ARPA-E AWARDED PROJECTS IN ENERGY STORAGE

- Lead Research Org. - (Partner Org's.) - Amount Awarded - Project Location	PROJECT DESCRIPTION
FY2011	
ABB Inc (SuperPower Inc.; Brookhaven National Lab.) **$4,200,000** Cary, NC	**Superconducting Magnetic Energy Storage (SMES): Superconducting Magnet Energy Storage System with Direct Power Electronics Interface**
Beacon Power Corp. (Imlach Consulting Engr; IONICORP) **$2,250,000** Tyngsboro, MA	**Flywheel: Development of a 100 kWh/100 kW Flywheel Energy Storage Module**
Boeing **$2,264,136** Huntington Beach, CA	**Flywheel: Low-Cost, High-Energy Density Flywheel Storage Grid Demonstration**
CUNY Energy Institute (Rechargeable Battery Corp) **$3,000,000** New York, NY	**Battery: Low-cost Grid-Scale Electrical Storage using a Flow-Assisted Rechargeable Zinc-Manganese Oxide Battery**
Fluidic Energy Inc. **$3,000,000** Scottsdale, AZ	**Battery: Enhanced Metal-Air Energy Storage System with Advanced Grid-Interoperable Power Electronics Enabling Scalability and Ultra-Low Cost**
General Atomics (UC San Diego) **$1,986,308** San Diego, CA	**Flow Battery: GRIDS Soluble Lead Flow Battery Technology**
General Compression **$750,000** Newton, MA	**Compressed Air Energy Storage (CAES): Fuel-Free, Ubiquitous, Compressed Air Energy Storage and Power Conditioning**
Lawrence Berkeley Nat. Lab. (DuPnt; Bosch; 3M; Proton Energy) **$1,592,730** Berkeley, CA	**Flow Battery: Hydrogen-Bromine Flow Batteries for Grid-Scale Energy Storage**
Primus Power **$2,000,000** Alameda, CA	**Flow Battery: Low-Cost, High Performance 50 Year Electrodes**

Proton Energy (Penn State University) **$2,148,719** Wallingford, CT	**Fuel Cell: Transformative Renewable Energy Storage Devices Based on Neutral**
United Technologies Research Center (Univ. of TX; Clipoper Windpower; Pratt & Whitney; Sandia National Laboratories **$3,000,000** East Hartford, CT	**Flow Battery: Transformative Electrochemical Flow Storage System (TEFSS)**
Univ. of So. California (Jet Propulsion Laboratory) **$1,459,324** Los Angeles, CA	**Battery: A Robust and Inexpensive Iron-Air Rechargeable Battery for Grid-Scale Energy Storage**
FY2010	
Arizona State University (Fluidic Energy, Inc.) **$5,133,150** Tempe, AZ	**A new class of metal-air batteries using ionic liquids, with many times the energy density of today's lithium-ion batteries. Could enable long range, low cost plug-in hybrid and all-electric vehicles.**
EaglePicher Technologies (Pacific Northwest National Laboratory) **$7,200,000** Joplin, MO	**High energy, low cost planar liquid sodium beta batteries for grid scale electrical power storage. Could enable continuous power from renewable resources, like wind and solar, and could support a highly stable and reliable grid.**
Envia Systems Argonne National Laboratory **$4,000,000** Hayward, CA	**High energy density Lithium-ion batteries with 3x better energy density than current batteries. Based on novel nano silicon-carbon composite anodes and manganese composite cathodes discovered at Argonne National Laboratory. Could lower the cost and speed the adoption of plug-in hybrids and electric vehicles.**
FastCAP Systems Corp. Mass. Inst. of Technology **$5,349,932** Cambridge, MA	**A nanotube enhanced ultracapacitor with energy density approaching that of standard batteries, but with many times greater power density and thousands of times the cycle life. Could greatly reduce the cost of hybrid and electric vehicles and of grid-scale storage.**
Inorganic Specialists, Inc. Ultramet, Inc; EaglePicher; Southeast Nonwovens; EMTEC **$1,999,447** Miamisburg, OH	**A silicon-coated carbon nanofiber paper for the anode of next generation Lithium-ion batteries. These low cost, manufacturable batteries could accelerate the deployment of plug-in hybrids and electric vehicles, shifting U.S. transportation energy from imported oil to the grid.**
Massachusetts Institute of Technology **$6,949,624** Cambridge, MA	**An all liquid metal grid-scale battery for low-cost, large-scale storage of electrical energy. This new class of batteries could enable continuous power supply from renewable energy sources, such as wind and solar, and a more stable, reliable grid.**