

Data Centers in Michigan:

Current State of Energy, Water, and Local Considerations

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This report provides a level-setting snapshot of data center development in Michigan as of April 2026, organized around four core topics: **energy, water, policy, and community engagement.** It is intended to provide a short synopsis of the existing knowledge and state-of-play across these areas, providing a baseline reference to inform conversation rather than an analysis or set of recommendations. Because policy frameworks, technology, and project plans are evolving quickly, the conditions described here reflect a moment in time and will continue to shift in the months and years ahead.

Introduction

Datacenters have operated in Michigan and across the country for decades, but hyperscale facilities primarily built to serve AI workloads are new to the state and warrant special attention due to their concentrated resource demands and community impacts.

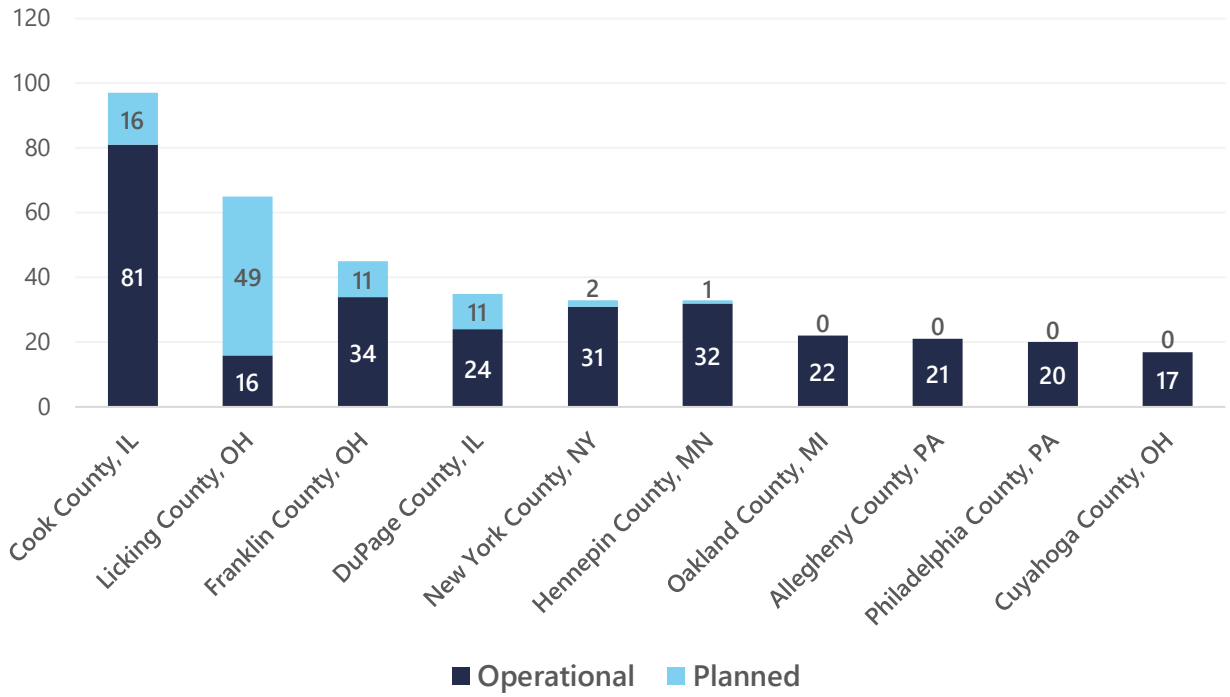


Figure 1: Operational data centers by type and by state in the Great Lakes region.[2]

While no universal definition exists, hyperscale data centers typically house over 5,000 servers, ranging from tens to hundreds of megawatts in power capacity.[1] There are currently no hyperscale data centers operating in Michigan, though that is subject to change. Recent

analysis projects Michigan data centers could support roughly 7,400 jobs and generate $1.4 billion in GDP by 2030[2] (though projections remain highly uncertain). The first approved hyperscale campus in Michigan, Oracle and OpenAI's Project Stargate in Saline Township, is permitted at 1.4 GW.[3] If operated continuously at full load, that would equal about 12.1 Terawatt hours of electricity use per year, which is more than the annual electricity use of 1.1 million average US homes.[4]

Historically, Michigan has played a relatively limited role in the national data center market compared to other states (Figure 1). With the emergence of hyperscale development plans in Michigan, it is critical to understand the conditions driving development in specific localities and the impacts these projects have on the communities that host them.

Conditions Driving Data Center Development and Siting in Michigan

Due to the substantial infrastructure requirements of hyperscale data centers, several factors influence where development occurs, as illustrated in Figure 2.

Power and Transmission	Data centers require large, concentrated electricity loads with sufficient grid capacity and manageable interconnection timelines.
Fiber Connectivity	Sites with robust fiber infrastructure are favored as hyperscale datacenter performance depends on fast, reliable connectivity.
Water and Wastewater	Cooling technology affects the water demand profile, making access to adequate supply and treatment capacity a site-specific consideration.
Metro Clustering	In the Great Lakes region, 96% of operational data centers are located in large and medium metro counties, where existing infrastructure enables cheaper development.[2]
Taxes and Regulations	Michigan is one of 36 states with data center tax exemptions. The creation of the "enterprise data center" category eligible for tax exemptions beginning in April 2025 was a key catalyst for attracting hyperscalers.
Local Siting	Siting determines where noise, traffic, land-use conflict, and infrastructure strain are concentrated, making zoning and community protections critical.

Figure 2: Key siting factors for hyperscale data centers

Michigan Policy Landscape around Data Centers

Michigan has offered data center sales and use tax exemptions since 2015, though the original "qualified data center" category (requiring that at least 75% of revenue comes from unaffiliated co-located businesses) largely excluded hyperscale operators. The most significant amendment, effective April 2025, established a new "enterprise data center" category with higher capital, labor, and clean energy requirements, but broadening facility eligibility to include hyperscale facilities. This new tax exemption, among other drivers, unleashed significant developer interest across Michigan —so much so that it has prompted some municipalities to enact protective moratoria to provide time to draft adequate regulatory frameworks. As of February 2026, at least 25 Michigan municipalities had enacted temporary moratoria on data center permitting while reworking zoning ordinances to better address setbacks, noise limits, and cooling technology requirements.[5]

The influx of local moratoria has triggered state-level attention. Bills have been introduced in both chambers of the legislature that aim to slow or halt development: House Bills 5396-5398 (proposed in December 2025) would repeal existing data center tax exemptions, while House Bills 5594-5596 (proposed in February 2026) would impose a moratorium on data center permitting and development through April 1, 2027, including at the local level.

Because no two data centers have identical environmental and economic profiles, blanket policies risk misaligning costs and benefits. Data centers vary widely in scale, power demand, water intensity, local tax yield, and strain on community infrastructure. These risks -— relevant to all partners — illustrate the importance of examining more targeted, conditional policy approaches that clarify each party's respective obligations and benefits.

Siting and Zoning

Siting and local zoning are the primary mechanisms through which communities shape data center development, governing the local impacts projects impose and the standards they must meet. While state policy and regulatory processes shape whether and how projects move forward, local zoning regulates setback distances, building height, lighting, noise, traffic, and visual impacts that directly affect nearby residents.

Experience from high growth regions illustrates the risk of reactive planning. Loudoun County, Virginia provides a case study of how insufficient early planning for data center development can impact a local community. The county's unusually favorable siting conditions has attracted significant developer interest. Projects that complied with existing building codes were approved by-right, with planning staff signing off through routine permitting and no opportunity for public comment or elected review. While these projects met local codes, they still generated quality-of-life issues like noise pollution that community members had no formal opportunity to weigh in on. As impacts grew and public trust eroded, officials came under pressure to impose more stringent requirements. In March 2025, Loudoun eliminated by-right data center development entirely, requiring all new projects to go through public hearings before the Planning Commission and Board of Supervisors, creating unexpected

hurdles for developers mid-pipeline.[6] In contrast, areas like Chandler, Arizona serve as positive examples where data center-specific zoning standards were established before any significant development. These municipalities require noise studies, construction baseline measurements, and restricted siting, giving both communities and developers clear expectations and greater certainty over a project's costs and benefits.[7]

Michigan currently lacks formal mechanisms to ensure data center developments deliver community benefits, leaving outcomes to be negotiated on a case-by-case basis. The Project Stargate development illustrates how this plays out in practice, where the developer's $14 million in financial commitments to Saline Township ($8M for fire services, $4M for farmland preservation, and $2M for community investment) were secured through litigation rather than through an enforceable framework such as conditional zoning or subsidy-tied requirements.

Community Engagement

Effective community engagement is best understood as a sequence rather than a single event (Figure 7). Each stage involves different partners and serves a different function, and weakness at any stage can compound into the next.

Stage	Description
Pre-application	Takes place before formal permitting begins. Focuses on site selection, scoping of likely concerns, and early identification of issues that may shape project design.
Permitting-stage	Occurs through public hearings, comment periods, and zoning proceedings, where communities formally weigh in on applications under review.
Post-approval	Continues through construction and operation, addressing complaint resolution, monitoring of agreed-upon mitigations, and adjustments as projects evolve.

Figure 7: Stages of community engagement in data center siting

Across stages, communities consistently raise a recognizable set of questions about data center proposals, including expected power and water demand, cooling technology, water source, backup generator type and runtime, local economic impacts and jobs, construction hours and traffic routing, noise mitigation, decommissioning plans, and the legal entity behind the project. Clear answers to these questions early in the process tend to support more productive engagement, while gaps or shifting information often become focal points for opposition later.

Because data center-specific engagement is still an emerging practice, much of the available research draws on adjacent infrastructure contexts. Renewable energy siting offers the most directly comparable evidence base, since the scale and rural geographies of these renewable

energy projects mirror those of data centers. A report by graduates of UM's Urban & Regional Planning program notes that effective community engagement requires that developers understand the local history and context; identify key stakeholders, including those who might be harmed by the project, and engage them early; meaningfully incorporate public feedback into project plans; and establish solid relationships by following through on commitments.[21] Not all renewable energy projects, though, follow these practices. Instead, recent work on large-scale solar siting has documented what it calls "misengagement:" engagement processes are often compressed in time and structured around a final decision on an already-developed proposal, rather than around earlier collaboration that could shape project design itself.[22] While data centers differ from wind and solar projects in scale, ownership structure, and impact profile, the underlying lesson appears consistent: the procedural foundations of engagement, established well before formal permitting, tend to shape how projects are received once they enter public review.

Energy

Energy Demand

Because data centers primarily draw electricity from the grid, many of the environmental impacts associated with their energy use (e.g. air quality, water consumption, carbon emissions) occur at power generation facilities rather than at the data centers themselves. However, an increasing number of data centers are turning to on-site generation. Multiple sources have estimated that roughly 30% of new data center load coming online by 2030 will be served by behind-the-meter (BTM) generation.[8, 9, 10] The dominant BTM energy source is natural gas, though nuclear, solar, and batteries are also expected to play a notable role. Many view behind-the-meter energy solutions as the most viable near-term path forward, especially for data centers exceeding 500 MW.[11]

So far, Michigan's most developed hyperscale projects have diverged from this national BTM trend. This is partially a result of the state of Michigan's enterprise data center tax exemption requiring the procurement of at least 90% clean energy. The Oracle/OpenAI Stargate project in Saline Township (which received conditional approval from the Michigan Public Service Commission (MPSC) in December 2025) is in initial construction and will operate on grid power supplied by DTE, with the project also resulting in $2 billion of new battery storage to be installed across DTE's system. Google's proposed Project Cannoli in Van Buren Township has filed a similar agreement with DTE contracting for grid-supplied energy while also funding DTE development of 2.7 GW of new resources (1.6 GW renewable generation, 450 MW storage, and demand flexibility) to help serve the 1 GW facility.[12] While the absence of publicly disclosed BTM generation does not preclude future on-site additions, these developments position Michigan's investor-owned utilities as responsible for serving the majority of near-term data center load growth.

DTE alone has identified roughly 7 GW of additional hyperscale load in its forecasted project pipeline, which would approximately double the utility's current system demand. The scale of anticipated data center load growth creates tension with Michigan's clean energy mandates

set out in PA 235 (50% renewable by 2030, 100% by 2040). How this tension is resolved will play out somewhat at the Michigan Public Service Commission through the 2026 Integrated Resource Plan filings from DTE and Consumers.

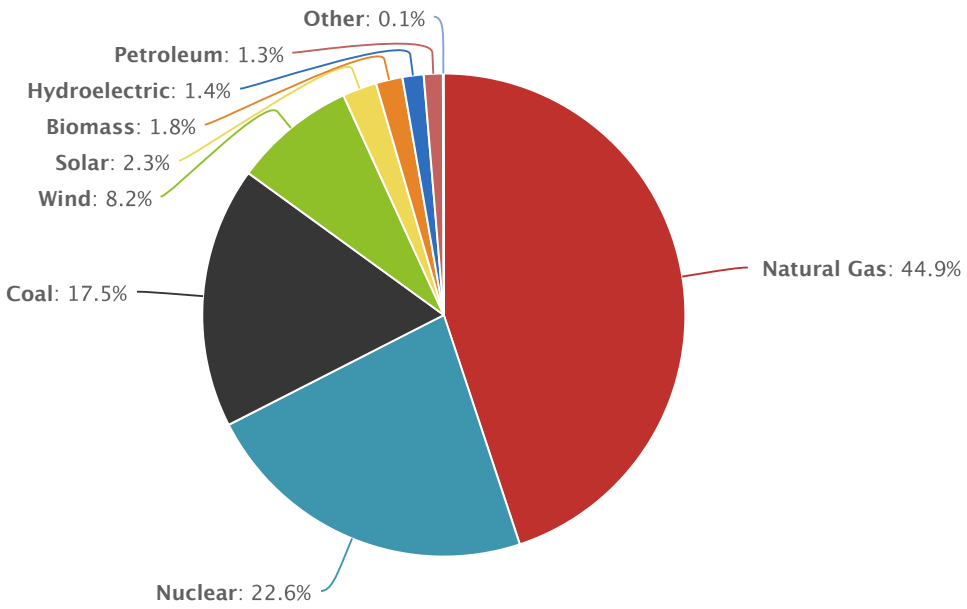


Figure 3: Michigan net generation by fuel source: all sectors: February 2026[13]

Backup Generation

Even where primary electricity service is provided by the grid rather than behind-the-meter generation, environmental impacts from backup generation have local implications. Large data centers commonly install diesel or natural gas backup generators for reliability and emergency operations. Although these units usually do not serve the facility's continuous load, they run regularly for required operational testing, during grid outages, and in some cases to support the grid during periods of peak demand. Even routine testing can contribute to localized emissions of nitrogen oxides, particulate matter, and greenhouse gases, making generator permitting and disclosure an important part of community review.

Meeting Energy Load

Data centers submit service requests to utilities, which must evaluate whether sufficient generation, transmission capacity, and reliability standards can be met. In Michigan, large-load service agreements (especially those with significant system or ratepayer impacts) require approval from the MPSC.*

Speed to Power

Data centers can often be permitted and constructed faster than the generation, transmission,

*For a national database tracking emerging large-load tariffs, see Smart Electric Power Alliance's Database of Emerging Large-Load Tariffs (DELTa).[14]

and substation infrastructure required to serve them (Figure 4). If development outpaces grid expansion, this can create reliability constraints, increase reliance on fossil peaker plants or imports, and place additional strain on existing infrastructure.

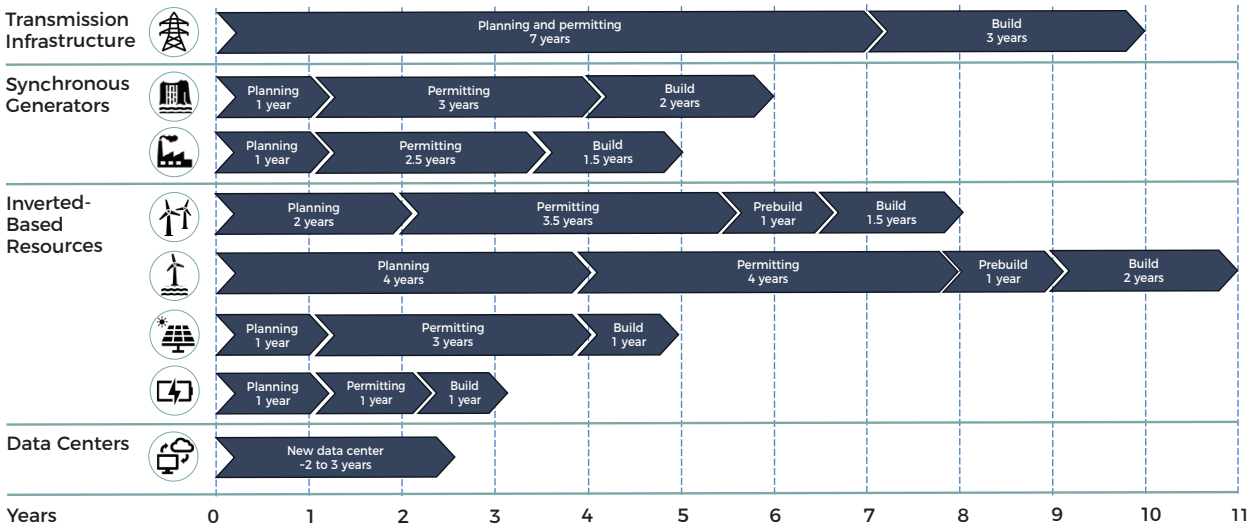


Figure 4: Development timelines for infrastructure supporting datacenters[15]

Interconnection

The mismatch between data center and supporting infrastructure development timelines is largely driven by the interconnection process required to bring new generation online. Transmission-connected resources must move through the Midcontinent Independent System Operator's (MISO) generator interconnection queue that falls under the Federal Energy Regulatory Commission's (FERC) jurisdiction, which currently carries multi-year wait times, creating bottlenecks for utility-scale additions. In contrast, lower-voltage, distributed energy resources (DERs) interconnected at the distribution level fall under state jurisdiction and thus are reviewed by the host utility under the MPSC. As distribution studies are more localized, interconnection at the distribution level can be reasonably shorter, albeit at a smaller scale and often greater cost per MW of addition.

DERs for Data Centers

DERs have received increasing attention as a potential solution to the speed-to-power challenge. The logic builds directly on the interconnection asymmetry discussed above: because data centers are willing to pay a premium for speed, and since distribution-connected resources bypass the multi-year MISO queue, hyperscaler capital can fund distribution-sited solar, storage, and virtual power plant (VPP) deployments that come online on data center timelines. These investments can deliver broader benefits, including deferred transmission and substation upgrades, bill savings for participating households and businesses, and capacity that can be dispatched by the utility to support grid reliability during periods of system stress.[16] By maximizing utilization of existing distribution infrastructure in areas with available capacity and adding dispatchable resources where constraints exist, this approach can accommodate new load without the lead times associated with bulk system expansion. A 2024 Brattle

Group report found that 400 MW of VPP resource adequacy costs roughly $2 million annually, compared to $43 million for equivalent new gas plants and grid upgrades, suggesting that procuring capacity through DERs can meaningfully reduce upward pressure on rates (Figure 5).[17]

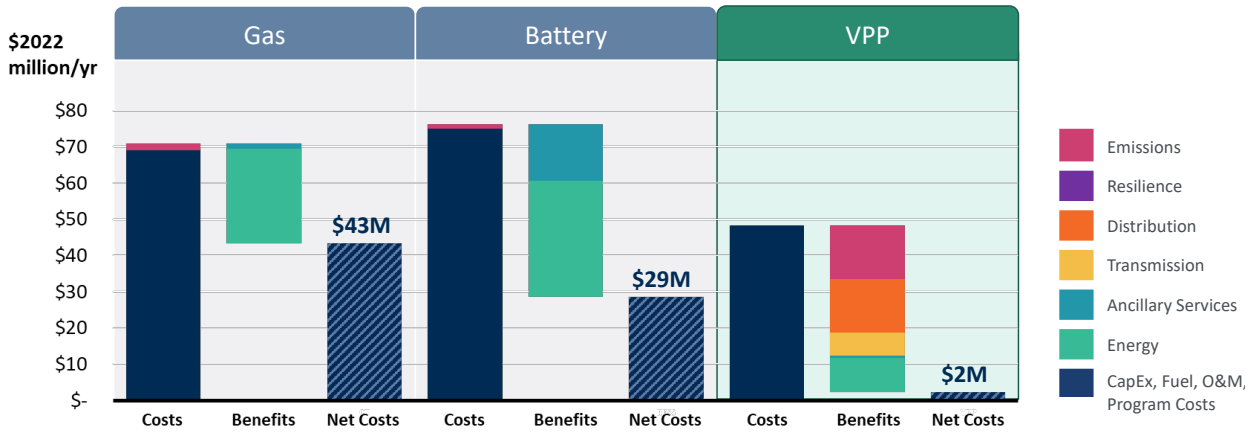


Figure 5: Net cost of Providing 400 MW of Resource Adequacy[17]

Michigan's existing regulatory framework, however, limits the scale at which a DERs-for-DCs model could be deployed today. Under MPSC Order U-21099, only commercial and industrial customers with at least 1 MW of enrolled load can participate through third-party aggregators; resources are compensated only for load reduction rather than export capacity, limiting economic viability; and eligible resource types remain narrow.[18] SB 731 and SB 732 (introduced in December 2025) would close these gaps by establishing statutory definitions for VPPs, require DTE and Consumers to incorporate them into distribution and transmission planning, and allow MPSC-regulated aggregators to enroll residential and small commercial resources (e.g. smart appliances, solar-plus-storage, EVs, etc.).

While transmission-scale clean resources in the MISO queue will be the primary pathway for buildout and compliance with state clean energy mandates, distribution-sited DERs funded by hyperscalers offer a structurally different path to capacity that is faster to deploy, more readily sited, and more directly beneficial to ratepayers in host communities.

Power Usage Effectiveness (PUE)

PUE is the standard industry metric used to evaluate energy efficiency, comparing total facility energy consumption to IT-related energy use. Modern hyperscale facilities often achieve PUEs of 1.2-1.3, meaning that for every 1 kWh of energy used by servers, an additional 0.2-0.3 kWh is required for cooling, power conditioning, and other ancillary systems. While technology is advancing, efficiency gains are often offset by rapid growth in computational demand and AI workloads, reflecting a Jevons paradox* dynamic

*The Jevons paradox refers to the tendency for gains in efficiency to be outpaced by growth in demand, such that total resource use rises rather than falls.

in which total energy use continues to rise despite improvements in efficiency.

Energy-Water Nexus

Facilities with lower PUEs often rely on water-intensive evaporative (open-loop) cooling systems, while more water-efficient (closed-loop) cooling systems tend to be more energy-intensive and costly. This creates a tradeoff between PUE and Water Usage Effectiveness (WUE) that must be evaluated based on local resource constraints.

Indirect Water Impacts

Even facilities with low on-site water use carry indirect water impacts through electricity consumption. In Michigan, power generation still relies significantly on thermoelectric facilities. In 2024, Michigan's electric power plants withdrew roughly 5.4 billion gallons of water per day for cooling, 19 meaning much of the water burden associated with data centers occurs at energy generation facilities.

Water

Cooling and Water Use

On-site water use depends heavily on cooling technology and can vary across data center designs. Cooling is one of the largest sources of non-IT energy use for data centers. Hyperscale facilities typically rely on one of three cooling approaches (Figure 6).

Cooling Type	Description	Open vs Closed Loop	Water Usage
Evaporative	Use water evaporation to reject heat with high energy efficiency.	Open-loop	High
Air-cooled	Rely on ambient air and mechanical cooling with little to no on-site water use.	Closed-loop	Minimal
Liquid-cooled	Circulate a coolant directly to servers and can be paired with either evaporative or air-cooled heat rejection.	Depends on system	Depends on system

Figure 6: Hyperscale data center cooling approaches

Cooling systems can be broadly categorized as open-loop or closed-loop based on how they release heat to the outside environment. Open-loop systems discharge heat by cycling water through the system, where evaporation carries heat into the atmosphere (energy efficient but water-intensive). Closed-loop systems instead use air or a recirculating fluid to expel heat without consuming water in the process.

While some facilities use minimal direct water (e.g. air-cooled systems), those that rely on evaporative cooling can require substantial water use for heat rejection.

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Wastewater

Cooling systems, particularly evaporative systems, can generate discharge containing elevated concentrations of salts, biocides, and conditioning chemicals that can strain local wastewater treatment infrastructure.

Permitting and Governance

Michigan regulates large water withdrawals through a coordinated framework led by the Department of Environment, Great Lakes, and Energy (EGLE) under the Great Lakes-St. Lawrence River Basin Compact. Data center projects making direct withdrawals must demonstrate that proposed withdrawals will not cause adverse impacts to nearby water resources via EGLE's Adverse Resource Impact (ARI) assessment where they must submit water use requests outlining withdrawal volumes, sources, and timing. Regulatory requirements scale with withdrawal volume, with larger projects subject to more detailed review and permitting processes.

Many Michigan water systems have additional capacity available, as deindustrialization has resulted in large industrial customers leaving despite water systems being sized for industrial loads. Thus, many water systems can accommodate new data center demand; however, leveraging municipal water systems to serve data center load comes with limited oversight, as it falls outside EGLE's direct withdrawal reporting requirements. Consumption is tracked only at the utility account level rather than by facility, leaving both the quantity and composition of a data center's water use largely invisible to regulators and the public, as the information is aggregated with other water utility contracts.

Looking Ahead

The data center landscape in Michigan is moving quickly. Utility resource plans, state legislation, local zoning ordinances, and individual project proposals are all in active flux, and the conditions described in this report will continue to evolve as these processes play out. Coordinated attention across energy, water, policy, and community engagement will be essential to ensuring that data center development in Michigan delivers durable benefits to host communities and the state as a whole.

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Appendix 1

Key Sustainability Considerations for Data Center Siting and Operations

Key Sustainability Considerations	
Siting	Site facilities in locations with available or planned energy capacity, while also ensuring adequate water supply and wastewater infrastructure. Siting decisions should reflect local resource constraints and minimize community and environmental impacts.
Cooling System	Select cooling systems based on local energy and water tradeoffs, balancing efficiency, water use, and resource availability.
Efficiency	Improve efficiency through facility design, equipment optimization, and reduced cooling demand to minimize both energy and water use.
Transparency	Increase transparency through disclosure of energy demand, water use, cooling technologies, and infrastructure impacts to build community trust and improve certainty around local effects.

Energy-specific		Water-specific	
Flexibility	Incorporate load flexibility and demand response, including shifting workloads to periods of high renewable generation and allowing limited curtailment during grid stress. Recent research suggests that 76 GW of new load could be integrated using existing grid capacity if projects are willing to accept an average annual curtailment rate of 0.25% of maximum uptime.	**Wastewater Management**	Minimize and treat wastewater discharge, including managing thermal loads and chemical concentrations.
On-site Generation	Pair grid supply with renewable on-site generation and storage to reduce peak demand impacts.	**Water Sourcing**	Use non-potable or recycled water where feasible.