PROJECT PROFILE
MESA 1 and 2
Hardeson and Everett Substations ESS

SNOHOMISH COUNTY
PUD
PUBLIC UTILITY DISTRICT No. 1

Outcomes:
1. Automatic and complete integration of renewable power into the distribution grid.
2. Grid-modernization built on a core of substation-sited energy storage systems.
3. Control systems for the next generation distribution grid.

Challenge

After growing its wind generation from o-to-8% in just two years, Snohomish County (SnoPUD) realized it would not be able to keep adding wind generation to the system without help managing its intermittency. They turned to energy storage as the answer, both to address renewable intermittency and to more broadly support the transmission and distribution grid. SnoPUD recognized that to cost-effectively deploy more than one ESS, energy storage had to become more scalable and replicable. Economies of scale require standardized components and publicly available software interfaces for connecting them together.

Doosan GridTech Solution

Doosan GridTech delivered a holistically designed, grid-integrated and optimized, set of energy storage systems for SnoPUD. The set is comprised of three separate energy storage systems, fully designed, procured, installed, commissioned by Doosan GridTech. Two ESSs were deployed at the same substation, and demonstrated the capability of the Doosan GridTech Intelligent Controller® (DG-IC®) to manage more than one ESS at the substation. The third ESS is an energy dense (2MW/8MWh) vanadium redox flow battery, with another DG-IC® control system. All ESSs were deployed using the MESA standards, ensuring that SnoPUD has standardized communication interfaces, uniform scheduling capability, and reliable security parameters.

Doosan GridTech integrated its DG-IC® controls into SnoPUD's communication and SCADA control systems, with scheduling functionality for optimal management. Effective and functional integration of ESS controls into SCADA and other control systems is one of the most important factors of ESS scalability, and is the reason that more and more utilities are requiring compliance with MESA standards.

Doosan GridTech's Distributed Energy Resource Optimizer® (DG-DERO®) is the keystone of SnoPUD's program. It is the first integrated, scalable, fleet optimization system involving multiple energy storage systems, different battery performance characteristics, and the integration of multiple types of renewable energy. DERO® runs in the SnoPUD data center and is built on open standards such as MESA, OpenADR, Web Services, ICCP, and DNP3. Drawing on its suite of bulk power applications, DERO® maximizes the economics of the fleet of energy storage systems by matching each storage asset to the most valuable mix of opportunities on a day-ahead, hour- ahead and real-time basis.
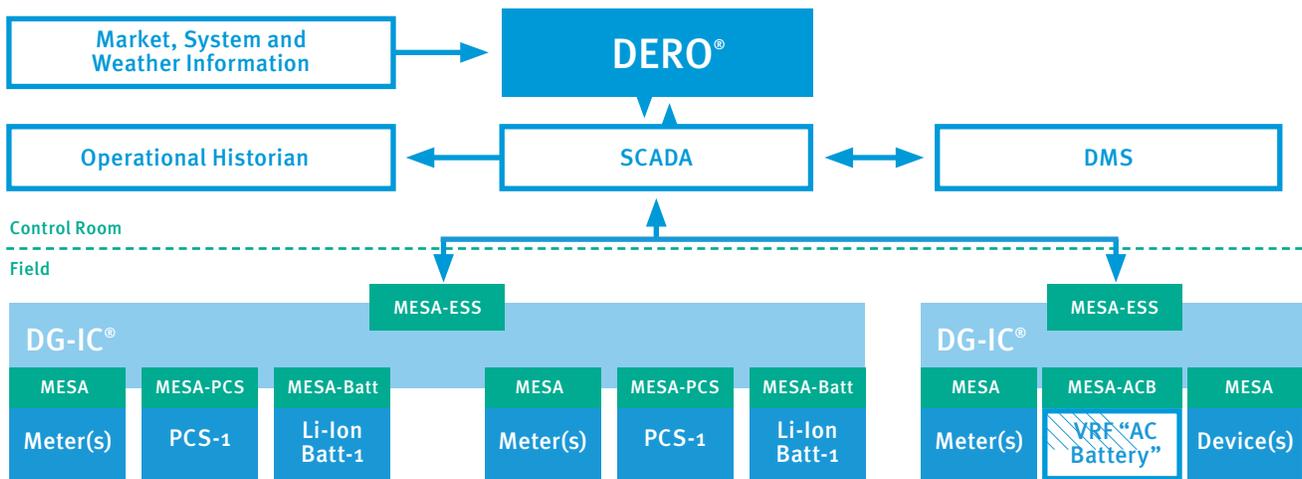
The first open standards-based energy storage program that proves that a component-based ESS fleet can be tightly integrated into grid operations.