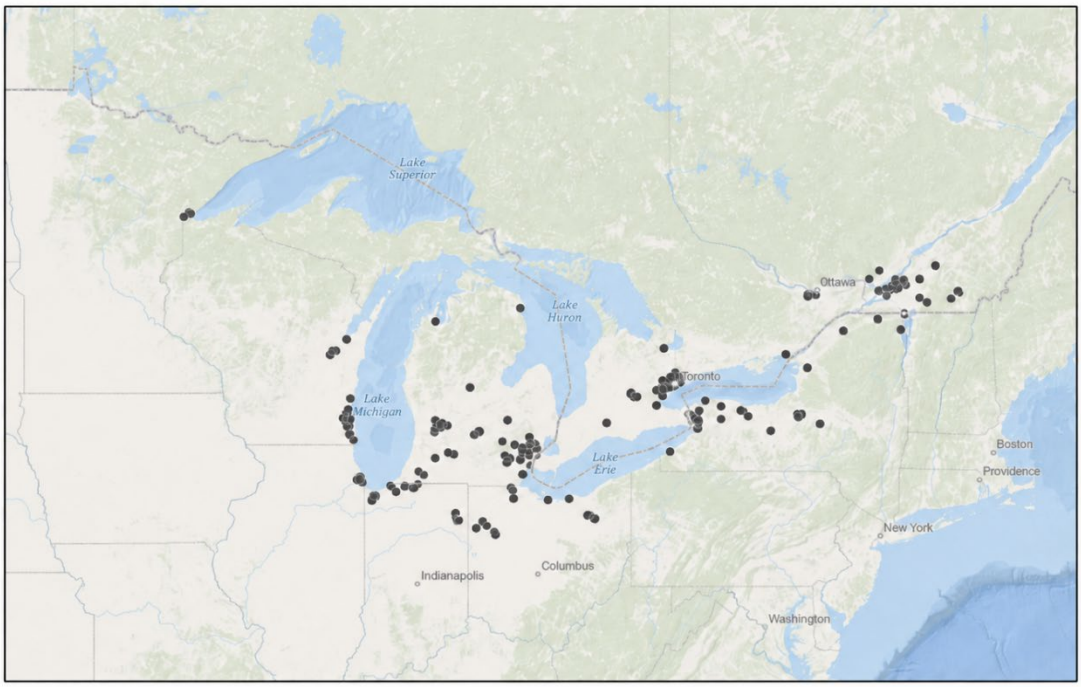
Data Centers in the Great Lakes St. Lawrence Region

Data centers are occupying an increasingly prominent place in public debate. While they often generate strong reactions, there is still limited understanding of what they are and how they operate in the Great Lakes St. Lawrence region. The Conference of Great Lakes St. Lawrence Governors & Premiers (GSGP), a nonpartisan organization, therefore seeks to provide a clearer picture of data centers in the region.

Figure 1: Data Centers Around Great Lakes–St. Lawrence River Basin



Where Are the Data Centers Located? Data centers are not a recent phenomenon in the region and have been present since at least the early 2000s. Today, there are around 525 data centers in the eight U.S. States bordering the Great Lakes, representing about 20% of all U.S. data centers. Around 225 new data centers are planned across the region for 2025-2030. Narrowing the scope to facilities located within the Great Lakes Basin, there are about 270 data centers in the U.S. portion of the Basin, 80 in the Canadian portion, and 60 additional U.S. and Canadian facilities located within the St. Lawrence watershed. Most are concentrated in large and medium-sized metropolitan counties because of access to necessary infrastructure (**See Figure 1**). New data centers average approximately 300,000 square feet (or five football fields). About 73% of current facilities are owned by out-of-State companies, and about 95% of planned facilities are being developed as hyperscale or wholesale facilities[1].

What is their economic impact? Because most owners are headquartered outside the region, many local economic benefits are concentrated in short-term construction and equipment spending, while long-term operating expenditures are more moderate. In 2024, accounting for direct, indirect, and induced effects, data centers contributed around $10.9 billion (US) to the Great Lakes St. Lawrence region's GDP (0.15% of total) and supported approximately 79,000 jobs (0.14%). By 2030, the impact is projected to increase,

[1] All data referenced is from the Weldon Cooper Center for Public Service. (n.d.). *Data Centers in the Great Lakes Region*. https://www.coopercenter.org/data-centers-great-lakes

reaching approximately $22 billion (US) in GDP (0.27%) and 152,000 jobs (0.28%). State and local governments are projected to receive approximately $2 billion (US) in annual tax revenue by 2030, although the employment impact of data centers remains modest. Only about 20% of data center capital spending is associated with local construction activity, while most IT equipment is produced outside the region[1].

How much energy and water do they use? Data centers are currently estimated to consume around 3% of total electricity usage in the Great Lakes St. Lawrence region. Under current growth trends, energy consumption is projected to reach approximately 8% by 2030 (or the equivalent of 8 million households) and could reach 20% by 2040. Pressure differs between States, with Illinois and Ohio expected to see energy requirements more than double by 2030[1].

Less is known about water use in the region. Nationally, it is estimated that U.S. data centers consumed approximately 17 billion gallons of water in 2023 for on-site cooling, with consumption expected to grow in the coming years[2]. In this context, *the Great Lakes St. Lawrence River Basin Water Resources Compact* ("Compact") and the companion cross-border Agreement serve as an important framework for the responsible management of Basin water resources.

How can the "Compact" and Agreement help? On December 8, 2008, the *Great Lakes St. Lawrence River Basin Water Resources Compact* ("Compact") came into force. The Compact, along with the cross-border Agreement, establishes how the region's States and Provinces will manage and protect the water resources of the Great Lakes St. Lawrence River Basin. It supports economic development through the sustainable use and responsible management of Basin waters. It also prohibits new or increased diversions of water from the Basin, with limited exceptions for near-Basin communities and only after rigorous standards are met.

For in-Basin uses, the States and Provinces have flexibility for determining when the common standard for reviewing Withdrawals must be used. While the Compact and the cross-border Agreement include a common standard for in-Basin uses, each State and Province has a different threshold for application of that standard (see "Attachment A"). For those withdrawals subject to that standard, decisions must comply with applicable Compact requirements, including efficient use and conservation of existing water supplies, return of water to the source watershed where feasible, no significant individual or cumulative environmental impacts, and implementation of water conservation measures. In addition, prior notice and opportunity to comment must be given to all States and Provinces for proposals that will result in a new or increased consumptive use of more than 5 million gallons per day. Beyond the regulatory aspects of the Compact and Agreement, the Great Lakes St. Lawrence States and Provinces are collaborating and sharing information through GSGP. This is part of an overall effort that includes webinars, discussions on water reuse, and regular meetings to collaborate and share information on a continually evolving industry.

For more information, visit www.gsgp.org or contact Peter Johnson, GSGP Deputy Director.

[2] 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*. Lawrence Berkeley National Laboratory. LBNL-2001637.

Attachment "A"

Thresholds by Jurisdiction

All New or Increased Consumptive Uses of over 5 Million Gallons per Day/19 Million Litres per Day must undergo "prior notice and opportunity to comment" pursuant to sections Article 205 of the *Great Lakes St. Lawrence River Basin Sustainable Water Resources Agreement* ("Agreement"); and, Section 4.6 of the *Great Lakes St. Lawrence River Basin Water Resources Compact* ("Compact") before they may be approved.

Jurisdiction	Permit trigger threshold	Decision-making standard	Implementing law
Illinois	In theory, withdrawals of 100,000 gallons per day or more over any 90-day period. However, Illinois will continue to be governed by the terms of the U.S. Supreme Court Decree, which caps its diversion from Lake Michigan at 3,200 cubic feet per second averaged over a 40 year period	Require an efficient use and conservation of existing water supplies; require water to return to the source basin (with limited exceptions); require no significant individual or cumulative environmental harm; and impose conservation measures	45 ILCS 147; Illinois Water Inventory Program (IWIP); Wisconsin et al. v. Illinois et al.
Indiana	Withdrawals of 5,000,000 gallons or more per day from Lake Michigan, 100,000 gallons or more per day from salmonid streams, or 1,000,000 gallons or more per day from other surface water or groundwater, measured over any 90-day period	Require water to return to the source basin; require no significant individual or cumulative environmental harm; impose conservation measures	IC 14-25-15
Michigan	Withdrawal capacity exceeding 2,000,000 gallons per day or withdrawal that will transfer more than 100,000 gallons per day over any 90-day period from the watershed of one Great Lake to a watershed of another Great Lake	Require efficient use and conservation of existing water supplies; require water to return to the source basin (with limited exceptions); require no significant individual or cumulative environmental harm; and impose conservation measures	MCL - Section 324.34201; Michigan Water Use Program

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Jurisdiction	Permit trigger threshold	Decision-making standard	Implementing law
Minnesota	Withdrawals of 10,000 gallons per day or 1,000,000 gallons or more per year (stricter than Compact)	Require efficient use and conservation of existing water supplies; require water to return to the source basin (with limited exceptions); require no significant individual or cumulative environmental harm; and impose conservation measures	Minnesota Statutes, section 103G.265; Minnesota Statutes, section 103G.801; Water Appropriation Permit Program
New York	Non-Agricultural – Water withdrawal systems with the capacity to withdraw 100,000 gallons per day or more (statewide) Agricultural - Withdrawal of water of a volume in excess of an average of 100,000 gallons per day in any consecutive 30-day period (statewide)	a. the proposed water withdrawal takes proper consideration of other sources of supply that are or may become available; b. the quantity of supply will be adequate for the proposed use; c. the project is just and equitable to all affected municipalities and their inhabitants with regard to their present and future needs for sources of potable water supply; d. the need for all or part of the proposed water withdrawal cannot be reasonably avoided through the efficient use and conservation of existing water supplies; e. the proposed water withdrawal is limited to quantities that are considered reasonable for the purposes for which the water use is proposed; f. the proposed water withdrawal will be implemented in a manner to ensure it will result in no significant individual or cumulative adverse impacts on the quantity or quality of the water source and water dependent natural resources;	ECL § 15-15; ECL § 21-10; 6 NYCRR Part 601; Water Withdrawal Permits And Reporting

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		g. the proposed water withdrawal will be implemented in a manner that incorporates environmentally sound and economically feasible water conservation measures; and h. the proposed water withdrawal will be implemented in a manner that is consistent with applicable municipal, state and federal laws as well as regional interstate and international agreements	
Ohio	Withdrawals of 2,500,000 gallons or more per day from Lake Erie or navigational channel, and 1,000,000 gallons or more per day from any river/ stream, or from groundwater measured over any 90-day period. Any facility with the capacity to withdraw 100,000 gallons per day or more must register.	Require water to return to the source basin, less an approved consumptive use; require no significant individual or cumulative impacts on the quantity or quality of the waters of the basin; impose conservation measures; and require that the proposed withdrawal or consumptive use will not result in irreparable damage or destruction to an aquifer.	Chapter 1522 - Ohio Revised Code | Ohio Laws
Ontario	A Permit to Take Water is required for withdrawals of more than 50,000 litres on any day from groundwater or surface water, subject to certain exceptions.	As set out in Article 203 of "the Agreement": return flow to the source watershed (less consumptive use), no significant individual or cumulative adverse impacts, environmentally sound and economically feasible water conservation measures, compliance with applicable laws and agreements, and demonstration that the proposed use is reasonable.	Ontario Water Resources Act including the Water Taking and Transfer Regulation (O. Reg. 387/04)

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Jurisdiction	Permit trigger threshold	Decision-making standard	Implementing law
Pennsylvania	Withdrawals of 100,000 gallons per day or greater over any 90-day period	Require water to return to the source basin; require no significant individual or cumulative environmental harm; and impose conservation measures	Act No. 43 (2008)
Québec	Withdrawals of 75,000 liters per day or greater on any day for a permit (around 19,800 gallons), and 379,000 liters of water or more on any day for regional reporting (or 100,000 gallons)	Good faith; collective governance of water resources; no significant adverse impacts; conservation programs required	C-6.2; Q-2, r. 14; Q-2 (31.95)
Wisconsin	Withdrawals of 100,000 gallons per day or greater over any 30-day period for general permit, and 1,000,000 gallons per day for 30 consecutive days or greater for individual permit	Conditions for monitoring, estimating and reporting water use and losses; require water conservation measures; set limits on timing, location, and use of withdrawals; and include environmental safeguards to prevent significant adverse impacts	Wisconsin Statutes (§ 281.346); Wisconsin Water Use Permitting