

Why are transmission lines important?

You can count on your alarm clock waking you in the morning and your personal computer powering up because of a strong transmission system. The transmission system is the vital link between where power is produced and where it's needed, and the reliability of the electricity in your home depends on it.

Years ago, power plants were small and generated electricity for the immediate, surrounding area. But as the demand for electricity increased, these local power plants were replaced by bigger, more efficient generating stations that no longer were located near their customers. Transmission lines became necessary to send electricity at a high voltage over long distances from the power sources to local distribution areas.

What is the transmission grid and what does it have to do with my electricity?

A strong transmission system guarantees reliable electricity in other ways, too. Utilities connect their transmission systems to neighboring systems run by other utilities. These interconnected systems form a grid that allows power to flow from one region to another, ensuring reliable and efficient electric delivery to customers, even during emergencies.

Do you know these terms?

Voltage: A type of 'pressure' that drives electrons through a circuit. Higher voltage lines generally carry power longer distances. A kilovolt (kV) is equal to one thousand volts (V).

Generation: The process of converting various forms of chemical or mechanical energy, such as coal or wind, into electrical energy. The amount of electrical energy produced is expressed in kilowatt hours (kWh) or megawatt hours (MWh).

Grid: The interconnected transmission and distribution networks that deliver electricity to end users.

Transmission line: Equipment used to move electricity at high voltage, usually over long distances, between power sources and major substations where the voltage is 'stepped down' for distribution to customers. Transmission is considered to end where the line connects to a distribution substation.

Substation: A facility that monitors and controls electrical power flows, uses high voltage circuit breakers to protect power lines and transforms voltage levels to meet the needs of end users.

Distribution system: An interconnected group of lines and equipment for the delivery of lower voltage electricity from the transmission network to homes, businesses and other end users.

Transformers: Devices that change voltage levels.



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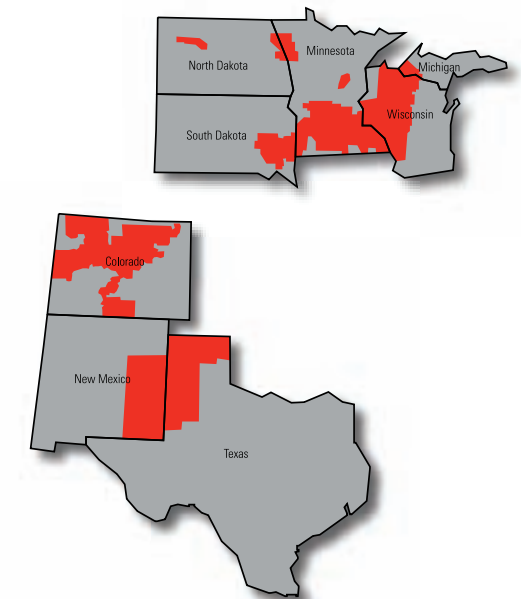
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Electricity Basics: How does electricity flow?

Xcel Energy at a glance

Xcel Energy is the fifth largest combination electric and gas utility, based on customers. It provides a portfolio of energy-related products and services to 3.3 million electricity customers and 1.8 million natural gas customers.



Xcel Energy has four utility subsidiaries:

- Northern States Power Company – Minnesota, an Xcel Energy Company
- Northern States Power Company – Wisconsin, an Xcel Energy Company
- Public Service Company of Colorado, an Xcel Energy Company
- Southwestern Public Service Company, an Xcel Energy Company

If you would like more information about Xcel Energy, please visit our Web site at xcelenergy.com.

POWERING OUR DAILY LIVES seems as simple as clicking on the TV, flipping a light switch or pressing the buttons on our microwave. But producing and delivering reliable electricity to customers is more complex.

Electricity can't be stored; it has to be generated, transmitted and distributed at the moment you turn on your computer or any other appliance. Travelling at almost the speed of light – 186,000 miles a second – electricity arrives where it's demanded at almost the same moment that it's produced.

