

ANALYSIS

# The Rural Grid Squeeze

How Data Centers, Copper Thieves,  
and Pipeline Physics Are Converging  
on America's Cooperatives

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### Executive Summary

America's 890 rural electric cooperatives own 42 percent of our nation's distribution lines while serving approximately 12 percent of the population. They collect less than \$23,000 per mile of line, compared to over \$111,000 per mile per year for the rest of the industry.<sup>1</sup>

This structural cost disadvantage has persisted since cooperatives were originally chartered under the Rural Electrification Act of 1936. For most of their nine decades of existence, this financial gap was manageable. It is becoming less so.

Three forces are currently converging on cooperative infrastructure:

- (1) Large data center development is establishing priority claims on regional generation capacity, driving wholesale electricity costs sharply higher for neighboring utilities that receive none of the hosting benefits.
- (2) Record copper prices are creating a theft epidemic that disproportionately targets rural infrastructure because of its isolated and lightly monitored nature.
- (3) The expansion of firm natural gas transportation contracts for large-load customers is tightening the margin of deliverability on pipeline systems that cooperatives depend on for power generation.

Independently, each force is significant. Together, the convergence creates a compounding risk that existing policy frameworks do not address. No single data center siting decision, no single copper theft incident, and no single pipeline contract will bankrupt a cooperative. But the cumulative effect of rising capacity costs, deteriorating physical assets, and eroding fuel security threatens the economic model that has sustained rural electrification for nearly a century.

This analysis examines each force, identifies the mechanisms by which they interact, and proposes a framework for federal and state action. The goal is not to slow development. It is to confront a larger question: Will the social commitment that built rural electrification adapt to sustain these same communities?

## **The Structural Baseline: Why Cooperatives Are Different**

In 1936, 90 percent of urban American households had electricity and 90 percent of rural households did not. The economics of rural service (too few customers per mile, too much copper to string) did not justify the capital investment from investor-owned utilities. The cooperatives that emerged under the Rural Electrification Act filled this gap, wiring the nation's countryside through member ownership, federal lending, and the conviction that modern citizenship required modern infrastructure.

The basic math has not changed. The typical electric cooperative in 2026 serves roughly nine customers per mile of distribution line; the rest of the industry serves nearly 39. Rural cooperatives cover 56 percent of the nation's landmass, including 92 percent of persistent poverty counties,<sup>2</sup> while collecting a fraction of the revenue per mile that the rest of the industry earns. Cooperatives exist precisely because no profit-maximizing entity would serve these territories.

What has changed is the competitive environment. The three forces described below do not merely add cost to cooperative operations. They systematically disadvantage the rural, dispersed, and thinly capitalized utility cooperatives that are least equipped to absorb the negative spill-over effects from some of today's most significant economic trends.

### **Force One: The Adjacency Tax**

When a hyperscale data center is constructed in a rural community, the host jurisdiction usually receives direct benefits including tax revenues, construction employment, and a negotiated electricity contract that reflects the buyer's enormous purchasing power. These are real benefits and communities are right to pursue them, though many unfortunately leave significant potential community value on the table.<sup>3</sup>

In some cases the cooperatives are on the receiving end of that gain, hosting large-load development themselves or partnering in it, and capturing real local economic and system benefits.

The question this analysis raises is the one that gain leaves unanswered: What happens to the cooperatives and communities next door?

Adjacent cooperatives draw from the same regional grid and bid into the same wholesale capacity markets as the jurisdiction hosting the datacenter. They face the same prices and receive none of the offsetting benefits. The result is an externality: development drives up system costs, and those costs land on neighboring utilities that share in none of the gains. Clarifying how these

costs are identified and allocated will be essential to maintaining confidence in regional market structures as large loads continue to connect.

The scale of this externality is becoming measurable. In PJM service territory (the grid operator serving 67 million people across 13 mid-Atlantic states), a December 2025 capacity auction cleared at \$333.44 per megawatt-day, the maximum allowed price and up from \$28.92 just three auctions earlier.<sup>4</sup> The auction failed to procure enough capacity to meet PJM's own reliability target, falling short by more than 6,600 megawatts.<sup>5</sup> PJM's independent market monitor attributed approximately 40 percent of the \$16.4 billion in total capacity costs to data center demand forecasts.<sup>6</sup>

These costs reach every ratepayers in PJM's footprint, but not evenly. The data center that signed its power purchase agreement before the spike locked in its pricing. The small manufacturer in rural Pennsylvania and the household served by an Ohio cooperative did not. In 2024 alone, the Union of Concerned Scientists found that utilities assigned \$4.3 billion in data center connection costs to existing customers across seven mid-Atlantic states.<sup>7</sup>

In 2025, 11 PJM states signed an open letter criticizing the grid operator's failure to connect new resources efficiently. They warned that jobs and investment would leave for other regions. They were right to raise the alarm. But one group was not asked to sign the letter: The rural cooperative boards whose territories carry too little political weight to command legal, legislative, or regulatory attention.<sup>8</sup>

Their disadvantage is not only political. When a buyer with an unlimited budget secures priority access to a constrained resource, the price rises for everyone else, and the cooperative is the buyer that can least keep up. Data centers offer 20-year power purchase agreements backed by investment-grade credits that are in some cases rated higher than the U.S. government.<sup>9</sup> A typical rural cooperative cannot match these terms.<sup>10</sup> Cooperative planning horizons are annual, not generational, and its members are farmers and small businesses, not Fortune 500 companies. So the data center locks in fixed rates for decades while the cooperative takes whatever the wholesale market hands it. The contracts signed today will shape grid economics for years to come, and the cooperatives least able to afford volatility are the ones least able to escape it.<sup>11</sup>

Regulators have begun to respond. In December 2025 the Federal Energy Regulatory Commission (FERC), which oversees wholesale power markets, took a step toward making data centers pay their own way. FERC ordered PJM to rewrite the rules for data centers that connect directly alongside a power plant. The principle behind the order is the right one: A customer should pay for the grid services it uses and the upgrades it causes, rather than shifting those costs onto others.

But the FERC order does not reach the costs this analysis describes. The order governs how an individual data center connects and what it pays for its own grid services. The order leaves untouched the broader effect, the way aggregate data center demand drives the wholesale capacity price that every utility in the region then pays. FERC said as much when it declined to change the capacity market in this order. So the cooperative two counties away, which hosts no data center and signs no contract, still pays the higher price that data center demand helped drive.

The voluntary commitments often cited as the other response run into the same wall. In March 2026, seven of the largest data center operators (Amazon, Google, Meta, Microsoft, OpenAI, Oracle, and xAI) said they would pay for the power and grid upgrades their own facilities require. But this statement covers each company's own load and nothing more. It is not a contract, and it is silent on the capacity prices their combined demand pushes into the broader market... which is exactly where the cost falls on everyone else.

None of this means cooperatives are simply victims of data center growth; often the reverse is true. Many cooperatives are actively pursuing data centers, and where the economics work, a single large customer can anchor a community and its cooperative for years. The National Rural Electric Cooperative Association is helping many of its members compete for data center attention. But winning that business does not resolve the divide; it deepens it.

The cooperative that lands a data center strengthens its position, while the one next door, drawing from the same market, absorbs the higher costs with none of the revenue or tax base to offset them. The challenge here is that NRECA now speaks for both sides of this divide. And in that arrangement, the communities without trillion-dollar corporate residents to bargain over are the ones whose interests are easiest to leave unspoken.

None of this is an argument against data centers or development. Data centers and the advances in AI they enable are central to U.S. leadership in computing, innovation, and to national security. The point is narrower and harder: The costs of development should fall on the parties that benefit from it, not on the neighboring ratepayers who had no seat at the table.

## Force Two: The Copper Arbitrage

Rural cooperatives do not just have more miles of line per customer. They have more miles per dollar of revenue, more miles per security camera, and more miles per law-enforcement patrol. When copper prices surge, these miles become an invitation. In May 2026, U.S. copper climbed to a record high above \$6.60 per pound, past levels most analysts had expected to mark the top of the market.<sup>12</sup>

The economics are simple. A motivated thief with basic tools can strip 50 to 100 pounds of copper wire from unguarded rural infrastructure in roughly an hour. Stripping insulation and preparing the wire for sale as bare bright copper might add another hour. The total time investment is two to three hours and delivers a cash return of ~\$200 to \$500.<sup>13</sup> With those returns, the more salient question is not why rural copper theft happens, but why it does not happen more often.

The asymmetry between theft value and damage cost is where the real burden falls. In Alaska, Chugach Electric Cooperative reported 20 substation break-ins between September 2024 and February 2025, each causing thousands of dollars in damage to infrastructure serving the cooperative's 92,000 members.<sup>14</sup> In south-central Kentucky, Farmers RECC has absorbed two waves of copper theft from utility poles over the last two years.<sup>15</sup> In Tennessee, thieves cut down a pole and stripped copper wire from a Sequachee Valley Electric Cooperative substation that was offline from storm damage, extending outages in Grundy County where line crews were already hard at work.<sup>16</sup> In each case, leaders of these cooperatives point to the same driver: the price of copper.

At the national level, the picture is worsening. More than 15,000 destructive attacks targeted domestic communications and electrical networks between June 2024 and June 2025, with copper theft a major driver.<sup>17</sup> AT&T alone reported a thirty-fold increase in California copper theft incidents between 2021 and 2024, with approximately \$76 million spent on remediation in 2025 across 8,700 incidents.<sup>18</sup>

Urban utilities by contrast can deploy comprehensive countermeasures like surveillance networks, rapid-response teams, dedicated investigators, and sophisticated tracking and identification systems at scrap yards. Los Angeles established a Copper Wire Task Force in 2024 that made 82 arrests.<sup>19</sup> Rural cooperatives usually cannot replicate this model because their operating budgets are too thin, and their infrastructure is too dispersed. A rational criminal targets the path of least resistance, and rural electrical infrastructure in remote locations with limited surveillance and limited law enforcement presence offers far better risk-adjusted returns than urban infrastructure surrounded by cameras and patrol cars.

The forecasts disagree on how far prices will run, but most point in the same direction. The International Copper Study Group projects the refined copper market will enter a 150,000-ton deficit in 2026, its first structural shortage in years.<sup>20</sup> J.P. Morgan forecasts a larger 330,000-tonne shortfall, driven heavily by data center demand.<sup>21</sup> Not every analyst expects the rally to hold; Goldman Sachs sees the current price as overextended and projects a pullback later in the year. But even the bearish case keeps copper near historic highs, and the longer-term outlook is for tightening: the IEA warns of a 30 percent supply deficit by 2035,<sup>22</sup> and BloombergNEF projects that without massive new development, the global copper shortfall will reach roughly 75 percent of current annual production by 2050.<sup>23</sup>

Every dollar that copper prices increase widens the arbitrage opportunity for infrastructure theft. And growth in forecastable arbitrage will attract more sophisticated operators. Rural cooperatives, with their extensive and isolated infrastructure, will bear a disproportionate share of these costs. And unlike investor-owned utilities, cooperatives cannot pass these costs through to shareholders. The only pathway is to pass these business costs to member-owners already paying more per kilowatt-hour.

### **Force Three: The Pressure in the Pipe**

Natural gas has become the dominant fuel in the U.S. energy mix because it is cheap and reliable. But it carries a physical weakness that its cost and reliability tend to obscure. Coal can be stockpiled on-site for months, and nuclear fuel can drive generation for years between refuelings; natural gas generation depends on just-in-time pipeline delivery. The same delivery model that makes gas flexible also makes it fragile.<sup>24</sup>

Most natural gas power plants do not (or cannot) store natural gas onsite, which makes gas "dispatchable" in theory more than in practice. A gas plant can generally ramp up or down on demand, but only if the gas flows when called. In normal conditions it does. But during extended cold snaps these assumptions can be tested: residential heating demand surges, commercial and industrial loads climb, and reduced renewable output forces plants to burn more gas to fill the gap. And through all of it, data centers keep drawing their contracted supply. At some point the assumption of unlimited gas availability breaks.

Natural gas delivery depends on pressure, the force that pushes molecules through a pipeline. When demand for natural gas spikes sufficiently across a region two things happen: storage facilities release backup supply and system pressure falls. Below certain pressure thresholds, natural gas can no longer move at the rates customers need. Regardless of a pipeline's theoretical capacity, at that point, if there are not enough CH<sub>4</sub> molecules at adequate pressure in the line, the energy (MMBtus) cannot be delivered.

Winter Storm Uri in February 2021 was a brutal demonstration of what happens when that threshold is crossed. The Electric Reliability Council of Texas (ERCOT) ordered 20,000 MW of rolling blackouts, the largest manually controlled load-shedding event in U.S. history. More than 4.5 million Texans lost power, some for days in bitter cold. Hundreds of people died.<sup>25</sup> The subsequent FERC / North American Electric Reliability Corporation (NERC) investigation identified natural gas supply as a principal cause, and the failure compounded on itself: as production was curtailed and demand drew down the world's largest network of storage facilities, system pressure fell, which cut deliverability, which forced more electrical curtailments, which knocked out the compressor stations that keep the pipelines pressurized, which dropped pressure further. The spiral fed itself until the grid operators broke it by shedding load.<sup>26</sup>

Uri was an extreme case, but the underlying vulnerability is not rare. In January 2026, Winter Storm Fern brought severe cold across the U.S. The associated strain showed first in fuel supply.

In New England, where the natural gas pipeline system is contracted to serve home and business heating before power plants, generators that could not get gas switched to burning oil. When the snow then disrupted oil deliveries, both fuels were constrained at once. Fortunately the grid held, but only because the U.S. Department of Energy issued emergency orders allowing power plants to run beyond their normal environmental limits to keep power supply ahead of demand.

These events hardened a policy response. Most gas systems follow a curtailment hierarchy that prioritizes human-needs customers first, then electricity generation, then large industrial users. Texas formalized its version after Uri. The hierarchy settles who gets gas when supply is tight. But it raises an uncomfortable question as pipeline systems add more large-load customers with firm contracts: What happens to everyone below them in the queue?<sup>27</sup>

Data center developers understand fuel security and are acting on it, negotiating firm midstream delivery contracts that guarantee pipeline capacity and priority access to natural gas.<sup>28</sup> Energy Transfer's 2025 agreement to supply a 1.2GW Texas data center through its Oasis Pipeline (ten years of directly connected firm supply) illustrates this model.<sup>29</sup> These are rational decisions by sophisticated buyers aiming to secure their operations. The consequences land on everyone else.

A firm transportation contract entitles the holder to natural gas, but only the gas that can physically reach them. When regional storage depletes and system pressures drop below critical thresholds, even firm entitlements may not be deliverable at the rates the contracts specify. The rural utility (the small generation-and-transmission cooperative, the municipal power provider, the distribution cooperative that depends on wholesale power from a regional generator) rarely has the scale or creditworthiness to negotiate these types of firm contracts on favorable terms. This leaves it a lower-priority claimants for whatever gas the system can still move.<sup>30</sup>

During normal operations the hierarchy is invisible and everyone stays warm. During a severe winter event, when firm contract holders are drawing their full entitlements and residential heating demand is spiking and system pressure is falling, pressure becomes the only thing that matters. The rural utility without a firm contract is not just lower in the queue, it is drawing from a system that has nothing left to give.

The trajectory runs the wrong way. According to NRECA, the United States' 60 generation-and-transmission cooperatives are scheduled to add nearly 15 gigawatts of new generation capacity (including ~8.5 gigawatts of natural gas) over the next several years.<sup>31</sup> This buildout is real progress against rising demand. But every gas-fired megawatt added deepens cooperative dependency on the one delivery system that puts them last in line for the energy molecules they need, precisely when they need it most.

## **The Convergence: Why These Forces Compound**

Analyzed in isolation, each of these forces is a significant but manageable challenge. Analyzed together, they reveal a compounding dynamic that no single policy intervention yet addresses.

Data center development drives capacity costs higher, straining cooperative budgets. Strained budgets reduce resources available for infrastructure security and maintenance. Reduced security increases vulnerability to copper theft. Copper theft damages equipment and triggers expensive emergency repairs, further straining budgets. Meanwhile, the same data center growth that drives capacity costs also increases competition for firm gas transportation contracts, pushing cooperatives further down the priority queue during the winter emergencies, when reliable power matters most.<sup>32</sup>

The political invisibility of this convergence makes the problems worse. Each force is governed by different regulatory bodies at different levels of government. Capacity markets are overseen by FERC. Copper theft is a state and local law enforcement matter. Pipeline access is regulated by state commissions, FERC, and the Pipeline and Hazardous Materials Safety Administration. Data center siting is a local land-use decision.

Each body can act only within its own mandate, and even where one has begun to act, as FERC did in its December 2025 order on data center cost causation, the action reaches one piece of the problem and not the convergence. No single regulator has authority over the whole, and no single congressional committee has jurisdiction. The result is a classic problem of distributed risk: 890 cooperatives, serving 42 million Americans across more than half of the nation's landmass, each absorbing incremental stress from forces that are individually unremarkable and collectively transformative.

## A Policy Framework: Five Recommendations

The following recommendations address the convergence described above without impeding the development that drives it. Data centers are critical infrastructure. Natural gas generation plays an essential role in grid reliability. Copper is a globally traded commodity whose price reflects legitimate demand. The goal is not to slow these forces but to ensure that the costs they impose are borne by the parties that create and benefit from them.

These recommendations are designed to be administratively scalable and, where appropriate, supported by federal or state resources so that smaller and resource-constrained cooperatives can participate without diverting funds from core service obligations.

### 1. Require Adjacent-Community Impact Assessments for Large-Load Interconnections

Federal regulators have started down this path, but only partway. The December 2025 FERC order addresses how data centers connect and pay for their own grid services. The FERC order does not reach the cost this analysis documents: the higher capacity prices that regional data center demand drives onto every utility in the market, including cooperatives that host nothing.

The voluntary pledges signed by major data center operators stop at the service territory boundary. They speak to what each company pays for its own facilities, not to the market-wide prices their collective demand sets. Closing this gap requires a tool aimed directly at it.

FERC and state public utility commissions should require that any interconnection request above a defined threshold<sup>33</sup> include a quantified assessment of impact on capacity costs, wholesale rates, and grid reliability for utilities in adjacent service territories. This assessment should be funded by the interconnecting party and made available to affected cooperatives and their regulators before the interconnection is approved. The cost of this would be trivial relative to the capital contemplated and the rate impacts at play.

A growing number of states have already begun reviewing how data center costs are allocated.<sup>34</sup> These state reviews currently focus on how costs are split between data centers and existing in-territory customers. They should be expanded to include adjacent-territory impacts as a standard element of siting approval.

## **2. Establish a Federal Critical Infrastructure Protection Program for Rural Electric Assets**

The FBI's last comprehensive assessment of copper theft from utility infrastructure was published in 2008.<sup>35</sup> Congress should authorize and fund a targeted grant program, administered through the Department of Energy or the Rural Utilities Service, to help cooperatives deploy physical security, monitoring technology, and rapid-response capabilities scaled to the geography of their service territories.

DOE should commission an updated assessment specifically segmented by utility type, with particular attention to the vulnerability gaps between investor-owned utilities and small cooperatives.<sup>36</sup> Program design should prioritize ease of access, minimal matching requirements, and eligibility criteria that reflect the geographic scale and staffing limitations of smaller cooperative systems.

## **3. Require Aggregate Pipeline Stress Analysis for Firm Transportation Contract Approvals**

FERC and state pipeline regulators should require that each new firm gas delivery (also called "transportation") contract approval include an analysis of aggregate impact on system deliverability during peak demand events. Current practice evaluates contracts individually even though the risk is cumulative. Each firm contract holder that secures priority access during an emergency reduces the deliverable margin for every other customer on the system.

Regulators should model simultaneous full-draw scenarios, where every firm contract holder exercises entitlements during a severe weather event while residential heating demand peaks. These results should be published for public review. Cooperatives, municipal utilities, and state regulators need this information to assess fuel security risk before it materializes during the next winter emergency, not after the pressure has already dropped.

## **4. Create Cooperative Energy Security Planning Grants**

The 60 generation-and-transmission cooperatives that provide wholesale power to distribution cooperatives should have access to federal planning grants to evaluate fuel security alternatives: on-site fuel storage options, on-site power storage options, generation portfolio diversification, and regional cooperative purchasing consortia for firm gas transportation.

Many cooperatives lack the staff and analytical resources to conduct the kind of fuel security planning, modeling, and scenario analysis that investor-owned utilities perform routinely with dedicated planning departments.

A targeted grant program through DOE or Rural Utilities Service would close this gap, and the cost of planning would be trivial compared to the cost of a cooperative losing generation during a winter emergency.

## **5. Integrate Rural Infrastructure Resilience into the 2026 Surface Transportation Reauthorization**

The surface transportation programs authorized under the Infrastructure Investment and Jobs Act expire in September 2026. The reauthorization presents an opportunity to address rural infrastructure resilience as a cross-cutting priority rather than a series of siloed programs. It should direct the Department of Transportation and the Department of Energy to conduct a joint assessment of converging risks to rural energy infrastructure, including the interaction of data center development patterns, critical minerals security (including copper supply and theft vulnerability), and pipeline system capacity under stress conditions.

This assessment would provide the analytical foundation for targeted federal action and ensure that rural cooperatives are not, once again, an afterthought in the infrastructure policy debate that will shape the next decade of federal investment.

## Indicators to Monitor

Several markers will reveal whether this convergence is accelerating toward crisis.

**Cooperative rate trajectories.** As PJM and other grid operators process the 2025–2026 auction results, cooperative rate filings will reveal how much capacity cost pressure is reaching member-owners. Annual increases above 10 percent signal unsustainable trajectories that will require regulatory intervention.

**Copper theft data by utility type.** No federal dataset currently segments copper theft by utility ownership structure. Creating one would illuminate whether cooperative infrastructure is being disproportionately targeted.

**State-level data center cost reform.** A wave of state activity is now underway: more than 300 data center bills were filed across more than 30 states in early 2026. Virginia has approved a new rate class requiring large loads to cover most of the cost they impose, while Georgia’s 2026 session failed to pass similar measures, leaving its tax exemption in place.

So far, the state measures that pass tend to address the data center and the utility that directly serves it, not the neighboring utilities and ratepayers who pay higher regional prices without hosting anything. Whether any state extends protection to those non-hosting communities remains the open question.

**Cooperative consolidation.** Small cooperatives beginning to merge with larger utilities or cede service territory will indicate that the economics are no longer viable at current scale.

**G&T cooperative gas contracting.** Whether generation-and-transmission (G&T) cooperatives obtain firm transportation contracts at rates their member-owners can absorb, or are forced into interruptible service, will determine their fuel security posture for the next two decades.

**Whether the response reaches far enough.** On the data center side: FERC has not yet set the rates for the co-location service rules it ordered in December 2025, but has said it will act on broader large-load interconnection rules by mid-2026. The question is whether this broader action reaches the regional capacity prices that fall on non-hosting cooperatives, or stays with the individual data center and its utility. On the copper side: a federal report on the domestic copper market (due mid-2026) will inform a decision regarding new tariffs, which would impact the prices that drive infrastructure theft. On the natural gas side: Winter Storm Fern’s signals of supply strain were real. Whether utilities and the companies that move and store gas treat these signs as a call to action remains to be seen.

## Conclusion

### The Social Compact, Revisited

The Rural Electrification Act succeeded because it recognized a market failure and provided a policy solution. Investor-owned utilities would not wire the countryside because the returns did not justify the investment, so the government provided low-cost lending, cooperatives provided organization, and rural Americans built the critical infrastructure that private capital would not.

Nine decades later, the underlying economics have not changed. There are *still* fewer customers per mile, more copper to maintain, more territory to cover, and less revenue to fund it. What has changed is the competitive environment: new claimants on generation capacity who can outbid cooperatives for every available kilowatt, record price incentives that make rural copper worth stealing, and high demands on natural gas pipeline systems that will push cooperative generators to the back of the queue.

Each of these forces independently would stress a system already operating at the margin. Together they threaten to prove what investor-owned utilities believed in 1936: that rural electrification cannot be sustained on commercial terms alone.

The adjacency tax described in here is not an abstraction. It is measurable in PJM capacity auction results, visible in the rate filings that cooperative boards will review this year and felt in the budget decisions that force general managers to choose between infrastructure security and keeping rates affordable for members who are already stretched. The convergence of capacity cost pressure, physical asset vulnerability, and fuel delivery risk creates a compounding burden that falls hardest on the institutions that serve the communities with the least political voice to demand relief.

The question for federal and state policymakers is whether the social commitment that electrified rural America will adapt to preserve what it built. The alternative is a countryside left, once again, with only the infrastructure that market incentives will support, and political attention will reach.

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## Citations and Notes

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<sup>1</sup> NRECA Electric Co-op Fact Sheet, April 2026. NRECA membership: 830 distribution and 60 G&T cooperatives, a total of 890 rural utility members serving an estimated 42 million people; cooperatives own about 42% of the nation's distribution lines. Revenue per mile of line: \$22,775 for cooperatives vs. \$111,533 for the rest of the industry. Customers per mile of line: 8.7 for cooperatives vs. 38.9 for the rest of the industry.

<https://www.cooperative.com/programs-services/bts/Documents/Data/Electric-Co-op-Fact-Sheet.pdf>

<sup>2</sup> NRECA. Electric cooperatives serve 56 percent of the nation's landmass and 92 percent of U.S. persistent poverty counties; the latter reflects NRECA analysis of 2023 USDA Economic Research Service data (291 of 318 counties). <https://www.electric.coop/electric-co-ops-support-nearly-623000-jobs-contribute-111-billion-to-u-s-gdp-annually-report-finds>; <https://www.cooperative.com/topics/power-supply-wholesale-markets/Pages/Electric-Cooperatives-and-Persistent-Poverty-Counties.aspx>

<sup>3</sup> Virginia's Joint Legislative Audit and Review Commission (JLARC, December 2024) found the state's data center tax exemption generated 48 cents in revenue for every dollar foregone and that a typical 250,000-square-foot facility creates approximately 25 direct permanent jobs. The Tax Foundation (December 2025) finds targeted property tax abatements for data centers "difficult to justify." The National Association of Counties (February 2026) has published guidance urging county officials to establish community priorities before engaging with developers, acknowledging the resource and information asymmetry between host communities and project proponents.

<https://jlarc.virginia.gov/pdfs/presentations/Rpt598Pres-1.pdf>; <https://taxfoundation.org/research/all/state/data-centers-taxation/>; <https://www.naco.org/news/look-years-down-road-when-sketching-benefits-agreements>

<sup>4</sup> PJM Interconnection capacity auction results, December 17, 2025. Clearing price: \$333.44/MW-day (maximum allowed). Prior auction: \$28.92/MW-day. <https://insidelines.pjm.com/pjm-auction-procures-134479-mw-of-generation-resources/>

<sup>5</sup> PJM capacity auction fell 6,623 MW short of the 20% reserve margin reliability target.

<https://insidelines.pjm.com/pjm-auction-procures-134479-mw-of-generation-resources/>;

<https://www.utilitydive.com/news/pjm-interconnection-capacity-auction-data-center/808264/>

<sup>6</sup> Monitoring Analytics report, January 5, 2026. Data centers responsible for approximately 40% of \$16.4 billion total capacity costs. <https://www.utilitydive.com/news/data-centers-pjm-capacity-auction/808951/>

<sup>7</sup> Union of Concerned Scientists, 2024. \$4.3 billion in connection costs for data center projects assigned to customers across seven mid-Atlantic states. <https://www.ucs.org/sites/default/files/2025-09/PJM%20Data%20Center%20Issue%20Brief%20-%20Sep%202025.pdf>

<sup>8</sup> PJM Governors' Collaborative, launched September 2025. <https://www.eenews.net/articles/data-center-boom-sparks-sticker-shock-for-pjm-ratepayers/>; <https://www.utilitydive.com/news/pjm-interconnection-capacity-auction-data-center/808264/>

<sup>9</sup> Microsoft holds AAA (S&P) and Aaa (Moody's) credit ratings, the highest available. The U.S. government holds AA+ from both S&P (since 2011) and Fitch (since 2023). Microsoft Investor Relations,

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<https://www.microsoft.com/en-us/investor/faq>; S&P and Fitch sovereign rating actions are publicly reported. See also DoubleLine Capital, “Would You Rather Lend to the U.S. Government or Microsoft?” February 2025, [https://doubleline.com/wp-content/uploads/DoubleLine\\_Would-You-Rather-Lend-to-Microsoft-or-US-Govt\\_Feb-2025.pdf](https://doubleline.com/wp-content/uploads/DoubleLine_Would-You-Rather-Lend-to-Microsoft-or-US-Govt_Feb-2025.pdf)

<sup>10</sup> Umatilla Electric Cooperative statistics. Approximately 16,800 consumers, 2,300 miles of transmission lines, 1,900 square miles of service territory. <https://findenergy.com/providers/umatilla-electric-cooperative/>

<sup>11</sup> Bloomberg investigation. Wholesale electricity costs increased as much as 267% over five years in areas near data centers. <https://www.bloomberg.com/graphics/2025-ai-data-centers-electricity-prices/>

<sup>12</sup> Copper prices up 35–40% in 2025, record high above \$11,800/tonne.

<https://www.mining.com/markets/commodities/cuusd/>; <https://www.cnn.com/2025/12/22/economy/copper-wire-theft-att-outages>

<sup>13</sup> Bare bright copper scrap prices as of January 2026: approximately \$4.40/lb.

<https://iscrapapp.com/prices/copper/bare-bright-copper/>; <https://rockawayrecycling.com/scrap-metal-prices/bare-bright-copper/>

<sup>14</sup> Chugach Electric Cooperative, Anchorage, Alaska: 20 substation break-ins, September 2024 through February 2025. <https://www.adn.com/alaska-news/anchorage/2025/02/27/thieves-keep-stealing-copper-from-utility-equipment-in-anchorage/>; <https://www.alaskasnews.com/2025/02/25/chugach-electric-seeing-rise-stolen-copper-wire-substations-telephone-poles/>

<sup>15</sup> Farmers RECC, south-central Kentucky: two waves of copper theft from utility poles in Barren and Metcalfe counties, 2024–2025. <https://www.wbko.com/2025/05/29/copper-thefts-threaten-safety-power-reliability-rural-kentucky/>

<sup>16</sup> Sequachee Valley Electric Cooperative, South Pittsburg, Tennessee: copper theft from storm-damaged substation during active restoration, extending outages in Grundy County. <https://www.electric.coop/vandalism-at-co-ops-knocks-out-power-destroys-equipment>

<sup>17</sup> NCTA. More than 15,000 destructive attacks on domestic communications and electrical networks, June 2024–2025. <https://www.ncta.com/news/critical-networks-nationwide-snapshot-attacks-communications-infrastructure>

<sup>18</sup> AT&T: 2,200 California copper theft incidents in 2024 (up from 71 in 2021); \$76 million spent on copper theft in 2025 across 8,700+ incidents. <https://www.cnn.com/2025/12/22/economy/copper-wire-theft-att-outages>

<sup>19</sup> Los Angeles Copper Wire Task Force, 2024. 82 arrests, 2,000 pounds recovered.

<https://www.ncta.com/news/industry-unites-to-combat-attacks-comms-networks/>

<sup>20</sup> International Copper Study Group: 150,000-tonne refined copper deficit projected for 2026. <https://icsg.org/icsg-press-releases/>

<sup>21</sup> J.P. Morgan Global Research: 330,000-tonne deficit, \$12,500/tonne price forecast by Q2 2026.

<https://www.jpmorgan.com/insights/global-research/commodities/copper-outlook>

<sup>22</sup> International Energy Agency Critical Minerals Outlook 2025: 30% supply deficit projected by 2035.

<https://www.iea.org/reports/global-critical-minerals-outlook-2025>

<sup>23</sup> BloombergNEF Transition Metals Outlook 2025: 19 million tonne copper shortfall by 2050 without major new mine development. <https://about.bnef.com/insights/clean-energy/how-data-centers-are-fueling-global-copper-crunch/>

<sup>24</sup> DOE/NETL. Coal plants store 50–80 days of fuel on-site; nuclear refuels every 18–24 months; gas-fired plants rely on just-in-time pipeline delivery. See also Rocky Mountain Institute: gas-fired generators rely on just-in-time delivery; on-site LNG storage resisted as extra carrying cost. <https://rmi.org/insight/clean-energy-is-reliable-energy/>

<sup>25</sup> FERC/NERC Final Report on Winter Storm Uri. 20,000 MW rolling blackouts, 4.5 million Texans lost power. Natural gas fuel supply issues identified as principal cause. <https://www.ferc.gov/news-events/news/final-report-february-2021-freeze-under-scores-winterization-recommendations>

<sup>26</sup> EIA. Winter Storm Uri caused curtailment of more than half of daily natural gas production.

<https://www.eia.gov/todayinenergy/detail.php?id=46896>

<sup>27</sup> Texas Railroad Commission curtailment rule, April 2022. Priority hierarchy: human needs customers, electric generation, industrial users. <https://www.rrc.texas.gov/gas-services/weather-emergency-preparedness/>

<sup>28</sup> Norton Rose Fulbright, August 2025: data centers negotiating firm transportation contracts for priority gas access. <https://www.projectfinance.law/publications/2025/august/data-centers-and-natural-gas/>

<sup>29</sup> Energy Transfer–CloudBurst agreement: Oasis Pipeline, LP to provide up to 450,000 MMBtu/day of firm natural gas supply for 1.2 GW behind-the-meter data center generation near San Marcos, Texas, for at least ten years. Uses Energy Transfer’s existing Oasis Pipeline system. <https://ir.energytransfer.com/news-releases/news-release-details/energy-transfer-and-cloudburst-sign-agreement-natural-gas-supply>

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<sup>30</sup> Norton Rose Fulbright, August 2025: firm vs. interruptible transportation service and its impact on reliability and cost exposure. <https://www.projectfinance.law/publications/2025/august/the-shift-back-to-gas/>

<sup>31</sup> NRECA Electric Co-op Facts & Figures, June 2025, for the generation buildout figure: cooperatives adding nearly 15 GW of new generation capacity including over 8.5 GW of natural gas. The generation-and-transmission count (60) follows the current NRECA Electric Co-op Fact Sheet (April 2026); see note 1. <https://www.electric.coop/electric-cooperative-fact-sheet>

<sup>32</sup> The compounding works in the other direction as well. A cooperative struggling with systemic copper theft has less financial capacity to negotiate favorable wholesale power contracts or invest in generation diversity. A cooperative paying higher capacity costs has less margin to absorb the repair bill from a substation attack. A cooperative that loses generation during a winter emergency because its gas supply was curtailed faces both the immediate cost of the outage and the long-term cost of degraded member confidence in the institution itself.

<sup>33</sup> 250 megawatts is a reasonable starting point.

<sup>34</sup> Georgia is projected to forgo roughly \$2.5 billion in state and local tax revenue from its data center exemption in fiscal year 2026, rising to about \$3 billion in 2027. Even so, in Georgia's 2026 session, multiple bills to protect ratepayers and to limit or sunset the exemption (including SB 34 and SB 410) failed to pass, leaving the exemption in place. Virginia took a different route: rather than legislation, its Joint Legislative Audit and Review Commission published a comprehensive review of data center impacts in December 2024.

<https://insideclimatenews.org/news/09042026/georgia-legislature-data-center-bills-fail/>;  
<https://jlarc.virginia.gov/pdfs/presentations/Rpt598Pres-1.pdf>

<sup>35</sup> FBI Criminal Intelligence Section, "Copper Thefts Threaten U.S. Critical Infrastructure," Intelligence Assessment (Unclassified), September 15, 2008. The FBI confirmed in 2024 that no updated comprehensive assessment has been published. The current FBI Metal Theft program page continues to reference the 2008 findings:

<https://www.fbi.gov/investigate/transnational-organized-crime/jewelry-and-gem-theft>

<sup>36</sup> Critical infrastructure protection funding has historically flowed to the assets that are most visible, not the assets that are most vulnerable. Cooperative infrastructure in remote locations with no cameras, no fencing, and limited nearby law enforcement are among the most vulnerable infrastructure assets in the country.