

# COLUMBUS<sup>®</sup> CURRENTS

## Beginner's Guide to the Electric Grid

*By Maura Giles*

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 span 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.

Columbus Electric Cooperative receives power from our generation and transmission (G&T) co-op, Tri-State. We work closely with Tri-State Generation and Transmission 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.

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A Touchstone Energy<sup>®</sup> Cooperative 

# Happy Holidays!

Spark joy and light this holiday season. From our co-op family to yours, we wish you safe and warm season with friends and loved ones.



Office closure dates for the holiday season!

December 25, 2023

December 26, 2023

January 1, 2024

## Board Highlights

The Board reviewed and approved the minutes from the October meeting as well as the financial and operational reports for the month of October.



Don't miss your chance to apply!

Columbus Electric Cooperative offers educational scholarships to active members of CEC and their immediate family members. Scholarship recipients can receive financial assistance for up to eight semesters of undergraduate studies at the college of their choice. Applicants must complete an application and submit letters of recommendation. Applications may be obtained by contacting our office, the student's high school counselor or at [columbusco-op.org/scholarships](http://columbusco-op.org/scholarships). The deadline to apply is March 4, 2024.

For questions, please call our office at 575-546-8838

**Scholarship Applications will be accepted December 1, 2023- March 4, 2024 for the 2024-2025 school year**



## Government-In-Action Youth Tour

Applications for the 2024 Government in Action Youth Tour are now being accepted for the 2024 once in a lifetime trip to Washington, D.C. Next year's trip is scheduled for June 17-21, 2024. Each year Columbus Electric Cooperative sponsors two high school students from our service area to attend the all-expense paid trip to learn about our nation's history, meet with members of congress and learn about electric cooperatives. Applications may be obtained by contacting our office, the student's high school counselor or at [columbusco-op.org](http://columbusco-op.org)

The deadline to apply is January 31, 2024

## Energy Efficiency Tip of the Month

Get smart with a better way to heat and cool your home! Smart thermostats are Wi-Fi enabled and automatically adjust heating and cooling temperature settings in your home for optimal performance. Smart thermostats learn your temperature preferences and establish a schedule that adjusts to energy-saving settings when you're asleep or away.

For maximum energy savings, look for smart thermostat models with the ENERGY STAR® label.

Source: Dept. of Energy



Emergency Response Number  
1-800-228-0579

Toll - free Office Number  
1-800-950-COOP (2667)

[www.columbusco-op.org](http://www.columbusco-op.org)