ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

Presentation for

City Council
ENERGY, ENVIRONMENT & SUSTAINABILITY
COMMITTEE MEETING

October 14, 2025

Department of Design and Construction
City and County of Honolulu

Submitted by the Department of Design and Construction for Informational Briefing Item No. 2
Committee on Energy, Environment & Sustainability | October 14, 2025

DEPT. COM. 771 EES

ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

TOPICS:

- **What is Electric Vehicle (EV) Charging Infrastructure?**
- **History of EV Charging in the City**
- **Public Charging at City Facilities**
  - **Current Network**
  - **Upcoming Chargers**
- **Electrification of the City's Light to Medium-Duty Fleet**
  - **Fleet Charger Locations**
  - **Honolulu Fire Department Messenger Vehicle Project**
  - **On-going EV Infrastructure Projects for City Fleet Charging**
  - **Future EV Infrastructure Projects for City Fleet Charging**
- **EV Infrastructure for the City's Bus Fleet**
  - **Kalihi-Palama Bus Facility – Building C (Dynamometer Room)**
  - **Kalihi-Palama Bus Facility – Ready Line**
  - **Alapai Transit Center**
  - **Pearl City Bus Facility**
- **Cost of EV Infrastructure**
- **Long-Range EV Infrastructure Planning**

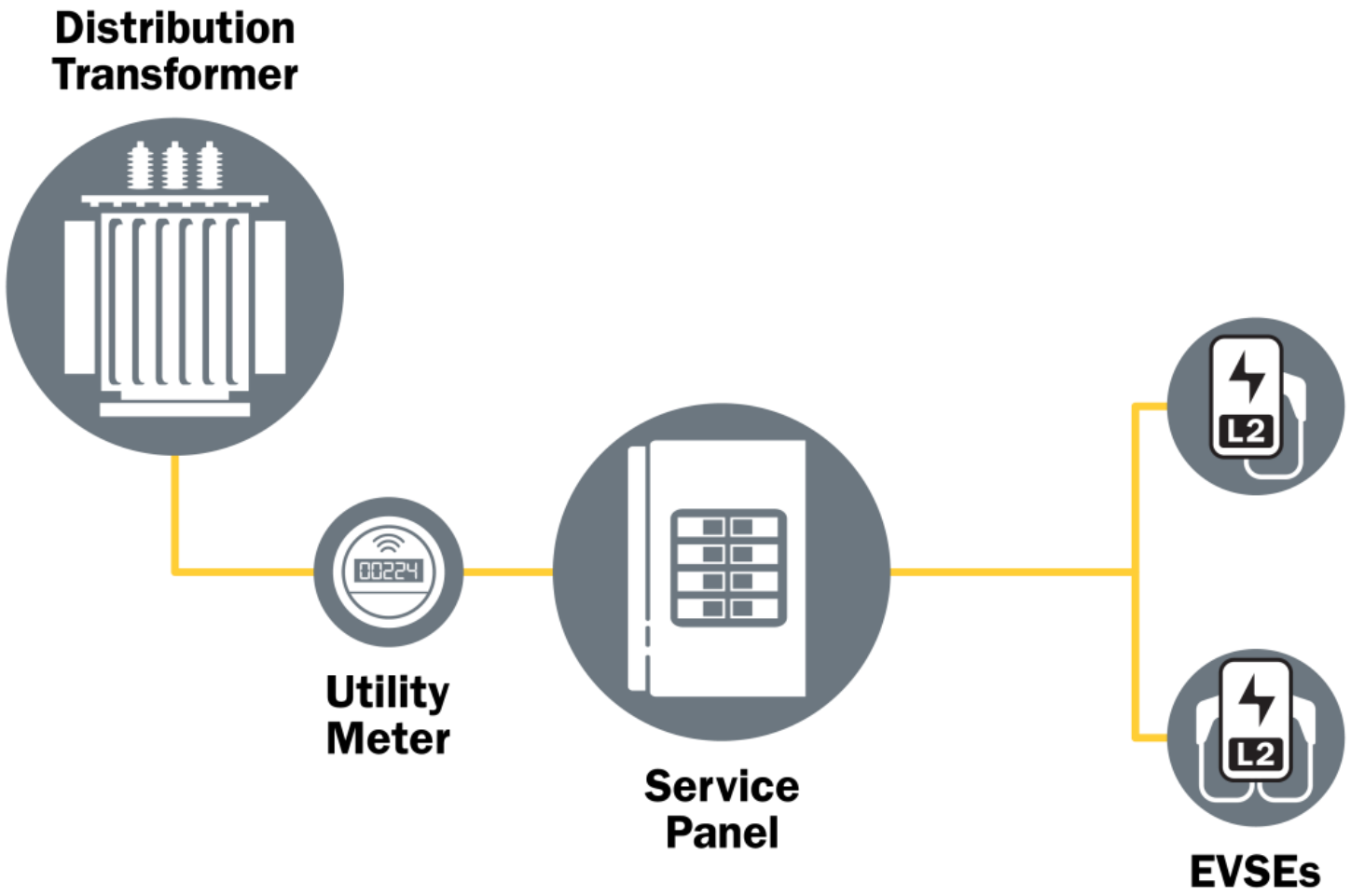
What is Electric Vehicle (EV) Charging Infrastructure?

Level 1 charging	Level 2 charging	Level 3 charging
		
Voltage: 120V Charge Time: 3 - 5 miles per hour Locations:	Voltage: 240V Charge Time: 12 - 40 miles per hour Locations:	Voltage: 480V Charge Time: 80% charge in 20-30 mins Locations:
Home	Home, Public, Fleet	Public, Fleet

There are three (3) types or levels of EV chargers or electric vehicle service equipment (EVSE).

The levels are determined by the electrical voltage being supplied to the EVSE.

What is Electric Vehicle (EV) Charging Infrastructure?



Electrical power to the EVSE comes from the utility company via its utility meter, then distributed to the EVSE via the facilities electrical distribution system.

History of EV Charging in the City

The grant funds were also used to purchase two (2) 2012 Mitsubishi EVs for the motor pool. One EV is still in use today.

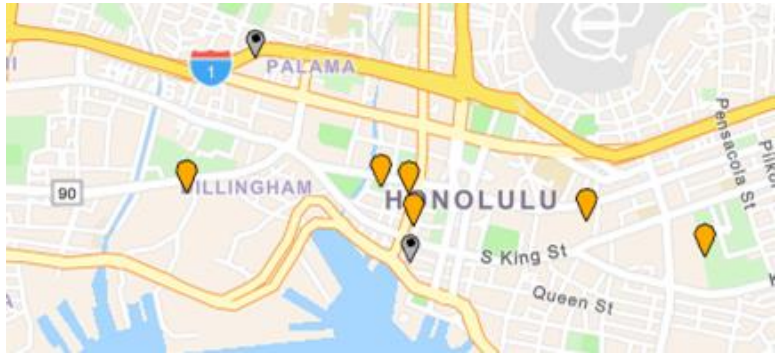
Battery capacity: **16 kWh**	Range: **60 miles**

In 2012, the City received a $400,000 grant from DBEDT as part of its Hawai‘i EV Ready Program. Six (6) single port chargers for the public were installed at:

- **Fasi Municipal Building**
- **Neal Blaisdell Center**
- **Smith-Beretania Parking Structure**
- **Hale Pauahi Parking Structure**
- **Chinatown Gateway Plaza**
- **Honolulu Zoo**

These chargers were upgraded to dual port in 2019 by the operating agencies.

Public Charging at City Facilities



Today: (23) ports at (10) locations

Adding (21) ports at (7) locations, including the City's first Level 3 direct current fast chargers (DCFC) at Kapolei Hale

Public Charging at City Facilities (Current Network)

Transportation Services	
Location	**Ports**
Chinatown Gateway	2
Smith/Beretania	2
Hale Pauahi	2

Facility Maintenance	
Location	**Ports**
Civic Center	2
Kapālama Hale	4
Wahiawā Satellite City Hall	2

Enterprise Services	
Location	**Ports**
Blaisdell Center	2
Honolulu Zoo	2
Ala Wai Golf Course	3

Parks and Recreation	
Location	**Ports**
Hans L'Orange Park	2

Public Charging at City Facilities (Upcoming Chargers)

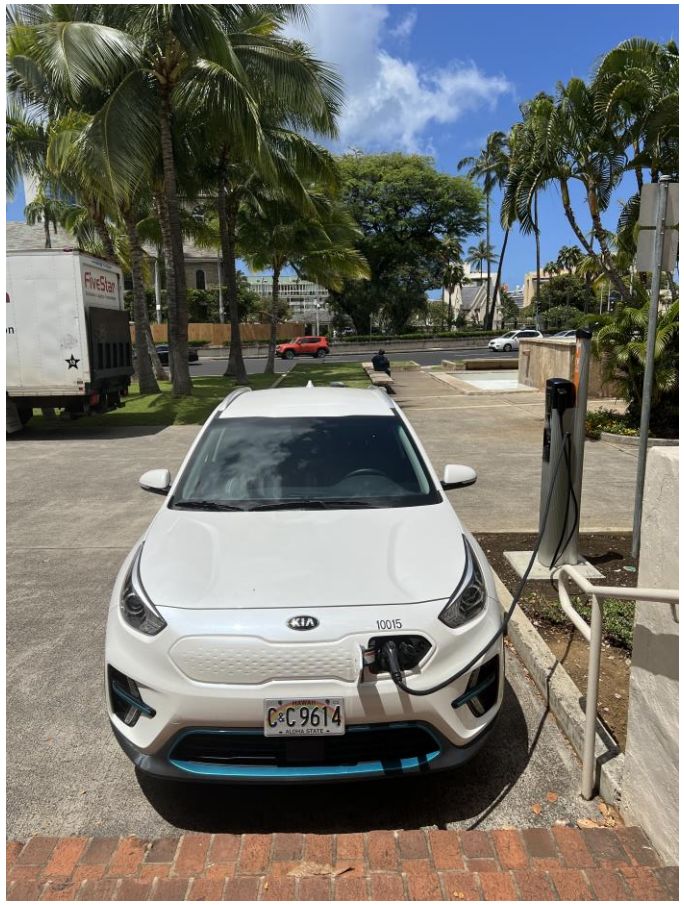
Transportation Services	
Location	**Ports**
Harbor Court	4
Harbor Village	4
Lani Huli Elderly Housing	4
Kailua Parking Lot	5
Kaimukī Parking Lot	1

Facility Maintenance	
Location	**Ports**
Kapolei Hale	2

Electrification of the City Light to Medium-Duty Fleet

Medical Examiner's Office

HFD Museum



Honolulu Hale

CHALLENGES:

- Availability of EV Equivalents to Existing City Vehicles
- Drivers' Range Anxiety
- Existing Electrical Capacity at City Facilities
- Alignment with Operating Agencies' Fleet Modernization Plans
- Energy Cost Offsets

Electrification of the City Light to Medium-Duty Fleet

Lāʻie Corporation Yard L3 Charger

Replaces EV charger installed years ago by HECO under a pilot project.

ʻUmi Street Fueling Facility L3 Charger

Replaces EV charger installed years ago by HECO under a pilot project.

Facility is located in a flood zone; hence, the raised concrete pad.

CITY FLEET CHARGER LOCATIONS:

• CCPS Motor Pool	4 ports
• Kapolei Hale	2 ports
• Hālawa Corporation Yard	2 ports
• HFD Museum	2 ports
• Mililani Mauka Fire Station	2 ports
• HFD Waipahu Maintenance	2 ports
• Honolulu Hale	1 port
• Medical Examiner's Office	2 ports
• ʻUmi Street Fueling Facility (Level 3)	1 port
• Lāʻie Corp. Yard (Level 3)	1 port
Total	**19 ports**

Honolulu Fire Department Messenger Vehicle Project

2020 KIA NIRO REPLACEMENT FOR 2010 FORD EXPLORER

EV Specifications:

Battery (V):	356 V	Level 2 Charge Time	
Battery Capacity (Ah):	180 Ah	(0 to Full):	9.50 Hrs.
Battery Energy (kWh):	**64** kWh	Level 3 Charge Time	
Battery Power (kW):	170 kW	(0 to 80%):	1.25 Hrs.

Operational Cost Comparison:

Fiscal Year 2020 Explorer Data:		Estimated Kia Niro EV Data:	
Miles Driven:	26,662	Range (Miles):	**239**
Fuel Used (Gal.):	1,666	Electricity Use (kWh):	7,306
Fuel Cost:	$3,853	Electricity Cost:	$2,192
Maint. Cost (Labor):	$ 983	Maint. Cost (Labor):	$ 45
Maint. Cost (Parts):	$1,006	Maint. Cost (Parts):	$ 23
Total Annual Costs:	$5,842	Total Annual Costs:	$2,260

ANNUAL OPERATING SAVINGS: $3,582

Cost Differential Electric Vehicle versus Internal Combustion Engine Vehicle:

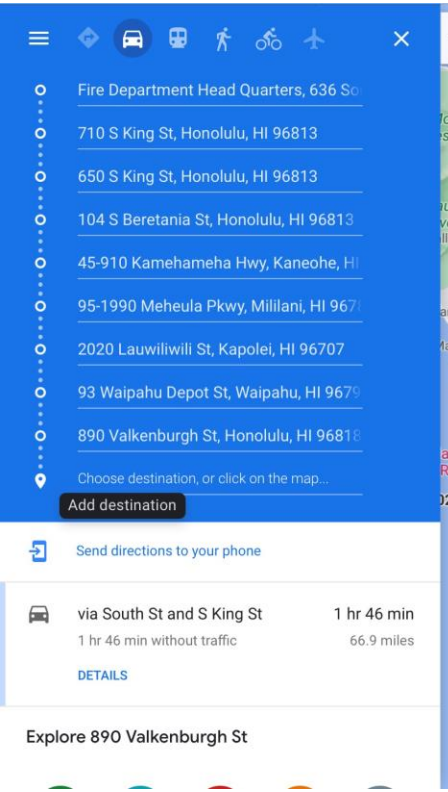
2020 Kia Niro EV	$44,500
2020 Ford Explorer	$35,880
Difference	**$ 8,620**

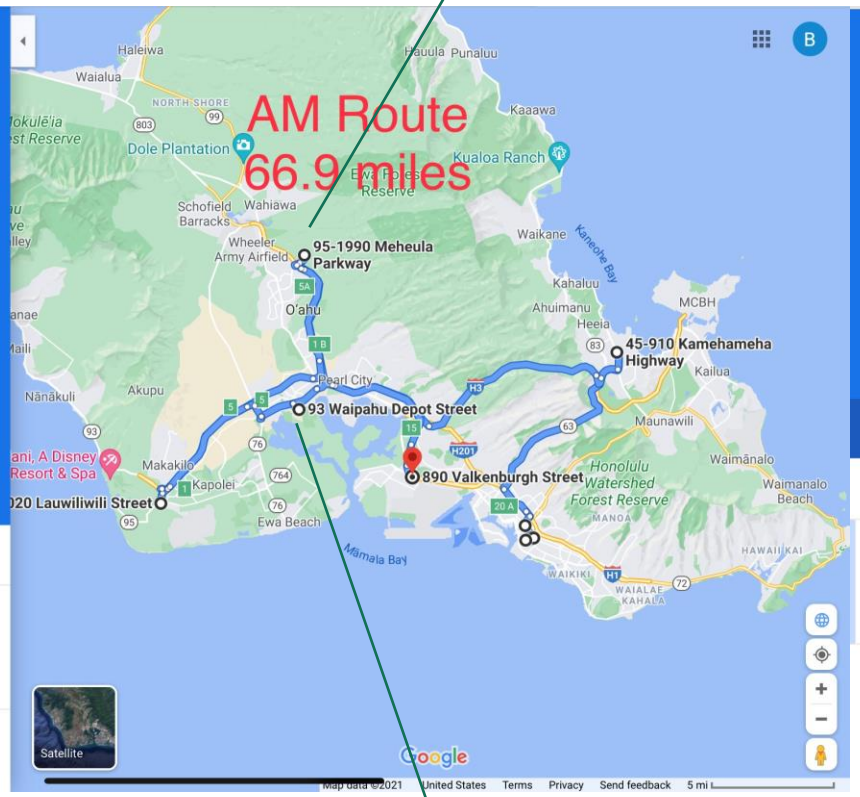
($8,620/$3,582 per year = **2.4** years)

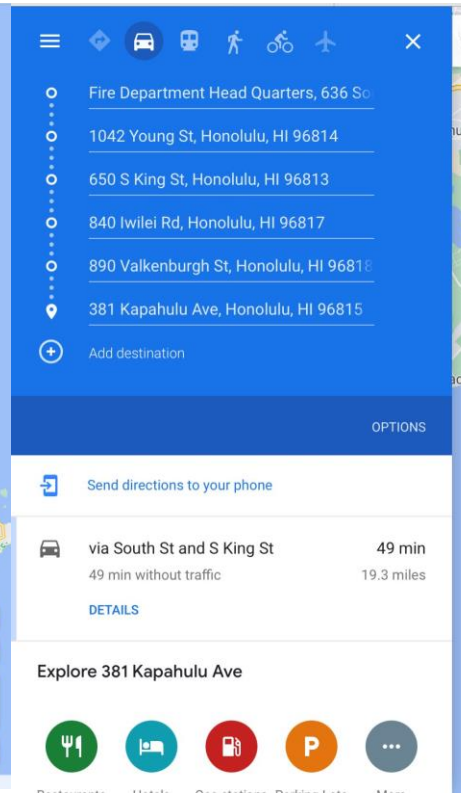
Honolulu Fire Department Messenger Vehicle Project

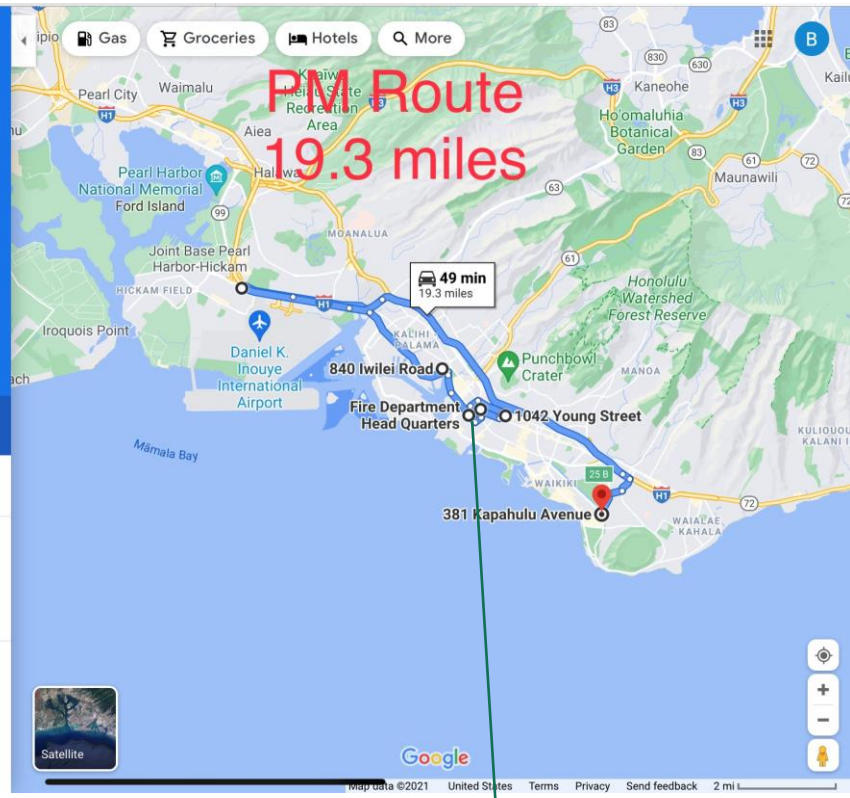
Smart Charging – Route Planning

Mililani Mauka Fire Station









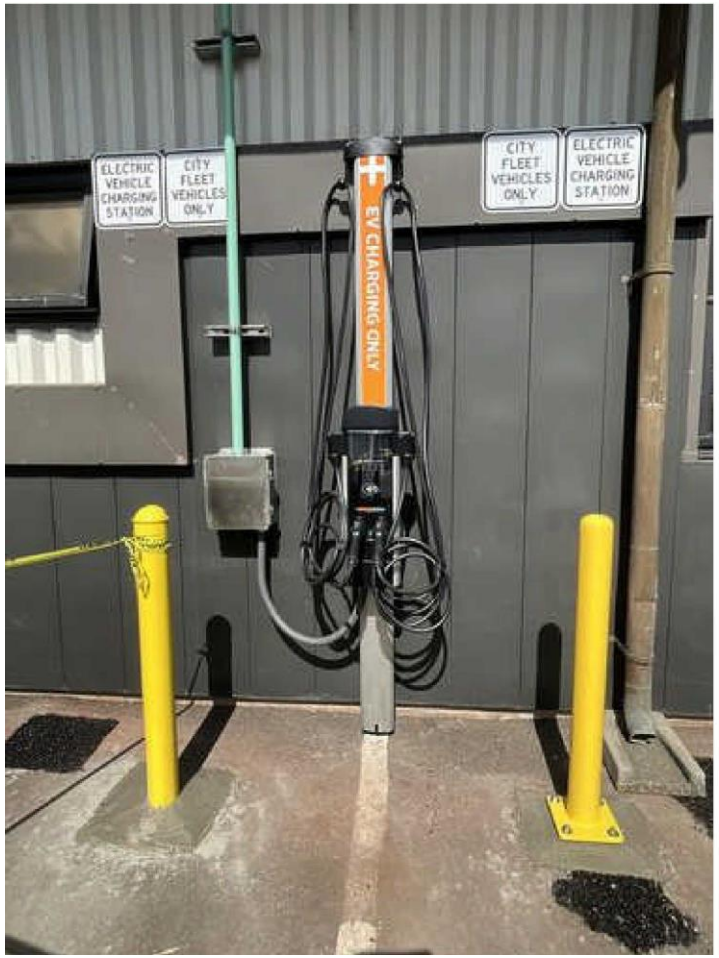
HFD Messenger Vehicle – AM Route
Driving Time 1:46

HFD Vehicle Maintenance

HFD Messenger Vehicle – PM Route
Driving Time 0:49

HFD Museum At HFD HQ

Honolulu Fire Department Messenger Vehicle Project



Dual-Port EV Charger at HFD Maintenance Facility

A 130-kW PV system provides electricity to the facility, which then powers the EV charger.

HFD Messenger Vehicle – 2020 Kia Niro

Flashing emergency lights and auxiliary 12-volt battery were added after market.

On-going EV Infrastructure Projects for City Fleet Charging

418-kW Photovoltaic System Supplies Electricity to Kapolei Hale

The electricity powers the building, which then powers the EV chargers.

Thirty (30) Dual Port EV Chargers Under Construction

The electrical conduits and boxes are suspended from the PV canopy to minimize the amount of underground electrical work, which helps to reduce the cost of construction.

Future EV Infrastructure Projects for City Fleet Charging

Kapālama Hale – (4) ports for City Motor Pool Vehicles

DFM Building Maintenance Facility – Phase 1 – (12) ports for light and medium vehicles.

Civic Center Parking Structure – Phase 1 – Approximately (50) ports for half of the light-duty fleet assigned to the CCPS.

These locations have or will have photovoltaic systems to help offset the electricity use.

EV Infrastructure for City's Bus Fleet

Level 3 DC Fast Charger

Kalihi-Palama Bus Facility
Level 3 DC Fast Charger Building C
(Dynamometer Room)

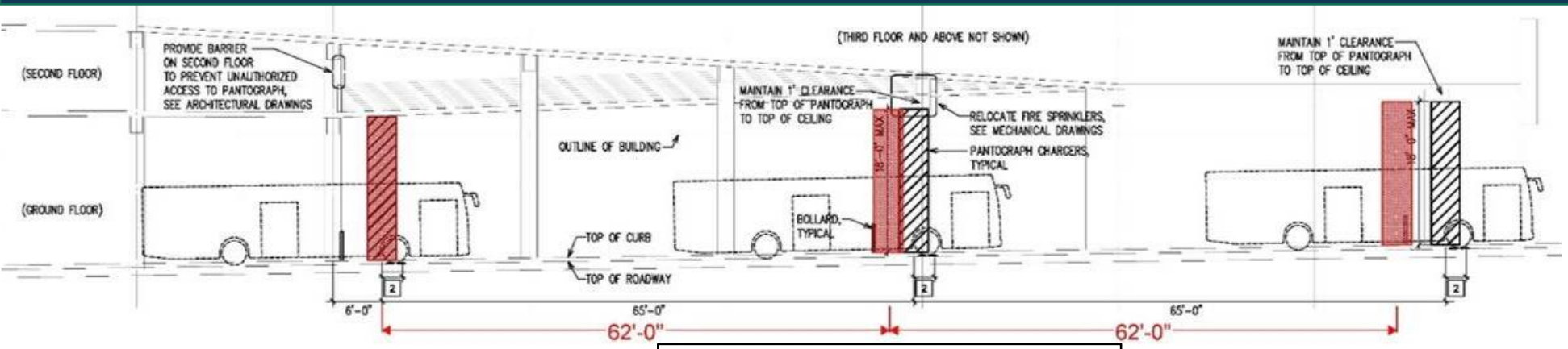
- First Level 3 charging facility in the City.
- Provided charging to the City's first three (3) electric buses.
- Building had spare electrical capacity to support the 62.5 kW Level 3 charger.
- Future PV system for Building C is in pre-construction.

EV Infrastructure for City's Bus Fleet

Kalihi-Palama Bus Facility Ready Line

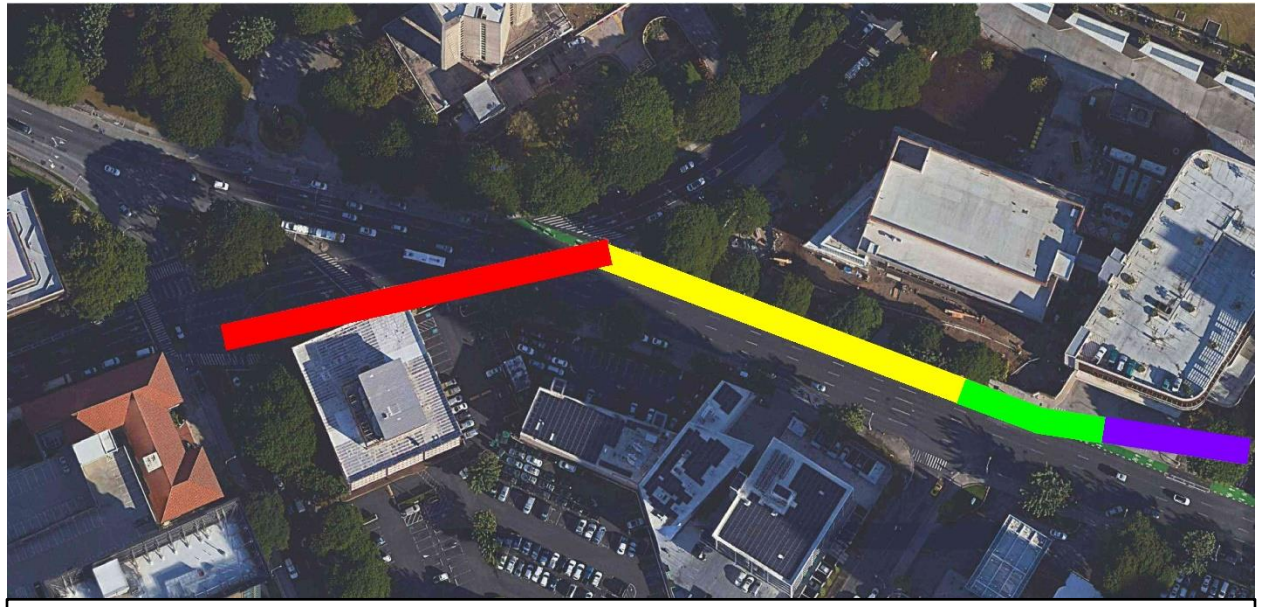
- (25) charge dispensers for (15) buses.
- Over 5,000 linear feet of under electrical conduits.
- Site had spare electrical capacity.
- 365-kW PV system provides 12% of the electricity needed to charge the buses.

EV Infrastructure for City's Bus Fleet



On-route Charging Concept

Overhead Pantograph



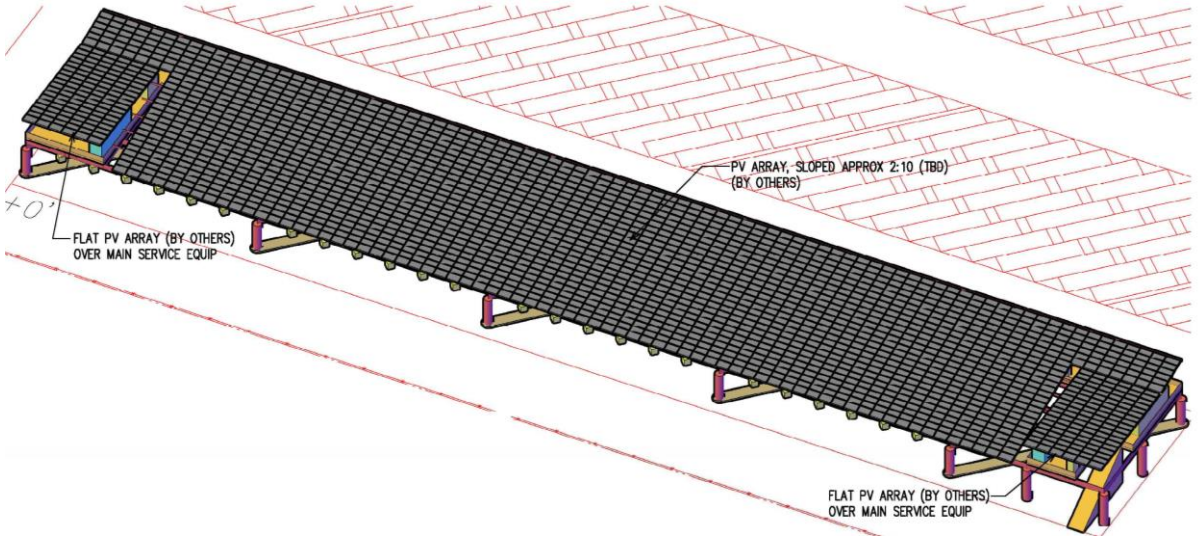
Route of New Underground Electrical Conduits

Alapai Transit Center at the JTMC

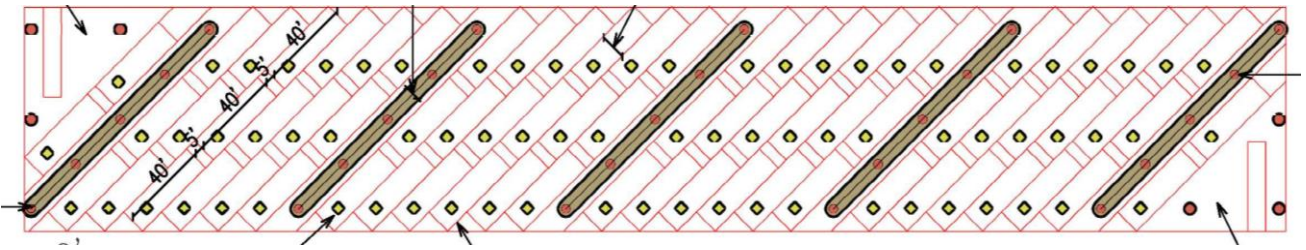
- (3) overhead pantograph chargers for on-route charging.
- (16) charge dispensers for overnight charging.
- New HECO off-site electrical service is necessary.

EV Infrastructure for City's Bus Fleet

Pearl City Bus Facility



Proposed PV Canopy



Charge Spots for Approximately (76) Buses

Pearl City Bus Facility – Phase 1

- (76) depot chargers.
- Provision for future photovoltaic system with battery energy storage.
- New HECO off-site electrical service to be determined.

Cost of EV Infrastructure

Station Name	No. of Ports	Year Installed	Project Cost	Station Name	No. of Ports	Year Installed	Project Cost
FASI CIVIC CTR	2	2012	$29,174	**HFD WAIPAIHU MAINT. FAC.**	2	2023	$122,123
MOTOR POOL 1	2	2012		**KAPALAMA HALE 1**	2	2024	$540,228[2]
SMITH BERETANIA	2	2012	$16,587	**KAPALAMA HALE 2**	2	2024	
HALE PAUAHI	2	2012	$16,987	**HONOLULU HALE**	1	2024	$139,627[3]
CHINATOWN GATEWAY	2	2012	$16,587	**HANS L'ORANGE NEIGHBORHOOD PARK**	2	2024	Unknown[1]
BLAISDELL CTR	2	2012	$18,387	**MED EXAMINER 1**	1	2024	$61,955
HONOLULU ZOO	2	2012	$22,525	**MED EXAMINER 2**	1	2024	
KAPOLEI HALE	2	2012	$18,187	**UMI STREET FUELING FACILITY Level 3**	1	2024	$294,088
ALA WAI 1	1	2019	Unknown[1]	**LAIE CORPORATION YARD Level 3**	1	2024	$313,509
ALA WAI 2	1	2019	Unknown[1]	**KAPOLEI HALE** Level 2 – City Fleet	60	2025	$2,253,741
ALA WAI 3	1	2019	Unknown[1]	**KAPOLEI HALE** Level 3 – Public	2	2025	
HALAWA CORP YARD	2	2020	Unknown[1]	**KALIHI-PALAMA BUS FACILITY** – Dynamometer Room	1	2019	$241,956
WAHIAWA SATELLITE CITY HALL	2	2021	$167,077	**KALIHI-PALAMA BUS FACILITY** – Ready Line	25	2021	$3,723,181
HFD MUSEUM	2	2021	$122,778	**ALAPAI BUS FACILITY** – Offsite Electrical Work	n/a	2025	$3,502,292
MOTOR POOL 2	2	2022	$95,986				
MILILANI MAUKA FS	2	2023	$122,123				

[1] EV charger installed as part of a larger project or by in-house forces. Cost breakdown not available.

[2] Includes hazardous material mitigation.

[3] Includes archaeological services.

Long-range EV Infrastructure Planning

Key Players to Long-Range EV Infrastructure Planning:

- Office of Climate Change, Sustainability, and Resiliency
  - Leads the Fleet Modernization Working Group.
  - Provides guidance to operating agencies.

- Operating Agencies
  - Develop fleet modernization plans, which include procurement of EVs and location of charging facilities.
  - Work with DDC in planning their 6-year CIP budgets.

DDC will assist in determining available electrical capacity at the operating sites.

DDC will implement CIP projects based on agencies' fleet modernization plans.

MAHALO!

Department of Design and Construction
City and County of Honolulu