Agenda for NIST Workshop on
Power Conditioning System Architectures for Plugin-Vehicle Fleets as Grid Storage

The Pentagon, Arlington VA
June 13, 2011

http://www.nist.gov/pml/high_megawatt/

Agenda (Morning – Before break)

1) US Policy and Programs for Electric Transportation

- **Camron Gorguinpour** (U.S. Air Force – Office of the Assistant Secretary) A DOD Perspective on EV Ancillary Services
- **Allen Hefner** (NIST) Introduction and Workshop Goals

9:10am

2) Use of EV as Grid Storage

Panel A: What are existing ancillary service markets where a Plugin Electric/Hybrid-Electronic Vehicle (PEV) Fleet might participate?

- **Scott Baker** (PJM) ISO/RTO Markets – Freq. reg., Spin res., Peak shave and VARs
- **Willett Kempton** (MAGICC) Demonstration Project - Plugin EVs for Frequency Regulation

9:45am

Panel B: What additional grid storage requirements and markets might emerge that could utilize a PEV Fleet?

- **Tom Weaver** (AEP) Current Utility Needs for Storage and Ability to Integrate
- **Kevin Schneider** (PNNL) Potential Value of Storage for Distribution System

10:20am **Break**

Agenda (Morning – After break)

10:35am

2) Use of EV as Grid Storage (Continuted)

Panel C: How might a PEV Fleet aid in integration of distributed variable renewable generators?
How might a PEV Fleet aid in integration of resilient micro-grids?

- **Glenn Skutt** (PowerHub) Inverter/Storage functions to support Renewable Integration
- **William Siddall** (next energy) Storage functions to support Resilient Microgrids

11:10am

Panel D: PEV Battery as Grid Storage - Impact of dual-use on Battery Life Degradation.

- **Dave Nichols** (Altairnano) Impact of grid storage functions on battery degradation
- **Cyrus Ashtiani** (Saft) Impact of duel use on battery – V2G storage and propulsion
- **Eric Hsieh** (A123) Regulatory, Business and Policy issues for PEV as Storage

12:00 Lunch

Agenda (Afternoon – Before break)

12:50pm

3) PCS Architectures for PEV as Storage

Panel E: What PEV charging and bi-directional charging units are available today?
How might onboard vehicle propulsion inverters and converters be utilized for PEV grid interconnection?

- **Kathryn Miles** (Eetrex) — Vehicle to grid charging/inverter systems
- **Ron Lacobelli** (Azure Dynamics) — Hybrid Electric Truck Power Electronics
- **Bill Alexander** (Ideal Power Converters) — Multi-port converter: Grid, Battery, and Propulsion

1:40pm:

***Panel F*:** How might large grid inverters be used to integrate multiple vehicles and other generator/storage devices?
How might DC circuits and DC micro-grids be utilized within a PEV Fleet Power Conditioning System (PCS) architecture?

- **Leo Casey** (Satcon) — Large Grid-Supportive Inverters for Solar, Storage, and V2
- **Paul Savage** (Emerge Alliance) — DC Microgrids and Applications
- **Mark Earley** (National Electrical Code) — Safety Considerations - Grid Inverters and DC circuits

2:30pm **Break**

Agenda (Afternoon – After break)

2:45pm

4) Transition to PEV Fleet as Storage

Panel G: In addition to DOD what other potential large PEV Fleets might emerge?

- **Bruce Gruenewald** (NSI) — Bus Fleet Vehicle-to-Grid Storage
- **John Bryan** (Fleet Energy Company) — Business Development of Vehicle Fleets as Storage

3:20pm

Break-out Session: *Complete Information Charts:*

How might the value proposition of different PEV Fleet PCS approaches be categorized by vehicle type, fleet usage type, and local grid type?

What are PCS gaps and next steps required to enable Vehicle Fleet as storage?

4:00pm

Discuss Break-out Information Results

5:00pm Escort to Metrorail