

MICROGRID BEST PRACTICES



ABOUT MICROGRIDS

A microgrid has the ability to disconnect from the utility grid and continue to serve customers within the microgrid boundary in the event of a power outage. Dedicated equipment, in addition to any generation or energy storage sized to provide power to the connected customer's needs, is required to enable such a system. A microgrid represents a significant investment for many businesses and institutions. The following is a list of useful things to consider before installing one.

ENERGY EFFICIENCY FIRST

Before installing a microgrid, consider implementing energy efficiency measures to lower your facility's electric load. This may reduce the size and upfront cost of a microgrid, promote a cleaner environment, and provide you with savings on your electric bill.

IDENTIFY CRITICAL LOADS

By determining which loads are critical and which can remain off during an outage, you may be able to significantly reduce a microgrid's size and the upfront expenditure.

DETERMINE THE LOWEST-COST COMBINATION OF DISTRIBUTED ENERGY RESOURCES (DERs) NEEDED

Consider the appropriate capacities of DERs (solar, energy storage, etc...) that minimize the microgrid's upfront cost.

USE YOUR EXISTING SOLAR AND ENERGY STORAGE

If your facility already has solar generation and/or energy storage, it may be possible to convert these resources for microgrid use. This generally requires the addition of a microgrid controller, switches, energy management software, and other electrical infrastructure.

CONSIDER THE VALUE OF RESILIENCY

A grid interruption has varying effects on different businesses and institutions. The benefits of having resilient power during outages should be compared against the costs of installing and operating a microgrid. Be sure to consider the electric bill savings that DERs may provide. Also, compare the history of grid outages with your facility's tolerance for interruptions – for example, if your facility can handle a 3-hour interruption and the grid is interrupted for 1 hour, then a microgrid may not provide significant value.

ELECTRIC BILL SAVINGS ARE GENERALLY NOT PRODUCED BY A MICROGRID

The electric bill savings are produced by the DERs. These resources can be installed independently of a microgrid.

CONSIDER YOUR AVAILABLE SPACE

The physical size and power output of a microgrid may be limited by available space needed for a solar generator, energy storage system, and other electrical components. If your facility is leased, you may need to contact the property owner before installing a microgrid.

CONSIDER ALTERNATIVES

A backup generator provides interim power if the grid is interrupted and may cost less than a microgrid, but is limited in run time by most air quality management districts because it is not environmentally sustainable. In addition, a backup generator cannot provide bill savings, whereas microgrid resources such as solar generation and energy storage typically can.



CONSIDER THE COSTS OF A MICROGRID

The total costs associated with a microgrid can be significant. According to the National Renewable Energy Laboratory (NREL), upfront costs can range from \$2 million to \$4 million/MW (this includes generation resources, energy storage, infrastructure, etc.). If your facility has existing generation and energy storage, the cost could be lower. However, there will be recurring costs for operation and maintenance.

CONSIDER THE TAX BENEFITS

A significant portion of a microgrid's upfront cost may be eligible for accelerated tax depreciation. In addition, if you install and own a solar generator by the end of 2020, there is a 26 percent Federal Investment Tax Credit (ITC) available. The ITC drops to 22 percent for solar installed in 2021, and then to 10 percent after that. If you have questions about the ITC or depreciation, please contact a Certified Public Accountant (CPA) for tax advice.

METHODS TO ACQUIRE A MICROGRID

There are multiple options for acquiring a microgrid, including:

- Capital lease or operating lease
- Power Purchase Agreement or Service Agreement with a microgrid developer or vendor
- Full system purchase

Consider receiving bids from multiple microgrid developers before making a commitment.

More information on microgrids, including the Interconnection Agreement application process, is available on [SCE's microgrid website page](#).