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State Policy Solutions *for* Data Center Water Impacts

APRIL 8TH | 2:00PM ET

Introduction

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State Climate Policy Network

Network of **15,000+**

- ➔ State and local elected officials
- ➔ NGO advocates
- ➔ Researchers
- ➔ State agency staffers
- ➔ Organizers and activists
- ➔ Business leaders

... working on state climate policy

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Pro Bono Policy Assistance

We specialize in state climate policy design and analysis.
Reach out to kristen@climate-xchange.org with your requests on:

- **Example states** and **model rules** for a given policy
- **Gap analysis** of your state's climate policy landscape
- **Connections** to other actors working on similar issues

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State Policy Solutions for Data Center Water Impacts

Margaret Cook
Vice President of Water and Community Resilience
Houston Advanced Research Center (HARC)

Kristen Soares
State Climate Policy Network Manager
Climate XChange

Agenda

1. Data Center Water Use
2. State Policies to Address Data Center Water Impacts
3. Q&A

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Speaker

Margaret Cook

Vice President of Water and Community Resilience

Houston Advanced Research Center (HARC)

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Thirsty Data: Water Use at Data Centers

Dr. Margaret Cook
HARC Vice President,
Water & Community Resilience

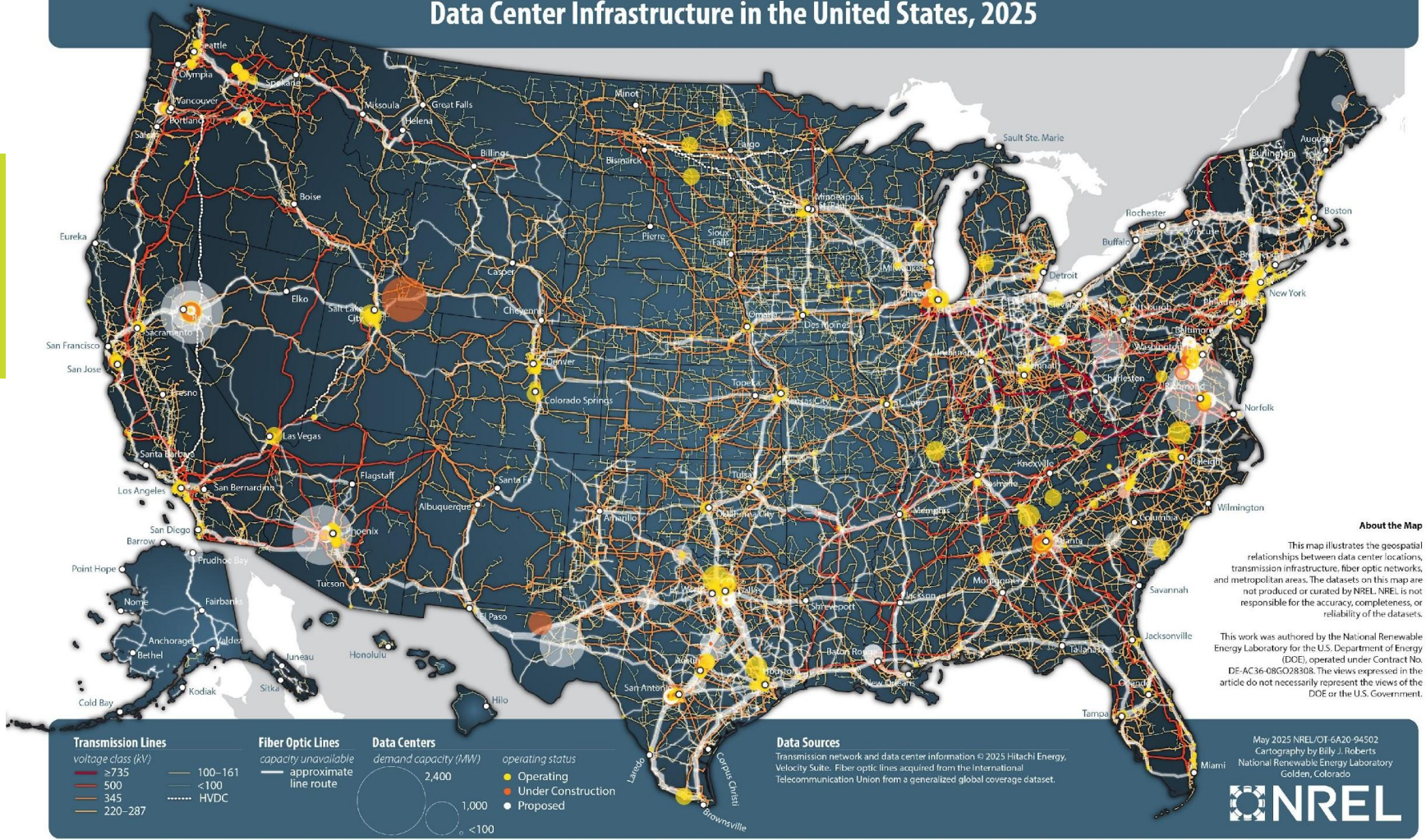
HARC

About HARC

HARC is an independent & nonpartisan nonprofit organization focused on advancing science-backed sustainability solutions.

The motivating force behind all HARC's work is to advance a sustainable future for Texas.

Data Center Infrastructure in the United States, 2025



About the Map

This map illustrates the geospatial relationships between data center locations, transmission infrastructure, fiber optic networks, and metropolitan areas. The datasets on this map are not produced or curated by NREL. NREL is not responsible for the accuracy, completeness, or reliability of the datasets.

This work was authored by the National Renewable Energy Laboratory for the U.S. Department of Energy (DOE), operated under Contract No. DE-AC36-08GO28308. The views expressed in the article do not necessarily represent the views of the DOE or the U.S. Government.

Transmission Lines

voltage class (kV)

- ≥735
- 500
- 345
- 220–287
- 100–161
- <100
- HVDC

Fiber Optic Lines

capacity unavailable

- approximate line route

Data Centers

demand capacity (MW)

- 2,400
- 1,000
- <100

operating status

- Operating
- Under Construction
- Proposed

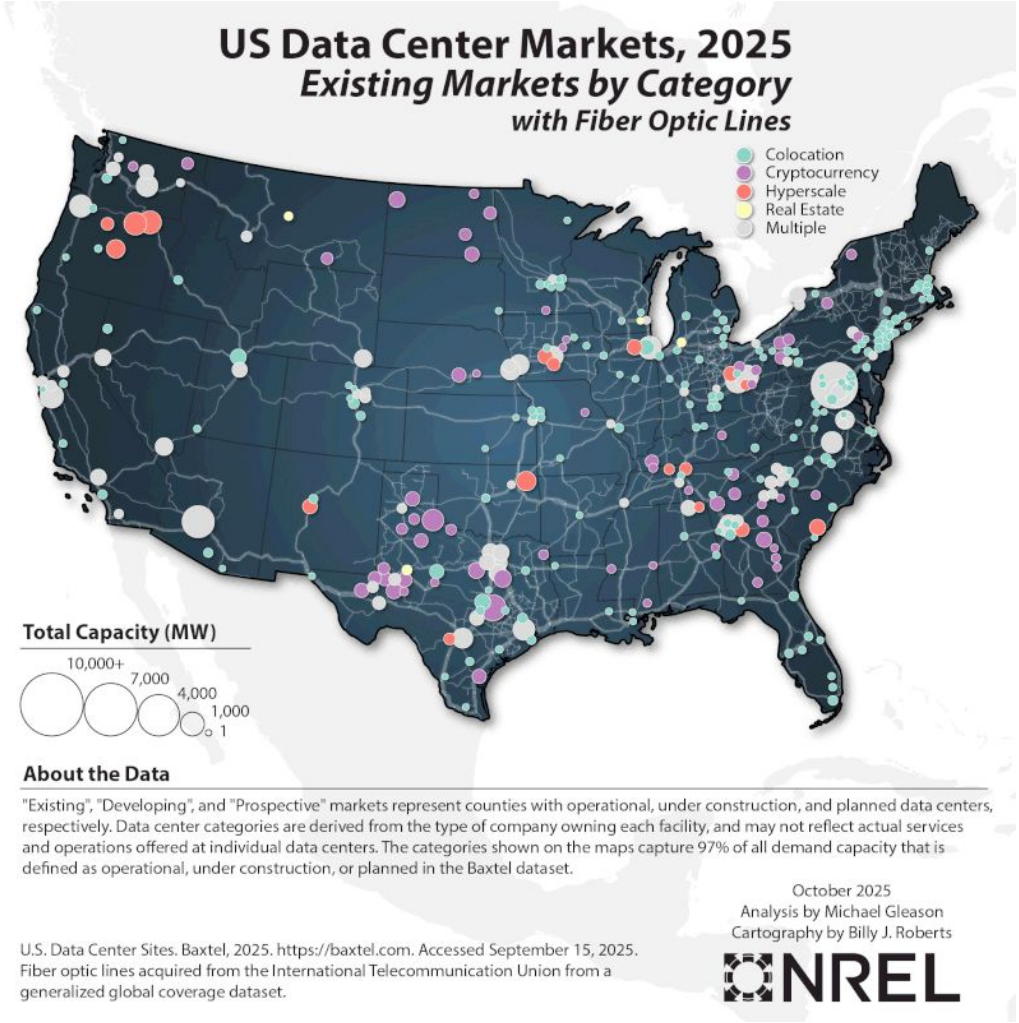
Data Sources

Transmission network and data center information © 2025 Hitachi Energy, Velocity Suite. Fiber optic lines acquired from the International Telecommunication Union from a generalized global coverage dataset.

May 2025 NREL/OT-6A20-94502

Cartography by Billy J. Roberts
National Renewable Energy Laboratory
Golden, Colorado

NREL



Siting Decisions

- Land lease
- Power price
- Adjacent to fiber
- Floodplain and other building considerations
- Ability to source water (if needed)
- Proximity to labor force
- Distance from residential and other permitting considerations

Casey Keller, Caerus Commodities

Estimated Water Demands

- **Est. water demand**: average ~**95 gals/MWh** [LBNL 2024]
- **Direct water use:** evaporation through a chiller or cooling tower – new withdrawals occur to replace vaporized water with freshwater, recirculates
- **Wastewater:** largely blowdown - water removed from cooling supply to prevent excessive concentration of dissolved solids (it gets too briny)
- **Indirect water use:** at power plants for cooling
- **Individually:** water demand may not be large
- **Collectively:** Rapid growth rate, large localized presence and impacts

Factors Influencing Water Use

Amount of water use depends on

- Cooling type used (right)
- The size of the data center,
- The type of data center (hyperscaler, crypto, etc.), and
- The computing equipment needing cooling

Cold Plate Cooling

Cooling hottest components in non-immersed loop

Dry Cooling

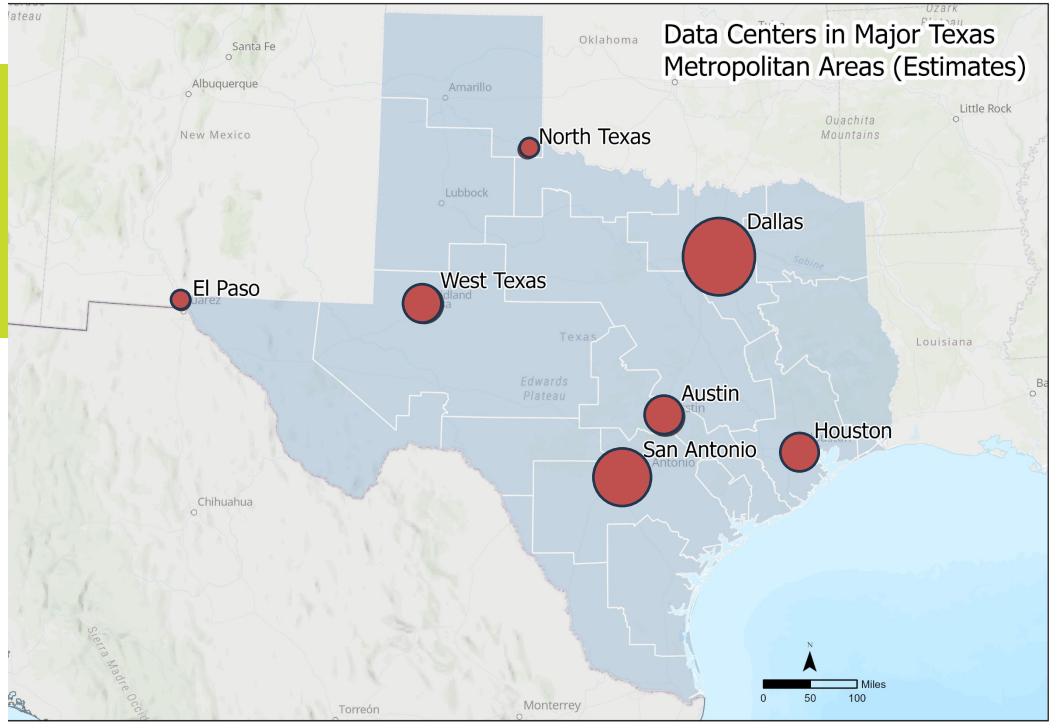
Heat transferred through cool air. Higher energy demand. Not possible for all data center types.

One-Phase Cooling

Servers immersed in oil-based liquid. Heat exchanged to liquid then water. Hot water sent to cooling tower (evaporates).

Two-Phase Cooling

Servers immersed in chemical liquid. Heat causes liquid phase change. Heat exchanged with water.



Information on data centers obtained from the Baxtel website. The North Texas location represents an approximate grouping of data centers near Wichita Falls, Pampa, & Dumas. The West Texas location represents an approximate group of data centers between Amarillo, Pecos, Abilene, & Fort Stockton.

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Case Study: Texas

As of September 2025, Texas had 464 facilities (according to Baxtel):

- 197 in Dallas Fort Worth (3rd largest market in US)
- 48 in Houston (12th largest market)
- 60 in San Antonio
- 53 in Austin
- 59 in West Texas
- more sites under construction and more in planning and development

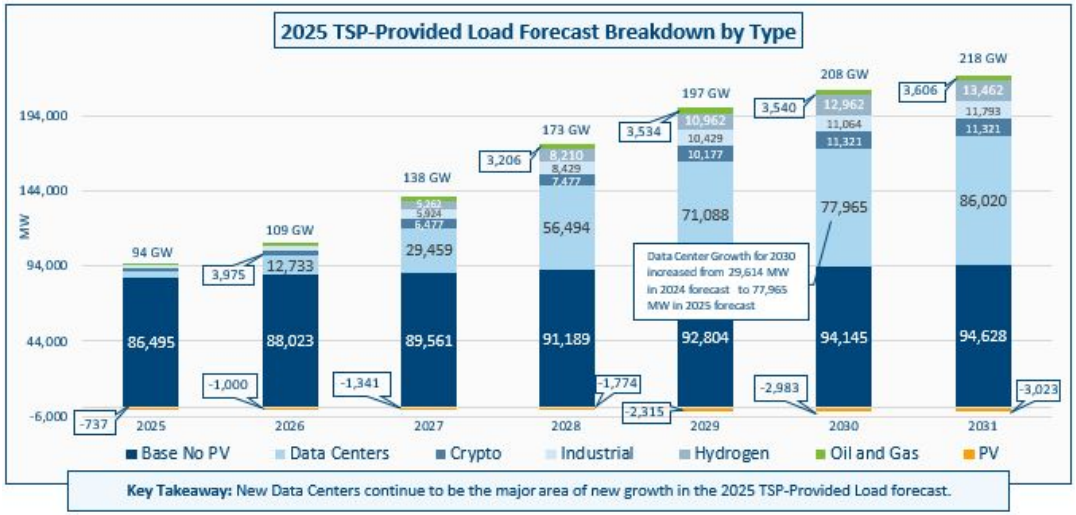


Figure 1 Long-term Load Forecast for 2025-2031 provided by ERCOT on April 7, 2025 shows data centers contributing to major electricity sector demand growth.[13]

*PV is “behind the meter” rooftop photovoltaic solar—solar providing power to a home or business rather than to the grid

HARCresearch.org

Data Center Energy Demands

Collectively, require 9,567 MW of electricity.

By 2030, ERCOT expects DC growth to require 22,175-77,965 MW capacity on the grid – near tenfold increase.

Data Centers historically have high water needs for cooling

- Direct at the data center
- Indirect at power plants

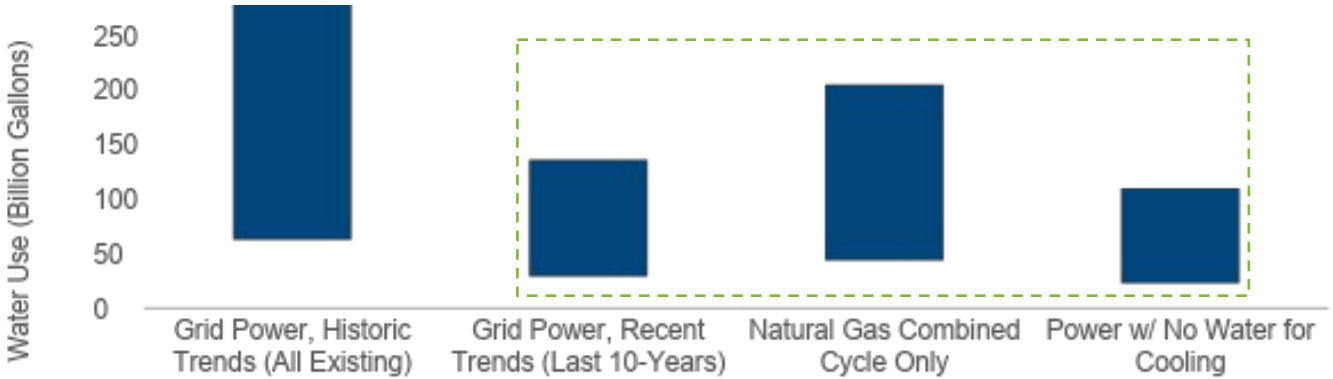
Estimated Water Demands

- Existing data centers in Texas consume an estimated **25 billion gallons of water annually (77 thousand acre-feet)** or **0.4% of total water use in 2025**.

- By 2030
  - Demand could increase **up to 161 billion gallons or 2.7%* of total annual water use in Texas**.
  - Equivalent to **filling Daikin Park over 537,000 times or AT&T stadium over 200 times.**

**Depending on type of data center and power generation, this figure ranges from 29-161 billion gallons (98-494 thousand acre-feet) or 0.5-2.7%.*

Reducing Indirect Water Use



Greatest water savings in order

- Power supply w/ no water for cooling required (e.g., solar)
- New grid power under current trends (combo of solar, NGCC, wind, batteries)
- Onsite or direct contracts with NGCC plants
- Grid power under historic Texas grid trends

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Source: Thirsty Data and the Lone Star State: The Impact of Data Center Growth on Texas' Water Supply White Paper

Reducing Water Demands

- Technology or management changes
- Leverage investment
- Public-private partnerships
- Possible policy drivers
- One Water framing

Water-Lean Technology

Use water-lean energy technologies like solar, wind, and natural gas turbines; reduce water on-site

Dry Cooling

Use dry cooling at data centers and power plants (energy penalty – use w/ water-lean energy)

Alternative Water

Use alternative sources of water like municipal reuse & onsite grey water

Reduce Energy On-site

Energy-efficient operations and scheduling non-peak demand periods

Challenges of Estimating Water Demands of Data Centers

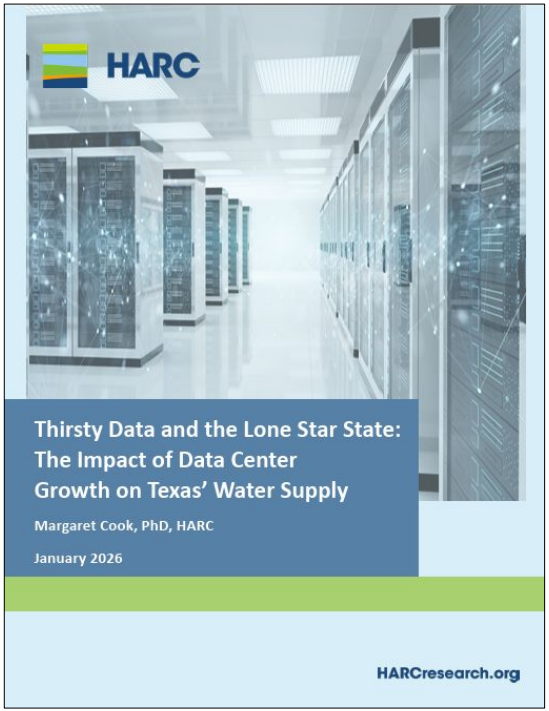
- Data uncertainty
  - Lack of transparency from data centers
  - Few published studies available
- Data center water *growth* is not in our current or upcoming state water plan
- Municipalities don't have the most up-to-date data to make informed choices
  - Borrowing against future water needs

Recommendations

- **Transparent Data** – Data centers report expected & actual electricity and water use.
- **Forward Looking Water Planning** – Coordinate w/ data center developers, ensure large industrial users are captured in water planning.
- **Efficiency & Alternatives** – Incentivize data centers to use energy-lean and water-lean technologies.
- **Leverage Infrastructure Investment & Public-Private Solutions** – Seek data center investments that serve the local community, where possible.
- **Draw from Energy Sector Best Practices**

Without **proactive planning** and an integrated policy framework for data centers, their unchecked expansion could **strain infrastructure** and jeopardize progress toward reliable, sustainable, and resilient energy and water systems.

Thirsty Data & the Lone Star State



HARC's White Paper: *Thirsty Data and the Lone Star State: The Impact of Data Center Growth on Texas' Water Supply*

https://bit.ly/ThirstyData

Thank you!

For more information, contact HARC at

(281) 364-6000 or visit www.HARCresearch.org.

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HARC

Speaker

Kristen Soares

State Climate Policy Network Manager

Climate XChange

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State Policy Toolkit for Data Center Regulation

Water Impacts

Kristen Soares, Climate XChange
April 2026

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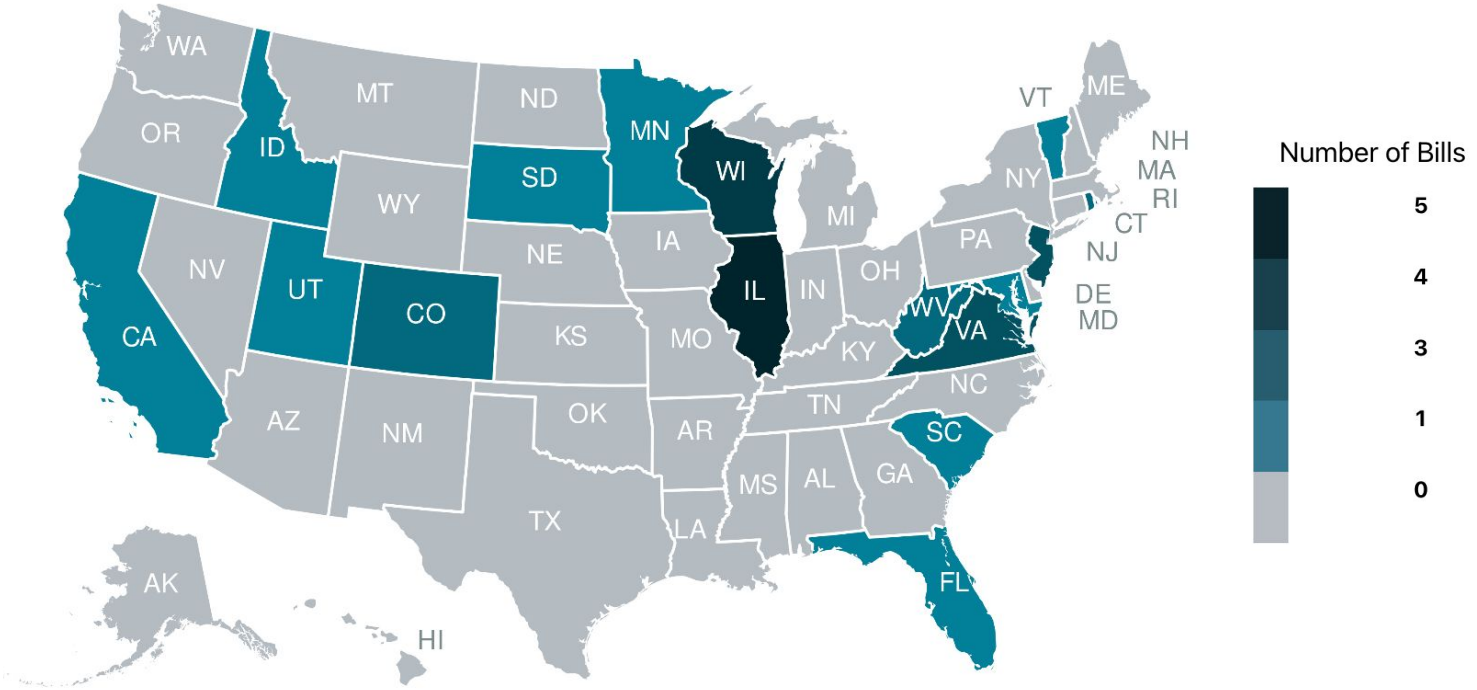
Legislative Recap

Regulating Water Impacts of Data Centers

- 2025: ~30 proposed bills across 13 states
  - Enacted: MN HF 16 and MD HB 270/SB 116 (overrode veto)
  - Vetoed: NJ S 4293, CA AB 93, and VA HB 1601
- 2026: ~30 proposed bills across 16 states
  - Enacted: ID H 895, SD SB 135, UT HB 76, WV HB 4983

2026 Legislative Recap

Regulating Water Impacts of Data Centers



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The Toolkit

- Goal: Provide **state-level legislative examples** of approaches to regulating data centers' water impacts from on-site water usage

- Use case: State policymakers and advocates utilize policy mechanisms that work for **their state's specific priorities**

- Notes:
  - In some cases, **moratoria** may be required until proper assessments and regulation are established
  - Direct, enforceable regulation is always ideal; attaching water protections to incentives is a **last resort**.

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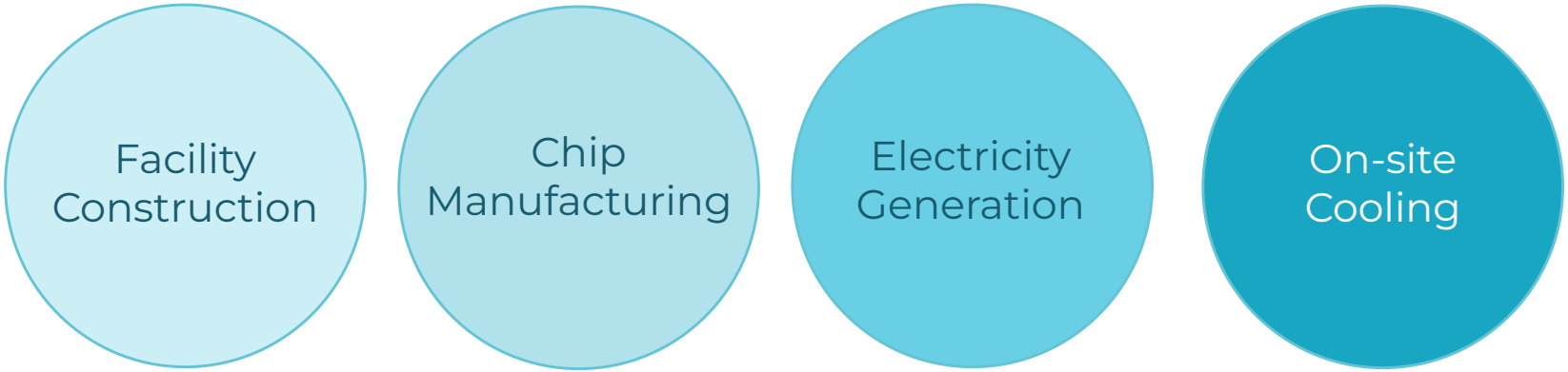
Data Centers' Water Usage



Majority-share of water usage by data centers

Today's focus

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The Value of A Holistic Approach

- **Tradeoffs** between water efficiency and energy efficiency
  - E.g. air cooling requires no water and high energy, while evaporative cooling requires high water consumption and low energy.
- Coordination with **local governments** and impacted **communities**
- Synergy across state **priorities**: economic, energy, climate, public health, and environmental

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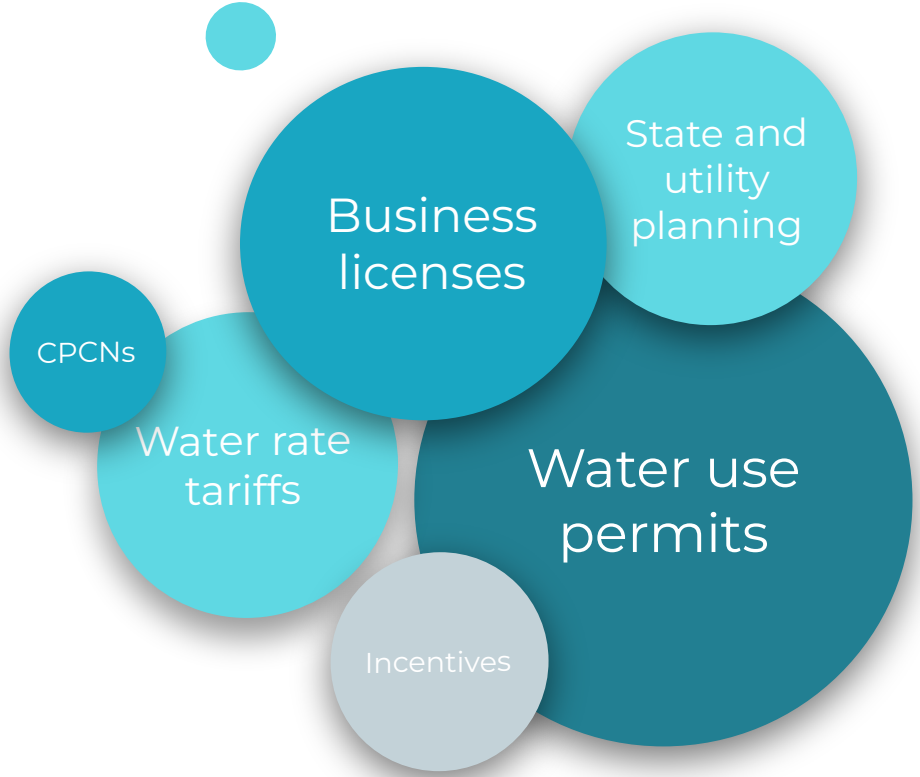
State Policies for Data Center Regulation: Water Impacts

Usage and discharge standards	Establish water **efficiency** standards and **discharge** requirements
Impact mitigation and assessment	Prohibit **adverse impacts** to water resources, require full **impact assessments**, and mandate impact **mitigation plans**
Disclosure and analysis	Require **reporting** on water sources, uses, and discharges, and **statewide analysis** on impacts
Ratepayer protections and water funding	Require data centers to **pay** for all water service infrastructure, and establish fees to **fund water conservation** and remediation

Water Regulation: The Tools



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Standards for Water Usage

Tangible requirements to reduce water consumption and protect fresh water

1. Water efficiency **standards**
   a. Water Usage Effectiveness (WUE) = $\frac{\text{water consumption}}{\text{energy consumption}}$
   b. Note: LBNL's average WUE for U.S. data centers = **0.48 L/kWh**
2. Water efficiency **technology** requirements
3. Fresh water protection and watershed health **management** requirements
   a. e.g. recycled / non-potable / stormwater use
4. Discharge standards for pollutants not covered by CWA (e.g. PFAS)

Examples

Water Efficiency Standards

1. Discrete, enforceable water efficiency standards
    a. South Carolina SB 902 (proposed, 2026): Would require the Dept of Env Services to establish **tiered water efficiency standards** for data centers, achieved through the implementation of specified technologies, and measured through specified WUE metrics.
    b. Virginia SB 1448 (failed, 2025): Would require the Dept of Env Quality to create **permit standards that protect public health and the environment** for high-water or -electricity facilities.
        i. The state would be required to **convene a regulatory advisory panel** to develop these standards alongside methods to assess cumulative impacts, **funded by fees collected from the facilities** themselves.

Water Conservation Tech

2. Requirements for water efficiency technology
    - Minnesota HF 16 (enacted, 2025): Requires that, for data centers with high water usage, water use permit approval is contingent on **water conservation, efficiency, and watershed health technology and measures** being **"reasonably considered"**, including water efficient fixtures and practices, and installing closed-loop systems

3. Requirements for fresh water conservation and watershed management techniques
    - Minnesota HF 16 (enacted, 2025): Techniques to be **"reasonably considered"** include **recycling water** before discharging, partnering with local water utilities to use **discharged water** from the data center, using **reclaimed water**, and supporting water restoration and replenishment in local watersheds
    - Illinois SB 3830 (proposed, 2026): Would require that data centers implement a water stewardship strategy that optimizes water management for cooling through closed-loop systems or the **exclusive use of treated wastewater**

Water Impact Guardrails and Assessments

Processes to assess and mitigate impacts to water resources

1. Prohibit **adverse impacts** to watershed health and water supply
2. Require full **environmental review** and water-related impact assessments
    a. Site-specific watershed and aquifer testing
    b. Cost-of-service study for water service and wastewater treatment
3. Require watershed management and impact mitigation **plans**

Engage communities in impact review and mitigation plans

Examples

Water Impact Mitigation

1. Prohibit adverse impacts to watershed health and water supply
    a. Minnesota HF 16 (enacted, 2025): Requires that, for data centers with high water usage, water use permit approval is contingent on **protecting public health**, safety, and welfare; **addressing water use conflicts**; and **conducting aquifer tests** if needed.

    b. West Virginia HB 4832 (proposed, 2026): The Dept of Env Protection must limit, condition, or prohibit a data center's water use if it will **adversely impact state water resources,** or if it is located in or will create a critical water planning area, defined as **threatening to exceed the safe yield** of available water resources.

Examples

Water Impact Assessment

2. Require full environmental review and 3. Impact mitigation plans
    a. Maryland SB 978 (failed, 2025): Would require that data center permit applications include public health and **environmental impacts and mitigation measures,** with an existing burden report reviewed by public officials and **open for public comment**.
        i. Permits are **not approved** if they contribute to adverse impacts.
        ii. Conditional permits are allowed if the project serves an essential environmental, health, or safety need in the community and there are no alternatives.
            1. Additional permit conditions must be created to protect public health and mitigate cumulative impacts, **developed in a fund agreement with impacted communities**.

Disclosure and Analysis of Water Usage and Impacts

Requirements for data centers to report usage and states to analyze impacts

1. Require **reporting** on water sources, withdrawals, consumption (and WUE), discharges, adverse impacts, water use conflicts, and water efficiency efforts.
    a. Ban NDAs, especially those that cover water-related topics
2. Require **public notification** of reported information
    a. Specify that water use data is not a trade secret under public disclosure laws
    b. Publicize usage by facility or, if not possible, anonymized and aggregated

Disclosure and Analysis of Water Usage and Impacts

Requirements for data centers to report usage and states to analyze impacts

3. Require the state to **assess and analyze** data center impacts to water, funded by data center fees, including:
    a. Total volumes of water delivered and effluent treated, impacts to watersheds, changes in water quality and drought risk, and impacts/costs to water service and treatment infrastructure
    b. Consider establishing a review body with ample representation from public interest groups and a mandate to protect water
4. Require that findings **inform future regulations** to mitigate adverse impacts

Examples

Water Disclosure

1. Require data centers to report water usage and impacts
    a. Utah HB 76 (enacted, 2026): Would require large data centers to report estimated water **withdrawals**, **discharge treatment** plans, and **water reuse or watershed replacement** plans before construction.
        i. Must also report annual water consumption reduction efforts, withdrawals, and pollution prevention efforts. Data must be made **publicly available**.
    b. Illinois SB 3830 (proposed, 2026): Would require that data centers discharging to a wastewater treatment plant identify and monitor discharged pollutants, and report **pollutant levels and pollutant reduction measures** to the state EPA for analysis.
2. Require public notification of reported information
    a. Virginia HB 2035 (failed, 2025): Would require that “high-energy facilities” submit quarterly reports on water usage and sources, and direct the DEQ to publish reports on a **publicly accessible clearinghouse**.

Examples

Statewide Water Assessment

3. Require the state to conduct statewide assessments of data center water impacts

   a. Maryland HB 270/SB 116 (enacted, veto overridden, 2025): Requires state agencies to **analyze air, water, and environmental impacts** of data centers in the state, the **feasibility of technology** that mitigates environmental impacts, and impacts on meeting statewide bay restoration and other emissions, environmental, and energy goals.

   b. Virginia HB 496/SB 553 (sent to Gov, 2026): Would require the State Water Control Board to estimate **current and projected water withdrawals** from large water users, including data centers; evaluate the ability of waterways and public water systems to **meet estimated water usage**, including in drought; and estimate local and regional **water supply shortfall risks**. Would also require the Board to work with DEQ to coordinate and include relevant findings and risks in **regional water planning**.

Examples

Using Data to Inform Policy

4. Require that water disclosures are used to inform future regulations
    a. Illinois SB 2181 (proposed, 2026): Would require data centers to annually report water consumption and end uses, including water used for cooling, and water usage reduction efforts, to the Illinois Power Agency, with reporting broken out by month.
        i. The Agency must make aggregated and anonymized data publicly available and publish an **annual report** summarizing data center water consumption trends, with **legislative recommendations** to address issues.
        ii. The Agency must conduct a **study on the environmental, energy, and rate impacts** from data centers in the state and **identify potential legislation** to mitigate impacts, drawing from **best practices in other states**.

Data Center Fees and Ratepayer Protections

Requirements for data centers to pay their fair share for water impacts

1. Require data centers to **pay for service and infrastructure costs** incurred by providing water and treating wastewater
2. **Collect fees** from data centers to fund water conservation, watershed remediation, water infrastructure upgrades, or other local water projects
    a. Fees as part of permitting/licensing process
    b. Noncompliance fees
    c. Carveout of tax revenue from data centers

Paying for Water Service Costs

1. Require that data centers pay for all costs incurred by providing water service and effluent treatment
    a. Illinois SB 4016/HB 5513 (proposed, 2026): Would require that data centers **demonstrate that they will cover any costs** of necessary modifications to community water supply and wastewater treatment infrastructure **to receive water impact permits**.
    b. West Virginia HB 4832 (proposed, 2026): Would require that data centers **pay all utility rates, fees, and charges** during construction and operation, including related to water and stormwater.
    c. “Large load tariffs” for water users?

Examples

Establishing Water Funding

2. Collect fees from data centers to fund local water conservation and watershed remediation
    a. Illinois SB 4016/HB 5513 (proposed, 2026): Would require that data centers **contribute to a state fund** that would, among other things, be utilized for **water pollutant protection programs**, including modifications to community water supply and wastewater treatment plants.
    b. Arizona HB 2893 (failed, 2025): Would require that **50% of tax revenue** from data centers is allocated to the **Water Conservation Grant Fund**, and the remaining 50% is allocated to a new On-Farm Irrigation Efficiency Fund created by the bill.

Concluding Thoughts…

- Many examples of regulating water impacts
- Hopeful to see more success on:
  - Enforceable water standards
  - Cost-related protections
  - Tangible community benefit agreements
- Incentives as a last resort — and should never come at the cost of full environmental review and community engagement

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Q&A

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Thank you for joining!

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