



# Data Center, AI, and Bitcoin Facility Characteristics, Water Use, and Water Demand Projections

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The Texas Water Development Board (TWDB) proactively monitors the data center, artificial intelligence (AI), and Bitcoin industries and is exploring ways to collect the associated water use information and to develop associated manufacturing water demand projections to inform Texas' water planning process. This work includes reviewing available research and participating in information sharing and events with other entities like the Bureau of Economic Geology. Furthermore, the TWDB will assist with developing a study that the Public Utility Commission is required to perform under Rider 6 from the 89th Legislative Session to help understand the growth in these industries.

There are two factors of these developing industries that are relevant to water supply planning:

1. Direct water use: Onsite water use at each facility for cooling, operation, onsite power generation, etc.
2. Indirect water use: Water demands associated with the power to run these facilities

## **How does the TWDB capture data center, AI, and Bitcoin facility water use?**

Through its annual water use survey, the TWDB collects information related to direct and indirect water use associated with known data center-related facilities. Depending on the location and scale of these facilities, their annual water use (direct water use)—including for general operations and cooling needs—is generally captured within reported commercial water uses. These reported uses are part of the overall municipal water use category for facilities that purchase their water supply from municipal water utilities.

Starting with the 2025 Water Use Survey (for 2024 water use), data center water use will be reclassified and tracked – to the extent possible - as a part of the manufacturing sector. This change will facilitate more explicit monitoring of the data center industry's water use as it develops. The TWDB also monitors industry developments, collects information on new facilities, and updates the agency water use survey to include newly identified sites each year.

The electricity needs for these facilities have associated water demand captured as part of the water use estimates associated with power generation. The TWDB relies primarily on reported information to develop its annual water use estimates and works to collect and verify water use information through secondary sources—especially for new and growing sectors, such as data centers.

It is important to distinguish water used directly for cooling data centers from water used to generate electricity utilized by these facilities. If these facilities purchase power from the Texas grid (ERCOT), the indirect water use is likely already captured in the water use survey for utility power plants if the power comes from fossil fuels—if the energy source is renewable, there is generally no associated water use. If a data facility has its own power plant that uses water, then this direct water use should be captured in the current water use 2024 surveys. Likewise, if data centers have self-supplied water sources or purchase water for direct cooling, that water use should be captured in the 2024 surveys.

## How does the TWDB project future water demand for data center, AI, and Bitcoin facilities?

- The TWDB uses historical water use data to inform draft water demand projections for the regional and state water supply planning processes.
- The TWDB did not have specific and separate water use information for data center, AI, and Bitcoin facilities for the 2022 State Water Plan or the 2026 regional water plans. However, much of the water use associated with existing data centers is embedded in the base year water demands, as well as the near-term projected power-generation water demands to support them. When demand projections were developed for the 2026 regional plans and 2027 State Water Plan, the most current water use data available was from 2020, and the data was limited to one or two facilities.
- Regional water planning groups review draft demand projections and bring locally available data to the process to inform the final set of projections. However, none of the planning groups requested demand revisions based on these types of facilities for the 2026 regional plan projections.
- If a facility purchased its water from a public water system, its water use is already captured in the plans as municipal (commercial) use in the 2022 State Water Plan and 2026 regional water plans.
- The TWDB used projection methodologies for the 2026 regional and 2027 State Water Plan that generally capture the sector growth and use through
  - municipal demand for commercial-scale facilities **or** manufacturing demand for larger-scale facilities, **and**
  - steam-electric power generation for indirect water demands associated with electricity generation.

The TWDB uses projection methodology for manufacturing water demand that increases over the 50-year planning horizon as informed by data on historical manufacturing facility and water use growth. The increase in projected manufacturing demand captures future water use to an extent, even without a current firm estimate of data center, AI, and Bitcoin water use. However, the water demands associated with the long-term power demands related to data centers will remain

difficult to project for multiple reasons, not least of which are the varying amounts of water needed for various power sources and the uncertainty of where future facilities will be located.

Demand projections for future state water plans will consider multiple data sources and will likely rely on triangulation of available information to produce water demand projections, or ranges, for future data center water use due to such complicating factors as the variety of water-cooling methods and the development of behind-the-meter, onsite power generation. One of the most significant difficulties is anticipating where new facilities will be sited, since that information is generally proprietary and only becomes known close to their short build-out periods.

### **How does the water planning process address data center, AI, and Bitcoin water demand?**

Data center, AI, and Bitcoin facility water use should be captured in the near-term projected water demands, and the regional water plans are produced every five years to adapt to changed conditions.

If planning groups have concerns about water demand projections for any water use sector, or if projections are lower than anticipated, planning groups can

- plan for volumes of supply development greater than identified potential water supply needs,
- amend their plans at any time to adjust or add recommended water management strategies, and/or
- amend the demand projections in their plans.