



ELECTRIC ISLAND – A PARTNERSHIP BY PORTLAND GENERAL ELECTRIC AND DAIMLER TRUCK NORTH AMERICA

Jonathan Yan / Charging Infrastructure / 7.12.2022

FREIGHTLINER ECASCADIA AND EM2



eCASCADIA



eM2

MOTIVATION: TESTING VEHICLES ENSURE CHARGING INTEROPERABILITY

- Based on learnings from our prototype fleet, there is great need for testing our vehicles with the wide array of different charger suppliers.
- Vehicle charging standards leave room for interpretation, which then leads to different implementations by suppliers
- Primary issues relate to the initial charger and vehicle “handshake” process. If one is unable establish communication to the other, charging does not start.
- Physical space to park during charging is also an issue!

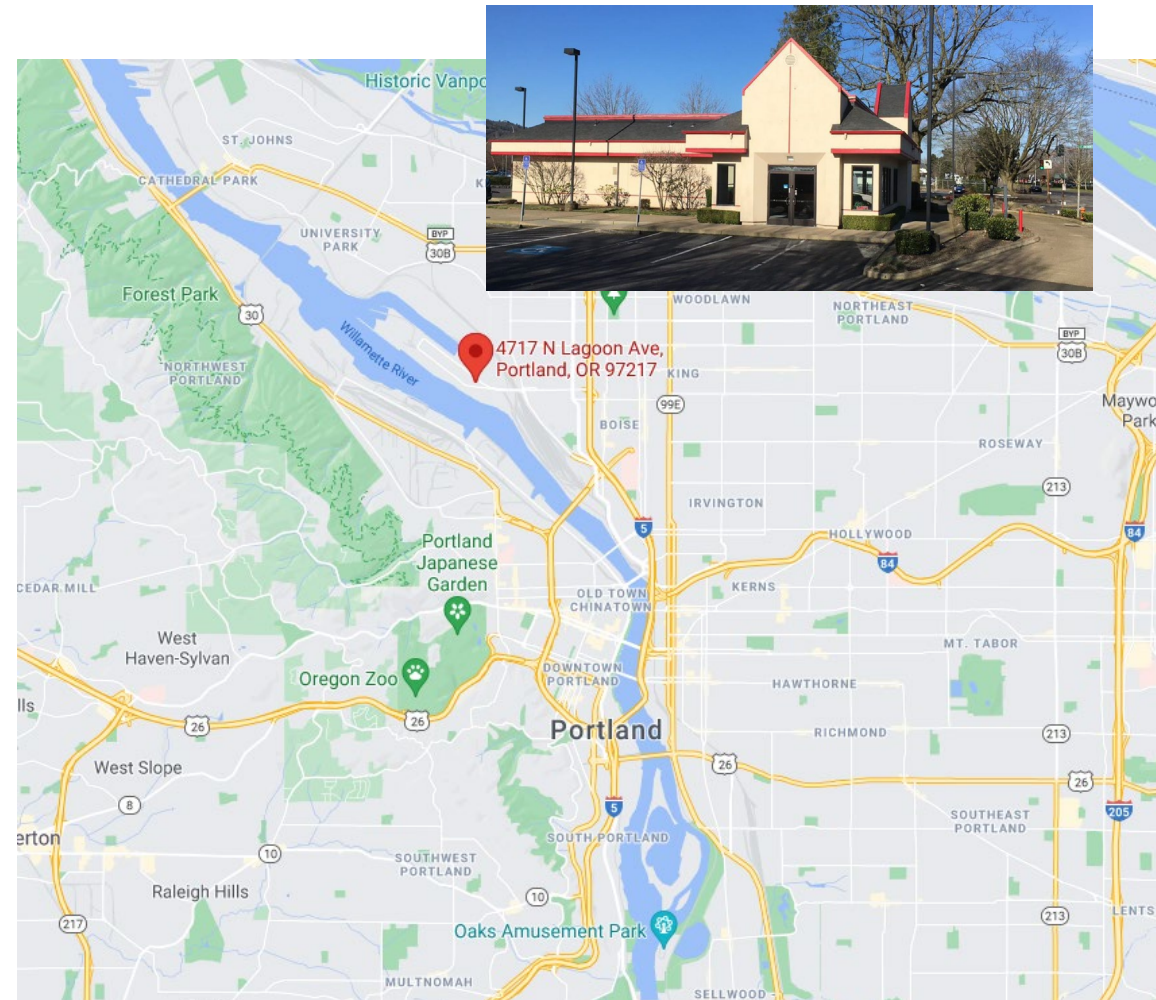


MOTIVATION: THE SOLUTION

- Develop the “first” public commercial vehicle charging site
- The site features a number of chargers from different manufacturers and will be publicly accessible – any electric truck, bus, or pass. vehicle can use the chargers.
- This allows for our trucks to test on a wide range of chargers.
- Located in the heart of our corporate campus

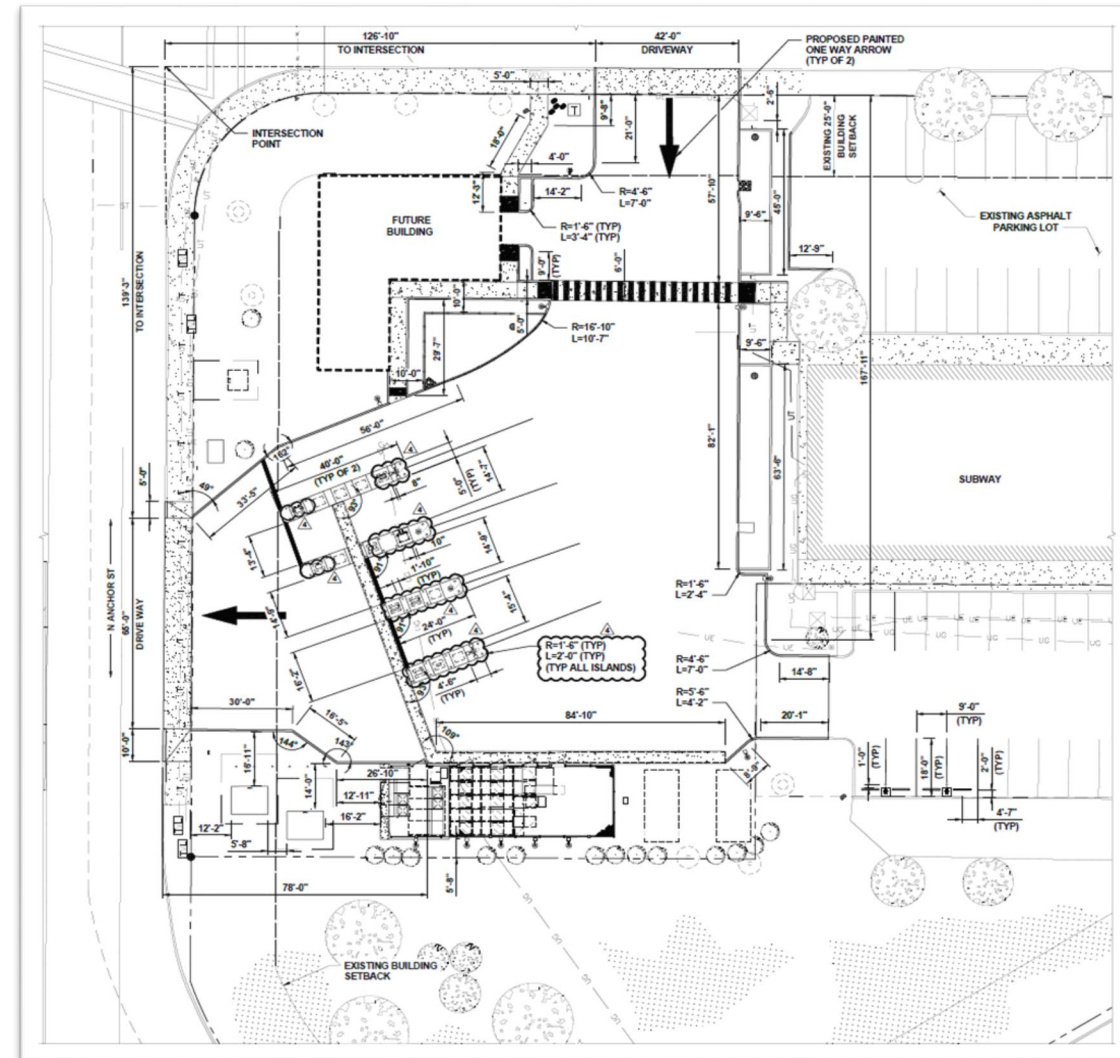
MOTIVATION: THE HOW

- DTNA partnered with Portland General Electric to design/construct a heavy-duty EV charging site on Swan Island in NW Portland, known as Electric Island.
- Black & Veatch was awarded the engineering, procurement and construction contract (EPC) for the project.
- Previously, an abandoned fast food restaurant sat on the property



SITE LAYOUT PLANNING

- ~1 acre property, leased by DTNA and accessible to the public
- Space for 15 charger dispensers (11 chargers currently installed)
- Designed to accommodate the turning radius of the largest class-8 trucks
- Innovative concrete trenching system allows for “quick swap” of chargers as newer models become available
- Room for a potential “Showcase” building for tours, public demonstrations, etc.



SITE OVERVIEW – NOTABLE FEATURES

“Power Garden”
location for
charger power
cabinets



Cable concrete
trench



ELECTRICAL AND EVSE DETAILS

Utility distribution interconnection

- 2 MW existing capacity (5 MW possible)
- 2x 3000-Amp services
- 2x 1000 kVA transformers (with concrete pads sized for future upgrade to 2500 kVA each)

Charger specifications

1500kW of total installed charging capacity

- ABB Terra HP 175 (175kW)
- ABB HVC 150 (150kW)
- ABB Terra 184 (180kW)
- BTCPower 100kW All-in-one
- BTCPower 200kW
- 2x ChargePoint CPE250 (62.5kW)
- 2x ChargePoint CT4025 7.2kW
- Heliox Flex 180kW
- Tritium RTM75 75kW
- Proterra 120kW
- Detroit eFill 180kW



DATA COLLECTION / PAYMENT

- Shell Recharge Solutions



- ChargePoint



- Place to Plug



PHASE 1 COMPLETE APRIL 2021



PHASE 1 COMPLETE APRIL 2021



PHASE 1 COMPLETED APRIL 2021



NEXT STEPS AT ELECTRIC ISLAND

- Currently in the planning phase, the next stage of Electric Island will likely include:
 - Up to 2 MW of on-site energy storage from conventional and second-life eCascadia batteries, in order to mitigate any power quality impacts that the chargers impart on the local distribution system
 - Up to two megawatt-scale, heavy-duty chargers (MCS).
 - On-site solar generation (~30kW)
 - A showcase building for tours and educational purposes
 - Installing additional chargers to provide even more charging capacity.

PUBLIC CHARGING

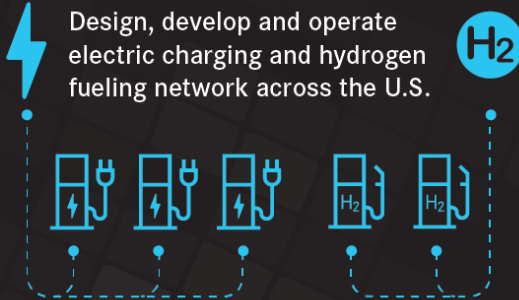
1 | CHALLENGE

Lack of a publicly available, nationwide electric charging infrastructure for commercial vehicles.



2 | MISSION

Design, develop and operate electric charging and hydrogen fueling network across the U.S.



3 | COLLABORATION

DAIMLER TRUCK
North America



BlackRock.

4 | FOCUS

Battery electric medium- and heavy-duty vehicles with option for light-duty vehicles.



SECONDARY PASSENGER CARS



5 | INITIAL ROUTES



THANK YOU.

