APPLYING RENEWABLE STORAGE TO THE COMMERCIAL ENVIRONMENT

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ABSTRACT

This poster will highlight the details of two recent projects GSB (GS Battery [USA] Inc.) has been involved in that combine renewable energy (photovoltaic energy in these cases) and battery storage in commercial environments. These projects were implemented to demonstrate the real-world benefits (electrical and economical) of coupling advanced battery storage technology with renewable energy technology.

The first project was installed at Mesa del Sol in Albuquerque, New Mexico, in a commercial office building. The Mesa del Sol (MdS) project is one of the first projects in the United States that is a part of the five-year cooperative research agreement between Sandia National Laboratories (SNL) and Forest City (MdS developer). Beginning in April 2009, this agreement was set up to complement the SNL Distributed Energy Technical Lab (DETL) to provide the Department of Energy (DOE) a way to provide the public data from real-world installations. The project funding was managed by SNL with a $2 million earmark that Forest City received. The MdS project includes a grid-tied PV/battery storage system including 17.1-kilowatt (kW) photovoltaic (PV) modules, 15-kW PV/battery power electronics, and 20.48-kWh advanced valve-regulated lead-acid (VRLA) battery technology. The battery technology used at this site includes design features such as glass fiber tubular positive plates, nano-carbon applied to negative plates, and advanced granular silica gel. These features combined together create a battery with higher charge efficiency and increased cycle life and operating years, even in a high-temperature condition. Storage benefits that are being demonstrated at the site include time of use (TOU) energy cost management and renewable energy time-shift. The collected storage benefit data will be shown on this poster.

The second project was installed at the GSB main office building in Roswell, Georgia. This project was funded by GSB to provide an on-site demonstration of the electrical and economic benefits of PV plus storage at a typical commercial office building. The system consists of 37.44-kW PV modules, 30-kW PV inverter, 15-kW battery inverter, and 144-kilowatt hour (kWh) battery storage. The battery technology used at this site is similar to the battery technology used at the MdS site. Storage benefits including TOU energy cost management and electric service and reliability uninterruptible power supply are being demonstrated at this site and such data will be shown on this poster. This project was the first commercial PV installation with energy storage in the state of Georgia.

In conclusion, GSB believes that these two projects will be good examples of typical commercial renewable storage installations and will provide meaningful, real-world data that can be used to validate some of the many benefits of renewable storage.

BIOGRAPHICAL NOTE

Mr. Hires joined GS Battery in 2010 and currently serves as Engineering Manager. Mr. Hires graduated from the University of Florida with a B.S. in Electrical Engineering in 2004. Mr. Hires is a registered professional engineer (electrical) with over 9 years experience. Before coming to the GS Battery, he worked as a design engineer for a MEP consulting firm, where he worked on the electrical power and telecommunication designs of industrial, healthcare, institutional, and commercial buildings. In the last few years as a consulting engineer, he focused on the design of the many renewable energy projects (wind, photovoltaic, with and without battery storage). Since joining GS Battery, he continues to help design and implement many PV-plus and storage projects as well as storage-only projects around the country, as well as assisting our Japanese engineering team in the development and support of new and existing products.