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

Jonathan Yan / Charging Infrastructure / 7.12.2022
FREIGHTLINER ECASCADIA AND 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 to 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

- **Cable concrete trench**
- **“Power Garden” location for charger power cabinets**
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

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

5. INITIAL ROUTES
- WEST
- TEXAS
- EAST
THANK YOU.