DOOSAN GridTech

BEACON SOLAR BESS

Capacity
20MW / 10MWh

Location
Mojave, California

PROJECT CASE STUDY

Los Angeles' First Utility-Scale Solar-Attached Battery

About the Client

The Los Angeles Department of Water and Power (LADWP) is the largest municipally owned utility in the United States, serving more than four million residents. LADWP is committed to ambitious renewable energy storage targets, including 65% renewable energy by 2036 and net-zero carbon by 2045.
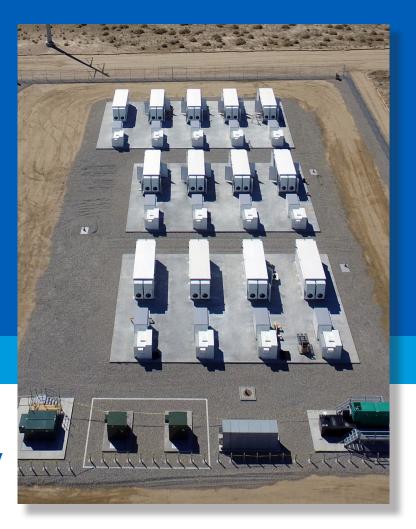
The Beacon BESS is a cornerstone of LADWP's early energy storage program, part of a broader statewide plan to add 178MW of storage by 2021 under California state law AB 2514.

The Challenge: Stabilizing a Renewable-Rich Grid

By 2017, LADWP had already integrated over 2,500MW of renewable capacity, including 590MW of solar and 135MW of wind in the Mojave Desert. While clean, this concentration of resources introduced challenges:

- Solar variability leading to sharp ramps and curtailments.
- Grid reliability risks following the curtailment of the Aliso Canyon gas storage facility in 2015.
- Regulatory pressure under California's storage mandates to deploy scalable solutions quickly.

LADWP needed a cost-effective, fast-track battery system to stabilize one of its most critical transmission corridors with frequency response, voltage control, and power smoothing services.

Client	Role	Commissioned	Market
LADWP	EPC & System Integrator	2018	CAISO

Doosan GridTech's Solution

Doosan GridTech served as both EPC partner and software systems integrator, delivering a modular, resilient design tailored to LADWP's operational and environmental requirements.

Core Solution Elements

- **System design**: 13 PCS-battery container pairs, totaling 35.75 MVA nameplate capacity, engineered to reliably deliver 25 MVA / 10 MWh output even under Mojave heat.

- **Battery technology**: Samsung SDI lithium-ion NMC chemistry, configured with 3,211 modules / 70,642 cells across 247 racks.

- **Resilience features**:
  - N+1 redundancy across critical equipment, ensuring 99% availability.
  - 100% redundant HVAC cooling systems (20 tons per container).
  - Seismic and weather hardening for earthquakes and 120°F+ temperatures.
  - Backup generator with seven days of autonomous HVAC operation.

- **Control Platform**: The Doosan GridTech Intelligent Controller® (DG-IC®), one of the first controllers built on MESA open standards, integrates LADWPs' SCADA system and allows future system expansion without new software.

Outcomes and Impact

Since commissioning in October 2018, the Beacon BESS has proven the role of storage as a flexible, durable grid resource:

- **Grid Reliability:** Completed 90 days of performance testing with 99.9% availability, now providing frequency response, voltage support, automatic generation control, and black start backup.
- **Renewable Integration:** Smooths output from 590MW of solar and supports a planned 490MW expansion while balancing output from the 135MW Pine Tree Wind Farm at Barren Ridge.
- **Economic Value:** Reduces reliance on costly gas-fired peakers, lowering long-term system costs for LADWP customers.
- **Durability:** Designed and warranted for 10 years of 99%+ availability in extreme desert conditions.
- **Strategic role:** Laid the foundation for LADWP's broader utility-integrated storage program and helped position Los Angeles as a leader in municipal clean energy.

Why This Project Matters

The Beacon Solar BESS is more than LADWP's first utility-scale battery. It demonstrates how grid-scale storage can deliver reliability and resilience under some of the harshest conditions in North America.

By combining vendor-agnostic integration, advanced controls, and rugged design, Doosan GridTech enabled LADWP to:

- Maximize renewable utilization.
- Improved grid stability despite the loss of local gas resources.
- Establish a scalable, repeatable model for future storage growth.

The project underscores how battery storage is central to meeting reliability standards and climate goals, positioning LADWP as a leader among U.S. municipal utilities.

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