

# Demand Response: How to Operate Off the Grid

By *Winston Huff*

Most institutional and commercial facilities operate on flat rates from electric utilities. In most cases, utilities base these rates on calculations of the average cost of power delivered to customers. This method has worked for years, but a growing reliance on cooling systems has created a large demand on the electrical grid for reliable power at reasonable rates.

Now, utilities face the choice of buying power from other utilities at high, sometimes unstable rates or building expensive power-generation facilities to meet peak demands. Utilities can use several options to address this situation. They can conduct energy-conservation programs that encourage customers to use less power during peak times. They also can employ smart meters that allow users to track consumption and reduce the amount of energy used during peak-load times.

Another method is to develop demand-response, or peak-shaving, programs, which are designed to help maintenance and engineering managers reduce peak-demand energy use in their facilities. Whether a manager chooses to participate in a demand-response program, options are available that can address an organization's need for reliable, cost-effective energy.



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## Methods in Application

Demand response refers to changes in electricity use by end users from normal consumption patterns in response to changes in the price of electricity, or to incentives aimed at cutting electricity use when wholesale market prices are high or when system reliability is jeopardized, according to the U.S. Department of Energy.

Some utilities' peak-shaving programs alert a facility when it should go off the grid and generate its own power. Facilities often use natural gas and diesel-powered generators in such situations. Some facilities can operate completely off the grid for a few hours or even several days. Such facilities benefit from lower rates because they meet monthly generating-testing requirements, and managers know the facilities can operate properly when grid power is not available. Some facilities, such as hospitals, have critical power needs and cannot lose power.

In some cases, utilities have generation partner programs, in which the utility buys back the power that facilities generate via alternative sources. This usually is accomplished using two utility meters. One meter is the normal meter that reads the amount of power a facility buys from the utility. The second meter reads the amount of power the utility buys from the facility.

Control systems on the market can monitor the current price of power the utility charges and the price the utility pays for power. As a result, the facility control system either can use the available green power on site or sell it back to the utility.