

Exceptional service in the national interest



**Sandia
National
Laboratories**

Sandia National Laboratories

ARPAe Summit 2012



U.S. DEPARTMENT OF

ENERGY

Increase Building & Industrial **EFFICIENCY**

Solid-state lighting is an emerging technology with the potential to reduce energy consumption for lighting by a factor of
3 to 6 TIMES

The Sandia COOLER has
3 to 6 TIMES
lower thermal resistance than a conventional CPU cooler

High Temperature SiC Power Module
reduces the size and volume of power electronic systems by an order of magnitude over present state-of-the-art silicon-based solutions while simultaneously reducing energy loss by greater than
50%



Deploy Clean **ELECTRICITY**

Microsystems-Enabled Photovoltaic uses microfabrication to produce solar cells as small as 3-20 microns thick that require
30 TIMES
less semiconductor material



Modernize the **GRID**

Sandia is helping to modernize Vermont's electric grid, working with DOE & the utilities to bring smart grid technologies to
85% of VERNON CUSTOMERS

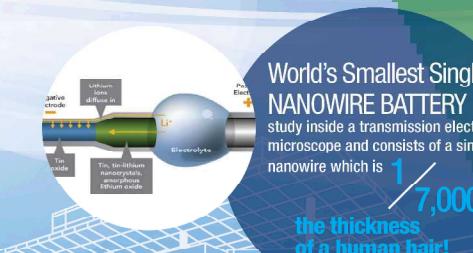
Sandia's Smart Outlet is an autonomous intelligent electrical outlet for controlling loads for power grids with a high percentage of renewable resources



ELECTRIFY the Fleet

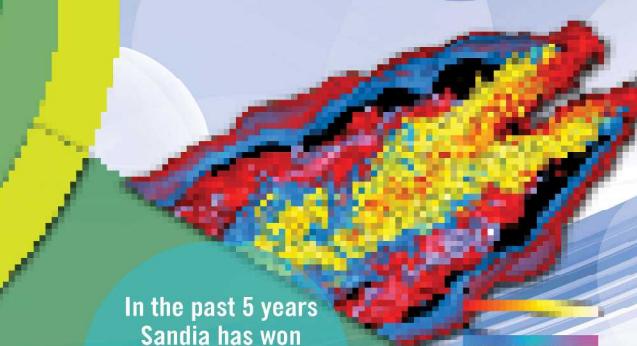


The BATLab is equipped with 4 mechanical abuse test systems to perform a variety of puncture, impact, or crush tests that can deliver up to
120,000 LBS OF APPLIED LOAD



World's Smallest Single NANOWIRE BATTERY study inside a transmission electron microscope and consists of a single nanowire which is
7,000 times the thickness of a human hair!

The Combustion Research Facility has been working closely with U.S. engine manufacturers for more than
30 YEARS



Deploy Alternative **FUELS**



In the past 5 years Sandia has won
23 AWARDS