

EV Roadmap 6 Conference Proceedings

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July 2012



The EV Roadmap conference series began as an opportunity for Portland to showcase its leadership in transportation electrification. Early conferences explored the boundaries of the electric vehicle (EV) space, offering insight into battery technology, charging networks and reducing reliance on fossil fuels. Conference topics have evolved into a cohesive picture of EV adoption, keeping in step with current challenges related to supply chain development, charging standards and consumer sentiment. The conference series has garnered a nationwide following as its relevancy to EV adoption has been recognized and acknowledgement of Northwest leadership in the space has grown.

The conference series intends to increase the visibility and understanding of EVs through outreach and education to engage all facets of the community. The conference has traditionally shared technology advancements, lessons learned and best practices however, the latest conference emphasized the driver experience. EV Roadmap 6 sees consumers as agents of change, driving electric vehicle adoption. While previous conferences focused on



the evolution of EV technology and contemplated various adoption scenarios, the latest event was presented as a practical course in electric vehicle deployment. EV Roadmap 6 captured the concept of the driver experience being a more powerful marketing tool than the “green” attributes of electric vehicles. Shared experiences of EV drivers are compelling potential customers to look more seriously at electric vehicles as a transportation solution.

The EV Roadmap 6 conference would not have been a success without the support of its sponsors. The logos displayed below represent the diversity of entities engaged in the electric vehicle industry, including trade organizations, original equipment manufacturers, utilities, public agencies, car-sharing companies and sustainable development advocates. Sponsors were not merely satisfied with making an appearance; they realize that electric vehicles will market themselves if consumers have the opportunity to drive one.

Conference Agenda

Tuesday, July 30th

8:00 – 9:00 AM Registration

9:00 – 9:15 AM *Conference opening*

George Beard, Alliance Manager, Portland State University

Carol Dillin, Vice President, Portland General Electric

9:15 – 10:15 AM *Keynote*

John Voelcker, Editor, Green Car Reports

10:15 – 10:30 AM Break

10:30 – 11:30 AM *Live Focus Group*

Adam Davis, Partner Davis, Hibbitts & Midghall

11:30 – 12:30 PM Lunch

12:30 – 1:45 PM *Western Leadership and the Electric Highway*

Jeff Doyle, Director Public Private Partnerships, WSDOT

Ashley Horvat, State of Oregon EV Lead, ODOT

Christine Kehoe, Executive Director, PEV Collaborative

1:45 – 3:00 PM *Electro-mobility*

Max Sato, Marketing Manager, Car 2 Go

Ben Holland, Director of Deployment Strategy, Electrification Coalition

Beth Wheeler, Director of Business Rental Sales, Enterprise

3:00 – 3:30 PM Break

3:30 – 5:00 PM *Workplace Charging Panel*

Sarah Olexsak, Workplace Charging Coordinator, USDOE

Jeannie Lam, EV Business Development Manager, Nissan North America

Rick Wallace, Senior Policy Analyst, Oregon Department of Energy

Rick Durst, Transportation Electrification Project Manager, PGE

4:30 – 7:30 PM Evening Reception in the Plaza Room with Drive Oregon Wednesday, July 31st

Wednesday, July 31st

8:00 – 8:30 AM Opening

8:30 – 9:00 AM *Keynote*

Phil Ditzler, Oregon Division Manager, Federal Highway Administration

9:00 – 9:15 PM Break

9:15 – 10:15 AM Concurrent Sessions:

Selling More Electric Vehicles

Tom Saxton, Chief Science Officer, PIA

Troy Jones, Northwest Regional Sales Manager, Tesla Motors

Richard Rosen, President, ROSEN Convergence Marketing

Elaina Medina, Corporate Communications Specialist, Portland General Electric

Not All Drivers Need Four Wheels

Bob Van Der Woude, President, Conscious Commuter

Mark Frohnmayer, President, Arcimoto

Greg Lemhouse, Director of Global Fleet Development, Brammo Inc

John MacArthur, Research Associate, OTREC

10:15 – 11:15 AM Concurrent Sessions:

Evolving Technology: Lessons Learned

Lee Stogner, Chair, IEEE Transportation Electrification Initiative

Eric Park, Creative Director, Ziba Design

Tom Garetson, Director, Project Management, Ecotality

Road User Fees

James Whitty, Office of Innovative Partnerships, ODOT

Tobias Read, Oregon State Representative

Bruce Starr, Oregon State Senator

11:15 – 11:30 AM Break

11:30 - 12:30 *Improving Payment Networks*

Jordan Ramer, CEO, EVConnect

Jason Wolf, CEO, CollaboratEV

Dexter Turner, President and CEO, OpConnect, LLC

12:30 – 12:45 PM *Closing Remarks*

George Beard, Alliance Manager, Portland State University

THE ELECTRIC GENERATION



Themes

The theme of this year's EV Roadmap conference represented a shift from a technical conversation to one about driver preference. Conference organizers illuminated drivers of electric vehicles from multiple angles, with John Voelcker, Editor of Green Car Reports



delivering the opening keynote and polling the audience about their experiences and impressions as EV drivers, Adam Davis of DHM Research holding a live focus group of EV drivers and inviting numerous panelists to discuss issues affecting electric vehicle owners like workplace charging, public charging payment systems and the electric car buying experience. It seems that drivers get it as sales of plug in electric vehicles have outpaced sales of hybrids at the same stage of adoption. Improving the buying experience and the public charging network will stimulate more sales as drivers realize the advantages of electro-mobility.

The general consensus at the conference was that the electric vehicle industry has turned a corner in the eyes of the driving public. Electric car manufacturer Tesla surprised many consumers and investors when it announced profitability last quarter and has heralded a new paradigm in car ownership by removing concerns about range, selling directly to the consumer and building its own free fast charging network. The accidental success of Fiat's 500e compliance car has also astonished observers. Fiat introduced their electric car to meet California fuel efficiency compliance standards and it has been so popular that electric vehicle drivers in other states have been clamoring for them. And, Nissan Leaf sales continue to rise, posting their highest sales numbers ever in July and making it their most popular model in the Portland and San Francisco markets.

Organization of the EV Roadmap 6 conference was centered on panel discussions to stimulate dialog between speakers and the audience. The conference program was designed to engage attendees in conversations about how to improve the electric car driving experience. Accordingly, panelists with expertise in electric car sales, payment networks, evolving technology and workplace charging were selected. Speaker presentations have been posted to SlideShare and are available at this link.

Program

The keynote speaker, John Voelcker of Green Car Reports, quizzed the audience about their personal embrace of electric vehicles. After learning that nearly a third of the audience already owned or had access to an electric vehicle, he shared his admiration for the early adoption culture of the Pacific Northwest. He noted that plug-in electric vehicle adoption has occurred more rapidly than Hybrid adoption at the same state of market maturity. John also advocated for “getting butts in seats” as a way to accelerate EV adoption. Strategies that could accommodate exposing more drivers to electric vehicles centered on workplace charging, increased visibility of EVSE and a greater commitment from auto manufacturers to support EV models. John’s examples covered the gamut of auto manufacturers from the electric car friendly (Tesla and Nissan) to the skeptics (Chrysler and Mazda).

Personal experiences using a friend’s or co-worker’s electric vehicle are the most powerful marketing tool available to electric car manufacturers. Availability of workplace charging exposes potential buyers to the benefits of EV ownership since co-workers who own electric vehicles tend to share their positive driving experiences and offer test drives to the uninitiated. While regional champions in the electric vehicle industry are advancing the shift to transportation electrification, little things like the comfort of knowing someone who enjoys their electric vehicle are also important to sustain the momentum the industry has already generated.

Adam Davis of DHM Research conducted a live focus group of EV drivers on July 29th. The group was comprised predominantly of Nissan Leaf drivers who are relatively well off, have no children and vote Democrat. Their motivation was mainly to stop going to a gas station, although many self identified as early technology adopters who crave efficiency. Most of the focus group participants enjoy the quiet, smooth and fun ride. The general message of the focus group acknowledged challenges facing widespread adoption of electric vehicles when the motivation to own one is to reduce demand for foreign oil or to promote early adoption of new technologies. Many regions in the US are not ready to identify with those sentiments and will therefore need other motivations to adopt. The live stream from the focus group can be viewed by following this link.



Panelists

Most of the information shared at the EV Roadmap 6 conference was communicated by panels illustrating how car sharing programs, workplace charging, targeted marketing strategies, rapidly changing technology and industry standards can promote sales of electric vehicles. Speakers also shared success stories about the West Coast Green Highway, discussed controversial subjects like road user fees and introduced the audience to two and three wheeled electric vehicles. The following panel profiles encapsulate conference themes and recap speaker topics.

Western Leadership and the Electric Highway

This panel shared information about implementation of the West Coast Green Highway, a network of fast charging stations located every 25 to 50 miles along the I-5 corridor funded through an ARRA grant. Panelists Jeff Doyle of the Washington Department of Transportation, Ashley Horvat of the Oregon Department of Transportation, and Christine Kehoe of the PEV Collaborative shared success stories about the project and the benefits it has brought California, Oregon and Washington.

Jeff Doyle spoke about the challenges and opportunities the twelve DC Fast Chargers and Level 2 chargers have brought to Washington state. Utilization of the charging network has varied by location with rural stations experiencing a drop in usage and stations near highway oriented commercial areas experiencing an increase in usage. This pattern makes sense when considering that most electric vehicles registered in the state are in the Puget Sound area. Washington has partially solved the road user fee issue by charg-

ing electric vehicle owners a transportation tax and a \$100 BEV user fee however, they face the same challenges as Oregon and California related to fast charging standards and sustaining the network when grant funding dries up.

Ashley Horvat shared background info on electric vehicle ownership and efforts to promote it in Oregon. Oregon has been at the forefront of EV adoption with many local companies part of the supply chain, widespread support from state officials and leadership in regional transportation electrification initiatives. She cited a Travel Oregon initiative to encourage EV tourism around the state by locating EVSE near hospitality centers and along corridors frequented by tourists like the Columbia River Gorge and the Oregon Coast. Oregon companies like Tesla Tours, an exhibitor at the conference, have capitalized on this form of eco-tourism by filling a niche demand for tours by electric vehicle.

Christine Kehoe explained the role of the PEV Collaborative in California, a public-private partnership to build a robust plug-in electric vehicle (PEV) market there. A broad coalition of auto manufacturers, regional governments and environmental organizations has boosted the credibility of programs that have increased PEV sales in California to 37,000 units, a 30% share of the US market. The state's assertiveness in promoting PEVs is manifest in the purchasing incentives they provide, which include rebates, tax credits and access to carpool lanes. The



PEV Collaborative has also been promoting workplace and multi-unit dwelling charging by commissioning case studies, creating best practices and drafting model language for local governments can use to provide for EVSE in their ordinances. Transportation electrification has strong political support in California in recognition of its potential to remedy poor air quality in many of the state's metropolitan areas.

Electro-Mobility

The electro-mobility panel brought together representatives from car sharing and car rental companies and a non-profit advocacy group to help understand how the availability of flexible electric transportation options create opportunities for more people to experience electric vehicles and spread the gospel of adoption. Panelists Max Sato of Car2Go, Beth Wheeler of Enterprise Holdings and Ben Holland of the Electrification Coalition describe their approach to delivering auto-oriented mobility without the commitment of ownership.

Max Sato discussed the move by Car2Go, a car sharing service owned by Daimler AG, to deploy electric Smart cars in the Portland, OR and Austin, TX markets. He explained how using electric cars in limited markets has limited long-term maintenance costs, been a hedge against escalating fuel costs and broadened transportation options for their customers. The pilot program has exposed the promise and challenges of electric car sharing. Electric Car2Go vehicles are popular with users in both markets, but additional labor costs have been incurred retrieving units with depleted batteries and they experience more down time as vehicles are recharged. The electric vehicles have the same free parking privileges as the gas powered units do, but the company offers \$20 as an incentive to customers who plug into EV charging stations when their done using one of their electric vehicles.

Beth Wheeler described Enterprise Holding's electric car sharing programs that employ membership services and community based solutions, one of a suite of sustainability initiatives within the company. One of Enterprise's



most ambitious programs involves a partnership with Portland State University deploying 30 Toyota Scion iQ electric cars (of the 90 in existence) as part of community based car sharing program serving retirement communities, apartment complexes or condominium associations. The program is in its infancy with many details still being considered, but shows promise as a novel mobility option.

Ben Holland provided a NGO perspective on a wide range of electro-mobility solutions the Electrification Coalition has been working on to reduce dependence on foreign oil. Important work in communities like Orlando is underway connecting car rental agencies (Enterprise in particular) and the tourism industry to offer a complete electric car rental experience with express lane privileges, free valet parking at participating hotels and charging stations at all major tourist attractions. This premium service, coupled with the pleasure of driving an electric car, will expose travelers to the benefits of electric vehicles and further their adoption.

Workplace Charging

This panel spoke about a critical link between electric vehicle promotion and the availability of EV charging at the workplace. Having the option to charge an electric vehicle at work alleviates anxiety about their range and allows drivers the flexibility to run errands during lunch or after work. Workplace charging can also serve as a recruitment tool in competitive job markets like the Silicon Valley in California where Google and Cisco serve as a model of implementation. Panelists Sarah Olexsak with USDOE, Jeannie Lam with Nissan NA, Rick

Wallace with Oregon DOE, Rick Durst with Portland General Electric and Jasna Tomic of CALSTART represented public, private and government workplace charging advocates working at the regional, state and national scale.

Sarah Olexsak spoke about the fed's posture on workplace charging and the Workplace Charging Challenge, a program to promote electric vehicle adoption in cooperation with national employers. Support of the USDOE, and its ambassador trade organizations, has fostered legitimacy for workplace charging and attracted both traditional brick and mortar corporations like 3M, General Electric and Coca Cola and internet companies such as Google, Facebook and Zappos. The initiative advances transportation electrification by filling an infrastructure gap for EV owners with little or no access to a charging station at home and by increasing the profile of electric vehicles through the personal accounts of co-workers.

Jeannie Lam shared progress Nissan North America has made delivering on the promise of workplace charging. Not only are they producing the most popular zero emission vehicle in the country, Nissan NA has provided their employees access to nearly two dozen Level 2 chargers at their headquarters in Franklin, Tennessee. Their EV Business Partner Program spreads the wealth of EV adoption with incentives ranging from preferred pricing for Nissan Leafs to arranging campus ride and drives. Jeannie also recognizes the opportunities and threats presented by workplace charging; a recruitment and retention attractor, a dynamic advertisement for PEV ownership and a positive "green" company image and a source of employee tension over use of charging stations, off campus parking to access nearby charging stations and perceived favoritism of PEV

drivers. The benefits outweigh the risks when considering the community health attributes and enhanced corporate identity workplace charging comforts.

Rick Wallace with the Oregon Department of Energy shared accounts of Oregon's efforts to promote workplace charging. Recent legislation allows state agencies to contract with third party vendors to install charging stations at no cost to the state.

Oregon DOE also has a program offering charging station incentives to businesses, covering 35% of the cost of installation, and to individuals covering 25% of the cost of installation up to \$750.

Rick Durst of Portland General Electric discussed the contributions they have made to regional workplace charging. Starting close to home, PGE has installed 14 charging stations at its headquarters, including nine Level 2 chargers (three are combos), a DC Fast Charger, a Tesla charger and three dedicated fleet charging stations. There is no fee to use any of these charging stations, only payment for parking. Other workplace charging challenges described by Rick noted abuses of free Level 1 charging attributable to employees forgoing home charging and a limited number of available spaces. An employer that switched to a payment system on Level 2 chargers experienced fewer conflicts and had few complaints little from employees. Availability of workplace charging evidently is more important to PEV drivers than free service.

Jasna Tomic with CALSTART set forth workplace charging best practices developed with many employers in California. The best prac-

tices were fashioned with the help of employers who participated in surveys, remote meetings and interviews to identify a workable deployment strategy. Nurturing internal support, selecting the appropriate system, establishing internal policies and procedures and monitoring how the charging network is used are important steps in establishing a workplace charging program. Each company considering workplace charging has specific needs and infrastructure



requirements, so careful attention is necessary when sizing the system. With competition for talent high in many metropolitan areas in the state, designing an effective program can result in a competitive edge, particularly with technology companies.

Payment Networks

The Improving Payment Networks panel considered the current state of payment technology for electric vehicle charging stations. There are now multiple payment systems available to

Standardization of payment networks or configuring charging kiosks to accept payment from more than one card will enhance adoption of PEVs by instilling confidence in users that they will find a charging station that they can access.

Jordan Ramer of EV Connect shared experiences providing enterprise software and solutions for PEV charging.



Their solutions offer a range of electric vehicle charging support functions capturing charging station management, payment systems, energy use, network integration and demand management. EV Connect's services include EV charging hardware and software deployment, management and system integration, relying on the cloud to process payments, develop new applications, license API and facilitate network integration. This multi-faceted approach to charging network support delivers platinum service to PEV users, alleviating range anxiety and encouraging greater electric vehicle adoption.

Jason Wolf of CollaboratEV described a common electric vehicle charging issue involving ready access to charging stations with incompatible payment systems. No fewer than six different national payment networks vie for the same customer base. Customers are clamoring for simplification of payment networks to avoid having to carry multiple payment cards, find an appropriate charging station or navigate through various maps and location apps. Standardization of the payment environment can smooth adoption by creating a better customer experience.

Dexter Turner of OpConnect described an electric vehicle charging solution that leverages other applications that can be activated on demand. OpConnect's charging kiosks can be configured for parking, concierge, mapping, emergency and EVSE services. The system is credit card enabled so cross network operability is not an issue for them at the moment. A nascent PEV industry needs the flexibility their system offers to deploy charging kiosks that serve intermediate needs while demand for its vehicle charging function incubates.



Sessions

The second day of the EV Roadmap 6 conference featured four workshop topics designed to elicit a dialog around subjects often ignored by the electric vehicle industry; generating more sales, the role of two and three wheeled EVs, learning from other technology industries, and road user fees. While discussing these issues may appear premature given the current state of the electric vehicle industry, it is maturing rapidly. Consideration of vehicle sales, technology standards, non-traditional vehicles and public policy may soon draw attention from batteries, motor controllers, charging density and fast charging standards. Staying ahead of the industry growth curve by anticipating these issues will facilitate adoption of electric vehicles by aligning customer needs with product development.

Selling More Electric Vehicles

Sales of plug-in electric vehicles can seem like an afterthought when one considers how little effort large auto manufacturers put into promoting them. Leading auto manufacturers have sent mixed signals to the market by producing excellent cars like the Nissan Leaf, Chevy Volt and Fiat 500e while placing little emphasis on incentives and training in their showrooms. Determined customers appear to be driving sales more than manufacturers as they seek better technology and freedom from fossil fuels. There are few of these early adopters however, and a concerted approach to selling electric vehicles is necessary to capture more customers.

Sales of the above models continue to exceed expectations but sustaining growth will require targeted sales and marketing campaigns. Tom Saxon with Plug In America, Richard Rosen of ROSEN Convergence Marketing, Troy Jones with Tesla and Elaina Medina with Portland General Electric described their strategies to grow industry demand and satisfy discerning customers.

Each contributor to the conversation brought a unique perspective: Tom Saxon discussed barriers to electric car sales and how to breach them with consumer messages about inexpensive power, convenience and fun;



Richard Rosen promoted his convergence marketing method to better communicate with potential electric vehicle consumers; Troy Jones shared Tesla's experiences with direct marketing of their cars; and Elaina Medina

introduced the audience to The Electric Generation, a coalition of electrical power providers promoting transportation electrification.

The general message from session participants identified a need for cohesive electric vehicle marketing strategies that is embraced by corporate boards and salespeople alike. Consistent marketing messages from the industry can resolve confusion among consumers who are forced to reconcile conflicting information.

Not All Drivers Need Four Wheels

Alternatives to the electric car abound in the transportation electrification space. Electric vehicles come in nearly every form with bicycles, motorcycles, unicycles, forklifts and golf carts all filling niche markets. They have become popular recreation vehicles as electric motorcycle manufacturers Zero and Brammo can attest. There are practical applications for lighter electric vehicles as well. Electric bicycle sales have increased as their reliability has improved and highway capable three wheeled vehicles provide the same utility as an electric car in a smaller package. This product diversity allows consumers to “right size” their purchases and expands the electric vehicle market to customers who may consider electric cars the only transportation option.

The unharnessed potential of one, two and three wheeled electric vehicles was explained by Mark Frohnmayer of Arcimoto, Bob Vander Woude with Conscious Commuter and Greg Lemhouse of Brammo who are expanding the electric vehicle product base with alternatives to electric cars. Brammo has been successful at marketing electric motorcycles by giving customers what they want. While most electric vehicles accelerate without using a gearbox, Brammo has engineered a six-speed transmission to harness their electric motor. Designing a motorcycle with a transmission was a good business decision. The company understood riders’ desire to shift and incorporated that movement in their product design.

Similarly, electric bicycle producer Conscious

Commuter recognized the need for a light, elegant folding design that was functional and aesthetically pleasing. Their design is perfectly suited for trip chaining on transit and has launched a pilot program in Hawaii to take advantage of that compatibility. Arcimoto has filled a niche for light, highway capable electric vehicles with their three-wheeled design. With a top speed of approximately 75 mph and a range of up to 120 miles, Arcimoto’s product mimics the versatility of a car while using fewer raw materials. Their all-electric vehicle is classified as a motorcycle by the DMV, which means lower licensing, registration and insurance costs. Drivers benefit from these and other innovative light electric vehicles because they satisfy an array of customer preferences.

Evolving Technology - Lessons Learned

The electric vehicle industry has seen remarkable growth in relatively little time. Its ascent has been so rapid that there are signs of growing pains. Multiple charging standards are symptomatic of uneven maturity, with SAE and CHAdeMO fast charging now offered in combined charging stations to ensure connectivity. The need for combined fast chargers is indicative of an evolving industry that can hinder growth by creating uncertainty in the market. This session compared electric vehicle industry maturity to historic evolution in other technology sectors. Wireless communication, automated teller protocols and audiovisual platforms have experienced some form of upheaval during development. There are lessons buried in those stories that can inform the transition to greater standardization of EV technology standards.

Three perspectives on the best way to meet the challenges of changing technology in the electric vehicle space were presented by Lee Stogner of IEEE, Tom Garetson with ECOtality and Eric Park with Ziba Design. The engineering approach to managing technology change in the electric vehicle industry was presented by Lee Stogner who explained the role of IEEE in guiding change. His organization has become a hub for collaboration between electric power generators, battery designers, vehicle manufacturers, charging station manufacturers and EVSE service providers. Their aim is to provide a complete PEV mobility solution.

Tom Garetson shared lessons learned from data gathered by ECOtality as part of the EV Project. Implementing the project required planning for signage, permitting and ADA compliance, data collection, transmission and analysis, contract management and reporting. The EV Project constituted a test case for new EVSE technology, tracking over three million charging events in ten states. Data from the project revealed user preferences, willingness to pay for charging services and the relationship between charging density and EV adoption rates.

Eric Park discussed stimulants and impediments to widespread adoption of new technology, citing ergonomic keyboards and car sharing as examples. In both cases change bias had to be overcome through improved design and marketing. The keyboard example underscored the importance of presentation.

The most ergonomic designs were visually unappealing and appeared abnormal. Modifying the appearance of an ergonomic keyboard to resemble what users were accustomed to seeing made their acceptance more palatable. Embracing a car sharing model required the



consumer to relate the car sharing experience with the feeling of independence one gets from car ownership. Creating an impression that membership in a car sharing entity is more desirable than car ownership by emphasizing the independence it provides was critical to breaking down adoption barriers.

A similar strategy to favorably define what it means to be a PEV driver can close the gap between early adopters and technology acceptance.

Road User Fees

Several states have attempted to close a widening gap between road maintenance costs and revenues from gas taxes. Oregon has assembled a task force to explore alternatives to a gas tax to fund road maintenance. One of the causes for lower gas tax revenue is more fuel-efficient vehicles. The task force identified vehicles with a fuel efficiency rating of 55 mpg or greater as subjects for a pilot program looking at a per mile charge road use fee. Electric vehicles have been included in the pilot program since most meet the eligibility criteria.

The pilot program uses GPS technology to measure vehicle miles traveled, assesses a road user fee and invoices the driver appropriately. Opponents to the program have stated that it unfairly singles out electric vehicles and infringes on drivers' privacy. Participants in the Road User Fees concurrent session shed light on the status of the pilot program in Oregon and what it means for electric vehicle owners. James Whitty of the Oregon Department of Transportation's Office of Innovative Partnerships, State Representative Tobias Reed and State Senator Bruce Starr introduced Oregon's approach to assessing road user fees and deftly fielded questions about privacy issues related to GPS tracking and the inherent prejudice towards electric vehicles in the pilot program. Many in the audience questioned the Oregon road user fee strategy out of concern it will hinder electric vehicle adoption and unduly target EV owners.

Conclusion

The EV Roadmap 6 conference provided a framework for public agencies, private consultants, EVSE providers and electric vehicle manufacturers to improve the PEV driving experience. While significant progress has already been made installing workplace charging, forming coalitions around transportation electrification and promoting EV tourism, more needs to be done to make charging station payment networks easier to access, promote electric car sales at showrooms, and deploy a robust charging network at popular destinations in commercial centers and the urban core. Supporting the upward trend in PEV sales will require comfort among drivers that they can easily locate an available charging station and be treated well by auto dealers and road authorities.

Challenges to greater PEV adoption were well articulated in conference sessions about selling electric vehicles, technology standards and EVSE payment systems. The existence of multiple fast charging standards, CHAdeMO, SAE and Tesla, and disparate payment networks is confusing to customers and can be remedied with greater coordination among providers. Although competition should be encouraged in all markets, overprotection of business ideas has resulted in chaotic charging landscape. With the comparative advantages of various charging platforms already understood by market players, systems can be streamlined through licensing and joint venture arrangements to expand the pie of PEV adoption and increase revenues for most companies engaged in the market.

Greater support from auto manufacturers for their electric models could also accelerate adoption of electric vehicles. Making desirable PEV models like the Fiat 500e available in markets outside California would send a signal to consumers that manufacturers are serious about their electric cars. Auto dealers can also demonstrate their commitment to electric vehicle sales by offering incentives, training their staff and certifying maintenance. The gap in sales support for electric vehicles can be partially filled by state auto dealer associations. Customers need to feel that auto manufacturers are serious about electric vehicle sales before they will be confident about their choices.



The EV Roadmap 7 conference will occur on July 24 - 25, 2014 at the World Trade Center Portland.