



Turning It Up

Consumer Reliance On Digitized Information and the Role of Data Centers

- ▶ **As increased consumer reliance on digitized information** sparks a critical new addition to energy infrastructure, energy consumers are no longer passive recipients of electricity and utility services — they are increasingly active participants in energy generation, management and optimization.

As digital transformation accelerates across industries and households, data centers are emerging as pivotal infrastructure components not just for information storage and processing but also for enabling smarter, cleaner and more resilient energy systems. From individual consumers to large industrial users, the role of data centers extends beyond data management to directly influencing energy consumption patterns, supporting renewable integration and enhancing grid stability.

This paradigm shift offers numerous benefits, including cost savings, environmental sustainability and improved energy reliability. Understanding this evolving landscape from the vantage point of both energy consumers and utilities reveals the critical importance of data centers in building a sustainable energy future.

Historically, data centers were viewed solely as on-site spaces and facilities housing servers and networking equipment to support business operations, cloud computing and internet services. Their primary focus was on managing computational loads efficiently and securely.

In recent years, as data demands soared to unprecedented levels, the size and energy footprints required to meet the exploding usage have increasingly required more sophisticated standalone facilities and today, data centers are transforming into sophisticated energy hubs that enable real-time monitoring, demand response and renewable energy integration. They are becoming embedded within the energy infrastructure to support a smarter, more flexible and sustainable grid.

For energy consumers — residential, commercial or industrial — the integration of data centers into the energy ecosystem will enhance reliability and could over time produce cost savings and reduced environmental impact. For utilities, the data centers could be important partners in reducing wasted energy and managing peak loads.

The operative word is “could” because it will take time for the existing infrastructure and the new structural data center additions to optimize their interaction (e.g., remember when you installed that new software system) and some of the adjustments are likely to stress all the players during that transition.

Data centers, for example, are among the most energy-intensive facilities, often consuming hundreds of megawatts of power, comparable to the energy demands of entire small cities. For example,

when located within a utility’s service area, they may exert significant pressure on the local grid, including:

- **PEAK LOAD INCREASES.** Data centers typically operate continuously at high capacity and their demand can coincide with peak grid loads, exacerbating stress on transmission and distribution infrastructure.
- **INFRASTRUCTURE UPGRADES.** Utilities may need to invest in reinforcing substations, transformers and distribution lines to accommodate the additional load, leading to increased capital expenditure.





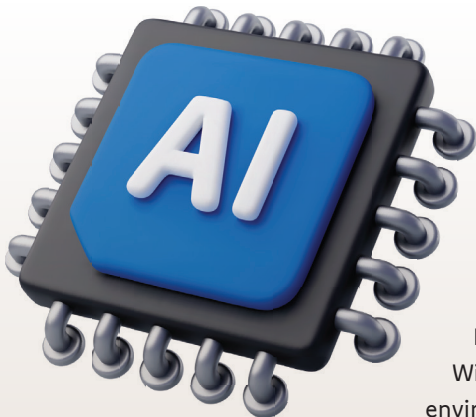
- **VOLTAGE AND STABILITY CHALLENGES.** The high and variable load profiles of data centers can cause voltage fluctuations and stability issues, demanding advanced grid control measures.

One good example of this sort of evolutionary management transition can be found in how the largest data center developers such as Microsoft and Google have responded to early concerns about the amount of water being used to cool their data centers. In Arizona, for example, which has a number of large data centers, there was public concern about heavy water usage. In response, in 2024, Microsoft, "...unveiled its plans to implement a groundbreaking, water-free cooling technology across all its new data centers."

Described in a December 2024 article in Sustainability Magazine, as "the proposed zero-water design pivots from

traditional evaporative cooling methods to an advanced chip-level cooling system, which manages temperatures via a closed-loop, water-recycling process. This new setup will potentially cut down water use by approximately 125 million litres annually for each facility. "These new liquid cooling technologies are designed to circulate water within a closed network," says Steve Solomon, vice president of Data Centre Infrastructure Engineering at Microsoft. "Once the initial setup is complete, the system operates independently, dissipating heat efficiently without additional water intake."

In addition, as data centers are able to maximize their potential as partners in energy management they will be able to use advanced algorithms to optimize energy consumption, renewable integration and grid stability, providing consumers with smarter, more cost-effective energy solutions such as data centers supporting grid stability through real-time data analytics, fault detection and outage management to enhance reliability; demand



What say A.I.?

Competitive Wisconsin, Inc. asked an AI source, Perplexity AI, whether each of these assertions were true. The results are provided below.

► QUESTION:

Is it true that in Wisconsin, the regulatory environment requires that costs incurred in the

development and use of large data centers must be paid for by those who build, own and use them?

► **AI RESPONSE:** Yes, Wisconsin's regulatory environment is indeed structured so that the costs associated with developing and operating large data centers — particularly the energy infrastructure needed to support them — are expected to be paid by the companies that build and use them, not by general ratepayers.

• Public Service Commission Oversight

Wisconsin's Public Service Commission (PSC) regulates how infrastructure and utility costs are allocated. As new hyperscale data centers emerge across the state, the PSC has made it clear that existing utility customers should not bear the financial burden of the energy and transmission upgrades

required for these data centers. The PSC evaluates utility rate proposals to ensure that large data consumers — like data centers — cover their proportional infrastructure costs.

• Utility Rate Design

Utilities such as We Energies and Alliant Energy have proposed and implemented special rate structures for large data center users. These rates include fixed and variable components designed to recover both generation and distribution costs from the data centers themselves.

For example, We Energies' 2025 proposal included a fixed administrative cost per billing period and additional costs based on the customer's peak demand, explicitly stating that data center customers will "directly pay for the power they consume, along with costs of power generation plants and distribution facilities built to serve them."

• Policy Intent and Legislative Framework

The Wisconsin Economic Development Corporation (WEDC) promotes data center development through tax exemptions but retains the principle that each project is a

response programs facilitated by data centers during peak periods to reduce consumer costs; and data-driven optimization to reduce overall carbon footprints by enabling renewable energy use and efficient consumption.

In short, from the perspective of energy consumers, data centers are no longer just digital infrastructure — they are vital enablers of a smarter, cleaner and more resilient energy future. They support cost savings through demand response, facilitate renewable energy integration and enhance grid reliability, all while promoting environmental sustainability.

And, as the energy landscape continues to evolve, the strategic deployment and optimization of data centers will be critical in empowering consumers to participate actively in energy management. Embracing this integration offers a pathway toward more equitable, sustainable and resilient energy systems — where consumers are empowered and the planet benefits.

Nevertheless, the transition from this “beginning” point to the point where “could” becomes “can” will require addressing specific operational challenges while still maintaining grid resilience. More specifically, while the benefits are substantial, integrating data centers into the energy ecosystem poses challenges, including data center impact on energy consumption, exposure to cybersecurity risks and making sure that all consumers benefit from the advancements.

Utility executives and economic development professionals in Wisconsin make two critical assertions when discussing data centers in Wisconsin. First, they assert that Wisconsin’s regulatory environment requires that costs incurred in the development and use of large data centers must be paid for by those who build, own and use them. Second, they say that communities wishing to sustain and grow their economies are likely to discover that having access to a data center will be essential. ●

self-financed investment — meaning developers must fund their own site preparation, power and cooling infrastructure. The state’s legislative framework under Wis. Stat. §238.40 defines “eligible data center costs” as expenditures made by the business entity or its affiliates for construction, equipment and operational improvements, reinforcing that these costs are privately financed.

● **Conclusion**

In summary, Wisconsin’s policies and regulatory decisions ensure that:

- Data center developers and operators pay for the infrastructure costs necessary to support their energy-intensive operations.
- Utilities recover those costs directly from the data center customers through specialized rate tariffs.
- Ordinary ratepayers are protected from subsidizing these large industrial power users.

Therefore, it is accurate to say that in Wisconsin, the costs incurred in developing and using large data centers must be paid by those who build, own and use them, not by the general public or existing utility consumers.

▶ **QUESTION:** Is it true that communities wishing to sustain and grow their economies are likely to discover that having access to a data center will be essential?

▶ **AI RESPONSE:** Yes. Communities aiming to sustain and grow their economies are increasingly finding that access to data centers — or at least strong connections to digital infrastructure — has become essential for long-term competitiveness and development.

Modern economic activity depends heavily on reliable data storage, processing and low-latency connectivity. Data centers now function as critical infrastructure, comparable to water systems, power grids and transportation networks. They underpin cloud computing, artificial intelligence, e-commerce, banking, logistics and public services. Without such digital hubs, many businesses cannot operate efficiently or attract investment in a data-driven global economy. ●