AT A GLANCE

WHAT IS IT?
The first general purpose federal fleet that is electric enabled
- 42 vehicles and charging stations

Demonstration of vehicle-to-grid (V2G) technology
- Bi-directional charging stations
- Cutting edge plug-in electric vehicles (PEVs)
- Advanced software systems

Public / Private Partnership
- State and local government
- Other federal agencies
- Private industry, academia and local utilities

WHAT ARE THE BENEFITS?
More reliability
- Improved grid stability

Lower Costs
- Reduced fuel and maintenance costs
- Reduced utility bill – credit for power discharged to the grid

Community Achievements
- State of California roadmap to expand V2G
- Active forum between State of California and utility providers for additional advanced energy demonstrations
- Experimental regulatory framework to expand V2G
- Identified resolution for grid congestion affecting China Lake and surrounding community

Environmental Benefits
- Reduce greenhouse gas emissions

HOW VEHICLE TO GRID (V2G) WORKS

Through its V2G services, a military base
REDUCES its energy costs by ensuring a stable grid.

Energy providers will PAY for V2G services – vehicle batteries provide an energy source to stabilize the grid.

With V2G, PEVs can receive or provide power to the grid.

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

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

PROGRAM SUCCESSES

Los Angeles Air Force Base (LA AFB) is the first federal facility to replace 100 percent of its general purpose vehicle fleet with plug-in electric vehicles.

LA AFB is the largest plug-in electric vehicle (PEV) fleet on a federal facility and the largest V2G demonstration in the world.

With the ability to direct power both to and from the grid, these vehicles enable the installation to earn revenues that can be used to offset its energy costs, as well as enhance grid reliability and power security.

LA AFB’s PEVs can provide more than 700 kilowatts of power – enough to power 140 typical American homes on a hot summer afternoon.

This demonstration was made successful with the commitment of state and local government, federal agencies, private industry and energy providers and regulators.
# Plug-In Electric Vehicles and Plug-In Hybrid Electric Vehicles in Fleet

<table>
<thead>
<tr>
<th>Model</th>
<th>Range Description</th>
<th>General Purpose Fleet Role</th>
<th>Battery Capacity</th>
<th># at Locations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nissan LEAF Sedan</td>
<td>PEV electric range: 76 miles fuel efficiency: 96 MPG</td>
<td>23.6 cubic feet cargo capacity</td>
<td>24 kWh</td>
<td>13</td>
</tr>
<tr>
<td>Ford F-Series Trucks</td>
<td>PHEV electric range: N/A fuel efficiency: 45 MPG**</td>
<td>1500 to 2800 lbs payload</td>
<td>27 kWh</td>
<td>5</td>
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<tr>
<td>VIA Motors VTRUX Van</td>
<td>PHEV* electric range: 31 miles fuel efficiency: 38 MPG**</td>
<td>2550 lbs payload (cargo van only)</td>
<td>21 kWh</td>
<td>5</td>
</tr>
<tr>
<td>Electric Vehicle International (EV)</td>
<td>Range Extended Electric Vehicle (REEV)</td>
<td>5300 lbs payload</td>
<td>54 kWh</td>
<td>4</td>
</tr>
<tr>
<td>Phoenix Motorcars Electric Shuttle</td>
<td>PEV electric range: 100 miles fuel efficiency: 32 MPGe</td>
<td>visitor transport: 12 passengers + driver</td>
<td>102 kWh</td>
<td>1</td>
</tr>
</tbody>
</table>

Miles per gallon (MPG), Miles per gallon equivalent (MPGe), Kilowatt-hours (kWh)

Los Angeles Air Force Base (LAAFB), Joint Base Andrews (JB A), Joint Base McGuire Dix Lakehurst (JBMDL)

** Fuel used only when electric range exceeded

** Averaged over 60 miles

## Partnerships

### Department of Defense and Federal Agencies
- Secretary of the Air Force
- Secretary of the Air Force Installations, Environment, and Logistics
- Los Angeles Air Force Base
- Air Force Civil Engineer Center
- Air Force Research Laboratory - Advanced Power Technologies Office
- Air Force Vehicle and Equipment Management Support Office
- Office of the Secretary of Defense
- Secretary of the Army Installations, Energy & Environment
- Army Tank Automotive Research, Development, and Engineering Center
- Army Engineer Research and Development Center-Construction
- Engineering Research Laboratory
- General Services Administration

### Private Industry
- ACDD
- Akuacom, Inc.
- Bel Fuse, Inc.
- Clean Wave Technologies, Inc.
- Concurrent Technologies Corporation
- Coritech Services, Inc.
- Eaton Corporation
- Electric Vehicle Add-On Systems, Inc.
- Electric Vehicles International LLC
- Electricore, Inc.
- Ford Motor Company
- Kisensum, Inc.
- Nissan Motor Corporation
- Phoenix Motorcars, LLC
- Princeton Power Systems, Inc.
- VIA Motors Inc.

### State Government and National Laboratories
- California Energy Commission
- California Office of Planning and Research
- Lawrence Berkeley National Laboratory
- MIT Lincoln Laboratory

### Energy Providers and Regulators
- California Independent System Operator
- California Public Utility Commission
- Southern California Edison