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Before the United States House of Representatives Committee on Small Business

Subcommittee on Rural Development, Energy, and Supply Chains

Hearing on "Empowering Rural America Through Investment in Innovation"

January 21, 2026

Chairman Ellzey, Ranking Member Morrison, and distinguished members of the Subcommittee on Rural Development, Energy, and Supply Chains: Thank you for the invitation to testify today. I am Nicol Turner Lee, a Senior Fellow in the Governance Studies program and Director of the Center for Technology Innovation at the Brookings Institution. With a history of over 100 years, Brookings is committed to evidence-based, nonpartisan research in a range of focus areas. My research expertise encompasses data collection and analysis around regulatory and legislative policies that govern telecommunications and high-tech industries, along with the impacts of digital exclusion, artificial intelligence (AI), and machine learning algorithms on vulnerable populations, including rural populations. I am also the author of *Digitally Invisible: How the Internet is Creating the New Underclass*, which explores the historical complexities of the U.S. digital divide.

I. Introduction

Technological innovation has been pivotal to economic growth and prosperity. Artificial intelligence (AI) is contributing to this by rapidly transforming areas like health care, education, financial services, housing, and employment. AI developers are investing billions to build and power the technology with the promise of it bringing new insights, innovations, and access to government,

companies and individuals.[1] As AI becomes more integrated into all aspects of life, it will change the way we work, how we learn, get well, and interact online, as well as embolden other transformative use cases like speeding up the development of scientific discoveries, and better evaluating climate impacts.[2]

However, AI presents a set of challenges that include embedded biases in algorithmic models that deny certain consumers access to credit and home loans, and environmental impacts related to the vast computing needs of generative models. Further, not all consumers have full access to AI products and services, especially those with limited internet access, or who lack the digital skills to utilize AI in their lives.

Rural communities have been historically left behind when it comes to technological innovation and can benefit from what AI offers.[3] With vast topography, rural areas tend to have the land needed to support physical data centers, especially those needed for advanced computing. Technology can create new avenues for economic development in rural areas that are experiencing declines in population and farming assets, as well as insufficient access to high-speed broadband services. Between 2010 and 2020, the population in rural areas remained stagnated or decreased.[4] U.S. family farms also declined in 2024 to 1.88 million, reflecting an 8% decrease from the 2.04 million reported in 2017.[5] While gains have been

[1] Munjal, Mayank and Vineet Sachdev. "Investment in AI is exploding." *Reuters*, December 5, 2025. www.reuters.com/graphics/USA-ECONOMY/AI-INVESTMENT/gkvlqbgxkpb/.
[2] Mock, Marissa, Suzanne Edavettal, Christopher Langmead and Alan Russell. "AI can help to speed up drug discovery — but only if we give it the right data." *Nature*, September 19, 2023. www.nature.com/articles/d41586-023-02896-9;
"Harnessing the Power of AI for Climate Change Impact Assessment," United Nations University, UNU-INWEH, August 27, 2024. unu.edu/inweh/article/harnessing-power-ai-climate-change-impact-assessment.
[3] Dumont, Andrew. "Changes in the U.S. Economy and Rural-Urban Employment Disparities." Board of Governors of the Federal Reserve System, January 19, 2024. www.federalreserve.gov/econres/notes/feds-notes/changes-in-the-us-economy-and-rural-urban-employment-disparities-20240119.html.
[4] Davis, James C., John Cromartie, Tracey Farrigan, Brandon Genetin, Austin Sanders and Justin B. Winikoff. "Rural America at a Glance: 2023 Edition." U.S. Department of Agriculture Economic Research Service, November 15, 2023. www.ers.usda.gov/publications/pub-details?pubid=107837.
[5] Lacy, Katherine. "The number of U.S. farms continues slow decline." U.S. Department of Agriculture Economic Research Service, March 12, 2025. www.ers.usda.gov/data-products/chart-gallery/chart-detail?chartId=58268.

made in rural broadband access, many residents are still not connected to the internet, which has huge consequences for their access to health, employment, and educational resources.[6]

Throughout the U.S., affordability is a major concern that is equally affecting rural residents, especially those in poverty or with limited incomes who currently struggle to meet the cost of groceries, housing, and transportation.[7] Rural innovation can facilitate greater economic opportunities and data centers have gotten increased visibility as economic drivers for local communities; *but that is only if they are built in ways that are additive to the local economy and bring limited harms to residents and local businesses*.

In my testimony, I will discuss the increasing explosion of data centers across the U.S. and particularly in rural areas. To address everyone's needs, state and local leaders, business owners, employees, and residents should participate in planning and implementation together with technology companies. Because data centers can present both foreseen and unforeseen challenges, communities must be actively involved at the onset of data center development and have transparency from companies to assess the impacts on local utilities, jobs, and land use, among other areas. Without meaningful community engagement and appropriate safeguards to protect local resources, proposed data centers are likely to be perceived as liabilities rather than assets. This may result in sustained community opposition, which is already emerging across urban, suburban, rural, and tribal regions throughout the United States.

II. Data centers and rural America

Connectivity is driving transformation across health, education, finance, employment, manufacturing, and agriculture. In a recent paper, my Brookings colleague Darrell West and I note that advanced data centers are vital to the AI economy but require a national framework for resources,

[6] Sanders, Cynthia K. and Edward Scanlon. "The Digital Divide Is a Human Rights Issue: Advancing Social Inclusion Through Social Work Advocacy." *Journal of Human Rights and Social Work*, 6(2), 130–143. doi.org/10.1007/s41134-020-00147-9.
[7] "The American Affordability Tracker." *Urban Institute*, accessed January 18, 2026. www.urban.org/data-tools/american-affordability-tracker.

security, permitting, and community benefits.[8] Data centers host file servers and networking equipment to store, process, and analyze information sources, including text, code, and images.[9] There are several types of facilities, including enterprise, hyperscale, colocation, and edge. The first refers to data centers that companies construct on premises and are used for that business or organization, while colocation and/or managed centers offer leases for the use of the facility, a model more frequently used by smaller businesses.[10] Edge centers are smaller, decentralized centers that are local and keep data close to the end user. These have various use cases, including health care and agriculture.[11]

Since the explosion of AI, technology companies are investing in larger facilities for greater amounts of computing power. For example, 10 years ago, centers with 30-megwatt capacities were considered large, but more recent builds regularly have capacities in the hundreds.[12] More compute power requires more space, equipment, and electricity, resulting in the demand for many more hyperscale centers—facilities that typically have more than 5,000 file servers and can span millions of square feet.[13] These types of data centers are leveraged for processing information quickly and support low latency to accommodate AI services and agents, large language models (LLMs), and other high-scale applications, including military intelligence. The companies building hyperscalers, including Microsoft, Google, and Amazon, have greatly benefitted from the explicit support of the Trump administration whose favorable stance toward more data centers to compete with China, has expedited permitting and bypassed environmental remediations as per the tenets in the AI Action Plan published in July 2025.[14] However, the current administration also has threatened to rescind federal funding to states if they stand in the way of

[8] Turner Lee, Nicol and Darrell West. "The future of data centers." *Brookings*, November 5, 2025. www.brookings.edu/articles/the-future-of-data-centers/.
[9] Ibid.
[10] Susnjara, Stephanie and Ian Smalley. "What is a data center?" IBM. www.ibm.com/think/topics/data-centers
[11] "Edge data centers: how to participate in the coming boom." PwC, accessed January 18, 2026. www.pwc.com/us/en/industries/industrial-products/library/edge-data-centers.html.
[12] "What is a data center?" McKinsey & Company, July 29, 2025. www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-a-data-center.
[13] Susnjara, Stephanie and Ian Smalley. "What is a data center?" IBM. www.ibm.com/think/topics/data-centers
[14] White House. "Winning the Race: America's AI Action Plan." July 2025. www. whitehouse.gov/wp-content/uploads/2025/07/Americas-AI-Action-Plan.pdf

AI deployments. In December 2025, the White House issued an executive order making states ineligible for BEAD non-deployment funds if their laws threatened such, which could include data centers.[15]

Companies state they are racing to build more data centers to keep pace with customer demand for AI.[16] This is reflected by the vast amount currently under construction or announced within the last few years, which both number in the hundreds according to multiple sources.[17] Given the land requirements for these vast centers, companies often look to rural areas for construction, intriguing state and local leaders who, in turn, offer tax incentives and abatements as they expect billions of dollars in new tax revenue from data centers.[18] At least 36 states have created subsidies for data center projects to attract companies to their area.[19] Additionally, officials in rural communities have sought out these projects to bring higher-speed connectivity to their residents and new job opportunities that may have been lost in past years.[20] For example, new data center projects can bring faster broadband and greater processing power to surrounding communities if assets are effectively leveraged, expanding digital opportunities to areas where they currently lag.[21]

However, rural communities can suffer when the details about these deals are not transparent. For example, companies may promise investment in new infrastructure or job opportunities, but these can be

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[15] JSITEL. "White House links BEAD non-deployment funding eligibility to state laws through new executive order." December 17, 2025. www. www.jsitel.com/resource/white-house-links-bead-non-deployment-funding-eligibility-to-state-ai-laws-through-new-executive-order/.
[16] Novet, Jordan. "Microsoft reiterates plan to invest $80 billion in AI, but may 'adjust our infrastructure in some areas.'" *CNBC*, February 24, 2025. www.cnbc.com/2025/02/24/microsoft-reiterates-plan-to-invest-80-billion-in-ai-.html.
[17] Turner Lee, Nicol and Darrell West. "The future of data centers." *Brookings*, November 5, 2025. www.brookings.edu/articles/the-future-of-data-centers/.
[18] O'Neal, Connor. "New Microsoft data center to add dozens of more jobs in West Des Moines." *We Are Iowa*, June 7, 2024. www.weareiowa.com/article/tech/new-microsoft-data-center-west-des-moines-jobs-construction-environmental-impact/524-0d8f0a15-c73f-4986-9f70-aae1ec351cea.
[19] Hardy, Kevin. "Study Finds Lack of Transparency in State Data Center Incentives." *Government Technology*, November 14, 2025. https://www.govtech.com/infrastructure/study-finds-lack-of-transparency-in-state-data-center-incentives.
[20] Pipa, Anthony F. and Nicol Turner Lee. "Data centers in rural America: Nicol Turner Lee on the global race for AI, local impacts and trade-offs, and community oversight." *Brookings*, December 10, 2025. www.brookings.edu/articles/rural-data-centers-ai-nicol-turner-lee/.
[21] Turner Lee, Nicol and Darrell West. "The future of data centers." *Brookings*, November 5, 2025. www.brookings.edu/articles/the-future-of-data-centers/.

difficult to quantify if not formalized in community benefits agreements. State legislators can also get ahead of discussions when the whole community is not involved like the governor of West Virginia, who signed a data center bill into law without community input. Residents of Tucker County expressed great resistance to the media after finding out that it strips away any guardrails on noise, lighting, and land use from future data centers, and directs tax revenue to the state instead of the county.[22]

III. What worries local communities about data centers

More communities are actively and loudly expressing their discontent as data center developers exhibit urgency in their efforts without sharing information with local communities on the short- and long-term consequences of doing so. According to Data Center Watch, at least 53 groups spanning 17 states are organizing against proposed facilities, and $98 billion in projects were canceled between March and June 2025 alone.[23] Data centers have been the central focus of some gubernatorial and state legislature campaigns during recent elections in New Jersey and Virginia, where consumers saw rising electricity rates coincide with unprecedented demand for new data centers.[24] A bipartisan group of governors recently banded together to demand that tech companies foot their own bill when it comes to the electricity that data centers consume.[25] This effort is happening as local officials in Kentucky, Missouri, Georgia, and 11 other states have passed temporary moratoriums on new data centers.[26]

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[22] Culvyhouse, Henry and Sarah Elbeshbishi. "Western Virginia lawmakers offer no clear plan for addressing local concerns about data centers." *Associated Press*, December 15, 2025. www.kvue.com/article/syndication/associatedpress/west-virginia-lawmakers-offer-no-clear-plan-for-addressing-local-concerns-about-data-centers/616-648dcbf8-7c97-4c2a-820a-8d282b94ddb1.

[23] Taft, Molly. "The data center resistance has arrived." *WIRED*, November 14, 2025. www.wired.com/story/the-data-center-resistance-has-arrived/.

[24] Kimball, Spencer. "Skyrocketing electricity prices fuel political backlash against tech sector's AI data centers." *CNBC*, November 12, 2025. www.cnbc.com/2025/11/12/electricity-prices-data-center-ai-new-jersey-virginia-midterm-election.html?msockid=3b99ec5d4388685138b6faf5421c6976.

[25] Bell, Brad. "Skyrocketing electricity prices fuel political backlash against tech sector's AI data centers." *Fox 45 News*, January 17, 2026. foxbaltimore.com/newsletter-daily/wes-moore-electricity-costs-bipartisan-effort-maryland-virginia-pennsylvania-energy-policy-pjm-interconnection-power-plants-regional-cooperation-energy-security-glenn-youngkin-josh-shapiro-doug-burgum-chris-wright-whitmer.

[26] Ruddock, Jenna. "The real race for an AI moratorium: Stopping data centers." *Tech Policy Press*, December 17, 2025. www.techpolicy.press/the-real-race-for-an-ai-moratorium-stopping-data-centers/.

Land preservation has become part of the growing list of community concerns about data centers. This month, six conservation groups joined the first-ever lawsuit in Prince William County, Virginia opposing the construction of 37 data centers around 1,750 acres in Manassas Battlefield Park.[27]

With communities becoming bold in their opposition to data centers, a middle ground must be met to balance the needs of advanced technologies with the demands of community residents who seek more clarity, buy-in, and oversight over the decisions to build data centers in their backyard. Further, the demand for more transparency will only grow due to the lack of more robust information about the impacts of data centers on electricity and water, noise, pollution, land use, and the creation of jobs.

Electricity and water concerns

Because of their architecture, data centers require large amounts of electricity, and cooling alternatives mainly through water. In 2023, data centers accounted for 4.4% of U.S. electricity demand, and this number is expected to rise in the coming years. On the global scale, data centers account for 1-2% of energy needs, with some estimating this reach 21% by the end of the decade.[28] Even if these forecasts prove outsized on the international scale, the electricity needs of individual centers can have a significant impact on surrounding communities given their considerable and constant electricity needs. Upgrades to the grid are wholeheartedly necessary in the U.S. and have been for decades. However, energy infrastructure modernization will be a long process, and one wrought with the red tape of permitting and zoning hurdles. Electricity rates have already increased by 30% since 2020, and despite evidence that data centers may have not contributed this rise in years past, experts are concerned that the massive buildout will cause rates to spike in the future.[29] Microsoft recently pledged through their

[27] Turco, Rebecca. "Conservation groups support lawsuit to block Prince William Digital Gateway." *ABC7 News*, January 16, 2026. wjla.com/news/local/six-conservation-groups-file-brief-supporting-lawsuit-against-pwc-digital-gateway.
[28] Stewart, Josie, Brooke Tanner, and Nicol Turner Lee. "As energy demands for AI increase, so should company transparency." *Brookings*, July 14, 2025. www.brookings.edu/articles/as-energy-demands-for-ai-increase-so-should-company-transparency/.
[29] Klaus, David M. and Mark MacCarthy. "Boom or bust: How to protect ratepayers from the AI bubble." *Brookings*, October 30, 2025. www.brookings.edu/articles/boom-or-bust-how-to-protect-ratepayers-from-the-ai-bubble/.

Community-First AI Infrastructure to pay the full costs of their centers to ensure increases to consumers' electricity bills are not the result of their facilities, demonstrating the scale of public concern and a shift to address them.[30]

The modernization of existing transmission lines is also at stake in data center expansion, ensuring that the electric grid can scale with reliability and stability. In rural communities, transmission line placement and upgrades support new data centers, but invade the solitude of farmland. Building them can take more than 10 years as they enable electricity to flow from region to region. Farmers in Maryland are currently embroiled in conflict with private companies over a proposed 67-mile transmission line project that would cut through their land as part of efforts to support incoming facilities.[31] The project, which has been called an "extension cord" for the growing number of data centers in Northern Virginia, has the developer threatening to exert the power of eminent domain to proceed with the project, making local farmers feel helpless in their fight to quell the influence of big companies.[32]

Similar local concerns arise around the water usage of data centers. My Brookings colleague, Joe Kane, wrote about the balancing act that technology companies undertake with water intake to data center for cooling purposes. In his blog, he states that "a typical data center uses 300,000 gallons of water each day (equivalent to the demands of about 1,000 households), but large data centers can use an estimated 5 million gallons of water each day, equivalent to the needs of a town of up to 50,000 residents."[33] His research also found that these projections do not account for water that will be used to cool offsite facilities.[34] Some technology companies are moving away from evaporative water cooling systems to

[30] Weise, Karen. "Microsoft pledges to pay more for electricity, drawing praise from Trump." *The New York Times*, January 13, 2026. www.nytimes.com/2026/01/13/technology/microsoft-electricity-data-center-trump.html?mc_cid=5d18073cab&mc_eid=0ee55c89c1.
[31] Harris, Bracey. "Farmers fight an 'extension cord' for data centers." *NBC News*, November 1, 2025. www.nbcnews.com/news/us-news/maryland-farmers-data-centers-extension-cord-power-lines-rcna233324.
[32] Ibid
[33] Kane, Joseph W. "AI, data centers, and water." *Brookings*, November 20, 2025. www.brookings.edu/articles/ai-data-centers-and-water/.
[34] Ibid.

those that are closed-loop and zero-water cooling using AI applications for greater efficiencies.[35] Google has introduced alternatives for more climate-conscious water cooling and has been the first company to make information public on the water consumption of their data centers.[36]

Whether it's water or electricity, the goal of technology companies should be to modernize infrastructure, especially in rural towns and cities. Communities should not feel the drain of data centers on their natural and generated resources. They should also not be overlooked by companies attempting to build their own power substations or irrigation systems in places with dire needs for infrastructure improvements. The situation in Latin American countries should flag potential problems around water use for rural regions as many of their locations are facing serious droughts due to increased water extraction.[37]

Other environmental concerns

While the environmental impacts of data centers are still largely unknown, researchers have attempted to quantify the amount of electricity and water required per AI inquiries to the alarm of some whom worry about mass adoption and the scale of training these models could accelerate the climate crisis. These concerns may be furthered exacerbated by the current administration, which quickly upended progress toward clean energy sources. This includes an executive order directing the Environmental Protection Agency (EPA) to modify regulations like the Clean Air Act and Clean Water Act for large-scale data center projects seeking faster approval.[38] As more technology companies look to nuclear power as another energy source, advantages and disadvantages should be explored. For example, Microsoft is slated to reopen the Three Mile Island plant in 2028 to power their data centers after it

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[35] Craske, Ben. "How are data centres shifting to zero-water cooling tech?" *Data Centre Magazine*, January 22, 2025. datacentremagazine.com/news/how-are-companies-pioneering-data-centre-zero-water-cooling.
[36] Miller, Rich. "Google developing new climate-conscious tech to save water." *Data Center Frontier*, March 1, 2023. www.datacenterfrontier.com/cooling/article/33001080/google-developing-new-climate-conscious-cooling-tech-to-save-water.
[37] Uribe, Pablo Medina, Francisca Skoknic, Alberto Pradilla, Laura Scofield, Justin Hendrix, Julia Gavarrete. "Many Latin Americans living near data centers don't feel welcome in the future." *Tech Policy Press*, September 12, 2025. www.techpolicy.press/many-latin-americans-living-near-data-centers-do-not-feel-welcome-in-the-future/.
[38] The White House. "Accelerating federal permitting of data center infrastructure."July 23, 2025. https://www.whitehouse.gov/presidential-actions/2025/07/accelerating-federal-permitting-of-data-center-infrastructure/.

suffered a partial meltdown in 1979.[39] The company projects that they will bring about 3,400 jobs and generate increased tax revenue for the area.[40] On the one hand, nuclear power projects can generate jobs, and money for desolate areas. They are also less likely to produce the byproducts associated with fossil fuels, while furnishing a consistent energy supply for data centers. On the other hand, nuclear sites can take some time to build from scratch, require extensive permitting and remediation, and can generate far-reaching consequences to local communities if radioactive waste materials are not properly handled and disposed of.[41]

Communities adjacent to planned or existing data centers also have other concerns, including noise and light pollution from the vast facilities. Most facilities currently run on natural gas, and the turbines powering them can produce constant humming sounds that reach nearby homes.[42] To date, Virginia has reported the most data centers (over 200) with more in the works. In 2023, a study explored the low-frequency noise that data centers emit, concluding that the concerns were not warranted and not enforceable given the lack of inclusion in existing zoning ordinances.[43] However, residents, who are displeased with the number and location of data centers in their communities, have waged this as a complaint, urging companies to conduct sound modeling prior to construction. In fact, anti-data center advocacy groups have used noise pollution as one of the many reasons for rejecting these projects despite the nominal effect of noise pollution on residents.[44]

Data center location and zoning

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[39] Mandler, C. "Three Mile Island nuclear plant will reopen to power Microsoft data centers." *NPR*, September 20, 2024. www. npr.org/2024/09/20/nx-s1-5120581/three-mile-island-nuclear-power-plant-microsoft-ai.
[40] Ibid.
[41] ANS Nuclear Café. "The advantages and challenges of nuclear-powered data centers." ANS / Nuclear Newswire, April 11, 2025. www. ans.org/news/2025-04-11/article-6927/the-advantages-and-challenges-of-nuclearpowered-data-centers/,
[42] Chen, Amber X. "A.I. Is on the Rise, and So Is the Environmental Impact of the Data Centers That Drive It." *Smithsonian Magazine*, September 29, 2025. www.smithsonianmag.com/science-nature/with-ai-on-the-rise-what-will-be-the-environmental-impacts-of-data-centers-180987379/.
[43] "Data Centers in Virginia." Joint Legislative Audit and Review Commission, December 9, 2024. https://jlarc.virginia.gthe rov/landing-2024-data-centers-in-virginia.asp.
[44] Murphy, Ryan and Emily Feng. "Why more residents are saying 'No' to AI data centers in their backyard." *NPR*, July 17, 2025. www. npr.org/2025/07/17/nx-s1-5469933/virginia-data-centers-residents-saying-no.

Companies should consider several factors when scouting areas, including the current infrastructure and proximity to clients who rely on these facilities. With global demand for data centers increasing, the impact on real estate, especially in communities with stagnant growth, could be significant. A 2025 study by real estate services firm, CBRE, found that 95% of major investors globally are projected to invest in data centers; 41% of those in the study planned to allocate $500 million or more in equity to the data center sector in 2025.[45] As interest increases in more rural areas, parcels of land are likely to be bought to host hyperscale data centers, presenting new opportunities for economic development. Realtors should be seen as an important stakeholder in this wave of AI expansion, and rural communities should think carefully about the possible locations of proposed facilities, as well as their proximity to housing, schools, firehouses, and other community assets. Ideally, they should be built in industrial corridors or near other logistics or manufacturing plants.

Given the timing of the current data center boom, local governments should be updating their zoning code to account for data centers, which may have previously fallen between classifications. To avoid contention over land use, it's also important for construction to be in accordance with local zoning requirements and economic development plans.

State and local revenue

As mentioned, tax revenue is a primary benefit for communities that local and state officials want for their communities. This can result in billions of dollars in funding for communities surrounding data centers, with some companies also committing additional funds for other projects. Especially in rural communities, tax revenues from new data centers can support investments in community institutions from firehouses to schools, while helping small businesses scale their operations with greater connectivity. However, tax revenue is only realized once the data center is active, and before this, many states are

[45] Shan, Lee Ying. "Data are a gold rush for global real estate- but can funding keep up?" CNBC, October 1, 2025. www.cnbc.com/2025/10/01/data-centers-hyperscalers-gold-rush-global-real-estate-commerical-real-estate-funding.html.

offering tax rebates and other cuts to incentivize and court data center developers. In a forthcoming paper, West and I argue that localities should have some stated and clear expectations on the projected revenue promised by companies and have firm, written commitments from them on steady revenue if there were to be an AI bubble or implosion. Further, we suggest in our paper that tax assessments should include the tax revenues minus any tax abatement incentives offered to developers and operators who, in many states, are receiving substantial tax discounts to build in certain communities.

Job creation and workforce development

One of the other major benefits technology companies espouse for these facilities is job creation, though these are questions about the scale of these roles and whether they are long-term. For example, a 2024 study from the Joint Legislative Audit & Review Commission in Virginia found that about 80% of the jobs created for data centers in the state between fiscal years 2021-2023 were from the construction phase.[46] Despite the scale of most new builds, which can require thousands of people to construct, far less staff is required in the actual facilities for the upkeep and protection of equipment. These roles may number in the tens or hundreds depending on the project.

My Brookings colleague, Darrell West and I have argued that "data centers will spur labor demand, particularly in construction and engineering, where there might be a groundswell in job opportunities and subcontracts. However, the current workforce simply does not have the necessary supply of technical workers."[47] Constructing these facilities requires the expertise of electricians, welders, and more. Nationally, the construction sector is facing huge shortages in trained and licensed workers, roughly half a million workers. These challenges offer a chance for government agencies, businesses, and local governments to collaborate on solving workforce shortages. In fact, rural areas are primed to cultivate the next generation of men and women in the trades to aid in pre- and post-construction

[46] "Data Centers in Virginia." *Joint Legislative Audit and Review Commission*, December 9, 2024. jlarc.virginia.gthe rov/landing-2024-data-centers-in-virginia.asp.
[47] Turner Lee, Nicol and Darrell West. "The future of data centers." *Brookings*, November 5, 2025. www.brookings.edu/articles/the-future-of-data-centers/.

opportunities arising from the data center market. A recent Fortune article suggested that one in four postings in rural job markets are for unfilled construction, health care, and warehousing jobs.[48] It also suggested that even with AI scaling in society, most IT jobs are being fulfilled by remote workers, which automatically excludes rural talent given their lack of sufficient access to high-speed broadband. Finding ways to increase the pipeline of trained and licensed tradespeople in partnership with community colleges or federal apprenticeship programs not only creates a viable, local workforce, but also roots that talent in their respective rural communities once the data center is active.

Further, more flexible licensing of workers in the trades should be encouraged across states; for example, electrician certifications could be transferable to enable greater geographic mobility of workers with the necessary skills.[49] West and I argue in our published paper on data centers that the U.S. Department of Labor, in coordination with state workforce agencies, also could support a temporary or flexible labor initiative tailored to large-scale data center construction.[50] There are also opportunities for technology companies to invest in rural community colleges, including land grant Historically Black Colleges and Universities, as well as trade schools to support AI-enabled training, licensing, certification, and recertification to tap a pipeline of workers from site engineers to electricians; many of whom will be newly credentialed and able to serve their respective communities beyond the work and life of the physical data center.

Access to high-speed broadband

Despite decades of funding toward closing the digital divide, millions of rural residents remain offline and foreclosed from the opportunity of the digital economy. People in rural areas are less likely to have internet service subscriptions, and even when residents are connected, they more often rely on

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[48] Kibarian, Chris. "The real problem gripping rural America and the jobs of the future." *Fortune*, August 21, 2025. fortune.com/2025/08/21/rural-america-jobs-not-enough-workers-ai-mike-rowe-lightcast/.
[49] Turner Lee, Nicol and Darrell West. "The future of data centers." *Brookings*, November 5, 2025. www.brookings.edu/articles/the-future-of-data-centers/.
[5050] Ibid.

wireless or satellite connections—options that are less reliable than wired ones.[51] Data centers typically run 24 hours a day, seven days a week, requiring reliable, high-speed connection, most frequently through fiber optic cables. When this infrastructure is built for data centers, there is an opportunity to connect or strengthen connections for surrounding communities who may currently lack access to high-speed internet. This is critical to ensure everyone can participate in the digital economy and use the applications these facilities power. Having broadband access can also enable digital skills training, especially AI literacy for young people and adult residents in rural areas. If positioned effectively, AI-enabled tools can even be used to license and recertify those in the trades, enabling them to compete for the jobs afforded by data centers. Amazon has invested more than $2.5 billion in students, adults, and their own employees as part of a workforce development initiative to train more than 50 million people.[52] Their curricula have resources supporting skills development f data center jobs, enabling more local workers to benefit from these new opportunities.

Long-term resilience and sustainability

Data centers are the infrastructure for the latest digital revolution, and we must have some foresight about their long-term impact on surrounding communities, the environment, and their overall resilience. This is especially important as fears over a potential AI bubble escalate and feed the possibility of stranded assets after communities have given the green light to new data centers. Technology companies have committed to ensuring their data centers will be adaptable to future innovations, but it's not always clear to communities if contingency plans exist. Communities should be asking about the plans for stranded and/or deserted buildings including how they can be repurposed or better integrated into community settings at the onset.

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[51] Junod, Anne N. and Corianne Payton Scally. "Expanding Digital Opportunity in Rural Communities." *Urban Institute*, February 2025, www.urban.org/sites/default/files/additional-materials/Expanding_Digital_Opportunity_in_Rural_Communities_.pdf.
[52] Galetti, Beth. "How Amazon is upskilling 50 million people for the future of work." Amazon News, October 23, 2025. www.aboutamazon.com/news/workplace/amazon-future-of-work-skills-jobs-training.

There have also been calls to link data centers and biodiversity to support greater sustainability efforts. Researchers have proposed sustainable drainage systems, wetlands, planted swales, or vegetated retention walls as ways to bring more nature to otherwise stark buildings.[53] Biodiversity efforts could improve water quality, soften the aesthetic of the building, and provide natural cooling systems as "the integration of vegetation across the built environment can lower peak ambient temperatures."[54]

IV. What's next to encourage responsible and ethical data center development

Data centers are critical to the digital economy and the expansion of AI, but getting more online will require extensive buy-in from communities. Companies will need to work not only with partners in state and local governments, but civil society and communities at large to ensure deals have a vision for the path ahead and address the current disconnect between stakeholders about the benefits of these proposals. Transparency should be central to these conversations and will be critical to help narrow the existing gap.

The concerns communities have with these centers mirror many of the same worries expressed about AI more broadly, and right now, lawmakers and everyday people are unable to keep up with the pace of innovation. As state lawmakers seek to better understand and address these challenges, they should not feel encumbered by the current administration's threats to their autonomy. The Trump administration's signing of a Dec. 11 executive order that grants the attorney general authority to sue states for laws that do not "sustain and enhance the United States' global AI dominance through a minimally burdensome national policy framework for AI" will have a disproportionate impact on the ability of communities to pursue authentic partnerships with technology companies in ways that protect public interests. Further, the order threats to withhold BEAD funding from states who obstruct AI

[53] Davies, David. "From grey boxes to green spaces: designing data centres that give back." *Data Centre Review*, August 4, 2025. datacentrereview.com/2025/08/from-grey-boxes-to-green-spaces-designing-data-centres-that-give-back/.

development seems counterintuitive to the ultimate goal for having data centers in the first place.[55] Though the executive order states that a "fragmented State regulatory landscape for AI threatens to undermine BEAD-funded deployments," withholding funds runs contrary to the mission of AI dominance by not expanding potential routes for adoption and counters the BEAD program's goal of universal connectivity.

Communities should have some agency and say in conversations involving data centers in their communities, and for rural populations, their engagement is even more critical as they recover from some of the more devastating blows of economic and population declines. To close my testimony, I offer the five points below to rural community leaders and legislators that ensure early collaboration and accountability toward more responsible and ethically built data centers.

A. **Ensure early and ongoing collaboration between energy, water, and telecom utilities to ensure reasonable use and costs for assets and a local return on investments.** Utility companies must coalesce with data center developers to modernize local infrastructure or at least find ways to accommodate the growing demand of AI. With data centers accounting for the largest share of energy load, it is important that these entities find paths for affordable and available power generation in ways that do not produce higher prices for consumers. AI also can be used to determine energy flows and be integrated into electricity monitoring for households adjacent to data centers to determine their share of resources. With energy demand for data centers projected to be more than $2 trillion in the next few years, it's imperative that energy companies find innovative ways to build their capacity, and in some instances, work with technology companies to bring power directly to new data centers if no other alternative exists. Similar collaborations should be sought with telecom companies that are providing fiber directly to data centers, or to consumers. While many telecommunications companies operate their own

[55] The White House. "Ensuring a national policy framework for artificial intelligence." December 11, 2025. www.whitehouse.gov/presidential-actions/2025/12/eliminating-state-law-obstruction-of-national-artificial-intelligence-policy/.

data centers, they do provide connectivity to AI-enabled applications and other software. Rural leaders should be connecting the dots between these and other stakeholders (like realtors), as well as Public Utility Commissions (PUC) who set the rates for payers, to ensure that they are also gaining from infrastructure upgrades and investments, while maintaining affordability for their residents. This might also be an opportunity to develop a more formal advisory that works on data centers from inception to implementation, keeping the community informed.

B. **Develop community benefit agreements that resolve and make public the major concerns around data centers.** Community benefit agreements (CBAs) are documents that outline the costs and benefits of data centers in specific communities. These agreements should be central to community negotiation processes with AI companies to clarify building and operating data costs in addition to other factors of interest to residents and government leaders. CBAs are negotiated as formal contracts and should be subject to legal safeguards. They can help communities anticipate possible problems and address them before construction begins, especially in areas of major concern like electricity, water, tax revenue, location, and jobs. In our forthcoming paper, Darrell West and I encourage communities to negotiate all these areas, and request companies to deliver planning documents, including environmental assessments. We also propose the development and regular updating of a public dashboard with key metrics hosted on town, county, and city web sites to enable transparency and accountability. A public dashboard will also allow officials, residents, and reporters to assess project impact and determine whether data centers met their stated goals. These community benefit agreements can also generate value for small businesses who can be provided with training resources, and contracts with their local data centers in areas like food service, security, and maintenance, among other locally sourced services.

C. **Focus on job creation in data center development, especially in the trades.** Jobs created for data center development must not be temporary in nature. These opportunities that will primarily be in the skilled trades must be coupled with appropriate and timely training and certification,

enabling rural residents to benefit from the wages and work related to new data centers. As mentioned, technology companies should be partnering with the Department of Labor, community and land-grant colleges, and trades schools to institute national skills requirements and professional credentials for workers building and working in these facilities. Depending on the facilities' size, data centers might end up creating around 200-300 onsite jobs, but communities should focus on training local tradespeople to keep talent in the area after the lifespan of the enterprise. Community benefit agreements also could include investments in education and job opportunities, with developers supporting K-12, occupational, and higher education.

D. **Support smaller data centers when appropriate.** While hyperscalers are dominating conversations around data centers, smaller facilities do exist and can be preferable in some cases. The largest companies will continue to invest in scale, but for other companies or communities, edge centers can provide the necessary compute power and be used to host equipment for small- and medium-sized businesses. Smaller and more localized data centers are currently being leveraged by rural Tribal communities, who not only benefit from greater security and lower latency, but can ensure digital sovereignty efforts when it comes to the information stored and exchanged across Tribal lands.[56] Considering that health, education, and financial data are the primary reasons why AI is skyrocketing in terms of use, rural communities should question the size of large data centers as the only route to connectivity, and find ways to work with local institutions providing these services to guarantee accessible and seamless access, especially in rural communities experiencing high rates of health disparities.

E. **Create safeguards to protect communities from stranded assets.** Community benefit agreements also will be important to address the risk of stranded assets, ensuring that utility

[56] Williams, Chancellar. "Tribal Digital Sovereignty: How Native communities are powering their own tech future." Ford Foundation, November 12, 2025. www.fordfoundation.org/news-and-stories/stories/tribal-digital-sovereignty-how-native-communities-are-powering-their-own-tech-future/.

providers won't pass costs onto consumers if data center projects are paused or close after a few years. Communities can also negotiate how physical facilities can be repurposed to avoid the eyesore of empty data centers, especially in states with huge clusters of physical facilities. For example, China who like the U.S. has speculated on the importance of data centers has recently found the country with underutilized or idle data centers.[57] The reality is that critical minerals, semiconductors, and other materials are still the ingredients of efficient and sprawling data centers, and with uncertain global markets, including tariffs, these components could be more expensive to obtain.

V. Conclusion

One final note in my testimony is that local communities—whether rural, urban, or suburban—should have the right to refuse a data center if they feel that they are not being responsibly or ethically planned and developed. Having a data center in their communities still should be their choice, and not one driven by the interests of big technology companies who may not have to deal with the long-term consequences of environmental or community harm. As most people are clear that AI is the new normal in society, the rush to build them should also ensure the same compliance and integrity that was undertaken during other large-scale industrial movements like the railroad. Without guardrails, data, and feedback, the U.S. could find themselves overbuilding and overpromising in this area despite the large, private investments by technology companies.

Thank you again to the Members of the Subcommittee on Rural Development, Energy, and Supply Chains for the opportunity to testify. I also want to thank Josie Stewart for her assistance in preparing my statement. I look forward to your questions.

[57] Chen, Caiwei. "China built hundreds of AI data centers to catch the AI boom. Now many stand unused." *MIT Technology Review*, March 26, 2025. www.technologyreview.com/2025/03/26/1113802/china-ai-data-centers-unused/.