

Hawaii EV Partnership

- Coalition of stakeholders interested in accelerating the adoption of EVs in Hawaii
- Partnership formed to discuss and policies and programs needed to remove barriers to EV adoption
- Quarterly Meetings
- Coordinated by Blue Planet Foundation's Honolulu Clean Cities program
- Contact: Shem Lawlor - shem@blueplanetfoundation.org

Supporting ACT 164

- EV Structure
- Nissan North America
- Ulupono Initiative
- Hawaii Energy
- MECO
- HECO
- Green Lots
- OpConnect
- ChargePoint
- Volta
- REACHawaii
- DBEDT
- HTDC
- Hawaii Auto Dealers Association
- Sema Connect
- HEVN
- Kauai County
- C&C Honolulu
- PUC



Purpose and Intent



•Purpose

- The purpose of this PowerPoint is to assist the public with interests in Electric Vehicle Charging in a MUD /AOAO property . This information is for Public awareness and geared toward home owner's ,renters ,property managers and their board of directors with an understanding of the roles and responsibilities of connecting an electric vehicle charging equipment "EVSE" with no one property alike to the local utility system in Hawai'i.

Intent



• The PowerPoint is intended:

To help increase public awareness of the challenges that are faced in order to make better decisions when a multi-unit dwelling buildings needs new electric vehicle charging station infrastructure . From our research and experience ,All buildings built before 2013 accommodating more then a 100 parking stalls will need their electrical infrastructures to be upgraded. It is this working groups intent to ultimately build solutions in a safety-first working environment .



CONTRACTOR PROFILE

Since 1967, having also installed the very 1st charging station in Pasadena CA, in 1998 for the Rav1 program .Now currently with 5 offices nationwide including Honolulu since 2005 . We are in over 1,200 MUD properties ,having installed and serviced over 5,000 + Electric Vehicle Service Equipment (EVSE) in commercial properties nationwide including the largest Charging station network in Hawai'i with the Opconnect/better place take over. We have found that the introduction of electric vehicles (EVs) in Multiple Family Residential Units requires extensive research and brings a distinct set of planning, regulatory, and costing issues. EVs require a unique infrastructure, which includes charging equipment and adequate electrical infrastructures. To Name a few our Local and national clients are Hawaiianna , Certified, and Associated property management companies ,Enterprise Rental Car, BMW, FORD,TESLA, GM Motor Companies, Blink, Opconnect, AV, Charge Point ,GE, ABM to name a few.

EvStructure (A sister Co. of Morgner Companies – www.morgnerco.com) is a Honolulu Clean Cities board Advisor a transportation engineering firm with over 48yrs. of experience. We have designed and constructed commercial and industrial facility projects, including energy auditing, electrical infrastructures, and renewable power systems, that increase energy efficiency, reduce energy costs, and ensure reliable power for education, government, commercial and HOA/AOAO customers throughout Hawaii, California, Puerto Rico and the Nation.

Contact Info: Todd Ritter/ Managing Principal Partner /PH. 808-352-3044/ email tritter@evstructure.com

The Basic Steps



Safety and Rules

Electric Service Upgrades

1. Contact a LIC electrician or electrical engineer to assess existing panel capabilities. ““TRANSFORMER LOAD ASSESMENT”
2. Contact the utility in your area to start your application to add load.
3. The utility will assess existing utility equipment based on your new electrical load. Contractor and Engineer works on pm/customer side to provide electrical data.
4. Your utility identifies service upgrade requirements and costs with the data given from load assessments performed by LIC EE .
5. Your electrician installs your charging station



- Adding the electric charging station is adding electrical loads in your common area garage.
Example 10 x Level I' s are 20 amp /120volt = 200 amps of extra load as most level II EVSE's are 40amp/ 240volts = the same amount of power as a Jacuzzi, AC window unit). 5 x Level II = 200 amp to the panel
- Notify your utility for safety purposes, including passing all local codes. If you are upgrading your panel or adding a second panel, a service upgrade may be required.
- Service upgrades are necessary when the service wire to your facility has inadequate capacity to meet the needs of your panel.



The Electrical Panel

- An electrician will determine whether the current electrical panel has capacity. EE is needed for transformer upgrades
- If a transformer upgrade is needed , it requires Informing the utility HECO. Paper work required (Un-Known).
- If an upgrade is required, the electrician & EE will arrange an inspection and obtain a permit from the city/county. This applies to all customers, regardless of rates. (**slow and Painful**)

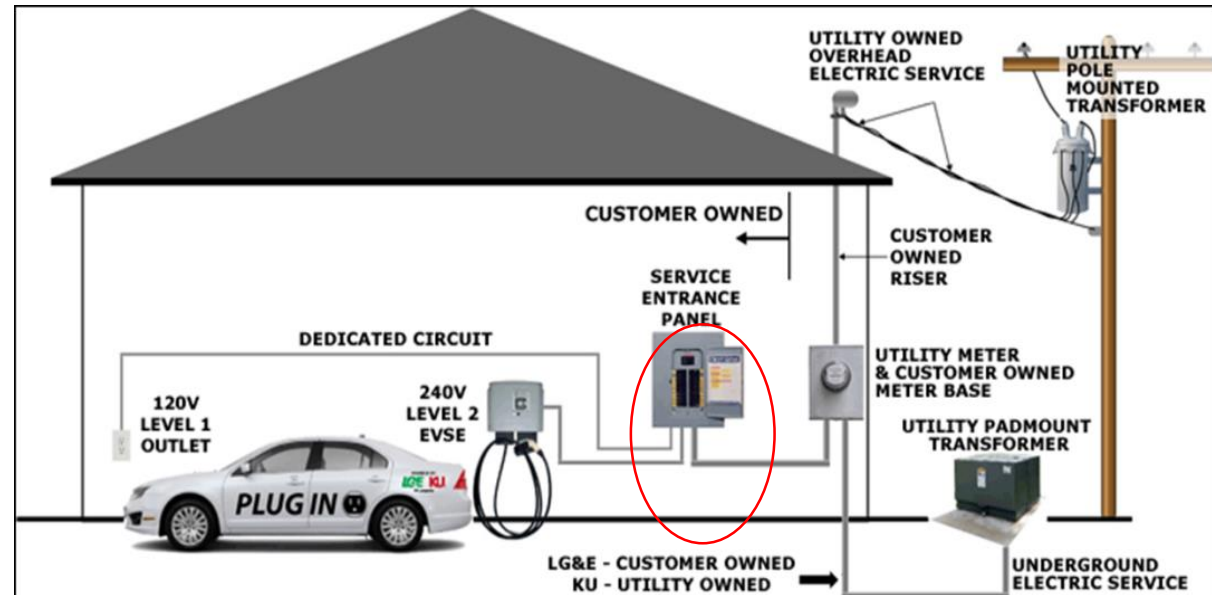
Barriers

* **DPP Permitting Issues Recent CASE STUDIES**

Case 1 – HCC (5) Opconnect EVSE almost 1yr to obtain Permit to install.

Case 2- Ko' Olina AOA (2) common area Opconnect EVSE for Homeowners to charge
7 mos. still awaiting Permit to install?

Electrician assesses the capacity of your electrical panel, EE for upgrades



Tenant/Unit Owner

Property Manager

EVSTRUCTURE

Utility

The EvStucture Company LLC



1. Tenant or Unit owner requested EV charging from Property Manager.

2. Property Manager contacts EVSTRUCTURE to conduct an initial site assessment of the property to submit a proposal.

3. EVSTRUCTURE submits proposal to Property Manager and BOD's for review.

4. Property Manager and BOD's determine best needs for property and approve EVSTRUCTURE to implement.

5. EVSTRUCTURE begins a detailed electrical engineering evaluation of existing property Infrastructure and available options for charge units.

6. EVSTRUCTURE to consult with electric utility on existing service capacity, metering options and rates.
*May perform transformer load assessment.

7. EVSTRUCTURE to present available options to the Property Manager and BOD's for their consideration.

8. Establish approval process determining equipment, billing methods, rates and cost recovery procedure. Selection of equipment to meet MUD requirements.

9. Adopt any necessary revisions to policies and procedures to accommodate EV drivers and comply with Act 186 in existing CC&R adoption.

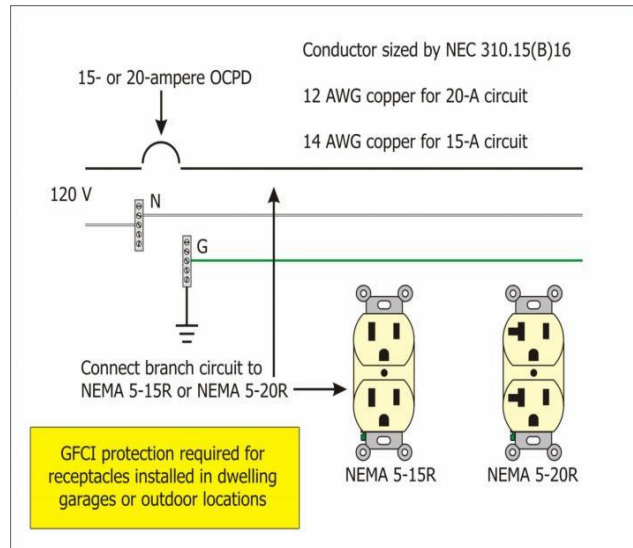
10. Approve EVSTRUCTURE to design, obtain permit and procure necessary equipment/ charge station(s).

11. EVSTRUCTURE to install equipment/ panels, breakers, new switch gears, EvGauge, transformers, charge station(s) per approved plans.

12. EVSTRUCTURE to obtain local inspection approval; Training for AOA's, PM's owner and BOD's.

Case Costing Scenario AC Level 1 EVSE Charging Admiral Thomas AOA

- Electric vehicle (EV) charging that employs cord-and-plug connected portable electric vehicle supply equipment (EVSE) that is transported with the EV and is used specifically for EV.
- AC Level 1 EVSE is rated single-phase, nominal 120 VAC, 16 A maximum, and is suitable for connection to NEMA 5-15R or 5-20R receptacles. (A Basic 110 Outlet)
- NECA recommends an **individual branch circuit** for all EVSE, including AC level 1.

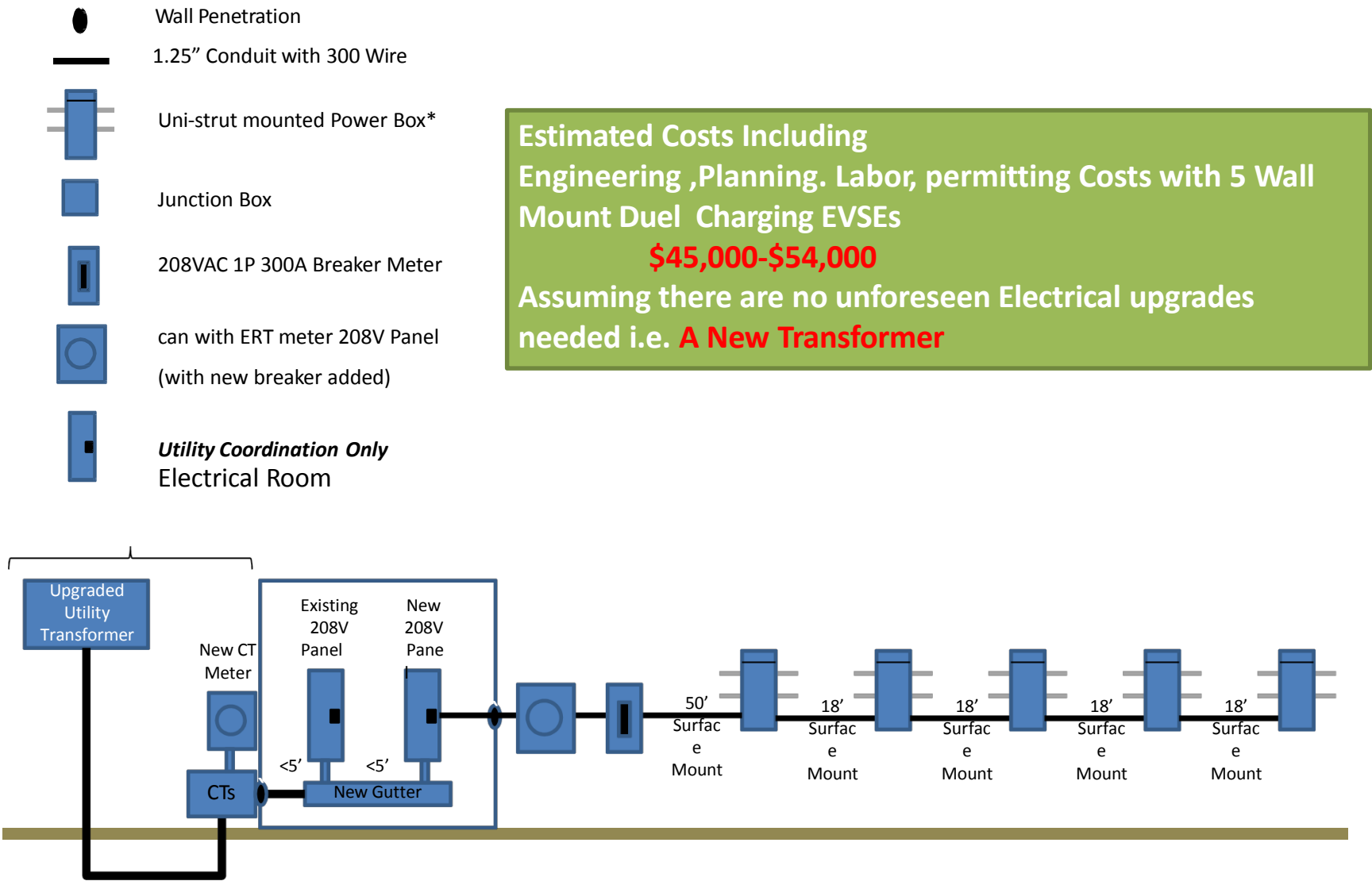


CASE STUDY: A NEW Tesla owner provided in writing a request to install a plug to charge his new EV. The bod requested back before granting permission that the home owner first provide a Load Assessment, calculation to verify and satisfy ACT 186 CCNR Adoption at his expense.

Client costs thus far:

- Electrical Engineering verification and Stamp **\$900**
- Installation and Permitting of NEMA 5-15R i **\$800.00**
- Sub Metering System to verify KWH Used to be billed back Hard costs avg **\$1,500-\$2,500** installed

Costing Scenario Common Area Chargers: Single-Story Garage with Fixtures on Full-Height Walls (5 fixtures in 10 Spaces)



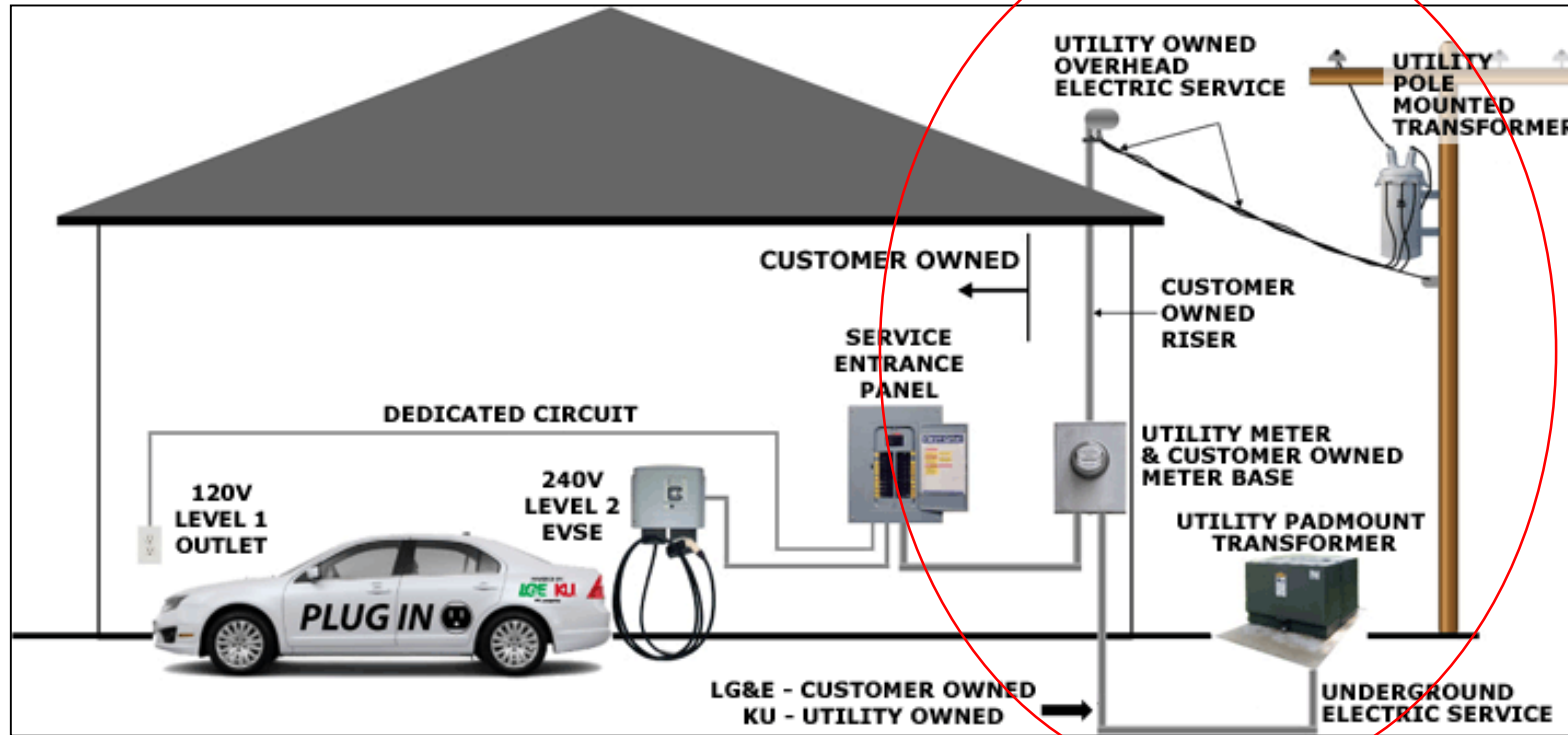
Common Area Charging Costs

EXAMPLE 1 COSTS BASED ON HOURS OF USE OF CHARGER				EXAMPLE 2 COSTS BASED ON HOURS OF USE OF CHARGER				EXAMPLE 3 COSTS BASED ON HOURS OF USE OF CHARGER			
Tesla with 60KWH Battery & Single Charger				Tesla with 60KWH Battery & Optional Dual Charger				Tesla with 85KWH Battery & Single Charger			
Level II 220v charger				Level II 220v charger				Level II 220v charger			
Input Assumptions				Input Assumptions				Input Assumptions			
Costs				Costs				Costs			
A	Electricity Cost per kwh	0.25		A	Electricity Cost per kwh	\$ 0.25		A	Electricity Cost per kwh	\$ 0.25	
B	kilowatts used per hour	6		B	kilowatts used per hour	12		B	kilowatts used per hour	8.5	
C	Number of hours each car charges to fill 60 kwh battery <u>half way</u>	5.0		C	Number of hours each car charges to fill 60 kwh battery	5.0		C	Number of hours each car charges to fill 85 kwh battery <u>half way</u>	5.0	
D	Cost per charge	7.50		D	Cost per charge	15.00		D	Cost per charge	10.63	
E	Number of cars charging per day	5		E	Number of cars charging per day	5		E	Number of cars charging per day	5	
F	Days per year charger is used	182		F	Days per year charger is used	182		F	Days per year charger is used	182	
	Cost per year (A*B*C*E)	\$ 6,825.00			Cost per year (A*B*C*E)	\$ 13,650.00			Cost per year (A*B*C*E)	\$ 9,668.75	

New Barriers

Entering The Unknowns in Hawai'i with local Utilities “Transformer Upgrades”

Best Practices The Utility & The Customer = Safety First



Our utilities need to help plan in adding new electrical loads

