

# NEW YORK STATE ELECTRIC AND GAS AMERICAN RECOVERY AND REINVESTMENT ACT ADVANCED COMPRESSED AIR ENERGY STORAGE DEMONSTRATION PLANT – 2011 STATUS

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This paper will present the current status of the New York State Electric & Gas (NYSEG) Advanced Compressed Air Energy Storage (CAES) Demonstration Plant Project, which is co-funded by the U.S. Department of Energy's (DOE's) Smart Grid Program and is classified as a DOE American Recovery and Reinvestment Act (ARRA) Regional Demonstration project. NYSEG will work with selected consultants, contractors and vendors to complete the installation of an advanced CAES plant sited in Reading, New York, at the southern end of Seneca Lake, near Watkins Glen, in New York State's Finger Lakes region. The plant is to have a capacity in the range of 130 megawatts (MW) to 210 MW with up to 10 hours of storage – which is sufficient to provide a wide range of operational benefits on the NYSEG power system. As part of the project, a period of two years of monitoring will be conducted that is independent of any existing manufacturer/vendor or utility system monitoring. The CAES plant monitoring will be configured to quantify both plant operational and transmission grid system benefits. A secure data acquisition system will collect, analyze, and disseminate data regarding system operational performance from the local plant point of view and from the New York Independent System Operator (NYISO) point of view.

The NYSEG advanced CAES plant will use electricity to compress air into a solution mined salt cavern air storage system. When electricity is needed, the high-pressure air is withdrawn, heated via combustion, and run through an expansion turbine to drive an electric generator. Compared to a combustion turbine, such plants burn about one-third the premium fuel and produce about one-third the carbon dioxide and other pollutants per kilowatt hour of plant output.

The current status of the NYSEG CAES project presented in this paper will include an overview of the project's management plan, technical architecture and

engineering services, and economic energy market analysis services.

## BIOGRAPHICAL NOTES



James Rettberg is a Project Manager employed by New York State Electronic Gas, a subsidiary of Iberdrola USA. His experience spans over 30 years in management of fossil generating units and in managing major technical projects.

Mr. Rettberg holds a B.S. degree in mechanical engineering from Lehigh University, and an MBA degree from Syracuse University. Mr. Rettberg is a Registered Professional Engineer in New York and Pennsylvania.



**Conference presenter:** Dr. Robert Schainker is Senior Technical Executive in the Electric Power Research Institute Power Delivery and Utilization Sector. His research activities cover energy storage, generation, and transmission technologies with special focus on compressed air energy storage,

battery energy storage, strategic planning, electric grid dynamic stability, transmission substations, high-voltage power flow controllers, transformers, and power quality. Dr. Schainker has given expert testimony to the U.S. Congress, the U.S. Federal Energy Regulatory Commission, and the California Public Utility Commission on strategic planning and a wide variety of electric utility technologies to improve the efficiency and “smartness” of the U.S. grid. Dr. Schainker holds three patents and has written chapters in two encyclopedias on electric grid and energy storage technologies. Dr. Schainker holds a B.S. degree in mechanical engineering, an M.S. degree in electrical engineering, and a Ph.D. in applied mathematics, all from Washington University in St. Louis, Missouri.

