

Sustainable Ballard's

Alliance of Sustainable Alternatives to Petroleum (ASAP)

Presents:

“The Seattle Electric Vehicle to Grid Forum”

Community activists of the non-profit **Sustainable Ballard** believe that Washington State is strategically poised to lead the nation in the development, manufacture and implementation of renewable energy technologies that will help wean our economy from its addictive dependence on non-renewable and dwindling carbon resources such as coal and oil. Clean, renewable energy is clearly this country's future. We can spearhead it right here in Washington state.

Day One

“Technical Symposium on Vehicle To Grid Power”

Monday, June 6, 2005, 1:00pm to 4:30pm, Bertha Landes Room, City Hall, Seattle WA
600 Fourth Avenue South (entrance on Fifth Avenue)

A panel of experts will thoroughly cover vehicle-to-grid power at a **technical level**. Planned topics include: comparison of plug-in hybrid with battery vehicles, new sources of clean power in the Pacific Northwest, modular factories for small-volume vehicle manufacturing, the economics of V2G to support renewable energy policy and implementation strategies, and a brief hands-on tutorial for calculating basic V2G power and price parameters. The presentations will be interspersed with questions and discussion with the audience.

Day Two

“The Seattle Electric Vehicle to Grid Enterprise (V2G)”

Tuesday, June 7, 2005, 1:00pm to 4:30pm, Bertha Landes Room, City Hall, Seattle WA
600 Fourth Avenue South (entrance on Fifth Avenue)

This panel will bring together experts who can present exciting scenarios in which we engage and deploy the manufacturing resources and highly-trained workforces already in place here in the Pacific Northwest. This panel **advocates “connecting utility infrastructure with automobiles” for the eventual creation, marketing and manufacturing of Vehicle to Grid (V2G) in Seattle.**

This forum is sponsored by Climate Solutions, Seattle City Light and Sustainable Ballard.

Please RSVP to vic@sustainableballard.org. Last minute RSVP's ok.

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Alliance of Sustainable Alternatives to Petroleum (ASAP) Presents:
**“The Seattle Electric Vehicle to Grid (V2G)
Forum”**

Part One: V2G Technical Symposium

Monday, June 6, 2005, 1:00pm to 4:30pm

Bertha Landes Room, City Hall, Seattle WA 600 Fourth Avenue South (entrance on Fifth Avenue)

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www.sustainableballard.org

- 1:00 **Vic Opperman** and **Mark Wilson**, Welcome (Sustainable Ballard Introduction)
- 1:05 **Willett Kempton** (U of Delaware): Symposium overview

Electric Drive--essential for sustainable transportation:

- 1:10 **Dean Taylor**, Senior Technical Specialist, Electric Transportation Division, Southern California Edison: Vision for electric transportation; SCE's long term operating experience with an EV fleet
- 1:22 **Patrick Mazza** (Climate Solutions) and **Roel Hammerschlag** (Institute for Lifecycle Environmental Assessment): Carrying the Energy Future: Comparing Hydrogen and Electricity for Transmission, Storage and Transportation
- 1:34 **Amardeep Dhanju**, (U of Delaware): Wind power and V2G: The "Other" large non-CO2 electricity source for the Pacific Northwest
- 1:46 – 2:00 *Discussion*

Engineering design:

- 2:00 **Ahmad Pesaran**, Energy Storage Project Leader, National Renewable Energy Lab: Li batteries for BEV and PHEV applications
- 2:12 **Mark Duvall**, Electric Transportation Technology Development Manager (Electric Power Research Institute): Technical overview of the PHEV Sprinter, design choices, and the process of working with an OEM
- 2:24 **Tom Gage**, President, and **Alan Cocconi**, Chairman (AC Propulsion): Lessons learned from designing both plug-in hybrid and battery vehicles: Tradeoffs in design and in providing V2G
- 2:36 **Frank Lambert**, Chair (Hybrid Electric Vehicle WG of the Infrastructure Working Council): Standards for V2G interconnection with the grid
- 2:48 **Willett Kempton**, Associate Professor and Senior Policy Scientist (U of Delaware): Calculating V2G power and revenue: Why vehicle design matters for electric grid management and for renewable energy
- 3:00 – 3:15 *Discussion*
- 3:15 - 3:20 Break (5 minutes)

Business models and market development:

- 3:20 **Roger Duncan**, Deputy General Manager (Austin Energy): The "50 city" plan
- 3:32 **Jasna Tomic**, consultant, WestStart-Calstart, and Postdoctoral Scholar, U of Delaware: V2G Economics from a fleet perspective
- 3:44 **Tom Gage**, President (AC Propulsion): EVs without OEMs: How to build EVs and a market for them starting now
- 3:52 **Steve Letendre**, Chair, Dept. Business & Economics (Green Mountain College); and **Tony Maine**, Director (Future Enterprises Pty Ltd): Business models combining public and private funding for local EV production
- 4:00 – 4:25 *Discussion*

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1:00 **Vic Opperman** and **Mark Wilson**, Welcome

1:05 **Steve Nicholas**, Director, City of Seattle's Office of Sustainability and Environment. Steve Nicholas works to increase the environmental sustainability of City operations and services, and to accelerate the adoption of those practices in Seattle-area businesses, households, and neighborhoods. In the early 1990s, Steve co-founded Sustainable Seattle, a nonprofit organization promoting sustainability awareness and action. He currently serves on the Governor's Sustainable Washington Advisory Panel. <http://www.ci.seattle.wa.us/environment>

1:15 **Jorge Carrasco**, Seattle City Light, Superintendent. Jorge Carrasco brings a unique combination of insight and more than 30 years experience in the management of a large city energy utility. Jorge's vision is focused on the needs of our energy future and the role renewables play in meeting those challenges. He is responsible for Seattle City Light's commitment to emit zero net greenhouse gas emissions. <http://www.ci.seattle.wa.us/light>

1:25 Panel Moderator, **Patrick Mazza**, Climate Solutions Research Director. Patrick Mazza is a veteran journalist and accomplished environmental reporter and activist, who leads the research and authoring of Climate Solutions' special reports and publications. Patrick co-authored the book “Stormy Weather: 101 Solutions to Climate Change” and coordinated the Green Party's global climate position statement to the December 1999 Kyoto Climate Summit, endorsed by 65 Green parties on six continents. <http://www.climatesolutions.org>

1:40 **Dr. Willett Kempton**, Associate Professor and Senior Policy Scientist at the University of Delaware. Dr. Willett Kempton is the innovator of the electric vehicle-to-grid (V2G), the concept of connecting vehicles to allow two-way electrical flow to the power grid. He has developed the concept, equations and market analysis in a series of publications and research, with students, colleagues and engineers, funded by utilities and public agencies. His education combines electrical engineering, computer science and anthropology. His career spans 35 years experience in energy systems, environmental analysis, and technology policy. His two current research, speaking, and publishing foci are V2G and offshore wind power (see www.udel.edu/V2G and www.ocean.udel.edu/WindPower).

2:05 **Tom Gage**, President, AC Propulsion Inc. AC Propulsion manufactures electric vehicle propulsion systems and develops world leading vehicle-to-grid technology. AC propulsion electric vehicles can source or sink grid power at up to 20 kW. The AC Propulsion, iZero is an electric sports car that out-accelerates a Lamborghini, but is more efficient than a Honda Insight. <http://www.acpropulsion.com>

2:15 **Dr. Mark Duvall**, Electric Transportation Technology Development Manager at EPRI (Electric Power Research Institute), a non-profit organization whose mission is to provide collaborative science and technology solutions for the electric power industry. Dr. Duvall conducts research and technology development efforts in advanced transportation, including hybrid system design, advanced energy storage, vehicle efficiency, systems modeling, and environmental analysis. His primary focus is plug-in hybrid electric vehicles and he oversees a number of EPRI research partnerships and collaborations with the automotive industry, state and federal agencies, national laboratories, and academic research institutions. He currently heads up EPRI's Grid-Connected Hybrid Electric Vehicle Working Group (HEVWG) and is EPRI's technical lead for the Daimler Chrysler-EPRI Plug-in Hybrid Electric Sprinter Van Program. <http://www.epri.com>

2:25 **Patrick Mazza**, Moderated Discussion within Panel

3:20 Audience Discussion Among Themselves/ Tabling/ Restroom Break (5 minutes)
3:25 Questions for Panelists from Attendees (roaming cordless mike)
4:10 **Patrick Mazza**, Final Round, Capping Next Step to Implementation
4:25 – 5:45 Adjourn to lounge outside Bertha Landes Room for continued discussion/
speakers & audience