Oregon’s EV Charging Network

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OREGON – In Perspective

- Population – 3.8 Million
- Just over 3 million passenger vehicles registered in Oregon
- Approx. 1,400 EVs on Oregon roads
- Oregonians drive about 28 miles per day on average
“One Million Electric Vehicles by 2015”

• In his State of the Union speech in Jan. 2011, President Obama set a goal of “1,000,000 electric vehicles on the road by 2015”

• Oregon tripled its per capita share of that goal at 30,000
EVs in Oregon
Nissan LEAF
Electric Ford Focus
Ford Transit Connect
Toyota Plug-in Prius
Smith Electric Trucks
Chevy Volt
Mitsubishi “i” car
Electric SMART car
My Little EV – TH!NK – Made in Indiana
Oregon Premier Launch Site for EVs

- ODOT courted several EV manufacturers to bring their products first to Oregon
- First MOU with Nissan in 2009 naming Oregon as launch site for LEAF
- Subsequent agreements with FORD, Mitsubishi and others
What Distinguishes Oregon?

• Pioneering Land Use Laws and Urban Growth Boundaries promote compact development
• Relatively Clean Electrical Grid (42% Hydro, 14% Natural Gas, 5% renewables - wind, solar)
• Environmental Ethos – 1st State w/ bottle deposits, Public Beach Law, etc.
• Statewide Building Code streamlined for EV charging infrastructure
• Statewide Price agreements for EVSE
Oregon’s Collaborative Approach

• All EV manufacturers and vehicle types are welcome and invited
• “Ecumenical” approach encouraging various suppliers of EV charging infrastructure
• “Petry Dish”
• Cooperation between governments, electric utilities, universities and regulatory bodies
Why EV Charging Infrastructure?

• The biggest limitation for EV drivers is the **RANGE** of the vehicles – “range anxiety”

• A reliable network of EV Charging Stations will encourage people to invest in new technologies

• “Chicken and Egg” phenomena ➔

• 75-80% of charging will be residential

• Next largest segment will be at work
EVSE: Level 2

- Input Voltage: 240V
- Standardized SAE J1772 connector
- Charging Time: 2 - 4 hours (12 - 24 miles/hour of charge)
- Breaker Size: 40 amp
- Charging Time: 3-4 hours
EVSE Level 2 – ODOT Workplace Charging
Employees experiencing range anxiety first hand...
DC Fast-Chargers (aka “Level 3”)

- Input Voltage: 480V or 208V, 3-Phase
- Charging time: 20 - 30 minutes (4 miles/minute of charge)
- Cost: $50,000 - $100,000 installed
- “CHAdeMO” connector – Japanese standard
DC Fast-Chargers

A Tesla, Plug-in Toyota Prius, Mitsubishi i car and Nissan LEAF all charging at Portland General Electric Headquarters in Portland, Oregon
Partnership:

- Planned Infrastructure in Oregon:
  - 800 Level 2 EVSE
  - 20-30 DC Fast-Chargers

Funded by:

- Free residential charging units installed for qualified buyers of the Nissan LEAF
“Green Highway” Initiative

- Signed by Governors of Oregon, Washington and California and the Premier of British Columbia in February 2010

- Envisions a day when you could drive an EV “from BC to Baja”
• Robust network of public-access DC fast-charging locations around every 20 to 50 miles along I-5

• Cooperative effort with Washington State
  – Common Host Site Selection Criteria
  – Common Signage
  – Logos on EVSE
Fast Chargers Installed in Southern Oregon!

• Dedicated March, 2012

• ODOT received $915,000 from DOE to install ten fast chargers in southern Oregon

• ODOT hired AeroVironment to deploy DC Fast Chargers every 25 to 30 miles

• AeroVironment installed one DC fast charger and one Level 2 at each host site
Completed “West Coast Electric Highway” DC Fast-Charger installed at Wolf Creek, OR in January 2012
US DOT - TIGER II Grant
Expanding the EV Charging Network

• ODOT received $3.34 million to expand the fast-charge network around Oregon
• Up to 35 “fast chargers” on major transportation corridors and travel destinations (e.g., Oregon Coast, Columbia Gorge, Cascades Mountains)
• Coordinating closely with southern Oregon and WSDOT deployments
Charging Station Installations

• Long lead time to sign up host sites
• Bring Electric Utility on board EARLY!
• Look out for political blow-back
  – Unused infrastructure – Government boondoggle
• “Haves and Have Nots” – Urban vs. Rural
• Fast charge stations are not tourist attractions
  – EV drivers want to get in and out
  – Host sites want them to stay and spend $$$
Supporting Efforts

• Adopted signage to keep internal combustion engine (ICE) vehicles from parking in EV charging spots

• Petitioned FHWA to use an alternative “gas pump” sign, which is now an approved national standard

• State Electrical Code amended to fast-track permitting and inspection of EV charging stations
Commercial Electric Truck Incentive Program (CETIP)

Freightliner’s All-Electric Walk-in Van

Smith Electric Truck – In service in Portland!

Navistar “E Star” Unveiled in Portland 2011
CETIP Program Features

- Funded with $4 million in Congestion Mitigation and Air Quality (CMAQ)
- Provides $20,000 vouchers to buy down the initial cost of the qualified electric trucks
- Will encourage fleet operators to invest in zero-emission urban delivery trucks
- Estimated to reduce diesel particulates by 1.8 tons per year and return about $1.5 million annually in public health and environmental benefits
2012 and Beyond – Future Activities

• Governor appointed Transportation Electrification Executive Council (TEEC)
  – Coordinate EV policy for Oregon
  – Promote EV adoption to reduce GHG emissions and reliance on imported oil

• US DOE $500K planning grant to State of Oregon
• “Energizing Oregon” Plan due September 2012

• 2015: Get to a Million EVs!

• Road Usage Charge for EVs????
Thank you for the chance to talk about Oregon’s EV Charging Network

Questions? Comments?

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