

# MESA BESS PORTFOLIO

## Capacity

3.2MW / 10MWh

## Location

Everett, Washington

## PROJECT CASE STUDY

## Setting the Standard for Modular, Interoperable BESS

### About the Client

Snohomish County Public Utility District (SnoPUD) is the second largest publicly owned utility in the Pacific Northwest, serving more than 350,000 electric customers across Snohomish County and Camano Island in Washington State. As an early leader in grid modernization, SnoPUD has been at the forefront of integrating energy storage and distributed energy resources to enhance reliability, manage renewable variability, and support its long-term clean energy strategy.

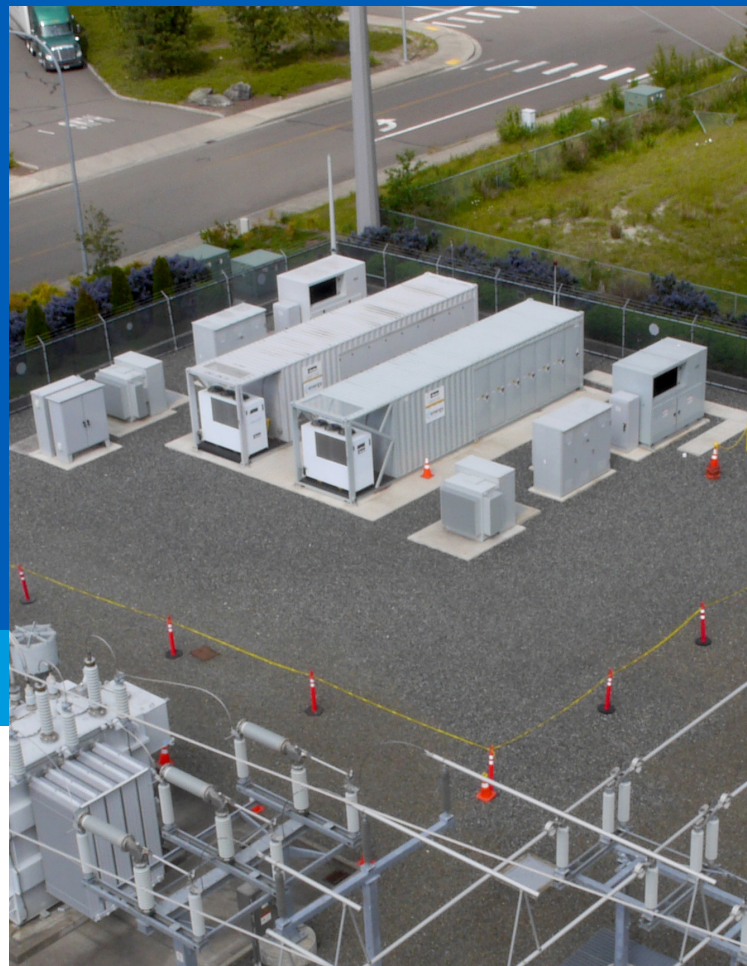
The Modular Energy Storage Architecture (MESA) projects represent some of the first open-standard, multi-vendor energy storage systems in North America. Together MESA 1a, 1b, and 2 established a replicable framework for modular, interoperable storage that continues to influence utility programs nationwide.

### The Challenge: Managing Renewable Intermittency and Grid Flexibility

As SnoPUD expanded its renewable generation portfolio, particularly from wind energy, it faced emerging challenges balancing supply and demand while maintaining voltage and power quality across its distribution network. The utility sought to:

- Mitigate renewable intermittency through fast-response energy balancing.
- Enhance power quality and voltage support within its service territory.
- Demonstrate open interoperability between different battery chemistries and control systems.
- Develop a scalable framework for future distributed energy resource integration.

The MESA initiative aimed to validate a new model for deploying flexible, vendor-agnostic energy storage that could evolve alongside grid needs.



## Client

Snohomish PUD

## Role

System Integrator

## Commissioned

2015 & 2017

## Market

Northwest



## Doosan GridTech's Solution

Doosan GridTech partnered with SnoPUD to design, build, and integrate a portfolio of energy storage systems leveraging MESA open standards. The three systems were developed as progressive demonstrations to evaluate different chemistries, vendors, and use cases under a unified control platform.

### Core Solution Elements

- **MESA 1a & 1b (Hardeson Substation):**
  - 1a is a 0.5MW / 1MWh lithium-ion system using LG Chem batteries.
  - 1b is a 0.5MW / 1MWh lithium-ion system using Mitsubishi/GS Yuasa batteries.
  - Validated frequency response, load smoothing, and renewable integration functions.
  - Both systems operated under the Doosan GridTech Intelligent Controller® (DG-IC®) to demonstrate multi-vendor interoperability at a single substation.
- **MESA 2 (Everett Substation)**
  - 2.2MW / 8MWh vanadium redox flow battery supplied by UniEnergy Technologies (UET).
  - Provided long-duration energy shifting, renewable smoothing, and load management.
- **SCADA and DERMS Integration:** All systems were fully integrated with SnoPUD's SCADA network and coordinated through Doosan's Distributed Energy Resource Optimizer® (DERO®) platform, enabling fleet-level visibility and optimization.
- **Standards Framework:** Implemented MESA, DNP3, OpenADR, ICCP, and Web Services protocols to ensure cybersecurity, interoperability, and future scalability.







## Outcomes and Impact

The MESA projects remain one of the most significant demonstrations of open-standard storage integration in the United States

- **Grid Reliability:** Delivered load balancing, frequency regulation, and voltage control across SnoPUD's distribution grid.
- **Proven Interoperability:** Validated seamless control and coordination of multi-vendor, multi-chemistry systems under one open-standard framework.
- **Long-Duration Capability:** Introduced one of the first utility-scale vanadium flow batteries in North America, callable of sustained eight-hour discharge.
- **DERMS Leadership:** Demonstrated the ability to coordinate distributed assets of using Doosan's DERO platform, advancing early fleet-level energy management.
- **Future Ready Design:** Established a flexible foundation for future resource additions, including renewables and demand response assets.
- **Industry Recognition:** Cited by the U.S. Department of Energy, EPRI, and PNNL as a national benchmark for modular energy storage innovation.

## Why This Project Matters

The SnoPUD MESA program stands as a pivotal milestone in the evolution of utility-scale energy storage. It proved that open, vendor-neutral standards can reduce integration risk, lower lifecycle costs, and support the transition to distributed, renewable-rich power systems.

By integrating diverse chemistries and vendors under a single control framework, Doosan GridTech and SnoPUD helped pioneer the future of distributed energy management, laying the groundwork for today's DERMS-driven grid modernization strategies.