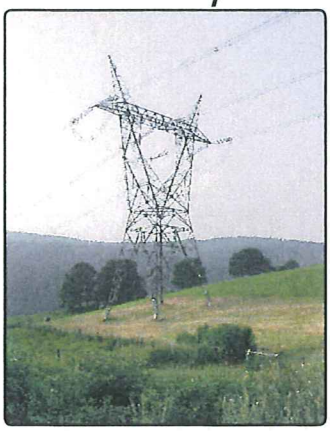
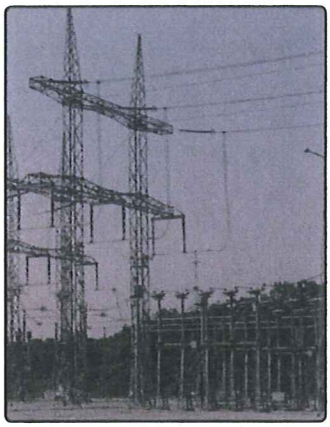
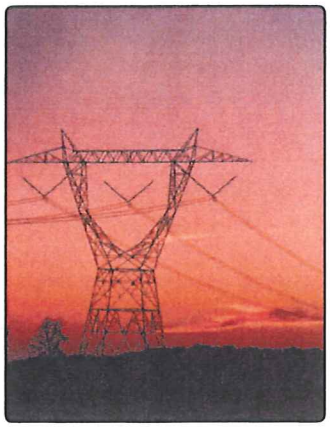
Public Safety

Electricity's Journey

Anatomy of a Transmission System Explored



We use electricity multiple times every day, but where does it come from and how does it get to your wall outlet? To help you stay safe around electricity, it's important to understand electricity's journey, what equipment is used to deliver it, and the potential safety issues posed along the way.

The Beginning of Electricity's Journey

Before electricity can arrive at your home or business, it makes several stops along the way.

A basic electric utility system is made up of power plants, transmission lines, distribution lines, substations, transformers and meters. Each piece of equipment plays a role in delivering electricity to you.

Electricity is first generated at a power plant. When electricity leaves the power plant, it is in its most powerful form or as high as 765,000 volts. To compare, when it gets to your wall outlet, it is just 120 or 240 volts.

Transmission System 101

From the power plant, transmission lines carry electricity long distances from state-to-state or city-to-city.

These lines are held up and linked together by transmission towers, which are the big structures you have probably seen along highways. These towers are usually about 100 feet tall and can be made of either metal or wood.

Transmission lines are actually bare aluminum or copper wires, which are conductors for the electricity. Transmission wires are larger than the wires on poles in your neighborhood. Porcelain insulators hold the wires in place and keep the electricity running through the wires and not through the tower itself.

In addition to the wires carrying the electricity, one or two ground wires protect the tower from lightning strikes. Before electricity can travel from the transmission system and be delivered to your home, it has to make a stop at a substation.

A substation is enclosed by fencing for safety and houses the equipment that changes the electricity from one level to another.

The electricity coming from the transmission line runs through a substation transformer, which transforms the electricity or steps it down to a lower level, reducing it from as much as 765,000 volts to less than 39,000 volts. This lower level of electricity is easier to handle and is now ready to be delivered to your home or business.

Transmission Safety Tips

- Transmission wires are bare and not insulated, so do not touch any wires.
- Do not touch or attempt to climb transmission towers.
- Do not enter a substation for any reason. If a child's ball or other object ends up in the substation, do not attempt to retrieve it. Call the power company to remove the object safely.
- Do not touch, climb or cut holes in substation fencing. The fencing is there for your protection.
- Do not approach or attempt to climb on any electrical equipment because if there is an equipment failure, it could cause injury.
- Do not attempt to steal copper or any other material from a substation. Copper is a conductor, so it is used to help deliver electricity. Stealing copper can literally steal your life.

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For more public safety information, visit: http://www.kentuckypower.com