

Energy Storage Demonstrations

| HQ State | HQ City | Name of Primary Awardee | Project Title and Brief Project Description | Project Locations | Recovery Act Funding | Total Project Value Including Cost Share |
|-----------------------|---------------|------------------------------------|--|---|----------------------|--|
| CA | Alameda | Primus Power Corporation | Wind Firming EnergyFarm™ - Deploy a 25 MW - 75 MWh EnergyFarm for the Modesto Irrigation District in California's Central Valley, replacing a planned \$78M / 50 MW fossil fuel plant to compensate for the variable nature of wind energy providing the District with the ability to shift on-peak energy use to off-peak periods. | Alameda, CA; San Ramon, CA; and Modesto, CA | \$14,000,000 | \$46,700,000 |
| | Berkeley | Seeo, Inc | Solid State Batteries for Grid-Scale Energy Storage - Develop and deploy a 25kWh prototype battery system based on Seeo's proprietary nanostructured polymer electrolytes. This new class of advanced lithium-ion rechargeable battery will demonstrate the substantial improvements offered by solid state lithium-ion technologies for energy density, battery life, safety, and cost. These batteries would be targeted for utility-scale operations, particularly Community Energy Storage projects. | Berkeley, CA and Van Nuys, CA | \$6,196,060 | \$12,392,120 |
| | Fremont | Amber Kinetics, Inc. | Amber Kinetics Flywheel Energy Storage Demonstration - Develop and demonstrate an innovative flywheel technology for use in grid-connected, low-cost bulk energy storage applications. This demonstration effort, which partners with Lawrence Livermore National Laboratory, will improve on traditional flywheel systems, resulting in higher efficiency and cost reductions that will be competitive with pumped hydro technologies. | Fremont, CA | \$4,000,000 | \$10,000,000 |
| | Rosemead | Southern California Edison Company | Tehachapi Wind Energy Storage Project -Deploy and evaluate an 8 MW utility-scale lithium-ion battery technology to improve grid performance and aid in the integration of wind generation into the electric supply. The project will evaluate a wider range of applications for lithium-ion batteries that will spur broader demand for the technology, bringing production to a scale that will make this form of large energy storage more affordable. | Tehachapi, CA | \$24,978,264 | \$53,510,209 |
| | San Francisco | Pacific Gas & Electric Company | Advanced Underground CAES Demonstration Project Using a Saline Porous Rock Formation as the Storage Reservoir - Build and validate the design, performance, and reliability of an advanced, underground 300 MW Compressed Air Energy Storage (CAES) plant using a saline porous rock formation located near Bakersfield, CA as the storage reservoir. | Kern County, CA | \$25,000,000 | \$355,938,600 |
| California | | | | | \$74,174,324 | \$478,540,929 |
| MA | North Reading | Premium Power Corporation | Premium Power Distributed Energy Storage System Demonstration for National Grid and Sacramento Municipal Utility District - Demonstrate competitively-priced, multi-megawatt, long-duration advanced flow batteries for utility grid applications. This three-year project incorporates engineering of fleet control, manufacturing and installation of seven 500-kW/6-hour TransFlow 2000 energy storage systems in California, Massachusetts, and New York to lower peak energy demand and reduce the costs of power interruptions. | North Reading, MA; Syracuse, NY; Everett, MA; Sacramento, CA; and Rancho Cordova, CA | \$7,320,000 | \$16,080,554 |
| | Tyngsboro | Beacon Power Corporation | Beacon Power 20MW Flywheel Frequency Regulation Plant -- Chicago, IL -Design, build, test, commission, and operate a utility-scale 20 MW flywheel energy storage frequency regulation plant in Chicago, Illinois, and provide frequency regulation services to the grid operator, the PJM Interconnection. The project will also demonstrate the technical, cost and environmental advantages of fast response flywheel-based frequency regulation management, lowering the cost to build a 20 MW flywheel energy storage plant to improve grid reliability while increasing the use of wind and solar power. | Tyngsboro, MA and Chicago, IL | \$24,063,978 | \$48,127,957 |
| Massachusetts | | | | | \$31,383,978 | \$64,208,511 |
| MI | Detroit | The Detroit Edison Company | Detroit Edison's Advanced Implementation of A123s Community Energy Storage Systems for Grid Support - Demonstrate the use and benefits of Community Energy Storage (CES) systems for utilities and test the ability to integrate secondary-use electric vehicle batteries as part of the CES demonstration. This project will install 20 CES units, 25kW/2hr each, into a system that includes a 1 MW storage device integrated into a solar system. | Detroit, MI; Northville, MI; Fairfax, VA; Blacksburg, VA; Auburn Hills, MI; and Hopkinton, MA | \$4,995,271 | \$10,877,258 |
| Michigan | | | | | \$4,995,271 | \$10,877,258 |
| NC | Charlotte | Duke Energy Business Services, LLC | Notrees Wind Storage - Deploy a wind energy storage demonstration project at the Notrees Windpower Project in western Texas. The project will demonstrate how energy storage and power storage technologies can help wind power systems address intermittency issues by building a 20 megawatt (MW) hybrid-energy storage system capable of optimizing the flow of energy. | Goldsmith, TX | \$21,806,232 | \$43,612,464 |
| North Carolina | | | | | \$21,806,232 | \$43,612,464 |

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| NH | West Lebanon | SustainX, Inc. | Demonstration of Isothermal Compressed Air Energy Storage to Support Renewable Energy Production - Design, build, and deploy a utility-scale, low-cost compressed air energy storage system to support the integration of renewable energy sources onto the grid. The 1 MW/4hr system will store potential energy in the form of compressed air in above-ground industrial pressure facilities. The technology utilizes isothermal gas cycling coupled with staged hydraulic compression and expansion to deliver an efficient and cost-effective energy storage solution. | West Lebanon, NH; Hanover, NH; and Saxonville, MA | \$5,396,023 | \$10,792,045 |
| New Hampshire | | | | | \$5,396,023 | \$10,792,045 |
| NM | Albuquerque | Ktech Corporation | Flow Battery Solution for Smart Grid Renewable Energy Applications - Demonstrate a prototype flow battery system that can be grid connected, charged and discharged, and scaled to utility power levels. The project will combine a proven redox flow battery chemistry with a unique, patented design to yield an energy storage system that meets the combined safety, reliability, and cost requirements for distributed energy storage. | Albuquerque, NM; Sunnyvale, CA; and Snelling, CA | \$4,764,284 | \$9,528,567 |
| | Albuquerque | Public Service Company of New Mexico | PV Plus Storage for Simultaneous Voltage Smoothing and Peak Shifting - Demonstrate how a 2.8MWh Zinc-Bromine flow battery along with a sophisticated control system turns a 500kW solar PV installation. into a reliable, dispatchable distributed generation resource. This hybrid resource will mitigate fluctuations in voltage normally caused by intermittent sources such as PV and wind andsimultaneously store more energy for later use when customer demand peaks. | Albuquerque, NM | \$1,755,931 | \$5,851,303 |
| New Mexico Total | | | | | \$6,520,215 | \$15,379,870 |
| NY | Binghamton | New York State Electric & Gas Corporation | Energy East Advanced CAES Demonstration Plant (150MW)Using an Existing Salt Storage Cavern - Demonstrate an advanced, less costly 150 MW Compressed Air Energy Storage (CAES) technology plant using an existing salt cavern. The project will be designed with an innovative smart grid control system to improve grid reliability and enable the intergration of wind and other intermittent renewable energy sources. | Watkins Glen, NY | \$29,561,142 | \$125,006,103 |
| New York Total | | | | | \$29,561,142 | \$125,006,103 |
| OH | Painesville | City of Painesville | Painesville Municipal Power Vanadium Redox Battery Demonstration Program - Demonstrate 1 MW vanadium redox battery (VRB) storage system at the 32 MW municipal coal fired power plant in Painesville. The project will provide operating data and experience to help the plant maintain its daily power output requirement more efficiently while reducing its carbon footprint. | Painesville, OH; Johnstown, PA; Alexandria, VA; Evansville, IN; Devens, MA; and Parma, OH | \$3,743,570 | \$7,487,153 |
| Ohio Total | | | | | \$3,743,570 | \$7,487,153 |
| PA | Lyon Station | East Penn Manufacturing Co. | Grid-Scale Energy Storage Demonstration for Ancillary Services Using the UltraBattery Technology - Demonstrate the economic and technical viability of a 3MW grid-scale, advanced energy storage system using the lead-carbon UltraBattery technology to regulate frequency and manage energy demand. This project will entail the construction of a dedicated facility on the East Penn campus in Lyon Station, PA that will be used as a working energy storage demonstration for UltraBattery modules. | Lyons Station, PA | \$2,245,523 | \$4,491,046 |
| | Pittsburgh | 44 Tech Inc. | Demonstration of Sodium Ion Battery for Grid Level Applications - Partner with Carnegie Mellon University to demonstrate a new, low cost, long-life, highly efficient, environmentally friendly, stationary energy storage battery that uses a proven and fully novel cell chemistry. Specifically, an aqueous sodium-ion based electrolyte is used in conjunction with simple highly scalable electrode materials housed in low cost packaging. | Pittsburgh, PA | \$5,000,000 | \$10,000,000 |
| Pennsylvania Total | | | | | \$7,245,523 | \$14,491,046 |
| Energy Storage Totals | | | | | \$184,826,277 | \$770,395,378 |