



Saft Li-ion energy storage pilots a new approach to balancing for California's transmission network



California municipal utility Glendale Water & Power (GWP) has deployed a megawatt-scale battery, based on Saft's lithium-ion (Li-ion) technology, at its Grandview Substation. With the near-instantaneous ability to respond to changes in load, this pilot energy storage system (ESS) will demonstrate how GWP can achieve an unprecedented capacity to regulate its transmission system and ensure a reliable customer supply.

Meeting the requirements of the California Renewable Portfolio Standard

GWP is the local, publicly owned, electric utility for the City of Glendale, providing electric services to nearly 88,000 retail customers. GWP has a summer load peak of approximately 300 MW and an annual load obligation of 1.1 million MWh. The utility has made significant progress in meeting the requirements of the California Renewable Portfolio Standard (RPS) and Greenhouse Gas reduction programs. Currently, at least 25 percent of its annual energy requirement is derived from renewable energy sources. GWP is continuously evaluating investment opportunities to ensure compliance to the increasing RPS targets, effectively integrate renewable resources, and maintain an efficient and reliable electric system. This includes the adoption of grid scale energy storage.



GWP ESS pilot project - key facts

- Location: City of Glendale, California – Grandview Substation
- Skylar Resources sponsored the development, engineering and construction of the storage
- Functions:
 - Transmission system regulation and load balancing
 - ACE correction to compensate for the difference between forecast power and actual power available
 - Black-start capability for local generators
 - Supporting integration of renewables
- Scalable to meet future needs
- Helping to defer major investment in network upgrades

Energy storage maintains a balanced electricity supply

Much of the power supplied to Glendale is brought in on a single transmission line, or interconnection, from the Los Angeles Department of Water & Power (LADWP). GWP provides LADWP with a day-ahead forecast of power flows for each 15-minute period, and is working to minimize the difference between forecast and actual power levels, also known as Area Control Error (ACE). Saft worked with GWP and Skylar Resources LP, a St. Thomas USVI based energy marketing and consulting company focused on medium to long-term

structured energy transactions, to model several months of ACE data. This showed that a multi-container ESS could effectively control the ACE to within an acceptable margin.

Preparing the way for a full-scale ESS

The current installation is a pilot for a potential larger ESS, designed to follow an ACE signal provided by GWP's control system and provide a scaled response. GWP and Saft will analyze operating data for the scaled response to verify

the effectiveness of the system and evaluate battery aging. Success with the pilot system will provide a sound basis for GWP to deploy the full-scale ESS.



Saft ESS for Glendale Water & Power - key facts

- 1 x Intensium® Max+ 20M container
- Battery Rating: 950 kWh
- 2 MW grid-forming power conversion system with black-start capability
- Typical response time: 150 milliseconds

"We are very pleased with the completion and commissioning of the ESS at Grandview substation. This system is now one of the fastest responding storage systems for any municipal utility in Southern California. It gives GWP a flexible, state-of-the-art resource to meet its customers' needs today and in the years ahead. Collaboration with Saft was key in helping GWP to optimize its operations."

William O. Perkins III, CEO and President of Skylar



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