



# Oregon's EV Charging Network

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Office of Innovative Partnerships**





## “One Million Electric Vehicles by 2015”



*“With more research and incentives, we can break our dependence on oil with biofuels, and become the first country to have a million electric vehicles on the road by 2015”*

- President Barack Obama, 2011 State of the Union

- 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



## Oregon Premier Launch Site for EVs

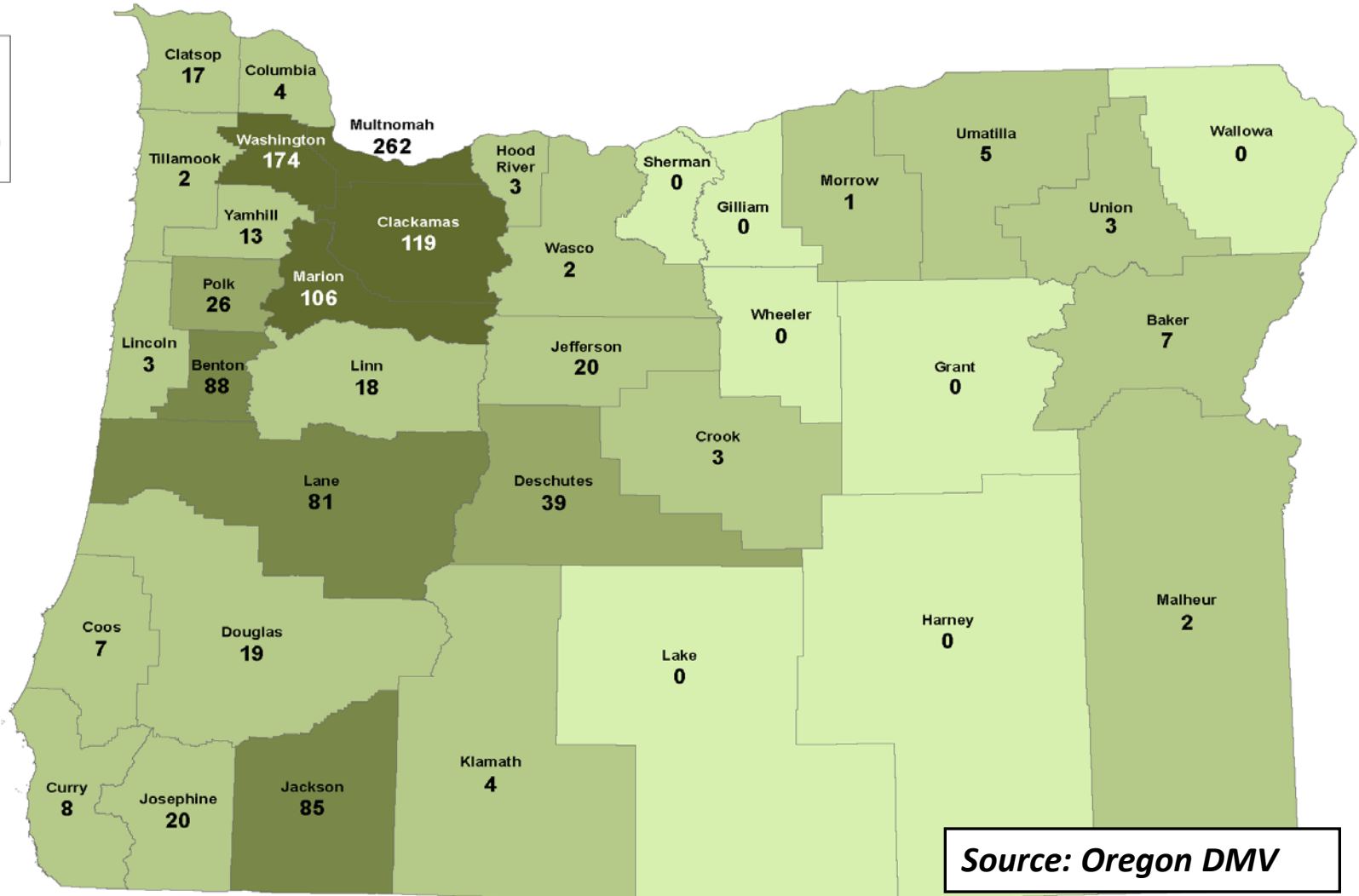
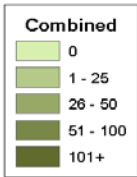


- ODOT courted several EV manufacturers to bring their products first to Oregon
- First MOU with Nissan in 2009 naming Oregon as launch site for LEAF
- Subsequent agreements with FORD, Mitsubishi and others





# Number of EV Registrations in Oregon by County



Source: Oregon DMV



## 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 Currently Installed in Oregon

## ECOtality

396 Residential  
268 L2 Publicly Available  
2 DC Fast Charge

## ShorePower

0 Residential  
29 L2 Publicly Available

## AeroVironment

36 Residential  
16 L2 Publicly Available  
8 DC Fast Charge

## SPX

2 Residential  
2 L2 Publicly Available

## Coulomb

0 Residential  
35 L2 Publicly Available

## GE

0 Residential  
1 L2 Publicly Available

## Eaton Corp

0 Residential  
1 DC Fast Charge



**EVSE Level 2 – ODOT Workplace Charging**



# DC Fast-Chargers (aka “Level 3”)

## Nissan LEAF Charging Ports



- Input Voltage: 480V or 208V, 3-Phase
- Charging Time: 20 - 40 Minutes (4 miles/minute of charge)

Cost: \$50,000 - \$80,000 installed

- “CHAdeMO” connector – Japanese standard





# DC Fast-Chargers in Oregon Governor at ECOtality Dedication - September 2011





## 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



THE  Project





WEST COAST  
**ELECTRIC  
HIGHWAY**

- 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



# Eight Fast Chargers Installed in Southern Oregon!

- ODOT received \$700,000 to extend the 3-phase, 480V fast charge network in southern Oregon
- ODOT hired AeroVironment to deploy the eight charging stations every 25 to 30 miles
- AeroVironment installed one CHAdeMO-certified DC fast charger 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-Funded: The Electric Vehicle Corridor Connectivity Project

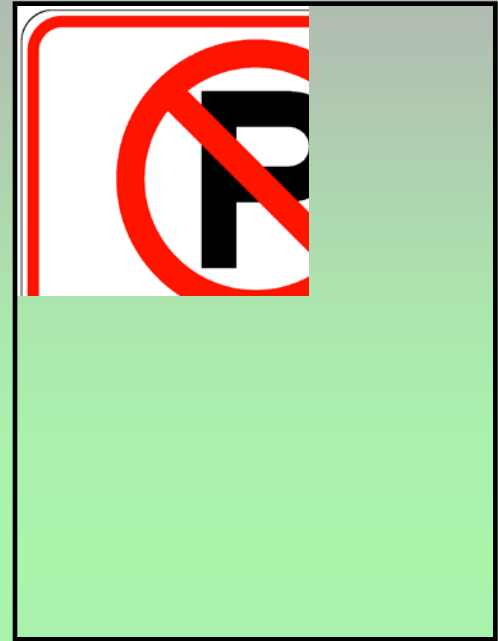
- ODOT received \$2 million to expand the fast-charge network in Northwest Oregon
- Additional 22 “fast chargers” on major corridors and underserved communities (Coast, Gorge, Cascades)
- Plan to coordinate closely with southern Oregon and WSDOT deployments





## 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





## 2011 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
  - Plan due September 2012
- Road Usage Charge for EVs????



# They're Definitely Coming!!!!





Thank you for the chance to talk about  
Oregon's EV Charging Network

Questions? Comments?

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