MESSAGE FROM THE COOPERATIVE

Data centers, power supply, and electricity rates

How they affect each other and electric cooperatives

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PRESIDENT/CEO

Ohio's and America's appetite for electricity is at an all-time high. Why? Our world is more electrified today with high-tech gadgets and the need to stay warm or cool during extreme weather seasons. When demand is high and supply is low, prices go up in a volatile energy market. Consumers of public utility companies, also called investor-owned utility companies (or IOUs), experienced rate spikes firsthand last summer. Thankfully, rates among Ohio's electric cooperatives, like Holmes-Wayne Electric have remained stable. Co-op members are shielded from volatile energy markets and rate spikes because Ohio's co-ops together own their power generation plants.

The supply of electricity is shrinking because of less power generation in the state. In 2009, Ohio had 21 coal-fired power plants generating electricity. Today, there are just four remaining after closures due to overreaching U.S. Environmental Protection Agency regulations. The impending imbalance between supply and demand is the root cause of high electric bills for public utility consumers. But the increasing price of transmitting electricity is affecting everyone.

More power demand at our doorstep

As supply is shrinking, power demand is growing at a steep rate. Data centers are driving the surge in power demand across the country. In 2020, the big four in data — Amazon, Microsoft, Google, and Meta — were collectively spending $25 billion every quarter for capital investment in data centers. Today, in 2025, they are spending four times that amount — $100 billion a quarter — according to their own websites.

What are data centers?

Data centers are the place where our favorite television shows, movies, photos, websites, and other cloud data are stored. More recently, they are the training ground for artificial intelligence tools like ChatGPT, and they consume a lot of power. A single ChatGPT search for information requires ten times the power of a standard Google internet search. To put it into a power perspective: Historically, one of the largest industrial manufacturing plants in Ohio used 500 megawatts, and most large plants use less than 50 MW. A single hyperscale AI data center can use 1,500 MW — enough to power 1.5 million homes.

Data centers in Ohio

Data centers are increasing power demand in Ohio, too. Central Ohio is currently experiencing massive data center growth, mainly outside electric cooperative territories. But that is changing. Soon, the first Ohio electric cooperative will begin serving a small data center. Several more cooperatives are in discussions with data centers now, and interest continues to grow. The largest investor-owned utility in the state, AEP Ohio, states that electric demand from data centers in Central Ohio today accounts for 4,000 MW of the 9,400 MW it serves across the state. By 2030, AEP Ohio expects electric demand from Central Ohio data centers to double to 8,000 MW. Another 30,000 MW of proposed data center projects are seeking to connect to the electric grid. That's more electric demand than the entire state of Ohio. Serving these new loads will require billions of dollars of investment in the transmission system, plus take years to build.

The generation gap

PJM, the regional transmission organization that manages supply and demand for the grid in Ohio and 12 other states, is indicating there may not be enough power generation resources to serve the projected demand from data centers. To make matters more challenging, more baseload generation is expected to retire because of U.S. EPA rules and business decisions made several years ago.

Again, it's this impending imbalance between generation supply and power demand that's causing concern across the state and affecting the price of electricity for customers of investor-owned utilities, or IOUs, like AEP Ohio and Duke Energy.

Rate increases aren't the only concern

In addition to higher rates, power reliability has been another concern: Will there be enough power to meet Ohio's power needs year-round, especially if data centers come online? The reliability of electricity in Ohio and the PJM region is not a new concern. Ohio's electric cooperatives have been alerting members and the public of the risk to electricity reliability and affordability since December 2022, when Ohio narrowly escaped blackouts on Christmas Eve during a stretch of extreme cold. Power demand was very high as people tried to stay warm, and supply was low due to plant closures and some natural gas plants freezing. Data centers are not causing the price spikes — it's the supply-demand issue — but as data centers request to come online, the issue will become more challenging.

Thankfully, Buckeye Power — the co-op-owned generation co-op — has enough generation to meet all Ohio electric cooperative members' current demands, even during extreme hot and cold weather However, Buckeye will likely need new generation to meet future demand driven by data centers.

If we build it, will they come?

"We're not going to build $2 billion in new generation on the hope that a data center meets its load forecast," says Ben Wilson, vice president for power generation at Buckeye Power.

The company believes it is critical to get upfront cost commitment from data centers that come online before any new generation is developed to meet the data center's load projections.

"Our focus is making sure all additional costs to serve a data center aren't shifted to electric cooperative members," says Craig Grooms, president and CEO, for Buckeye Power.

The transmission system is paid for by everyone that uses it, through transmission rates. Calculating a transmission rate is relatively straightforward. In simple terms, it's the value of the transmission system itself divided by the number of megawatts served by the system during peak demand, which is a one-hour point when usage of the transmission system is at its highest. Constructing new transmission lines and stations increases the system's value and causes transmission rates to rise. Increasing demand on the system (while making little to no investment) can have the opposite effect, and lower transmission rates, but presents a risk to reliability.

How are transmission rates affected by connecting data centers?

It would require billions of dollars of investment in the transmission system to serve these loads, but data centers also increase the number of megawatts served by the transmission system during peak demand. If the data centers increase system demand by as much as they claim, transmission rates could remain unchanged or even decrease. We know transmission owners like AEP Ohio are planning to make billions of dollars of investments in their transmission systems, and those investments will lead to higher transmission rates. If the data centers don't show up as planned and fail to increase demand on the transmission system, transmission rates would skyrocket.

To prevent huge increases in transmission rates, it is critical for data centers to commit to coming online and meeting their load projections. This will ensure that the transmission system investments are used and useful, and the cost of those investments is not burdening other customers using the transmission system.

It's like sharing a pizza with a group of friends where everyone pitches in a certain amount to pay for pizza they plan to eat. If someone doesn't show up to eat or pay for their share of pizza, everyone else is left to pay more. Plans have already surfaced to prevent this from happening with data centers.

Retail level plan

Investor-owned utility AEP Ohio just received approval for a retail tariff for data centers aimed at weeding out speculative data center requests. The plan also incentivizes data centers to accurately forecast their loads and would require them to pay for 85% of the load they forecast, whether the load is reached or not, so the utility isn't overbuilding transmission and negatively affecting rates. AEP Ohio also included exit requirements to prevent a data center from coming in and leaving a year later, after transmission is built. AEP Ohio's plan protects their retail customers but does not protect wholesale customers like electric cooperatives.

Proposed wholesale-level plans:

- Put aside all monies collected from the data center's requirements to pay a minimum percentage of its forecasted load and apply it at the wholesale level, so rates for electric cooperatives would not be impacted by standard costs. Buckeye Power favors this approach.
- Instead of basing transmission rates on one hour of peak demand per year, average 12 hours of peak demand a year to make it more difficult for data centers to fool the system by shutting off for one hour during peak load to defer costs to everyone else. In this scenario, the data center would pay for its actual usage on the system.
- Pay to play plan: Another plan, supported by the Ohio Consumer Council, proposes making data centers pay for any new transmission built for them. But that is difficult to do in practice if you have many new large loads on

the system. Again, it is critical to get commitment from data centers that they will come online and meet their load projections.

Build power generation faster

Data centers are willing to build their own generation, but historically, they've only built renewable generation sources, which provide intermittent power. The demand growth has data centers now realizing they need reliable, dispatchable generation resources. They are making investments in small modular nuclear reactors, as well as Bloom Energy fuel cells, which convert natural gas, biogas and hydrogen into electricity, with low to no carbon emissions. Some have even installed thermal resources with plans to isolate those resources, meaning they won't connect to the grid, so they can avoid transmission costs and the length of time it takes to build transmission.

Some data centers have also sought to locate next to existing generating resources (like nuclear plants) so that the generation from those plants would be dedicated to serve the data center rather than the rest of the grid. These options help data centers to come online faster but do not resolve the overall capacity shortfall Ohio and the PJM region are facing. Ohio legislators support a competitive energy market in the state and are incentivizing generation companies to build new generation in Ohio. Higher market prices may also help encourage generators to construct new plants but have driven up energy costs for customers whose utilities do not own generation to serve their customers.

Looking to the future

As Ohio and the nation navigate the evolving energy landscape, the interplay between data centers, power supply, and electricity rates remains a critical concern. Through strategic planning and investments, the goal is to ensure a stable, reliable, and affordable electricity supply for all consumers.

HWEC Power Students

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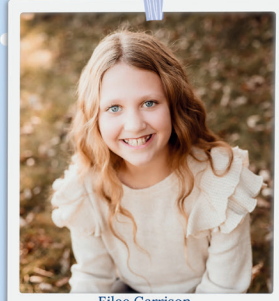

Eilee Garrison
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