オレゴン州EV情報

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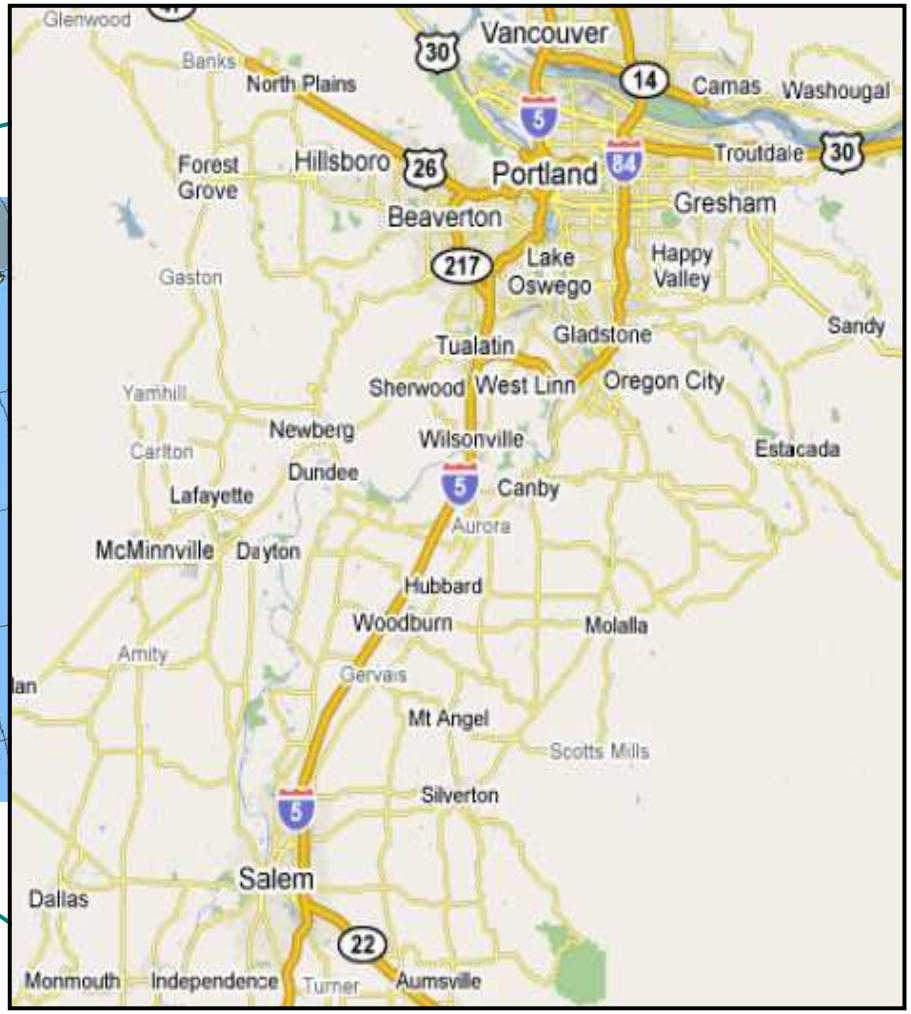
Portland General Electric

March 2011

ポートランド電力供給地域

State of Oregon



ポートランド電力一覧

- Portland, Oregon headquarters
- Service territory population 1.6 million, 43% of state's population
- 815,870 retail customer accounts
- 52 cities served – Portland and Salem the largest
- 4,000-square-mile service area
- 26,000 miles of T&D lines
- 2,459 MW of generation

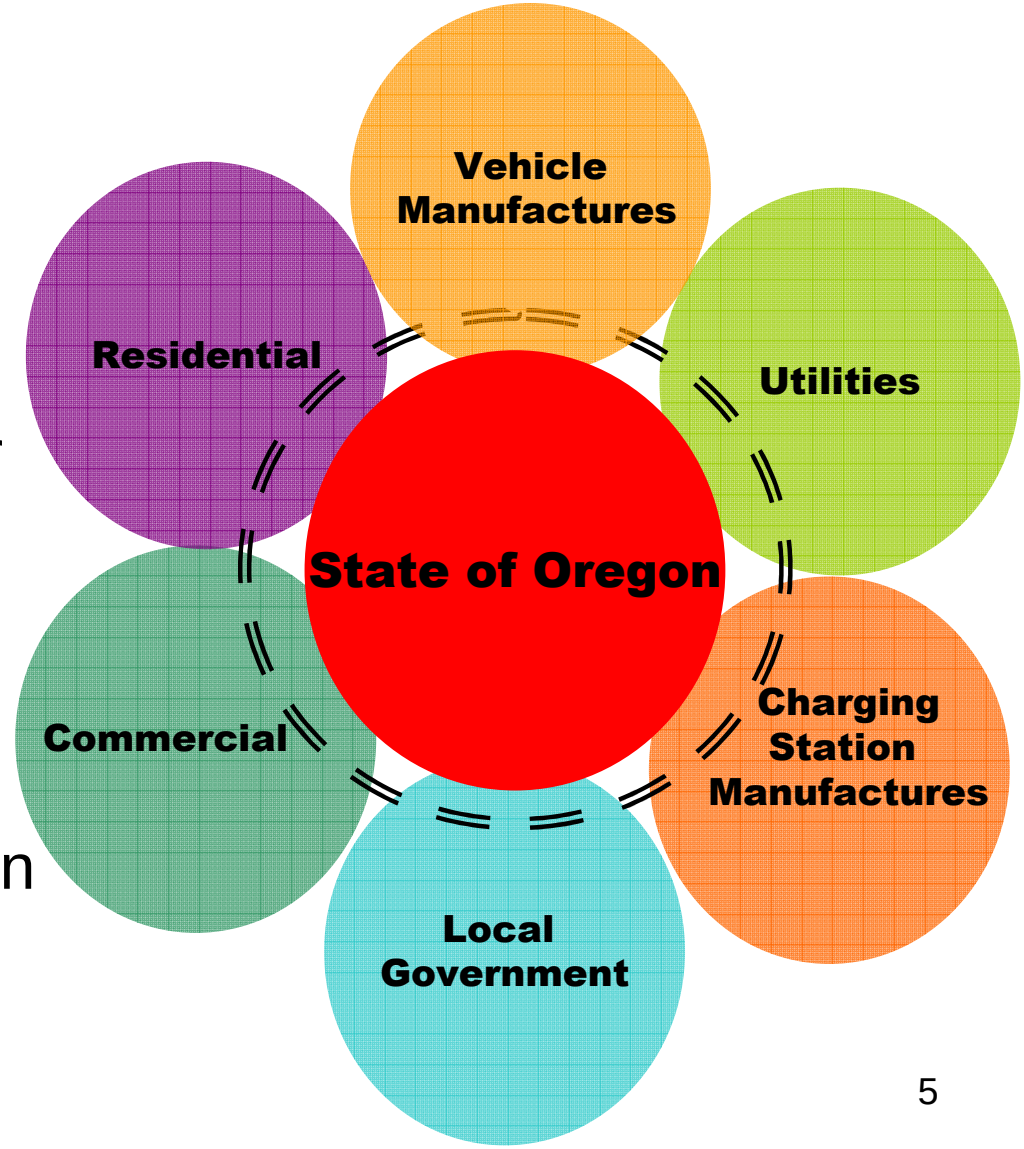
- Summer peak load of 3,950 MW (2009)
- Winter peak load of 4,073 MW (1998)
- Annual demand of 2,348 MWa (weather adjusted)
- 2,708 employees

オレゴン州のEVビジョン

- National leadership in Transportation Electrification and lower carbon emissions for transportation
- Premier US Launch & now Adoption Market for Plug-In Vehicles
- All manufacturers, all designs and all vehicle styles welcome and invited (vehicles, charging infrastructure, support services, etc)
- Full coordination with mass transit and urban planning/ development
- Charging Infrastructure will be ready
  - Charging Stations, building codes, contractor training, process streamlining
- Fleet deployment commitments in place
  - “Soft Orders” survey among public agencies, private employers (organizational use and employees)
- Universities ready to study usage & trends
  - Optimal charging locations, usage patterns, consumer behaviors

Oregon's Collaborate Approach

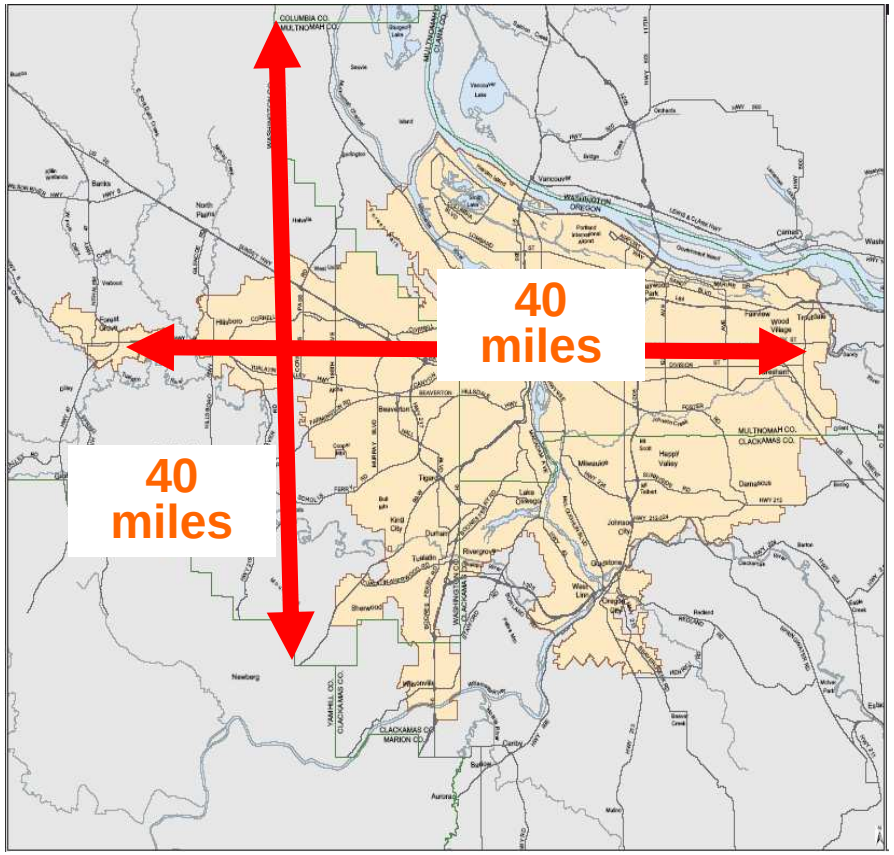
- Collaborative Oregon approach: public and private sector working together
- Infrastructure work under way
- Working with all vehicle and charging station manufactures
- Governor's Transportation Electrification Executive Council



コンパクトな都会

- Urban growth boundary for each community creates ideal location for EV applications Portland, Eugene, Salem, Corvallis
- Local governments commitment to sustainability
- Residents strongly support sustainability
- Daily miles traveled data: average 20 miles per household daily
- Extensive transit/commute usage data available

Portland Example



環境保護計画目標

- State of Oregon – reduce total carbon emissions to 75% below 1990 levels by 2050
- Portland's (Oregon's largest city) goals:
  - 40% below 1990 levels by 2030
  - 80% below 1990 levels by 2050
  - Transportation is key focus area
  - `For details, see http://www.portlandonline.com/bps/index.cfm?c=49989

オレゴン州知事のリーダーシップ

Transportation Electrification Executive Council

- **Announced September 22, 2010**
- **Central point of coordination of electric vehicle (EV) strategy, development and deployment for the state of Oregon**
- **12 Members appointed by the Governor**
- **Primary point of contact on transportation electrification for the state**

"This is a long-term vision, a long-term mission – and we must make a long-term commitment to not only bring this next generation of cars to our communities….but also a commitment to make this transition to cleaner cars a successful one."

~ Governor Ted Kulongoski

EV関連

- $1500 Oregon Tax Credit for plug-in vehicles, plus $7500 Federal tax credit
- Businesses eligible for state tax credit of 35% of the cost difference between ICE (gasoline) and Plug-in vehicles
- State Tax Credits for charging stations (for businesses and individuals)

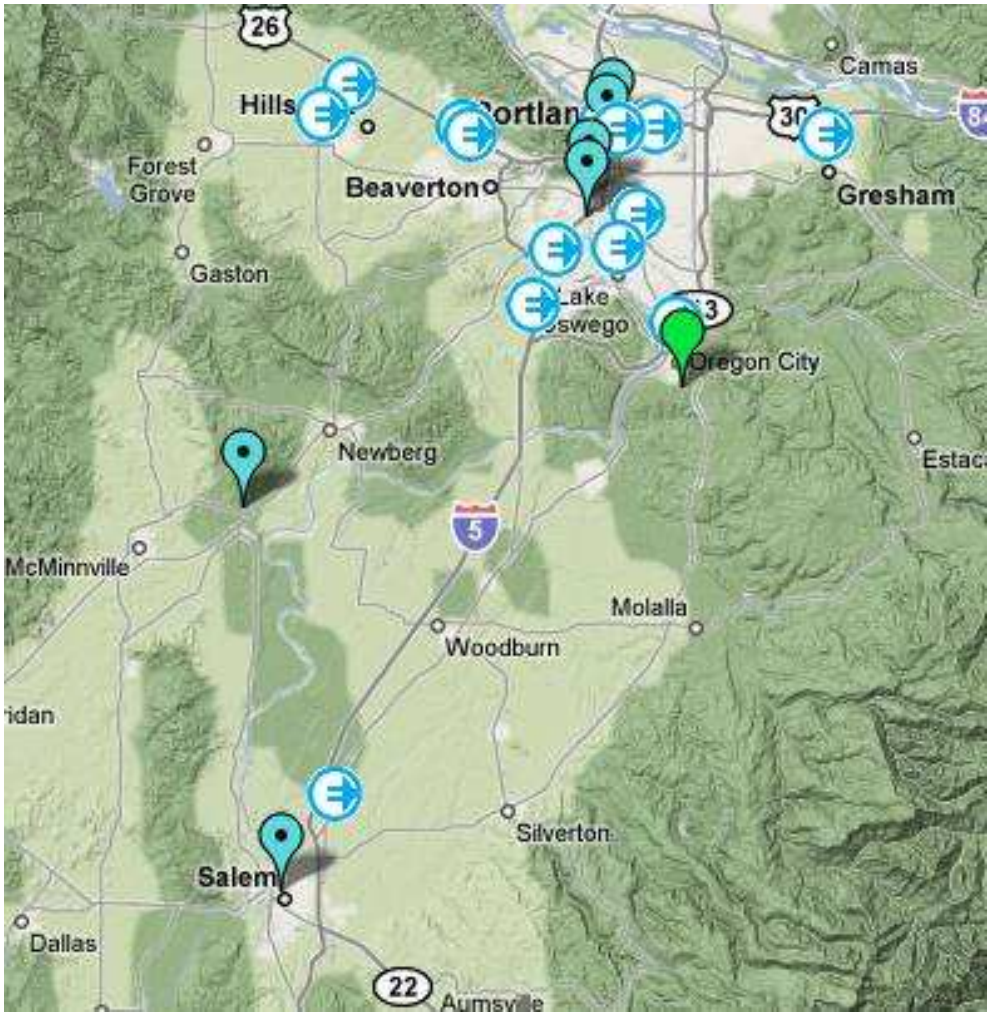
EV関連世論調査

- **61% think EVs are immediately available to purchase by the general public in Oregon, but are unsure which motor vehicle companies are selling EVs.**
- **84% have some degree of knowledge about EVs, with 38% who say they are at least "somewhat knowledgeable," representing an opportunity to educate residents.**
- **62% think charging stations should be made more readily available before EVs are manufactured in high volume.**
- **75% report they would have a higher impression of a company that uses EVs to distribute its products and conduct its business within the city.**
- **88% believe it is important for the United States to be a leader in using EVs as an alternative to gasoline fueled vehicles.**

オレゴン州公共充電ステーション

Over 50 public charging stations installed in Oregon

- Many different owners
- Majority are sub-metered to capture usage and trends data
- Over 50% upgraded to J1772 standards (Level 2)
- Many stations are powered by 100% PGE renewable energy
- North America's only publicly available DC Quick Charger in Portland



USDOE Grant ("The EV Project")

- **USDOE awarded a $100 million grant to eTec to build and study a mature charge infrastructure based on Nissan EVs. (October 2009) Project has since been expanded to include more regions, more chargers, etc.**

- **A total of $200+ million will be expended (1:1 match)**
  - 5 market areas originally
    - Seattle, Oregon, San Diego, Phoenix/Tucson, Tennessee
  - 5000 Nissan LEAF EV
  - 12,500 Proposed Level 2 EVSE
  - 250 Proposed Level 3 Fast Chargers
  - Infrastructure can be used by all EVs (not limited to LEAF)

- **Infrastructure studies and modeling**
  - Data collection
  - Lessons learned
  - Grid interaction

- **Results will become basis for nationwide EV charging infrastructure deployment strategy**

- **www.TheEVProject.com for additional information**

EV Project のタイムライン

Nissan Leaf Deliveries Start	2010 Q4
Home Level 2 Chargers Installed	2011 Q1
Public Level 2 Chargers Installed	2011 Q2
DC Quick Chargers Installed	2011 Q3 →
Evaluation	2011 Q3 – 2012 Q4
USDOE Grant Completion	2013 Q2

Operating Costs and Carbon Emissions

The typical passenger car

15,000 miles annually

- 20 mpg; **15** cents/mile fuel cost @ $3/gal
- Carbon emissions: **7.3** tons

The typical light truck

20,000 miles annually

- 10 miles/gallon; **30** cents/mile fuel cost
- Carbon emissions: **19.6** tons

All electric passenger car

15,000 miles annually

- 4 miles per kWh; **2** cents/mile fuel cost @ 8 cents/kWh
- Carbon emissions: **1.9** tons (at 2,000 lbs/ton)

All electric light truck

- 20,000 miles annually
- 1 mile per kWh; **8** cents/mile fuel cost
- Carbon emissions: **2.5** tons (at 2,000 lbs/ton)

急速充電器がオレゴンへ

- Manufactured by Takasago Seisakusho headquartered in Tokyo, Japan. Takasago is part of the NEC Group.
- Mr. Keiichi Takahashi is the President of Takasago, and former President of NEC Oregon.
- PGE and Takasago representatives meet in Tokyo in 2009 and discuss idea to bring Quick Charger to Oregon for demonstration
- MOU signed in Portland, Oregon - June 2010


Charlie Allcock and Mr. Takahashi

急速充電器がオレゴンへ　－2

Ms. Ueda and Mr. Sakurai, NEC and Carol Dillin and Charlie Allcock, PGE

- DC Quick Charger arrived in Portland July 12, 2010
- Technical personnel from Takasago, NEC Japan and NEC America joined the PGE Team to successfully install the unit completed July 13, 2010.
- Installed in the parking garage of PGE HQ in Portland, Oregon
- Interek of Beaverton, Oregon, retained to perform third-party certification to National Electrical Code
- Received inspection and approval August 2, 2010

北米初の公共急速充電器

August 5, 2010 - NEC and PGE announced the successful installation of the first DC quick charger in North America for public use with electric vehicles at the World Trade Center in Portland, Oregon. The all electric Nissan LEAF was the first vehicle plugged in and fully charged.

Oregon Governor Ted Kulongoski plugs into the Nissan LEAF

急速充電は配電系統影響なし

Mitsubishi i-MiEV and NEC/Takasago DC Quick Charger

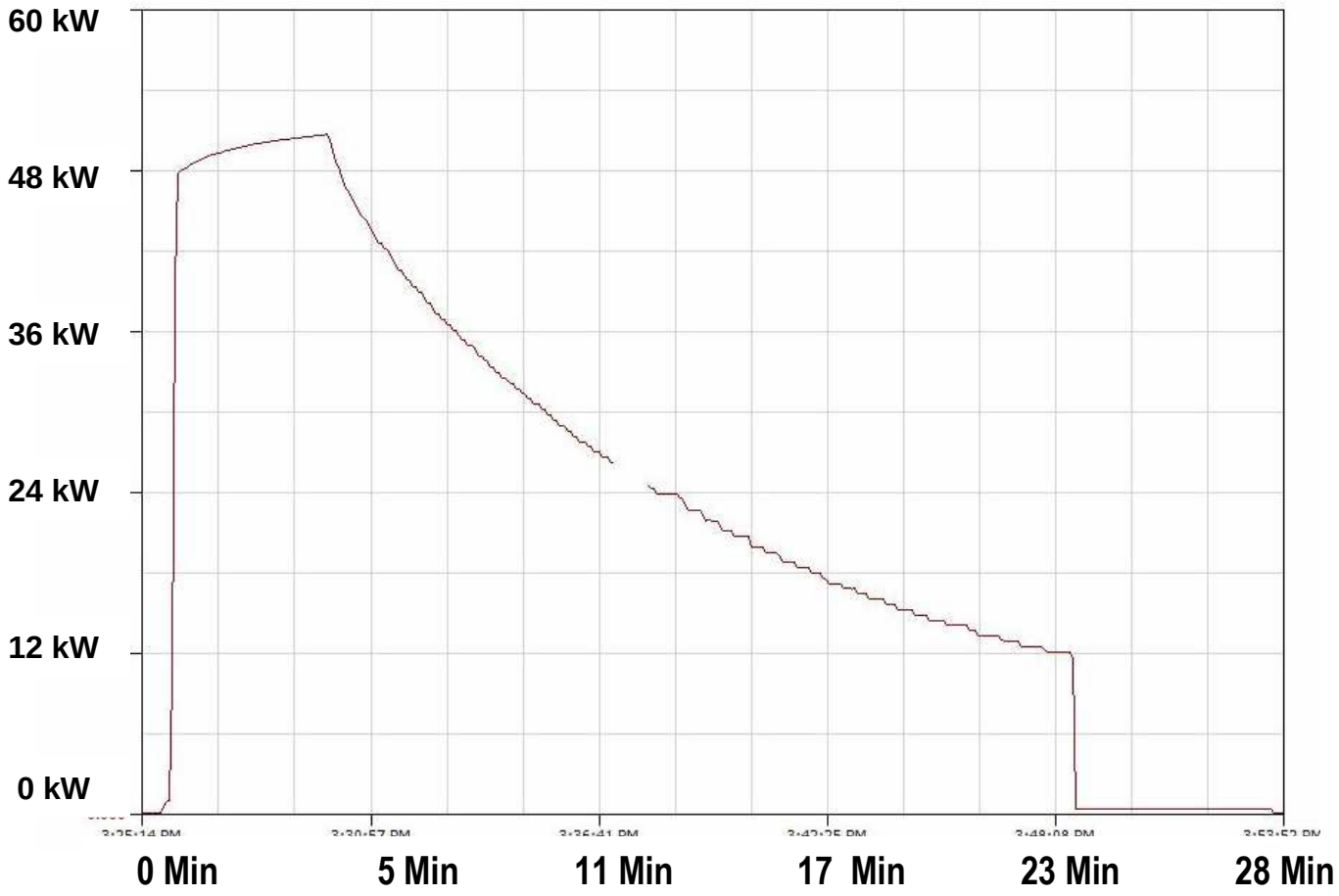
- Results:
  - Typical 20 Min charge time from 20% SOC to 80%
  - 4-5 miles of range per charging minute
  - After 10-15 min charging rate slows down
  - No significant impact to building power quality

- Conclusions:
  - Able to charge more quickly than anticipated
  - Charger connector was heavy, and charging/socket interface can be challenging to users.
  - Not Tested – Temperature affect on the charging rate.
  - 3Φ, 208VAC input sufficient; no need for 480VAC

Quick Charge Profileはよく知られていない

NEC/Takasago DC Quick Charger with Mitsubishi iMiEV

- 50 kW peak
- Roughly 5 miles per minute of charge in the first 10 minutes of charge
- 6 kWh delivered in the first 10 min; 5 kWh in the remaining 13 minutes



北米西海岸は先頭に走る

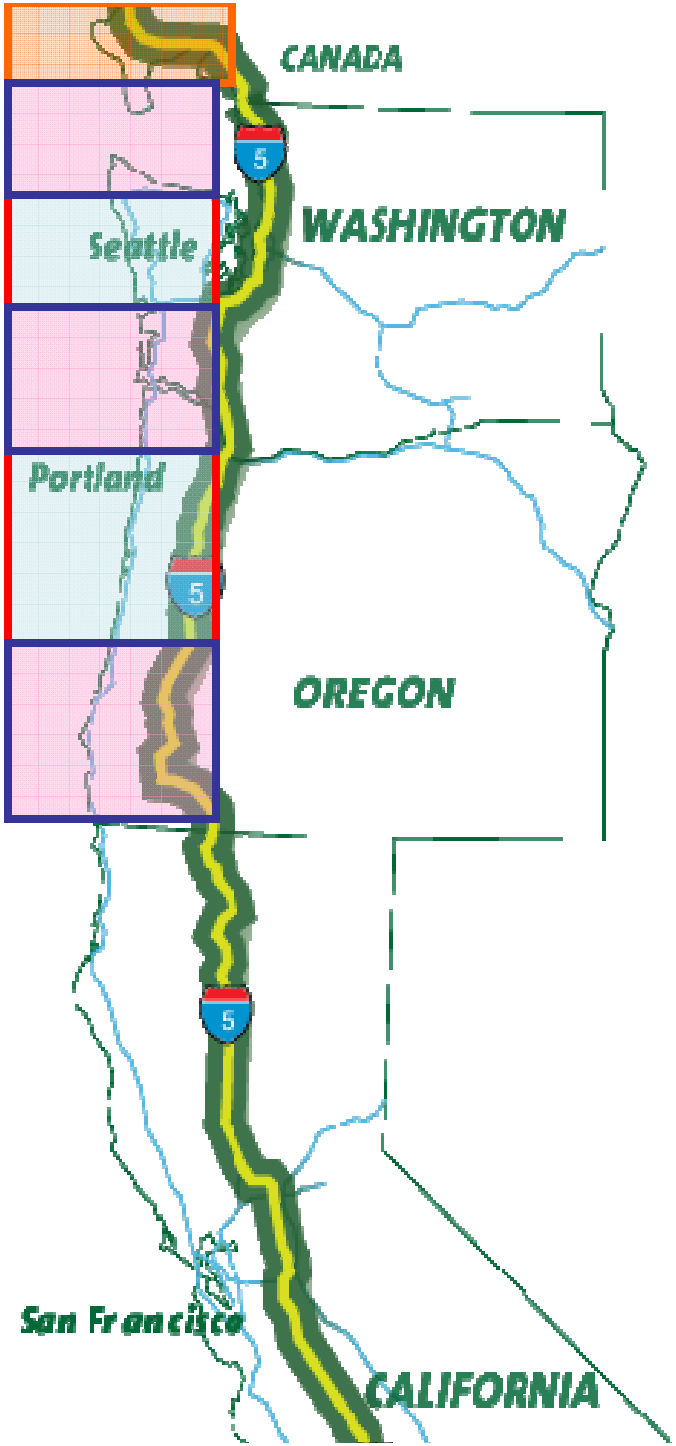
Signed by Governors of Washington, Oregon and California and Premier of British Columbia
Vancouver, B.C.
February 12, 2010

- **Build a Pacific "Green Highway" (I-5 corridor)**
- **Promote public-private partnership**
- **Share standards and best practices for alternative fuels**
- **Collaborate on all electric and plug-in electric vehicles**
- **Maximize impact of public fleets policies**
- **Maximize results from research and commercialization efforts**
- **Create consistent roadside signage for alternative fuel stations**

高速I-5沿に急速充電器

I-5 West Coast Green Highway

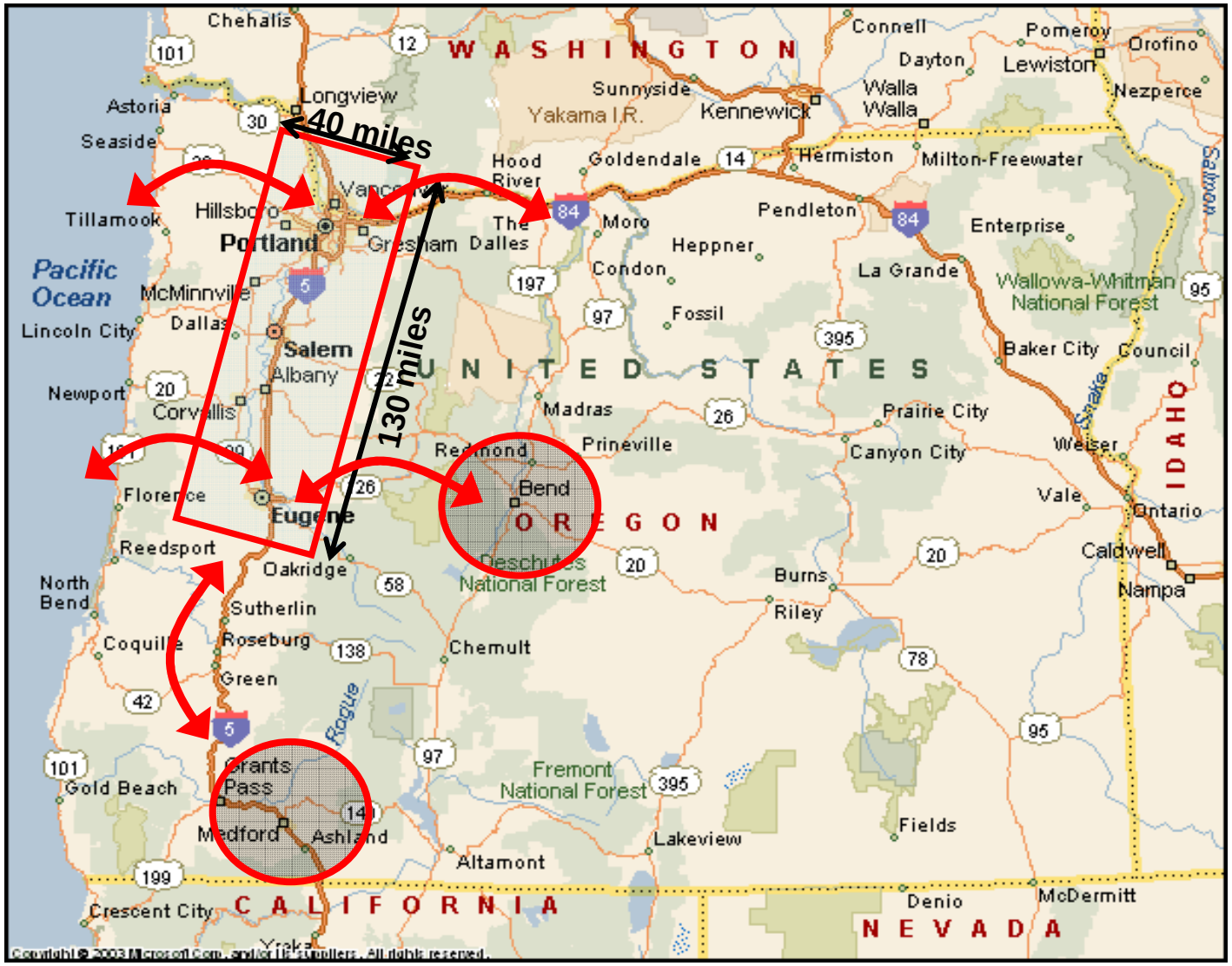
- 600 miles long
- 10+ million population
- Similar demographic & sustainability values
- Allow residents of one metro area to travel to other metro areas using EVs
- High level of interaction & collaboration already exists



Building the Northern section of the I-5 Green Highway

- BC Hydro project US/Canada border through Vancouver BC up to Whistler.
- I-5 corridor covered by TheEVProject (Eugene-Portland and Olympia to Everett).
- Additional areas in Oregon and Washington that will receive EV chargers with supplemental ARRA and TIGER II grant funds.

急速充電器で地方旅行も出来るようにする



両州の協力体制

RFI from both Oregon Department of Transportation (ODOT) and Washington Department of Transportation (WashDOT)

- Seeking information from manufacturers and suppliers of Electric Vehicle (EV) Quick Charge Equipment
- Goal: select one or more suppliers and/or site developers to expand the Charging Network beyond The EV Project
- Goal: Coordinated RFI/RFP process in two states
- Single largest US project to-date
- Responses to RFP were due February 2011

その他の次世代自動車用意事業

- While USDOE grant for EV charging infrastructure is a key component, other complementary activities are envisioned
  - Areas in Oregon/SW Washington outside the grant
  - Electric trucks, off-road transportation electrification
- Oregon State Building Code Division already amended electrical code for EV charging stations
  - Statewide rule preempts local regulations
  - Established standards for permitting and inspection
- Next Oregon building code update (2010-11) for new homes/buildings to include PIV charging
- ODOT finalized EVSE installation manual for both residential and commercial sites

オレゴン州PUCの取り組み

- Docket UM-1461 is exploring obstacles to rapid deployment of EVs in Oregon and utility role.
- PUC Commissioners and utilities encourage flexible approach to allow EVSE market development.
- Docket is ongoing and aims to complete inquiry and issue policy or guidelines by Spring 2011.

共通ロゴを使って充電器を見つけやすくする

次世代自動車はオレゴンに早く来る

Toyota Plug-in Prius	June 2010
Navistar eStar electric truck	Summer 2010
Nissan Leaf	December 2010
Smart EV	December 2010
Ford Transit Connect EV (truck)	mid-2011
Mitsubishi i	Fall 2011
Ford Focus EV	Fall 2011
GM Volt	Fall 2011
Many other models	2012-13

次世代自動車に関する課題

- Is Level 1 charging a cost-effective option?
- Level 2 charging at 6.6kW
  - “Many Level 2 & few DCQC” vs “fewer Level 2 and more DCQC”
- Plug-in hybrids vs battery electric vehicle
- “Early adopter” vs “mass market” consumers
- Renters, apartment residents and others with no electric service where car parks at night – solutions needed
- SAE standards process takes time
  - National Electrical Manufacturers Association also starting review
- Role of fleet electrification
- Local government budgets are tight
- Government-sponsored projects strongly prefer US content, manufacturing, assembly and job creation.

米国政府方針

- Goal - 1 million advanced technology vehicles on US roads by 2015
- Change $7500 Federal tax credit for EV into rebate at point of sale
- Enhanced R&D investments in electric drive, batteries and energy storage technologies
- Prioritized advanced EV charging infrastructure in up to 30 “designated communities”
- Increased tax credit for EV charging stations
- Higher tax credit for hybrid and pure electric trucks
- Incentives for using old reconditioned batteries from EV for energy storage

次期オレゴン州プロジェクトアイデア

- “Electric Avenue” showcase at Portland State University
- Fleet Electrification
- Solar panels + lithium-ion batteries + EV charger combo
- Taxi EV test
- Rental cars and eco-tourism
- Convert diesel trucks to electric or plug-in hybrid
- Smart grid, demand response and time-of-use charging
- IT software applications for EV users
- Manufacturing & assembly to meet US domestic content requirements for publicly-funded projects

Oregon welcomes CHAdeMO member companies for product design, testing and demonstration

連絡先

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お気軽に日本語でもどうぞ連絡してください。