Plug-in Electric Vehicle - Vehicle to Grid (PEV V2G)
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Electric Vehicle Scenarios

• EV Charging Only
• Smart Charging without V2G
• Bi Directional, Utility Connected V2G
  – Ancillary Services
  – Peak Shaving
• Bi Directional, Off Utility Grid Capable
  – Generator Support
What is V2G

- Electric vehicle energy storage through bi-directional power flow provides an energy resource when the vehicle is parked and connected

- Vehicle to Grid (V2G) Ancillary Services
  - Frequency Regulation Services
  - Spinning/Non-Spinning Reserve Services
  - Peak Power Shaving Demand Reduction

- Other Energy Uses
  - Backup power when configured in a micro grid
  - Providing installation energy security
V2G Pilot Objectives

- Demonstrate and validate V2G technology
  - PEVs
  - Bi-directional charging stations
  - Communication software system
  - Aggregator software controls
  - Electrical utility ancillary services markets
V2G Pilot Objectives

• Determine feasibility of a broad-scale V2G implementation throughout the DoD
  – Does the technology work?
  – Does operation interfere with mission activities?
  – Can PEVs achieve cost parity or better with conventional vehicles?
V2G Vehicle Types

Note: Most images captured during vehicle integration

- VIA Van Hybrid
  Chevrolet Express van chassis

- EVAOS – Ford F150, F250 and F350 Hybrid

- EVI Stake Bed and Box Truck Hybrid

- Phoenix Shuttle Bus
  All Electric

- 2012 & 2013 Nissan LEAF
V2G Charging Station Types

- **DC charging station** – (Nissan LEAF CHAdEMO)
- **AC (V2G SAE)**
- **DC (V2G SAE Combo)**

Princeton Power System (PPS)

Coritech Services
What is Plug-in Electric Vehicle – Vehicle to Grid (PEV-V2G)?

Through its V2G services, a military base reduces its energy costs and greenhouse gas emissions.

**Software Capabilities**
- Fleet Management System
- Charge Control
- Grid Scheduling
- EV Asset Coordination
- Grid Interface

**Sites**
- Los Angeles Air Force Base (LAAFB), California
- Fort Hood, Texas
- Joint Base (JB) Andrews, Maryland
- JB McGuire-Dix-Lakehurst (MDL), New Jersey

Energy providers will pay for V2G services – vehicle batteries provide an energy source to stabilize the grid.
Concurrent Technologies Corporation

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Posters and discussion available during the reception