



Electricity Demand Response

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Demand response programs are used by utilities to change electricity consumption patterns and respond to the economic and reliability needs of the power grid.

For example, the Public Service Company of Colorado (also known as Xcel Energy) recently [projected](#) an electricity capacity shortfall, in part due to reduced capacity at some of their power plants. Xcel Energy plans to overcome this shortfall using several strategies, including demand response programs. This issue brief provides an overview and examples of demand response programs in Colorado.

Power Grid Balancing

To maintain grid reliability and energy affordability, electricity supply (i.e., generation at power plants) and demand (i.e., use by customers) must always be matched. If demand for electricity exceeds supply, it can cause electricity price fluctuations, physical damage to electrical equipment, and prolonged blackouts. Events that can imbalance electricity supply and demand include:

- loss of electric generating capacity at power plants from equipment failure or intermittency (e.g., wind not blowing);

- spikes in demand from extreme weather (e.g., heat waves, which increase air conditioning use); and
- damage to transmission lines from high-wind storms or other emergencies.

During emergencies, utilities may bring supply and demand into balance by “shedding load”. Unlike unplanned outages, rolling blackouts are an emergency strategy that are:

- planned and controlled by utilities;
- rotated between regions;
- usually short-term; and
- used to prevent larger system failures.

Demand Response

The Federal Energy Regulatory Commission (FERC) [defines demand response](#) as “changes in electric usage by end-use customers from their normal consumption patterns in response to changes in the price of electricity over time, or to incentive payments designed to induce lower electricity use at times of high wholesale market prices or when system reliability is jeopardized.” It can be used in emergencies or for everyday operations.

Peak Demand

Electricity consumption varies throughout the year, with most regions experiencing peak levels during the hottest summer days.

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However, utilities must continuously maintain enough generation capacity year-round to meet peak demand. Utilities typically prioritize power sources in order of increasing cost. Higher cost power plants are only used when demand is high. Known as peaking power plants, these facilities are idle most of the year and only operate during peak demand.

Demand response programs aim to improve grid reliability, reduce peak demand, and avoid additional generation dispatch costs. They do so by altering the timing and level of usage through economic and operational changes. Economic changes include flexible electricity prices or financial incentives, while operational changes include customer alerts. According to a [2025 assessment](#), about 6.5 percent of the peak demand within organized wholesale energy markets could be met by demand response programs.

Federal Requirements

The federal [Energy Policy Act of 2005](#) requires demand response to be a quantifiable and reliable resource. Since [2008](#), FERC has required that demand response be treated similar to other generation resources. Since [2011](#), some entities must compensate demand response resources for the service provided to the energy market (e.g., avoided electricity use) at the market price for energy.

Demand Response Examples

Utilities can issue emergency alerts urging customers to reduce electricity use. In August

2025, [Xcel Energy issued an emergency alert](#) due to high regional temperatures and an unrelated power plant outage.

Time-of-use (TOU) electricity rates change depending on the time or day of the week, with higher rates during on-peak periods. This shifts demand, particularly electric vehicle charging and the use of large appliances, to times when electricity is cheaper and supply is less constrained. Several Colorado utilities use TOU rates, including [Xcel Energy](#), [Black Hills Energy](#), and [Colorado Spring Utilities \(CSU\)](#).

Utilities can use demand charges to bill customers for the highest amount of power customers use during a given time. Demand charges increase when multiple large appliances are used simultaneously. Colorado utilities that use demand charges include [CORE Electric Cooperative](#) and [CSU](#).

Utilities can also offer financial incentives to customers who voluntarily curtail electricity use during peak demand times. Examples include Xcel's [Interruptible Service Option Credit](#), [Peak Partner Rewards](#), [AC Rewards](#), and [Saver's Switch](#) programs. [CORE Electric Cooperative](#) and [Holy Cross Energy](#) also offer similar bill credit programs.

Some utilities also offer financial incentives to customers who allow the utility to use or manage energy from customer-sited distributed energy resources, such as rooftop solar and battery storage. Examples include Xcel's [Renewable Battery Connect](#) program, and Holy Cross Energy's [Power+Flex](#) program.