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About this Report

U.S. Water for Data Centers: Market Trends, Opportunities, and Forecasts, 2025–2030

Released May 2025

Sections

Summary

BACKGROUND

The explosive growth of data centers—driven by surging demand for artificial intelligence (AI), machine learning, Internet of Things (IoT), and cloud services—is amplifying the sector's environmental impacts. Water is emerging as a crucial strategic priority for data center owners, operators, and communities. As companies transition from legacy, on-premises systems to larger hyperscale facilities, the demand for water for cooling and operations is rising, elevating its role in siting, design, and risk management decisions.

To navigate these pressures, leading tech firms are deploying various advanced strategies. These include investing in reclaimed water infrastructure, piloting "water-free" and closed-loop cooling systems, and leveraging digital tools to monitor and optimize water usage. These efforts are not only about environmental stewardship; they also reflect growing operational risks associated with water availability, permitting timelines, and community opposition. For solution providers, the expansion of digital infrastructure presents a significant opportunity to integrate water technologies throughout the asset life cycle, from pretreatment to system optimization.

Twenty companies operate more than 960 data centers across the U.S, with strategic clustering by industry leaders in Virginia, Texas, and California

report SCOPE

Backed by a transparent research methodology, this Insight Report provides **qualitative** and **quantitative** analysis to help companies understand data center water usage and **market opportunities** in the U.S. over the next decade.

This Insight Report provides an analysis of water used at data centers in the U.S., collected from 20 data center companies, representing over 960 data centers in the country (18% of U.S. data centers), selected based on their market share and data availability.

report HIGHLIGHTS

- Drivers and opportunities shaping investment and spending decisions
- Analysis by data center type, cooling technology, and geography
- Budget segments with highest planned capital investment
- Pockets of opportunity for water solutions amid data center build out
- Market sizing and forecasts for the period 2025–2035

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Research Methodology and Data Sources

Scope

This Insight Report provides an analysis of water used at data centers in the U.S., collected from 20 data center companies, representing over 960 data centers in the country (18% of U.S. data centers), selected based on their market share and data availability.

Key Assumptions And Methodology

- Bluefield collected information on 960 data centers across 41 states, with varying degrees of reported data dependent on company disclosures.
- Bluefield estimated water use based on disclosed data center electricity demands, current and projected data center landscape makeup (percentages for hyperscale, colocation, & traditional) with associated power demand and cooling system technology adoption, and the cooling system water intensity.
- To estimate CAPEX, Bluefield utilized the existing asset base of data centers, historic growth rates, value of monthly construction put-in-place data, data center companies' capital investment plans, and 50 disclosed, new data center announcements.
- To estimate OPEX, Bluefield leveraged its water usage sizing, developing an operational spend intensity per million gallons of water used. Values were determined based on data center water & wastewater bills and select case studies.
- Market size, segmentation, and growth were discussed with industry players for verification—data center companies, solution providers, and engineering firms.

Data Sources

- Company disclosures (e.g., Microsoft, CoreSite, Equinix)
- U.S. Department of Energy—U.S. Data Center Energy Usage Report
- International Energy Agency
- U.S. Census Bureau—construction put in place data
- Industry interviews (data center companies, engineering firms, water solution providers)

Companies Profiled

aws, CyrusOne, Google, IBM, Meta, Ecolab, Equinix, Black & Veatch, QTS, CoreSite, Aquatech, CERAFILTEC CLEAN WATER. EVERYWHERE., Kurita, Digital Realty, carollo, h2o innovation, Veolia, Flexential, Microsoft, Veralto, xylem, Vantage Data Centers, Stack Infrastructure, Lumen, Iron Mountain

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Insights

SAMPLE TAKEAWAYS

Water infrastructure spend to exceed US$4.1 billion through 2030

Water-related expenditures for data centers are forecast to rise at a compound annual growth rate (CAGR) of 7.8%, reaching US$797.1 million by 2030. Capital expenditures (CAPEX), which account for 56.7% of the total spend, are primarily driven by investments in municipal infrastructure and on-site equipment such as pumps, sensors, and chemical treatment systems.

- **Hyperscalers unlock long-term opportunities for water solution providers.** With more than US$100 billion in announced investments from Amazon Web Services (AWS), Microsoft, Meta, and Google, the hyperscale segment is driving sustained capital deployment. These investments provide significant tailwinds for water treatment, cooling, and infrastructure vendors to embed long-term solutions.
- **Water constraints slowing growth yet opening doors for strategic solution providers**. Delays in permitting, limitations from utility providers, and mounting community scrutiny are increasingly hindering new data center projects. Companies offering integrated services—from structuring public-private partnerships (PPPs) to advanced water system design and regulatory strategies—are emerging as key enablers for project approval and accelerated deployment.
- **Greenfield build-out favoring water-free and liquid cooling technologies.** While legacy facilities dominate water demand, liquid cooling adoption is projected to reach approximately 50.0% of new builds by 2030. This transition highlights the opportunity for high-efficiency closed-loop systems and advanced control technologies.
- **AI workloads tare increasing data center density and cooling complexity.** The rise of AI is expected to account for 23% of projected data center power demand by 2030, resulting in higher rack densities and heat loads.
- **Big Tech turns to community water investments as a path to local approval**. Tech giants are partnering with advanced leak detection firms like FIDO Tech to support municipal water loss reduction. They can count the volumes of water conserved toward their offset targets.
- **Colocation squeeze spurs infrastructure demand.** As vacancy rates in colocation facilities—multi-tenant, leased spaces that house servers and networking equipment—drop to a record low of 2.6% in 2024, operators are racing to expand their capacity. This accelerated build-out puts additional pressure on local water resources, highlighting the urgent need for expanded municipal supply systems and on-site treatment infrastructure.

Key Questions Addressed

How does water usage vary by cooling technology, geography, and data center type?

What is the estimated amount of water consumed vs. discharged by data centers in the U.S.?

What is the estimated growth in water withdrawals from 2025 to 2030, based on changes in cooling technology adoption and facility type?

What is the estimated total water management spending of U.S. data centers (CAPEX & OPEX)?

How is data center water management spend expected to change through the end of the decade?

What is the estimated cost of pretreatment systems, on-site water equipment, and municipal infrastructure?

What is the market size for these OPEX subcategories: water bills, chemicals, energy, and labor?

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Opportunities Emerge Amid Data Center Growth

As the data center market continues to grow, new water opportunities arise for solution providers to capitalize on.

Market Drivers of Change

Data Demand Growth
Higher data demand is a result of growing data processing and storage needs, along with the boom of AI. This demand is driving the industry to continue expanding.

Low Colocation Vacancy
Record-low vacancy rates in colocation data centers are limiting business gains, as tenants must wait for available lease space. Consequently, colocation providers, with the support of investors, are expanding their capacity.

Shift to the Cloud, Away from On-Premises Data Centers
Enterprises are seeing the benefits in shifting their data to the cloud rather than hosting IT equipment on-site. The transition encourages hyperscalers to gain a larger share of the market.

Focus on Sustainability
Data center companies are facing community backlash due to their significant impact on the local environment. Consequently, these firms are setting water sustainability goals and funding projects aimed at improving efficiency.

Technological Advancements
Innovations in data center design, such as the deployment of more efficient liquid cooling technologies and the use of chips with higher temperature thresholds, are improving water management.

Water Opportunity Areas

Municipal Water Treatment System Expansion
Data centers often rely on utilities for their water supply and effluent treatment. As a result, data centers have invested millions in expanding community water systems.

Reclaimed Water Solutions
To meet water needs, especially at legacy facilities, data centers will leverage reclaimed water from the utility. The lower cost per unit and environmental benefits provide a strong incentive for this approach. However, challenges such as additional permitting requirements, purple pipe network expansions, and increased monitoring can create pain points.

Digital Solutions for On-Site Water Management
Data center companies are increasingly adopting advanced digital solutions to optimize cooling systems. AI applications are becoming more popular among hyperscalers and leading colocation providers.

Off-Site Water Management Projects
To insulate themselves from negative community opposition and meet sustainability targets, big tech companies are investing in solutions for better community water management, such as leak detection in municipal networks and optimizing agricultural irrigation.

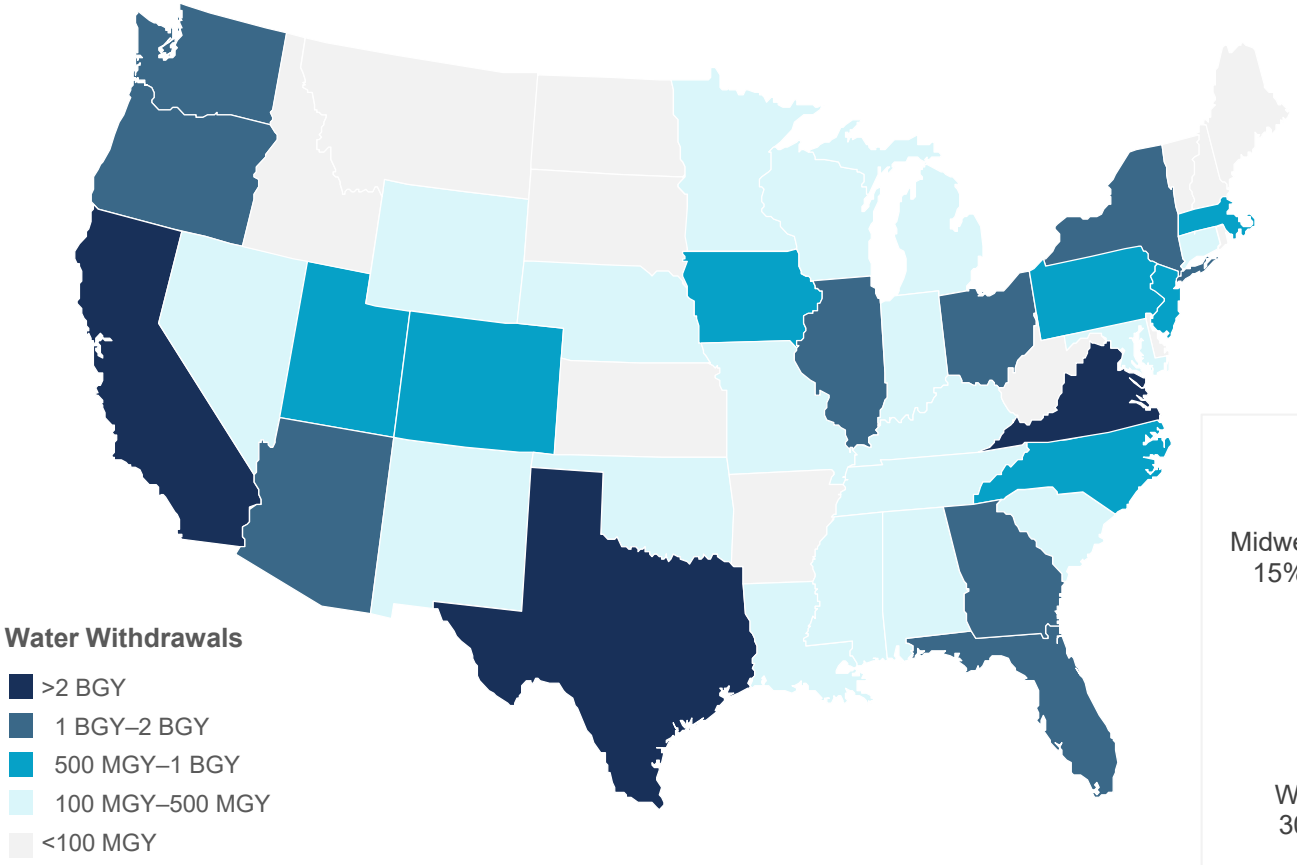
Containerized Treatment Solutions
Data centers aiming to outsource water management can lease containerized treatment units to effectively treat water for cooling requirements.

Source: Bluefield Research

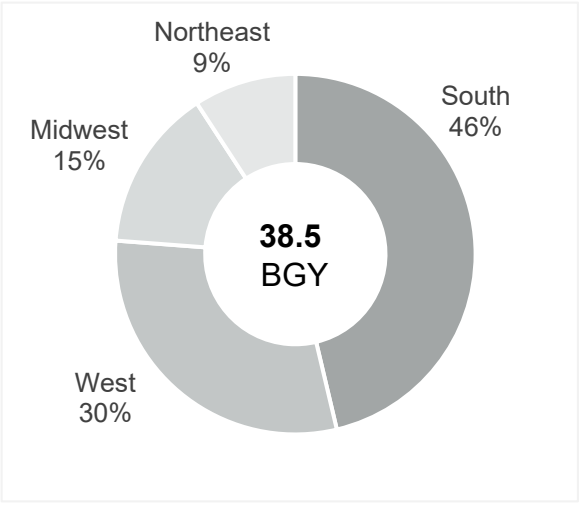
Data Center Water Use by State

In 2025, Virginia, California, and Texas will have the highest water demands for data centers, totaling 16.2 billion gallons and accounting for 42.0% of all water withdrawals.

Data Center Water Use by State, 2025



By Region, 2025



BGY = Billion gallons per year, MGY = Million gallons per year
Source: Bluefield Research

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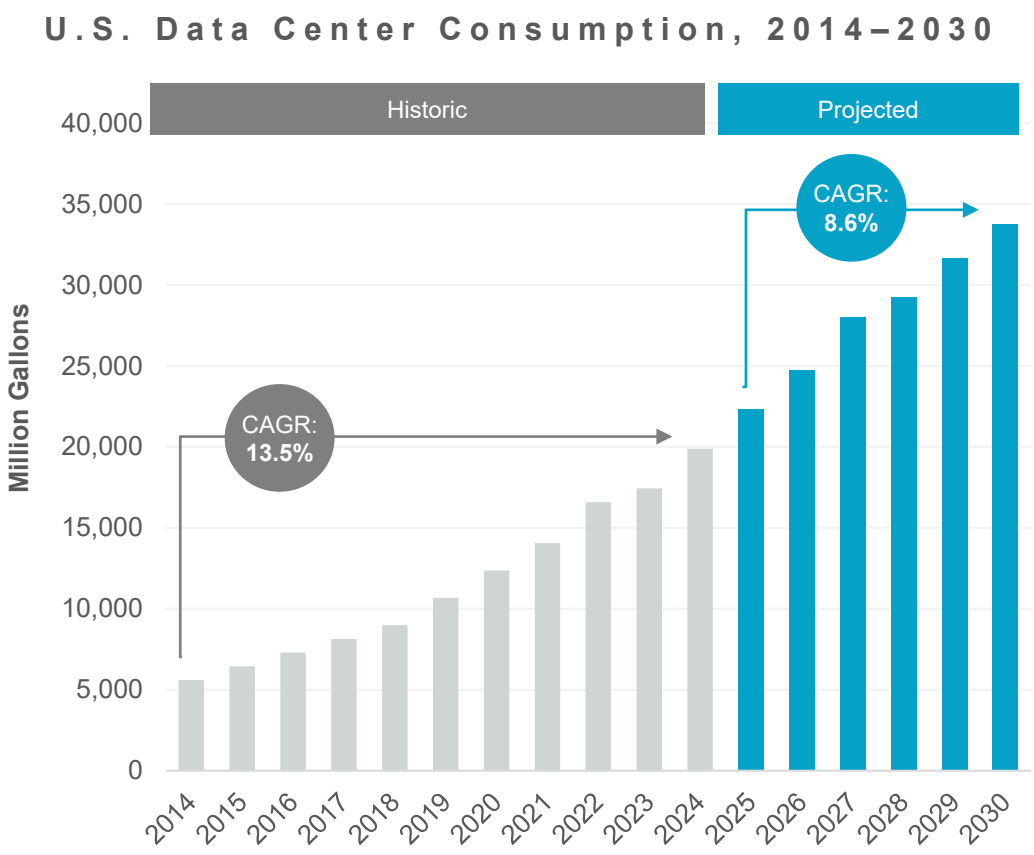
Data Center Water Consumption Over Time

Data centers are poised for strong near-term growth in water demand, rising at an 8.6% CAGR through 2030. However, efficiency gains and market maturity will gradually moderate consumption intensity over time.



Note: Water consumption is estimated to be approximately 58% of withdrawals. Remaining water is discharged
Source: U.S. Department of Energy, Bluefield Research

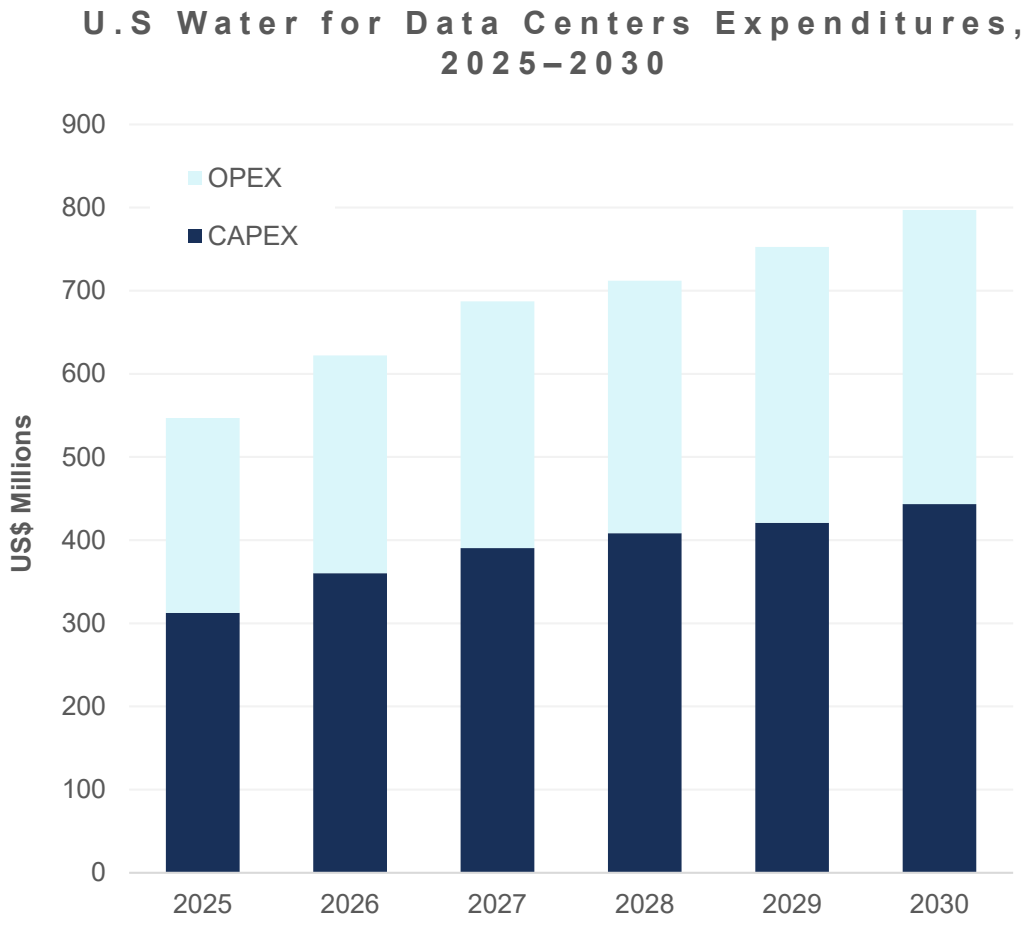
Analysis

Data center water demand is rising fast, but efficiency gains and alternative strategies like reclaimed water are emerging to curb intensity and manage long-term risk.

- Data centers are projected to consume 169.8 billion gallons of water over the next five years—a 33.2% increase over the previous decade—creating material opportunity for on-site water management and utility partnerships.
- The widespread deployment of closed-loop and water-free cooling and higher-heat-tolerant chips is expected to dampen per-site water intensity, even as total capacity expands.
- While Meta and AWS report leading WUE values of 0.18 L/kWh (down 40% and 28% from recent baselines, respectively), the cost, complexity, and risk of retrofitting legacy infrastructure limit systemwide gains in the short term.
- Instead of costly upgrades, many operators leverage reclaimed water and invest in watershed offset projects to reduce their dependence on potable water and improve community alignment.

Top-Line Water for Data Centers Spend Outlook

Water-related expenditures for data centers are expected to grow at a CAGR of 7.8%, increasing from US$546.9 million in 2025 to US$797.1 million in 2030. This growth will total over US$4.1 billion over the forecast period.



Source: Bluefield Research

Analysis

Near-term investment in water for data centers is surging, but long-term growth hinges partly on economic conditions and the pace of infrastructure deployment.

- Rising data and AI workloads are fueling aggressive data center build-outs, triggering parallel investment in water infrastructure and elevating long-term operational costs.
- CAPEX will dominate near-term spend, accounting for 56.7% of total water-related investment from 2025 to 2030 (approximately US$2.3 billion) as developers fund new-capacity and system upgrades. OPEX is projected at US$1.8 billion over the same period.
- Water spend is forecast to grow at an 12.1% CAGR through 2027, driven by a wave of announced hyperscale and colocation projects now entering development and construction phases.
- Spending growth is expected to decelerate post-2027, moderating to 5.8% CAGR through 2030 as economic uncertainty and demand recalibration slow future build cycles and many operators complete their current expansion rounds.

Sample Company Profile

ECOLAB

Company Overview

Ecolab is a leading water, hygiene, and infection prevention solution provider. Key industrial markets include food & beverage, general manufacturing, data centers, microelectronics, and heavy industries. North America contributes over 50% to the company's total sales. Industrial water services include treatment solutions, chemicals, and an expanding range of digital offerings, such as 3D TRANSAR technologies.

Water-Related Data Center Offerings

Design Build		Products			Support Services		
Design Services	Construction	Equipment & Hardware	Chemicals	Mobile Treatment	Water Testing	On-Site Support	Digital
○	○	●	●	●	●	●	●

Key Statistics

Company Headquarters: St. Paul, MN, U.S.

Company Type: Diversified

Year Founded: 1923

Employees: 48,000

Ownership: Publicly traded

Total Company Revenue (2024): US$15.7 B

Bluefield Perspective

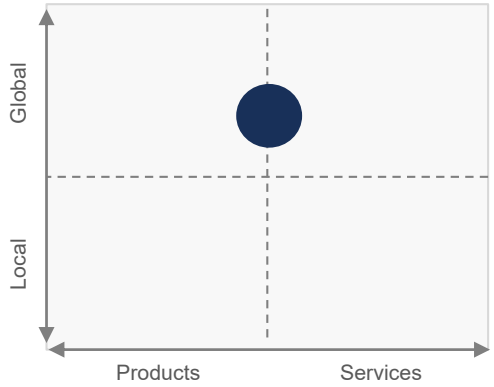
Ecolab has a significant presence in the data center industry, working with over 800 data centers on water management through Nalco Water. The company's offerings span the entire value chain, and its chemical products are widely used in data centers. Ecolab has invested in digital monitoring capability expansions to offer facilities offerings that are starting enterprise-wide sustainability goals.

Additionally, Ecolab's recent acquisition of Barclay Water Management further expands its disinfection applications in commercial facilities, including data centers, particularly targeting the prevention of *Legionella* outbreaks.

Project Activity

- **Partnership with Digital Realty** (2024): To pilot Ecolab's AI-driven water conservation solution in 35 of Digital Realty's U.S. data centers, identifying real-time operational inefficiencies in cooling systems and recommending actions for improvement. At full sale, the project aims to reduce water use by 15%, extend equipment life cycles, and reduce 126 million gallons of water withdrawals.
- **Microsoft's San Antonio, Texas Data Center:** Driven by the San Antonio Water System's requirements amid drought conditions, Microsoft partnered with Ecolab to deploy smart monitoring technology and risk assessment. Microsoft leveraged a reclaimed water source, saving 58.3 million gallons of potable water annually.
- **SAP's Colorado Data Centers:** Targeted microbiological growth prevention in new data centers by utilizing the 3D TRANSAR technology and developing a water management plan, including water testing and treating, focusing on minimizing *Legionella* bacteria.
- **California Data Center:** Improved the quality of feed water used from a recycled water source. The project utilized Ecolab's 3D TRANSAR technology, with scale/corrosion inhibitor, an acid feed system, and a chemical delivery system, increasing cooling tower cycles from 1.8 to 3.3 cycles, saving 2.9 million gallons annually.

Data Center Positioning



Source: Ecolab, Bluefield Research

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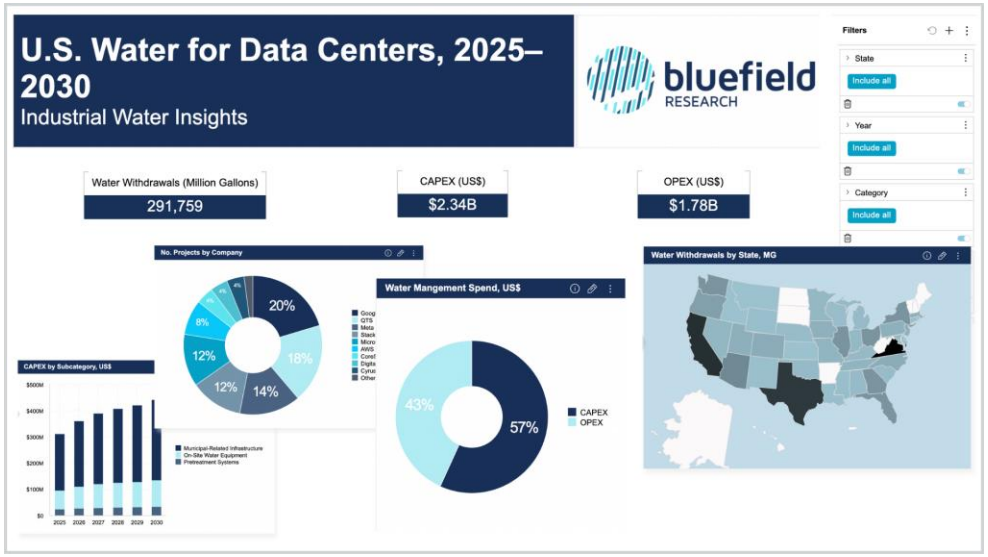
Data Navigator

Data underpins Bluefield's breadth of insight reports and analysis. This report is accompanied by a data dashboard that is available in Bluefield's flexible and interactive Data Navigator platform.

SAMPLE DATA DASHBOARD



Dashboard Widgets US$:

- Water Withdrawals by State, MG
- Water Spend by State
- Water Withdrawals by Use (MG), by Data Center Type
- Water Management Spend
- Water Spend by Data Center Type
- OPEX & CAPEX by Subcategory
- No. of Data Center Projects by State, by, Company
- Water Use & Spend Data Table

Learn more

Talk to us about our data or book a demo.

Book 30-min demo

See the power of Data Navigator

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Global companies across the value chain are developing strategies to capitalize on greenfield opportunities in water − new build, new business models, and private investment. Bluefield Research supports a growing roster of companies across key technology segments and industry verticals addressing risks and opportunities in the new water landscape.

Companies are turning to Bluefield for in-depth, actionable intelligence into the water sector and the sector's impacts on key industries. The insights draw on primary research from the water, energy, power, mining, agriculture, financial sectors and their respective supply chains.

Bluefield works with key decision makers at utilities, project development companies, independent water and power providers, EPC companies, technology suppliers, manufacturers, and investment firms, giving them tools to define and execute strategies.

Boston | Barcelona | Chicago | Paris | San Francisco

NORTH AMERICA: +1 (617) 910 2540
EUROPE: +34 932 716 546

waterexperts@bluefieldresearch.com | www.bluefieldresearch.com

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