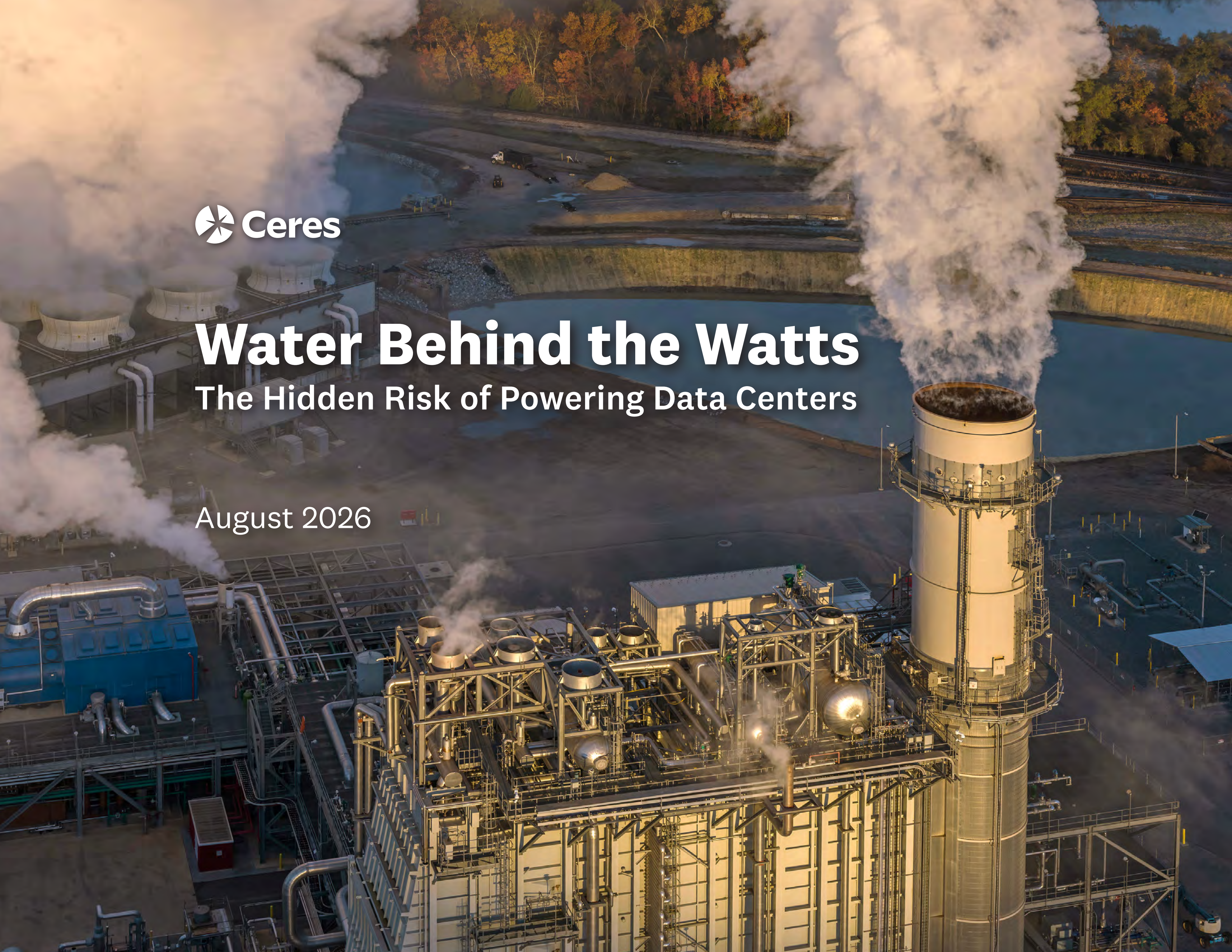
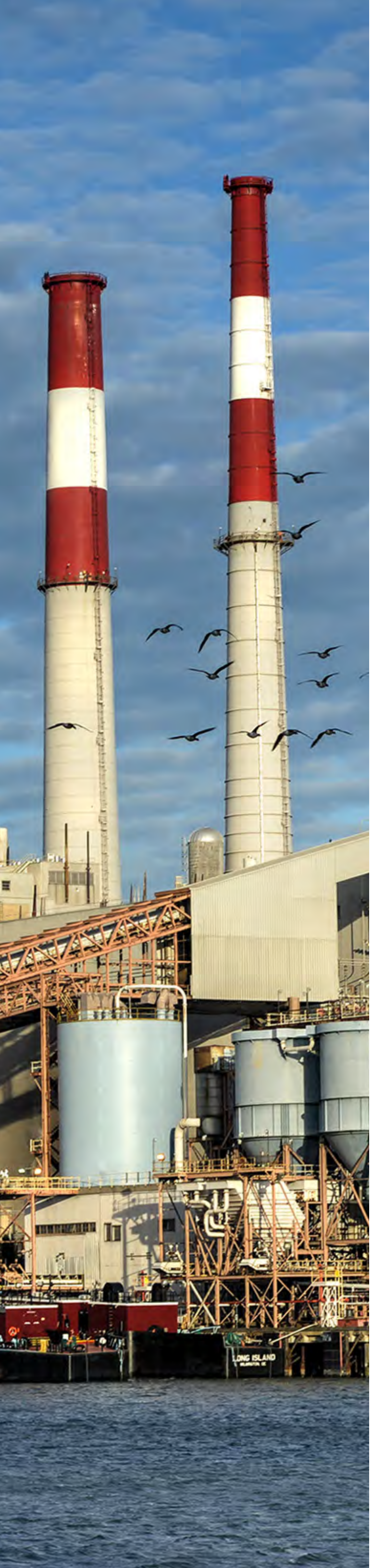


Ceres

Water Behind the Watts

The Hidden Risk of Powering Data Centers

August 2026



Executive Summary

As the buildout of data centers for AI accelerates across the U.S., the stakes for water, energy, and land are rising just as quickly.

The growing pushback from communities nationwide crystallizes the task at hand: ensuring that new data centers are powered by clean energy, use water more efficiently, and are developed in ways that are fair, affordable, and protective of local communities and natural resources.

This report focuses on one aspect of that challenge: understanding and managing the growing demand for water. While data center companies typically focus on the amount of water they use to cool the technology running within their facilities, the water used for power generation to meet their massive energy needs has an even greater impact.

Ceres' analysis shows how water use in energy production is the largest and least visible share of data centers' overall water use.

This report examines the water required to generate the electricity that powers data centers in seven states that account for about 50% of all U.S. data centers: Virginia, Texas, California, Illinois, Georgia, Ohio, and Arizona. In these states, much of the electricity comes from water-intensive power generation, and many power plants are in regions facing water stress or drought.

This reliance creates risks for companies, investors, and communities. Water shortages, drought restrictions, and competition for water resources can affect power generation, increase costs, complicate future infrastructure development, and strain the water supplies that residents, farmers, and businesses depend on.

This report outlines steps companies can take to assess these risks fully and to work with power producers, policymakers, and other stakeholders on mitigation. As policymakers turn their attention to data centers, water used to generate the electricity that powers them should be part of that policy conversation.

Data center companies and power producers that directly address these risks, along with the other very real impacts of the massive buildout underway, have a major opportunity to advance responsible AI development in the U.S. Supported by sustainable solutions and policies, utilities and data center companies can secure financial returns, business continuity, and national competitiveness.

This analysis is based on power plant level data across the seven states in the U.S. using the most recent (2024) publicly available U.S. Energy Information Administration's data, supplemented with modeled water use estimates where plant reported water use data was unavailable. The indirect water use estimates are based on withdrawals (not consumption) and include hydropower.

Key Findings Overview

1

Power generation makes up the bulk of data center water use

- Data centers in the states analyzed depend on roughly 3.4 trillion gallons of freshwater annually for electricity, around 12X the annual water use of Los Angeles, Phoenix, and Washington D.C. combined.

2

The amount of water needed to produce electricity varies widely by state, depending on the type of electricity generation used

- 78% of the electricity in the states analyzed came from power plants that use water to operate.
- Ohio, Georgia, and Virginia each generated over 90% of their electricity from water-intensive thermal power plants.
- California withdrew more water for energy generation than any other state, due to its use of hydroelectric power.

3

Most electricity is generated by power plants located in areas facing water stress or drought (or both)

- In the states analyzed, 66% of the electricity generated using water came from areas facing medium-high to extremely high water stress—meaning demand for water is close to or exceeds the available supply.
- 44% of the electricity generated using water came from power plants in areas that faced 3 or more months of drought.
- Electricity generation in Arizona and Illinois had the greatest exposure to water stress and drought.

4

Most power producers identify data centers as a primary driver of rising electricity demand, but few have considered the potential water risks tied to this growth

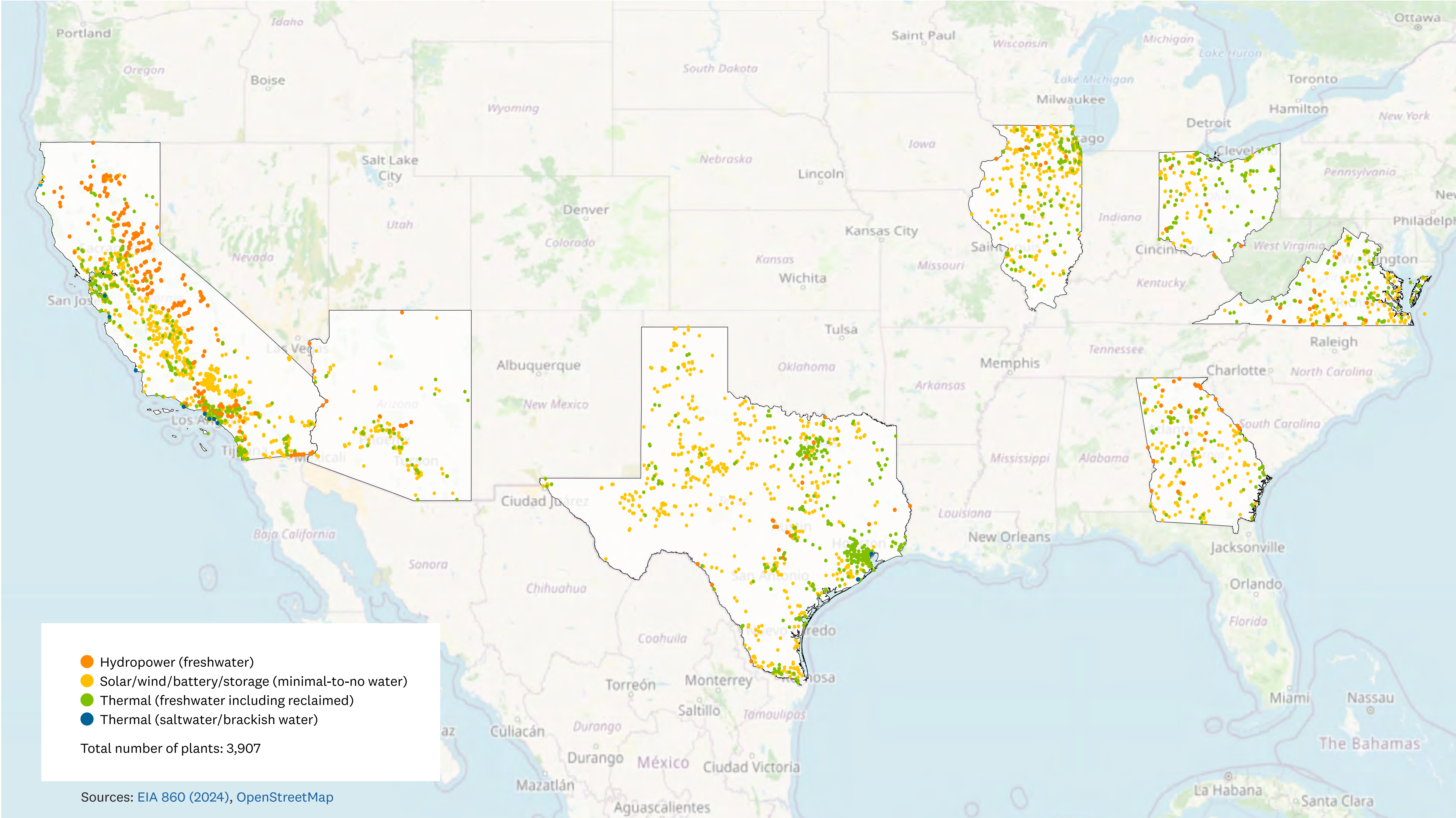
- Some power producers have developed water management strategies that could serve as a foundation for addressing water risk tied to data center demand.

5

Most companies operating data centers do not take into account the water risks linked to the electricity they purchase.

- Companies' water strategies currently focus primarily on cooling technology and equipment inside data centers.
- A few companies disclose the water used to generate the electricity they purchase.

Figure 1: Study area power plants (1 MW or higher and with active generation in 2024)



Sources: EIA 860 (2024), OpenStreetMap

Background

Rising Electricity Demand from Data Centers

AI expansion is driving rapid data center growth, and with it, rising electricity demand. In the United States alone, data center capacity is expected to nearly double, with electricity use projected to reach 9% to 17% of total U.S. demand by 2030, up from 4% to 5% today.

This surge has important water implications. Water is not only needed to cool the servers and equipment running inside data centers, it is also used by power plants to generate the electricity that runs those facilities.

This "indirect" water represents the largest and least visible share of data centers' overall water use. In 2023, U.S. data centers consumed roughly 176 TWh of electricity, carrying an estimated indirect water dependency of 211 billion gallons, (based on the regional electricity grid mix).

Given the growth trends, the demand for both electricity and water continues to rise. By 2030, water used in electricity generation is projected to account for 72% of U.S. data center total water consumption, even as the facilities use more efficient cooling and reclaimed water within their own operations.

Increasing Data Center Water Risk

On the ground, these water risks are coming into focus. As Ceres' 2025 Drained by Data analysis shows, in the Phoenix, Arizona region, annual water use associated with data center electricity consumption is expected to increase by 400%, as planned data centers come online.

Many data center facilities are in or are planned for regions that are already experiencing water stress and that also source water-intensive power from water-stressed regions, compounding their risk.

Between 2022 and 2025, roughly two-thirds of new or planned data centers in the U.S. were in water-stressed areas of states including California, Arizona, Texas, Illinois, and Virginia. Facilities are also often clustered together (nine out of 10 data centers have another facility within 5 miles), increasing pressure on shared water resources and scrutiny from communities, regulators, and utilities.

These pressures are increasingly material for data center operators. Companies can face operational constraints if their power supply is disrupted because of a water shortage or community concerns over water supplies.

This has already occurred, with some coal and nuclear plants curtailing output or shutting down due to water strains, and drought conditions leading to reduced hydropower generation. Local opposition over water and grid capacity disrupted $130 billion in data center projects in the first quarter of 2026 alone, and concerns over the local impacts have led to state moratoriums on data center growth. This is shaping policy discussions and requirements for energy and water use, along with local permitting and resource use requirements and best practices.

Evaluating Water Risk from Power Generation

Assessing the water risk tied to a data center's water use embedded in purchased electricity includes examining the power plants connected to the grid that supplies them (specifically, their generation technology, cooling system, fuel type, water supply sources, and any seasonal variations in water demands).

It is also important to understand the local water context, including basin stress levels and drought conditions in the areas where power plants operate.

Thermal generation of electricity (including through coal, natural gas, nuclear, geothermal, petroleum, and biomass) uses significant volumes of water, particularly for the cooling of power plants. Water use varies significantly based on the type of cooling used in the process, given it is the most water-intensive part of thermal power generation.

For instance, once-through cooling systems pull large volumes of water from the source and return most of it at a higher temperature. Recirculating systems such as cooling towers and ponds withdraw far less volume but lose more to evaporation. Dry cooling uses air instead of water to minimize water use. By comparison, wind and solar electricity generation require little to no water to operate, while hydropower relies on water from reservoirs that can lose significant volumes to evaporation.

Nationally, data centers rely heavily on water-dependent electricity generation. Natural gas supplies 40% of their electricity, followed by renewables (24%), nuclear (20%), and coal (15%). Though there are many renewable projects in the pipeline to meet the growing energy demands (65% of renewable power purchase agreements in the U.S. signed since 2021 have been dedicated to data center operations), these options are often limited by timing or transmission and distribution issues across the grid.

Study Area: U.S. Data Center Hotspots

Given that purchased electricity by data centers can be a main driver of their water dependency and impacts, this report examines the water use embedded in their purchased electricity across seven states: Virginia, Texas, California, Illinois, Georgia, Ohio, and Arizona, where approximately 50% of U.S. data centers are located, and the underlying water stress in the regions where power is produced.

The states within the scope of the analysis reflect a range of data center market growth projections and sources of electricity generation. They also face varying levels of water stress and drought conditions.

Data Analysis

To understand water use in electricity production in each state, the analysis uses power plant level data across the seven states using the most recent (2024) publicly available U.S. Energy Information Administration's (EIA) forms (860 and 923), supplemented with modeled water use estimates where plant reported water use data was unavailable.

The analysis consisted of five steps: (1) identifying the individual power plants within each state with at least 1 MW capacity – the minimum generating threshold EIA requires facilities to report – that had active generation (3,907 total plants in Figure 1) and that rely on water (excluding saltwater/brackish) for generation (1,434 total plants), (2) aggregating water use totals for the subset of power plants identified in step 1 through reported water volume data and estimating values for plants without reported data using World Resources Institute's guidance, (3) characterizing the prevalence of water stress and drought through spatial overlay of power plant locations, WRI's Aqueduct tool, and data from U.S. Drought Monitor (assuming withdrawals occurred in vicinity of the power plant), (4) estimating the magnitude of data center water use embedded in purchased electricity by state (assuming data centers source electricity from the state they are located in) by using data from EPRI's 2024 state level estimates of data center electricity share, and (5) reviewing public disclosures to assess whether data center companies are addressing their indirect water dependency and impact and how electric power producers (including utilities, cooperatives, independent power producers, etc.) are working to address emerging water risks from rapidly increased energy demands.

This analysis focuses on water withdrawals, rather than consumption, to capture data center companies' indirect exposure to water risks. While consumption reflects water permanently lost from the local system, withdrawal reflects the full volume an asset depends on to operate, providing a strong indicator of risk exposure. While the water sources used for electricity generation and seasonal variability in electricity demand are important factors in fully understanding water risk, they are excluded from the scope of this analysis. The findings in this analysis are directional estimates, reflecting the scale and direction of water risk, rather than an exact accounting of water use. Some data centers are employing power generation on-site to meet or supplement electricity demand. This behind-the-meter generation may rely on water but falls outside of the scope of this analysis. Water used in other parts of the value chain is also outside of this report's scope. Additional methodological details are provided in the Appendix.

Key Findings

1

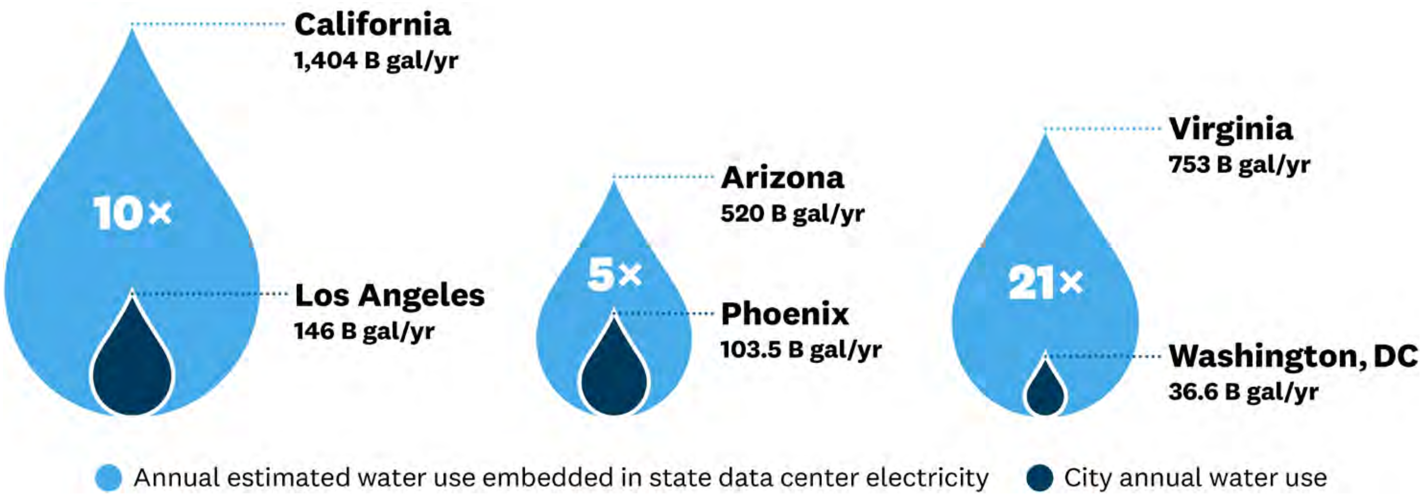
Power generation makes up the bulk of data center water use

- Data centers in the states analyzed depend on roughly 3.4 trillion gallons of freshwater annually for electricity, around 12X the annual water use of Los Angeles, Phoenix, and Washington D.C. combined.

Powering data centers used an estimated 3.4 trillion gallons of water withdrawals in 2024, applying EPRI state estimates. Annual withdrawal volumes varied dramatically by state, ranging from 25 billion gallons in Ohio to 1.4 trillion gallons in California.

By comparison, the estimated amount of water used to power data centers in Virginia was roughly 21 times the amount of water neighboring Washington, D.C. uses each year, while the annual estimated water use attributed to electricity generation for data centers in California equaled about 10 times the annual use of the City of Los Angeles.

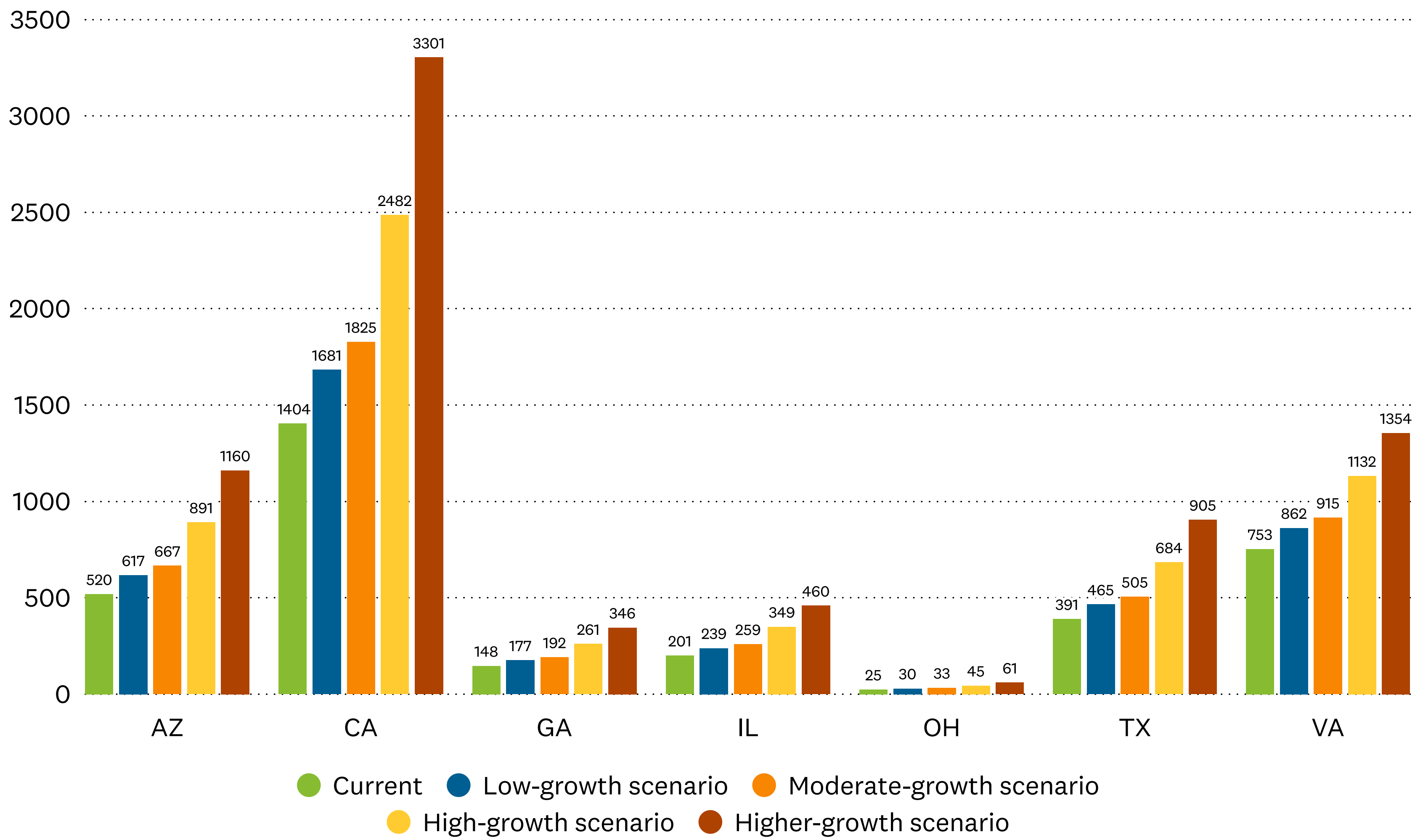
Power Plant Water Withdrawal for Data Centers vs. City Water Use (2024)



Sources: DC Water Accessed, LADWP Briefing Book, City of Phoenix

The water use embedded in purchased electricity for data centers in the states analyzed could rise substantially by 2030, ranging from an estimated 4.1 to 7.6 trillion gallons withdrawn. (Applying EPRI's data center growth scenarios, which are based on projected electricity demand, industry growth, AI adoption, and data center efficiency scenarios, to the estimated total withdrawals from power plants in this analysis)(Figure 2).

Figure 2: Annual Estimated Water (B Gal) Embedded in Data Center Electricity Use. Based on EPRI (2024) Current and Future Growth Scenarios till 2030



Sources: EIA (2024), estimated water volumes using Guidance For Calculating Water Use Embedded In Purchased Electricity (2020), and EPRI (2024)

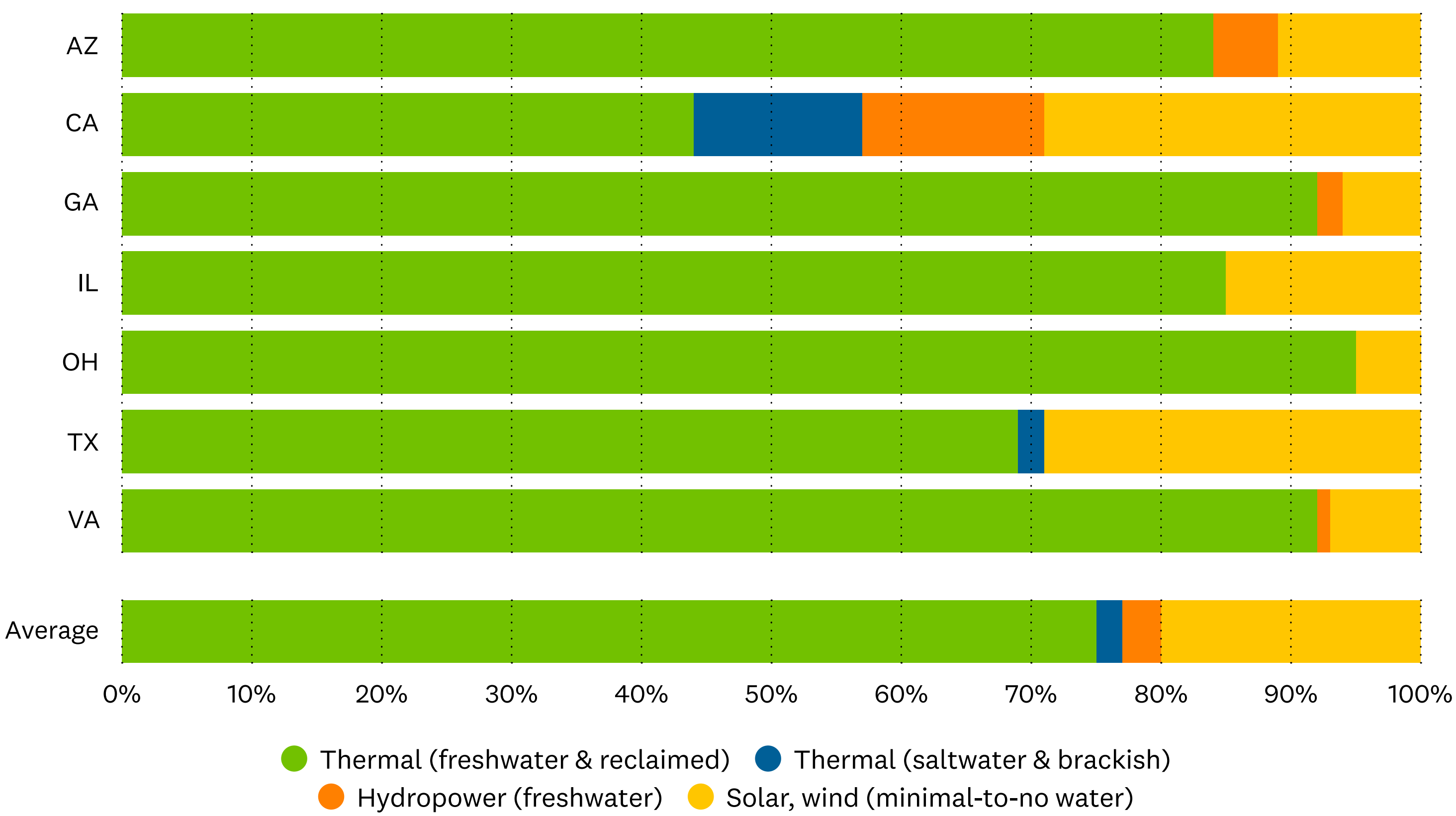
2 The amount of water needed to produce electricity varies widely by state, depending on the type of electricity generation used

- 78% of the electricity in the states analyzed came from power plants that use water to operate.
- Ohio, Georgia, and Virginia each generated over 90% of their electricity from water-intensive thermal power plants.
- California withdrew more water for energy generation than any other state, due to its use of hydroelectric power.

The more a state grid relies on thermal generation or hydropower, the more freshwater is required, and the greater the indirect water dependency for data center companies.

Across 3,907 active plants, 37% of power plants (1,434) were dependent on water for generating electricity in 2024 and in total produced 1,142 TWh, almost 78% of the electricity in the study area (1,467 TWh). By contrast, the remaining 63% of solar, wind, battery storage facilities, and thermal plants using saltwater generated about 325 TWh, or close to 22% of the electricity in the study area. Thermal generation, including gas, coal, and nuclear (and some geothermal, biomass, and petroleum), dominates, ranging from 57% in California to 95% in Ohio (Figure 3).

Figure 3: Total Annual Generation Mix (%) from Power Plants



Sources: EIA 860 (2024), EIA 923 (2024)

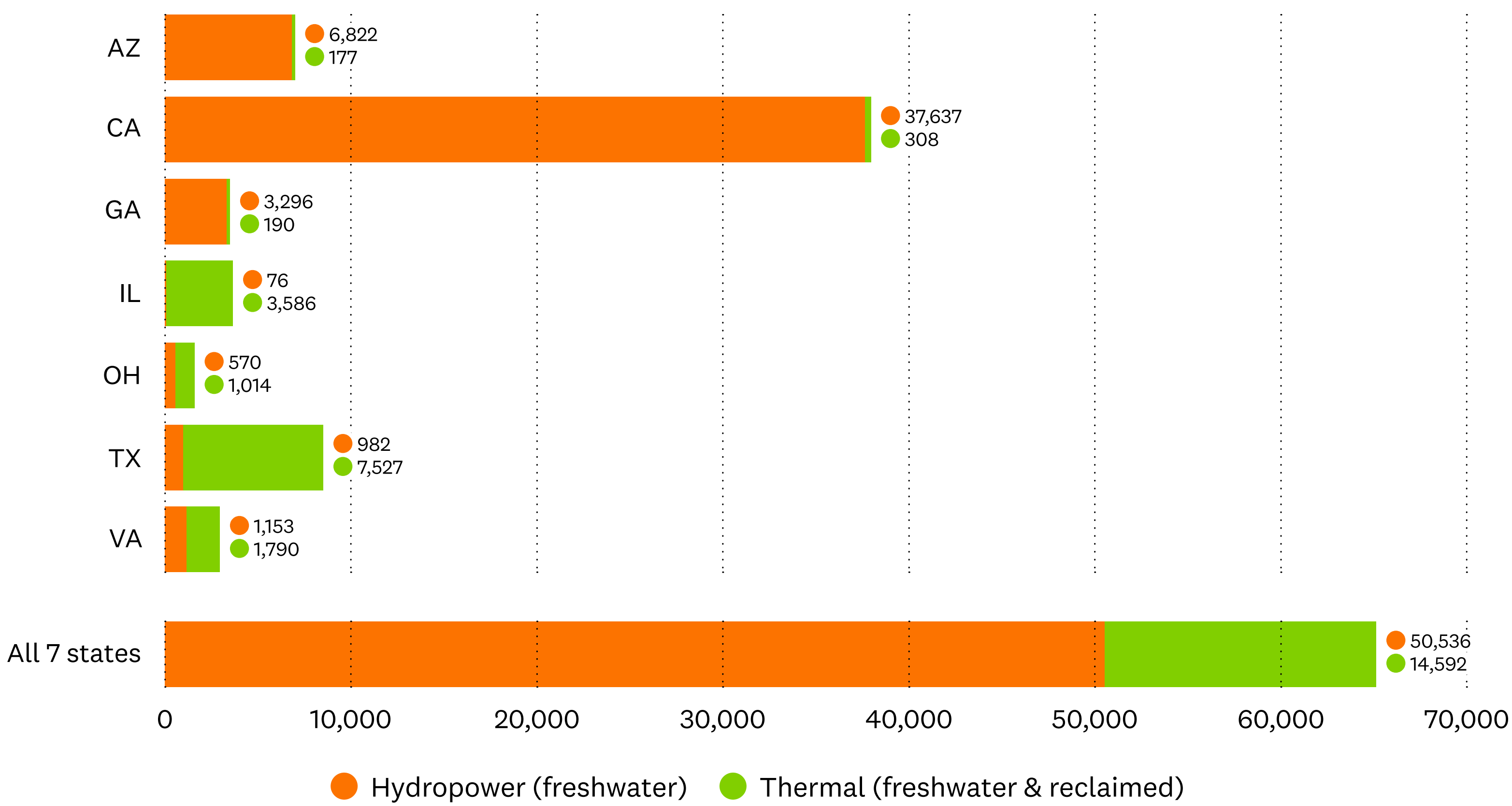
Each state's generation mix influences how much water is withdrawn. Withdrawals (reported and estimated totals) varied across states, from 1.6 trillion gallons in Ohio (largely due to coal and hydroelectric fleets) to 37.9 trillion gallons in California (due to the state's large hydroelectric fleet) (Figure 4).

Illinois relied primarily on nuclear energy at 63%. Texas stood out for its fossil-heavy fleet (natural gas and coal) accounting for roughly 90% of its total withdrawals. Texas is an example of a state that has made significant inroads in adding renewable generation that requires minimal water use, while still being reliant upon water-intensive fossil fuel generation.

In the states analyzed, the withdrawal volumes were dominated by hydropower (approximately 78%), which passes large volumes through turbines and returns them to the source, as seen overwhelmingly in California, Arizona, and Georgia.

Across the study area, power plants using freshwater withdrew roughly 65 trillion gallons of water, or roughly 227 times as much water as the cities of Los Angeles, Phoenix, and Washington D.C. used in 2024 combined.

Figure 4: Annual Estimated Water Withdrawal (B Gal) from Power Plants using Freshwater to Generate Electricity



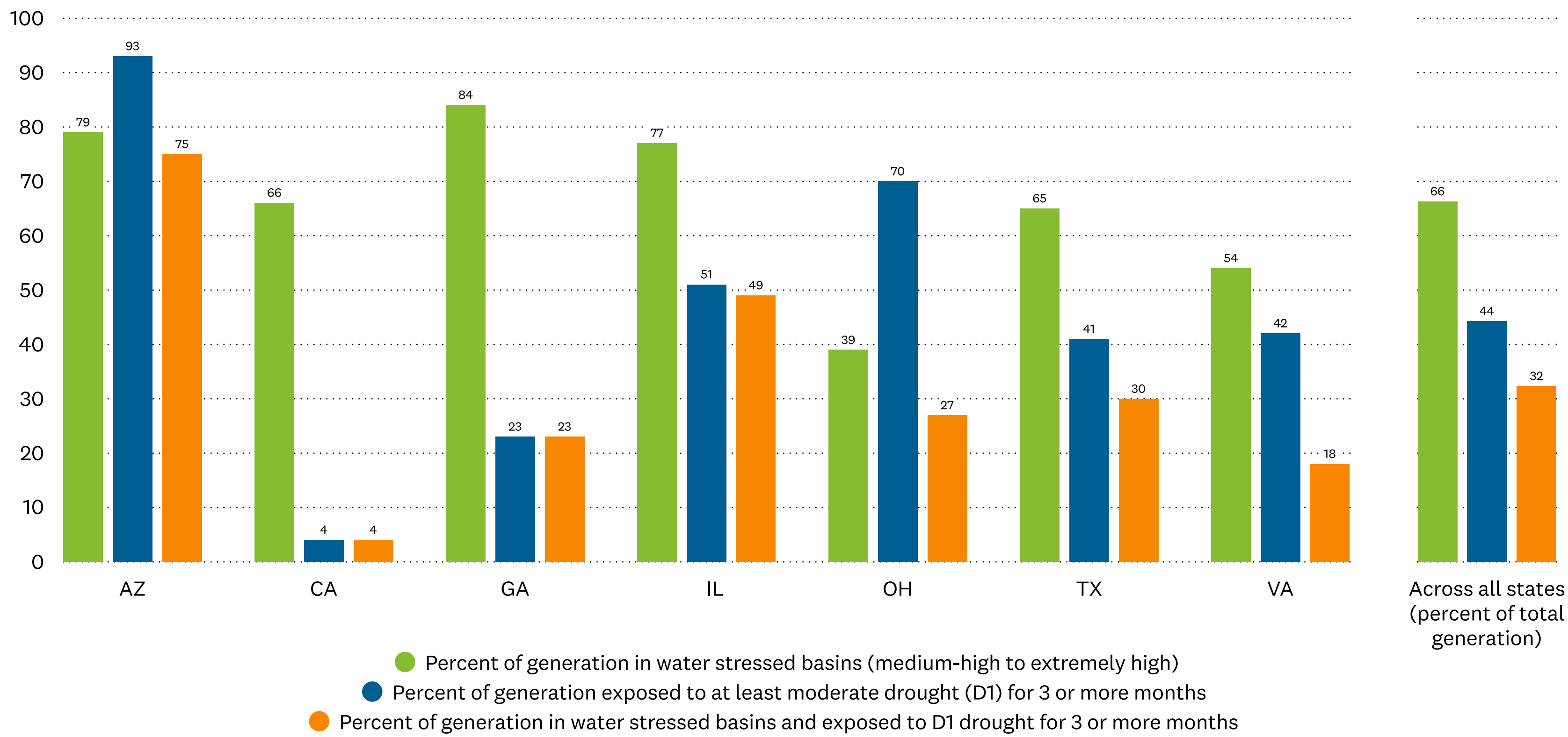
Sources: EIA (2024), estimated water volumes using Guidance For Calculating Water Use Embedded In Purchased Electricity (2020)

3 Most electricity is generated by power plants located in areas facing water stress or drought (or both)

- In the states analyzed, 66% of the electricity generated using water came from areas facing medium-high to extremely high water stress.
- 44% of the electricity generated using water came from power plants in areas that faced 3 or more months of drought.
- Electricity generation in Arizona and Illinois had the greatest exposure to water stress and drought.

Local context is critical to understanding water risk associated with electricity generation. As shown in Ceres' 2025 Drained by Data report, data center growth could push annual water stress up by as much as 32% in basins where power plants are generating electricity for data centers in the Phoenix area. Overlaying water stress and drought data with power plant locations provides insight into the potential compounding water-related risk in areas where data centers are located or draw their energy from.

Figure 5: Energy Generation at Risk of Water Stress, Drought, or Both



Sources: Baseline annual water stress identified using **WRI Aqueduct 4.0** and **U.S. Drought Monitor, 2024**

Across the seven states analyzed, 66% of electricity generated from power plants using water is in regions facing medium-high to extremely high baseline annual water stress, while at least 44% occurred in areas experiencing moderate drought conditions (D1 category) for three months or more in the year. Approximately a third of the total generation across the seven states (32%) came from plants exposed to both water stress and moderate drought conditions for three months or more in the year.

Water stress and drought exposure vary considerably across the study area (Figure 5). California generated a large percentage of its electricity (66%) in water-stressed basins but had limited drought exposure. Power plants in Ohio had the opposite experience. They were in areas that experienced drought, but few faced water stress.

In Arizona, however, the risks were compounded, with 75% of generation exposed to both water stress and three months or more of moderate drought conditions in the same year. Of note, drought and water stress conditions can vary considerably year to year and seasonally. For instance, California's 2021 drought led to reduced statewide hydropower generation because of low reservoir levels.

California
Hydropower reliability risk

California is among the leading U.S. markets for data centers, both current and proposed, and is also a major hydropower producer. While hydropower is considered a renewable energy source with relatively low water consumption, its reliability as an electricity source can be affected by local water conditions, exposing data centers that rely on hydropower to both water and electricity reliability risks.

In California, about 39% of the water used for hydropower generation in 2024 occurred in basins experiencing medium-high to extremely high water stress. Factors such as reservoir evaporation, drought, and the need to maintain sufficient reservoir storage and river flows during dry periods can all limit the amount of water available for power generation. These constraints are reflected in strategic planning of PG&E, one of California's largest utilities. In its 2022 Integrated Resource Plan, the utility revised its hydro generation forecast, projecting 15% to 21% lower hydroelectric generation in the near future. The revision reflected the impacts of climate change (such as warmer temperatures, decreased snowpack, and recent extreme droughts), as well as expected changes to permitting that would reduce water allocation for hydropower.

Illinois
Concentrated water risks related to nuclear energy

Among the states analyzed, Illinois was the most dependent on nuclear power, accounting for 63% of the state's electricity generation in 2024. However, most of that nuclear capacity is clustered in the northwest part of the state, where facilities draw from several water-stressed portions of the Mississippi-Missouri basin. In fact, 75% of Illinois's nuclear generation comes from plants located in areas of high water stress.

Despite the exposure to water risk of the current plants, there is increased support for the promotion of new nuclear capacity. In January 2026, Illinois lifted its moratorium on large nuclear reactors. The White House has set a goal to reach 400 GW of nuclear capacity nationally over the next 25 years, including a near-term target of 5GW in new capacity and increases in generation at existing nuclear facilities by 2030. While some next generation advanced reactors are designed to reduce or avoid water-intensive cooling, most existing and planned nuclear facilities still depend on water – meaning future development of plants should account for exposure to water risk.

4 Most power producers identify data centers as a primary driver of rising electricity demand, but few have considered the potential water risks tied to this growth

- Some power producers have developed water management strategies that could serve as a foundation for addressing water risk tied to data center demand.

Across the seven states analyzed, power producers, including utilities, have employed several approaches to water risk management. Some have identified assets exposed to water risk. Texas's Vistra identifies and discloses its power plants in areas of high or extremely high water stress. Others have adopted water targets specifically tied to reducing the water used for generation. Arizona's SRP has a 2035 commitment to achieve a 30% reduction in generation-related water use intensity. Virginia's Dominion Energy met a 50% water withdrawal reduction target in 2023 and continues to prioritize transitioning from high water-intensive sources (coal and oil) to lower water-intensive sources (solar and wind).

Others have prioritized technology to reduce and manage water use. California's PG&E uses dry cooling at some gas plants and Southern California Edison operates less water-intensive simple-cycle turbines. NRG reduced water withdrawals for power generation by 77% through water-saving cooling towers and a coal-to-gas transition.

While the majority of large power producers assessed within the study area (through sustainability reports, integrated resource plans, and CDP disclosures) have identified data centers as major drivers of load growth, few have evaluated the water risks tied to this forecasted growth or developed water management strategies specifically to address the added demand from this fast-growing industry.

In Ohio, for example, AEP anticipates adding approximately 12 gigawatts (GW) of new contracted load across its service territory between 2026 and 2030, driven by data center growth. To meet this demand, the company is investing $5.2 billion to expand and strengthen its transmission and distribution systems, while also exploring solutions such as fuel cells for data centers. However, AEP's disclosures do not address the relationship between meeting data center demand and the increased water reliance. Similarly, Dominion Energy's disclosures highlight the new demand created for 81 new data center projects that came online in Northern Virginia between 2020 to 2024, and its $65 billion investment through 2030 to secure new gas, solar, and wind. Yet, readily available disclosures do not discuss how continued data center growth will affect the utility's water use.

Some broader planning efforts by power producers in the study area do consider water use, and may capture the growing demand from data centers through these activities. For instance, Arizona's SRP includes water as a metric to evaluate during scenario planning for future energy needs, alongside metrics such as reliability, affordability, and emissions, while tracking and planning for drought with state and regional partners. Also in Arizona, APS uses long-term supply planning, retiring water-intensive units, using reclaimed water, and engaging regionally on water issues.

5 Most companies operating data centers do not take into account the water risks linked to the electricity they purchase.

- Companies' water strategies currently focus primarily on cooling technology and equipment inside data centers.
- A few companies disclose the water used to generate the electricity they purchase.

Companies operating data centers are increasingly setting targets and strategies to address direct water use, including Amazon, Microsoft, and Apple.

When it comes to water use embedded in purchased electricity, corporate disclosures are much more limited, and most efforts do not clearly tie back to mitigating water risk. A few companies, however, have begun to consider water embedded in electricity generation. Meta discloses the total embedded water consumption in its purchased electricity, including contracted renewable energy, and reports on the avoided water consumption associated with those procurement decisions.

CyrusOne estimates data center facility water burden by considering water consumed on-site (WUE Site), plus the water used in the production of its electricity, known as WUE Source. Estimations are done using WRI's Guidance for Calculating Water Use Embedded in Purchased Electricity. The company's WUE Source has declined 67% since 2018, driven primarily by renewable energy procurement, as the company works towards its SBTi-validated carbon target of becoming climate neutral by 2030. For its Project Jupiter campus in New Mexico, Oracle has announced replacing planned gas turbines and grid dependence with Bloom Energy fuel cells. Unlike combustion turbines, this technology does not require a steam cycle or cooling towers and is expected to minimize water use compared to gas turbines that were originally planned.

Recommended Actions

There are concrete actions that stakeholders can take to help mitigate water risk from dependence on water embedded in electricity for data centers. From the data center companies procuring electricity, to the power producers generating it, to the policymakers and investors shaping the incentives around both, the following recommendations translate this report's findings into specific steps each actor can take:

Data center companies

- **Integrate** both direct water use and water use embedded in purchased electricity into risk assessments, modeled under scenarios of current and future climate, demand growth, and varied mixes of energy sources. The assessments should consider site-level water sources, seasonal supply and demand variability, and infrastructure needs. Comprehensive assessments will support better evaluation of water dependency, impacts, and risks, and inform more effective risk mitigation strategies.

- **Disclose** both direct water use and water use embedded in purchased electricity for each existing and proposed data center (or aggregated at the city, county, or basin level, if necessary, given data limitations) and its associated risk. Include information on how water risks are being addressed, and how identified risks inform business decisions including those around siting, cooling design and energy procurement. This transparency will help build trust and credibility with shareholders, communities, and regulators concerned with water use by data centers.

- **Evaluate** how power purchase agreements, renewable energy purchases, and behind-the-meter electricity investments affect the water risk profile of data center operations, including impacts on water availability and electricity reliability, to better understand the water benefits of renewable energy procurement and support more informed decision-making.

- **Collaborate** with power producers to understand the extent of water stress and drought exposure in the regions supplying their power and support efforts already underway to address identified vulnerabilities.

- **Expand** peer collaboration in a precompetitive space to help identify best practice and co-develop effective approaches to mitigate sector-wide risks, supporting shared learning, industry-specific data collection, identification of barriers to scaling action, standard setting, and best practice sharing.

- **Engage** with peers, power producers, researchers, and other sectors to support the development of a standardized methodology and database for assessing and disclosing the water use embedded in purchased electricity and the related risks to business operations and impacts on local water resources. This will support a scientifically grounded, data-driven, and standardized approach that the sector can implement and all stakeholders can access.

Power producers

- **Disclose** water withdrawals, water consumption, and water sources for individual power plants, alongside site-level drought vulnerability, basin-level risk assessments, generation-related water targets,

and mitigation measures to further understand vulnerabilities and support customers, such as data center operators that have placed heightened attention on water risk in the value chain.

- **Integrate** water risk from data center demand growth into resource planning and infrastructure decisions, including more efficient water cooling technologies, to support strengthened water resilience and long-term business continuity.

- **Expand** collaboration with customers, water managers, and community stakeholders to increase resilience and adaptation to future changes in water supply and increased demand for power.

Policymakers

- **Require** standardized reporting on both direct water use and water use embedded in purchased electricity to ensure decision-makers and other stakeholders can easily access relevant information to understand risks and impacts and to promote consistency.

- **Incentivize** lower water use technologies and water conservation practices to help scale water-saving practices and ensure water resources are resilient for all water users in the long term.

- **Incentivize** the deployment of low water intensive renewable energy to support more sustainable and resilient data center developments and other customers.

- **Ensure** that siting, permitting, infrastructure, and resource-planning decisions account for basin-level water stress, seasonal water supply and demands, and community impacts to ensure decisions consider potential impacts and community and other water needs are met now and in the future.

- **Ensure** that behind-the-meter electricity generation minimizes impacts on local freshwater resources, particularly in water-stressed regions, to ensure this new trend for meeting energy demand from data center companies does not create unintended impacts.

Investors

- **Encourage** comprehensive disclosures from data center companies and power producers that better articulate water risks associated with the data center value chain to better understand the full suite of potential water risks for investment decision-making.

- **Encourage** data center companies to demonstrate how water stress and drought exposure in the regions supplying their power factor into procurement and siting decisions to understand if vulnerabilities are being addressed, and risk is appropriately mitigated.

- **Engage** with data center companies and power producers to understand whether they are appropriately accounting for and mitigating water risk to support long-term value creation. The Ceres Valuing Water Finance Initiative offers a platform and tools to support investors as they engage with technology and data center companies on water risk issues.

Appendix

Data Sources and Methodology

Scope and power plant selection: This analysis examines the water embedded in electricity generation for data centers across seven states — Virginia, Texas, California, Illinois, Georgia, Ohio, and Arizona — that together account for roughly 50% of U.S. data center capacity. The group of power plants assessed were identified using publicly available power plant-level and generator-level (individual electricity-generating units within a facility) 2024 filings from the U.S. Energy Information Administration (form 860 and 923). Of the 5,230 plants reporting at least 1 MW of capacity across the seven states, 3,907 had active generation in 2024, and of these, 1,434 were used in the analysis for water use after filtering out retired facilities, plants with zero or negative net generation in 2024, saltwater- and brackish-cooled plants, and plants that used minimal to no water to generate electricity, such as wind and solar. Plants with multiple generators or fuel types were treated as a single facility, identified by each facility's unique EIA plant ID, and classified by the technology responsible for the largest share of generation in 2024.

Water use data: Where a plant reported cooling water data to EIA, those values were used. Of the 1,434 plants identified (per the process above), 194 reported withdrawal or consumption under EIA-923 Schedule 8D. Data for the remaining 1,240 plants (including smaller thermal units, hydroelectric facilities, and plants not subject to cooling water reporting) were estimated using WRI's technology-specific water-intensity factors applied to each plant's 2024 net generation. The WRI factors estimate water withdrawal across all generation types, treating hydropower as a withdrawal rather than an instream use.

Attributing water use to data centers: To estimate the embedded water used in generating power for data centers, EPRI's 2024 state-level estimates of data centers' share of electricity use were applied to each state's total power plant water withdrawals (reported and estimated). Using this, the proportional share of the water used to generate electricity flowing through each state from power plants was attributed to data centers within that state. The 2024 EPRI data was also used to estimate the embedded water use in purchased electricity for data centers based on projections for 2030 low, medium, high and higher growth scenarios (based on electricity demand and data center growth).

Water risk characterization: To understand exposure to water risk, each plant's coordinates were mapped to WRI Aqueduct 4.0 data to assign each plant a baseline annual water stress value associated with its location in a watershed. Site-level drought exposure data was obtained from the U.S. Drought Monitor (USDM) weekly categorical data for 2024, which is developed by the National Drought Mitigation Center, the U.S. Department of Agriculture, and the National Oceanic and Atmospheric Administration. Weekly data spanning all 53 collection periods in 2024 were used to calculate the period of each plant's exposure to moderate drought conditions (D1). This was done by combining the available raster data into a single-multiband layer to extract the drought intensity at each plant location for every week of the year and identifying those experiencing 3 or more months (D1) of drought. Where power plants experienced both medium-high to extremely high water stress and moderate or greater drought conditions during 2024, these were identified as facing compounding exposure.

Limitations: The findings in the report are directional estimates, not precise measurements. Water data is self-

reported to EIA and not independently verified. For plants without reported data, the water use calculations rely on WRI's national-average factors, which have limitations such as they do not reflect a given plant's age, cooling design, climate, or efficiency. Given that many smaller power plants and hydroelectric facilities are not required to report water data to EIA, a significant portion of this analysis relies on WRI estimates rather than reported values. The analysis for states with large thermal fleets - Arizona, Texas, and Illinois - relied on a greater percentage of reported data points, as these plants are required to report to EIA. States such as California and Virginia with more hydroelectric dams and smaller plants required a larger share of estimated values. Further, the water sources for electricity generation are assumed to be within the same geographic location as the power plant. While water withdrawals, water stress, and drought conditions fluctuate across seasons and years, this analysis uses a single year (2024) snapshot to illustrate the direction and scale of indirect water use and potential risk.

Another limitation of this analysis is that embedded water use is estimated using state-level generation data, whereas the generation mix and its associated water use are plant-level attributes shaped by dispatch decisions made by balancing authorities (BAs), whose boundaries frequently cross state lines. The electricity delivered to a specific data center reflects the generation mix of the BA serving that facility, which may span multiple states (for example, PJM, which serves Virginia's data center corridor, covers 13 states) or represent only part of a single state (for example, ERCOT covers most, but not all, of Texas). State-level figures in this report should therefore be taken as an approximation of regional water risk exposure across a state's power fleet, not as the precise electricity mix and associated water use delivered to any individual facility or utility service territory. Additionally, water is attributed to data centers based on where electricity is generated, not where it is ultimately consumed. Net power-exporting states may therefore have water use overstated, since some of their generation serves demand elsewhere, while importing states, such as Virginia and California that rely partly on out-of-state generation, may have water use understated.

About Ceres

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