State of Hawaii

Department of Business, Economic Development, and Tourism
Report to the Hawaii State Legislature

# Act 164: Working Group
Regarding requests to the board of directors of an association of apartment owners, condominium association, cooperative housing corporation, or planned community association regarding the installation of electric vehicle charging systems

*Prepared by the State Energy Office within the State of Hawaii Department of Business, Economic Development, and Tourism Hawaii with assistance by the Legislative Reference Bureau*

*December, 2015*

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# 1 INTRODUCTION

The purpose of this report is to present the findings and recommendations of the Working Group established by Act 164, Session Laws of Hawaii 2015,[1] to examine the issues regarding requests to the board of directors of an association of apartment owners, condominium association, cooperative housing corporation, or planned community association (collectively referred to in this report as multiple unit dwellings (MUDs)) for the installation of electric vehicle charging systems.[2] Additionally, this report recommends that Hawaii promote the use of electric vehicles (EVs) in Hawaii through improving electric infrastructure in MUDs.[3]

## 1.1 Hawaii Clean Energy Goals

Hawaii relies on imported fossil fuels for ninety-five percent of its energy needs, making Hawaii the most petroleum-dependent state in the United States.[4] [5] This reliance results in the highest electricity prices in the United States.[6] Hawaii's dependence on petroleum makes Hawaii's economy vulnerable to world events well outside of its control. In 2008, the State established the Hawaii Clean Energy Initiative as a means of addressing and minimizing the State's reliance on fossil fuels.[7] A commitment of the Hawaii Clean Energy Initiative is to move Hawaii from dependence on imported fossil fuels to reliance on the State's abundant renewable clean energy sources.[8] This year, the State increased its commitment to energy self-reliance to an unprecedented level in the United States: one hundred percent renewable energy by 2045.[9]

[1] See Appendix 4.6 for copy of Act 164, Session Laws of Hawaii 2015.
[2] See Appendix 4.2 for definition of and information about charging systems.
[3] See Appendix 4.2 for definition of and information about electric vehicle.
[4] Hawaii Clean Energy Initiative, http://energy.gov/oe/services/electricity-policy-coordination-and-implementation/state-and-regional-policy-assistanc-2.
[5] U.S. Energy Information Administration, https://www.eia.gov/state/analysis.cfm?sid=HI.
[6] *Id.*
[7] Energy Agreement Among the State of Hawaii, Division of Consumer Advocacy of the Department of Commerce & Consumer Affairs, and Hawaiian Electric Companies. October 2008.
[8] *Id*.
[9] Section 269-92, Hawaii Revised Statutes.

## 1.2 Electric Vehicles in Hawaii

As of November 2015, 3,919 Hawaii drivers selected EVs as their primary mode of transportation, a twenty-seven percent increase from November 2014.[10] EVs account for 0.38 percent of all passenger vehicles in Hawaii.[11]

The U.S. Energy Information Administration ranks Hawaii in the top three states in the nation for number of EVs registered in the state,[12] and Navigant Research anticipates Hawaii exceeding 30,000 EV registrations by 2020.[13] The International Council on Clean Transportation projects Hawaii sales of EVs to account for one in every ten vehicles sold in 2030, with an estimated 43,000 EVs on the road.[14]

The Working Group views the adoption and widespread deployment of EVs as a key approach towards reducing Hawaii's dependence on fossil fuels. While playing a role in the State achieving independence in the energy sector, EVs could add significantly to peak electricity demand, necessitating an increase in the amount and cost of energy generation and/or storage required to balance customer needs with energy supplies. However, if the electricity load caused by EVs is managed efficiently, the State could experience grid benefits that lower costs and decrease greenhouse gas emissions while boosting total electricity consumption.

As of the publishing of this report, Hawaii leads the nation in the number of public EV charging locations per capita. [15]

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[10] Department of Business, Economic Development, and Tourism Monthly Energy Trends, November, 2015. http://files.hawaii.gov/dbedt/economic/data_reports/energy-trends/Energy_Trend.pdf.

[11] In November 2015, there were 1,039,023 registered passenger vehicles in the State. The number of passenger gasoline vehicles 1,004,614, which was 96.7% of total passenger vehicles. The number of passenger hybrid vehicles in the state in this month was 21,064, accounting for two percent of the total passenger vehicles. Department of Business, Economic Development, and Tourism Monthly Energy Trends, November 2015. http://files.hawaii.gov/dbedt/economic/data_reports/energy-trends/Energy_Trend.pdf.

[12] http://www.greencarreports.com/news/1095929_california-washingon-lead-all-other-states-in-electric-car-ownership-rates.

[13] Hawaii State Energy Office, Act 164 - Working Group Meeting Presentation, October 1, 2015.

[14] Hawaii Clean Energy Initiative Transportation Energy Analysis, 2015. http://www.hawaiicleanenergyinitiative.org/wp-content/uploads/2015/02/Final_TransEnergyAnalysis_8.19.15.pdf.

[15] EV Stations Hawaii and Alternative Fuels Data Center.

**Registered EVs and Public Charging Systems in Hawaii, November 2015**

| County | Electric Vehicles | Level 2 Charging System[16] Ports | DC Fast Charging System[17] Ports | Total Ports |
|---|---|---|---|---|
| **Oahu** | 2,957 | 252 | 10 | 262 |
| **Maui** | 655 | 67 | 35 | 102 |
| **Hawaii** | 172 | 56 | 2 | 58 |
| **Kauai** | 135 | 33 | 1 | 34 |
| **Total Statewide** | **3,919** | **408** | **48** | **456** |

## 1.3 Promoting Electric Vehicles through Legislation

Adopting legislation that promotes EV use has been one method employed effectively in advancing Hawaii's EV market. Specifically, the following "carrots and sticks" to incentivize the use of EVs have been adopted:

- Requirement that public accommodations with at least one hundred parking spaces available for use by the general public have at least one parking space exclusively for EVs and be equipped with an EV charging system;[18]
- Free EV parking at state and county facilities, including free metered parking, with certain limits, for vehicles with specialized EV plates;[19]
- Exemption from High Occupancy Vehicle (HOV) lane restrictions for vehicles with specialized EV plates;[20]

[16] EV charging station that uses 208/240VAC electricity through a hardwired or heavy-duty plug connection.
[17] A commercial-grade 277/480VAC 3-phase device that uses direct current (DC) to recharge an EV.
[18] Section 291-71(a), Hawaii Revised Statutes.
[19] Act 168, Session Laws of Hawaii 2012.
[20] *Id.*

- Conditional rights to install EV charging systems in MUDs;[21] and
- Penalties for non-EVs parked in spaces designated and marked as reserved for EVs.[22]

## 1.4 Advancing EV Use via Charging Access in Multiple Unit Dwellings

An important consideration for encouraging the use of EVs and deployment of EV charging systems in Hawaii is the installation of EV charging systems in MUDs, including condominiums, cooperative housing, and community associations. An estimated thirty-eight percent of Hawaii's housing units are MUDs.[23] Increasing the availability of EV charging systems located at MUDs could enable roughly one-third of households to own EVs.[24]

Since 2010 and pursuant to section 196-7.5, Hawaii Revised Statutes, Hawaii has prohibited MUDs from preventing a unit owner from placing an EV charging system on or near the owner's parking stall at the MUD.[25] The law allows for MUD associations to adopt rules that reasonably restrict the placement and use of EV chargers, but states that associations cannot prohibit the installation or use of EV charging systems altogether.[26] While MUDs are restricted from preventing property owners in their dwelling from installing EV charging systems, owners do not have an affirmative right to install EV charging systems.[27] Furthermore, there are no statutory or administrative procedures that address the installation of EV charging systems that are shared among multiple units in a single MUD.

According to information obtained by the Working Group, section 196-7.5, Hawaii Revised Statutes, has not sufficiently addressed the installation of EV chargers in MUDs. Additional information received by the Working Group identified significant installation costs, limited electrical capacity, insufficient parking availability, and uncertainty surrounding billing

[21] Section 196-7.5, Hawaii Revised Statutes.
[22] Section 291-72, Hawaii Revised Statutes.
[23] United States Census Bureau, http://quickfacts.census.gov/qfd/states/15000.html.
[24] Hawaii Clean Energy Initiative Transportation Energy Analysis Final Report, August 2015.
[25] *See note 21.*
[26] *Id.*
[27] *Id.*

management as specific challenges to installing EV charging systems in MUDs.

## 1.5 Act 164, Session Laws of Hawaii 2015: Working Group

The 2015 Hawaii State Legislature passed Senate Bill No. 1316, Conference Draft 1, which was enacted as Act 164, Session Laws of Hawaii 2015. Act 164 established a Working Group within the Department of Business, Economic Development, and Tourism, to:

(1) Address the installation of EV charging systems at MUDs;
(2) Examine the issues regarding requests to MUDs for the installation of EV charging systems; and
(3) Report findings and recommendations, including any proposed legislation, to the Legislature.

As the Legislature considered the various versions of Senate Bill No. 1316 in the first three legislative committees, some of the requirements of the bill included:

(1) A MUD's board of directors, upon receipt of a request to install an EV charging system, to make a decision within sixty days to approve the request, or approve the request with restrictions;
(2) Documentation on current MUD transformer load capacity; and
(3) A current energy audit for the MUD.

Testimony on the various versions of Senate Bill No. 1316 expressed concerns about vague and ambiguous language, financial liability, equity and fairness issues, lack of enforcement, and how the legislation could be subject to unnecessary litigation.[28]

[28] http://www.capitol.hawaii.gov/Session2015/Testimony/SB1316_TESTIMONY_ENE_02-17-15.PDF.
http://www.capitol.hawaii.gov/Session2015/Testimony/SB1316_SD1_TESTIMONY_CPN_02-24-15.PDF.
http://www.capitol.hawaii.gov/Session2015/Testimony/SB1316_SD2_TESTIMONY_EEP_03-17-15_.PDF.
http://www.capitol.hawaii.gov/Session2015/Testimony/SB1316_HD1_TESTIMONY_CPC_03-30-15_.PDF.

Based on the numerous concerns expressed in testimony and with an intent to continue the conversation regarding the installation of EV charging systems in MUDs, the House Committee on Consumer Protection and Commerce deleted the contents of Senate Bill No. 1316, House Draft 1, and inserted language that would be used in Conference Draft 1 to establish the Act 164 Working Group.

### *1.5.1 Working Group Members*

Act 164 designated the following individuals or their designees as members of the Working Group:[29]

- The Director of Business, Economic Development, and Tourism, to serve as the chairperson of the Working Group;
- The Director of Commerce and Consumer Affairs;
- One representative from the Division of Consumer Advocacy;
- The Chair of the Committee on Consumer Protection and Commerce of the House of Representatives;
- The Chair of the Committee on Commerce and Consumer Protection of the Senate;
- The Chair of the Committee on Energy and Environmental Protection of the House of Representatives;
- The Chair of the Committee on Energy and Environment of the Senate;
- Two representatives of the Community Associations Institute;
- Two representatives from Hawaii EV Partnership;
- One representative from the Building Industry Association of Hawaii; and
- One representative from the Hawaiian Electric Companies.

[29] See Appendix 4.5 for list of Working Group member names.

### *1.5.2 Working Group Meetings*

The Working Group held four meetings in 2015, on October 1, October 28, November 16, and December 18. The first meeting focused on education and information exchange. The second meeting focused on sharing of information and data and a discussion of solutions and potential recommendations. The third meeting further explored and identified solutions and recommendation specifics including proposed legislation. The fourth meeting provided the opportunity for members to discuss and vote on the final report.[30]

# 2 EXAMINING ISSUES

The Working Group was tasked to examine issues regarding requests to the board of directors of a MUD for the installation of EV charging systems. The Working Group examined the issues regarding installation requests by reviewing the challenges of installing EV charging systems in existing MUDs and the construction considerations of potential EV charging systems in new MUDs. The Working Group also examined mainland trends of EV charging system installation and the importance of integrating workplace and public EV charging during non-peak electricity use times to avoid overburdening the State's electric grid, and to match electric charging with renewable energy supply.

## 2.1 Installing EV Charging Infrastructure in Existing MUDs

The Working Group focused the majority of its examination on issues relating to requests for installation of EV charging systems in existing MUDs. As stated previously, an estimated thirty-eight percent of Hawaii's housing units are in existing MUDs.[31] The challenge of installing a single EV charging system in an existing MUD can be substantial, and at times impossible, for a multitude of reasons. A flow chart was presented by the Hawaii State Energy Office to highlight

[30] See Appendix 4.4 for Working Group meeting minutes.
[31] According to CoStar Group, statewide apartment properties make up 2,454 properties with an estimated 50,000 units. Statewide Condos and Co-ops account for 809 properties with an estimated 73,500 existing units.

the complexity of challenges that EV drivers may encounter when trying to install an EV charging system at an existing condominium.[32] This flow chart served as a model to examine the challenges that may be faced by a MUD, and highlights the fact that there is no one-size-fits-all solution to addressing the challenges of installing an EV charging system in a MUD. Specifically, challenges examined by the Working Group include:

(1) EV driver requests to a MUD board;
(2) Electric infrastructure capacity and parking facility limitations
(3) Costs associated with installation and operation.

### *2.1.1 EV Driver Requests to a MUD Board*

In most installation scenarios in MUDs, the EV driver will seek consent or guidance from the building management before proceeding with installation. Although the building management is statutorily prohibited from altogether preventing an EV driver from installing an EV charging system in or near a parking stall of the unit that they own, management delays to approval or cooperation can arise due to a variety of issues.[33] The Working Group identified the following as issues that can defer or prevent EV charging installations:

(1) Frequency and quorum requirements of MUD board meetings;
(2) The need to incorporate EV specifications into MUD association rules;
(3) Overall uncertainty of allowing installation of charging systems; and
(4) Concerns relating to costs, liability, equity, and charging system ownership and management.

An additional delay in management approval or cooperation may arise if the EV driver, whether a unit owner or renter, does not have an assigned parking spot, or is not the owner of the land

[32] See Appendix 4.3 for flow chart.
[33] In examining these issues, the Working Group recognizes that not all MUDs deny requests for EV charging station installations. The Working Group did not extensively examine the scope of management denials.

where the vehicle is parked.

### *2.1.2 Electric Infrastructure Capacity and Parking Facility Limitations*

Challenges to installing EV charging systems may arise from the limitations of a building's electrical capacity and the design of its parking facilities.

#### *2.1.2.1 Electrical Capacity and Equipment Upgrades*

Industry representatives identified issues pertaining to capacity constraints of a building owned transformer and other electrical equipment[34] as the primary shortfall for installing EV charging systems in existing MUDs.[35] [36] Most of Hawaii's existing MUD buildings were not designed with numerous EV charging systems in mind, and MUDs can lack the electrical capacity necessary to accommodate such EV charging infrastructure.[37] A power recording/feeder and service study[38] based upon circuit and load calculations in the National Electrical Code or connected load assessment could be conducted to determine if existing building electrical distribution and capacity is adequate and available in a MUD.[39] If electrical distribution and capacity is deemed limited, then upgrades may be required for the building owned or utility owned transformer, switchboards or switchgears, and other electrical infrastructure. As an alternative, applying energy efficiency retrofits to existing MUDs is recognized as a mechanism to potentially increase a MUD's available electrical capacity. Incorporating efficiency measures to existing buildings may free up additional capacity needed to install some EV charging infrastructure.[40]

[34] MUDs commonly own dedicated transformers which only service the building. Utility owned transformers generally will service an area larger than a single MUD. Unless noted, electrical capacity concerns discussed in this section refer to the building owned transformer and other electrical equipment.
[35] In some cases, due to increased electrical demand, a utility service upgrade involving the replacement of the transformer and/or conductors that serve the building up to the common point of connection (typically the utility revenue meter) may be required. When a service transformer upgrade is required, Hawaiian Electric will replace the transformer at no cost to the customer. However, the costs of certain ancillary provisions (such as a new and larger concrete pad for the larger transformer) are borne by the customer.
[36] Working Group Meeting Discussion, October 1, 2015.
[37] The average age of Hawaii's MUD market is approximately forty years.
[38] See Appendix 4.2 for definition of and information about power recording/feeder and service studies.
[39] See National Electrical Code (NEC) Article 220.
[40] All electrical work requires permitting and inspection by the local authority having jurisdiction.

Further, efforts to obtain permission from an MUD to make the infrastructure upgrades necessary to increase electrical capacity may be impeded by financial constraints and liability or equity concerns for both the EV driver and MUD.

#### *2.1.2.2 Parking Facility Size and Assigned Parking*

Most MUDs did not plan for EV growth in the original construction plans, and consequently did not design parking facilities to accommodate EV charging systems. EV charging systems can be a challenge to install because of limited physical space in a MUD's parking facility.

Additionally, most MUDs have assigned parking spaces for residents, while some MUDs provide common area parking provided for additional vehicles or guests. Some MUDs may be willing and able to accommodate an EV driver's request for guaranteed access to charging by installing a charging system in their assigned parking space, while other MUDs may find common area shared chargers a more efficient option. Installing charging systems in common parking areas can allow several residents to share a charging system. However, a disadvantage of shared charging includes the need for scheduling and coordination among EV drivers. In addition, some MUDs may not have sufficient common area parking available to accommodate EV charging infrastructure.[41]

#### *2.1.2.3 Parking Spot Proximity to Electric Infrastructure*

Since most MUDs did not anticipate planning for EV growth in the original construction, adequate electrical capacity or infrastructure in parking facilities was not incorporated. Identifying a suitable EV charging system site location within a MUD parking facility is a critical factor in successful installation. The charging system's proximity to sufficient electrical distribution and power is a central component to minimizing installation costs. If the EV driver's parking space is far from an electrical service access point or a utility meter, then installation

[41] http://www.pevcollaborative.org/sites/all/themes/pev/files/docs/MUD_Guidelines4web.pdf.

costs, primarily due to trenching, may increase.

### *2.1.3 Costs Associated with Installation and Operation*

Installation of each EV charging system in a MUD is a unique scenario, resulting in a wide range of total project costs. Both up-front and post-installation costs associated with the installation of EV charging systems may be significant impediments for MUDs and EV owners.

#### *2.1.3.1 Up-Front Costs for Installing EV Charging Systems*

High up-front costs of equipment and installation can impede the build-out of EV charging systems.[42] There are many components and complexities that are considered when calculating the cost of EV charging system installation. Primary cost factors include:

(1) The purchase price of an EV charging system;
(2) The actual installation cost for the charging system;
(3) Whether the MUD has adequate wiring and electrical capacity; and
(4) The distance between the electrical point of interconnection, any desired charging site, and other construction requirements.

Hawaii industry representatives state that Hawaii EV charging system installation cost averages are higher than for the U.S. mainland, primarily due to material shipping costs and labor, resulting in twenty to thirty percent higher costs.[43] Installations in Hawaii are more complex due to limited space and power available for expansion. Mainland buildings typically offer larger footprints, helping to minimize installation cost and complexity. Prices vary considerably: reported MUD Level 2 EV charging system installation costs have ranged from $4,000 to $25,000 and included estimates as high as $100,000. A relatively simple EV charging system

[42] Rocky Mountain Institute, What's the true cost of EV Charging Stations. http://www.greenbiz.com/blog/2014/05/07/rmi-whats-true-cost-ev-charging-stations.
[43] Cost estimates provided by: Hawaii EV Partnership, represented by EV Structure; and industry representatives, Boss Electric and A-1-Alectrican.

installation typically costs $6,000 to $8,000 per system. However, these figures do not include consultant and engineering fees that could cost an additional $3,000 to $5,000. Level 2 charging system equipment costs range from just under $500 to well over $7,000. While a Level 1 charging system installation and equipment is generally less costly than a Level 2, obsolete breaker or electrical equipment and charging system location or parking stall proximity (trenching needs) can still inflate installation costs.[44] [45]

#### *2.1.3.2 Post-installation Costs: EV Charging and System Maintenance*

Once installation of an EV charging system is completed at a MUD, MUDs and EV drivers face unique considerations regarding billing issues to recover electricity use costs associated with the EV charging system. Depending on the number and location of charging systems, electricity use costs could be divided among all MUD residents, or among the individual drivers using the charging systems. Some MUDs may be willing to make a special billing arrangement between MUD management and an EV driver, such as predetermining a specified amount for additional electricity costs. Other MUDs may seek to recover costs via itemized real-time billing, as some charging system network software can manage billing and reservations. Lastly, sub metering has been recognized as an effective tool to measure and calculate individual EV driver electricity usage and associated costs.[46] Each of these strategies can help reconcile the difference between the cost for individual use of the EV charging system and the total impact on energy billing for the entire MUD. Currently, sub meters are available and deployed in Hawaii[47] by third-party vendors and operators. However, some MUDs are not willing to agree to third-party sub meter installation, citing concerns regarding potential disputes over billing discrepancies.[48]

[44] Cost figures provided should be noted as a rough estimate of Hawaii costs.
[45] Level 1 charging stations use a standard 110/120-volt alternating current (VAC) three-prong wall outlet, while Level 2 charging stations use a 208/240VAC outlet which requires a hardwired or heavy-duty plug connection.
[46] See Appendix 4.2 for definition of and information about sub meters.
[47] Current Hawaii law pertaining to sub meters allows AOAOs to provide sub metering or individual meters at the request of unit owners so that they can control their units' electric bill. The law only applies to condominiums.
[48] Hawaii Energy currently offers rebates for sub meters that meet a specified revenue standard.

Additionally, MUDs and EV drivers may need to pre-determine any post-installation maintenance and liability costs.

## 2.2 New MUD Construction Planning for EV Charging Systems

Working Group members and meeting attendees representing building and MUD industries agreed that incorporating EV charging infrastructure in the design and construction of new buildings will reduce the cost of providing EV charging infrastructure.

### *2.2.1 Building Codes*

The Working Group heard representatives explain that energy building codes can encourage the MUD market's transition to energy efficient buildings. When building codes are amended, such as when an energy efficiency requirement is implemented, the MUD market drives a demand for the necessary equipment and design integration into construction plans to meet the amended code.

#### *2.2.1.1 Hawaii Energy Building Code*

In 2015, the Hawaii State Building Code Council passed the International Energy Conservation Code (IECC), the latest national building code which includes a tropical climate code. The code will be considered through a public hearing process, resulting in rule adoption and incorporation within the Hawaii Administrative Rules. Within the next year, Hawaii's counties will proceed with the ordinance adoption process. Although the 2015 code does not include EV charging system guidelines, it is anticipated that EV charging infrastructure requirements will be incorporated into the 2018 national building code.[49]

[49] The next time the national IECC code will be updated is in 2018.

#### *2.2.1.2 Mainland EV Charging Infrastructure Energy Building Code Developments*

The State of Washington, State of California, New York City, and other regions across the nation are starting to incorporate EV charging infrastructure within their respective energy building codes.[50] The Washington State Building Code Council has proposed that new buildings serving MUDs and workplaces be required to provide EV charging infrastructure where parking is provided and to design electrical rooms to accommodate EV charging infrastructure.[51] The California Building Code requires new construction to be wired for EV charging systems beginning in 2015.[52]

## 2.3 Utility and Charging System Industry "Make Ready" Programs

Major mainland utilities have deployed EV charging infrastructure programs, including working partnerships to demonstrate public infrastructure programs, providing time of use (TOU) rates and meter options, developing residential EV procedures, and planning for infrastructure enhancements.[53] In California, proposed utility programs for MUD, public, and workplace EV charging are pending regulatory approval.[54]

The EV charging system industry has coined the term "make ready," which refers to infrastructure and costs needed to prepare an existing building to install an EV charging system. A recent trend proposed by mainland utilities is to cover costs and installation upgrades, as determined by the site host, needed to "make ready" an existing building and recover such associated costs through utility rate recovery mechanisms. Utility programs provide the

[50] EV-Ready Codes for the Built Environment, Electric Vehicle Supply Equipment Support Study. https://www.nyserda.ny.gov/-/media/Files/Programs/ChargeNY/EV-Ready-Codes-for-the-Built-Environment.pdf
[51] Washington State Electric Vehicle Action Plan, http://www.wsdot.wa.gov/NR/rdonlyres/28559EF4-CD9D-4CFA-9886-105A30FD58C4/0/WAEVActionPlan2014.pdf
[52] http://www.hcd.ca.gov/codes/calgreen/docs/calgreen-report-to-legislature-2014.pdf.
[53] California Municipal Utilities Association, Los Angeles' Department of Water and Power, Pacific Gas & Electric Company, Sacramento Municipal Utility District, San Diego Gas & Electric, Southern California Edison.
[54]V Quarterly Discussion Webinar - Multi-Unit Dwellings and EV Infrastructure https://cleancities.energy.gov/webinars/60

opportunity to establish quantifiable rate payer benefits such as requiring the site host to participate in potential load management, TOU rates, or demand response technology.

## 2.4 Integrated EV Charging

The Working Group examined the impact of increased EV charging on the State's overall electric load. EVs are considered a "flexible" addition to the load because they spend a significant amount of time in various locations, such as at home, at the workplace, or at large-scale commercial parking structures. The Working Group considered how the charging of EVs only during peak electricity use times or within a condensed area could overburden the electric grid. With appropriate EV charging infrastructure in place, EVs can be timed to charge at periods that best support the integration of renewable energy and do not overburden the electric grid, such as during the middle of the day when solar generation is at its peak or during the middle of the night when loads are low but wind turbines are still generating.

In the recent Distributed Energy Resources Phase 1 decision, the Public Utilities Commission (PUC) directed The Hawaiian Electric Company, Inc. (HECO) to develop a TOU rate for residential customers that encourages customers to shift load to the middle of the day, when solar energy production is highest.[55] The PUC also directed HECO to include its proposed EV TOU rates in the Distributed Energy Resources Phase 1 docket, with the same guidance regarding encouraging load during the middle of the day.[56] While the middle of the day has been targeted as a period when EV charging can potentially provide the greatest benefit to the electric grid, it does not necessarily align with the time periods during which most EVs are parked at MUDs. In most cases, typical EV owners would not utilize daytime charging at MUDs, except for weekends and holidays[57] because most EVs would be parked at a workplace during the day. HECO's proposed EV TOU rates are still pending PUC approval, and can be updated or modified as part of a larger programmatic offering by the utility in the future. As the electric

[55] Decision & Order No. 33258 in Docket No. 2014-0192, filed October 12, 2015.
[56] Decision & Order No. 33279 in Docket No. 2015-0342, filed September 25, 2015.
[57] Weekends and holidays represent roughly thirty percent of the days in a year.

grid evolves to become interdependent upon non-utility factors, such as transportation and customer-sited generation, it is important to design charging infrastructure that meets the needs of EV owners, thereby enabling a seamless transition to electric drive transportation. A combination of locations as well as a mix of types of charging infrastructure (Level 1, Level 2 and direct current (DC) fast chargers) will ultimately support the needs of all EV drivers.

# 3 RECOMMENDATIONS & FINDINGS

Given the positive impact that increased EV usage can have toward the State's renewable energy goals, and the percentage of the State's population that resides in MUDs, the Working Group acknowledges the merit of options that may assist MUDs in solving challenges associated with the installation of EV charging systems. Accordingly, the recommendations and findings of the Working Group towards providing such assistance are as follows:

## 3.1 Flexibility

*The Working Group finds that each request to install an EV charging system within an existing building is unique and is often associated with complicated issues and challenges that require flexibility in addressing installation solutions.*

The Working Group understands that there is no single solution that addresses the myriad of financial, structural, or organizational concerns relating to the installation of EV charging systems at existing MUDs. The Working Group further recognizes that due to the unique nature of each EV charging system's installation process, any installation request should be met with flexibility and an understanding of the complexities of installation challenges.

## 3.2 Statewide Incentive Program

*The Working Group finds the cost challenges faced by MUDs in the installation or upgrade of electric power infrastructure for the purpose of facilitating the deployment of EV charging*

*systems may be assisted by a statewide incentive program.*

*Additionally, the Working Group finds the public benefits fee[58] may be one source of funding that could be further explored to support such an incentive program. However, the Working Group suggests that if the Legislature were to explore and consider legislation that authorizes the use of the public benefits fee for the installation and upgrade of electric power infrastructure for the purpose of facilitating the use of EVs under the direction of the public benefits fee administrator, that there not be an increase to the existing public benefits fee rate; and concerns raised by Working Group members are considered*.

In particular, members of the Working Group expressed concerns about adding the installation or upgrade of electric power infrastructure to facilitate the use of EVs to the list of items supported by the public benefits fee. Specifically, the Department of Commerce and Consumer Affairs and the Division of Consumer Advocacy within the Department feel that:

- Increases to the public benefits fee should be avoided in order to minimize the impact on consumers;
- Using the public benefits fee for the proposed purpose may adversely affect the State's Energy Efficiency Portfolio Standards compliance;
- Appropriate measures should be taken to properly align the use of public benefits fee monies for non-Energy Efficiency Portfolio Standards objectives and the annual goals established for the public benefits fee administrator;
- Funds collected through the public benefits fee should be used toward projects that will benefit all ratepayers, rather than a small segment of ratepayers;
- Workplace charging stations may potentially benefit a larger number of customers and more directly address the grid challenges faced by the State; and

[58] See section 269-121, Hawaii Revised Statutes.

- As a general matter, the public benefits fee should not be used to fund “infrastructure”, including conduits, the structural work required to remove and/or install the new conduits, the wiring necessary to connect the charging stations to the electric grid, and any necessary upgrades to other infrastructure, such as transformers, etc. These types of costs should be the responsibility of the residents or occupants of the MUD.

In summary, concerns regarding use of the public benefits fee are that adding the installation or upgrade of electric power infrastructure to facilitate the use of EVs to the list of items supported by the public benefits fee may detract from the State’s energy efficiency goals and demand response objectives.

Should the legislature consider authorizing the public benefits fee to be used to install and upgrade electric power infrastructure to facilitate the use of electric vehicles, the Department of Commerce and Consumer Affairs and the Division of Consumer Advocacy feel that the legislature should consider avoiding increases to the public benefits fee to minimize the impact on consumers, and examine how this authorization will affect the impact of the state’s energy efficiency portfolio standards and other demand side management goals. Furthermore, any funds collected through the public benefits fee should be able to substantiate a distributional impact that will benefit all ratepayers.

Given recent PUC direction on rates, the Department of Commerce and Consumer Affairs and the Division of Consumer Advocacy would support greater consideration of workplace charging stations in the compliment of solutions. However, as a general matter, the Department of Commerce and Consumer Affairs and the Division of Consumer Advocacy believe that the public benefits fee should not be used to fund infrastructure.

The Working Group recognizes that there is a benefit to encouraging the use of EVs throughout the State and that facilitating the ability of EV drivers or potential EV drivers that live in MUDs to charge at home will advance EV use and contribute to the State's renewable energy goals.

The Working Group further recognizes that, because there is not a "one-size-fits-all" solution for addressing challenges associated with installation of EV charging systems, a statewide incentive program could encourage MUDs and EV drivers to work together to install or upgrade the electric power infrastructure of their buildings to accommodate EV charging systems.

## 3.3 Utility Support

*While further investigation and consideration is needed to ensure any proposed statewide incentive program is designed to be in the public interest, the Working Group finds that innovative utility programs are an option by which to address issues associated with EV charging infrastructure installation*.

The Working Group recognizes that another avenue that warrants exploration is the role of utilities in providing innovative programs to address the barriers to installing EV charging infrastructure and integrating EV charging into the overall electric grid in a way that lowers integration costs for renewable energy.[59]

## 3.4 Supporting Sustainable Transportation, Act 38

The Working Group supports sustainable transportation consistent with the policy established in Act 38, Session Laws of Hawaii 2015, to reduce and ultimately eliminate Hawaii's dependence on imported fuels for electrical generation and ground transportation.[60] The Working Group recognizes that achieving widespread EV adoption and addressing infrastructure installation challenges, including the challenges faced by non-MUD buildings that may be able to provide workplace EV charging, require that all options be given a holistic, broad examination.

[59] This recommendation is not intended to prejudge any review by the PUC of a particular proposal by the utilities to deploy such programs.
[60] See section 226-18, Hawaii Revised Statutes.

## 3.5 Sub Meters

*The Working Group finds that utilities should consider the deployment of sub meters to encourage EV adoption when appropriate.*

The Working Group recognizes that the use of utility sub metering in MUDs may help alleviate some cost concerns associated with installing EV charging infrastructure and should be evaluated by the electric utilities as part of a comprehensive EV program.[61]

## 3.6 New Construction

*The Working Group finds that market forces, future building codes, and customer demands are adequate to address EV installations in new MUD construction.*

The Working Group recognizes that demand from EV drivers and future EV buyers will likely encourage developers to incorporate EV charging infrastructure into the design and construction of new buildings. The Working Group encourages developers to consider incorporating EV charging infrastructure and to reference local and national resources for guidance.[62]

## 3.7 Education

*The Working Group finds that education and outreach is needed to publicize and maximize participation in an incentive-based program*.

The Working Group recognizes that any statewide incentive program established to encourage MUDs and EV drivers to work together to install or upgrade the electric power infrastructure of

[61] This recommendation is not intended to prejudge any review by the PUC of a particular proposal by the utilities to deploy such programs.

[62] Hawaii EV Ready Guidebook for Commercial Electric Vehicle Charging Station Installations http://energy.hawaii.gov/wp-content/uploads/2011/09/updated-EV-Guidebook_FINAL_Sep-25_2012.pdf.

their buildings to accommodate EV charging systems requires the support of stakeholder groups to sufficiently maximize program participation. Trade groups, nonprofit organizations, and utilities are in the best position to educate current EV drivers, potential EV drivers, and MUDs about the availability of a statewide incentive program and to encourage their participation.[63] Without sufficient publicity, education, and encouragement from stakeholders and other community groups associated with EV drivers, potential EV drivers, and MUDs, any statewide incentive program may likely be underused and thus fail to contribute significantly to widespread adoption of EVs.

# 4 APPENDIX

## 4.1 Acronyms

| | |
|---|---|
| **AC** | Alternative Current |
| **AOAO** | Association of Apartment Owners |
| **DBEDT** | Department of Business, Economic Development & Tourism |
| **DC** | Direct Current |
| **EV TOU** | EV Time of Use |
| **EV** | Electric Vehicle |
| **EVSE** | Electric Vehicle Supply Equipment or "charging system" |
| **HECO** | Hawaiian Electric Company, Inc. |
| **HOV** | High Occupancy Vehicle |
| **kW** | Kilowatt |
| **kWh** | Kilowatt-hour |
| **MUD** | Multiple Unit Dwelling |
| **NEC** | National Electrical Code |
| **PHEV** | Plug-in Hybrid Electric Vehicles |

[63] Trade groups such as the Community Association Institute and the Hawaii Auto Dealers Associations, and nonprofit organizations such as Blue Planet Foundation and Honolulu Clean Cities.

**SAE** Society of Automobile Engineers International

**TOU** Time of Use

## 4.2 Terms and Definitions

**AC Level 1 Charging System:** EV charging system that uses a standard 110/120-volt alternating current (VAC) three-prong wall outlet. No other connection is needed. The charging energy provided is approximately 1.2 to 1.4 kilowatts (kW) per hour. Level 1 charging is usually accomplished using a portable cordset that is provided with the vehicle.

**AC Level 2 Charging System:** EV charging system that uses 208/240VAC electricity through a hardwired or heavy-duty plug connection (like a stove or dryer). Charging energy can vary from 1.2 kW to 19.2 kW per hour. The onboard vehicle charger will determine the level at which the vehicle can charge, and the installation should be matched to those requirements. With the exception of the Tesla Model S, which can charge at a higher level, most light duty passenger vehicles currently charge at either 3.3 kW or 6.6 kW levels. AC Level 2 Charging System should be installed by a licensed electrician.

**Charging System:** An electric vehicle supply equipment (EVSE).[64] More commonly called a charger, charging unit, charging station, or charging system. A device connected to a facility's electrical system that is used to charge an EV. The charging system provides electricity grid connection, electrical safety, and power theft prevention features. Charging systems can provide a range of different power levels (AC Level 1, AC Level 2, and DC Fast Charging.) Some charging systems are simple, providing no more than basic grid connectivity, while others are more complex, with Wi-Fi or cellular communication, billing and reservation capabilities. Section 291-71(b), Hawaii Revised Statutes, defines an electric vehicle charging system as a system that:

(1) Is capable of providing electricity from a non-vehicle source to charge the batteries of one or more electric vehicles;

(2) Meets recognized standards, including standard SAE J1772 of SAE International; and

(3) Is designed and installed in compliance with article 625 of the National Electrical Code.

[64] See National Electrical Code Article 625.

**Charging System Installation:** In many cases the cost of installing a charging system at an MUD is prohibitive, given the distance from the desired charging location to an available electric service access point. The closer the charging system is to the power supply and electric meter, the lower the installation costs will be, by avoiding costly trenching through concrete. Boring through garage walls or parking decks is usually a costly process requiring services of a structural engineer. Whereas the tradeoff between AC Level 1 and AC Level 2 charging can save costs in other areas, the cost for trenching and buried conduit is almost the same in either case.

Installation costs will increase if a panel upgrade or meter installation is necessary. The power supply needs for Level 1 and Level 2 EVSE are as follows: Level 1: Dedicated branch circuit with NEMA 5-15R or 5-20R receptacle; Level 2: Dedicated 240VAC/single phase branch circuit hardwired to a permanently mounted EVSE.

**DC Fast Charging:** A commercial-grade 427/480VAC 3-phase device that uses direct current (DC) to recharge an EV. Provides approximately eighty percent battery charge in under thirty minutes for a 24 kWh battery size, (similar to Nissan Leaf). This level of charging is sometimes erroneously called Level 3.

**Electrical Capacity:** Electrical service size and availability generally measured in service amps (ampacity) and volts (voltage). The capacity to support new charging system wiring and panels typically depends on the original electrical design at the time the building was constructed. Most MUD garages have very limited electrical capacity near the assigned or deeded parking, and may not have adequate panel sizing and breaker space to supply charging systems because the original electrical design never anticipated additional loads. Electrical loads for these structures were usually designed for garage lighting and elevators. In such circumstances, an electrical service upgrade may be required to support the electrical load for vehicle charging.

**Electrical service upgrade:** Electrical service upgrades to accommodate an EV charging system requires coordination of the electrical contractor with the local utility.

**Electric Infrastructure:** A set of interconnected electrical elements which may include utility- and customer-owned systems including, but not limited to, wiring, conduit, switches and disconnects, circuit breakers and other protective equipment, grounding and bonding, switchboards, switchgear, in-building

and utility transformers, enclosures, equipment, monitoring and safety instrumentation.

**Electric Vehicle:** Plug-in electric vehicle, a generic term inclusive of both battery electric vehicles and plug-in hybrid-electric vehicles. Section 291-71(b), Hawaii Revised Statutes, defines EV as either: (1) A neighborhood electric vehicle as defined in section 286-2;[65] or (2) A vehicle, with four or more wheels, that draws propulsion energy from a battery with at least four kilowatt hours of energy storage capacity that can be recharged from an external source of electricity.

**Energy Audit:** A hands-on assessment of a building's energy usage, its energy-using equipment, and building conditions that may cause excessive energy consumption.

**Hawaii Energy:** The current Public Benefits Fee Administrator.

**MUD:** A multiple unit dwelling. Also known as multi-family residences or multi-family dwelling units. A classification of housing where multiple housing units are contained within one building or multiple buildings within a complex/community. Some MUDs are owned (e.g., condominiums), while others are leased or rented. Some common types of MUDs are duplexes, townhomes, apartments, condominiums, cooperative housing corporations, and planned community associations.

**Power recording/ feeder and service studies:** Based upon circuit and load calculations in the NEC Article 220, power recording/feeder and service studies are commonly a 30-day power recording period that can cost $1500 - $2500. Per NEC Article 220.87 exception for "Determining Existing Loads," if the maximum demand date for a one-year period is not available, the calculated load shall be permitted to be based on the maximum demand (measure of average power demand over a 15 minute period) continuously recorded over a minimum 30-day period using a power recording ammeter or power meter connected to the highest loaded phase of the feeder or service, based on the initial loading at the

[65] Section 286-2, Hawaii Revised Statutes, defines neighborhood electric vehicle as a self-propelled electrically powered motor vehicle to which all of the following apply:

(1) The vehicle is emission free;
(2) The vehicle is designed to be and is operated at speeds of twenty-five miles per hour or less;
(3) The vehicle has four wheels in contact with the ground;
(4) The vehicle has a gross vehicle weight rating of less than three thousand pounds; and
(5) The vehicle conforms to the minimum safety equipment requirements as adopted in the Federal Motor Vehicle Safety Standard No. 500, Low Speed Vehicles (49 C.F.R. 571.500).

start of the recording. Based on 220.87 exception, the cost can run higher than the normal cost of $1500 to $2500, and up to $3500 with all the data that has to be interpreted and put into a 30-day period report for the electrical engineer.

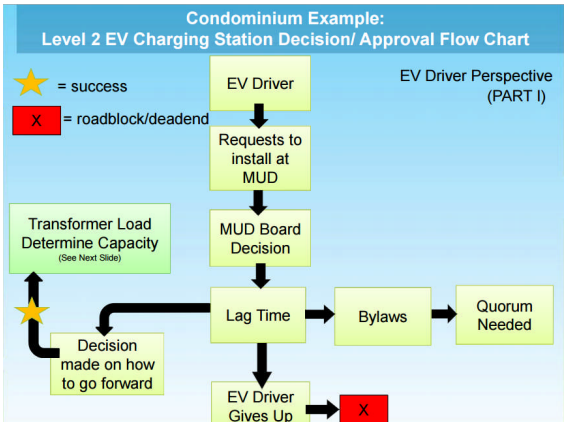
**Public Benefits Fee:** Statutorily authorized fee collected by Hawaii's electric utilities from its ratepayers through a demand-side management surcharge.[66]

**Sub meter:** Sub metering is the implementation of a system that allows a landlord, property management firm, condominium association, homeowners association, or other multi-tenant property to bill tenants for individual-measured energy usage. Third-party sub metering is operated and maintained by a third-party which may provide meter reading and billing services for the individual sub meters. Utility sub metering (not currently offered in Hawaii) is where the tenant is billed by the utility through a utility owned meter.

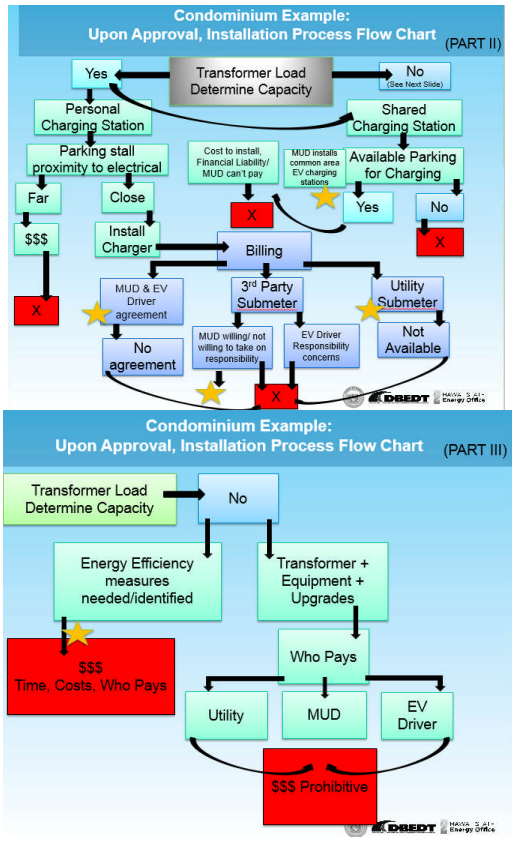
**Time of Use Rate:** Predetermined energy prices for specific time periods.

**Transformer Capacity:** After reviewing the electrical design for the charging systems on the property, the local utility can determine if a utility owned transformer serving the site needs to be upgraded. Building owned transformer capacity is assessed by an electrical consultant.

## 4.3 EV Charging Station Decision/Approval/ Installation Flow Chart




[66] See sections 269-121 to 269-124, Hawaii Revised Statutes.




## 4.4 Working Group Meeting Presentation & Minutes

Working Group materials including meeting summaries and presentations are located on the Hawaii State Energy Office's Electric Vehicle webpage[67].

## 4.5 List of Working Group Members

- Mark Glick, Chair, representing the Director of Business, Economic Development, and Tourism, Hawaii State Energy Office;
- Catherine P. Awakuni Colón, Director of Commerce and Consumer Affairs;
- Sherri Sakamoto, representing the Division of Consumer Advocacy;

[67] http://energy.hawaii.gov/testbeds-initiatives/ev-ready-program/laws-incentives

- The Honorable Angus L. K. McKelvey, Chair of the Committee on Consumer Protection and Commerce of the House of Representatives;
- The Honorable Rosalyn H. Baker, Chair of the Committee on Commerce, Consumer Protection and Health of the Senate;
- The Honorable Chris Lee, Chair of the Committee on Energy and Environmental Protection of the House of Representatives;
- The Honorable Lorraine R. Inouye, Chair of the Committee on Transportation and Energy of the Senate;
- Na Lan and Phil Nerney, representing the Community Associations Institute;
- Shem Lawlor and Todd Ritter, representing Hawaii EV Partnership;
- McKibbin Mist, representing the Building Industry Association of Hawaii; and
- Michael Colón, representing the Hawaiian Electric Companies.

## 4.6 Act 164, Session Laws of Hawaii 2015

THE SENATE
TWENTY-EIGHTH LEGISLATURE, 2015
STATE OF HAWAII

S.B. NO. 1316 S.D. 2 H.D. 2 C.D. 1

# A BILL FOR AN ACT

RELATING TO ELECTRIC VEHICLES.

**BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:**

SECTION 1. (a) There is established within the department of business, economic development, and tourism, for

administrative purposes, a working group to address the installation of electric vehicle charging systems at apartments, condominiums, cooperative housing corporations, and planned community associations.

(b) The working group shall examine the issues regarding requests to the board of directors of an association of apartment owners, condominium association, cooperative housing corporation, or planned community association for the installation of electric vehicle charging systems.

(c) The following individuals or their designees shall serve as members of the working group:

(1) The director of business, economic development, and tourism, who shall serve as the chairperson of the working group;

(2) The director of commerce and consumer affairs;

(3) One representative from the division of consumer advocacy;

(4) The chair of the committee on consumer protection and commerce of the house of representatives;

(5) The chair of the committee on commerce and consumer protection of the senate;

(6) The chair of the committee on energy and environmental protection of the house of representatives;

(7) The chair of the committee on energy and environment of the senate;

(8) Two representatives of the Community Associations Institute;

(9) Two representatives from Hawaii EV Partnership;

(10) One representative from the Building Industry Association of Hawaii; and

(11) One representative from Hawaiian Electric Company.

(d) The working group shall report its findings and recommendations, including any proposed legislation, to the legislature no later than twenty days prior to the convening of the regular session of 2016.

(e) The legislative reference bureau shall assist the working group with its final report to the legislature and prepare any proposed legislation.

(f) The working group shall be dissolved on December 30, 2015.

SECTION 2. This Act shall take effect on July 1, 2015.

**Report Title:**
Electric Vehicle; Electric Vehicle Charging System Installation

**Description:**
Establishes a working group to examine the issues regarding requests to the board of directors of an association of apartment owners, condominium association, cooperative housing corporation, or planned community association regarding the installation of electric vehicle charging systems. (CD1)

*The summary description of legislation appearing on this page is for informational purposes only and is not legislation or evidence of legislative intent.*

## 4.7 Act 164: Working Group Proposed Legislation

TWENTY-EIGHTH LEGISLATURE, 2016
STATE OF HAWAII

.B. NO.

# A BILL FOR AN ACT

Relating to electric Vehicles.

**BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:**

SECTION 1. Act 164, Session Laws of Hawaii 2015, established a working group to examine issues regarding requests made to multiple unit dwellings for the installation of electric vehicle charging stations. The working group found that there is no uniform process for installing electric vehicle charging

stations in existing multiple unit dwellings and that each multiple unit dwelling faces unique challenges when confronted with the installation process. As a result, flexibility is required to address the challenges and develop solutions relating to installing electric vehicle charging stations in multiple unit dwellings.

The working group further found that a significant impediment to the installation of electric vehicle charging stations in many multiple unit dwellings is the substantial costs associated with the installation and upgrade of electric power infrastructure required for electric vehicle charging stations. The working group found that state assistance is necessary to support the development of electric vehicle charging infrastructure and recommended the use of revenues generated from the public benefits fee as a viable source of funding.

The legislature finds that increasing the number of electric vehicles in Hawaii will help the State reach its clean energy initiatives and renewable energy portfolio standards goal of one hundred per cent renewable by 2045. The legislature further finds that the lack of electric vehicle charging stations in the State constitutes a significant barrier to the public's use of electric vehicles. The legislature believes that increasing the number of electric vehicle charging stations

in the State, including home- and work-based charging stations, will encourage more consumers to purchase electric vehicles.

The purpose of this Act is to authorize the use of the public benefits fee revenues for the installation and upgrade of electric power infrastructure to facilitate the use of electric vehicles by increasing the number of available electric vehicle charging stations, including home- and work-based charging stations.

The legislature intends that:

(1) In implementing this Act, the public benefits fee administrator be provided with flexibility in issuing moneys for infrastructure installation and upgrades for electric vehicle use, as each installation may pose unique challenges; and

(2) Private funds be used in conjunction with the public benefits fee for any electric power infrastructure installation or upgrade to facilitate the use of electric vehicles, and that the administrator determine the amount of private funds required to be contributed before fee revenues may be expended for these purposes.

Additionally, this Act is not intended to necessitate a change in the current rate of the public benefits fee.

SECTION 2. Section 269-121, Hawaii Revised Statutes, is amended by amending subsection (b) to read as follows:

"(b) The public benefits fee shall be used to support [~~clean~~]:

(1) Clean energy technology, demand response technology, and energy use reduction, and demand-side management infrastructure, programs, and services[~~.~~]; and

(2) The installation and upgrade of electric power infrastructure to facilitate the use of electric vehicles; provided that the fee shall not be used for this purpose unless the public benefits fee administrator determines that sufficient private moneys will be contributed to support the installation and upgrade of electric power infrastructure;

subject to the review and approval of the public utilities commission. [~~These moneys~~] The public benefits fee administrator may establish procedures, which shall not be subject to chapter 91, for the administration of public benefits fee programs established under paragraph (2). Moneys from the public benefits fee shall not be available to meet any current or past general obligations of the State; provided that the State may participate in any clean energy technology, demand response technology, or energy use reduction, and demand-side

management infrastructure, programs, and services on the same basis as any other electric consumer.

For the purpose of this subsection[~~,"clean energy technology"~~]:

"Clean energy technology" means any commercially available technology that enables the State to meet the renewable portfolio standards, established pursuant to section 269-92, or the energy-efficiency portfolio standards, established pursuant to section 269-96, and approved by the public utilities commission by rule or order.

"Electric vehicle" means a vehicle, with four or more wheels, that draws propulsion energy from a battery with at least four kilowatt hours of energy storage capacity that can be recharged from an external source of electricity."

SECTION 3. Statutory material to be repealed is bracketed and stricken. New statutory material is underscored.

SECTION 4. This Act shall take effect upon its approval; provided that on June 30, 2020, this Act shall be repealed and section 269-121(b), Hawaii Revised Statutes, shall be reenacted in the form in which it read on the day prior to the effective date of this Act.

INTRODUCED BY: _____

**Report Title:**

**Report Title:**
Electric Vehicles; Public Benefits Fee

**Description:**
Authorizes the public benefits fee to be used to install and upgrade electric power infrastructure to facilitate the use of electric vehicles. Authorizes the public benefits fee administrator to establish procedures for the administration of public benefits fee programs that install or upgrade electric power infrastructure to facilitate the use of electric vehicles. Sunsets on 6/30/2020.

*The summary description of legislation appearing on this page is for informational purposes only and is not legislation or evidence of legislative intent.*