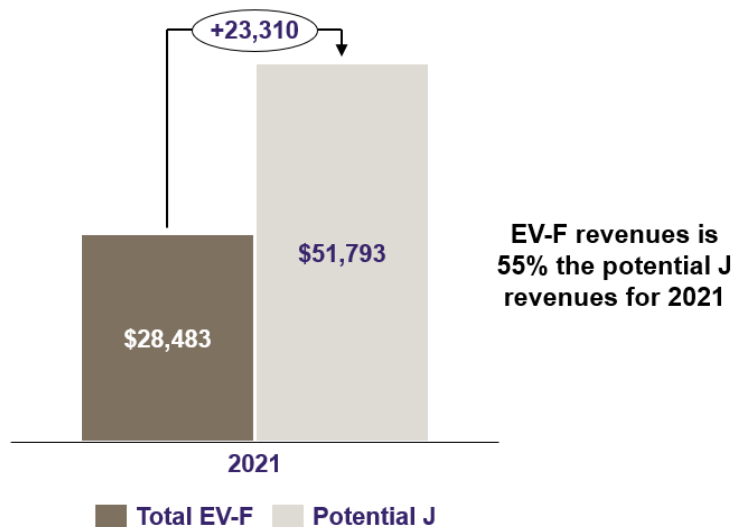


Figure 37: Comparison of Total EV-F Revenue and Potential Schedule J Revenue for 2021

Schedule EV-MAUI Tariff

Background

Maui Electric submitted its Revised Schedule EV-MAUI Tariff on August 30, 2019 and proposed four DCFC sites from the EVohana network that was previously owned and operated by the Maui Economic Development Board.⁴²

The revised Schedule EV-MAUI rates were 35-42% less than the corresponding rates that had previously been proposed for all time periods (i.e., Mid-Day, On-Peak, and Off-Peak), with the greatest percent reduction in rates for the Mid-Day period. The revised rate design incentivized charging during hours of solar generation, sent appropriate pricing signals to current and potential EV drivers, and was tailored for Maui’s specific grid needs.⁴³

The Commission approved Maui Electric’s revised Schedule EV-MAUI and accompanying proposal to own and operate four EV DCFC stations⁴⁴ and reiterated its approval of MECO’s request for deferred accounting treatment in light of MECO’s adoption of the shared savings mechanism set forth in D&O 36229.

⁴² Pursuant to D&O 36229 issued on March 22, 2019 in Docket No. 2018-0422.

⁴³ See D&O 36229 at 35-36.

⁴⁴ See D&O 36943 issued on January 10, 2020 in Docket No. 2018-0422. .

The EV-MAUI program launched in 2020, with the first charger installed and made available to EV owners on August 18, 2020 at the Pukalani Terrace Shopping Center (“PTC”), and three additional chargers installed in December 2020, at the Lahaina Aquatic Center (“LAC”), Piilani Village Shopping Center (“PVC”), and Queen Kaahumanu Center (“QKC”). These four stations were selected based on residential customer feedback, market pricing information, historic data, and forecasted charging network information. Additionally, the EV-MAUI charging stations increased access to public charging beyond the previous CHAdeMO-only charging ports under the EVohana program to be able to charge nearly 100% of full battery EVs (i.e., Teslas with adapters).

EV-MAUI DCFC Utilization

The EV-MAUI DCFC sites provide four of the seven available DCFC stations on the island of Maui. The other two sites consist of the EV-U DCFC station located at the Hawaiian Electric Kahului Office, and one station located at the Haiku Marketplace operated by a third-party charging provider. The total aggregate utilization of EV-MAUI DCFC stations for 2021 amounted to 161,309 kWh over 11,577 sessions. The monthly overall utilization for the EV-MAUI sites is shown below, by number of sessions in Figure 38 and by energy consumption in Figure 39.

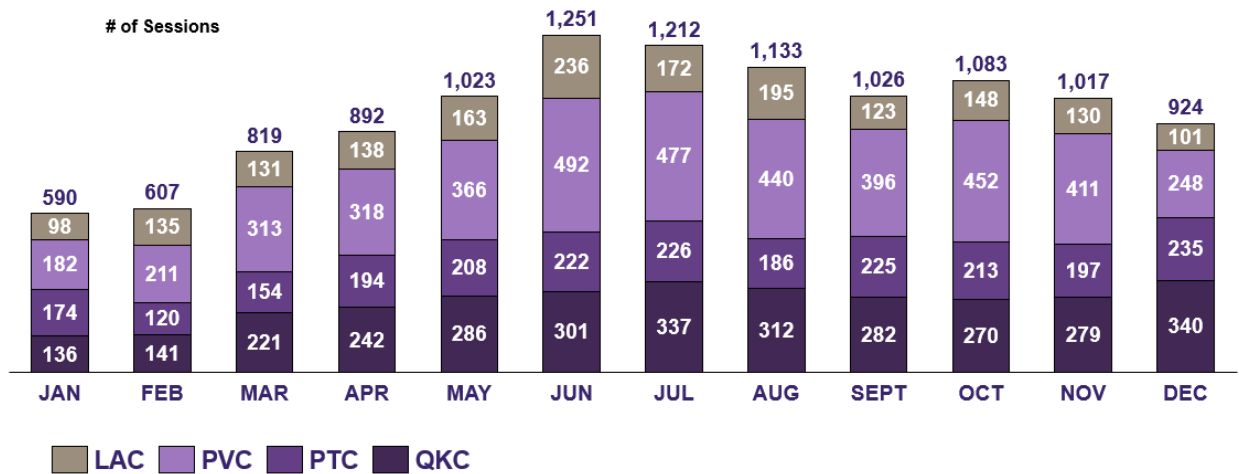


Figure 38: Monthly Number of Sessions in 2021 by DCFC Site for EV-MAUI

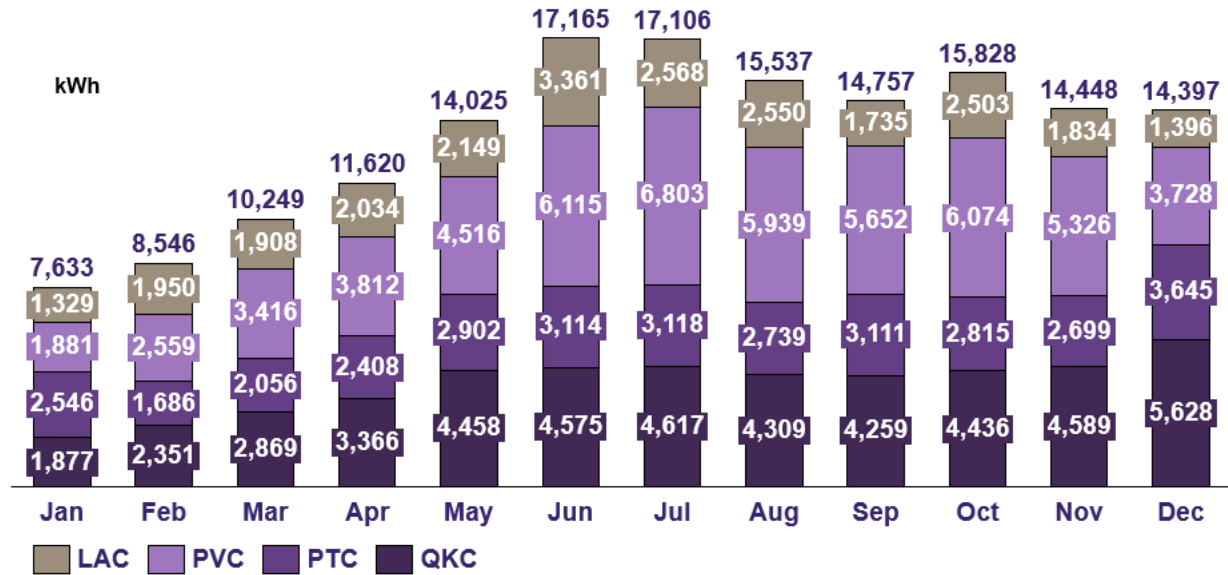


Figure 39: Monthly Summary of EV-MAUI chargers by Energy Consumed (kWh) for 2021

Market research from two surveys, analysis of historic utilization data, geographic diversity, and the Company’s Backbone Study were some of the criteria used in the selection of sites.⁴⁵ As shown in the usage summaries for each site, most of the charging is in the Mid-Day period. This may be mostly attributed to the large price difference with the least costs in the Mid-Day period. The TOU pricing per kWh for the EV-MAUI tariff is as shown below:

Off-Peak (10 PM to 9 AM)	Energy Charge - per kWh	38.3412¢
Mid-Day (9 AM to 5PM)	Energy Charge - per kWh	28.3412¢
On-Peak (5 PM to 10 PM)	Energy Charge - per kWh	40.3412¢

The start time of the charging session determines the applicable time-of-use period.

A summary of key metrics for EV-MAUI DCFC is provided in Figure 40 below, with time period utilization calculated using energy consumption (kWh) data for charging sessions initiated within the specified period. Following the table are individual discussions on the context and status of each charging station location.

⁴⁵ Revised Schedule EV-MAUI Tariff, Exhibit 2 at 14, footnote 37.

	Lahaina Aquatic Center	Pi'ilani Village Shopping Center	Pukalani Terrace Shopping Center	Queen Ka'ahumanu Center
% Utilization				
Off-Peak	12%	20%	13%	17%
Mid-Day	72%	58%	69%	66%
On-Peak	17%	22%	19%	17%
Avg Energy/Session (kWh)				
Off-Peak	15	14	14	16
Mid-Day	15	13	14	15
On-Peak	13	13	14	14
Avg Revenue/Session (\$)				
Off-Peak	\$5.71	\$5.23	\$5.22	\$6.15
Mid-Day	\$4.07	\$3.58	\$3.89	\$4.25
On-Peak	\$5.17	\$5.12	\$5.73	\$5.46
Avg Time/Session (min)				
Off-Peak	31	29	27	31
Mid-Day	31	28	27	31
On-Peak	26	29	28	29

Figure 40: Summary of Key Metrics for EV-MAUI DCFC in 2021⁴⁶

Lahaina Aquatic Center

The LAC charging station was installed in December 2020 and became available to the public on December 17, 2020. This DCFC provides critical access to fast charging to the West Maui community as well as drivers traveling in this area. There are several times a year when the two-lane highway (“Pali”) is shut down for hours due to reasons including vehicular accidents and brush fires, limiting access to other chargers. For EV drivers in West Maui this site is their only public DCFC option within 20 miles. Furthermore, during the pandemic, other EV Level II charging options were not available due to site and facility closures. The LAC DCFC serves the areas of Lahaina, Kahana, Napili and Kapalua and is open from 8 AM to 8 PM daily.

Most of the charging sessions at this location continue to be during the Mid-Day period. This result may be partially attributed to LAC’s business hours of 8 AM to 8 PM. In 2021, 72 percent of charging usage was initiated during the Mid-Day, 17 percent during the On-Peak, and 12 percent during the Off-Peak.

Pi'ilani Village Shopping Center

The PVC charging station was installed in December 2020 and commissioned on December 17, 2020. PVC is the only DCFC site open to the public in South Maui and serves the areas of Kihei and Wailea and

⁴⁶ Due to rounding of percentages to the nearest whole number, the sum for each charging station will not always equal 100 percent.

is accessible 24 hours per day, seven days per week. It is located at a large hub for shopping and restaurants. The PVC station was the highest utilized station for EV-MAUI in 2021.

In 2021, 58 percent of charging usage was initiated during the Mid-Day, 22 percent during the On-Peak, and 20 percent during the Off-Peak.

Pukalani Terrace Shopping Center

The PTC charger was the first of the EV-MAUI chargers to be installed. It was installed in August 2020 and commissioned on August 18, 2020. PTC is in Upcountry Maui and serves the areas of Pukalani, Makawao and Kula. It is accessible 24 hours per day, seven days per week although most of the PTC located businesses hours align with the Mid-Day period.

In 2021, 69 percent of charging usage was initiated during the Mid-Day, 19 percent during the On-Peak, and 13 percent during the Off-Peak.

Queen Ka`ahumanu Center

The QKC charger was also installed in December 2020 and commissioned on December 9, 2020. QKC is in Central Maui and serves the Kahului area and is accessible 24 hours per day, seven days per week. Under the previous EVohana program, the QKC location was the most utilized site in the entire EVohana network. In 2021, the QKC station was the second highest utilized next to the Piilani Village Shopping Center.

In 2021, 66 percent of charging usage was initiated during the Mid-Day, 17 percent during the On-Peak, and 17 percent during the Off-Peak.

Analysis of EV-MAUI Rate

Figure 41 below provides aggregate energy consumption by TOU period. As shown below, the Mid-Day period continues to be the most utilized charging period that is in-line with the lowest charging rates.

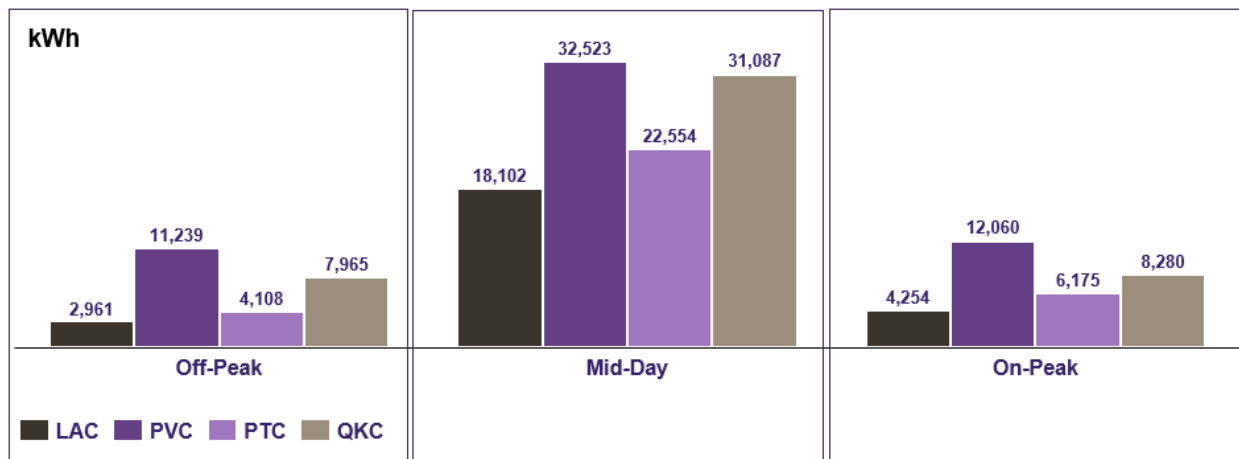


Figure 41: Aggregate Energy Consumption by Site and TOU Period for EV-MAUI in 2021

The percent share of energy consumption for each site by TOU period for 2021 is shown in Figure 42 below. The Mid-Day time period is the most utilized by each utility and on aggregate is 65% of all energy consumed in 2021 under Schedule EV-MAUI.

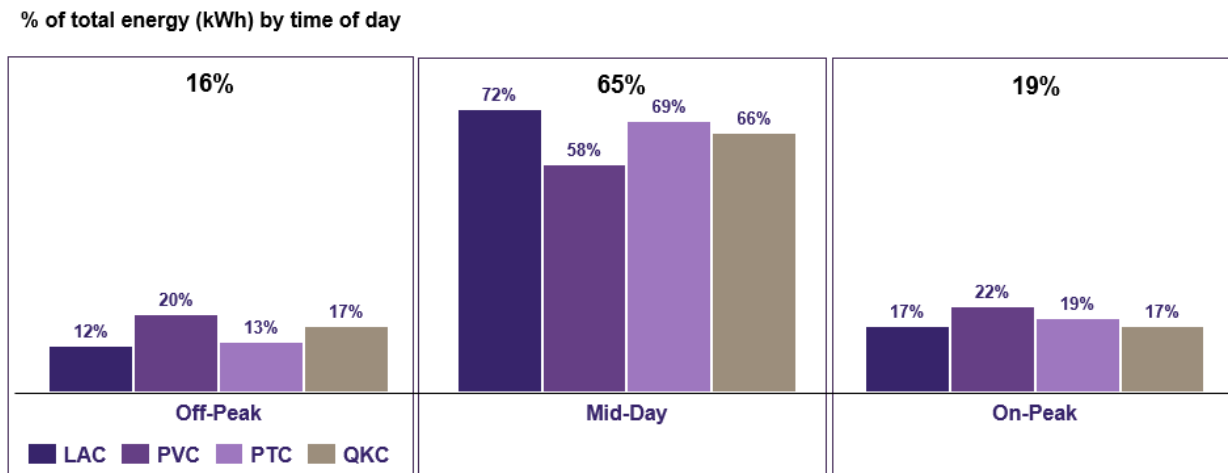


Figure 42: Percent of Energy Consumed by Site and TOU Period for EV-MAUI in 2021

Revenue and Operating and Maintenance Expenses

For transparency, operational costs are reported by reflecting incurred costs in a similar fashion to a third-party charge station operator. Therefore, the equivalent cost of electricity associated with charging station use, as well as volumetric transactional fees, is included in the reported O&M costs per site in this section. While the equivalent cost of electrical service is included as a cost of operation, it is not included as a cost to the overall program or as part of the Company’s electrical sales, since the Company cannot report revenue of electric sales to itself. Therefore, a reverse energy charge is applied to the program costs reported in Appendix D.⁴⁷

Figure 43 below illustrates the net values (revenue⁴⁸ less expenses)⁴⁹ for 2021 for each EV-MAUI site:

⁴⁷ The equivalent cost of electrical service (energy costs) is also excluded from O&M expenses in the calculation of the SSM.

⁴⁸ On a monthly basis, the Company undergoes a reconciliation process to assess net revenue owed by the DCFC network providers who collect payment from customers. The network provider submits a monthly report of session data including energy usage, billed amounts, and transaction fees. The Company then validates the data to determine actual amounts of revenue and fees. Accounting requires monthly data to be provided by the first business day following each month, so to meet such requirements, estimated monthly revenue and transaction fees based upon the previous month’s usage are accrued and then adjusted the following month when actuals are available.

⁴⁹A net positive effect occurs when revenues exceed O&M. A net negative effect occurs when revenues are less than O&M.

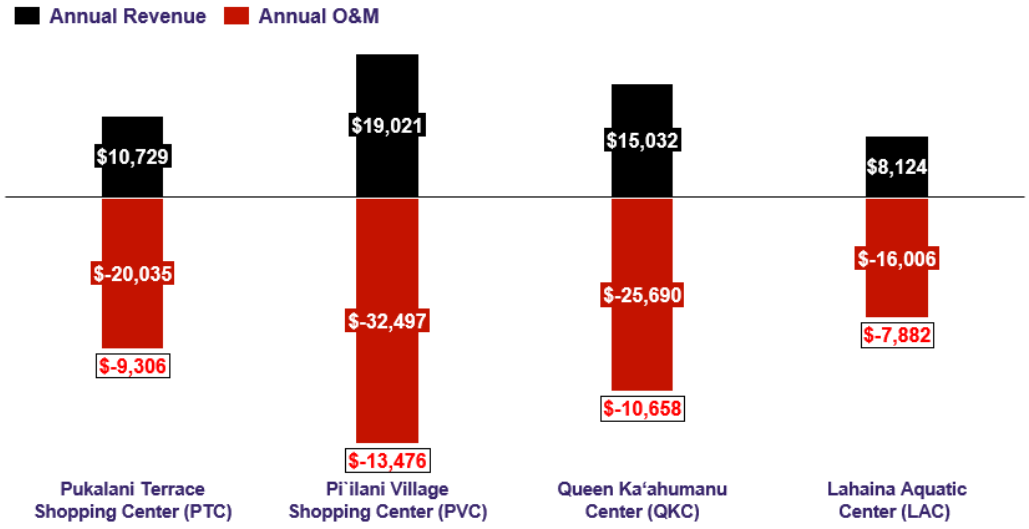


Figure 43: 2021 Annual Revenue, O&M and Net values for EV-MAUI Sites

Figure 44 summarizes the net values (revenue less expenses) in aggregate for the four EV-MAUI sites in 2021.

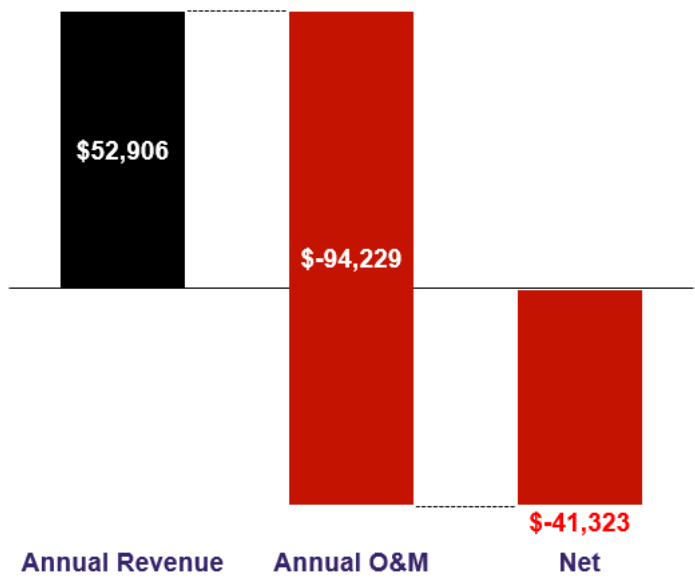


Figure 44: EV-MAUI Aggregate Annual Results for 2021

Deferred Operating and Maintenance Expenses

In Maui Electric’s Application for Approval to Establish Schedule EV-MAUI Electric Vehicle Fast Charging Service and Related Accounting Treatment filed on December 21, 2018 and resulting information request (“IR”) response PUC-MECO-IR-103 in Docket No. 2018-0422, the following O&M items were requested for deferral:

1. Fixed annual O&M for year:
 - a. Networking Plan;
 - b. Extended Warranty;
 - c. Routine Maintenance;
 - d. Unplanned Repair;
 - e. Tax rate of 4.712%

2. Variable annual O&M:
 - a. Transaction Fees

In D&O 36229, the Commission conditioned approval of Maui Electric's request for deferred accounting treatment upon implementation of a SSM, and noted its expectation that this SSM will incentivize Maui Electric to control costs and maximize revenues for the benefit of Maui Electric and its customers.⁵⁰

As noted in D&O 36229, the Commission anticipates that implementation of the SSM will require corresponding adjustments to existing cost recovery mechanisms to reconcile total expenses, revenues, and net costs.⁵¹ The Commission approved Maui Electric's request for deferred accounting treatment for the actual O&M expenses incurred before Maui Electric's next interim or final decision and order in Maui Electric's next rate case with a cap of \$180,000.⁵²

Total deferred O&M expenses for 2021 is \$15,796⁵³.

Summary of the Shared Savings Mechanism ("SSM")

In D&O 36229, the Commission conditioned its approval of Maui Electric's request for deferred accounting treatment upon implementation of a shared savings mechanism.

In D&O 36943, the Commission approved Maui Electric's proposed Revised Schedule EV-MAUI tariff as just, reasonable, and in the public interest provided implementation of the SSM.

The SSM is as follows:

For years 1 through 5, customers and MECO shall share in the net costs (i.e., the total expenses minus revenues) related to MECO's ownership and operation of the chargers on stepped-down basis as follows:

Year 1: 100% customers - 0% MECO

⁵⁰ See D&O 36229 at 30 ("The commission expects that implementation of the shared savings mechanism will provide incentives for [Maui Electric] to control costs and maximize revenues, for the benefit of [Maui Electric] and [Maui Electric]'s customers.").

⁵¹ D&O 36229 at 39, footnote 117.

⁵² See D&O 36229 at 33 ("For the purposes of the shared savings mechanism, annual O&M expenses shall be based on actual annual O&M expenses, capped at [Maui Electric]'s estimate of \$180,000."). \$180,000/8 sites = \$22,500 O&M expense cap per site.

⁵³ Inclusive of (\$2.74) in November overhead expenses which was reclassified to the deferred order in a correcting entry processed in February 2022.

Year 2: 80% customers - 20% MECO
 Year 3: 60% customers - 40% MECO
 Year 4: 50% customers - 50% MECO
 Year 5: 0% customers - 100% MECO

To the extent revenues exceed costs in the first four years, Maui Electric may retain the entirety of any net revenues (i.e., the profit). However, in consideration of the significant potential customer contribution to net costs in years one through four, beginning in year five, if revenues generated by the stations exceed the total expenses, thereby resulting in profit, such net revenues shall be shared between customers and Maui Electric as follows:

Year 5: 80% customers 20% MECO⁵⁴

Figure 45 below shows graphically the SSM and the allocation of costs and revenues between Maui Electric and customers for the EV-MAUI program:

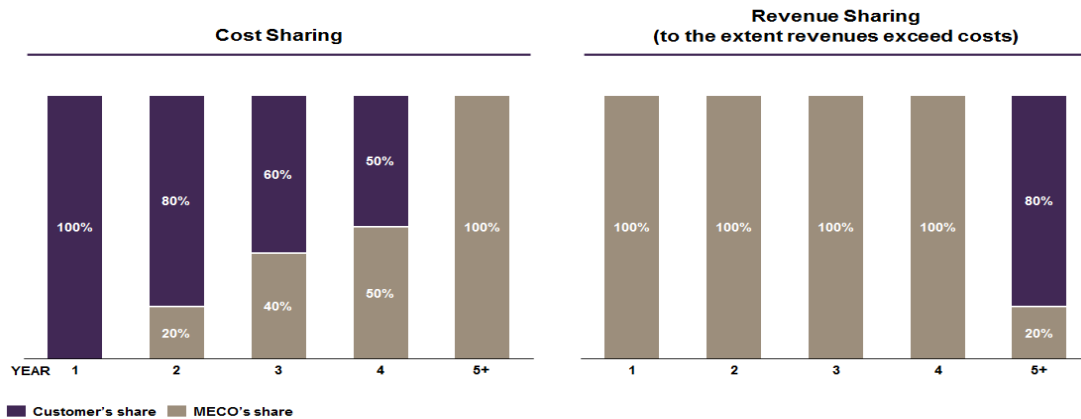


Figure 45: EV-MAUI Shared Savings Mechanism

Maui Electric's *Schedule EV-MAUI Tariff Annual Report* filed on March 31, 2021 in Docket No. 2018-0422 provided the EV-MAUI shared savings/cost mechanism calculation for each of the four EV-MAUI sites for Year 1 (calendar year 2020).⁵⁵ Since only Pukalani Terrace Center showed revenues that exceeded expenses in the first year, and Maui Electric is allowed to retain 100% of the profits in Year 1, there was no sharing of profits with the customers. For the other three sites (LAC, PVC and QKC), at the end of December 2020, project amounts had to be finalized to factor in straggling costs; as such the allowed return calculation was based on preliminary project amounts and the preliminary calculation resulted in net cost with no offsetting revenues. The installation of the fast chargers at these three sites was completed late in December 2020 and no revenue/ incremental expense accrual was recorded as there was no reasonable basis available at that time to determine the accrual. While costs greater than profit

⁵⁴ D&O 36229 at 31.

⁵⁵ The EV-MAUI SSM is calculated on a calendar year basis. The customer and company share of any cost/profit is calculated on a consolidated basis.

in Year 1 (2020) can be 100% allocated to ratepayers, the amounts were deemed immaterial, and Maui Electric has forgone recording a regulatory asset for the customers share of costs for Year 1 (2020).

Further, in Year 1 (2020), Maui Electric treated EV-MAUI revenues (other operating revenues) similar to EV-U revenues (other operating revenue) and thus included EV-MAUI revenues in adjusted revenues used in the calculation of its monthly RBA adjustment in accordance with D&O 31338 on Transmittal No. 13-07 (Schedules EV-U and EV-F).⁵⁶ As a result, Maui Electric's RBA balance as of December 31, 2020 was slightly understated by the amount of EV-MAUI revenues it had included in its RBA adjustment, to the benefit of the customers.

In Year 2 (2021), Maui Electric recognized that the treatment of EV-MAUI revenues should have conformed with the Commission's conditioned approval of Maui Electric's request for deferred accounting treatment upon implementation of the SSM.⁵⁷ Therefore, beginning in Year 2 (2021), the Company included EV-MAUI revenues in the SSM calculation as ordered in D&O 36229 and excluded EV-MAUI revenues from the determination of the monthly RBA adjustment to properly evaluate the performance of the EV-MAUI operation and share the O&M expenses, capital expenditures, and electric vehicle charging revenues between Maui Electric and its customers through the EV-MAUI SSM.⁵⁸

In Year 2 (2021), for purposes of the shared savings mechanism, EV-MAUI total consolidated revenues exceeded consolidated costs by approximately \$13,500. As Maui Electric is allowed to retain 100% of the profits in Year 2, there is no sharing of these net consolidated profits with customers. Therefore, there was no recording of a regulatory asset for Year 2 (2021).

Appendix E to this Annual Report is an excerpt from the Revised Schedule EV-MAUI Tariff⁵⁹ that contains the details of the financial model for the four sites, including the consolidated revenue sharing mechanism, bill impact and assumptions used for each site selected. Appendix F to this report includes the actual 2021 Shared Savings/Cost Mechanism Accounting Sheets for each of the four EV-MAUI sites.⁶⁰

Capital Costs

Figure 46 provides the capital costs of each EV-MAUI DCFC station installation to date. Utilization of the previous EVohana sites greatly reduced installation time and electrical infrastructure costs. Each site

⁵⁶ See D&O 31338 issued on July 1, 2013 on Transmittal No. 13-07 *Application for Approval to Establish Schedule EV-F – Commercial Public Electric Vehicle Charging Facility Service Pilot, and Schedule EV-U – Commercial Public Electric Vehicle Charging Service Pilot* and Transmittal No. 13-08 *Application to Modify Tariff Rule 15 – Supply to Separate Premises and Resale of Electric Energy (Consolidated)* at 25. As noted in D&O 31338, "all customers will benefit from any kWh sales under these rates" when other operating revenues, such as EV-U revenue, are included in adjusted revenue used for the determination of RBA adjustment.

⁵⁷ See D&O 36229 at 30 and D&O 36943 Ordering Paragraph 2 at 34.

⁵⁸ See D&O 36229 at 17.

⁵⁹ See Revised Schedule EV-MAUI Tariff, Attachment C at 1.

⁶⁰ Transmittal 22-01 *Notice to Update Target Revenue through the Major Project Interim Recovery Adjustment Mechanism and Calculation of 2021 Performance Incentive Mechanism and Shared Savings Mechanism Financial Incentives* filed on February 25, 2022, reported SSM data (MECO-WP-E-008) that had excluded some deferred overheads that should have been included in calculations contributing to the Allowed Return on Chargers line item. The impact is minimal and is properly reflected in the SSM accounting sheets included as appendices to this report.

took approximately three days to remove the previous EVohana chargers, install the new charger, and commission the new charger for public use. Average capital cost for the Company is \$71,481 per site. This is less than the average capital cost for EV-U of approximately \$175,068 per site, because the EV-MAUI chargers did not require engineering and infrastructure development to the same extent as a “green” site where no existing DCFC-compatible service exists.

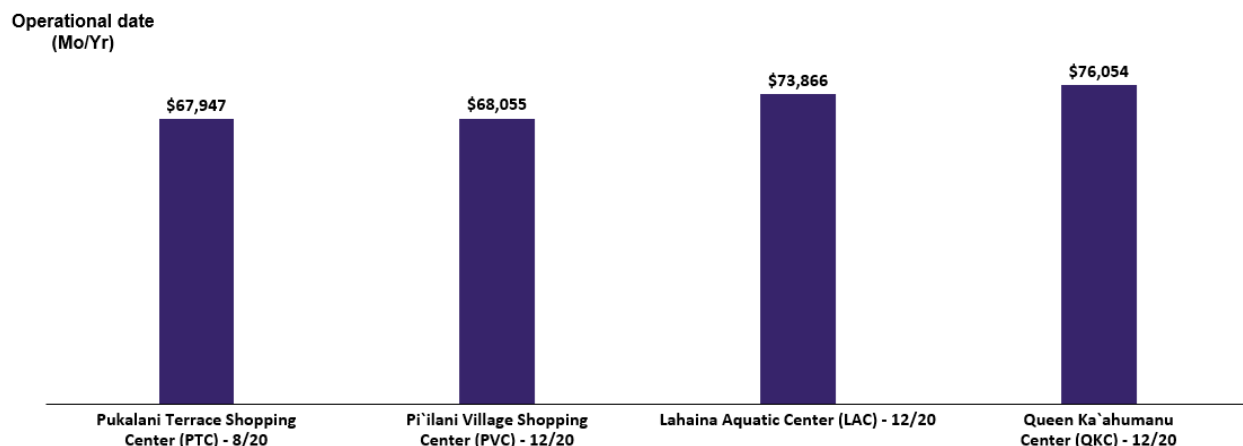


Figure 46: Associated Capital Cost for EV-MAUI DCFC in Order of Operational Date

Recommendation of Revisions to Rate Structures

On December 30, 2021, the Commission approved the Company’s *Application For Approval to Establish Electric Vehicle Tariffs for Schedule EV-J – Electric Vehicle Charging Service – Demand and Schedule EV-P – Electric Vehicle Charging Service – Large Demand, on a Pilot Basis*, a request for time-of-use commercial rates that provide lower prices for energy during the Mid-Day and demand charges lower than existing commercial electric rates.⁶¹ The effective date of these new rates, March 18, 2022, officially closes Schedule EV-F to new enrollment on O’ahu, Hawai’i Island and Maui. Enrollment is still open to customers on Moloka’i and Lana’i until the expiration of EV-F in June 2023.⁶²

On October 29, 2021, the Company filed its *Public Electric Vehicle Charger Expansion Project* in Docket No. 2021-0173 which requested a dramatic expansion of public charging offerings and a suite of changes to the existing public charging programs. This application proposed, among other things, revised EV-U tariffs designed to be roughly cost-competitive with gasoline and which encourage charging during the middle of the day when solar is abundant. Revisions include the removal of charging O&M costs and network fees from the EV-U rate design itself, and an update of the underlying basis of the rate to be the proposed EV-J rate for each Company.⁶³ The application also proposes to terminate Schedule EV-MAUI rate and have existing EV-MAUI meters included under the revised Schedule EV-U rate for Maui island when the revised Schedule EV-U takes effect. The Company contends that having a uniform rate offering for public charging at Company owned sites will improve customer experience, improve internal

⁶¹ See D&O 38157.

⁶² Tariff proposals for Moloka’i and Lana’i are under development and will be submitted prior to the expiration of EV-F.

⁶³ Docket No. 2021-0173, Public Electric Vehicle Charger Expansion Project filed October 29, 2021 at 31.

administrative efficiency, and increase utilization of all Company DCFC on the island of Maui.⁶⁴ The Company also proposed to continue the SSM for the four existing EV-MAUI charging stations until the end of their useful life or when they are replaced if prior to the end of their useful life. Once those stations are replaced, the Company proposes that the replacement chargers will no longer be subject to the SSM.⁶⁵

No Charge to Charge Program

On November 1, 2018, the Company launched a partnership with Nissan North America and Greenlots, Inc. to host the No Charge to Charge (“NCTC”) program in its service territory. The NCTC program provides drivers up to two years of complimentary fast charging through the Greenlots charging network, with a qualifying purchase or lease of a new Nissan LEAF on or before July 7, 2019 from LEAF-certified Nissan dealers in Hawai‘i.⁶⁶ The Companies were compensated and reflect revenue for NCTC sessions based upon the appropriate rate for the charge station. A summary of EV-U NCTC utilization in 2021 by location is illustrated by number of sessions in Figure 47 below and by energy consumption in Figure 48 below. A summary of EV-MAUI NCTC utilization in 2021 by location is illustrated by number of sessions in Figure 49 below and by energy consumption in Figure 50 below. The NCTC program ended on July 7, 2021 therefore the data reflects sessions from only the first half of the year. NCTC sessions comprised just under three percent of all sessions during the eligible time period in 2021.

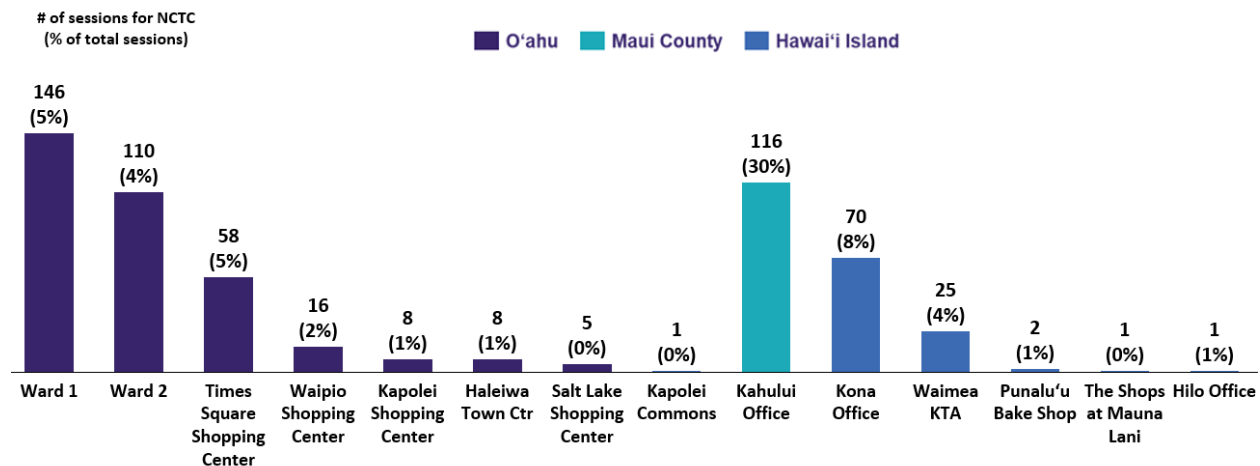


Figure 47: Number of 2021 NCTC Sessions by Station for EV-U

⁶⁴ Docket No. 2021-0173, Public Electric Vehicle Charger Expansion Project filed October 29, 2021 at 32.

⁶⁵ Docket No. 2021-0173, Public Electric Vehicle Charger Expansion Project filed October 29, 2021 at 32-33.

⁶⁶ <https://www.evgo.com/special-offers/nissan-no-charge-charge/>.

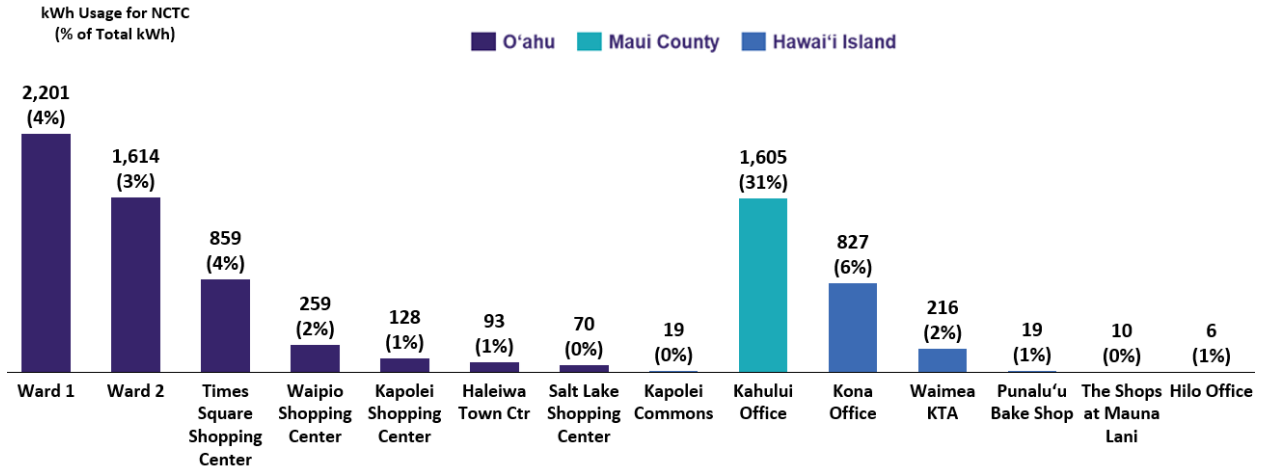


Figure 48: Energy Consumption of 2021 NCTC Sessions for EV-U

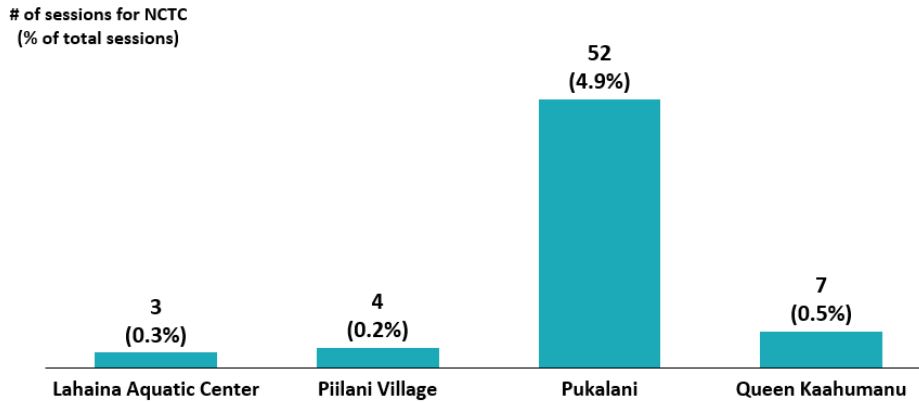


Figure 49: Number of 2021 NCTC Sessions by Station for EV-MAUI

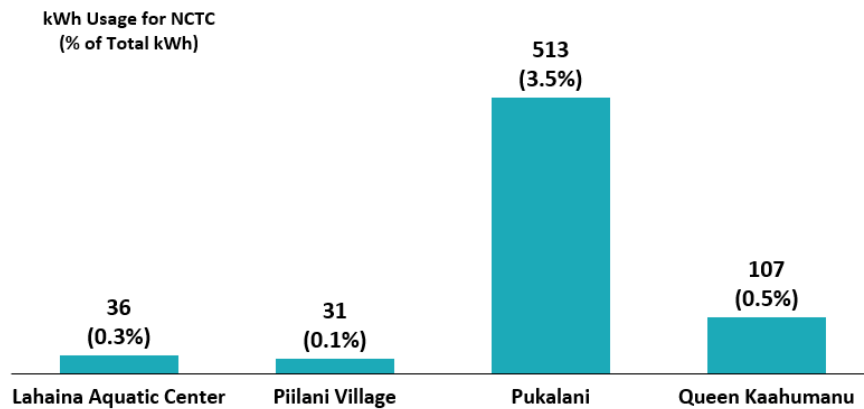


Figure 50: Energy Consumption of 2021 NCTC Sessions for EV-MAUI

Customer Engagement and Outreach (Roadmap Initiative #1)

As part of the Company's Roadmap, Initiative #1, customer engagement and outreach, is foundational and paramount to the success of the electrification of transportation in Hawai'i. The Company discovered that there is limited awareness, understanding, and enthusiasm for EVs among fleet operators, auto dealerships, and the public.⁶⁷ By working with partners⁶⁸ who share clean transportation objectives and who are willing to contribute their knowledge and expertise, the Company has leveraged the unique abilities of each partner and is hopeful that partners will continue to contribute financial and/or in-kind resources to this effort. Ultimately, the extent of the Company's action needed on outreach and education will depend on the ability of partners to assist.

Additionally, as part of the refiling of the EV-MAUI tariff, a Go to Market Plan was included.⁶⁹ This plan included the following components:

- Objectives to create awareness and increase use of the charge station;
- Audience identification to target communications;
- Product value to meet customer charging need;
- Channels for media and publicity; and
- Promotional opportunities

In 2021, the Company has contributed to the EV-U, EV-F, and EV-MAUI program education and outreach effort in the following ways:

- Keeping the Company's website up to date as a go-to resource for many customers seeking information about the Company's DCFC charge stations, including location, operation status (i.e., in-service or out-of-service), and applicable rates (ongoing)
- Press and social media alerts announcing the opening of new DCFC stations (ongoing)
- Speaking engagements at schools, workshops, member organizations, digital and broadcast television shows, and radio shows (ongoing)
- Key Account Manager outreach to potential DCFC site hosts (February – March)
- Virtual Booth at Building Industry Association of Hawaii's Home Building and Remodeling Show (March)
- E-newsletter to customers and key stakeholders (March)
- Online EV Driver Survey to capture feedback and lessons learned (June)
- DEH meeting to capture lessons learned from DCFC program (June)
- Fast Charger Site Hosts Survey to capture feedback and lessons learned (July)
- Charge up Hawaii – an interactive story map and survey to educate and collect broad input and feedback from customers and stakeholders (August – October) which included:
 - Email outreach to customers and EoT stakeholders
 - Press release to media outlets

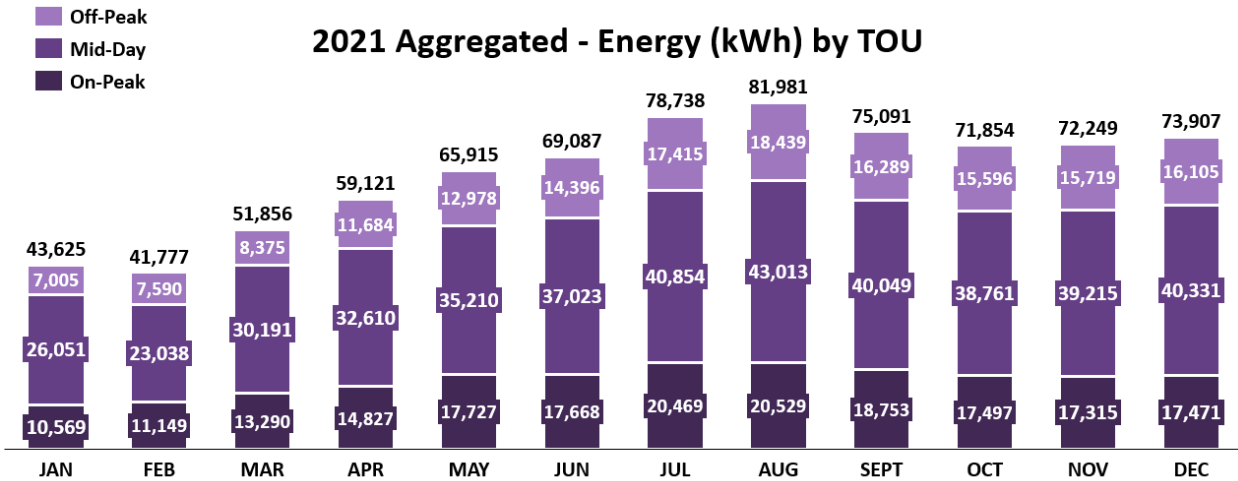
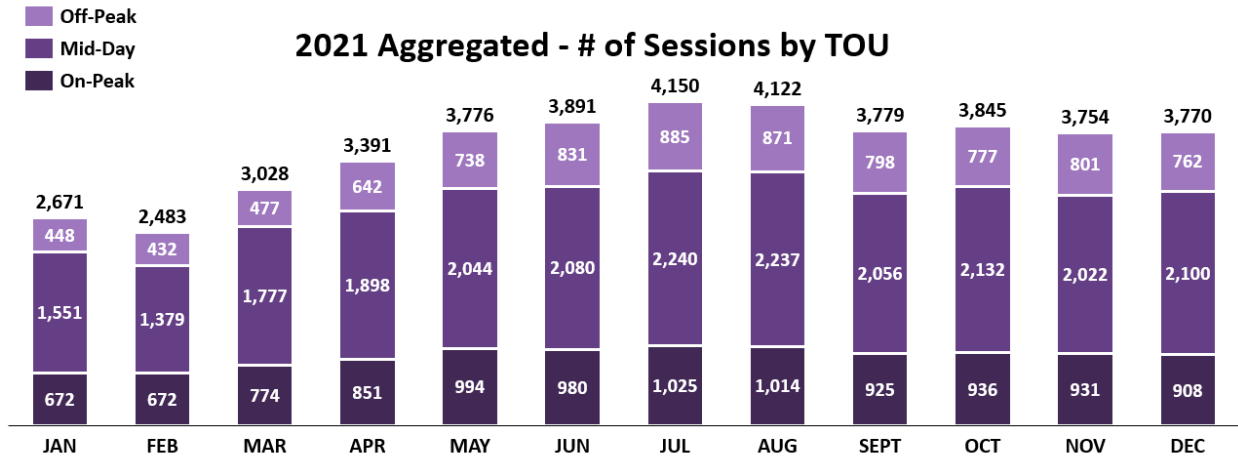
⁶⁷ Docket No. 2018-0135, Electrification of Transportation Strategic Roadmap filed March 29, 2018 at 69.

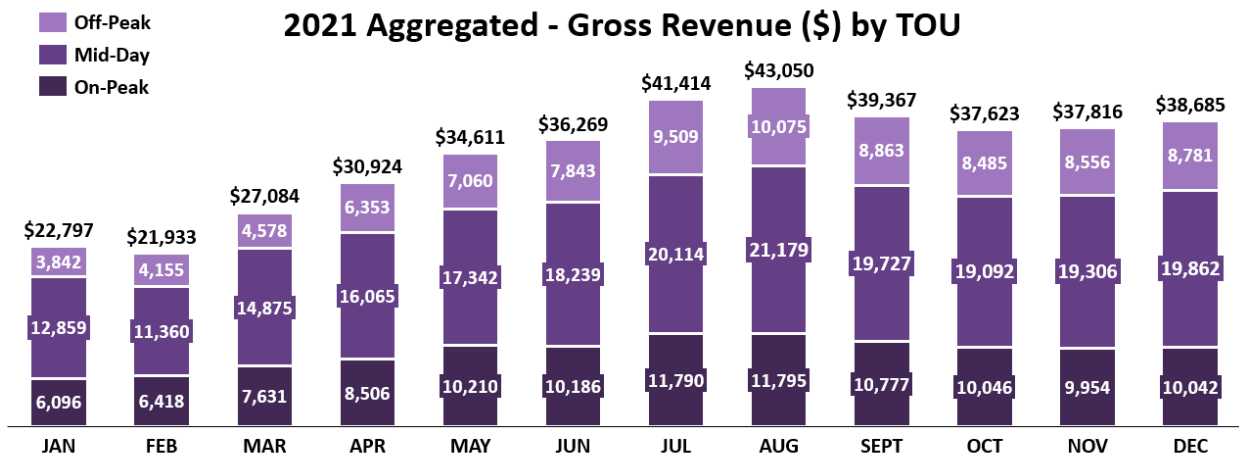
⁶⁸ Potential partners identified in the Roadmap: Drive Electric Hawai'i, Hawai'i Energy, NGOs, Automakers, Electrify America, and Dealerships and Hawai'i Automotive Dealer Association.

⁶⁹ See Attachment E to the Revised Schedule EV-MAUI Tariff, filed separately on September 16, 2019 in Docket No. 2018-0422.

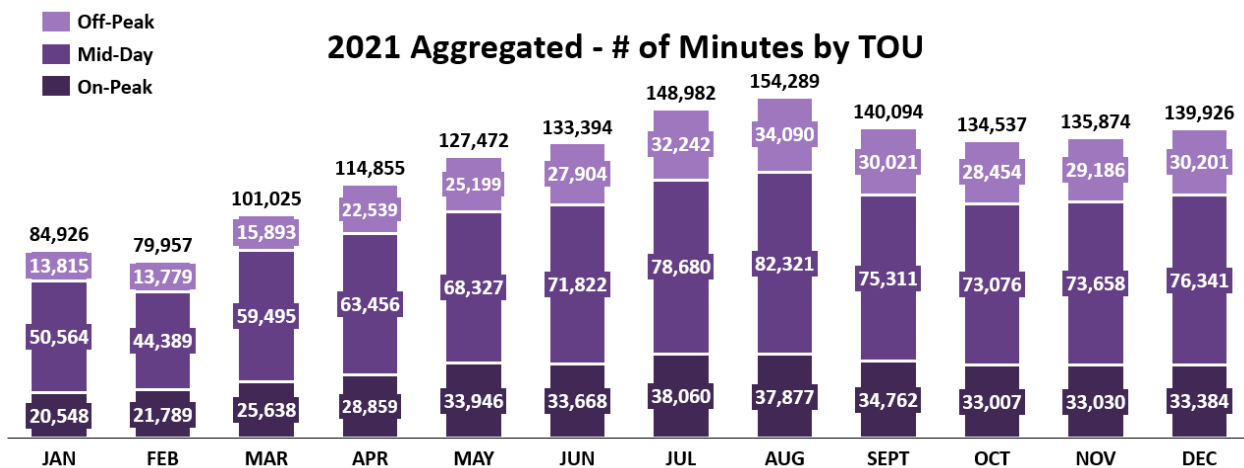
- Social media posts (LinkedIn, Facebook, Twitter, Instagram)
- Email outreach to neighborhood boards
- Email outreach and 1-1 tutorials to State Legislators
- Presentation to Energy Equity Hui
- Outreach to Hawaiian Electric LMI Advisory Council
- Sweepstakes promotion
- Engagement with Hawaiian Electric Company employees

Appendix A – Summaries of All EV-U Charging Locations by TOU period





Note: The aggregated gross revenue (\$) by TOU shown above is extracted from the network provider and does not represent booked annual revenue for the program.



Appendix B – Details for Schedule EV-U for 2021

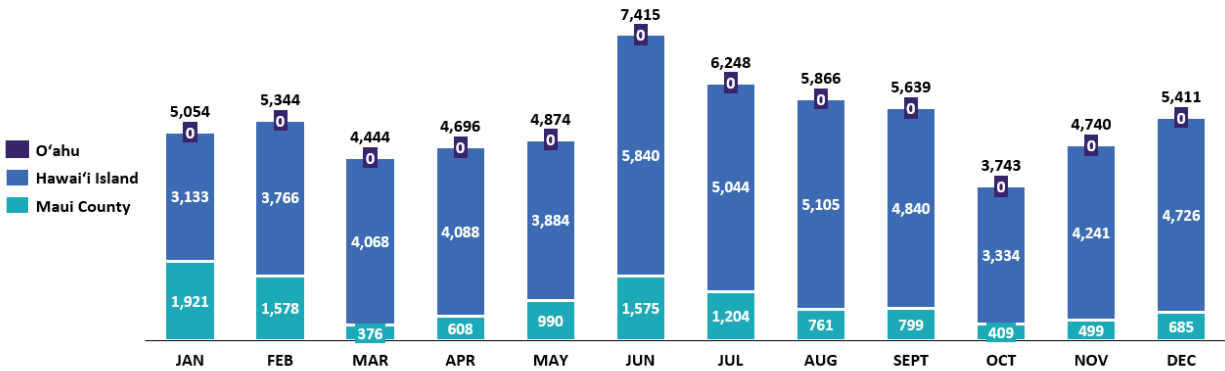
Details of Revenues, Expenses, and Capital for EV-U for 2021 and from inception of pilot program.

2021 Actuals:	Program Costs, January - December 2021			
	O'ahu	Hawai'i	Maui County	Totals
Revenue	\$ (367,627)	\$ (43,823)	\$ (9,997)	\$ (421,447)
Expenses				
Energy charge	\$ 238,153	\$ 38,210	\$ 12,246	\$ 288,609
Reverse energy charge	\$ (238,153)	\$ (38,211)	\$ (12,246)	\$ (288,610)
O&M				
Labor	\$ 73,521	\$ 988	\$ 1,540	\$ 76,049
Non-labor	\$ 154,191	\$ 41,972	\$ 14,131	\$ 210,294
Total Expenses	\$ 227,712	\$ 42,959	\$ 15,670	\$ 286,342
Capital costs, net of CIAC	\$ 480,365	\$ - *	\$ -	\$ 480,365
2021 PTD:	Program Costs, Pilot Inception Through December 2021			
	O'ahu	Hawai'i	Maui County	Totals
Revenue	\$ (877,660)	\$ (147,864)	\$ (26,678)	\$ (1,052,202)
Expenses				
Energy charge	\$ 622,586	\$ 129,791	\$ 42,136	\$ 794,512
Reverse energy charge	\$ (622,586)	\$ (129,791)	\$ (42,136)	\$ (794,513)
O&M				
Labor	\$ 812,652	\$ 8,086	\$ 46,141	\$ 866,880
Non-labor	\$ 415,787	\$ 79,991	\$ 64,883	\$ 560,660
Total Expenses	\$ 1,228,439	\$ 88,077	\$ 111,024	\$ 1,427,539
Capital costs, net of CIAC	\$ 2,622,795	\$ 1,139,622	\$ 116,276	\$ 3,878,692

Note: Reflected labor costs are direct labor costs only. Overhead costs are included in non-labor.

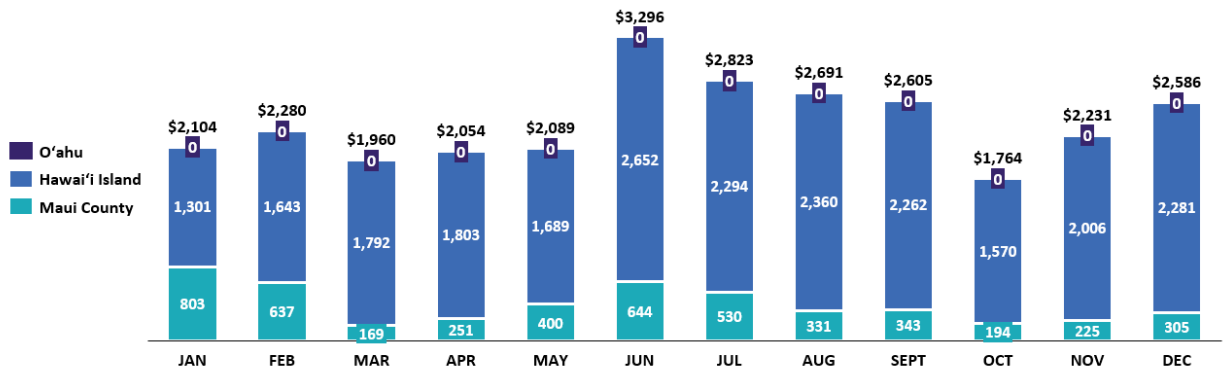
Appendix C – Details of Schedule EV-F for 2021

2021 Energy Consumption (kWh) by Service Territory



Note: Energy Consumption data is reflected in alignment with the bill month.

2021 Gross Revenue (\$) by Service Territory



Appendix D - Details for Schedule EV-Maui for 2021

Details of Revenues, Expenses, and Capital for EV-MAUI for 2021 and from inception of pilot program.

2021 Actuals:

Revenue	\$	(52,906)
Expenses		
Energy charge	\$	68,702
Reverse energy charge	\$	(68,702)
Deferred O&M	\$	15,799
* O&M	\$	9,728
Total Expenses	\$	25,527
Capital costs, net of CIAC	\$	3,321

2021 PTD:

Revenue	\$	(55,697)
Expenses		
Energy charge	\$	72,337
Reverse energy charge	\$	(72,337)
Deferred O&M	\$	16,186
* O&M	\$	9,728
Total Expenses	\$	25,915
Capital costs, net of CIAC	\$	285,922

*Note: "O&M" refers to all program related O&M expenses not eligible to be deferred. For 2021, all non-deferred O&M expenses were non-incremental labor. (\$2.74) in November overhead expenses was reclassified to the deferred order in a correcting entry processed in February 2022.

Appendix E - Revised Schedule EV-MAUI Tariff Attachment C

EV-MAUI
Consolidated - Queen Kaahumanu Center (QKC), Piilani Village Shopping Center (PVC), Pukalani Terrace Center (PTC) and Lahaina Aquatic Center (LAC)
Shared Savings Mechanism

	Year 1 2020	Year 2 2021	Year 3 2022	Year 4 2023	Year 5 2024	Year 6 2025	Year 7 2026	Year 8 2027	Year 9 2028	Year 10 2029	Year 11 2030	Year 12 2031	Year 13 2032	Year 14 2033	Year 15 2034
Expenses															
1 Incremental O&M expense	-	10,122	20,649	21,062	21,483	21,913	22,351	22,798	23,254	23,719	24,193	24,677	25,171	25,674	26,188
2 Amortization expense (Deferred O&M)	-	4,168	8,336	8,336	4,168	-	-	-	-	-	-	-	-	-	-
3 Depreciation expense	-	17,507	17,507	17,507	17,507	17,507	17,507	17,507	17,507	17,507	17,507	17,507	17,507	17,507	17,507
4 Allowed return on chargers	8,504	16,752	15,320	13,085	11,205	9,719	8,389	7,162	6,145	5,233	4,321	3,382	2,416	1,449	483
5 Federal Income Tax	1,671	3,293	3,011	2,572	2,202	1,910	1,649	1,408	1,208	1,029	849	665	475	285	95
6 State Income Tax	509	23	(65)	(197)	(309)	(398)	(478)	(551)	(612)	(667)	(722)	(772)	(815)	(845)	(87)
7 Total Expenses	10,685	51,865	64,760	62,364	56,257	50,651	49,417	48,324	47,502	46,821	46,434	45,713	45,002	44,302	43,320
8 Revenue Taxes	1,042	5,058	6,315	6,081	5,486	4,939	4,819	4,712	4,632	4,566	4,500	4,428	4,458	4,388	4,320
9 Total Expenses including Revenue Taxes	11,727	56,922	71,075	68,446	61,742	55,591	54,236	53,036	52,134	51,387	50,934	50,962	50,171	49,391	48,622
Revenues															
10 Charging Station Revenues	8,008	10,891	11,109	11,331	11,557	11,788	12,024	12,265	12,510	12,760	13,015	13,276	13,541	13,812	14,088
11 Revenues Total	8,008	10,891	11,109	11,331	11,557	11,788	12,024	12,265	12,510	12,760	13,015	13,276	13,541	13,812	14,088
NET COST/(PROFIT)	3,719	46,032	59,966	57,115	50,185	43,802	42,212	40,771	39,624	38,627	37,634	37,686	36,630	35,579	34,534
O&M Adjustment															
13 O&M Cap	-	45,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000
14 O&M above cap not recovered	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15 Revenue Taxes on the above cap O&M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16 Total non-recoverable O&M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NET COST/(PROFIT)	3,719	46,032	59,966	57,115	50,185	43,802	42,212	40,771	39,624	38,627	37,634	37,686	36,630	35,579	34,534
ADJUSTED FOR O&M CAP															
17 NET COST/(PROFIT)	3,719	46,032	59,966	57,115	50,185	43,802	42,212	40,771	39,624	38,627	37,634	37,686	36,630	35,579	34,534
Shared Savings Mechanism															
18 Customer Share Allocation of Cost	100%	80%	60%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
19 Customer Share Allocation of Profit	0%	0%	0%	0%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
20 Customer's share of Cost/(Profit)	3,719	36,825	35,980	28,558	-	-	-	-	-	-	-	-	-	-	-
21 MECO's share of Cost/(Profit)	-	9,206	23,987	28,558	50,185	43,802	42,212	40,771	39,624	38,627	37,634	37,686	36,630	35,579	34,534

Notes
* Includes 4 charging stations - Queen Kaahumanu Center (QKC), Piilani Village Shopping Center (PVC), Pukalani Terrace Center (PTC) and Lahaina Aquatic Center (LAC)

Line
1 2% escalation applied to O&M
4 Allowed return based on 9.30% ROE from MECO TY2018 Rate Case Dkt 2017-0150 Interim D&O No. 35631 (Exhibit A, dated 8/9/18).
5/6 Federal and State Income Taxes were included in the calculation of Net Cost/(Profit) in order to capture all costs of project expenditures.
12 Total expenses minus revenues results in "net costs," which may be a loss or a profit depending on whether total expenses exceed revenues.
13 Per D&O 36229, "For the purposes of the shared savings mechanism, annual O&M expenses shall be based on actual annual O&M expenses, capped at MECO's estimate of \$180,000/8 sites = \$22,500 O&M expense cap per site.
16 Per D&O 36229, "To the extent that annual O&M expenses exceed the cap of \$180,000, MECO may not recover such excess costs from customers."
18/19 Per D&O 36229, "For years 1 through 5, customers and MECO shall share in the net costs (i.e., the total expenses minus revenues) related to MECO's ownership and operation of the charges on a stepped-down basis. To the extent revenues exceed costs in the first four years, MECO may retain the entirety of any net revenues." However, beginning in year 5, if revenues generated by the stations exceed the total expenses, thereby resulting in a profit, such net revenues shall be shared between customers and MECO 80% customers/20% MECO.
21 MECO's share of Net Cost/(Profit) includes non-recoverable O&M.

**Appendix F - Actual 2021 EV-MAUI Shared Savings/Costs Mechanism
Accounting Sheets**

Shared Savings/Costs Mechanism
2021 Year 2

CONSOLIDATED
QKC, Piilani, Pukalani, Lahaina Aquatics

Queen Kaahumanu Piiilani Shopping Center Pukalani Terrace Center (PTC) Lahaina Aquatic Center 2021 Total

Expenses	Queen Kaahumanu	Piiilani Shopping Center	Pukalani Terrace Center (PTC)	Lahaina Aquatic Center	2021 Total
1 Incremental O&M expense	-	-	-	-	-
2 Amortization expense (Deferred O&M)	-	-	-	-	-
3 Depreciation expense (Capital)	4,863	4,528	4,532	4,927	18,849
4 Allowed return on chargers (Capital and Deferred O&M)	4,472	4,093	4,131	4,375	17,072
5 Federal Income Tax	-	-	-	-	-
6 State Income Tax	-	-	-	-	-
7 Total Expenses	9,335	8,621	8,663	9,302	35,921
8 Revenue Taxes	910	841	845	907	3,503
9 Total Expenses including Revenue Taxes	10,245	9,462	9,508	10,210	39,424
Revenues					
10 Charging Station Revenues	15,032	19,021	10,729	8,124	52,906
11	15,032	19,021	10,729	8,124	52,906
12 NET COST/(PROFIT)	(4,787)	(9,560)	(1,221)	2,086	(13,482)
O&M Adjustment					
13 O&M Cap	22,500	22,500	22,500	22,500	90,000
14 O&M above cap not recovered	-	-	-	-	-
15 Revenue Taxes on the above cap O&M	-	-	-	-	-
16 Total non-recoverable O&M	-	-	-	-	-
17 NET COST/(PROFIT) ADJUSTED FOR O&M CAP	(4,787)	(9,560)	(1,221)	2,086	(13,482)

Shared Savings Mechanism

- 18 Customer Share Allocation of Cost
- 19 Customer Share Allocation of Profit
- 20 Customers' share of Cost/(Profit)
- 21 MECO's share of Cost/(Profit)

80%
-
-
(13,482)

EV-Maui
Shared Savings/Costs Mechanism
2021 Year 2

Lahaina Aquatic Center
Plant add per PowerPlan 12/17/20, Project #MZ.005053.02

	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	2021 Total
Expenses													
1	-	-	-	-	-	-	676	-	(676)	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-
3	411	411	411	411	411	411	411	411	411	411	411	411	4,927
4	376	373	370	367	364	362	360	357	358	363	365	362	4,375
5	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-
7	786	783	781	778	775	772	1,446	768	92	773	775	772	9,302
8	77	76	76	76	76	75	141	75	9	75	76	75	907
9	863	860	857	854	851	848	1,587	843	101	849	851	847	10,210
	Total Expenses												
	215	697	793	568	682	721	1,485	554	793	254	994	367	8,124
	215	697	793	568	682	721	1,485	554	793	254	994	367	8,124
	Revenues Total												
	648	162	63	286	169	126	102	289	(692)	595	(143)	480	2,086
NET COST/(PROFIT)													
O&M Adjustment													
13	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875	22,500
14	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total non-recoverable O&M												
17	648	162	63	286	169	126	102	289	(692)	595	(143)	480	2,086
	NET COST/(PROFIT) ADJUSTED FOR O&M CAP												

**EV-Maui
Shared Savings/Costs Mechanism
2021 Year 2**

Piliani Shopping Center
Plant add per PowerPlan 12/23/20, Project #MZ.005053.03

	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	2021 Total
Expenses													
1													
2							863		(863)				
3	377	377	377	377	377	377	377	377	377	377	377	377	4,528
4	344	342	340	339	338	336	336	336	340	343	347	352	4,093
5													
6													
7	721	719	718	716	715	714	1,577	714	(146)	720	724	730	8,621
8	70	70	70	70	70	70	154	70	(14)	70	71	71	841
9	792	790	787	786	785	783	1,730	783	(160)	790	795	801	9,462
	Total Expenses												
	513	877	1,023	1,377	1,313	1,731	2,633	2,465	1,677	1,790	2,138	1,484	19,021
	513	877	1,023	1,377	1,313	1,731	2,633	2,465	1,677	1,790	2,138	1,484	19,021
Revenues Total													
10													
11													
12	279	(88)	(236)	(591)	(528)	(947)	(903)	(1,681)	(1,838)	(1,000)	(1,343)	(683)	(9,560)
NET COST/(PROFIT)													
O&M Adjustment													
13	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875	22,500
14													
15													
16													
	Total non-recoverable O&M												
17	279	(88)	(236)	(591)	(528)	(947)	(903)	(1,681)	(1,838)	(1,000)	(1,343)	(683)	(9,560)
NET COST/(PROFIT) ADJUSTED FOR O&M CAP													

EV-Maui
Shared Savings/Costs Mechanism
2021 Year 2

Pukalani Terrace Center (PTC)
Plant add per PowerPlan 10/7/20, Project #MZ.005053.04

	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	2021 Total
Expenses													
1 Incremental O&M expense	-	-	-	-	-	-	1,010	(147)	(863)	-	-	-	-
2 Amortization expense (Deferred O&M)	-	-	-	-	-	-	-	-	-	-	-	-	-
3 Depreciation expense (Capital)	378	378	378	378	378	378	378	378	378	378	378	378	4,532
4 Allowed return on chargers (Capital and Deferred O&M)	349	347	346	345	344	343	342	341	344	343	342	346	4,131
5 Federal Income Tax	-	-	-	-	-	-	-	-	-	-	-	-	-
6 State Income Tax	-	-	-	-	-	-	-	-	-	-	-	-	-
7 Total Expenses	726	725	724	723	722	721	1,730	571	(142)	721	719	724	8,663
8 Revenue Taxes	71	71	71	70	70	70	169	56	(14)	70	70	71	845
9 Total Expenses including Revenue Taxes	797	796	794	793	792	791	1,899	627	(156)	791	790	795	9,508
Revenues													
10 Charging Station Revenues	1,456	835	256	750	876	1,067	1,978	4	805	1,059	818	826	10,729
11	1,456	835	256	750	876	1,067	1,978	4	805	1,059	818	826	10,729
12 NET COST/(PROFIT)	(659)	(39)	539	43	(84)	(277)	(79)	623	(961)	(268)	(28)	(31)	(1,221)
O&M Adjustment													
13 O&M Cap	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875	22,500
14 O&M above cap not recovered	-	-	-	-	-	-	-	-	-	-	-	-	-
15 Revenue Taxes on the above cap O&M	-	-	-	-	-	-	-	-	-	-	-	-	-
16 Total non-recoverable O&M	-	-	-	-	-	-	-	-	-	-	-	-	-
17 NET COST/(PROFIT) ADJUSTED FOR O&M CAP	(659)	(39)	539	43	(84)	(277)	(79)	623	(961)	(268)	(28)	(31)	(1,221)

EV-Maui
Shared Savings/Costs Mechanism
2021 Year 2

Queen Kaahumanu
Plant Add date per PowerPlan 12/17/20. Project #MZ.005053.01

	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	2021 Total
Expenses													
1	-	-	-	-	-	-	863	-	(863)	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-
3	405	405	405	405	405	405	405	405	405	405	405	405	4,863
4	381	378	376	373	371	369	368	366	369	371	373	376	4,472
5	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-
7	786	784	781	779	776	775	1,636	771	(89)	776	779	782	9,335
8	77	76	76	76	76	76	160	75	(9)	76	76	76	910
9	863	860	857	854	852	850	1,796	847	(96)	851	855	858	10,245
	Total Expenses												
	586	873	849	1,026	1,200	1,858	1,463	1,472	1,328	1,334	1,533	1,511	15,032
	586	873	849	1,026	1,200	1,858	1,463	1,472	1,328	1,334	1,533	1,511	15,032
	277	(13)	8	(172)	(348)	(1,008)	333	(625)	(1,426)	(482)	(679)	(653)	(4,787)
Revenues													
10	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875	22,500
11	-	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-	-
17	277	(13)	8	(172)	(348)	(1,008)	333	(625)	(1,426)	(482)	(679)	(653)	(4,787)
NET COST/(PROFIT) ADJUSTED FOR O&M CAP													