

LOS ANGELES AIR FORCE BASE

PLUG-IN ELECTRIC VEHICLE AND VEHICLE-TO-GRID DEMONSTRATION



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

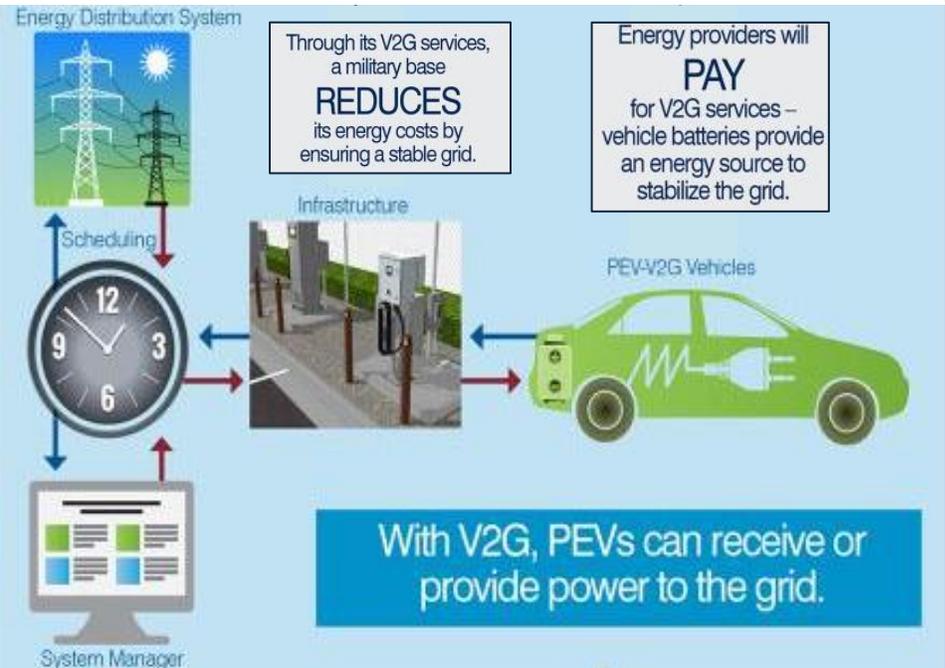
Community Achievements

- 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



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

	 Nissan LEAF Sedan	 Ford F-Series Trucks with EVAOS PHEV kits	 VIA Motors VTRUX Van	 Electric Vehicle International (EVI) Range Extended Electric Vehicle (REEV)	 Phoenix Motorcars Electric Shuttle
Range Description 	PEV electric range: 75 miles fuel efficiency: 99 MPGe	PHEV electric range: N/A fuel efficiency: 45 MPG**	PHEV* electric range: 31 miles fuel efficiency: 38 MPG**	PHEV* electric range: 40 miles fuel efficiency: 43 MPG**	PEV electric range: 100 miles fuel efficiency: 32 MPGe
General Purpose Fleet Role  	23.6 cubic feet cargo capacity	1500 to 2800 lbs payload	2650 lbs payload (cargo van only)	5300 lbs payload	116 cubic feet cargo capacity
Battery Capacity 	24 kWh	27 kWh	21 kWh	54 kWh	102 kWh
# at Locations 	LAAFB 13 Fort Hood 5 JB Andrews 4 JB MDL ---	5 14 5 8	9 --- --- ---	4 --- --- ---	1 --- --- ---

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

