



E.V. ROAD MAP

Conference Proceedings
November 9, 2009
World Trade Center, Portland Oregon

Portland, OR

Over the past two years, a number of interested communities in Oregon have shown an active and expanding interest in electric vehicles (EVs). During that same time some noteworthy partnerships have been forged between our state and several leading automobile corporations. Govern-



Electric Vehicle Showcase at the World Trade Center Plaza

nor Kulongoski issued an executive order creating a work group to study alternative fuel infrastructure and recommend actions that our state should take now. All the while, a number of companies in Oregon have come to market with vehicles, charging stations, batteries, and ancillary supplies. Notwithstanding the progress of these various interested parties there had not been a unifying event to stitch them into a community of interest. That was a primary purpose of E.V. Road Map: To pull together key players, do some level-setting of where we are at the moment, and take stock of what is on the horizon in 2010.

E.V. Road Map was a daylong event at the World Trade Center in Portland on November 9, 2009. Hosted by Portland General Electric and Portland State University with underwriting assistance from

The Lemelson Foundation and the Oregon Transportation Research and Education Consortium, the event brought together 180 attendees from around Oregon and the Pacific Northwest. The morning program was comprised of briefings and panels designed to bring the assembled up to speed regarding recent developments and current opportunities. The afternoon program included 10 breakout sessions aimed at promoting deliberation, discussion and information sharing among the participants as they prepare for the arrival, deployment and successful adoption of electric vehicle technologies in 2010 and beyond.

E.V. Road Map was produced by Portland General Electric and Portland State University with generous support from The Lemelson Foundation and the Oregon Transportation Research & Education Consortium

The EV Vision



Urgency and Opportunity

During the morning programs, speakers emphasized that our region must leverage our vision, values, and talent to meet the energy-urbanization-environmental-economic challenges with confidence and determination.

Morning Presentations

Former Portland newsman Eric Schmidt, now with the Association of Oregon Counties, served as master of ceremonies for E.V. Road. He introduced the lead-off speaker, Multnomah County Commissioner Jeff Cogen, who, among his many duties, is currently chairing the [Governor's Alternative Fuel Infrastructure Work Group](#). Mr. Cogen's animated presentation provided a compelling case for moving in earnest from CO₂-emitting internal combustion engine vehicles to low- and no-emission vehicles. He also highlighted the Work Group's assignments as they move toward submission of their findings and recommendations to Governor Kulongoski at the end of December 2009.

The lectern was then turned over to program co-hosts --PGE president and CEO Jim Piro and Portland State University president Wim Weiwel. Dr. Weiwel, who had just returned from a visit

to Japan with Portland Mayor Sam Adams, led off with remarks about that trip and the energy and progress he observed in Japan. Wim then talked about the role of an urban academic institution and why PSU is uniquely prepared to "push the adoption curve" on EVs— through education, fundamental and applied research, and serving as a convener on key issues. He also talked of the philosophy of engagement and how it is deeply engrained in PSU's academic programs. PGE's Jim Piro trumped Dr. Weiwel's messages and observed that the time to act is now, that we have to transition to new modes and models for how our region will move people and freight, and understand the electrification of transportation is important to our aspirations. Our region must leverage our vision, values, and talent to meet the energy-urbanization-environmental-economic challenges with confidence and determination.



The audience next heard from Charlie Allcock, PGE’s Business Development Manager who has been instrumental in opening partnership discussions with a number of national and international electric vehicle manufacturers. His [presentation](#) outlined the growing spectrum of E.V. activities in Oregon and provided a primer on electric cars, trucks, charging stations, and batteries.

Mr. Allcock’s overview was followed by Mark Perry, Nissan’s Director of Product Planning. He introduced the attendees to a pictorial preview of the Nissan Leaf, slated for introduction in Oregon and four other test markets in late 2010. Mark’s [slides](#) also covered the features and functions of the Leaf and briefly touched on Nissan’s relationship with eTec.

Rounding out this part of the program was a [presentation](#) by Kevin Morrow, Executive Vice President of eTek. He talked



Afternoon Work Groups	
I. <i>Portland Metropolitan Region Charging Network</i>	VI. <i>EV Owner/After Sales Support</i>
II. <i>Capitol Region Charging Network</i>	VII. <i>Public Information and Knowledge Management</i>
III. <i>Corvallis-Albany Region Charging Network</i>	VIII. <i>Commercialization Opportunities</i>
IV. <i>Eugene-Springfield Region Charging Network</i>	IX. <i>Defining Metrics: How Will We Know We Are Ready?</i>
V. <i>The Greater Willamette Valley Region Charging Network</i>	X. <i>Governance Issues</i>

about eTec credentials and experience in the business of EV charging stations and highlighted the basics from its recently announced grant from the U.S. Department of Energy.

Next up was a quick presentation from Jim Francfort, Principal Investigator, Idaho National Labs, who dutifully compressed his presentation to get the program back on schedule. Jim took the attendees through a well-documented data set related to plug-in hybrid electric vehicles and their performance attributes under different conditions. You can view his presentation [here](#).

We next heard “[A Scouting Report: Citizens Weigh-In on Electric Vehicles](#)”. This presentation by Adam Davis, Co-founder and Principal with Davis Hibbitts & Midghall, Inc. showcased major findings from an online public opinion survey his firm conducted in the Eugene, Corvallis, Salem, Portland, and Seattle metro areas.

Toward the end of the morning Tony Monda, Vice President of Marketing and Product Planning with Navistar presented “[Electrifying Shades of Green: Factoring in Urban Freight Mobility](#)”. By all accounts, Tony got the audience thinking beyond 4-wheeled passenger sedans with some noteworthy factoids about urban freight mobility.

George Beard, program producer for E.V. Road Map, briefly talked about the [rationale, assignments, and desired work products](#) for the 10 work groups, that were held in the afternoon. Beard’s closing message was direct: This is our opportunity to be a showcase to the rest of the nation (let’s not muck it up!)

The final morning session was titled, “Circa 2015: Looking Out Five Years and Beyond”. This panel included Corvallis Mayor Charlie Tomlinson, Clackamas County Commission Chair, Lynn Peterson and Steve Marshall with the Seattle-based Cascadia Center for Regional Development.

Infrastructure Work-Groups

Five regional work groups engaged in a hypothetical placement planning exercise that broadly targeted the allocation charging stations in their respective geographies. The assignment used the following assumptions:

Assume 2,000 Level-2 charging stations are slated for deployment in Oregon Test Markets.

Assume, too, that 1,000 Nissan Leafs will be available for sale in Oregon from Q4 2010 to Q4 2011. Each will have its own charging station for home use.

Therefore, the net number of "external" charging units is 1,000 units for assignment to public, fleet, and employer purposes.

Assume further that 70% of these need to be installed and ready for use by December 2010 (when EVs from Nissan and other manufacturers will begin hitting the fleet and consumer market).

Therefore, 700 charging stations needed to be initially sited and ready for use within our test markets: the Portland Metro, Salem Capitol, Corvallis-Albany, and Eugene-Springfield regions. In addition, some "waypoint" units were held back to serve as key connectors for the entire Eugene-Portland corridor, as well as some Level-3 (fast) charging stations.

These five "charging infrastructure" groups were given a number of units and then asked to allocate those charging stations to different facility types. This asset allocation exercise was,

admittedly, very approximate. But it provided an early indication where to prospect - and in what numbers - when planning starts in 2010 for where to actually place charging stations. The consolidated results of this exercise are presented on the following page.

The five infrastructure groups also were presented a range of questions to consider:

1. Does it make sense to create a local steering committee for your region that is charged with making sure that the right people are brought together to help shape the work agenda, enlist the right players, address problems, and keep the implementation on track?

The general consensus supported a purposeful and continuous effort by eTec and Nissan to engage Oregon's local cognoscenti in marketing, information campaigns, and site selection. Some anxiety was expressed that the project would be done "to" Oregon rather than "with" Oregon.

2. Where will citizens, consumers, fleet managers, employers, public officials and other interested parties get information about electric vehicles in Oregon? Who should provide this information?

There was nearly universal support for developing a website with extensive information about Oregon's ever-expanding as the source for the EV endeavors. No particular jurisdiction was identified for hosting the site, but the matter has been tacitly settled for



the time being as a result of The Lemelson Foundation providing a development grant to OTREC to create an electric vehicle site for Oregon. The first release of EVRoadMap.com was published in early December with plans already underway for the next round of enhancements.

3. What marketing initiatives are needed in 2010 to attract infrastructure "hosts" and customers?

The infrastructure work groups recognized the importance of this effort, but none offered a clear set of activities or identification of what organizations should lead this effort. This remains an important but unanswered question going into 2010.

4. What should be our region's pricing policy for publicly-accessible charging infrastructure within and across metropolitan

regions in Oregon (and across electric utility service areas)? What is the business model and usage policy for charging infrastructure. How much should users be charged? How will revenue be

split between a city, utility, and a service provider? What should be our region's plan and policy for deploying charging infrastructure at places of employment? Who is responsible for this activity?

Again, the discussion among the groups was far-reaching and thoughtful on these subjects, but no unifying position was taken. These questions remain on the table.

Infrastructure Work Group Results for Charging Station Allocation by Facility Type

	Portland		Salem		Corvallis		Eugene	
	#	%	#	%	#	%	#	%
Arts & Cultural Centers: <i>Museums, symphony, theaters, libraries</i>	0	0%	3	3%	3	4%	4	3%
Automobile Dealers: <i>Why not rely on the dealer who sells E.V.s?</i>	0	0%	3	3%	3	4%	2	2%
Corporate Fleets	19	5%	10	9%	5	7%	0	0%
"Garage Orphans": <i>E.V. owners without private garages</i>	0	0%	10	9%	4	6%	2	2%
Government Buildings	55	15%	12	10%	5	7%	4	3%
Hospitals & Care Facilities	73	20%	5	4%	3	4%	4	3%
Park 'n Rides	73	20%	8	7%	4	6%	9	8%
Parking Garages & Surface Lots	20	5%	12	10%	4	6%	10	9%
Projects on the boards & under construction ¹	0	0%	6	5%	3	4%	2	2%
Restaurants, Lodging, Hospitality Venues	0	0%	6	5%	4	6%	10	9%
Retail & Commercial Locations	19	5%	5	4%	6	9%	10	9%
Schools, Community Colleges, & Universities	0	0%	15	13%	6	9%	10	9%
Security Blanket Placements ²	0	0%	4	3%	4	6%	25	22%
Service Stations & Gas Stations	92	25%	3	3%	2	3%	10	9%
Supportive Employers: <i>e.g. Nike, State of Oregon, HP, Intel, etc.</i>	0	0%	7	6%	5	7%	4	3%
Transit Centers: <i>bus, train, airports</i>	19	5%	4	3%	5	7%	4	3%
Weekend, after-work destinations: <i>stadiums, Hood River, wine country, golf courses, etc.</i>	0	0%	2	2%	4	6%	5	4%
	370		115		70		115	

¹ These are commercial and residential development projects that are underway or in the permitting/planning queue. These can be "plumbed" for the necessary electrical access and capacity more readily and economically than retrofitting most existing buildings

² These address "range anxiety". They are charging station outposts on the periphery of an urban area that signal it is safe to go to this "waypoint" charge up, and return back to the urban center, or on to the next "waypoint" in the corridor.

Opportunity Work Groups

The afternoon sessions included 5 work groups charged with examining the questions of Governance, Metrics, Communication, After-sales Support, and Commercialization. While each group was given distinct assignments, the conversations from all coalesced around three broad common themes: the importance of information and communication, public policy, and specific E.V. facilitation strategies.

Communication

Most work groups, including those focused on charging infrastructure, emphasized the importance of information and communication. Even further, the Governance group cited greater public awareness as a metric in measuring success of E.V. efforts in Oregon.

The Communications work group summarized the need for two distinct information campaigns. The first, focused on E.V. end users, would provide data

needed for positive user experience such as features, costs, and charging availability. The second would educate elected officials and staff government on challenges and benefits of supporting an E.V. economy. The group recommended that these dual information campaigns need to be directed by a single organization and should have an identifiable “brand”.

Most groups proposed the development of a single source website for information sharing. The quality of available information was a concern for many. The After-sales and Metrics groups had similar suggestions that there is an opportunity for a watch-dog organization to fact-check claims and correct disinformation.

The type of information needed included financial, vehicle reliability, and infrastructure. The After-sales Support group enumerated many financial questions from would-be consumers about purchase financing, insurance, war-

rantees, rebates, tax-incentives, and trade-in or resale values. Questions about vehicle reliability spanned from cost of operation and repairs to battery performance to understanding range limitations. Infrastructure questions not only included a broad array of charging topics (e.g. how to of home installation and public charging locations), but also addressed ensuring the broader network of vehicle support service providers (e.g. mechanics, tow-trucks, and even first responders) had access to relevant EV knowledge.

Public Policy

Many groups identified institutional or government assistance that would help make E.V. implementation a success. However emphasis was placed on collaboration rather than regulation. The Governance work group stressed that decision making authority should not be *in* government but rather *with* government.

The Governance group identified a broad array of stakeholders who should participate in decision making and creation of long-term goals. They stated that the decision making group should not be lead by government but instead by an organization with broad regional affiliations. However, the Governance work group identified a separate need for a smaller task force to engage in the immediate needs associated with the short term goals of the Nissan / eTech implementation.



The Greater Willamette Valley infrastructure work group took the idea of regional collaboration further suggesting that there is an opportunity for broader Pacific NW regional cooperation to ensure charging infrastructure from Eugene to Vancouver, BC.

The issues identified to be deliberated by a governance group were quite varied. Ensuring common standards for vehicle charging and building codes was cited by many groups. Continuing with tax incentives for vehicle purchase and charging installation was another common theme.

Several groups addressed the questions regarding power sources for vehicle charging. The Portland work group recommended creating disincentives for



peak hour charging. The Eugene work group recommended that consumers have the option to purchase power from renewable sources. The Commercialization group recommended that EV interest could be used to broaden support renewable power industries in general. The After-sales market group suggested that the utilities be allowed renewable power credits for increased customer E.V. adoption.

Other policy questions commonly raised included how to make up for lost transportation infrastructure revenue from gas taxes, how support for E.V. vehicle use impacts Oregon's VMT reduction goals, and ensuring that E.V. support is equitable.

Facilitating Implementation

The topics most often discussed for encouraging E.V. acceptance included making the point of purchase easier for consumers, strengthening charging infrastructure, and leveraging economic development opportunities.


The length of wait for consumers to purchase an E.V. was cited as an obstacle to wide adoption. Reduction of consumer waiting



times for vehicles, tax credits, and charging installation was suggested as key to facilitating implementation.

Methods suggested for strengthening charging infrastructure included streamlining in-home charging installation, implementing publicly available Level III (fast) charging, and making public charging locations safe, visible, and "user-friendly."

And finally, most groups identified economic development as both an opportunity for the region and as a strategy to encourage adoption. Groups suggested developing a local supplier industry through increased funding for direct investment. Also, workforce training programs through the unions and community colleges was cited as a critical need going forward.

Key Opportunities	Communication	Policy	Facilitation
	<p>Opportunity for an organization who can "adopt" EV and brand itself as a single source for communication and "watch-dog" information.</p>	<ol style="list-style-type: none"> 1. Opportunity for collaborative decision making. 2. Encourage greater use of renewable power. 	<ol style="list-style-type: none"> 1. Strengthen charging infrastructure. 2. Support local industry through direct investment and education.

Conclusions & Next Steps

The E.V. Road Map session was launched to pull together and propel the activities and participants that were interested in, or had been working on, electric vehicle matters. By all indications the event provided a useful start. First, a larger-than-expected number of participants came together to meet, listen, deliberate, and plan. Second, an [evaluation](#) three weeks after the event indicated a high degree of satisfaction with the program. Third, there is no doubt useful information was exchanged (along with lots of business cards). We still have on-going work to do to achieve a vibrant E.V. community of interest, but a good start is still a good start!

Since November 9, a series of subsequent actions have shown continuous vitality, interest, and momentum on the EV front. For instance, the Nissan Leaf arrives in Portland December 17-23. An Oregon website, www.EVRoadMap.com has now been published that begins to organize our efforts and tell our story. A newly submitted proposal by PSU, OTREC, Zipcar and its partners (ODOT, City of Portland) will allow Oregon to partici-



pate in Toyota's Plug-in Prius Demonstration Project starting early spring of 2010. Dialogue continues with our counterparts in Washington state to explore opportunities and a shared agenda for the coming year. All the while, partnership discussions continue with several additional EV manufacturers and other related organizations.

2010 promises to be a breakout year for electric vehicles - and Oregon could be a breakout place. For the first time, we will see significant numbers of electric vehicles come to market here. Some will be produced locally. Others will come from global brands. All will have access to a charging

network whose numbers will grow from a couple dozen to several hundred stations. Oregon is positioned in the inside lane on a fast track that could strengthen our position as a leader in the electric vehicle race. But we need to work out some critical governance issues, inform and excite our citizens, and figure out some essential policy issues if we are to leverage our natural advantages of speed and collegiality. Time, and our focus and concerted efforts, will tell ...

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