



In emergencies, the temporary, controlled interruption of electric service is sometimes needed to maintain or restore system stability and reliability.

Why Do Power Interruptions Occur?

Most power outages are a temporary inconvenience. Some are a necessity.

Interruptions are often the result of unexpected damage to the electric system caused by storms, accidents or equipment failure. Sometimes, system operators need to act preemptively and disconnect a controlled group of customers to prevent a more widespread disruption of service (i.e., a power outage).

Limited and Controlled Interruptions Prevent Blackouts

These occasions are rare, but when there's a sudden imbalance between the supply and demand for electricity, or when operators detect instability developing on the system, they sometimes need to conduct a limited, controlled interruption called "load shed."

The conditions on the bulk electric system are constantly changing as weather patterns progress and customers use more or less energy over the course of a day. PJM operators continuously monitor conditions. With the help of sophisticated technology, they anticipate possible disruptions and adjust the system in advance to maintain reliability if the worst happens – such as the failure of a major power plant, transmission line or other major piece of equipment.



Source: Dominion



Load Shed: An Emergency Procedure of Last Resort

Load shed is the emergency procedure of last resort. It is a controlled interruption of power to customers, which operators turn to after exhausting all other options for maintaining stability. In some cases, this would occur during an extreme hot or cold spell, and operators could reasonably anticipate such an action as customer demand increases.

If instability develops suddenly, operators may need to bypass all other emergency procedures and immediately conduct a controlled interruption. PJM operators, for example, would call on a utility or utilities to shed load, and possibly conduct rotating outages, if the failure of a major power plant suddenly resulted in system instability.

What Are Rotating Outages?

In a rotating outage, controlled interruptions temporarily affect specific areas. The outage rotates from one area to another, generally for periods of about 15 to 60 minutes each, to reduce the overall demand for electricity and keep demand balanced with the available supply. During a rotating outage, customers share the limited supply of power. In some circumstances, controlled interruptions cannot be rotated by the local utility and are geographically fixed until service is restored. These interruptions affect a limited number of customers in one area but tend to have a more significant impact on those customers.





Why Is Load Shedding Important?

A tree branch falling on a local distribution line or a car striking a utility pole generally won't trigger a regionwide outage. The system is designed with protective equipment, such as fuses and circuit breakers, that can limit and isolate the impact of that type of damage.

A widespread disturbance, on the other hand, is most likely to occur as the result of a sudden loss of power-generating equipment, transmission equipment, or sudden and unexpected changes in customer demand.

A disturbance of this magnitude can result in critically loaded transmission equipment, dangerous variations in system frequency, or high or low voltage conditions.

If left unchecked, it can affect the reliable operation of the PJM system serving 13 states and the District of Columbia, as well as other systems within the Eastern Interconnection. When major events threaten stability, operators can turn to a series of escalating emergency procedures to maintain the system, including calls for consumers to curtail their usage and voltage reductions. If those actions do not resolve the issue, operators may need to shed load.

Jan. 3, 2024



Source: Dominion

