The Montrose Group, LLC

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# MONTROSE GROUP, LLC

## DATA CENTER AND INDUSTRIAL DEVELOPMENT STRATEGIES

## WHITE PAPER

**FROM THE MONTROSE GROUP, LLC**

**OCTOBER 2024**

100 East Broad Street, Suite 2320, Columbus, Ohio 43215

October 2024

Dear Friend:

There is no hotter industrial market in the United States than data centers. The Montrose Group, LLC is an economic development and lobbying consulting firm that is proud to be a thought leader for major business and public policy issues. As an economic development and lobbying leader, the Montrose Group, LLC has released several white papers outlining critical issues and opportunities for companies and communities across the United States.

Few industries illustrate as many opportunities as the data center industry for industrial development in 2024 and the coming years. The Montrose Group, LLC is excited to release the Data Center and Industrial Development Strategies White Paper that reviews:

- the corporate site location process,
- defines the role of data centers in a booming AI economy,
- outlines the growth prospects for data centers and the impact of access to energy has on these growth prospects,
- discusses innovative solutions for addressing this 21st Century Energy crisis, and
- reviews existing state economic development incentives for data centers across the United States.

Data centers present substantial opportunities for companies and communities to meet the surging demand for these facilities driven by the expansion of the use of Artificial Intelligence (AI).

Do not hesitate to contact me at **drobinson@montrosegroupllc.com** if I can be of any assistance to you on data center or other projects.

Sincerely,

David J. Robinson
Principal
Montrose Group, LLC

**Data Center Corporate Site Location Process Driven by Energy Access.** The corporate site location process decides where a company is located, and this process is about a lot more than tax incentives. Triggers such as the end of a real estate lease, growth needs beyond their current facility, decay of their existing facility, consolidation of existing facilities, a growth opportunity tied to a customer, a merger of companies, or a company seeking to capitalize on an economic trend tell a company they should undertake a corporate site location project.

The corporate site location process begins with defining the project to learn about the industry, the number of jobs, payroll, and capital investment planned by a company, needs for the project site, and geographic markets that fit the company's business plan leading to the creation of potential state and regional target list for the company's location. Next, any data center corporate site location project needs to begin with an analysis of how and when the site is going to gain the energy required for the project. This analysis will lead to either negotiations with an investor-owned utility likely who can provide the large baseload power for the project or the development of energy production facilities to serve just the data center site. If the site can gain its required energy, an incentive analysis is next undertaken to identify land use, infrastructure finance programs and economic development incentives that can address the cost of doing issues at the site. Upon completion of this research, the company will then narrow its search to a handful of sites in multiple states and cities that all would fit the company's business purpose. A confidential Request for Proposal or project letter is then sent from a corporate site location consultant or legal counsel that outlines the nature of the corporate site location project and the specific needs of the company related to the site in question with specific infrastructure, workforce, incentive, and site needs. Site acquisition, land use entitlements, economic development incentives, and government compensation agreements are then negotiated. Defining the economic prospects, workforce capabilities and cost of doing business in multiple regions is the first step for companies considering an economic expansion.

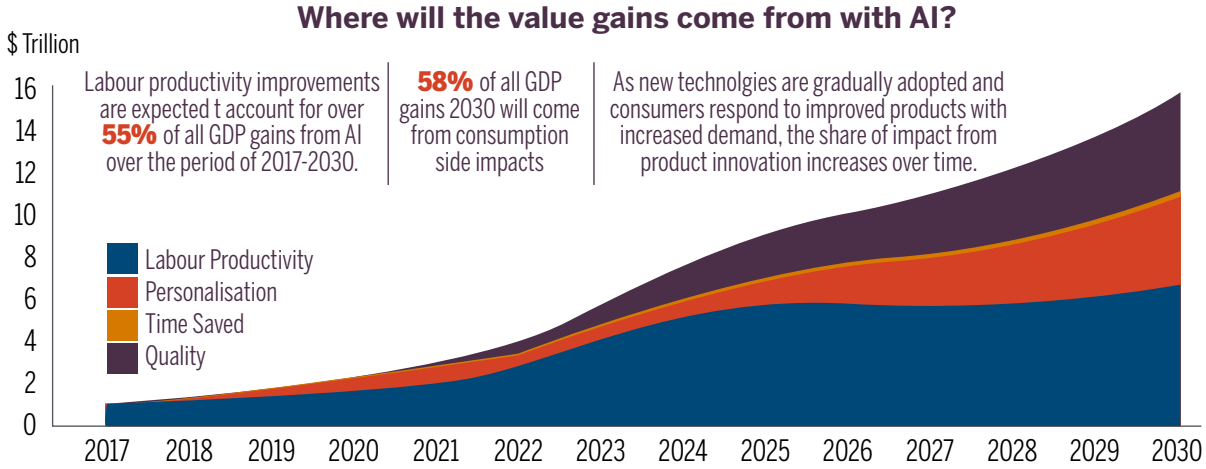
**Montrose Group Data Center Corporate Site Location Process**


Corporate site location for a data center is different than for other industries. Access to energy is the most important step in the corporate site location process for data centers with land use entitlements and economic development incentives to follow closely behind.

**Data Center Expansion Essential to the Booming AI Economy.** A data center is a physical facility that organizations use to house their critical computer applications and data. Several types of data centers operate including enterprise data centers that a single company houses on corporate campus; managed services data centers run by third party providers; colocation data centers where a company rents space within another's data center; and cloud data centers where off-premises data and applications are hosted by a cloud services provider such as Amazon Web Services (AWS), Microsoft (Azure), or IBM Cloud or others.

The growth of AI is what is driving the rapid demand for data centers. According to IBM, AI is technology that enables computers and machines to simulate human learning, comprehension, problem solving, decision making, creativity and autonomy, and applications and devices equipped with AI can see and identify objects. Computers are being programmed to understand and respond to human language, learn from new information and experience, make detailed recommendations to users and experts, and act independently, replacing the need for human intelligence or intervention. Generative AI is a type of artificial intelligence designed to generate content without human intervention, including text, images, and even music, and this technology uses complex algorithms and machine learning models to memorize patterns and rules from existing data that generates new content similar in style and structure.

Predictions of the macroeconomic impact of AI are all over the place but the technology is likely to lead to greater productivity. As an example, Goldman Sachs estimates that the use of Gen AI in finance is expected to increase global gross domestic product (GDP) by 7% or nearly $7 trillion, and it should boost productivity growth by 1.5%, and AI will start having a measurable impact on US GDP in 2027 and begin affecting growth in other economies around the world in the years that follow. The foundation of the Goldman Sachs forecast is the finding that AI could automate around 25% of labor tasks in advanced economies and 10-20% of work in emerging economies. PwC predicts, in the near-term, the biggest potential economic uplift from AI is likely to come from improved productivity which includes automation of routine tasks, augmenting employees' capabilities and freeing them up to focus on more stimulating and higher value adding work. PwC further predicts capital-intensive sectors such as manufacturing and transport are likely to see the largest productivity gains from AI, given that many of their operational processes are highly susceptible to automation, and the GDP uplift from product enhancements and subsequent shifts in consumer demand, behavior and consumption emanating from AI will overtake the productivity gains, potentially delivering more than $9 trillion of additional GDP in 2030.



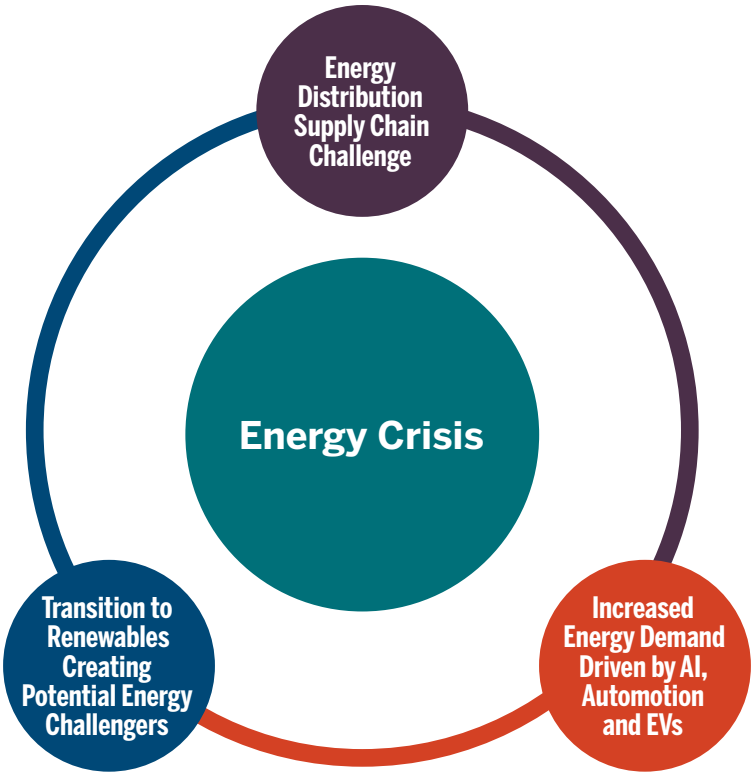

*Source: PwC*

According to JLL, the growing demand of AI is driving up demand for data center storage capacity which is expected to grow from 10.1 zettabytes (ZB) in 2023 to 21.0 ZB in 2027, for a five-year compound annual growth rate of 18.5%. Not only will this increased storage generate a need for more data centers, but generative AI's greater energy requirements – ranging from 300 to 500+ megawatts – will also require more energy efficient designs and locations. The need for more power will require data center operators to increase efficiency and work with local governments to find sustainable energy sources to support data center needs.

The reality is that AI is coming but its growth and expansion and economic productivity benefits are dependent on the development of more data center projects across the United States.

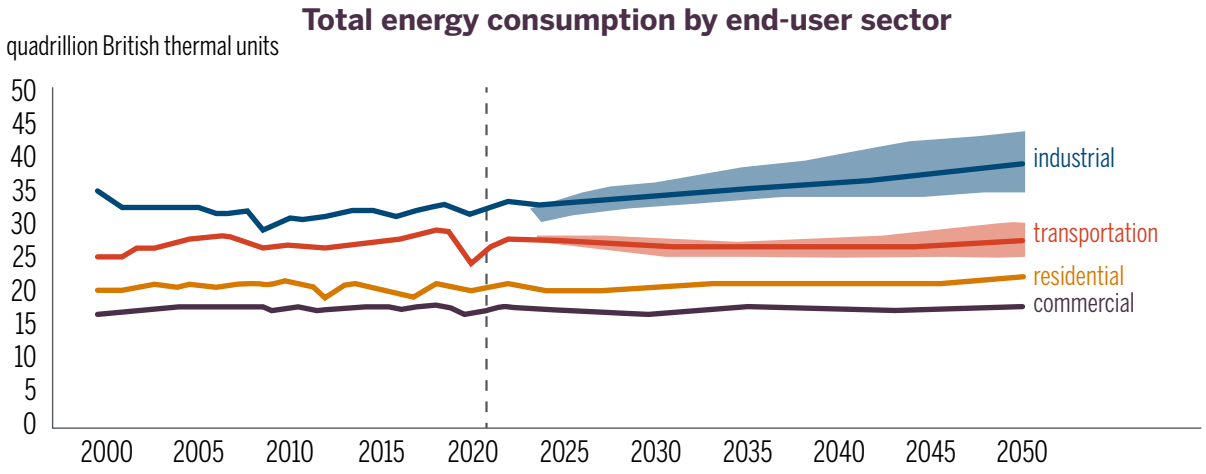
**Data Center Growth Prospects Impacted by Power Access.** Data centers are primarily located in or near major urban centers across the United States. CBRE reports that a continued worldwide power shortage is significantly inhibiting the global data center market's growth. Sourcing power is a top priority for operators across all regions, and secondary markets with ample power should attract more data center investment.[1] Vacancy rates continue to decline across most global markets due to strong demand, and large corporations face increasing difficulty securing data center capacity.[2] Low supply, construction delays and power challenges are impacting all markets, and the worldwide power shortage continues to fuel price increases for data center capacity.[3] AI advancements are projected to significantly drive future data center demand as high-performance computing will require rapid innovation in data center design and technology to manage rising power density needs.[4] Despite power supply issues, North American data center inventory grew by 24.4% year-over-year in Q1 2024, adding 807.5 MW across Northern Virginia, Chicago, Dallas and Silicon Valley.[5] Northern Virginia led with 391.1 MW of new supply, due to demand from public cloud providers and AI companies.[6]

The U.S. energy delivery system that ran the Industrial Revolution and made the United States a global economic powerhouse is facing substantial challenges that threaten the economic future of the nation, states, and regions.

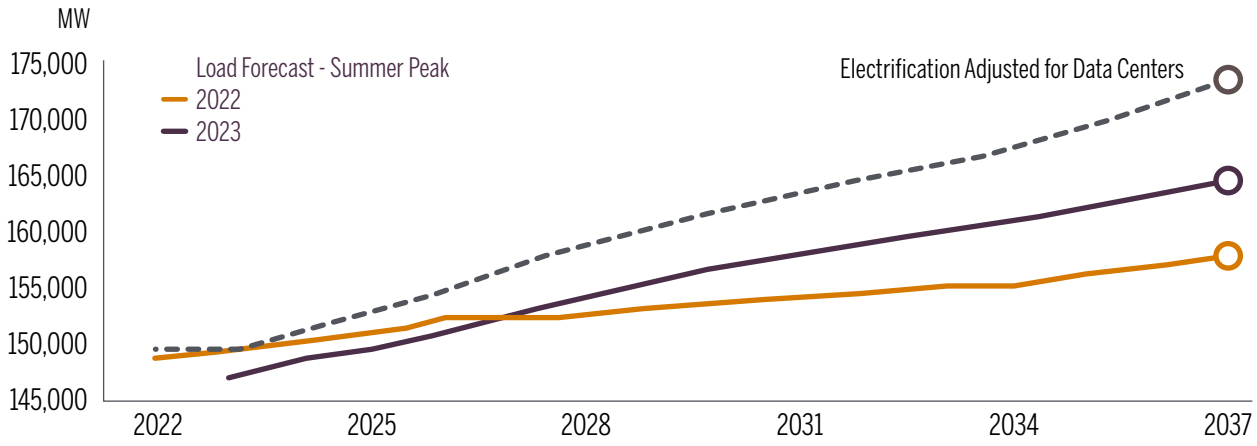


For the last several years, utilities throughout the United States have been facing COVID-19-based supply chain challenges for the materials needed to distribute electricity to customer sites. Some of the primary areas of concern include distribution transformers, conductors, utility poles, and large transformers. Utilities seeking to acquire all these components are seeing significant delays and steep price increases: a pad-mount distribution transformer, for example, now costs close to three times more than it did pre-pandemic, and lead times for delivery have increased by 12 months. Large transformer manufacturing will also have major long-term issues, with demand expected to double by 2027 and the steel industry already hitting maximum capacity. According to Deloitte, a combination of disruptors is driving supply chain gridlock and impacting end-to-end operations in the electric power sector. Pre-pandemic supply chain vulnerability, due to the geographic concentration of component manufacturing and critical minerals mining, has been compounded by the effects of the pandemic and the Russian invasion of Ukraine. California is even considering state legislation that would mandate utilities to connect development projects to the electric grid within eight weeks. This backlog can be credited in part to a shortage in labor and parts, but it is being exacerbated by a growing need for equipment driven by population growth, an abundance of infrastructure funding, broadband deployment, and pole attachment shot clocks increasing demand at a level that production cannot maintain.

At the same time, electric utilities are facing distribution supply chain challenges, and the consumption of all forms of energy is increasing in the United States according to the U.S. Department of Energy. Combined energy consumption in four U.S. end-use sectors—industrial, transportation, residential, and commercial—includes primary energy consumption, electricity use, and electricity-related losses. In the industrial sector, energy consumption will increase between 5% and 32% between 2022 and 2050, and, in the transportation sector, energy consumption ranges from a decrease of 10% between 2022 and 2050 to an increase of 8% as outlined in the chart below. Both sectors are heavily influenced by assumptions of economic growth; as the economy grows, they consume more energy.



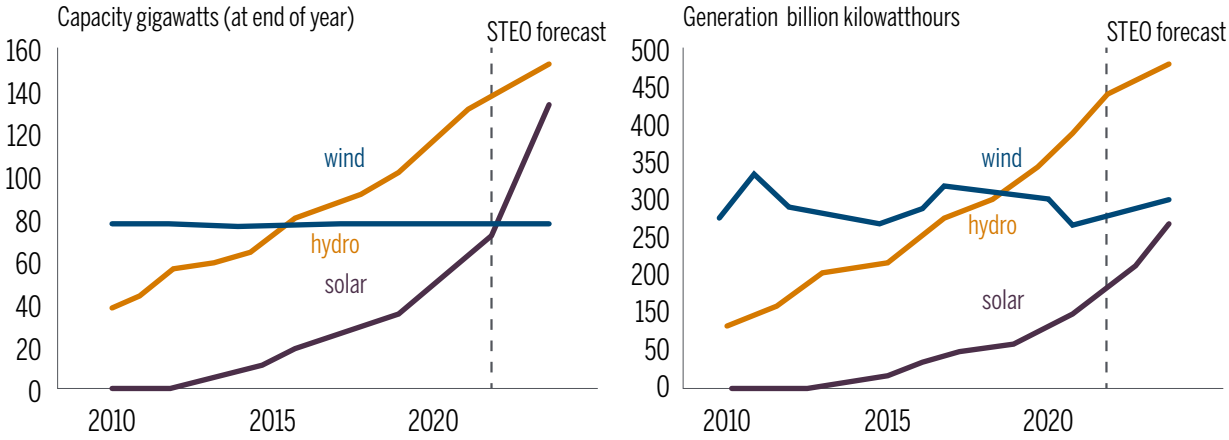
Data centers have the potential to double their energy usage by 2026, according to a recent International Energy Agency (IEA) report. IEA forecasts that data centers' total electricity consumption could reach more than 1,000 terawatt-hours (TWh) in 2026 with the electricity demand for data centers driven by new Artificial Intelligence (AI) applications equal to the energy consumption of Japan. In 2022, 460 terawatt-hours (TWh) were consumed by data centers, representing 2% of all global electricity usage—that amount is expected to jump to 6% by 2030. The share of U.S. electricity consumed in the transportation sector is also increasing as electric vehicles enter the marketplace.




In 2022, electric vehicles made up about a 6%–7% share of the U.S. vehicle market. As the adoption of EVs increases, electricity purchased for transportation reaches between about 0.6 quads and 1.3 quads in 2050, from 0.1 quads of purchased electricity in 2022, about a 900% to 2,000% increase across all cases. Due to the rise in electrification, PJM is forecasting significant long-term and medium-term load increases – more than 40,000 MW in the next 15 years.

At the exact time that electricity demand is dramatically on the rise, public policymakers are driving a transition of the U.S. sources of energy. According to the U.S. Department of Energy, in 2022, about 4,231 billion kilowatt-hours (kWh) (or about 4.23 trillion kWh) of electricity were generated at utility-scale electricity generation facilities in the United States. About 60% of this electricity generation was from fossil fuels—coal, natural gas, petroleum, and other gases. About 18% was from nuclear energy, and about 21% was from renewable energy sources.

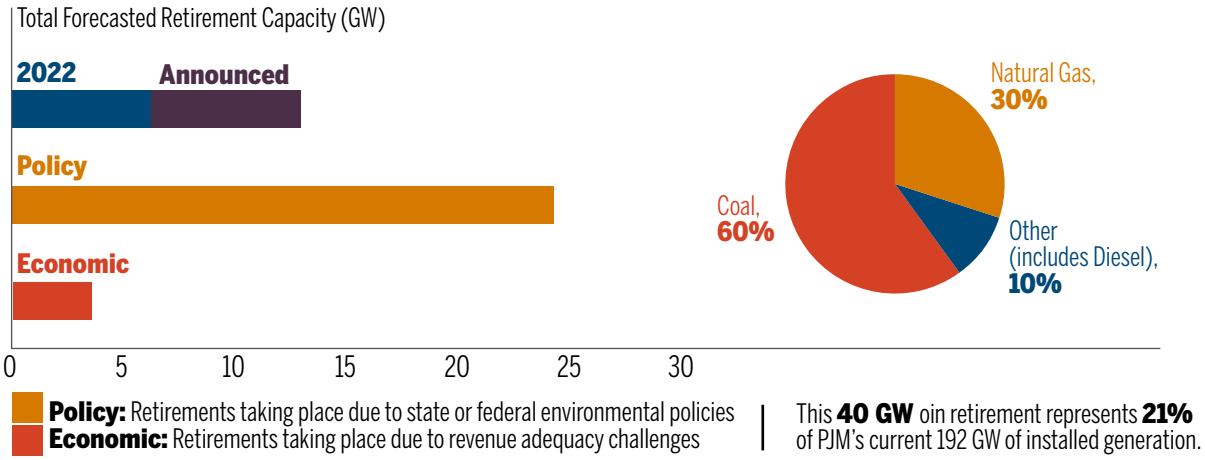
**U.S. power sector generating capacity and electricity generation 2010-2024**




The U.S. Department of Energy expects that new renewable capacity—mostly wind and solar—will reduce electricity generation from both coal-fired and natural gas-fired power plants in 2023 and 2024; however, renewable energy cannot power data centers. The "energy transition" creates challenges for the location of data centers in many parts of the United States.

**Federal Government Energy Policy Harming Data Center Expansion.** At the exact moment American industry needs additional electricity to make billions in economic investments, local, state, and federal government policymakers are disrupting efforts to generate that needed electricity. For supply to keep pace with demand given these trends, PJM needs as many new generation facilities to find their way onto the system as possible. PJM has cleared about 40,000 MW of projects through its study process that are, nevertheless, not getting built due to supply chain, financing, and siting issues. If this sluggish pace of development continues, PJM projects a shortfall in supply by the end of this decade – or sooner.

**Forecasted Retirements (2022-2030)**




The Biden Administration's battle against coal has intensified in recent months. The U.S. EPA proposed new coal power plant rules that mark the first time the federal government has restricted carbon dioxide emissions from existing coal-fired power plants. The rule also would force future electric plants fueled by coal or gas to control up to 90% of their carbon pollution. Driven by regulatory challenges, the United States is transitioning away from its reliance on coal for energy. The EPA's most recent rules suggest that coal plants that expect to retire by 2039 would face a less stringent standard but still would have to capture some emissions. Coal plants that are set to retire by 2032 would not be subject to the new rules. As a result, coal is dying as an energy source.

Instead, the Biden Administration is pushing billions in new funding to promote the use of renewable energy. However, not every region or state is running to develop renewable energy projects. A recent Columbia University study found that renewable energy projects have encountered significant opposition in at least 45 states with at least 228 local laws, ordinances, and policies being enacted in 35 states to restrict renewable energy projects. Many farmers do not like wind and solar projects taking up their neighbor's farmland.

In an age of political disruption and populism, many states are working to oppose the expansion of wind and solar projects.

- Ohio changed state law to give unique powers to townships and counties to decide if wind and solar projects will benefit their communities. This unprecedented move is leading to the decline in wind and solar projects located in Ohio which was the clear goal of the law change. Again, a Columbia University study pointed out that until October 2022, the Ohio Power Siting Board had never rejected an application for a solar energy project. Since October 2022, however, the Board has rejected at least three such applications (Birch Solar, Cepheus Solar, and Kingwood Solar). In addition, between April 2022 and March 2023, at least 11 counties in Ohio adopted binding resolutions to prohibit large renewable energy projects in all their unincorporated territories or large swathes of those territories. There are now at least 13 counties in Ohio that have adopted such resolutions since October 2021, when a state law allowing counties to establish restricted areas went into effect (these include Allen, Auglaize, Butler, Crawford, Columbiana, Hancock, Knox, Logan, Marion, Medina, Ottawa, Seneca, and Union).
- In March 2023, Buffalo County, Nebraska, adopted an exceptionally restrictive wind ordinance, which requires that turbines be set back 3 miles from the nearest property lines and 5 miles from any village or city. At least 8 other Nebraska counties also require that wind turbines be set back by at least 1 mile from either property lines or dwellings, including Wheeler (5 miles from dwellings), Thomas (3 miles from property lines), Hamilton (2 miles from property lines), Dakota (2 miles from dwellings), Brown (1 mile from property lines), Gage (1 mile from property lines), Otoe (1 mile from property lines), and Jefferson (1 mile from dwellings). Meanwhile, Stanton County has effectively banned commercial wind projects altogether.
- In Virginia, at least 7 counties adopted restrictive solar ordinances or moratoria between June 2022 and May 2023 (these include Charlotte, Culpeper, Franklin, Halifax, Page, Pittsylvania, and Shenandoah). Some of these are exceptionally burdensome. For example, Pittsylvania County now prohibits the construction of any solar farm within 5 miles of any other solar farm and limits utility-scale solar projects to 2% of the total acreage of any zoning district. Franklin County has imposed a countywide cap of 1,500 acres for all ground-mounted solar projects.
- Since September 2022, at least two Michigan townships (LaSalle and Milan) have adopted ordinances limiting utility-scale solar energy projects to industrial districts and prohibiting such projects on land zoned for agricultural use.
- In Wisconsin, 4 towns in Dane County (Deerfield, Dunn, Springfield, and Westport), have policies to restrict solar from agricultural land.

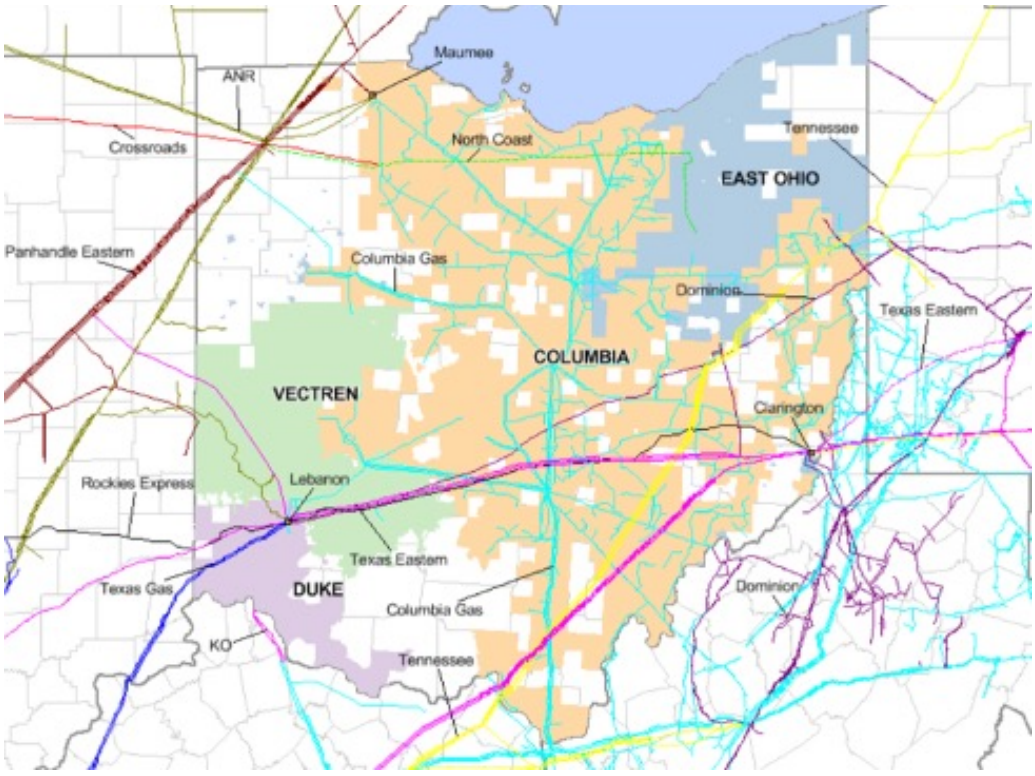
The delegation of state energy policy and regulation happens at the same time national energy policy is closing all the coal power plants that have kept the Industrial Midwest running at full steam. Add in data centers and continued manufacturing growth with some EVs on the streets and you have a disaster looming in America's industrial heartland from an electricity generation standpoint. This disconnects between local, state, and federal government policymakers puts in jeopardy the economic success of the United States and needs a solution to address this budding energy crisis.

**Innovative Energy Solutions Critical to Future Data Center Growth.** Solutions to America's energy crisis focus on increased investment in the electric grid, creating new utility rate approaches, and capturing natural gas to build data center power plants. Energy-intensive industries can address their energy demand challenge by maximizing energy efficiency, enhancing demand flexibility, getting more out of existing grid infrastructure, and negotiating for additional carbon-free energy and storage. However, often, engineering solutions are not enough to address the long-term demand for electricity for these facilities. Regulators and new power sources are seen as a short-term and long-term solution for America's current energy crisis.

Investor-owned utilities are working with regulators to find new approaches to serve energy-intensive projects such as data centers. American Electric Power, a Columbus, Ohio-based investor-owned utility, is proposing to create a new rate category with data centers increasingly angling to come online in the Central Ohio region. The plan recently filed before the Public Utilities Commission of Ohio would place data center customers and cryptocurrency mining and mobile data center operations into a new category to insulant other customers from shouldering those costs. Those impacted by the proposal would include data centers with a load greater than 25 megawatts and cryptocurrency/mobile centers with loads greater than 1 megawatt. Those customers must agree to specific requirements – including a 10-year commitment by data centers to pay for 90% of the energy they anticipate needing – before the utility pursues infrastructure buildout to serve them. Data centers would have to meet that 90% obligation even if they utilize less energy than anticipated.

The Federal Energy Regulatory Commission (FERC), which oversees wholesale electricity markets, adopted new rules that are designed to make it easier for big regional transmission projects to get approval. FERC approved two rules, one that will require companies that produce and transmit electricity to weigh factors such as supply and demand over at least two decades and another that addresses permitting critical projects in areas that lack adequate transmission capacity. The long-term plans will need to account for the impact of extreme weather tied to climate change along with the cost of projects. By expanding transmission capacity, regions hit by weather disasters will be more resilient because they can access power from other parts of the country.

Developing new, on-site energy production is the short-term solution for energy-intensive projects that cannot gain electricity in the near term from overloaded electric utilities. Natural gas combustion turbines are a new energy power source for data centers near a major natural gas line. Dedicated gas turbines can also combine with energy storage systems, allowing data centers to store excess energy during times of low demand, ready for use in periods where demand is higher. Two types of gas engines, high-speed and medium speed, are used in modern power engineering. High-speed technology, with speeds over 1000 rpm, is used in smaller-scale engines of up to 4 MW per unit, whereas medium-speed technology (typically 750 rpm for 50 Hz and 720 rpm for 60 Hz) is used for sizes above that. Combined cycle technology additionally increases electrical efficiency by more than 15% by using the waste heat from the gas turbine to produce steam in a heat recovery steam generator, which powers a steam turbine according to Siemens. This ingenious setup requires slightly more space but generates the highest amount of electricity from the fuel combusted in the process. Electrical efficiencies of up to 63% and more might be achieved again according to Siemens.

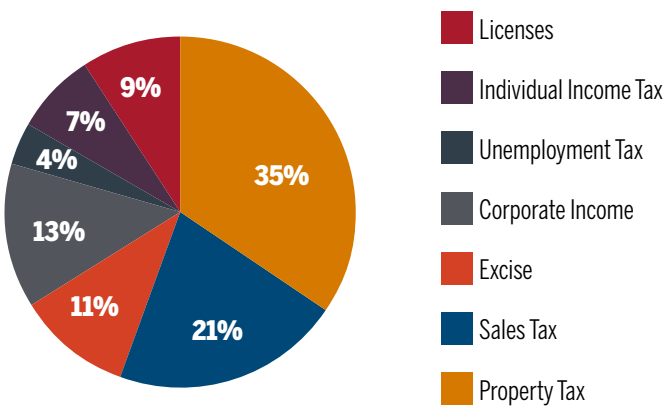


Building an on-site power plant for an energy-intensive project is an aggressive solution for meeting a project's energy demand but is not a simple process. First, these sites must gain access to a large amount of natural gas which usually means a connection to large-scale natural gas pipelines. As the Ohio Gas Association map above illustrates, states like Ohio with a boom in shale natural gas are fortunate to have substantial natural gas pipelines traveling across the state. To support building connections for a combined natural gas combustion facility at an energy-intensive site, communities and companies may want to utilize Ohio's new Infrastructure Development Rider (IDR) through the PUCO that permits natural gas utilities to assess their customers a charge to cover the cost of developing natural gas infrastructure for job-producing sites as supported by JobsOhio and regional economic development leaders.

New regulations, technology and power sources will be the key to addressing America's current energy crisis as regions and companies work to meet the increased demand for electricity in the next step of the Information Age.

**Data Center Development Impacted by Local and State Tax Policy.** Few industries are as sensitive to tax policy and incentives as data centers. Other than needing a small number of highly skilled high-tech workers, these facilities need a location safe from natural disaster, with reliable and affordable electric rates and water, and a competitive tax structure. Data centers pay substantial sales and property taxes based upon the high cost of the technology and equipment that operates within the walls of these 21st Century industrial facilities. Unfortunately, these two tax categories remain the prime local and state taxes paid by U.S. companies according to the Council for State Taxation as illustrated by the pie chart below.

**Local & State Taxation on U.S. Business**




According to the Tax Foundation, most states exempt manufacturing machinery from their sales tax other than Alabama, Hawaii, Kentucky, Mississippi, Nevada, New Mexico, North Dakota, South Dakota, and the District of Columbia.[7] In most states, businesses not only pay taxes on their real property (land and structures), but also on their machinery, equipment, fixtures, and supplies, which are classified as tangible personal property (TPP).[8] Arizona, Colorado, Idaho, Indiana, Michigan, Montana, and Rhode Island have TPP tax de minimis exemptions of $50,000 or more, while Florida, Georgia, Kentucky, and Utah have lower exemptions.[9] Ohio, New Mexico, Pennsylvania, New York, New Hampshire, New Jersey, Delaware, Illinois, Wisconsin, Iowa, Minnesota, North Dakota and South Dakota all fully exempt TPP from taxation providing a substantial benefit to data center development.[10] 19 states offer some form of property tax abatements data centers can attempt to gain through a corporate site location process. Sales tax is another substantial cost center for both the operation and construction of data centers, and many states offer aggressive economic development incentives to address their high sales tax costs which often provide revenue for local and state governments. As outlined below, many states offer a state sales tax exemption tax incentive.

**State Data Center Tax Incentives Offers Support for Tech Investment.** As most data centers are not "worker heavy" traditional state data center tax incentives are not focused on the job creation tax credits used for other industries but instead address sales and property taxes, construction, and electricity costs. Data centers may be eligible for local or state economic development incentives depending upon the state law. Most are focused on the size of the capital investment as the prime trigger for local and state data center tax incentive eligibility. 25 states offer some form of local and/or state economic development incentive to encourage the growth of data centers. The list below outlines the existing local and state data center tax incentive programs.

**Local and State Data Center Tax Incentive Programs**

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| Alabama data processing center projects are eligible for a tax abatement of all state and local non-educational sales and use taxes associated with constructing and equipping a project for an extended time contingent upon the total capital investment in the project. For these projects, the maximum abatement period is: 10 years for projects that invest up to $200M within 10 years from the commencement of the project; 20 years for projects that invest over $200M but less than $400M within 10 years from the commencement of the project; 30 years for projects that invest over $200M within 10 years from the commencement of the project and exceed $400M within 20 years from the commencement of the project. |
| Arizona offers data centers an exemption from the Transaction Privilege Tax and Use Tax exemptions at the state, county, and local levels, on qualifying data center purchases for an owner, operator or qualified co-location tenant of a data center who may receive the exemptions provided by the incentive for up to ten full calendar years following the year certification of the data center is issued. If the data center qualifies as a Sustainable Redevelopment Project, the exemptions are available for up to 20 full calendar years following the year certification of the data center is issued. If the data center is located in either Maricopa or Pima County, a Capital Investment of at least $50 million is made within five years of the date of the Letter of data center Certification from the Arizona Commerce Authority, if the data center is located in any county other than Maricopa or Pima, a capital investment of at least $25 million is made within five years of the date of the Letter of data center certification from the Arizona Commerce Authority; or, in the case of an existing data center, regardless of location, a capital investment of at least $250 million was made during the period between September 1, 2007 and August 31, 2013. |
| Arkansas has enacted legislation that creates a sales and use tax exemption for qualifying data center equipment and costs and certain services provided to a data center. The sales and use tax exemption will apply to data center equipment, eligible data center costs. services purchased for the purpose of and in conjunction with developing, acquiring, constructing, expanding, renovating, refurbishing, and operating a qualified data center, and electricity used by a qualified data center. To be eligible for the exemption, a data center must: Invest at least $500 million within five years of the issuance of a certificate of occupancy by the relevant local building authority; pay an aggregate annualized compensation of at least $1 million to employees within the state; apply and receive approval from the Arkansas Economic Development Commission (AEDC); and certify annually to AEDC that it meets the minimum requirements of investment and compensation. |
| Florida extended the data center sales tax exemption through June 30, 2027. The exemption, which went into effect on July 1, 2017, is Florida's first official tool to attract data center investment. The exemption eliminates sales tax and use tax for data centers, infrastructure, equipment, personal property, and electricity. The extension also changes the operational date of the qualified data center from June 30, 2022, to June 30, 2027. To qualify for the exemption, a company must make a minimum $150 million cumulative investment, the data center must have a critical load of at least 15MW and a critical load of at least 1MW per each individual owner or tenant in the facility, applications for exemption certificates must be made to the Florida Department of Revenue; and reporting to the Department of Revenue will be required to demonstrate the exemption was utilized to the letter of the law. Several of Florida's larger utility companies already have economic development programs in place to attract heavy users, such as data centers. The legislation creating the data center sales and use tax exemption requires a review by the Florida Department of Revenue to assure continued qualification. It also contains a "claw back" provision if it is determined that the data center property does not meet the criteria for exemption. |

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| Georgia offers two possible ways for data centers to qualify for sales and use tax exemptions on qualifying purchases: New (signed into law May 2018): Co-located data centers and single-user data centers that invest $100 million to $250 million in a new facility may qualify for a full sales and use tax exemption on eligible expenses, which include equipment under current data center exemption and computers, emergency backup generators, air handling units, cooling towers, energy storage or energy efficiency technology and many other items and the minimum required investment in the new facility is tied to the population of the county in which the data center locates; and Georgia also has a full sales and use tax exemption on certain computer equipment purchased by high-tech companies that invest a minimum of $15 million in qualifying equipment. To be eligible, the company must be classified under certain relevant NAICS codes, which include single-user data centers (but not co-located data centers), software publishers, computer systems design, certain telecommunications firms, financial transaction processing facilities and R&D centers. |
| Idaho offers new data centers a potential sales tax exemption on server equipment as well as construction materials used in the construction of the data center facility for companies that create and maintain at least 30 new jobs in Idaho within the first two years after beginning operations, paying an average wage that is at or above the county average for the county in which the data center is located and make a capital investment of at least $250,000,000 within 5 years after construction begins and be solely devoted to the purpose of providing the data center, or have a separately operated segment of a business solely devoted to the purpose of providing the data center. |
| Illinois' data centers investment program provides data center owners and operators with a tax credit of 20% of wages paid for construction workers for projects located in underserved areas with new and existing data centers and their tenants collectively making a capital investment of at least $250 million over a 60-month period for a term of 20 years, the data center owner/operator and its tenants create at least twenty (20) full-time or full-time equivalent new jobs associated with the operation or maintenance of the data center, total compensation for these jobs must be equal or exceed 120% of the median wage paid to full-time employees in the county where the data center is located, the data center must also be carbon neutral or attain certification under one or more green building standards and located in an underserved area. |
| Indiana Data Center Gross Retail and Use Tax Exemption provides a sales and use tax exemption on purchases of qualifying data center equipment and energy to operators of a qualified data center for a period not to exceed 25 years for data center investments of less than $750 million. If the investment exceeds $750 million, the IEDC may award an exemption for up to 50 years. Indiana local governments may also provide a personal property tax exemption on qualified enterprise information technology equipment to owners of a data center who invest at least $25 million in real and personal property in the facility. |
| Iowa data centers may be eligible for 50 or 100 percent refund on sales and use tax for: electricity purchased for use in data centers; power infrastructure equipment; computer purchases; temperature control equipment; cool tower equipment; racking systems, including cabling. |
| Kansas permits public investor-owned utilities with final approval by the Kansas Corporation Commission to provide a competitive rate to new customers with an electric demand of 50 MW or larger for eligible customers that include non-retail industries such as data centers, aviation, and other large-scale industrial development. Customers benefit from the special rate for 10 years, and a new load of at least 50 MW must be located at a single location. Renewable resources can be incorporated into the rate making, providing for additional savings, and allowing customers to meet their corporate goals. |
| Kentucky offers a tax exemption for the sale, purchase, use, storage, consumption, installation, repair, and replacement of data center equipment such as servers, routers, connections, monitoring, security systems, fiber optic cabling and network equipment, computer software, and other tangible personal property essential for operating the data center that may be purchased exempt from sales and use tax following preliminary approval of the project. Excluded from the exemption are construction equipment and building and construction materials that are to be permanently incorporated as an improvement to real property, electricity used by the facility, and administrative office equipment. To be eligible for the sales tax exemption, the data center must meet the requirements of and be approved by the Kentucky Economic Development Finance Authority, and this exemption is limited to sites within a consolidated local government having a population equal to or greater than five hundred thousand (500,000). |

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| Louisiana offers s a tax rebate on the sale of specific data center and communications equipment within the state, it applies to all certified data center facilities in Louisiana, as designated by the Department of Economic Development, and the tax break covers a wide range of equipment essential to data center operations, including: servers, routers, cabling, other hardware and software, power and cooling systems, and water conservation technologies. To qualify for these incentives, data center projects must meet stringent criteria, such as creating a minimum of fifty new direct, permanent jobs in Louisiana and involving at least $200 million in new capital investment in the state between July 2024 and July 2029. The tax benefits are structured to last for a period ranging from 20 to 30 years. |
| Maryland data centers that for a 10-year consecutive benefit period create five jobs over three years paying 150% of state minimum wage and make a minimum investment of at least $2 million in qualified data center personal property for a business located within a Tier 1 Area, and at least $5 million in qualified data center personal property for a business located in any other area of the State, and the benefit period expands to 20 years, subject to annual renewal, if the business invests at least $250 million in qualified data center personal property within the first ten years after submitting an application. |
| Minnesota companies that build data or network operation centers of at least 25,000 square feet and invest at least $30 million within 48 months may qualify for a sales tax exemptions for up to 20 years on: computers and servers; cooling and energy equipment; energy use; software; and pay no personal property tax, and Minnesota does not tax: personal property, inventories, utilities, internet access, information services, and custom-created software, and companies that substantially refurbish a data or network operations center of at least 25,000 square feet and invest at least $50 million within 24 months may qualify for the Data Center Sales Tax incentives. |
| Mississippi provides data centers with a sale and use tax exemption for all new and replacement computing equipment and software. Data centers must invest at least $20 million and must create at least 20 new jobs paying 125 percent of the average state wage to qualify for this program. |
| Missouri offers a data center company or a consortium of eligible companies who plan to locate at a new or existing data center facility with at least 5 new full time jobs with average wages at 150% of county average wage within 24 months and $5 million dollars in new investment within 12 months of the project approval, or at least 10 new full time jobs with average wages at or above 150% of county average wage and $25 million dollars in new investment within 36 months of the project approval, for an existing facility, an exemption on state and local sales and use taxes used for expanding operations for a specified maximum amount for each year for 10 years or, for new facilities an exemption of 100% of the state and local sales and use taxes for a specified maximum amount for each year for 15 years applied to construction or rehab materials; machinery and equipment purchases; and utility costs over a designated term at the facility, and projects may be eligible for a local government property tax abatement through the Chapter 100 Bond program. |
| Montana offers Qualified Data Centers with at least 25,000 square feet of new or expanded area, where the total cost of land, improvements, personal property, and software is at least $50 million invested during a 48-month period with construction commencing after January 1, 2019 a property tax abatement of 75% or 50% of their taxable value in the first five years after a construction permit is issued, with each year thereafter, the percentage must increase by equal percentages until the full taxable value is attained in the tenth year, approved by the corresponding county jurisdiction. |
| Nebraska offers Tier 2 data centers valued at $200 million in new investment and 30 new full-time jobs a full refund of the sales tax paid for qualified capital purchases at the project, the full sliding scale wage credit of 3%, 4%, 5%, or 6% depending on wage level, and a 10% investment tax credit. |
| Nevada offers a sales and use tax abatement reducing the rate to 2% for 10 or 20 years and requires the Governor's Office of Economic Development Board to approve a reduction to 2% by a two-thirds vote, and if this is not approved, the abatement will be reduced to 4.6%, and a 10 year and a 20 year tax abatement program: 10 year abatements: requires within 5 years creation of 10 jobs for Nevada residents paying 100% of the statewide average wage making $25 million in capital expenditures; and 20 year abatements: requires within 5 years creation of 50 jobs for Nevada residents paying 100% of the statewide average wage making $100 million capital expenditures. Co-located tenants must enter into a minimum two-year agreement with the applicant to use or occupy space at the data center and obtain a business license issued by the Secretary of State; and data centers must maintain the business in Nevada for 10 years, register pursuant to the laws of Nevada, offer medical insurance plan, and pay at least 65% of the plan's premium costs, and ensure that 50% or more of all workers engaged in construction of the data center are Nevada residents. |

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| New Jersey created the Next New Jersey program that provides $500 million to extend tax incentive awards of up to $250 million to firms that draw more than half their revenue or devote more than half their staff to AI development. To be eligible, a project must include at least $100 million of capital investment and create at least 100 jobs, and the New Jersey Economic Development Authority will administer the program. Awards under the program are based on the number of jobs created by a project. Each new job would win an awardee 0.1% of its total capital investment, to a cap of 25% of $250 million, whichever is lower. |
| New York for an Internet data center operator who operates a data center specifically designed and constructed as a high security environment for the location of servers and similar equipment that hosts Internet Web sites; and provides uninterrupted Internet access to customers' Web pages exempts the payment of sales tax on the purchase or use of machinery, equipment, and certain other tangible personal property that includes: computer system hardware, such as servers and routers; pre-written computer software; storage racks and cages for computer equipment; property necessary to maintain the appropriate climate-controlled environment, such as air-filtration equipment, air-conditioning equipment, and vapor barriers; power generators and power conditioners; property that will constitute raised flooring when installed; and other similar equipment, as well as building systems that are designed for an Internet data center, such as interior fiber optic and copper cables; fire control, such as fire suppression equipment and alarms; and maintaining a secure environment, such as protective barriers if the exempt property is placed or installed in the Internet data center for use there; and required for and directly related to providing Internet Web site services for sale, and Internet data center operators may purchase the following services exempt from tax when the services are provided directly to or in relation to exempt Internet data center property: installing, maintaining, servicing, and repairing qualified tangible personal property; maintaining, servicing, and repairing qualified real property; and protective and detective services. |
| North Carolina provides three sales and use tax exemptions for purchase of electricity and support equipment providing service or function included in the business of an owner, user or tenant of the data center, the generation, transformation, transmission, distribution or management of electricity, including exterior substations, generators, transformers, unit substations, uninterruptible power supply systems, batteries, power distribution units, remote power panels and other capital equipment for these purposes; HVAC and mechanical systems, including chillers, cooling towers, air handlers, pumps and other capital equipment used for these purposes; and hardware and software for distributed and mainframe computers and servers, data storage devices, network connectivity equipment and peripheral components and equipment, or providing related computer engineering or computer science research purchased for a "Qualifying Data Center investing $75 M within 5 years paying the county wage standard and providing health insurance, certain business property purchased for an "Eligible Internet Data Center" in Tier 1or 2 North Carolina counties for projects investing $250M within 5 years focused on software publishing; and computer software, defined as a set of coded instructions designed to cause a computer or automatic data-processing equipment to perform a task, at a "Data Center" that is defined as a facility that provides infrastructure for hosting or data-processing services and is concurrently maintainable, the power and cooling systems serving the computer equipment must include redundant capacity components and multiple distribution paths, and, although the facility must have multiple distribution paths serving the computer equipment, a single distribution path may serve the computer equipment at any one time. |
| Ohio provides a sales-tax exemption on the purchase of eligible data center equipment including equipment cooling systems to manage the performance of computer data center equipment, to generate, transform, transmit, distribute, or manage electricity necessary to operate the tangible personal property used or to be used in conducting a computer data center business, and building and construction materials sold to construction contractors for incorporation into a computer data center with $100M investment and $1.5M in payroll, and data centers are eligible for property tax abatements negotiated at the local government level. Ohio also permits local governments to award a property tax abatement through either the Community Reinvestment Area (CRA) that abates the future growth of real property tax or Enterprise Zone (EZ) program that abates the growth of real and personal property tax, and usually involves a compensation agreement to provide a Payment-In-Lieu of Taxes (PILOT) to the local governments and school districts. Large scale, billion-dollar investment projects may also qualify for Ohio's Megaproject Tax Incentive that can double the term of the Ohio Job Creation Tax Credit and CRA and EZ programs. |

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| North Dakota owners, operators, and tenants of a qualified data center may be granted a sales tax exemption on information technology equipment and computer software, including replacement equipment and software, purchased after December 31, 2020. To qualify, a data center must be a newly constructed or refurbished facility located in North Dakota of at least 15,000 square feet of which 50% is used for data processing. |
| Oklahoma computer services and data processing facilities in NAICS codes Numbers 5112 and 5415 may be eligible for a 5 year exemption from Ad Valorem Tax if they derive at least 50% of their annual gross revenues from the sale of a product or service to an out of state customer or buyer, invest $250,000 or more in construction, acquisition or expansion cost of the manufacturing facility and; have a net increase in annualized payroll of at least $250,000 if the facility is located in a county with a population of fewer than 75,000, or at least $ 1 million dollars if the facility is located in a county with a population of 75,000 or more in the initial application year. Establishments in NAICS codes 5142 must meet the following qualifications: 80% of annual gross revenues from the sale of a product or service to an out of state customer or buyer; invest $7 million dollars or more in capital improvements and; have a net increase in annualized payroll of at least $250,000 if the facility is located in a county with a population of fewer than 75,000, or at least $1 million dollars if the facility is located in a county with a population of 75,000 or more in the initial application year. Local governments may create a Tax Incentive District to waive part of the data center's excise taxes on the development. |
| Oregon data centers may gain a local government enterprise zone property tax abatement on the new plant and equipment for 3-5 years in rural communities. |
| Pennsylvania's Computer Data Center Equipment Program exempts from Pennsylvania sales and use tax when it is sold to, used, or consumed in a certified data center by an owner, operator or qualified tenant holding a Computer Data Center Sales and Use Tax Certificate of Exemption issued by the department. |
| South Carolina may exempt from some sales and use taxes when a data center is expanding and/ or new facility is certified by the South Carolina Department of Commerce as a qualifying datacenter and invests at least $50 million (or a combined $75 million with one or more other companies) in real or personal property at a single facility over a five-year period, create at least 25 new jobs within a five-year period with an average wage that is at least 150% of the state or county per capita wage, whichever is lower, and maintain the 25 jobs for at least three years. The items that may be exempt from sales and use tax are computer equipment, software and electricity directly used in datacenter operations, and once qualified for this exemption, all future computer equipment purchases are exempt. |
| Tennessee offers data centers a sales tax exemption for certain hardware and software purchased for a qualified data center with a minimum capital investment of $100M and 15 new full-time positions paying at least 150% of the state's avg. occupational wage; investment must be made during a 3 yr. period but can be extended to 5 yrs. for investments under $1B or 7 yrs. for investments exceeding $1B with the state's permission.[xxvi] |
| Texas offers data centers with 100,000 sq. ft. creating 20 and $200M in capital investment over a 5-year period that are constructed or refurbished for use primarily as a facility to house servers and related equipment and support staff in the processing, storage and distribution of data, have, or will have, an uninterruptible power source, generator backup power, a sophisticated fire suppression and prevention system, and enhanced physical security that includes restricted access, video surveillance and electronic systems, not be used primarily by a telecommunications provider to deliver telecommunications services; and not be subject to an agreement limiting the appraised value of the data center's property can qualify for a 100% exemption on sales and use tax. |
| Virginia offers data centers equipment sales tax exemption for projects with $150M investment creating 50 jobs paying 150% of average wage or 25 jobs in underserved markets in Virginia Enterprise Zones and permits end users at the data centers to gain access to the incentive. |
| Washington offers data centers a retail-sales and use tax exemption for purchases and labor installation costs for eligible server equipment and power infrastructure through a rural and urban center data center sales tax exemption program. |

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| West Virginia values tangible personal property, including servers, directly used in a high-technology business or in an Internet advertising business, for property tax purposes at 5% of the original cost of the property, and eliminates the sales tax from all purchases of prewritten computer software, computers, computer hardware, servers, building materials and tangible personal property for direct use in a high-technology business or internet advertising business. |
| Wisconsin offers a Data Center Sales and Use Tax Exemption for projects that involve buildings constructed or rehabilitated to house a group of networked computer servers to centralize the processing, storage, management, retrieval, communication, or dissemination of data and information. A company can apply for the exemption based on a plan to invest at least $150 million over five years in a county with population greater than 100,000, $100 million in a county with population between 50,000 and 100,000, or $50 million in a county with population of 50,000 or less. |
| Wyoming offers several data center incentives including a $2.25M max grant for Managed Data Center Cost Reduction Grant Program Is a $2.25 Million to reimburse accrued utility expenses for power or broadband over 3 years and for each grant the business must create a match of at least 125% of the grant amount in payroll and capital expenditure with the caveat that 50% of the match will be in payroll creation, and have a payroll must be greater than 150% of the county's median wage, a Data Center Permit Exemption for a mega-data center project which exceeds $178.3 Million in capital investment, would be exempt from the requirement of applying for an Industrial Siting Permit through the Wyoming Department of Environmental Quality providing a cost savings of approximately $500,000 associated with permit application preparation, wildlife studies, economic analyses, public meetings, permit hearings, attorney fees, etc., a Data Center Sales Tax Exemption that requires a $5 Million investment in capital infrastructure (building, walls, engineering, dirt work, etc.) in a Wyoming location in addition to a $2 Million or larger investment in data center equipment (servers, peripheral equipment and data center containers) and software purchases, and the Wyoming Legislature approved a $15,000,000 appropriation to assist Wyoming cities, towns and counties to build necessary public infrastructure for the recruitment and operation of data centers. |

Most states across the United States are using economic development incentives to recruit data centers to their marketplace through tax credits, exemptions, and abatements.

[1] https://www.cbre.com/insights/reports/global-data-center-trends-2024#:~:text=Despite%20power%20supply%20issues%2C%20North,cloud%20providers%20and%20AI%20companies.
[2] Ibid.
[3] Ibid.
[4] Ibid.
[5] Ibid.
[6] Ibid.
[7] https://taxfoundation.org/data/all/state/state-tax-manufacturing-machinery-2019/
[8] https://taxfoundation.org/data/all/state/state-tangible-personal-property-taxes-2024/
[9] Ibid.
[10] Ibid.