

The Power Grid of the Future



Building a Smarter Grid for Southern California

At Southern California Edison we are developing an electric grid to support California's transition to a clean and sustainable future that meets the needs and expectations of our customers.

This 21st-century power system will be more customer friendly, integrating technologies that allow us to deliver safe, efficient, resilient and reliable power while reducing environmental impacts.



Investing in the Power Grid

We are investing more than \$12 billion in the power grid over three years (2015-17). Our main investment goal is to increase power reliability through significant upgrades. The investments include:

- Upgrading cables, poles, switches and transformers.
- Updating the grid so it can accommodate new technologies, such as solar energy.
- Adapting the system to accommodate future California policy related to energy storage, electric transportation and renewable energy.

What is Changing?

Over the last century, we have delivered power from large, centralized power sources to customers, requiring only a one-way power flow. In the future, however, we will deliver power from many sources, including solar panels on rooftops or customer-owned batteries, requiring a grid that supports two-way power flow.

At the same time, we will increase the capacity of our distribution system to support California's goal of having 1.5 million electric vehicles on the road by 2025.

In 2015 our company filed a plan with the California Public Utilities Commission to modernize and safeguard the power distribution grid. The plan is based on five key guiding principles:

- Ensure a safe, reliable and resilient power network.
- Promote customer choice of new technologies.
- Provide affordable and equitable costs of electric service.
- Use competition in purchasing clean-energy resources.
- Reduce greenhouse gases.



Making Life Easier for Customers

"The coming power network will make it easier for customers to plug in many types of energy technologies," says Edison International President and CEO Pedro Pizarro, "whether it's electric vehicles, solar panels or energy storage devices."

Our investments in local communities will help ensure that customers receive safe, reliable and affordable electricity now and in the future.

New Technologies for the Grid of the Future

SCE is modernizing the grid to support the continued growth and integration of key environmental technologies, referred to collectively as Distributed Energy Resources, or DERs. The five DERs in the SCE grid modernization plan are:



- *Distributed Renewable Generation Resources:* Solar power generated from rooftop solar panels or other energy sources on the customer end of the power grid.
- *Energy Efficiency:* Reducing demand for energy through upgrades such as improved lighting, smarter appliances and better insulation.
- *Energy Storage:* Batteries that 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.
- *Electric Vehicles:* Plug-in cars and other innovative vehicles that will reduce our dependence on fossil fuels.
- *Demand Response:* SCE's Summer Advantage Incentive and similar programs that give customers incentives to reduce the use of electricity at peak times.

The Roadmap

The **Distribution Resources Plan** is SCE's official roadmap for achieving our grid modernization goals. It was filed with the California Public Utilities Commission on July 1, 2015, and is publicly available at <http://www.cpuc.ca.gov/infrastructure>. Click on *Distribution Resources Plan* near the bottom of the page.

Distribution vs. Transmission

The grid modernization efforts discussed here are on the distribution system, which is distinct from the transmission system*. The *transmission system* brings power from generating stations to distribution substations through high voltage transmission lines, which are usually strung between large transmission towers. The *distribution system* begins at these substations. From here, electricity flows through lower voltage distribution lines on distribution circuits to customer locations.

*Other efforts to incorporate renewable resources are taking place on the transmission system. For more information, visit Edison.com. Click on *Innovation* at the top of the page, and then *Grid Modernization* on the left-hand menu.

