ALLIANCE for the GREAT LAKES

Regional large water use policy solutions: siting data centers at record pace today, but what about tomorrow?

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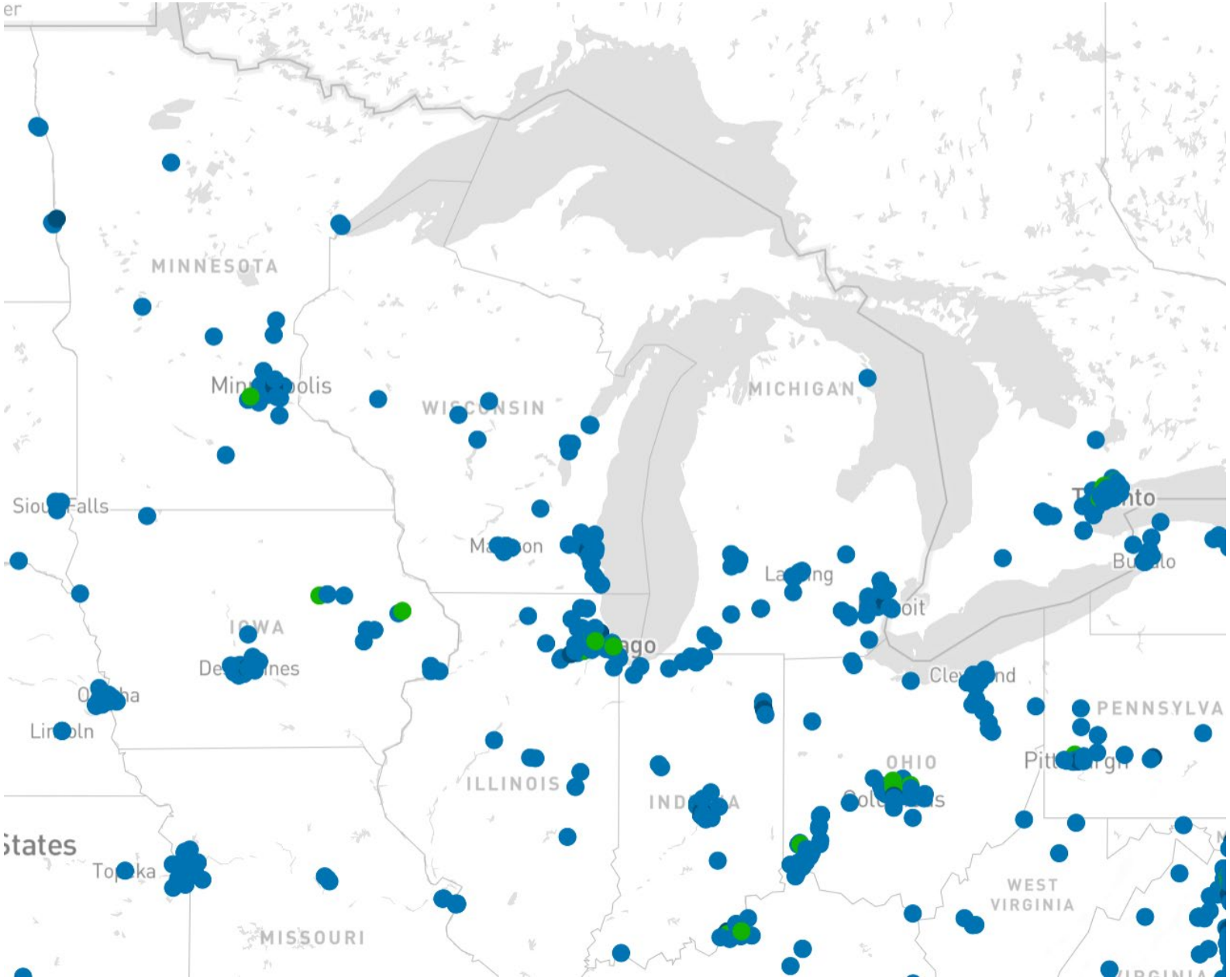
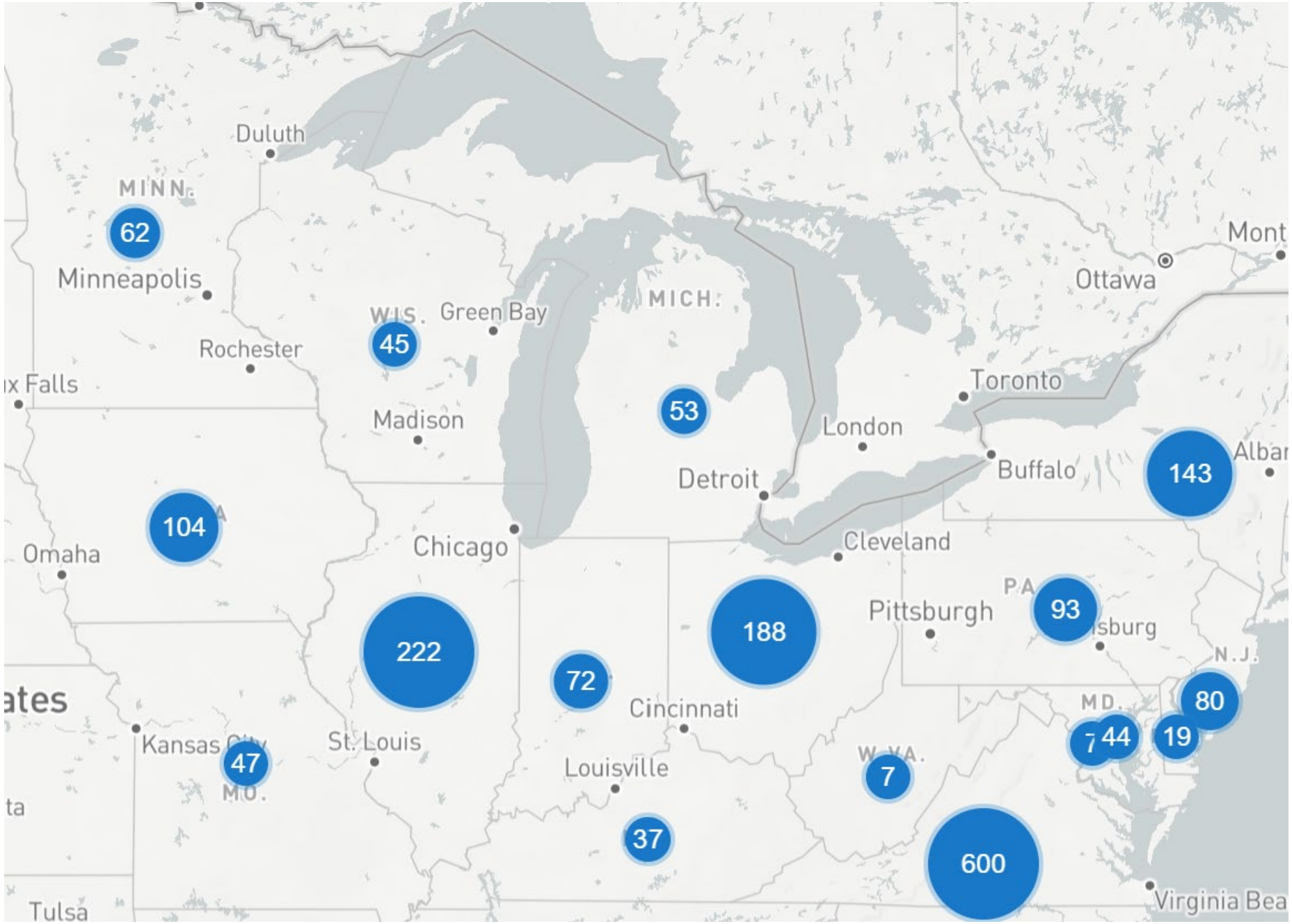


Source: Datacentermap.com



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Data centers

- Gen AI, cloud computing, IoT, crypto, and digital services are driving unprecedented demand for data centers
- GenAI requires vast data processing capabilities that only hyperscale (using between 1 and 5 MGD per day) can handle
- Hyperscale: 10,000+ sq ft, 5,000 + servers, 20+ MW of load
- A data center using 1 MGD for a year = *12,000 Americans*

Cooling methods data centers use

- Evaporative cooling is currently most common in the industry – consumptive use of water is high; lower electricity use but high water consumption
- Liquid immersion and direct to chip – direct use of water to cool equipment and needs less water and electricity but can introduce contaminants in discharged wastewater
- Closed loop - coolant is delivered directly to server racks as opposed to cooling the air in an entire room (an “open-loop” system)
- Air cooling – high electricity usage but insufficient to meet AI demands

Discharge and recirculation

- Evaporative cooling – more than half evaporates, the rest discharged as wastewater or recirculated
  - Recirculation isn't forever – ph, scaling, hardware, etc.
  - Discharge water is warmed, regulated as a discharge – need for WWTP capacity as well
- Closed loop and immersive cooling systems may resolve some of these issues and this may be where industry is headed
- A shell game? A shift to more electricity use still requires water for cooling, just at the power plant

Gaps

- What is the total water use footprint of a data center? We don't really know.
  - Unless the data center itself is withdrawing water, registration and consumptive use permit requirements don't apply - no reporting requirements where users hook into municipal water systems
  - Less than 1/3 are tracking water use – no requirement to do so
  - Electricity from coal, gas, and nuclear also needs water – and we don't know and can't calculate how much of that water use is driven by data centers
  - NDAs can obscure how much water a project is proposing to use at the outset
    - Market conditions change

Great Lakes – St. Lawrence River Basin Water Resources Compact

- Generally prohibits diversions (transfer to another watershed)
- Requires states to manage Great Lakes water use within the Basin
- Sets water conservation and efficiency goals, objectives, programs
- Establishes common water use reporting protocols

Per the Compact, programs:

"**need to adjust to new demands** and the potential **impacts of cumulative effects and climate**"

Beyond the Compact - groundwater laws are inadequate to curb use before crises occur

- 40 – 75% of Great Lakes state residents get drinking water from groundwater but -
  - Ohio – relies on litigation of disputes; no rules on groundwater stress areas
  - Michigan – water users committee; voluntary
  - Indiana – restricted use areas – but only after surveys indicate the safe annual yield and that withdrawal exceeds or threatens natural replenishment
  - Illinois – Dept. of Agriculture can impose emergency restrictions; but only where a complaint and investigation have found a draw down impact, or, where it determines that restriction of a high-capacity well is needed to preserve an adequate public supply

Complicating factors – other large water use sectors converging on the region

- Critical minerals mining
- Other industrial use – chip manufacturing, quantum computing, etc.
- Irrigation from agriculture – climate change and seasonal variations – both agriculture and data centers will need more water in summer
- Associated population growth – not necessarily climate migration driven, but economic development driven
- Groundwater conflicts – SW MI, Central Sands, Little Rock Creek, South Bend, IN

Policy solutions: regional, state, and local

- Planning – regional demand studies – OH, IL, IN
  - Incorporate as an ongoing part of conservation programs vs. one-off projects
  - Evaluate ecosystem and environmental needs as part of demand
  - Economic development agencies and local governments should turn to these studies when siting and incentivizing new projects
- Transparency and accountability
  - Tracking and water use reporting requirements for large water users - MN
  - Community benefit agreements – involve the community in decision making– pushback in Indiana; Valparaiso, Chesterton and Burns Harbor
  - Tax incentives and abatements – eliminate or connect with water use
- Efficiency standards for data centers - CT
  - Recirculation, co-location with WWTP, use of non-potable water

Learn more

- To learn more about the Alliance, the increasing demand for water in the Great Lakes region, and these policy solutions, visit:
  - Greatlakes.org
  - Report available at:
    - https://greatlakes.org/2025/08/great-lakes-region-unprepared-for-increasing-water-use-demands/