

Smart Grid Regional Demonstrations

HQ State	HQ City	Primary Awardee	Brief Project Description	Project Locations	Recovery Act Funding*	Participant Share	Total Project Value Including Cost Share
CA	Los Angeles	Los Angeles Department of Water and Power	Implement a smart grid demonstration at university campus properties and technology transfer laboratories to establish a fully-integrated Smart Grid system and suite of technologies as applied to demand response, conduct a comprehensive portfolio of behavioral studies, demonstrate next-generation cyber security technologies, and demonstrate the integration of substantial number of PHEVs into Smart Grid.	Los Angeles, CA	\$60,280,000	\$60,280,000	\$120,560,000
	Rosemead	Southern California Edison Company	Demonstrate an integrated, scalable model of a Smart Grid System from transmission through distribution to customer devices such as smart appliances and electric vehicles. Project will validate the interoperability of emerging standards for future Smart Grid systems and uses, including standards for communications, cyber-security and interoperability.	Irvine, CA	\$40,134,700	\$40,134,700	\$80,269,400
CA Total					\$100,414,700	\$100,414,700	\$200,829,400
MA	Westwood	NSTAR Electric & Gas Corporation	Demonstrate residential dynamic pricing (time-of-use and critical peak rates/rebates) and two-way direct load control using existing automated meter reading (AMR) equipment. The pilot will demonstrate the viability of leveraging existing AMR deployments to provide much of the Smart Grid functionality of advanced metering infrastructure (AMI) but without the full investment and without the stranded costs that would result from premature replacement of existing assets. Functionally, the system is expected to provide many of the features of AMI, such as interval meter data collection, communication to customers, direct load control, meter diagnostics, and automated outage reporting. Peak load reductions and energy conservation of approximately 5% are expected.	Newton and Hopkington, MA	\$2,362,000	\$2,362,000	\$4,724,000
		NSTAR Electric & Gas Corporation	Demonstrate the use of sensors and monitoring instrumentation on low voltage (secondary) networks in downtown Boston to safely work with distributed resource integration. Results will greatly improve understanding of grid status and behavior and allow for proactive maintenance that will improve safety and increase reliability. In addition, results also offer the promise of increased capability for integration of solar, plug in hybrids, and battery storage, which has not generally been possible on this type of grid in the past. Knowledge gained from this demonstration will be broadly applicable to secondary area network grids in large urban areas such as New York City, Philadelphia, Chicago and Los Angeles.	Boston, MA	\$5,267,592	\$5,267,592	\$10,535,184
MA Total					\$7,629,592	\$7,629,592	\$15,259,184
MO	Kansas City	Kansas City Power & Light Company	Demonstrate an end-to-end SmartGrid that will include advanced renewable generation, storage resources, leading edge substation and distribution automation and control, energy management interfaces, and innovative customer programs and rate structures at a major substation in an urban location, impacting about 14,000 commercial and residential customers across ten circuits and two square miles. It will provide the critical energy infrastructure required to support an urban revitalization effort, Kansas City's Green Impact Zone.	Kansas City, MO	\$23,940,112	\$24,185,203	\$48,125,315
	St. Louis	The Boeing Company	Demonstrate an advanced smart grid technology with military-grade cyber security for optimizing regional transmission system planning and operation by enabling wide-area situational awareness coordination, and collaboration in a secure manner. The project team includes Regional Transmission Operators and utilities, which collectively serve all or part of 21 states and more than 90 million people.	St Louis, MO; Sunnyvale, CA; Huntington Beach, CA	\$8,561,396	\$8,611,448	\$17,172,844
MO Total					\$32,501,508	\$32,796,651	\$65,298,159

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NY	New York	Consolidated Edison Company of New York, Inc.	Demonstrate a scalable smart grid prototype that promotes cyber security, reduces electric demand, increases reliability and energy efficiency, and is cost effective. The system will enable greater use of renewable energy, other distributed resources, electric vehicle charging and greater consumer participation in the energy mix.	Ramsey, NJ; Spring Valley and Nyack, NY; New York, NY	\$45,388,291	\$46,999,926	\$92,388,217
	Uniondale	Long Island Power Authority	Demonstrate the integration of a suite of Smart Grid technologies including Advanced Metering Infrastructure (AMI), substation, distribution circuit automation, distributed energy resources, and vehicle charging stations from substations to the customer. Demonstration will involve 800 customers.	Long Island, NY	\$12,496,047	\$12,797,688	\$25,293,735
	White Plains	Power Authority of the State of New York	Demonstrate the effects that Dynamic Thermal Circuit Ratings (DTCR) technology can have on areas of the New York State transmission system where there is abundant real or potential wind generation and determine a correlation between increased wind generation and increased transmission capacity. This project could result in a 5 to 15% increase in transmission line rating allowing more wind in constrained areas, defer millions of dollars in capital expenditures on transmission projects, prioritize proposed major transmission projects, and allow increased situational awareness for operators.	Massena & Chateaugay, NY	\$720,000	\$720,000	\$1,440,000
NY Total					\$58,604,338	\$60,517,614	\$119,121,952
OH	Columbus	Columbus Southern Power Company (doing business as AEP Ohio)	Demonstrate a secure, interoperable and integrated smart grid infrastructure to maximize distribution system efficiency and reliability and consumer use of demand response programs to reduce energy consumption, peak demand cost, and fossil fuel emissions. This project will include 110,000 consumers in customer programs and will install technologies (13 different technologies) from the substation through the customer, including generation and storage, improving distribution system efficiency and reliability by 30-40%	Approximately half of the State of Ohio	\$75,161,246	\$75,161,246	\$150,322,492
OH Total					\$75,161,246	\$75,161,246	\$150,322,492
TX	Austin	Center for the Commercialization of Electric Technologies	Demonstrate the management of the fluctuations of increasing levels of wind power, up to 10,000 MVA by 2020, at the system operator level through better system monitoring capabilities, enhanced operator visualization, and improved load management. Includes installation of synchrophasors to enhance monitoring of grid conditions as remote wind resources move through the system, and the use of integrated smart grid technologies in a community of 3,000 customers, including household and community battery storage, smart meters, and homes equipped with 1-3 kW solar photovoltaics.	Houston, TX	\$13,516,546	\$13,902,878	\$27,419,424
	Austin	Pecan Street Project, Inc.	The Energy Internet microgrid, located in a large mixed-use infill development site in Austin, Texas, will include initially linking distributed energy resources, 1,000 residential and 75 commercial two-way meters and customer technologies, and plug-in electric vehicle (PEV) charging sites. The project is located at a unique site chosen for its existing platform of advanced energy technologies and sustainability features and will be implemented by a unique Texas not-for-profit corporation created to research, develop and implement smart grid clean energy systems.	Austin, TX	\$10,403,570	\$14,252,915	\$24,656,485
	Dallas	Oncor Electric Delivery Company, LLC	Demonstrate the use of Dynamic Thermal Circuit Ratings (DLR) on 8 circuits in the Dallas, TX area to reduce transmission-line congestion and increase ampacity by 15%. As the data and results of utilizing DLR are verified and become better understood, transmission systems can be utilized to their full capacity, decreasing congestion and deferring upgrades and additional construction.	Dallas, TX	\$3,471,681	\$3,807,485	\$7,279,166
TX Total					\$27,391,797	\$31,963,278	\$59,355,075

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VA	Arlington	National Rural Electric Cooperative Association	Install and operate of a suite of diverse Smart Grid technologies, and aggregate the data from 17 rural electric cooperatives across 11 states. Technologies will include over 130,000 meters and over 18,000 demand response switches. In addition to customer-focused technologies, the project will include voltage sensors and fault detectors. The demonstration data will be centralized for all sites and include studies such as Advanced Volt/VAr for Total Demand, Distributed Resources and critical peak pricing smart grid networks, customer appliance control, time sensitive rate pilots, and Self-Healing Feeders for Improved Reliability.	Camp Point, IL; Friendship, WI; Osceola, IA; Marshalltown, IA; Humboldt, IA; Delhi, NY; Reynolds, GA; Lihue, HI; Petersburg, IL; Plymouth, NH; Elizabethtown, KY; Owentown, KY; Jacksonville, IL; Bardstown, KY; Covington, GA; Markle, IN; Franklinton, LA	\$33,932,146	\$33,932,146	\$67,864,292
VA Total					\$33,932,146	\$33,932,146	\$67,864,292
WA	Richland	Battelle Memorial Institute, Pacific Northwest Division	Spanning five states and affecting more than 60,000 consumers, demonstrate and validate new smart grid technologies and inform business cases; provide two-way communication between distributed generation, storage, and demand assets and the existing grid infrastructure; quantify smart grid costs and benefits; and advance interoperability standards and cyber security approaches.	Seattle, WA; Kennewick, WA; Fox Island, WA; Ellensburg, WA; Salem, OR; Airway Heights, WA; Milton Freewater, OR; Pullman, WA; Helena and Georgetown, MT; Idaho Falls, ID; Libby and Kalispell, MT; Jackson Hole and Afton, WY	\$88,821,251	\$88,821,252	\$177,642,503
WA Total					\$88,821,251	\$88,821,252	\$177,642,503
WI	Waukesha	Waukesha Electric Systems	Demonstrate, in a utility substation, a Smart Grid compatible Fault Current Limiting Superconducting Transformer by the end of 2012. The proposed 28MVA Utility Transformer will occupy approximately 50% of the physical size/weight of a conventional transformer, lower power consumption through reduction of losses, and increase the reliability of the Nation's Grid.	Irvine, CA	\$10,774,411	\$10,804,412	\$21,578,823
WI Total					\$10,774,411	\$10,804,412	\$21,578,823
Grand Totals					\$435,230,989	\$442,040,891	\$877,271,880

Smart Grid Energy Storage Demonstrations

HQ State	HQ City	Primary Awardee	Brief Project Description	Project Locations	Recovery Act Funding*	Participant Share	Total Project Value Including Cost Share
CA	Alameda	Primus Power Corporation	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	\$32,700,000	\$46,700,000
	Berkeley	Seeo, Inc	Develop and deploy a 25kWh prototype battery system based on Seeo’s proprietary nanostructured polymer electrolytes, demonstrating that battery packs based on Seeo’s solid state lithium ion technology offer transformational improvements in energy density, battery life, safety, and cost relative to state-of-the-art lithium ion batteries.	Berkeley, CA and Van Nuys, CA	\$6,196,060	\$6,196,060	\$12,392,120
	Fremont	Amber Kinetics, Inc.	Develop and demonstrate an innovative flywheel technology for use in grid-connected, low-cost bulk energy storage applications improving on traditional flywheel systems, resulting in higher efficiency and cost reductions, competitive with pumped hydro.	Fremont, CA	\$3,694,660	\$6,000,000	\$9,694,660
	Rosemead	Southern California Edison Company	Deploy and evaluate an 8 MW utility-scale lithium-ion battery technology in improving grid performance and integrating wind generation into the electric supply.	Tehachapi, CA	\$24,978,264	\$28,531,945	\$53,510,209
	San Francisco	Pacific Gas & Electric Company	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	\$330,938,600	\$355,938,600
CA Total					\$73,868,984	\$404,366,605	\$478,235,589
MA	North Reading	Premium Power Corporation	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	\$8,760,554	\$16,080,554
	Tyngsboro	Beacon Power Corporation	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 to speed deployment to other regions of the country.	Tyngsboro, MA and Chicago, IL	\$24,063,978	\$24,063,979	\$48,127,957
MA Total					\$31,383,978	\$32,824,533	\$64,208,511
MI	Detroit	The Detroit Edison Company	Demonstrate the use and benefits of Community Energy Storage (CES) systems in a utility territory and also to test the ability to integrate secondary-use electric vehicle (EV) batteries into the CES demonstration effort. 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	\$5,881,987	\$10,877,258
MI Total					\$4,995,271	\$5,881,987	\$10,877,258

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NH	West Lebanon	SustainX, Inc.	Design, build, and deploy a 1 MW/4hr isothermal, above ground energy storage system to provide cost effective, utility scale energy storage to support integration of renewable energy sources. 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	\$5,396,023	\$10,792,045
NH Total					\$4,995,271	\$5,881,987	\$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	\$21,806,232	\$43,612,464
NC Total					\$21,806,232	\$21,806,232	\$43,612,464
NM	Albuquerque	Ktech Corporation	Design, build, and deploy a 1 MW/4hr isothermal, above ground energy storage system using hydraulic pumps and motors to provide cost effective, utility scale energy storage to support integration of renewables energy resources.	Albuquerque, NM; Sunnyvale, CA; and Snelling, CA	\$4,764,284	\$4,764,283	\$9,528,567
		Public Service Company of New Mexico	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.	Albuquerque, NM	\$1,755,931	\$4,095,372	\$5,851,303
NM Total					\$6,520,215	\$8,859,655	\$15,379,870
NY	Binghamton	New York State Electric & Gas Corporation	Demonstrate an advanced, less costly 150 MW Compressed Air Energy Storage (CAES) technology plant design with an innovative smart grid control system t to improve grid reliability and the opportunity to integrate wind and other intermittent renewable energy.	Watkins Glen, NY	\$29,561,142	\$95,444,961	\$125,006,103
NY Total					\$29,561,142	\$95,444,961	\$125,006,103
OH	Painesville	City of Painesville	Demonstrate 1 MW vanadium redox battery (VRB) storage system at the 32 MW municipal coal fired power plant to provide operating data and experience for maintaining the plant's daily power output requirement more efficiently while demonstrating a reduced carbon footprint.	Painesville, OH; Johnstown, PA; Alexandria, VA; Evansville, IN; Devens, MA; and Parma, OH	\$3,743,570	\$3,743,583	\$7,487,153
OH Total					\$3,743,570	\$3,743,583	\$7,487,153
PA	Lyon Station	East Penn Manufacturing Co.	Demonstrate the economic and technical viability of a 3MW grid-scale, advanced energy storage system using the lead-carbon UltraBattery technology for use within frequency regulation ancillary services and demand management services.	Lyons Station, PA	\$2,245,523	\$2,245,523	\$4,491,046
	Pittsburgh	44 Tech Inc.	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 material housed in low cost packaging.	Pittsburgh, PA	\$5,179,000	\$5,000,000	\$10,000,000
PA Total					\$7,424,523	\$7,245,523	\$14,491,046
Energy Storage Totals					\$184,699,937	\$580,173,079	\$759,297,993