ALLIANCE for the GREAT LAKES

A Regional Playbook for Managing Data Center Impacts in the Great Lakes

EDUCATION, TOOLS, POLICIES, AND COMMUNITY ACTIONS

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About the Alliance for the Great Lakes

The Alliance for the Great Lakes is a nonpartisan nonprofit working across the region to protect our most precious resource: the fresh, clean, and natural waters of the Great Lakes. Our mission is to protect, conserve, and restore the Great Lakes, ensuring healthy water in the lakes and in our communities for all generations of people and wildlife. We advance our mission as advocates for policies that support the lakes and communities, by building the research, analysis, and partnerships that motivate action, and by educating and uniting people as a voice for the Great Lakes. More at greatlakes.org.

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ACRONYMS	
AGL	Alliance for the Great Lakes
CBA	Community Benefit Agreement
EANY	Environmental Advocates New York
EPA	Environmental Protection Agency
EUI	Energy-use Intensity
genAI	Generative artificial intelligence
GL	Great Lakes
HEC	Hoosier Environmental Council
IoT	Internet of Things
MCEA	Minnesota Center for Environmental Advocacy
MGD	Millions of Gallons per Day
MW	Megawatts
NbS	Nature-based Solutions
NDA	Non-disclosure agreements
OEC	Ohio Environmental Council
PILOTs	Payments in Lieu of Taxes
PJM	Pennsylvania – Jersey – Maryland
WUI	Water-use intensity

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A Regional Playbook for Managing Data Center Impacts in the Great Lakes

EDUCATION, TOOLS, POLICIES, AND COMMUNITY ACTIONS

1. Why This Regional Playbook?

This guide is designed for residents, concerned citizens, grassroots organizations, and local leaders across the Great Lakes Region seeking clear, accessible information to understand the rapid growth of data centers and their impacts on water, energy, land use, community health, and local economies. **The playbook brings together a compilation of ideas, data, and practical tools, drawing from existing toolkits, guidance documents, and best practices developed by state advocates, organizations, and communities across the Great Lakes region.**

By helping readers understand the processes and the potential consequences, identify the right questions to ask, and navigate local and regional decision-making processes with confidence, this playbook supports informed participation, community advocacy, and coordinated action. Its aim is to ensure that water resources are protected for people, ecosystems, and future generations. It also highlights the importance of state-level advocacy. **Ultimately, we cannot rely solely on local decisions to protect a water system shared across eight states. We must advance state policies that lead to responsible, transparent, and sustainable development.**

Communities across the Great Lakes are increasingly surprised by proposals for large-scale water use developments, from manufacturing plants, food and beverage facilities, and energy projects to data centers. These proposals often move quickly and can come up with significant water demands that are not always clearly explained to residents or local leaders. Data centers have become a growing concern, as their water use, energy needs, and long-term impacts on local water supplies are often unfamiliar to communities, and difficult to assess without clear information and transparency. Although the Great Lakes region is often viewed as “water-rich,” its rivers, wetlands, aquifers, and near-shore systems are finite, interconnected, and already under pressure from legacy pollution, growing withdrawals, and climate variation. Data centers, which power the digital services we rely on daily, from cloud computing to streaming a movie, email, and artificial intelligence, have become a particular concern because their water use, energy needs, and long-term impacts on local water supplies are unfamiliar to many communities and difficult to assess without clear, science-based information and transparency.

This playbook does not take a position on whether any specific proposed data center is “good” or “bad” for a community. Instead, it starts from the premise that projects of this scale raise essential questions that warrant careful consideration up front. The goal is to ensure that, if data centers move forward, they operate in ways that maximize public benefits while minimizing harm to water resources, community well-being, and ecosystems. This guide was developed by the Alliance for the Great Lakes, a nonprofit, nonpartisan Great Lakes water protection organization dedicated to safeguarding the basin’s freshwater for current and future generations. This guide is grounded in the belief that informed communities are better equipped to raise their voices and shape outcomes that align with both local needs and regional responsibilities.

Because the Great Lakes form a single, interconnected freshwater system,[1] decisions made at the state or local level can have state and regional consequences. When one jurisdiction allows intensive surface or groundwater withdrawals, weakens water bodies like rivers, streams, and wetlands, or permits increased thermal or pollutant discharges, the impacts can extend far beyond that community. Water flows across political boundaries, through aquifers, rivers, and lakes, meaning that over-extraction or contamination in one place can alter water availability, water quality, and ecosystem health across the entire basin**. This interconnectedness also affects communities, activities like fisheries, shipping, recreation, and the long-term resilience of the world's most extensive freshwater system.**

The Great Lakes-St. The Lawrence River Basin Water Resources Compact (known as The Compact), a legally binding agreement among the eight U.S. states and two Canadian Provinces (Ontario and Quebec) in the basin, was created to collectively protect this shared freshwater resource precisely because of its interconnectedness. The Compact recognizes that no state or province acts alone: water withdrawals, diversions, and consumptive uses must be reviewed to consider the cumulative and regional impacts on the Great Lakes system. At the same time, the Compact sends an important signal that Great Lakes water is a shared regional resource, even though it does not fully address the types of large-scale and emerging water uses, such as those covered in this playbook, that are increasingly shaping demand and risk across the basin-wide ecosystem.[2]

As data centers and other large water-using industries expand, these cumulative effects become more significant. Communities may face lowered water tables, warmer discharge temperatures that stress aquatic life, and increased pressure on watersheds already strained by climate change, as well as on aging and otherwise inadequate drinking water, wastewater, and stormwater systems. **If each state evaluates proposals in isolation, the region risks a "death-by-a-thousand-cuts" pattern of incremental losses that collectively undermine the Great Lakes' social, ecological and economic stability.**

2. All Connected by Water: Understanding Flow and Cumulative Effects in the Great Lakes

Imagine a single drop of rain falling on land within the Great Lakes watershed, perhaps onto a forest, farm field, or city street in northern Minnesota. That drop may soak into the soil and slowly recharge groundwater, or it may flow across the surface into a small stream. Streams feed rivers, and rivers carry water downhill toward the Great Lakes. This journey is guided by gravity and shaped by the landscape, with wetlands, floodplains, and soils acting as natural sponges that slow water, reduce flooding, and filter pollutants before the water ever reaches a lake.[3]

Beneath this visible journey, surface water and groundwater are deeply interconnected parts of the same hydrologic system. When rain infiltrates the soil, it doesn't disappear; it becomes groundwater, stored in underground layers of soil and rock. This groundwater slowly feeds streams, rivers, wetlands, and lakes, especially during dry times, helping keep water flowing when there hasn't been rain for a while. Because

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[1] Great Lakes–St. Lawrence River Basin Water Resources Regional Body. (2005). *Great Lakes–St. Lawrence River Basin sustainable water resources agreement*.
[2] Council of State Governments. (n.d.). *Great Lakes–St. Lawrence River Basin Water Resources Compact*.
[3] U.S. Geological Survey. (2018). Freshwater (lakes and rivers) and the water cycle.

of this connection, pumping too much groundwater or allowing it to become polluted can directly affect nearby rivers and lakes. It can lower water tables, warm streams, and harm fish, wildlife, and the people who depend on these waters. In the Great Lakes region, protecting groundwater is essential to protecting the lakes and rivers we can see and use every day.[4]

As the drop reaches the lakes themselves, it becomes part of a vast, connected freshwater system. Water flows first into **Lake Superior (1),** then through the St. Marys River into **Lakes Michigan (2)** and **Lake Huron (3),** which function as one hydrologic lake. From there, it continues through the St. Clair River, Lake St. Clair, and the Detroit River into **Lake Erie (4)** before passing over Niagara Falls into **Lake Ontario (5).** The final exit from the Great Lakes watershed is the **St. Lawrence River**, which carries water to the **Atlantic Ocean**. Along this route, the drop may take years or even decades circulating within each lake, pushed slowly by winds and currents.[5]

What makes this journey especially important is how slowly the Great Lakes renew themselves. Only about **1% of the water in the Great Lakes is naturally replaced each year** through precipitation and inflows; the rest has been stored in the system for decades to centuries.[6] Due to this slow renewal, water lost to evaporation, pollution, or consumptive use is not replenished quickly.

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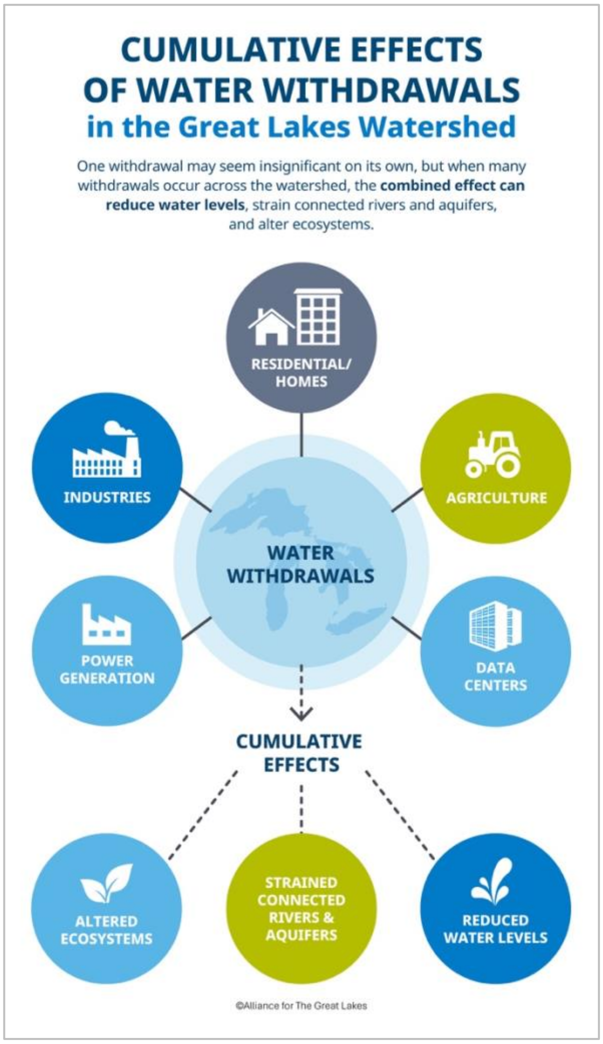
[4] Winter, T. C., Harvey, J. W., Franke, O. L., & Alley, W. M. (1998). *Ground water and surface water: A single resource* (U.S. Geological Survey Circular 1139). U.S. Geological Survey.
[5] International Joint Commission. (n.d.). *Great Lakes water levels*. Michigan Department of Environment, Great Lakes, and Energy. (n.d.). *Background information on lake levels in the Great Lakes*.
[6] Michigan Department of Environment, Great Lakes, and Energy. (n.d.). Background information on lake levels in the Great Lakes.



For example, a single water withdrawal may seem insignificant on its own. Still, when many withdrawals occur across the watershed, by industries, power generation, agriculture, or data centers, the combined effect can reduce water levels, strain connected rivers and aquifers and alter ecosystems. These **cumulative impacts** are especially concerning when water is lost through evaporation caused by industry processes or removed from the basin, because it is not reliably returned. **This means that actions taken upstream, such as how communities manage land, groundwater, and water withdrawals, can affect lake levels, ecosystems, and drinking water far downstream.** This interconnected flow is why the Great Lakes are managed as a shared system under cooperative agreements like the **Great Lakes–St. Lawrence River Basin Water Resources Compact.**

3. Understanding Data Centers: Why Demand Is Growing so Fast

The rapid growth in digital consumption of generative artificial intelligence (genAI) and other digital services, such as cloud computing, the internet of things (IoT), crypto mining, and others, is driving unprecedented demand for new data centers. Data centers have been around for over a decade, providing the digital services we use every day. But demand is rapidly increasing, and genAI is a key driver of that growth.[7] The kinds of data centers that can meet that demand require vast data processing capabilities and are often referred to as "hyperscale" data centers.

The table below illustrates how r**equirements differ across data center categories**, from small enterprise facilities to hyperscale and emerging mega-campus complexes, highlighting variations in size, server capacity, power demand, and water-use characteristics. A data center's size is driven by its computing needs, available power capacity, cooling systems, and intended use, and facilities generally fall into the following categories:[8]

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[7] McKinsey & Company. (2024). *AI power: Expanding data center capacity to meet growing demand*.
[8] Shehabi, A., Smith, S. J., Hubbard, A., Newkirk, A., Lei, N., Siddik, M. A. B., Holecek, B., Koomey, J., Masanet, E., & Sartor, D. (2024). *2024 United States data center energy usage report* (LBNL-2001637). Lawrence Berkeley National Laboratory.

DATA CENTER SPACE TYPES	
SPACE TYPE	**DESCRIPTION**
Telco Edge	Deployment of small closets/rooms to micro data centers and network infrastructure by communications companies as points of presence throughout their network
Commercial Edge	Network closets, server rooms, and micro-data centers deployed to support modern digital, infrastructure, and software delivery services to edge locations for commercial (focused on customer and business operations) and industrial (focused on supply chain and channel operations)
Small and Medium Businesses (SMB)	SMB deployments in their own internal facilities
Enterprise Branch	Classic remote and branch office (ROBO) deployments for large enterprises in their own internal facilities (network closets, server rooms)
Internal	Data centers run by enterprises, internally, for their own use
Communications Service Providers (Comms SPs)	Data centers run by telecommunications/cable companies to support internal services required to enable provision of communications technology services to their customers
Colocation – Sm/Med Scale	Data centers built by local colocation companies typically providing retail leasing at smaller scale
Colocation – Large Scale	Data centers built by major colocation companies providing wholesale and retail colocation leasing, typically deploying large and mega datacenters
Hyperscale	Data centers built by companies that deploy internet services and platforms at massive scale

These buildings run 24/7 and require massive electricity loads. Data centers in the U.S. already consumed about 4% of the nation's total electricity in 2024, with demand projected to grow substantially as AI workload increases.[9] They also demand large volumes of water for cooling, as cooling systems and heat rejection are critical to maintaining server performance; cooling alone can account for a significant share of total energy and water use, with hyperscale operation expected to account for most of the direct water consumption in the sector.[10] Finally, these facilities typically occupy a large land footprint, accommodating vast arrays of servers, power infrastructure, and cooling systems needed to support continuous, high-density processing.

3.1 How data centers use water?

Data centers are critical hubs, and they rely heavily on water, both directly (on-site consumption) and indirectly (off-site consumption). Understanding both types of water use is essential for assessing the environmental footprint of data centers and developing strategies for sustainable digital infrastructure.

[9] Leppert, R. (2025). What we know about energy use at U.S. data centers amid the AI boom. Pew Research Center.
[10] Leppert, R. (2025). What we know about energy use at U.S. data centers amid the AI boom. Pew Research Center

a. Direct Water Use (on-site consumption)

Data centers house thousands of servers that run continuously, and all this computing generates a large amount of heat, and if that heat is not removed efficiently, equipment can fail. To manage these temperatures, data centers rely on cooling systems, many of which use significant amounts of water.[11]

Evaporative cooling is one of the most widely used cooling methods, in this system, water passes through pads of membranes, and as it evaporates, it cools the surrounding air. While effective, this method uses water consumptively, meaning most of the water is lost to the atmosphere and does not return to rivers, lakes, or groundwater. Any remaining water is either discharged as wastewater or reused internally. In water-stressed regions, evaporative cooling can place substantial pressure on local water supplies.[12]

To reduce water use, some newer facilities use **liquid-based cooling technologies** like:

- **Direct-to-chip cooling, which circulates** liquid through pipes attached directly to computer chips, allowing heat to be removed much more efficiently than with air cooling.
- **Liquid immersion cooling, which submerges** servers in special non-conductive liquids that rapidly absorb heat. These systems typically use much less water and electricity, making them especially attractive for energy-intensive applications like generative AI.[13]

Another option is **closed-loop cooling,** in which water or coolant circulates within a sealed systems and is reused multiple times. Because the water is not exposed to the air, losses from evaporation are much lower than in evaporative cooling systems. However, closed-loop systems still require periodic water replacement and can consume large amounts of electricity to pump and chill the coolant, depending on system design.[14,15]

b. Indirect Water Use (off-site consumption)

Data centers also use water indirectly because generating the electricity they need requires water when power is generated by coal, natural gas, or nuclear-fired power plants. Some refer to this relationship as the "water-energy nexus." Per the Great Lakes Regional Water Use Database, energy generation is the largest water-using sector, as 70% of the Great Lakes reported water use in 2023 was associated with power generation.[16] That's overall water use, not the percentage of consumptive use, and the percentage generally matches each Great Lakes state's water use as well.

c. A Note on Consumptive Use, Water Withdrawal, and Depletion

When evaluating the water demands of any larger user, it's essential to understand three related concepts: **water withdrawal, consumptive use, and depletion.**

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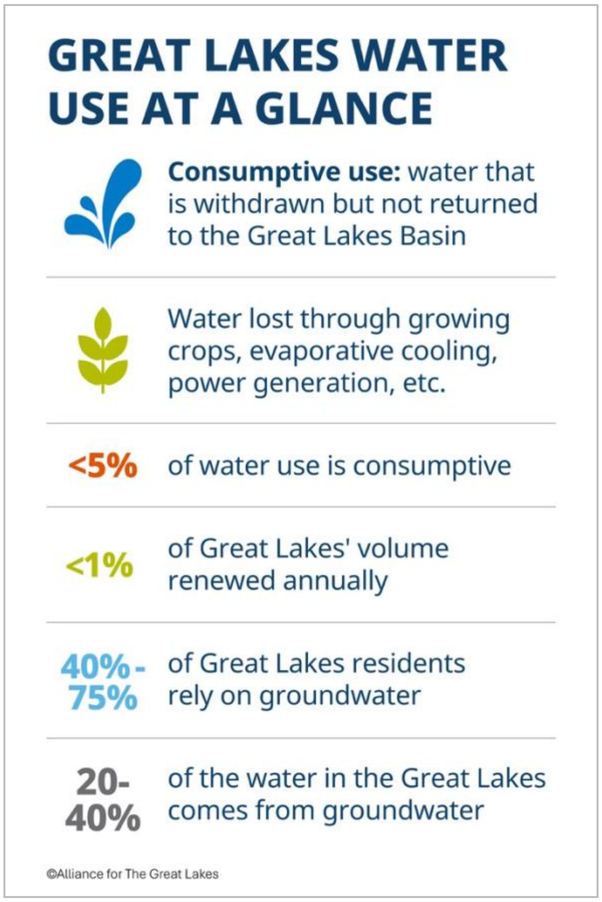
[11] Shehabi, A., Smith, S. J., Hubbard, A., Newkirk, A., Lei, N., Siddik, M. A. B., Holecek, B., Koomey, J., Masanet, E., & Sartor, D. (2024). *2024 United States data center energy usage report* (LBNL-2001637). Lawrence Berkeley National Laboratory.
[12] Shehabi, A., Smith, S. J., Hubbard, A., Newkirk, A., Lei, N., Siddik, M. A. B., Holecek, B., Koomey, J., Masanet, E., & Sartor, D. (2024). *2024 United States data center energy usage report* (LBNL-2001637). Lawrence Berkeley National Laboratory.
[13] Masanet, E., Shehabi, A., Lei, N., Smith, S., & Koomey, J. (2020). Recalibrating global data center energy-use estimates. *Science, 367*(6481), 984–986.
[14] U.S. Department of Energy. (2020). *Energy efficiency in data centers*.
[15] Patterson, M. K. (2008). The effect of data center temperature on energy efficiency. Proceedings of the 11th Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems. IEEE.
[16] Great Lakes Commission. (2025). New Great Lakes water use report demonstrates shared stewardship of the world's largest freshwater system.

Water withdrawal refers to the act of removing water from the surface water body (such as a lake or river) or from groundwater (an aquifer) for use. Some withdrawn water is returned to the watershed after use, while some are not.

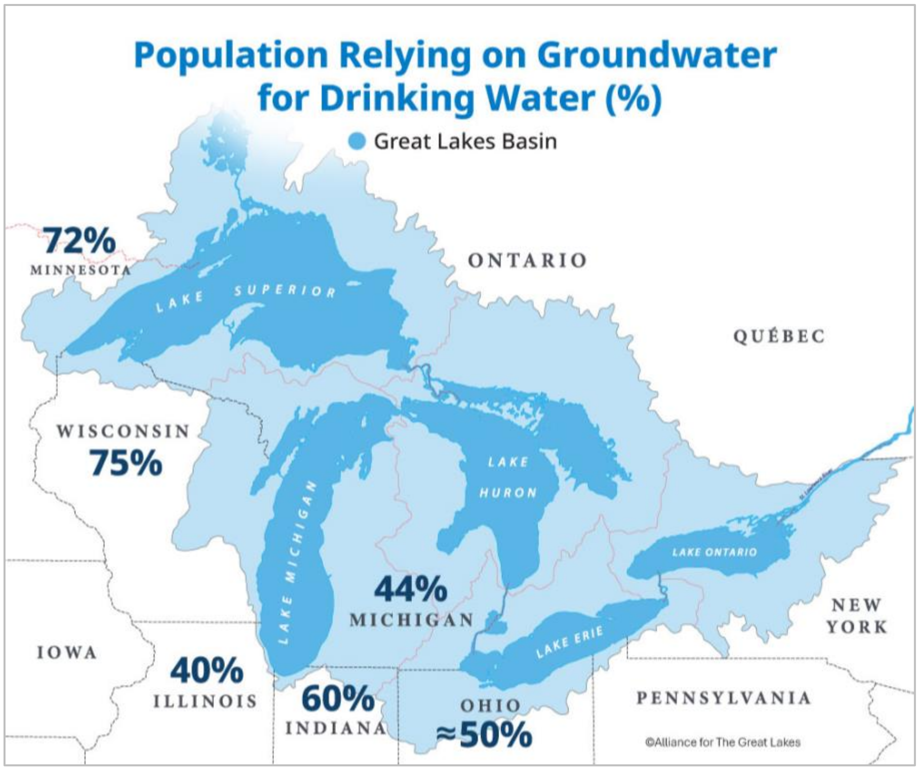
Consumptive use refers to the portion of water withdrawn from the Great Lakes Basin that is **not returned** because it is lost to evaporation, incorporated into a product or process, or otherwise removed from the system. Whether water is used to grow crops (corn, cucumbers), evaporated to cool a data center, or lost as steam during power generation, consumptive use effectively removes water from the watershed. It cannot reliably be returned to its source.[17]



Consumptive use has fallen to less than 5% of total water use across the Basin. This decline is thanks to the protection of the Great Lakes-St. Lawrence River Basin Water Resources Compact along with increased conservation and efficiency measures, including the decline of water-intensive coal power plants. This is significant progress, but continued vigilance is necessary.[18]

Only 1% of the Great Lakes' water volume is naturally renewed each year through precipitation, snowmelt, and groundwater inflow. This means the system has a limited ability to absorb additional losses. Groundwater adds another concern: If withdrawals exceed natural recharge rates, aquifers can become depleted. This presents risks to communities across the region, like the following image that shows the percentage (%) of residents that rely on groundwater for drinking water.[19]

[17] U.S. Geological Survey. (n.d.). *Water cycle*.
[18] Great Lakes Commission. (2025*). New Great Lakes water use report demonstrates shared stewardship of the world's largest freshwater system.*
[19] Joyce Foundation. (2024). *Groundwater governance in EPA Region 5 (May 5, 2024)*.



Depletion occurs when water withdrawals, particularly from groundwater, consistently exceed natural recharge rates. Over time, this can lower groundwater levels, reduce flows to connected rivers, streams, and wetlands, and diminish water availability for communities and ecosystems.[20] This is a critical concern in the Great Lakes region, where so many residents depend on groundwater for their drinking water.[21] Protecting both surface water and groundwater from excessive consumptive use is therefore critical to maintaining long-term water security for the Great Lakes Region.

d. Understanding Data Center Water Discharges and Local Water Quality

Data centers rely on water primarily for cooling, and while much attention is given to how much water they withdraw or consume, how water is discharged back into the environment is equally important for local water quality. Depending on cooling technology, and system design, data centers may discharge heated water, cooling tower blowdown, or treated wastewater to municipal systems or directly to surface waters under discharge permits.[22] Elevated discharge temperatures can contribute to thermal pollution, which reduces dissolved oxygen levels and stresses aquatic organisms, particularly cold-water species.[23] In addition, cooling tower blowdown can contain higher concentrations of salt, biocides, corrosion inhibitors, and nutrients, which, if not properly treated and regulated, can degrade receiving waters.[24]

[20] U.S. Environmental Protection Agency. (2025). *Great Lakes facts and figures*.
[21] Great Lakes Commission. (2025). *New Great Lakes water use report demonstrates shared stewardship of the world's largest freshwater system.*
[22] U.S. Environmental Protection Agency. (2017). *Water quality standards handbook: Chapter 3: Water quality criteria* (EPA-823-B-17-001). U.S. Environmental Protection Agency.
[23] U.S. Environmental Protection Agency. (2017). *Water quality standards handbook: Chapter 3: Water quality criteria* (EPA-823-B-17-001). U.S. Environmental Protection Agency.
[24] ICS Thailand. (2025). *Environmental impact of cooling towers and how to minimize it.*

Local impacts are especially significant in smaller rivers, streams, and watersheds, where dilution capacity is limited. Even when discharges meet permit requirements, cumulative effects from multiple facilities or from combined municipal and industrial discharges can worsen conditions such as harmful algal blooms, salinity increases, seasonal low-flow stresses. Research highlights that climate change, through warmer baseline water temperatures and more frequent low-flow periods, can amplify these impacts, making thermal and chemical discharge more consequential over time.[25] As a result, communities and state advocates are increasingly emphasizing the need of robust discharge permitting, continuous monitoring, and transparency, along with encouraging alternatives such as closed-loop cooling systems, reuse of non-potable water, and heat recovery systems to reduce risks to local water quality.

3.2 From power to water: the link behind data center water and power use

In the Great Lakes region, water and energy are closely connected. Most of the electricity we rely on, whether for homes, businesses, or digital infrastructure like data centers, comes from power plants that need water to operate, especially for cooling.[26] Because the Great Lakes contain about 20% of the world's surface freshwater, they have long supported electricity generation. At the same time, this water is essential for drinking water, agriculture, recreation, and healthy ecosystems. When water is used for power generation, it can affect all these needs.

As electricity demands grow, so does pressure on water resources. Data centers, which operate 24 hours a day, require large, continuous amounts of power. Even when data centers do not use much water directly, the electricity they consume still relies on water at power plants.[27] In many cases, water withdrawal for energy production is returned to lakes or rivers. Still, it is temporarily unavailable for other uses and may be returned at higher temperatures, which can affect aquatic life.

How water is used depends on the type of power plant and cooling system. Some plants withdraw huge volumes of water and return most of it, while others withdraw less water overall but lose more through evaporation, a permanent loss known as consumptive use (see 3.1.c). As electricity demand increases, even small increases in consumptive water use add up, especially during heat waves, droughts, or periods of low water levels linked to climate change.

For communities across the Great Lakes states, understanding the connection between energy and water is key to evaluating new developments such as data centers. Energy decisions are also water decisions. For example, data centers that use less water for cooling could instead use cooling systems with higher energy needs. Overall water demand could still be very high; the water use has simply shifted from the data center to the power plant. By planning for both together, through water-efficient technologies, clean energy choices, and transparent reporting, communities can support economic growth while protecting freshwater resources.[28] Coordinated energy and water planning helps ensure the Great Lakes remain healthy and available for people, ecosystems, and future generations.

[25] Intergovernmental Panel on Climate Change. (2022). *Climate change 2022: Impacts, adaptation and vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.* Cambridge University Press.
[26] Great Lakes Commission. (2009). *The energy-water nexus: Implications for the Great Lakes* (GLC Issue Brief No. 01).
[27] Great Lakes Commission. (2009). *The energy-water nexus: Implications for the Great Lakes* (GLC Issue Brief No. 01).
[28] Great Lakes Commission. (2009). *The energy-water nexus: Implications for the Great Lakes* (GLC Issue Brief No. 01).

WATER & ENERGY

Water and energy systems are interdependent.

Water is used in all phases of energy production. Energy is required to extract, pump and deliver water for use by humans, and to treat wastewater so it can be safely returned to the environment.

HOW WE USE WATER FOR ENERGY

Electricity Generation
Nearly half of all water withdrawn in the U.S keeps power plants cool enough to function safely & efficiently.

Oil & Gas
Water is used for hydraulic fracturing, enhanced oil recovery and other fossil fuel production processes.

Renewables
Essential for hydropower, water is also used for concentrated solar power for geothermal energy and to produce bioenergy.

HOW WE USE ENERGY FOR WATER

Pumping
We use energy to pump water from aquifers for agriculture and to transport to treatment facilities and consumer.

Water Treatment
Energy is needad to desalinate water and before it's returned to the environment.

Heating & Cooling
Energy and water work together to keep buildings and equipment at safe, comfortable temperatures.

Delivery
We use energy to distribute and heat water for cooling, showering, cleaning and drinking.

Knowledge informs our ability to adapt to change.

Weather and environment affect the relationship between energy and water. Population growth in areas where water is already scarce will create additional pressures. Climate change could intensify these effects.

Higher Temperatures increase electricity demand and make cooling processes at power plants less efficient.

Drought means less water for hydropower, bioenergy production, power plant cooling, and oil and gas extraction.

Changes in Precipitation Patterns mean less predictable rain, snowfall and snowmelts.

Severe Weather could threaten critical water and energy infrastructure.

Earlier Snowmelt means less electricity could be generated from hydropower during times of peak demand.

Regional Variation exists across the U.S. Many states already face water supply constraints.

New technologies can present solutions.

Advanced Air Cooling Technologies could significantly reduce water consumption and operating costs.

New Water Treatment Technologies could lead to energy recovery and reduce costs.

4. Barriers to Transparency and Public Accountability

Assessing the actual water-use footprint of an individual data center is challenging due to limited **transparency**. Several key information gaps make it difficult for communities, local officials, and decision-makers to fully understand the impacts of existing and proposed facilities, particularly in the Great Lakes states, where water resources are shared across borders.

First**, projected water and energy use are often kept from public view through non-disclosure agreements (NDAs).** Estimates of water withdrawals, cooling needs, and electricity demand are frequently treated as confidential business information, even when communities are being asked to approve zoning changes, tax abatements, or public infrastructure investments.[29] These NDAs can prevent local governments and the public from evaluating whether a proposed facility is compatible with local drinking water supplies, climate conditions, or long-term sustainability goals. When critical information is withheld, decision-making shifts risk from private developers to communities and public utilities.

Second, **many large water-using industries**, such as data centers, semiconductor plants, beverage and bottlers, food processors, power plants, hydrogen facilities, and other advance manufacturers, **are not required to measure or publicly report how much water they use** when they receive water from local municipal systems. In other words, if these facilities rely on city or town water supplies instead of drawing water from their own wells, or intakes, their water use often remains largely invisible to the public and decision-makers.

That responsibility falls to the water utility, which reports only total system-wide use, masking the impact of individual high-volume customers.[30] This lack of disaggregated data is significant because more than 97% of data centers rely on municipal water supplies rather than private wells.[31] As a result, residents and city planners, water managers cannot easily identify how much water a single facility uses or assess cumulative effects when multiple data centers are developed in the same area.

Third, **the indirect water impacts of data centers remain largely unquantified**. Data centers operate around the clock and drive increased electricity demand, which in turn raises water use at power plants that rely on cooling water. Without transparent reporting on both energy consumption and associated water use, it is nearly impossible to understand how growth in the data center sector is increasing consumptive water use across the Great Lakes System.[32] These indirect impacts are especially concerning during periods of high electricity demand, heat waves, or drought conditions.

4.1 Why NDAs are risky, and what communities can do.

The widespread use of NDAs creates several risks:

- **Erodes public trust** by limiting transparency around water and energy use
- **Undermines long-term planning** by restricting access to data needed for sound water and infrastructure management
- **Misses opportunities** for more water-efficient design by preventing shared learning and innovation

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[29] Great Lakes Commission. (2009). *The energy-water nexus: Implications for the Great Lakes* (GLC Issue Brief No. 01).
[30] Willson, M. (2025). *States push to end secrecy over data center water use. E*&E News by POLITICO.
[31] Edwards, E. (2025). *Data center water secrecy hurts communities* (and the industry itself). Bluefield Research.
[32] Great Lakes Commission. (2010). *The energy-water nexus: Implications for the Great Lakes* (Issue Brief No. 01). Great Lakes Commission.

- **Prevents meaningful comparison of projects**, making it difficult for communities to assess relative impacts
- **Obscures best practices**, limiting the ability to identify and replicate more sustainable approaches
- **Weakens accountability for public incentives**, as communities cannot verify whether benefits justify subsidies
- **Over time, undermines regional water stewardship** and weakens collective efforts to protect the Great Lakes

Communities and states advocates can address these risks through clear, proactive solutions. These include:

- **Requiring baseline disclosure** of projected water and energy use as a condition of permits or incentives.
- **Mandating public reporting** of large water users, even when served by municipal systems.
- **Limiting the scope of NDAs** so they do not override the public's right to know about water use.
- **Promote the use of nature-based solutions** (urban tree canopy, floodplain restoration and reconnection) and green infrastructure[33] (retention areas, permeable pavements, rain gardens, green roofs) as part of the design of the development.

Regional coordination among Great Lakes states, through shared reporting standards and data transparency requirements, can further ensure that economic development does not come at the expense of freshwater resources. Transparency is not an obstacle to growth; it is a foundation for responsible, resilient, and water-smart development.

5. Our Water, Our Lives: What Local Water Impacts Mean for Communities

Although the Great Lakes region is often seen as water-rich, **water supplies and water demand are not evenly distributed across communities.** Groundwater availability can vary widely depending on local geology, aquifer capacity, recharge rates, and existing water use. When data centers are sited without careful consideration of these local conditions, they can **create or intensify water stress (**demand for water in each area **approaches or exceeds the available supply**), mainly because they operate continuously. In several Great Lakes states, competition for groundwater already exists among municipalities, agriculture, industry, and private well owners, and introducing a large new water user can heighten tensions, particularly during droughts or heat waves.

Groundwater depletion is one of the most immediate local risks.[34] When groundwater is pumped faster than it can replenish itself, water levels drop. This can cause **private wells to fail**, reduce the amount of groundwater that feeds nearby streams, and harm wetlands that rely on steady underground flows.[35] These impacts are not theoretical; they are already occurring in communities across the Great Lakes region.

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[33] U.S. Environmental Protection Agency. (2023). *Using nature-based solutions to manage water*.
[34] U.S. Geological Survey. (2018). *Groundwater decline and depletion*. U.S. Department of the Interior.
[35] U.S. Geological Survey. (2018). *Groundwater decline and depletion*. U.S. Department of the Interior.

In **New Carlisle, Indiana**, for example, residents have experienced **dry, failing private wells.**[36] While the Indiana Department of Natural Resources (IDNR) found this example attributable to drought, it raises serious concerns about whether local groundwater supplies can meet growing water demands. For affected households, this can mean drilling deeper wells, hauling water, or seeking costly connections to municipal systems. Situations like this show how quickly groundwater stress can become a community-wide problem, especially when new high-volume water users are added without clear safeguards.

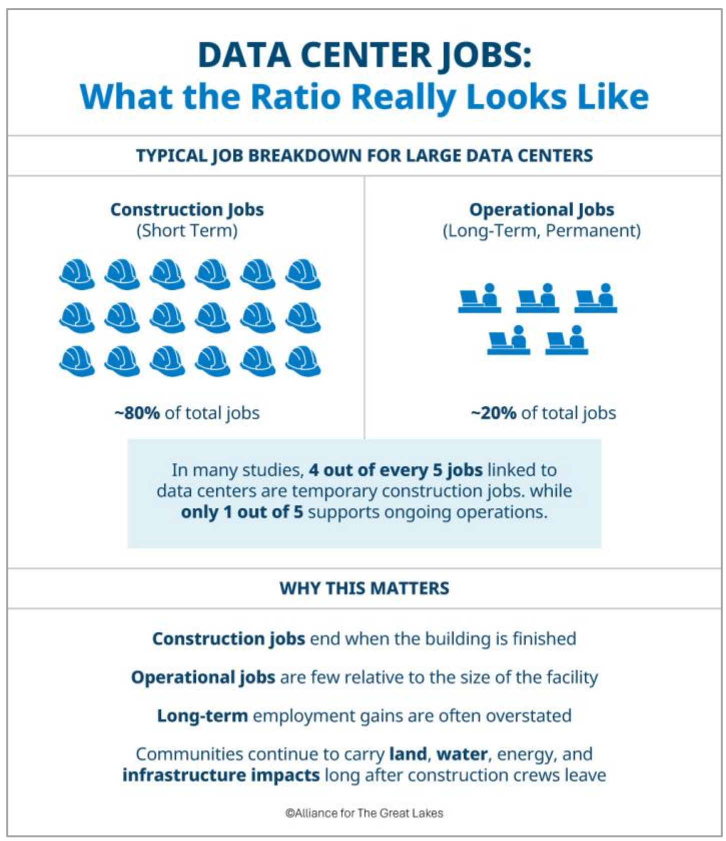
Importantly, groundwater depletion does not remain confined to a single town. **Groundwater and the Great Lakes are closely connected,** and when groundwater levels decline, less water naturally flows into rivers, streams, and lakes.[37] Over time, this places have added pressure on Great Lakes surface waters, particularly in areas already stressed by climate change, land-use changes, or existing withdrawals. Protecting groundwater is therefore essential not only for local drinking water supplies, but also for the long-term health of the entire Great Lakes system.

At the community level, the specific water impacts of data centers depend on factors such as **facility size, cooling technology, water source, and local hydrology**. Those facilities connected to municipal systems may require expensive water infrastructure upgrades, ultimately paid for by ratepayers. Increased demand can strain local water systems, limit future growth for residents and small businesses, and reduce a community's ability to respond to droughts or emergencies. While not every community will experience the same outcomes, these examples illustrate the **localized consequences** that can occur when large data centers are sited without fully accounting for local water conditions.

5.1 Other Local Impacts

a. Low Direct Employment Generation

While data centers require relatively **few permanent workers,** they occupy **large amounts of land** and place significant demands on **water and energy resources**. The construction of extensive server facilities often replaces green space with buildings and paved surfaces, reducing the amount of land where rainwater can soak into the ground and naturally recharge groundwater aquifers. This loss of permeable land can increase runoff, reduce local groundwater recharge, and limit future land-use options. Over time, it may also constrain the types of other businesses or industries that could locate in the community.



Economic analyses of data centers frequently highlight job creation and local economic

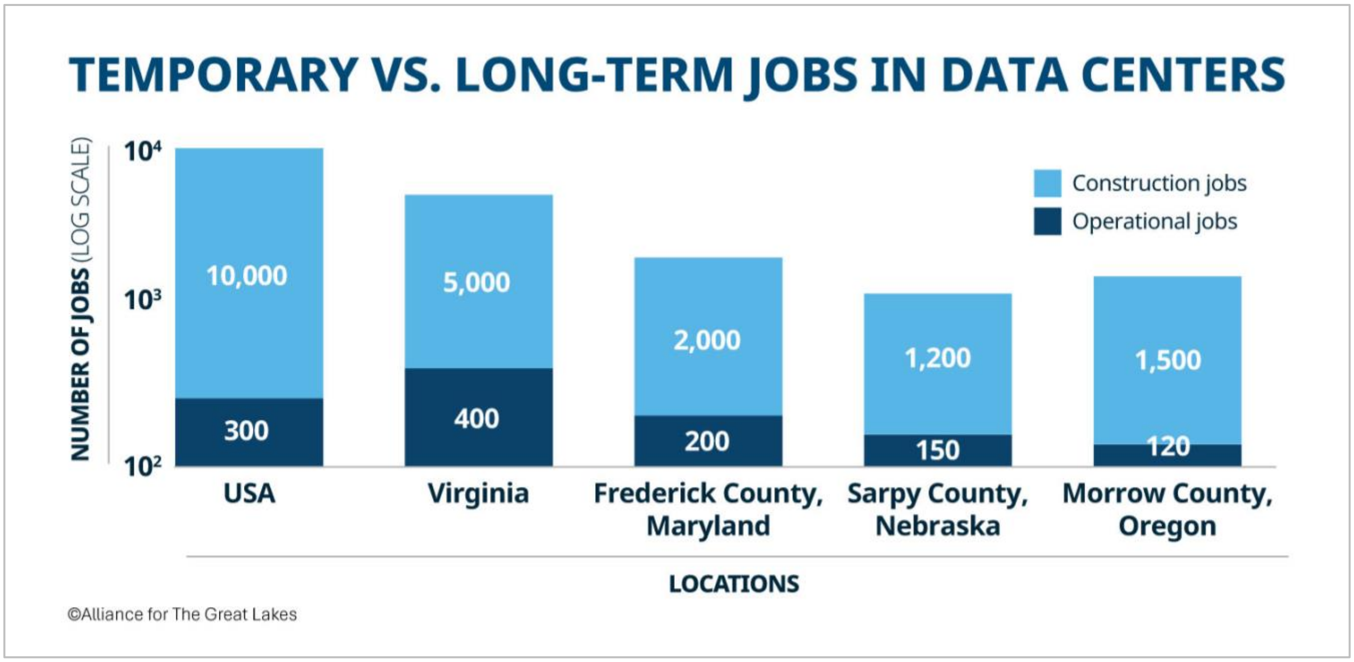
[36] Reilly, G. (2025). DNR says dry New Carlisle wells caused by drought instead of Amazon or GM/Samsung projects. South Bend Tribune.
[37] International Joint Commission. (2000). *Protection of the waters of the Great Lakes: Final report to the governments of Canada and the United States.*

benefits, but these impacts are often **overstated.** Most jobs associated with data centers occur during the **construction phase,** which is temporary. Recent analysis from the Great Lakes region shows that **for every five jobs attributed to data centers, four are construction-related and only one is tied to ongoing operations.**[38] While construction work occurs locally, much of the capital spending for data centers, particularly on servers, networking equipment, and specialized materials, takes place **outside the region and often outside the United States.**[39] As a result, the long-term economic contribution of data centers to **regional employment is relatively small,** accounting for less than 0.3% of the jobs in the region, with 0.21% linked to capital expenditure and 0.07% to operational activity.[40]

The following table shows how different studies estimate the economic impact of data centers on local jobs. Across locations, the pattern is consistent: Construction creates many jobs, often in the thousands, but once the data center is built, the number of permanent jobs is much smaller, usually in the dozens to a few hundred. The image that follows the graph visually illustrates the relationship between construction-phase jobs and long-term operational jobs, helping understand the distinction and relative scale between the two. In simple terms, data centers can bring temporary bursts of construction employment, but they tend to generate relatively few long-term local jobs compared to their size, land use, and resource demands.

INPUT-OUTPUT MODELS OF DATA CENTERS ECONOMIC IMPACT[41]			
STUDY	**LOCATION**	**CONSTRUCTION JOBS (SHORT-TERM)**	**OPERATIONAL JOBS (LONG-TERM)**
PwC (2023)	USA	~1,000–10,000 per campus	~50–300 per campus
JLARC (2024)	Virginia	~3,000–5,000 per construction phase	~100–400
Sage Policy (2024)	Frederick County, MD	~2,000	~200
Thompson (2019)	Sarpy County, NE	~1,200 total (~154 per data center)	~100–150 per data center
Morrow County (2024)	Morrow County, OR	~1,500	~80–120

[38] Ferreira, J. P. (2025, November 6). *UVA data centers webinar: Slide deck* [PDF]. Joyce Foundation
[39] Ferreira, J. P. (2025, November 6). *UVA data centers webinar: Slide deck* [PDF]. Joyce Foundation
[40] Ferreira, J. P. (2025, November 6). *UVA data centers webinar: Slide deck* [PDF]. Joyce Foundation.
[41] Hicks, M. J. (2025). *Data centers and local job creation: Some preliminary causal estimates from Texas*. The Country Economist.



Together, the studies and the chart show a clear and consistent pattern: Data centers create many short-term construction jobs but relatively few permanent jobs once they are built. Overall, this means that while data centers can look like major job creators at first, their lasting economic benefits are limited, an essential consideration for communities weighing these projects alongside long-term costs of water, energy, land use, and public resources.

b. Increase in Utility Rates

The construction and operation of data centers can place significant financial pressure on local utility systems, potentially leading to higher electricity and water bills for residents and businesses. Data centers are extremely resource-intensive facilities, requiring large and continuous supplies of electricity for computing and cooling, substantial volumes of water for cooling processes and expanded wastewater treatment capacity.[42] When existing infrastructure is insufficient to meet these demands, utilities must invest in new or upgraded transmission lines, substations, water mains, and treatment facilities; these costs are often passed on to taxpayers.

Evidence from the energy sector shows that these impacts are already materializing. In 2024, costumers in Illinois, Maryland, New Jersey, Ohio, Pennsylvania, Virginia, and West Virginia faced an estimated $4.3 billion in additional costs from regional transmission upgrades required to serve growing data centers loads, particularly within the Pennsylvania – Jersey – Maryland (PJM) Interconnection footprint.[43] Academic and regulatory analyses have similarly found that rapid, concentrated growth in data center electricity demand can accelerate grid expansion and increase costs for non-data-centers costumers if cost allocation policies are not carefully designed.[44]

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[42] Shehabi, A., et al. (2016). *United States data center energy usage report*. Lawrence Berkeley National Laboratory.
[43] Jacobs, M. (2025). *Connection costs: Loophole costs customers over $4 billion to connect data centers to power grid* [Issue brief]. Union of Concerned Scientists.
[44] Brown, M., & Zhou, S. (2023). *Electricity demand growth from data centers and implications for grid planning*. Energy Policy, 176, 113512. https://doi.org/10.1016/j.enpol.2023.113512

Water and wastewater infrastructure can face comparable strains. In some communities, utilities must extend new water mains or expand treatment capacity to serve data centers connecting to municipal systems. Even where physical connections already exist, large, concentrated water withdrawals, especially during peak cooling periods, can increase operational and maintenance costs, stress aging infrastructure, and reduce systems resilience.[45] Research shows that high-volume, short-duration water demands can lower system pressure, increase the risk of main breaks, and raise treatment costs, particularly in smaller or water-stressed communities.[46]

As a result, communities with limited water supplies or aging infrastructure may experience higher water and wastewater rates following data center development, unless safeguards are put in place. Without transparent accounting of infrastructure costs and clear cost-recovery mechanism, residents may bear the financial burden of supporting industrial-scale water and energy use that delivers relatively few long-term local jobs.[47]

c. Overview of Data Center Tax Incentives Across the Great Lakes State

Local governments across the Great Lakes region may view data centers as attractive economic development opportunities and potential additions to their local tax base. To compete for these projects, local governments often offer **financial incentives**, most commonly **property tax abatements or Payments in Lieu of Taxes (PILOTs).**[48] These arrangements can provide a large one-time upfront payment or reduced property tax obligations over many years. For example, **local governments in Ohio and Michigan** have approved long-term property tax abatements for large data center projects as part of economic development deals, lowering the amount of property tax revenue collected during the early years of operation.[49]

In addition to local incentives, **every Great Lakes state offers sales and use tax exemptions for data centers.** These exemptions allow companies to avoid paying sales taxes on construction materials, servers, cooling systems, and other equipment used inside the facility. States such as **Illinois, Indiana, Michigan, Ohio, and Wisconsin** provide exemptions that can amount to **tens or even hundreds of millions of dollars in forgone tax revenue** for large hyperscale projects. While these incentives can make communities more competitive in attracting investment, they also reduce the amount of revenue states collect and redistribute to **local governments, school districts, and public services,** shifting fiscal impacts on to the broader public.

While data centers may still pay some local taxes, heavy reliance on a single, highly incentivized facility to grow the tax base can create **fiscal dependency and long-term risk**. Communities may find that large amounts of **land, water, and energy capacity** are committed to one facility, limiting their ability to attract a more diverse mix of businesses or to accommodate future population growth. Over time, this tradeoff

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[45] U.S. Geological Survey. (2018). *Groundwater decline and depletion*. U.S. Department of the Interior.
[46] Scanlon, B. R., Fakhreddine, S., Rateb, A., de Graaf, I., Famiglietti, J., Gleeson, T., Grafton, R. Q., Jobbagy, E., Kebede, S., Kolusu, S. R., Konikow, L. F., Long, D., Mekonnen, M., Müller Schmied, H., Mukherjee, A., MacDonald, A., Reedy, R. C., Shamsudduha, M., Simmons, C. T., … Zheng, C. (2023). *Global water resources and the role of groundwater in a resilient water future*. *Nature Reviews Earth & Environment, 4*(2), 87–101.
[47] Hicks, M. J. (2025, November 10). *Data centers and local job creation: Some preliminary causal estimates from Texas. The Country Economist.*
[48] New Orleans Office of Inspector General. (2024). Industrial Development Board payments in lieu of taxes (PILOT) agreements.
[49] Barth, A., Arora, C., Shenai, G., Noffsinger, J., & Sachdeva, P. (2025, August 8). *The data center balance: How US states can navigate the opportunities and challenges*. McKinsey & Company.

can constrain local economic flexibility and shift costs, such as infrastructure upgrades or utility expansion, on to residents and other taxpayers.

The table below provides a state-by-state overview of **sales and use of tax exemptions and related incentives** available to data centers across the Great Lakes region. It highlights the types of incentives offered, summarizes their key features, and links to official state resources. Together, these incentives illustrate how public policy is being used to attract data center investment, and why understanding their fiscal implications is essential for informed local and regional decision-making.

SALES AND USE TAX INCENTIVES FOR DATA CENTERS IN THE GREAT LAKES REGION			
STATE	**INCENTIVE TYPE**	**SUMMARY OF BENEFIT**	**REFERENCE**
Illinois	**Sales & Use Tax Exemption (Qualified Data Centers)**	Exempts eligible data center purchases from state sales tax (specific criteria apply)	**Illinois Department of Revenue – Data Center Tax Exemptions (PDF)** https://www2.illinois.gov/rev/forms/sales/Documents/qualifieddatacenter.pdf
Indiana	**Data Center Sales & Use Tax Exemption**	Up to 25-year exemption on sales/use tax for data center equipment and energy; local property tax exemptions possible	**Indiana Economic Development Corp – Data Center Tax Exemption** https://iedc.in.gov/indiana-advantages/investments/data-center-sales-tax-exemption/overview/
Michigan	**Sales & Use Tax Exemption for Data Centers**	Exempts sales tax on qualifying construction materials, servers, and data center equipment; generally requires significant investment and job commitments	**Michigan Business Development Program – Data Center Incentives** https://www.michiganbusiness.org/services/data-center/
Minnesota	**Sales Tax Exemption (Qualified Data Centers)**	May exempt qualifying purchases (typically subject to specific job/investment criteria)	**Minnesota Department of Revenue – Data Center Exemptions** https://www.revenue.state.mn.us/qualified-data-centers
Ohio	**Sales Tax Exemption & Local Incentives**	Exempts qualifying data center equipment from state sales tax; additional local abatements possible	**Ohio Department of Development – Tax Incentives** https://development.ohio.gov/bs/bs_taxincentives.htm
Pennsylvania (Great Lakes region border)	**Sales & Use Tax Exemption (High-Tech Data Centers)**	Exempts certain data center purchases from tax; may include additional incentives	**PA Deptartment of Revenue – Data Center Incentives** https://www.revenue.pa.gov/FAQs/Tax%20Types%20Topics/SUT/Documents/SUT%20-%20Data%20Center%20Exemption.pdf

Wisconsin	**Data Center Sales & Use Tax Exemption**	Exempts purchases of servers, networking equipment, and other qualifying items from sales/use tax	**Wisconsin Economic Development Corp** https://wedc.org/programs/data-center-sales-and-use-tax-exemption/

d. Noise and Air Pollution in Communities

Data centers can contribute to **air pollution** because they use large amounts of electricity around the clock and often rely on **backup generators** to prevent power interruptions. The power plants that supply electricity, along with on-site generators that run during testing or outages can release air pollutants[50] are known to increase the risk of **asthma, heart disease, and cancer.** A national study estimates that by **2030**, pollution linked to data centers in the United States could contribute to **nearly 1,300 deaths each year, resulting** in a public health cost **$20 billion.**[51]

Air pollution does not stay in one place. Pollutants released into the air can travel long distances before falling back to the ground in rain, snow, or dust. When this pollution settles into the Great Lakes, rivers, and streams, it can make water more acidic, add excess nutrients, and worsen harmful algal blooms. These changes can damage fish and wildlife habitats and make drinking water more expensive and difficult to treat.

Data centers can also create **noise pollution** from cooling systems (HVAC fans) and external equipment like backup generators.[52] **The cooling systems that need to keep equipment from overheating can produce constant noise.** Inside the data center, noise levels can reach 96 A-weighted decibels (dBA). This is well above the threshold of 85 dBA considered harmful to human hearing. **This ongoing noise can affect workers, nearby residents, and local wildlife**.[53] While noise levels vary depending on design and cooling technologies, there are ways to reduce these impacts through better planning and construction.[54]

Because the Great Lakes are a single, interconnected water system, pollution released in one state, or even outside the basin, can affect water across the entire region. This is especially concerning because only about 1% of Great Lakes water is naturally renewed each year. That slow renewal rate means the lakes have limited ability to recover from added pollution over time, and over extraction. As a result, air pollution from data center-related energy use can quietly but steadily undermine the long-term health of the Great Lakes.

[50] U.S. Environmental Protection Agency. (2025, May 30). *Particulate matter (PM) basics*.
[51] Han, Y., Wu, Z., Li, P., Wierman, A., & Ren, S. (2024). *The unpaid toll: Quantifying the public health impact of AI* .
[52] Tao, Y., & Gao, P. (2025). *Global data center expansion and human health: A call for empirical research.* Eco-Environment & Health, 4(3), 100157.
[53] Yu Tao, Peng Gao, "*Global data center expansion and human health: A call for empirical research,* Eco-Environment & Health, Vol. 4, Iss. 3. (2025). https://doi.org/10.1016/j.eehl.2025.100157.
[54] Tao, Y., & Gao, P. (2025). *Global data center expansion and human health: A call for empirical research.* Eco-Environment & Health, 4(3), 100157.

e. Other Impacts

Electronic waste: Data centers must replace server equipment every 3 to 5 years.[55] This generates a lot of electronic waste for which there is no clear recycling path. If these materials are disposed of in local landfills, communities may eventually face capacity issues.

Risk of fire: Data centers generate a lot of heat and therefore typically incorporate complex fire suppression systems. Nevertheless, it is vital for local communities considering data center proposals to consider what kinds of firefighting and emergency service resources they have and whether they are prepared and equipped to address a fire inside that data center. For example, in Ohio, two data centers have made 84 emergency service calls since 2021, including a two-alarm blaze at one data center that occupied firefighters for nearly 30 hours and caused an estimated $50 million in damages.[56]

6. A Community Checklist for Evaluating Data Center Impacts

Data center projects are often well underway before the public becomes aware of them, leaving communities with limited opportunities to influence key decisions. Asking informed questions early in the process can help protect **local water resources, public health, and overall community well-being**. This checklist brings together lessons and best practices from **multiple checklists, toolkits, and guidance documents developed by organizations**[57,58,59,60] **across the Great Lakes states**. It is designed to help communities evaluate proposed data centers through a **comprehensive lens that considers environmental impacts, economic implications, public health, community benefits, and other local concerns**, supporting more transparent, accountable, and balanced decision-making that aligns with the long-term protection of the Great Lakes and the people who depend on them.

[55] Maguire, N. (2025). *How long do data center servers last?* Procurri.
[56] Butler, G. (2025). *Amazon data centers in Jerome Township, Ohio, called emergency services 84 times since 2021.* Data Center Dynamics.
[57] Freshwater Society. (2025). *Data centers and water use* (June 2025). https://freshwater.org/wp-content/uploads/2025/06/Data-Centers-and-Water-Use_Freshwater.pdf
[58] Coalition for Responsible Data Center Development. (n.d.). *Coalition for Responsible Data Center Development* (Website).
[59] MediaJustice. (2025). *The people say no: Resisting data centers in the South.* MediaJustice.
[60] Hoosier Environmental Council. (2025). *A community guide to data centers.* Indianapolis.

Use this checklist to engage early with local officials, planning boards, and developers.

COMMUNITY CHECKLIST FOR EVALUATING DATA CENTER IMPACTS		
	6.1	**Water Resources & Supply**
	☐	What amount of water will the data center need each day and each year?
	☐	What water quality is required (drinking-quality, industrial, non-potable)?
	☐	What is the source of the water (surface water, groundwater, municipal supply)?
	☐	Is that water source already stressed or at risk of depletion?
	☐	Have seasonal or drought conditions been considered in water planning?
	☐	Have regional water studies or projections been reviewed?
	☐	Who pays for new pipes or wastewater treatment if upgrades are needed?
	☐	Does the site have enough water for both residents and the data center, even in drought years?
	6.2	**Water Impacts & Protection**
	☐	Will the project affect local rivers, lakes, wetlands, or aquifers?
	☐	Could private wells or small community water systems be impacted?
	☐	How will wastewater or discharge be handled and monitored?
	☐	Could water withdrawals or discharges affect downstream users or ecosystems?
	6.3	**Water Efficiency & Reuse**
	☐	Are there plans for closed-loop cooling systems to reduce water use?
	☐	Will stormwater, recycled water, or treated wastewater be used instead of fresh water?
	☐	Are there opportunities to reuse water on-site or with nearby facilities?
	☐	Can discharged water be safely reused by other businesses or community uses?
	6.4	**Energy Use & Air Impacts**
	☐	How much electricity will the data center require?
	☐	Where will that energy come from (renewable vs. fossil fuels)?
	☐	Will diesel backup generators be used, and how often will they operate?
	☐	How will they avoid using noisy, polluted diesel generators for backup power?
	☐	How will air pollution from energy use and generators be minimized?
	☐	Who pays for the new power plants or grid upgrades needed?
	☐	Will data centers use renewable energy or batteries to ease strain during peak hours?

6.5	**Noise & Community Impacts**
☐	What noise levels are expected from generators, cooling systems, and HVAC equipment?
☐	What noise mitigation measures will be used (sound barriers, setbacks, operating limits)?
☐	How will impacts on nearby neighborhoods, schools, and wildlife be addressed?
6.6	**Land Use & Community Planning**
☐	Is the data center located in an appropriate zoning area?
☐	Are there opportunities to co-locate with complementary industries or land uses?
☐	Does the project limit future options for housing, agriculture, or other economic development?
6.7	**Long-Term Accountability**
☐	How will water use, water quality, and emissions be monitored and reported?
☐	Are there enforceable conditions or permits tied to water and environmental protection?
☐	What happens if the data center expands or increases water and energy use in the future?
6.8	**Community Transparency**
☐	Has the public been given meaningful opportunities to comment?
☐	Are all water, energy, and environmental data publicly available?
☐	Who is responsible if unexpected impacts occur?
6.9	**Nature-Based Solutions & Green Infrastructure**
☐	Will the project include green infrastructure (like rain gardens, bioswales, or wetlands) to soak up rainwater and reduce runoff?
☐	How will the project protect or use existing natural areas (trees, wetlands, open space) to manage stormwater instead of paving over them?
☐	Will trees be planted in parking lots and along paved areas to provide shade and reduce extreme heat?

7. Community Benefit Agreements (CBAs) as a Tool for Transparency and Accountability

Community Benefit Agreements (CBAs) are written agreements that help make sure large projects, like data centers, give back to the communities where they are built. They exist as an attempt to ensure that private investments generate tangible public benefits and that residents are not left carrying the costs, such as increased energy demand, pressure on water resources, land-use impacts, or environmental stress.

Because many data centers are approved quickly, create relatively few permanent jobs, and place long-term demands on local infrastructure and natural resources, communities often have limited opportunities to influence decisions once approvals are granted. CBAs help address this gap by setting clear expectations early in the process.

7.1 Why Do CBAs Matter?

When used effectively, CBAs:

- Give communities can be seated at the table before approvals are finalized
- Create clear, enforceable commitments rather than vague promises
- Address long-term and cumulative effects, not just short-term construction effects
- Help ensure projects align with local values, priorities, and resources limits

By clearly outlining responsibilities and benefits upfront, CBAs can also reduce conflict and uncertainty for both communities and developers.

7.2 What Can CBAs Include?

CBAs can require developers to be transparent about a project's impact and to commit to tangible community benefits, such as:

- Environmental protection and ongoing monitoring
- Broad environmental justice policies that incorporate environmental justice goals and considerations into a range of municipal activities[61]
- Water conservation and energy efficiency measures
- Land preservation and green infrastructure
- Investments in local infrastructure and public services
- Workforce development and job training
- Funding for trusted local nonprofits and community programs
- Proactive planning targeted at future development to address environmental justice via comprehensive plans, overlay zones, or green zones

7.3 Paying a Fair Share

[61] Natural Resources Defense Council. (2019). *Local policies for environmental justice: A national scan*.

In addition to CBAs, communities can use special utility fees for very large energy users, like data centers. These usage-based fees should be directed into a community fund that supports households facing high energy costs, especially low-income and overburden communities. Funds can be used for:

- Utility bill assistance
- Home weatherization
- Energy-efficient or electric home upgrades

7.4 Setting Clear Environmental and Community Standards

Data centers developers should be required to enter a CBA with a minimum contribution of $8,500 per megawatt. These agreements should include clear, enforceable commitments, not voluntary pledges, to protect the environment, preserve land, invest in community improvements, and support long-term environmental health and community well-being.

CBAs should also require investment in nature-based solutions, such as projects that recharge groundwater and aquifers, restore wetlands and floodplains, protect and restore headwaters of local watersheds, and support other natural systems that help manage water, reduce flooding, and improve water quality. These investments help strengthen local water supplies and build long-term resilience for both communities and the environment.

Importantly, CBAs should incorporate environmental justice principles to ensure that communities historically overburdened by pollution and underinvestment are not further impacted by large-scale industrial development. As highlighted in national scans of local environmental justice policies, effective frameworks include meaningful community participation in decision-making, transparent reporting and. monitoring requirements, cumulative impact assessments, and mechanisms for accountability and enforcement. By embedding these elements into CBAs, local governments can help ensure that private investment delivers measurable public benefits, reduces disproportionate environmental burdens, and advances equitable, community-centered development.

In addition, CBAs should require ongoing public disclosure of water use, energy consumption, greenhouse gas emissions, and local infrastructure impacts, with regular reporting accessible to residents and local officials. The Natural Resource Defense Council (NRDC) emphasizes that transparency, data accessibility, and formalized accountability structures are critical components of effective local environmental justice policies. By mandating continuous monitoring and public reporting, communities can better access cumulative impacts over time, identify emerging risks, and adjust mitigation strategies to safeguard long-term environmental and public health outcomes.[62]

7.5 A Practical Tool Until Stronger Oversight Exists

Until stronger state-level transparency and oversight requirements are in place, CBAs remain one of the most effective tools available to local governments and communities. Used well, they can bridge current policy gaps, ensure accountability, and give communities a stronger voice in shaping how data centers and other large developments move forward.

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[62] Natural Resources Defense Council. (2019). *Local policies for environmental justice: A national scan*.

For example, the city of Lancaster, Pennsylvania, successfully approved a CBA as part of a data center development proposal.[63] This CBA includes transparency requirements, as well as numerous environmental and operational performance provisions, such as a requirement to use a closed-loop system, a cap on water use, and requirements concerning wastewater, noise levels, air quality, energy efficiency, and e-waste.[64] Communities should ask local elected officials early in the decision-making process whether proposed data center developments can be conditioned on a CBA. CBAs are most effective when they include **specific, measurable requirements**, clear timelines, and **monitoring and enforcement provisions** to ensure long-term compliance.

When discussing a potential CBA, communities may want to ask whether it can include (checklist):

CHECKLIST OF COMMUNITY AND ENVIRONMENTAL BENEFITS		
	7.1	**Water Conservation and Efficiency Standards**
	☐	Install high-efficiency cooling systems (closed-loop or non-evaporative where feasible) consistent with best practices identified by EPA Energy Star[65]
	☐	Use reclaimed, recycled, or non-potable water instead of drinking water as recommended by EPA WaterSense[66] and EPA water reuse guidance[67]
	☐	Implement water-use intensity (WUI)[68] targets with annual reduction goals, aligned with emerging industry metrics used by ASHRAE and Department of Energy
	☐	Conduct regular water audits and implement leak detection and repair programs
	7.2	**Limits on Water Withdrawals or Consumptive Use**
	☐	Set maximum daily and annual withdrawal caps tied to watershed capacity
	☐	Prohibit increased withdrawals during drought, low-flow, or heat-stress conditions
	☐	Require no-net-increase in consumptive use for expansions or new phases
	☐	Offset unavoidable water use through verified watershed recharge projects in the headwaters of the basin
	7.3	**Energy Efficiency or Renewable Energy Commitments**
	☐	Commit to 100% renewable electricity by a defined date
	☐	Install on-site solar, storage, or microgrids where feasible
	☐	Meet or exceed energy-use intensity (EUI) performance standards
	☐	Participate in utility demand-response programs to reduce peak loads

[63] Reber, C. (2025). *Lancaster City Council votes to approve data center benefits agreement*. LancasterOnline.
[64] City of Lancaster, PA. (2025, November). *Community benefits agreement summary*.
[65] U.S. Environmental Protection Agency. (2023). *U.S. EPA's ENERGY STAR program develops energy-saving guidance for co-location data centers*.
[66] U.S. Environmental Protection Agency. (2023). *U.S. EPA's ENERGY STAR program develops energy-saving guidance for co-location data centers*.
[67] U.S. Environmental Protection Agency. (2004). *Guidelines for water reuse* (EPA/625/R-04/108).
[68] U.S. Environmental Protection Agency & ENERGY STAR. (n.d.). *What is water use intensity (WUI)?* ENERGY STAR.

	7.4	**Green Building Standards (LEED or equivalent)**
	☐	Achieve LEED Gold or higher, Envision, or an equivalent performance standard
	☐	Use low-impact, low carbon construction materials
	☐	Design buildings to minimize heat island effects through green roofs and shading
	☐	Incorporate water-efficiency landscaping
	7.5	**Public Reporting on Water and Energy Use**
	☐	Publish monthly and annual water and energy data in a publicly accessible format
	☐	Report water sources, withdrawals, return flows, and consumptive use separately
	☐	Disclose energy sources, backup generator testing, and associated emissions
	☐	Allow independent third-party verification of reported data
	7.6	**Ongoing Environmental Monitoring**
	☐	Install real-time water-use and groundwater monitoring systems
	☐	Monitor surface water flows, ground water levels, and water quality indicators
	☐	Track air emissions from on-site generators and power supply
	7.7	**Nature-based Solutions (NbS) for Water, Climate, and Community Resilience**
	☐	Restore or protect wetlands, floodplains, and riparian buffers on-site or within the watershed
	☐	Use green infrastructure (rain gardens, permeable pavement, recharge systems) to manage stormwater
	☐	Implement groundwater recharge projects using infiltration basins or restored natural areas
	☐	Preserve or expand natural open space to reduce flooding and improve water quality
	☐	Support off-site NbS investments in the same watershed when on-site options are limited
	☐	Tie NbS performance to measurable outcomes (gallons infiltrated, acres restored, pollutants reduced)

8. Regional Case Examples

While CBAs vary widely by project and location, several examples illustrate how they can be used to protect community interests:

- **Lancaster, Pennsylvania**[69]
  A Community Benefits Agreement was negotiated as part of a proposed data center development, helping secure local oversight and community-focused commitments before project approval.

- **Chicago Metropolitan Region, Illinois**
  CBAs have been used in large industrial, logistics, and energy-related developments to address infrastructure strain, environmental impacts, and neighborhood protections, setting precedents that can be adapted for data center projects.

- **Detroit and Southeast Michigan**
  CBAs have been incorporated into major redevelopment and infrastructure projects, including energy and manufacturing facilities, to require local hiring, environmental protections, and long-term accountability.

- **Ohio and Wisconsin Urban Areas**
  Local governments and community coalitions have used CBAs in large-scale industrial and power-related developments to secure commitments related to emissions controls, monitoring, and community investments, approaches directly relevant to data center siting.

9. Municipal Ordinances and Temporary Moratoria

Municipal ordinances and temporary moratoriums of development are another way to encourage sustainable development. New data center development has emerged as a tool for local governments and communities to achieve more sustainable, community-oriented outcomes. A moratorium is a temporary pause on permitting or approvals that gives communities time to study impacts, strengthen regulations, and develop standards before new proposals move forward. For example:

- **In September 2025, Jerome Township, Ohio** imposed a temporary 9-month moratorium on data center construction to update its zoning and better assess utility impacts, particularly on water and wastewater systems.[69]

- **In September 2025, Aurora, Illinois** enacted a 180-day development moratorium to evaluate infrastructure strain before allowing additional data center projects to proceed.[70]

Other jurisdictions have adopted permanent local ordinances with substantive requirements rather than outright pauses. In Lake County, Indiana, the county council passed an ordinance in 2024 that establishes detailed conditions for data center development, including setbacks, coordinated training with the fire department, and submission of comprehensive mitigation plans. These plans must address energy use, water withdrawals, conservation, noise control, and decommissioning strategies before building permits can be issued (**Lake County** Ordinance 2590).[71] Similar approaches have been seen in

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[69] Reber, C. (2025). Lancaster City Council votes to approve data center benefits agreement. LancasterOnline.
[70] City of Aurora, Illinois. (2025). *Data center and warehouse moratorium.*
[71] Lake County Planning Commission. (2025). *Ordinance No. 2590: Data center amendment* [PDF]. Lake County Government.

communities like **Grafton, Wisconsin**, which amended zoning to include data center-specific requirements for site design and environmental protection.[72]

When done thoughtfully, moratoriums and local rules can help **level the playing field between large companies and communities**. They give towns and cities time to understand whether their **water, energy, and other services can handle new development**, and to look closely at how projects might affect the environment and residents. This pause also allows communities to negotiate **clear community benefits**, such as public reporting on water and energy use, ongoing environmental monitoring, and investments in natural solutions, such as wetland restoration or improved stormwater management. Communities that take this approach, combining a temporary pause with public input and careful planning, are more likely to make decisions that **protect their resources, strengthen long-term resilience, and still allow responsible economic growth**.

10. Public Meetings and Hearings

You may have the opportunity to participate in a public meeting or hearing regarding a data center proposal in your community. In general, public bodies such as local governments are required to hold open meetings, unless an exception applies. Resources regarding open meetings laws can be found in the table below. In addition, each state has laws that govern how to make public records requests of public bodies. If you're not getting answers before the meeting occurs, creating a public records request might help provide access to the information that you seek.

[72] Village of Grafton, Wisconsin. (n.d.). *Archive Center*.

For resources on making public records requests and public meeting laws, see the table below.

STATE	PUBLIC RECORDS RESOURCE	OPEN MEETINGS LAW RESOURCE
Indiana	Indiana Public Access Counselor, Handbook on Indiana's Public Access Laws	Indiana Public Access Counselor, Handbook on Indiana's Public Access Laws
Illinois	Illinois Attorney General, Illinois Freedom of Information Act Frequently Asked Questions	Illinois Attorney General, Illinois Open Meetings Act Frequently Asked Questions
Michigan	Michigan Attorney General, Freedom of Information Act Handbook	Michigan Attorney General, Open Meetings Act Handbook
Minnesota	Minnesota Department of Administration, Data Practices	Minnesota Department of Administration, Open Meetings
New York	Committee on Open Government, "Your Right to Know"	Committee on Open Government, "Your Right to Know"
Ohio	Ohio Attorney General's Sunshine Laws Manual	Ohio Attorney General's Sunshine Laws Manual
Pennsylvania	Office of Open Records, Citizen's Right-to-Know Law and the Sunshine Act	Office of Open Records, Pennsylvania's Sunshine Act
Wisconsin	Wisconsin Department of Justice, Wisconsin Public Records Law Compliance Guide	Wisconsin Department of Justice, Wisconsin Open Meetings Law Compliance Guide

If you plan to attend a public meeting or hearing, being well-prepared can make a real difference. Many data center proposals are presented with compelling arguments, and understanding these claims ahead of time will help you participate more effectively. Below are some of the most common reasons offered in support of data center projects, along with guiding questions you can use to understand better, evaluate, and respond to them.

This table helps you prepare for public hearings. It shows common statements you may hear from developers or officials, what those statements often mean in plain English, and follow-up questions you ask to get clear, honest answers. Use it as a guide to help you speak up, ask the right questions, and better understand what is being proposed in your community.

WHEN THEY SAY…	ASK…
This proposal uses far less water and energy than "traditional" cooling methods	**Ask for specifics and documentation:** • How much less water and energy, in actual numbers (daily and annual)? • What cooling technology will be used, and how does it compare to other options? • How will the project's energy be generated (fossil fuel, renewables, grid mix)? • What water- and energy-efficiency or conservation measures are included? • How much water will be consumptively used (evaporated and not returned)? • If a closed-loop system is proposed, how often must it be replenished? • What chemicals or additives will the water contain, and where will it be discharged or disposed of?
This project will attract other tech companies and employers	• How much additional growth is anticipated, and over what time frame? • How will the community ensure sufficient water and energy for existing residents and businesses if the increased economic development occurs? • Has the cumulative impact of multiple facilities been evaluated?
This proposal will create X number of jobs	• How many jobs are permanent versus temporary construction jobs? • How many positions are directly employed at the data center? • What wages, benefits, and skill levels are expected? • Will residents be prioritized for these jobs?
This is a major investment in the city	• What are the concrete, long-term benefits to the community? • How does this investment compare to the public costs and risks? • Are there incentives, tax abatements, or exemptions involved?
This project will generate significant revenue for the city	• How much revenue will be generated, and over what period? • How does revenue compare to foregone taxes or incentives? • How will the city protect itself from over-reliance on a single facility or industry?
The data center will pay for the needed infrastructure	• How might this affect water, sewer, or energy rates for residents? • Who pays if infrastructure must be expanded in the future? • If increased demand causes water main breaks or system failures, who is financially responsible?
The data center will use advanced fire suppression systems	• Does the local fire department have the training and equipment to respond? • Will the company provide funding, training, or resources to first responders? • What are the water demands of fire suppression, and how could they affect local supplies during emergencies?

11. Why State-Level Advocacy Matters

Large water-consuming industries, such as data centers, do not operate in isolation, and their impacts extend far beyond any single municipality. Because water resources, energy systems, and economic incentives operate at a regional or statewide scale, effective oversight cannot rely solely on local governments. State-level policy is needed to ensure consistent standards, full accounting of cumulative impacts, and equitable protections for communities and ecosystems across the Great Lakes region.

Data centers compete with other essential users for water, including manufacturing, agriculture, households, and natural ecosystems. Across the Great Lakes region, these growing and overlapping demands place increasing stress on groundwater and surface water supplies. If water use is not carefully planned and managed, it can threaten long-term water availability and harm rivers, wetlands, and drinking water sources that communities depend on.

Despite these risks, state-level economic development agencies, whose mission is to attract new businesses, often do not fully evaluate water availability or long-term water impacts when offering tax breaks or other incentives. As a result, local governments and water managers may learn about major projects late in the process, after key decisions have already been made. Public participation can also be limited. For example, in Batavia, Illinois, residents were given only 10 days' notice to comment on a data center proposal, and less than 24 hours' notice when a significant change to the project's water use was introduced

Even when a data center claims it will use "low-water" or "water-efficient" cooling systems, water use does not disappear. Data centers require enormous amounts of electricity and producing that electricity often consumes large volumes of water at power plants, many of which are located far from the community hosting the data center. Because these water and energy impacts occur outside local boundaries, municipalities reviewing a proposal may overlook them entirely. This connection between energy use and water consumption is complex and challenging for local governments and residents to evaluate independently.

Local efforts to protect water resources can also trigger pushbacks at the state level. When communities adopt zoning rules, ordinances, or temporary moratoriums to slow or better evaluate data center development, state legislatures may respond by limiting local authority. For instance, Montana recently passed legislation that makes it much harder for local governments to regulate significant developments, and Ohio lawmakers are considering similar measures. These actions can weaken a community's ability to protect its own water resources.

For these reasons, solutions cannot rely solely on local governments. State-level policies are needed to address the full scale of water, energy, and economic impacts associated with data center development. Strong state policies can create consistency, transparency, and fairness across communities. Key state-level policy approaches include:

- **Regional water demand studies and groundwater mapping**, supported by dedicated funding, so decision-makers clearly understand how much water is available and how new development may affect existing users.

- **Public disclosure requirements for water and energy use** to ensure that communities have access to reliable information. Transparency should be standard practice, not dependent on whether a single project voluntarily shares details or negotiates a community benefits agreement.

- **Water-use reporting requirements for all large industrial users**, not just data centers. Other industries, such as semiconductor manufacturing or advanced computing facilities, can place similar demands on water systems and should be held to comparable standards.

- **Statewide water and energy efficiency standards** would reduce pressure on local governments to negotiate these protections on a project-by-project basis.

- **Reducing or eliminating data center-specific tax incentives,** which can drain state revenues that would otherwise support local governments, schools, and public services, especially in smaller or rural communities that rely heavily on state funding.

By addressing these issues at the state level, policymakers can better protect shared water resources, strengthen informed community participation, and ensure that economic development does not come at the expense of long-term environmental sustainability and public well-being.

11.1 State-level Organizational Directory

Participating in state-level advocacy doesn't have to be done alone. Many organizations are working on water and energy-related policies related to large water-using industries like data centers, with which you can collaborate. Below is a list of organizations that are actively participating in educating lawmakers and advancing state legislation and regulations. Again, this is not an exhaustive list, and there may be more organizations available in your area. These organizations can advise you on the opportunities available in your state.

STATE	ORGANIZATION	WEBSITE
Indiana	Hoosier Environmental Council	www.hecweb.org
	Save the Dunes	https://savedunes.org/
Michigan	Michigan League of Conservation Voters	https://www.michiganlcv.org/
Minnesota	CURE	https://curemn.org/
	Freshwater	https://freshwater.org/
Ohio	Ohio Environmental Council	https://theoec.org
Wisconsin	Clean Wisconsin	https://www.cleanwisconsin.org/
	Midwest Environmental Advocates	https://midwestadvocates.org
	River Alliance of WIsconsin	https://wisconsinrivers.org/
National	FracTracker Alliance	https://www.fractracker.org/

12. Additional Resources

Additional resources from the Alliance for the Great Lakes:

- ***A Finite Resource: Managing the Growing Water Needs of Data Centers, Critical Minerals Mining, and Agriculture in the Great Lakes Region***
- Factsheet: Great Lakes Region Unprepared for Increasing Water Use
- Webinar: Preparing the Great Lakes Region for Large Water Users

13. References

Barth, A., Arora, C., Shenai, G., Noffsinger, J., & Sachdeva, P. (2025, August 8). *The data center balance: How US states can navigate the opportunities and challenges*. McKinsey & Company. https://www.mckinsey.com/industries/public-sector/our-insights/the-data-center-balance-how-us-states-can-navigate-the-opportunities-and-challenges

Brown, M., & Zhou, S. (2023). *Electricity demand growth from data centers and implications for grid planning*. *Energy Policy, 176*, 113512. https://doi.org/10.1016/j.enpol.2023.113512

Butler, G. (2025). *Amazon data centers in Jerome Township, Ohio, called emergency services 84 times since 2021*. Data Center Dynamics. https://www.datacenterdynamics.com/en/news/amazon-data-centers-in-jerome-township-ohio-called-emergency-services-84-times-since-2021/

City of Aurora, Illinois. (2025). *Data center and warehouse moratorium*. https://www.aurora.il.us/Property-and-Business/Zoning-and-Planning/Data-Center-and-Warehouse-Moratorium

City of Lancaster, PA. (2025). *Community benefits agreement summary*. https://www.cityoflancasterpa.gov/wp-content/uploads/2025/11/Community-Benefits-Agreement-Summary-1-1.pdf

Coalition for Responsible Data Center Development. (n.d.). *Coalition for Responsible Data Center Development* (Website). https://www.datacenterresponsibility.com/

Council of State Governments. (n.d.). *Great Lakes-St. Lawrence River Basin Water Resources Compact*. https://compacts.csg.org/compact/great-lakes-st-lawrence-river-basin-water-resources-compact/

Edwards, E. (2025). *Data center water secrecy hurts communities (and the industry itself)*. Bluefield Research. https://www.bluefieldresearch.com/data-center-water-secrecy-hurts-communities-and-the-industry-itself/

Ferreira, J. P. (2025). *UVA data centers webinar: Slide deck* [PDF]. Joyce Foundation. https://assets.joycefdn.org/content/uploads/Joao-Pedro-Ferreira-UVA_Data-Centers-webinar_Nov-2025.pdf

Freshwater Society. (2025). *Data centers and water use (June 2025).* https://freshwater.org/wp-content/uploads/2025/06/Data-Centers-and-Water-Use_Freshwater.pdf

Great Lakes Commission. (2009). *The energy-water nexus: Implications for the Great Lakes* (GLC Issue Brief No. 01). https://www.glc.org/wp-content/uploads/GLCIssue-01-EnergyWaterNexus-Final-20100204.pdf

Great Lakes Commission. (2025). *New Great Lakes water use report demonstrates shared stewardship of the world's largest freshwater system*. https://www.glc.org/news/wudb-121125/

Great Lakes–St. Lawrence River Basin Water Resources Regional Body. (2005). *Great Lakes–St. Lawrence River Basin sustainable water resources agreement*. https://www.glslcompactcouncil.org/media/uvlnnp5d/great_lakes-st_lawrence_river_basin_sustainable_water_resources_agreement.pdf

Han, Y., Wu, Z., Li, P., Wierman, A., & Ren, S. (2024). *The unpaid toll: Quantifying the public health impact of AI* . https://doi.org/10.48550/arXiv.2412.06288

Hicks, M. J. (2025). *Data centers and local job creation: Some preliminary causal estimates from Texas*. *The Country Economist*. https://michaeljhicks.substack.com/p/data-centers-and-local-job-creation

Hoosier Environmental Council. (2025). *A community guide to data centers*. https://www.hecweb.org/2025/09/29/data-center-guide-community/

Hoosier Environmental Council. (2025). *A community guide to data centers.* Indianapolis. https://www.hecweb.org/2025/09/29/hec-data-center-guide-policy-makers/

ICS Thailand. (2025). *Environmental impact of cooling towers and how to minimize it*. https://icsthailand.co.th/environmental-impact-of-cooling-towers/

Intergovernmental Panel on Climate Change. (2022). Climate change 2022: Impacts, adaptation and vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press. https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_FullReport.pdf

International Joint Commission. (n.d.). Great Lakes water levels. Michigan Department of Environment, Great Lakes, and Energy. (n.d.). Background information on lake levels in the Great Lakes.

International Joint Commission. (2000). *Protection of the waters of the Great Lakes: Final report to the governments of Canada and the United States*. https://legacyfiles.ijc.org/tinymce/uploaded/documents/protection-of-the-waters-great-lakes-feb-2000.pdf

Jacobs, M. (2025). *Connection costs: Loophole costs customers over $4 billion to connect data centers to power grid.* Union of Concerned Scientists. https://www.ucs.org/sites/default/files/2025-09/PJM%20Data%20Center%20Issue%20Brief%20-%20Sep%202025.pdf

Joyce Foundation. (2024). *Groundwater governance in EPA Region 5* (May 5, 2024) [PDF]. https://assets.joycefdn.org/content/uploads/Groundwater-Governance-in-EPA-Region-5-Report.pdf

Lake County Planning Commission. (2025). *Ordinance No. 2590: Data center amendment*. Lake County Government. https://lakecountyin.gov/departments/planning-commission/ordinances-c/amendments/ord%202590%20data%20center.pdf

Leppert, R. (2025). *What we know about energy use at U.S. data centers amid the AI boom*. Pew Research Center. https://www.pewresearch.org/short-reads/2025/10/24/what-we-know-about-energy-use-at-us-data-centers-amid-the-ai-boom/

MacDonald, A., Reedy, R. C., Shamsudduha, M., Simmons, C. T., ... Zheng, C. (2023). *Global water resources and the role of groundwater in a resilient water future*. *Nature Reviews Earth & Environment, 4*(2), 87–101. https://doi.org/10.1038/s43017-022-00378-6

Maguire, N. (2025). *How long do data center servers last?* Procurri. https://www.procurri.com/2025/04/24/how-long-do-data-center-servers-last/

Masanet, E., Shehabi, A., Lei, N., Smith, S., & Koomey, J. (2020). Recalibrating global data center energy-use estimates. *Science, 367*(6481), 984–986. https://doi.org/10.1126/science.aba3758

McKinsey & Company. (2024). *AI power: Expanding data center capacity to meet growing demand*. https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/ai-power-expanding-data-center-capacity-to-meet-growing-demand

MediaJustice. (2025). *The people say no: Resisting data centers in the South.* MediaJustice. https://mediajustice.org/resource/the-people-say-no-report/

Michigan Department of Environment, Great Lakes, and Energy. (n.d.). *Background information on lake levels in the Great Lakes*. https://www.michigan.gov/egle/about/organization/water-resources/submerged-lands/levels-background

Natural Resources Defense Council. (2019). *Local policies for environmental justice: A national scan*. https://www.nrdc.org/sites/default/files/local-policies-environmental-justice-national-scan-tishman-201902.pdf

Newman, J. (2025). *Central Ohio township halts new data centers amid growing resident concerns.* Scioto Post. https://www.sciotopost.com/central-ohio-township-halts-new-data-centers-amid-growing-resident-concerns/

New Orleans Office of Inspector General. (2024, August 6). *Industrial Development Board payments in lieu of taxes (PILOT) agreements*. https://nolaoig.gov/media/industrial-development-board-payments-in-lieu-of-taxes-pilot-agreements/

Patterson, M. K. (2008). The effect of data center temperature on energy efficiency. *Proceedings of the 11th Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems*. IEEE. https://doi.org/10.1109/ITHERM.2008.4544393

Reber, C. (2025). *Lancaster City Council votes to approve data center benefits agreement.* LancasterOnline. https://lancasteronline.com/news/local/lancaster-city-council-votes-to-approve-data-center-benefits-agreement/article_b05cb1fd-a585-4c4f-8945-c96ada3172ad.html

Reilly, G. (2025). *DNR says dry New Carlisle wells caused by drought instead of Amazon or GM/Samsung projects*. *South Bend Tribune*. https://www.southbendtribune.com/story/news/local/2025/10/31/dnr-says-drought-caused-dry-wells-near-new-carlisle-developments/86876751007/

Scanlon, B. R., Fakhreddine, S., Rateb, A., de Graaf, I., Famiglietti, J., Gleeson, T., Grafton, R. Q., Jobbagy, E., Kebede, S., Kolusu, S. R., Konikow, L. F., Long, D., Mekonnen, M., Müller Schmied, H., Mukherjee, A.,

Shehabi, A., et al. (2016). *United States data center energy usage report*. Lawrence Berkeley National Laboratory. https://eta.lbl.gov/publications/united-states-data-center-energy

Shehabi, A., Smith, S. J., Hubbard, A., Newkirk, A., Lei, N., Siddik, M. A. B., Holecek, B., Koomey, J., Masanet, E., & Sartor, D. (2024). *2024 United States data center energy usage report* (LBNL-2001637). Lawrence Berkeley National Laboratory. https://escholarship.org/uc/item/32d6m0d1

Tao, Y., & Gao, P. (2025). *Global data center expansion and human health: A call for empirical research*. *Eco-Environment & Health, 4*(3), 100157. https://doi.org/10.1016/j.eehl.2025.100157

U.S. Environmental Protection Agency. (2004). *Guidelines for water reuse* (EPA/625/R-04/108). https://www.epa.gov/sites/default/files/2019-08/documents/2004-guidelines-water-reuse.pdf

U.S. Environmental Protection Agency & ENERGY STAR. (n.d.). *What is water use intensity (WUI)?* ENERGY STAR. https://www.energystar.gov/buildings/benchmark/understand-metrics/what-water-use-intensity-wui

U.S. Environmental Protection Agency. (2017). *Water quality standards handbook: Chapter 3: Water quality criteria* (EPA-823-B-17-001). U.S. Environmental Protection Agency. https://www.epa.gov/sites/default/files/2014-10/documents/handbook-chapter3.pdf

U.S. Environmental Protection Agency. (2023). *Using nature-based solutions to manage water*. https://www.epa.gov/waterreuse/water-reuse-and-nature-based-solutions

U.S. Environmental Protection Agency. (2023). *U.S. EPA's ENERGY STAR program develops energy-saving guidance for co-location data centers*. https://www.epa.gov/newsreleases/us-epas-energy-star-program-develops-energy-saving-guidance-co-location-data-centers

U.S. Environmental Protection Agency. (2025). *Best management practices*. WaterSense. https://www.epa.gov/watersense/best-management-practices

U.S. Environmental Protection Agency. (2025). *Great Lakes facts and figures*. https://www.epa.gov/greatlakes/great-lakes-facts-and-figures

U.S. Environmental Protection Agency. (2025). *Particulate matter (PM) basics*. https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#effects

U.S. Department of Energy. (2020). *Energy efficiency in data centers*. https://www.energy.gov/femp/energy-efficiency-data-centers

U.S. Geological Survey. (2016). *Emerging contaminants—Research and data gaps* (Circular 1441). U.S. Department of the Interior. https://pubs.usgs.gov/circ/1441/circ1441.pdf

U.S. Geological Survey. (2018). *Groundwater decline and depletion*. U.S. Department of the Interior. https://www.usgs.gov/water-science-school/science/groundwater-decline-and-depletion

U.S. Geological Survey. (2018). *Freshwater (lakes and rivers) and the water cycle*. https://www.usgs.gov/water-science-school/science/freshwater-lakes-and-rivers-and-water-cycle

U.S. Geological Survey. (n.d.). *Water cycle*. https://www.usgs.gov/water-science-school/science/freshwater-lakes-and-rivers-and-water-cycle

Village of Grafton, Wisconsin. (n.d.). *Archive Center*. https://www.villageofgraftonwi.gov/Archive.aspx?AMID=104

Willson, M. (2025). *States push to end secrecy over data center water use*. E&E News by POLITICO. https://www.eenews.net/articles/states-push-to-end-secrecy-over-data-center-water-use/

Winter, T. C., Harvey, J. W., Franke, O. L., & Alley, W. M. (1998). *Ground water and surface water: A single resource* (U.S. Geological Survey Circular 1139). U.S. Geological Survey. https://pubs.usgs.gov/circ/circ1139/

Yu Tao, Peng Gao, "*Global data center expansion and human health: A call for empirical research,* Eco-Environment & Health, Vol. 4, Iss. 3. (2025). https://doi.org/10.1016/j.eehl.2025.100157