SOUTHERN CALIFORNIA EDISON®
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Battery Storage Fact Sheet

Battery energy storage is among the clean energy resources transforming Southern California Edison's evolving power grid. SCE believes that batteries are a fundamental component of a cleaner, more resilient, more cost-effective grid. Over the last few years, SCE has become one of the leading utilities in committing to energy storage resources and bringing them online.

Batteries allow us to capture and store energy during times of low demand, when it is plentiful and inexpensive, and use it during times of high demand, when energy is in short supply and more expensive.

Benefits of Battery Storage

- Supports overall grid operation
- Reduces greenhouse gas emissions
- Improves the integration of renewable energy resources
- Provides additional capacity to the grid in times of need
- Potentially defers capital upgrades

As more and more renewable resources such as solar and wind come online, batteries can help smooth out the fluctuations in these resources by storing the energy they generate and supplying it to the grid later when the sun isn't shining or the wind isn't blowing. Energy storage can also support local distribution circuits impacted by the high penetration of renewable resources and improve power quality.

Battery energy storage can be used by itself or in combination with other resources, such as gas-fired peaker plants, to help meet peak demand and support electric grid operations, and can serve as emergency backup during energy shortfalls or grid service interruptions.

Over time, greater reliance on storage could also offset traditional ways of meeting increasing energy demand, such as building new power generation stations, transmission lines, and distribution circuits.

SCE plans to connect at least 580 megawatts of energy storage to the grid by 2024 by installing numerous battery energy storage systems and contracting for power supplied by energy storage systems.

Battery Energy Storage Systems Facts

- Battery storage systems can be charged during off-peak times, such as mornings, and then discharged during peak times, such as hot afternoons, to reduce peak energy needs.
- Battery energy storage systems can be placed strategically in locations on the circuit where they are needed most, with modular designs enabling flexible solutions to address space and other constraints.

SCE Battery Energy Storage Resources

At the beginning of 2017, Southern California Edison had nearly 400 megawatts of energy storage under contract, which is almost double the amount that was installed in the entire nation in 2015. These resources include:

Aliso Canyon Energy Storage Procurement – In 2016, SCE entered into a number of contracts for battery energy storage to increase grid reliability and to help mitigate the impacts of the projected gas shortages from a 2015 leak and subsequent shutdown of SoCal Gas's Aliso Canyon Natural Gas Storage Facility. The following contracts represent 62 megawatts of battery energy storage.

- The installation of two 10 megawatt SCE-owned battery energy storage systems adjacent to SCE's **Mira Loma Substation** in Ontario by Tesla Energy.
- The procurement of 22 megawatts of power from non-SCE owned battery energy storage facilities in Southern California.
- Installation of 10 megawatts of battery energy storage at each of two gas-fired peaker sites—**Center Substation in Norwalk** and **Grapeland Substation in Rancho Cucamonga**—by General Electric. The units will be integrated with the peakers, allowing the turbines to operate in standby mode without using fuel or emitting greenhouse gases and enabling immediate response to changing energy dispatch needs.

Preferred Resources Pilot – 75 megawatts of battery energy storage was included in the 125 megawatts of power purchased for the Preferred Resources Pilot, a multiyear project designed to determine whether "preferred resources"—including solar, wind, energy storage, energy efficiency and energy conservation—can be used to offset the increasing demand for electricity in Orange County.

Local Capacity Requirements Procurement – SCE purchased 260 megawatts of power from battery energy storage providers in 2014 as part of a 2200-megawatt procurement designed to meet local reliability needs for the L.A. Basin. Because energy storage was cost-competitive when compared with other preferred resources, the size of the battery energy storage component was more than five times the amount that the state required – a widely recognized game changer for the storage industry.

Demonstration Projects

SCE experiments with new uses of battery technology to evaluate how the technology might best serve its customers. SCE battery energy storage demonstration projects include:

The recently concluded **Tehachapi Energy Storage Project** demonstration was the largest lithium-ion battery energy storage demonstration project in North America at commissioning. The facility is located near one of the largest wind generation hubs in the U.S. — the Tehachapi Wind Resource Area. It is capable of supplying 32 megawatt-hours of electricity — 8 megawatts of power for four continuous hours, which is enough to power 6,000 homes. With the demonstration concluded, plans are underway to use the facility as a distribution-level resource supporting SCE's Monolith substation near Tehachapi, CA.

Irvine Smart Grid Demonstration – Hosted at UC Irvine, this demonstration project was an end-to-end study of smart grid technologies with multiple energy storage systems. The purpose of the project was to examine how to support the increasing contribution of renewable resources to the power system, the changing demands on the system, and how to respond to real world concerns. The demonstration was co-funded by a U.S. Department of Energy grant.

Distribution Energy Storage Integration I (DESI I) – This battery energy storage system in Orange is SCE's first pilot system deployed to support its distribution grid. DESI I's primary purpose is to help with reliability, especially during the hottest months when there is an increased demand for electricity. The system is capable of supplying 2.4 megawatts of power continuously for about an hour and a half.