Bi-State Electric Vehicle Connector

September, 27th 2019
Agenda

1. Introductions
   • ChargePoint, EV Launchpad, & Eversource Overview
2. Typical Host Questions
3. Hypothetical Project
4. Open for Questions & Answers
Typical Questions
Question

For a typical EV charging station installation, what work does the Utility perform and manage, and what is the responsibility of the site host?

Follow up question: What are some considerations that should be contemplated from an electrical infrastructure standpoint when installing EV charging stations?
Question

Does Eversource have any programs to incentivize charging station installation in NH?
Question

Do all EVs charge at the same rate and do we need different types of chargers? Is ‘faster’ synonymous with ‘better’?
# Charging Levels

<table>
<thead>
<tr>
<th>Level</th>
<th>Amperage</th>
<th>Voltage</th>
<th>Kilowatts</th>
<th>Typical Charging Time</th>
<th>Connector</th>
<th>Primary Use</th>
</tr>
</thead>
</table>
| **AC Level 1** | 12–16 amps| 120 V       | 1.3–1.9 kW| 12–80 hours 2–5 miles RPH   | J1772 connector  | • Backup charge  
 |                |           |            |           |                             |                   | • Some home use                          |
| **AC Level 2** | 6–80 amps | 208 V or 240 V | Up to 19.2 kW | 2–4 hours 20–25 miles RPH | J1772 connector  | • Park and charge  
 |                |           |            |           |                             |                   | • Home, commercial, and public charging  |
| **DC Fast Charge** | 70–125 am  | 480 V       | 50–500+ kW | 10–45 minutes 200–500 miles RPH | SAE Combo, Tesla, ChaDeMo connector | • Commercial, public  
 |                |           |            |           |                             |                   | • Charging while traveling long distances |
Identifying Appropriate Hardware

Level 2
- Overnight (Home or Hospitality)
- Workplace
- Fleet (overnight and high daily use)
- Destination Shopping (mall, etc)
- Restaurant/Sit Down Dining
- Sports and Recreation

DC Fast
- Lunch, Dinner, Quick Meeting
- Emergency Workplace Charging
- En-Route Fleet
- Quick Errands
- Fast Food
- Interstate/Highway Stops

Parking Duration (hours)
- 8
- 4
- 2
- 1
- ½
- ¼
Level 2: Commercial Charging Stations

- **Speed**: Provides 20-25 RPH (miles of Range Per Hour).
- **Clean Cord Technology**: Self-retracting, maintenance free, ultra-lightweight cord management system.
- **Power Management Options**: Cut installation costs and double the number of parking spots served.
- **Branding and Customization**: Promote your brand with an LCD screen and customizable signage.
- **3G “Smart” Connectivity**: Allows for many driver experience enhancements as well as station owner flexibility controls.
- **Consumer Friendly User Interface**: Available in multi languages (English, French, and Spanish), interactive animated user interface, and touch buttons for input (glove and ice operations).
- **Compatibility**: 100% of EVs can charge with our Level 2 Chargers including Tesla
Level 3: DC-Fast Charging

- **Speed**: 50kW up to 500kW. Provides 200-1000+ RPH

- **Branding and Customization**: Promote your brand with an LCD screen and customizable signage.

- **Compatibility**: 100% of BEVs charge at our stations simply by choosing which connector suits their car.
Question

I’ve heard about dumb and smart chargers - can you explain the difference?
# Networked Charging Stations vs Dumb Stations

<table>
<thead>
<tr>
<th>Feature</th>
<th>Smart Charger</th>
<th>Non-networked Charger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dispense Electricity</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Visible to Drivers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* through mobile app, turn by turn directions, nearby amenities, real-time availability, 24/7/365 driver support</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td><strong>Waitlist &amp; Driver Alerts</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* reserve a station, know when car is fully charged</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td><strong>Access Control for Owners</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* public/private, loyalty rewards, fleet services</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td><strong>Recover Revenue: Session Fees</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* charge per kWh, hourly, or per driver group</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td><strong>Data Analytics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* station usage, # of unique drivers, charging behavior, utilization, revenue, costs, and GHG offset</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td><strong>Remote Access and Maintenance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* proactive monitoring &amp; fixes, software updates</td>
<td>✓</td>
<td>✗</td>
</tr>
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</table>
What’s the value of a smart charging station for my organization/business/city/fleet/home?
## Value of Smart Charging

Reduce Expenses and Generate Direct & Indirect Income

<table>
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<tr>
<th>Home</th>
<th>Fleet</th>
<th>Workplace</th>
<th>Multi-Family Homes</th>
<th>Commercial Property</th>
<th>Parking</th>
<th>Retail &amp; Hospitality</th>
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<td>![Home Icon]</td>
<td>![Fleet Icon]</td>
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</table>

### GAIN GREATER CONTROL & VISIBILITY

+ Track usage and expenses
+ Charge during off-peak hours
+ Achieve sustainability goals

### LOWER COST OF TRANSPORTATION

+ Meet government mandates and regulations
+ Reduce operating expenses with lower fueling and maintenance costs
+ Achieve sustainability goals
+ Proactively manage expenses
+ Manage power in a grid-friendly way

### ATTRACT & RETAIN TALENT

+ Increase employee satisfaction
+ Improve productivity
+ Achieve sustainability goals
+ Provide pricing controls to support your business goals

### ATTRACT & RETAIN RESIDENTS & TENANTS

+ Increase average rent and property value
+ Provide valued amenity
+ Meet emerging state and city regulations
+ Achieve sustainability goals

### ATTRACT NEW CUSTOMERS

+ Drive revenue
+ Provide differentiating amenity

### INCREASE SALES

+ Attract new and repeat customers
+ Increase shopping time
+ Boost customer satisfaction
+ Achieve sustainability goals
+ Integrate with loyalty programs

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Question

How do the financials work? Should we charge money to drivers to use the stations? If so, how much?
Pricing Options

- **A fixed rate per charging session**: The driver pays a set fee for the entire session
- **An hourly rate**: The driver pays per hour, similar to how a parking meter operates
- **An hourly rate while charging**: The driver pays per hour but only while drawing energy
- **An energy rate**: The driver pays for the energy consumed on a per kWh basis
- **Length-of-Stay Graduated pricing**: One price is charged during the first x minutes/hours and another price is charged afterwards. Note: graduated kWh pricing is not supported
- **Charge Complete Graduated pricing**: One price is charged while the vehicle is actively charging, then a different price applies once the vehicle is finished, with a grace period.
- **Time-of-Day pricing**: One price is charged during peak hours and another during off-peak hours
- **Combinations of the previous, for example**:
  - A flat session fee PLUS an energy rate
  - A minimum session fee PLUS an hourly rate.
- **Change the policy based on who is charging**
  - Station owners may set unique policies for different classifications of drivers. For example:
    - Employees, Visitors, Fleet vehicles
How do I know if the stations are being used? And, how can I make them only accessible for my employees?
Overview of ChargePoint Stations on the Dashboard

- **Messages**
  - Driver Tip: Accessible même lorsque le concessionnaire est fermé. Accès par la rue f... 15 mins ago.
  - Driver Tip: Stop being lazy. 38 mins ago.
  - Driver Tip: WARNING: These 2 stalls are only for UCI employees (signs say UCI Parki... 5 hrs ago.
  - Driver Tip: Found this charging station by Target and it is FREE to charge. Awesom... 6 hrs ago.

- **Real Time Power**
  - 13.9 MW

- **Unique Drivers**
  - In thousands:
    - Oct: 0
    - Nov: 50
    - Dec: 100
    - Jan: 150
    - Feb: 100
    - Mar: 50

- **Sessions**
  - In millions:
    - Oct: 0
    - Nov: 0.5
    - Dec: 1
    - Jan: 1.5
    - Feb: 1.0
    - Mar: 0.5

- **Station Usage**
  - Last 30 Days (M-F)
  - Category: Light (< 3 hrs), Moderate (3-6 hrs), Heavy (> 6 hrs)
  - Number of Ports in thousands:
    - Light: 150
    - Moderate: 50
    - Heavy: 0

- **Station Status**
  - Ports: 79,248
  - Map:
    - In Use
    - Available
    - Not Ready
    - Watch List
    - Needs Service

- **Average Session Length**
  - Last 30 Days
    - 5h 43m
    - 2h 22m Charging
    - 3h 20m Idle
Manage your stations

- View the stations in a table, by groups, or by state (available, in use, need service)

- Add pricing rules, and access rules to a group of stations, and/or a group of drivers.

- Integrate promotional videos

- Add a waitlist feature: when all stations are busy, the driver gets in line, and is notified when charger is available.

- Apply a scheduled charging policy to a single charger, or a group of chargers.
Question

Remind me again why I should pay more for a Smart charging station?
Most Advanced Charging Software and Services

Dashboard & Analytics
Station owners see how stations are being used and when it’s time to add capacity.

Waitlist
Drivers can get in line and get notified when the station is available – improves utilization.

Energy Management
Efficiently and automatically utilize power available for charging vehicles. Save money on costly upgrades and avoid demand charges.

Flexible Pricing
By hour, by kWh, by time of day, by customer type, or by any combination.

Access Control
Limit who can use the charging stations and when. Station owners can disable charging during “closed” times.

Fleet Services
Fleet Managers can track vehicle charging and pay for fuel if the vehicles need to charge at other stations.

Driver Services
Automatically notify drivers when: fully charged, a station becomes available, power outage or decrease, and more.

APIs
Most functions are also available through SOAP/XML and REST APIs that follow the same data access rules as the UI.
Hypothetical Project
Hypothetical Project Overview

Site Specific Bullet Overview:
• ~1200 employees
• 24 EV drivers currently
• 75 customers per day
• anticipate that growing over the next 10 years and want to accommodate
• fleet is mix of 20 administrative passenger vehicles (sedans and SUVs)
• Average 12000 miles
• 8 grounds and maintenance vehicles
• Average 7000 miles
Phase 1

- Double plug charging station
- Customers = 12 car max
- Employees = 24-36 cars
- Fleet = 12

Fleet overnight charging on both sides

Customers

Employees

Fleet
Open Discussion with Panel. Thank you!