

**Did you know?**

*The Borrego Springs Microgrid is the first utility-owned, community-scale microgrid in America to demonstrate the full capabilities of renewable generation and new technologies to enhance energy reliability.*



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[sdge.com/microgrid](https://sdge.com/microgrid)

## Borrego Springs Microgrid

**As part of our sustainability strategy, SDG&E® is committed to building the infrastructure needed to strengthen resilience in our remote communities.**

Tucked away in the desert area of San Diego County, Borrego Springs has historically experienced many energy outages because the community is served by a single transmission line and weather conditions are extreme. To strengthen this community's energy reliability and climate resiliency, SDG&E has implemented advanced technology solutions, including a microgrid, and continually makes upgrades and improvements.

### What is a microgrid?

A microgrid is a local energy network that can leverage technology like renewable energy and battery storage to provide power to a specific area if an outage occurs on the larger grid. Essentially a mini power grid, the microgrid can connect and disconnect from the regional grid. It can function in parallel with or independently (island mode) of the regional grid, utilizing local resources such as battery storage and generators to provide power until utility service can be restored.

### Innovation in Borrego Springs

Microgrids that use renewable energy and battery storage can increase energy resilience and reduce carbon emissions. The Borrego Springs Microgrid is designed to be a robust, renewable energy-based system that provides critical power during emergencies and planned outages, which are necessary when system upgrades and maintenance work are required.

Renewable energy from the abundance of local rooftop solar and third-party owned solar photovoltaic plants can be stored within the microgrid's battery systems and then deployed when needed.

The Borrego Springs Microgrid is a true community microgrid, providing benefits to the entire area, and not just to a single metered customer.

### SDG&E upgrades microgrid to 100% renewable energy

In 2020, the U.S. Department of Energy's Solar Energy Technologies Office (SETO) awarded the Borrego Springs Microgrid a \$4.5 million grant to help it transition to 100% renewable energy. SDG&E is upgrading the microgrid to reduce its dependency on fossil-fuel, conventional generation and upgrading its existing energy storage systems to become the primary microgrid asset for Borrego Springs' critical infrastructure. *Our Borrego Springs Microgrid now becomes California's first renewable energy-based community microgrid.*

### Microgrid upgrades

**Generators:** The existing two 1.8 MW diesel generators will be replaced with two 2.5 MW, Tier IV Final generators which are the cleanest available technology for diesel generation. Diesel generators can be a dependable source of power when needed due to its ability to be refueled at any time of the day or night. Solar generation can fluctuate and is only available during the day and conventional generators will allow for extended microgrid operations. Construction is due to be completed by 2nd quarter of 2025.

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**More energy storage containers:** SDG&E is adding six (6) more battery containers that will have a total power output of 7 MW and 14 Megawatt-hours. This new battery system will become the primary microgrid resource instead of the diesel generators, which allows our microgrid to be 100% renewable.

System operation

**Normal conditions:** The Borrego Springs Microgrid is typically dormant or operating with the regional grid. Local solar plants export power as available, with the battery storage and ultracapacitors charged and ready to provide various grid support.

Grid outage scenarios

**Planned outage:** The microgrid can seamlessly transition to and from the regional grid to provide power. The microgrid can be placed in island mode

on demand, both locally and remotely to respond to conditions which force the community off the larger grid.

**Unplanned outages:** The microgrid can be activated to restore power. In order to ensure community safety, this process is initiated only after SDG&E is able to patrol the region to identify and isolate any cause of the unplanned power outage. Once it is safe to activate the microgrid, the batteries and/or generator can power the community and critical facilities, such as the fire and sheriff's station and local food mart.

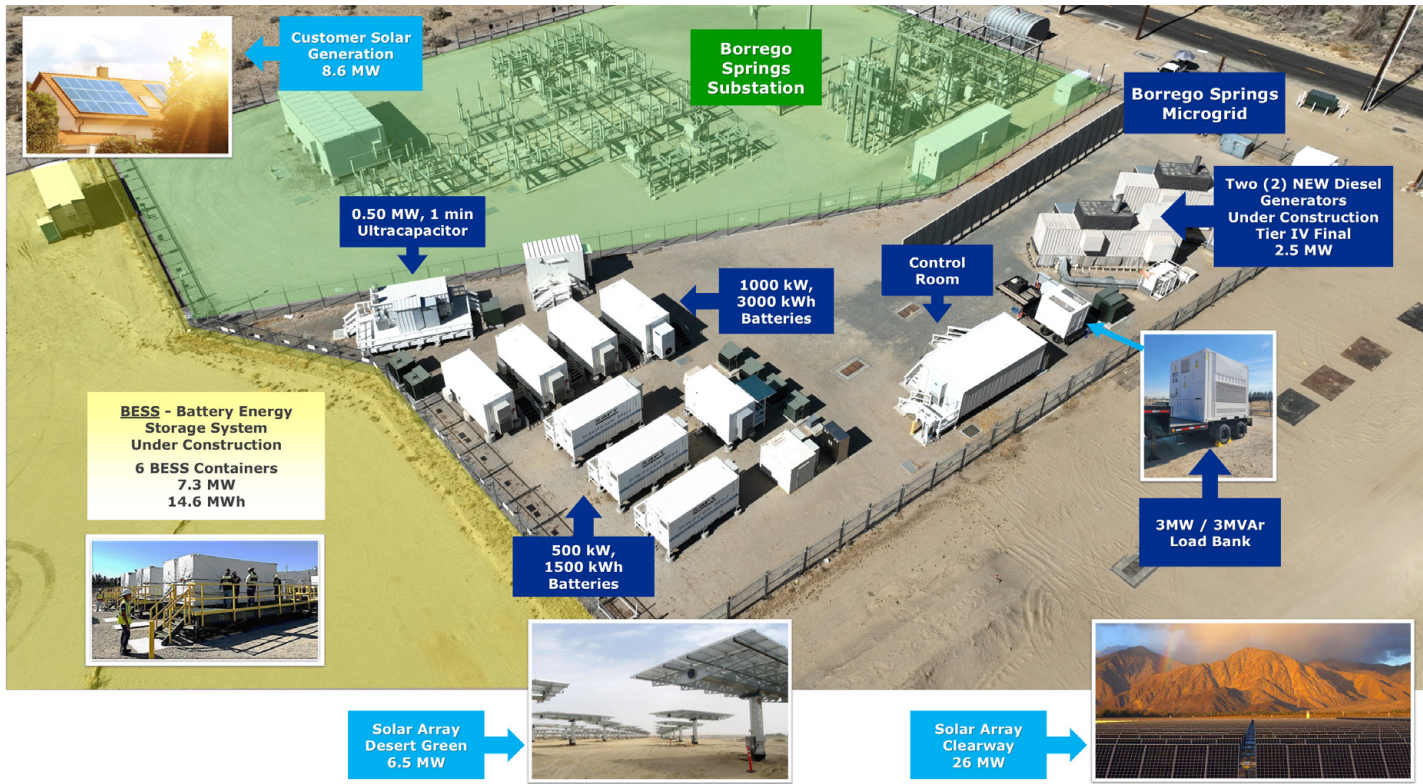
**Day vs. night outages:** During the day, the microgrid can harness energy from local solar plants and rooftop solar, as well as use batteries and generators to power the entire community. During the night, the microgrid's batteries and generators can power designated critical load areas. As needed, non-critical loads are shed to maintain microgrid stability.

Project funding and partners

**Utility:**  
SDG&E Distributed Energy Resources and Advanced Clean Technology

- Partners:**
- ABDNHA - Anza-Borrego Desert Natural History Association
  - Borrego Water District
  - CEC - California Energy Commission
  - NREL - National Renewable Energy Laboratory

**Funding:**  
In 2020, the Borrego Springs Microgrid was awarded a \$4.5 million federal grant from the U.S. Department of Energy's Solar Energy Technologies Office (SETO) to help stabilize the microgrid, improve energy reliability and transition the project to 100% renewable energy.



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