Clinton County Connection

Your Touchstone Energy® Cooperative

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Beginner's guide to the electric grid

Electricity plays an essential role in everyday life.

It powers our homes, offices, hospitals and schools. We depend on it to keep us warm in the winter (and cool in the summer), charge our phones and binge our favorite TV shows. If the power goes out, even briefly, our lives can be disrupted.

The system that delivers your electricity is often described as the most complex machine in the world, and it's known as the electric grid.

What makes it so complex? We all use different amounts of electricity throughout the day, so the supply and demand for electricity is constantly changing. For example, we typically use more electricity in the mornings when we're starting our day, and in the evenings when we're cooking dinner and using appliances. Severe weather and other factors also impact how much electricity we need.

The challenge for electric providers is to plan for, produce and purchase enough electricity so it's available exactly when we need it. Too much or too little electricity in one place can cause problems. So, to make sure the whole system stays balanced, the electric grid must adjust in real time to changes and unforeseen events.

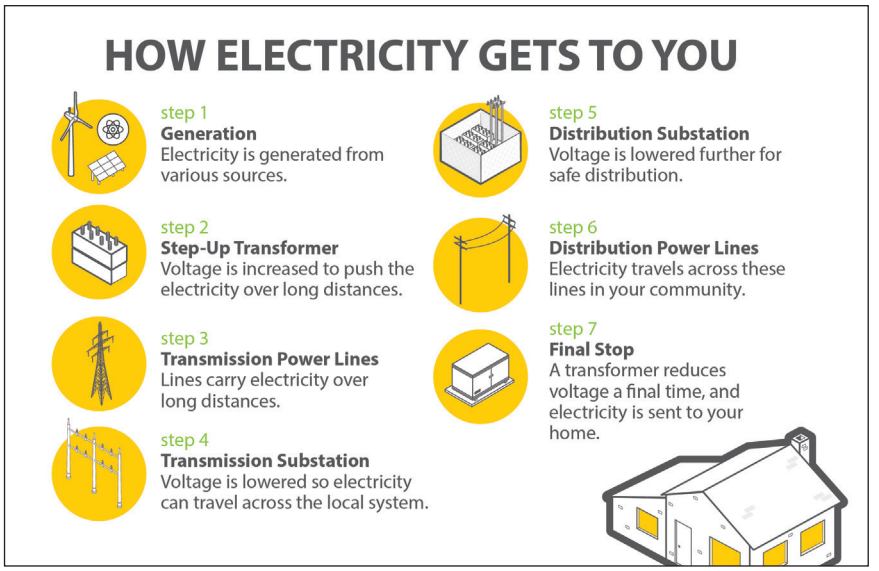
At its core, the electric grid is a network of power lines, transformers, substations and other infrastructure that spans the entire country. But it's not just a singular system. It's divided into three major interconnected grids: the Eastern Interconnection, the Western Interconnection and the Electric Reliability Council of Texas. These grids operate independently but are linked to allow electricity to be transferred between regions when backup support is required.

Within the three regions, seven balancing authorities known as independent system operators (ISOs) or regional transmission organizations (RTOs) monitor the grid, signaling to power plants when more electricity is needed to maintain a balanced electrical flow. ISOs and RTOs are like traffic controllers for electricity.

The journey of electricity begins at power plants

Power plants can be thought of as factories that make electricity using various energy sources, like natural gas, solar, wind and nuclear energy. Across the U.S., more than 11,000 power plants deliver electricity to the grid.

Clinton County Electric Cooperative (CCEC) receives power from our generation and transmission co-op, Southern Illinois Power Cooperative (SIPC). We work closely with SIPC to provide electricity at the lowest cost possible. Being part of a G&T benefits members like you by placing ownership and control in the hands of your co-op, prioritizing



affordability and reliability, supporting local economic development and fostering a sense of community.

To get the electricity from power plants to you, we need a transportation system

High-voltage transmission lines act as the highways for electricity, transporting power over long distances. These lines are supported by massive towers and travel through vast landscapes, connecting power plants to electric substations.

Substations are like pit stops along the highway, where the voltage of electricity is adjusted. They play a crucial role in managing power flow and ensuring that electricity is safe for use in homes and businesses.

Once the electricity is reduced to the proper voltage, it travels through distribution power lines, like the ones you typically see on the side of the road. Distribution lines carry electricity from substations to homes, schools and businesses. Distribution transformers, which look like metal buckets on the tops of power poles or large green boxes on the ground, further reduce the voltage to levels suitable for household appliances and electronic devices.

After traveling through transformers, electricity reaches you – to power everyday life

We're proud to be your local, trusted energy provider. From the time it's created to the time it's used, electricity travels great distances to be available at the flip of a switch. That's what makes the electric grid our nation's most complex machine — and one of our nation's greatest achievements.

FOUR REASONS TO VOTE

IN CO-OP DIRECTOR ELECTIONS

Electric co-ops are led by the members they serve, which means you have a say in who governs our co-op. Here are four reasons why you should participate in director elections.

1. As a member of the co-op, your input matters.
2. Directors represent you on important energy-related issues.
3. Directors' decisions can impact electricity rates and future projects.
4. With convenient voting options available, it only takes a minute.

Help shape our community's energy future by voting in the 2024 director elections

Applications are being accepted for 2024 Youth Day and Youth Tour

Clinton County Electric Cooperative (CCEC) will again sponsor up to 12 area sophomores, juniors or seniors to attend Youth Day in Springfield, to be held on March 20, 2024, sponsored by CCEC and the Association of Illinois Electric Cooperatives. Two Youth Day participants will be selected to go to Washington, D.C., June 14-21, 2024, for an all-expense-paid trip.

Who may enter?

Youth Day in Springfield and Youth Tour to Washington are open to high school sophomores, juniors and seniors whose primary residence is served by CCEC. Children of CCEC board trustees or employees may attend at their own expense.

Youth to Springfield

Up to 12 students will participate along with more than 125 students from other Illinois electric cooperatives in Illinois' Rural Electric Youth Day in Springfield, set for March 20, 2024. The day's activities in Springfield will include touring the State Capitol complex, visiting with legislators and a luncheon. Transportation to Youth Day in Springfield will be provided by CCEC.

Youth to Washington Tour

Of the 12 students attending Youth Day in Springfield, two will have the opportunity to participate in the Youth to Washington Tour. The two local winners will join approximately 70 other Illinois students who are winners of similar contests sponsored by other Illinois electric cooperatives. They will travel on air-conditioned buses, leaving on June 14 and returning June 21. While in Washington, D.C., they will visit such attractions as the White House, U.S. Capitol, Smithsonian Institution, Arlington National Cemetery, Lincoln Monument and many other national monuments and places of interest.

Applications are available at www.cceci.com/youth-programs. Completed applications need to be returned to the cooperative office no later than Feb. 12, 2024. Feel free to contact Carrie Trame at Trame@cceci.com or 800-526-7282 with any additional questions.

RESPECT SUBSTATIONS

and all other electrical equipment

REPORT SUSPICIOUS ACTIVITY

Only authorized utility workers should approach a substation, touch the fence or enter the gate.

Paying attention to activity in or near substations and other utility equipment helps keep everyone safe.

Authorized workers should:

- Wear proper personal protective gear and display an ID badge.
- Use work vehicles that have utility branded logos/information.

Suspicious activity includes individuals in street clothes who are:

- Near or inside a substation fence.
- Tampering with equipment, such as power poles, meters and padmount transformers.

If you notice anything unusual at a substation, please report it to the electric utility. Examples include:

- An open or unlocked gate.
- A damaged fence.
- Obvious damage inside the fence.

Call 9-1-1 and then the electric utility if you see:

- Smoke or fire.
- Non-utility workers inside the substation fence.
- Non-utility workers on a pole or tampering with a meter.

Learn more at:
SafeElectricity.org®