



Frequently Asked Questions: Data Centers

The Delaware River Basin Commission (DRBC) is a federal-interstate agency with a mission to manage, protect and improve the water resources of the Delaware River Basin for the 14+ million people who rely on them. The DRBC is providing these Questions and Answers in response to public interest around the development of data centers in the region. The answers are current as of the date listed below. The DRBC reserves the right to update this document in response to new or updated information.

Q: What is the connection between data centers and water?

A: The anticipated growth in data centers is of interest to the DRBC because water is essential to their operation. Data centers require water for cooling to prevent servers and other equipment from overheating. Regardless of data centers' cooling technology, they require water because of their demand for energy.

- Water-based cooling systems, or “evaporative cooling” systems, are attractive because of their relative efficiency and cost-effectiveness. In these systems, air is typically passed through a water-saturated medium, leveraging evaporation to remove heat from the facility. This has traditionally been a water-intensive approach, with high consumptive water use.
- Air-based cooling systems, or “dry cooling” systems, typically use air and liquid coolant (typically water, glycol and/or other constituents) in closed-loop system to cool a facility. This technology requires nominal water on site, but uses water due to relatively larger energy requirements, with electric generators in turn requiring water for cooling.
- Emerging technologies are rapidly developing, and water implications vary or are unknown. These include direct chip cooling, immersive cooling, and more.

As the size and number of data center facilities increases, so, too, will their associated demand for energy and potential impacts on water supply and water quality.

Q: What is consumptive water use?

A: Consumptive use is water withdrawn from the basin that is not immediately returned, for example, due to evaporation. Historically, the largest consumptive water uses within the Delaware River Basin have been for thermoelectric power generation, followed by public water supply and irrigation.

DRBC has a history of successfully managing consumptive uses from thermoelectric facilities by requiring them to provide consumptive use makeup water, for example, from water stored in reservoirs, or to curtail withdrawals during low flow conditions.

This helps ensure adequate freshwater flow into the estuary to repel the upstream migration of salty ocean water that could otherwise impact public water supplies and industrial withdrawals.

Q: What is an “indirect water footprint”?

A: The lower Delaware River Basin is one of the highest net electricity generators in the nation, relying largely on water for cooling.

Power generated in the Basin is supplied to the PJM grid, which serves data centers both inside and outside the Basin’s boundary, extending into Virginia and Ohio.

Accordingly, data center development both within and outside the Basin can drive an increase in water use within the Basin, creating an "indirect water footprint."

Q: What are some water supply considerations for data centers?

A: The Delaware River Basin generally has adequate freshwater. However, the Basin experienced a significant, multi-year drought in the 1960s and continues to be prone to periodic drought and low-flow conditions that affect water availability. Just last fall, the Commission declared a water supply emergency due to persistent dry conditions.

Additionally, sea level rise and changes in precipitation patterns will challenge DRBC’s ability to ensure there is sufficient freshwater during periods of low flow to repel salinity in the Delaware Estuary, which is vital to protect public water supplies and industrial withdrawals along the mainstem.

Q: What are some water quality considerations for data centers?

A: Depending on the technology used, water quality impacts may also be a concern due to discharges with increased temperatures; increased chlorides/salinity, especially in recycling water; potential leaching of microplastics and PFAS into cooling water systems; and the presence of antimicrobial/anti-fouling agents in closed-loop systems, which might require pretreatment if conveyed to municipal wastewater systems.

Q: Are there data centers operating in the DRB?

A: Yes. There are approximately sixty data centers currently operating within the Delaware River Basin, most of which are small-to medium-scale traditional and colocation centers. To the best of our knowledge, there are no large-scale colocation or hyperscale centers currently operating in the Basin. To date, the DRBC has not received any applications for data center projects because the existing data centers in the Basin purchase water from public water supply systems rather than operate their own withdrawal systems.

Q: Are there more data centers planned in the DRB?

A: Yes. The DRBC is aware of approximately nine new data centers being planned within the Delaware River Basin. To date, the DRBC has not received any applications for data center projects because the existing data centers in the Basin purchase water from public water supply systems rather than operate their own withdrawal systems. The DRBC is tracking publicly available

information on these proposals and will update its notice of applications received if/when a facility applies directly to DRBC for a water withdrawal approval.

Q: Do data centers need approval from the DRBC for cooling water withdrawals or discharges?

A: DRBC has the authority to review projects in the Basin that may have a significant impact on water resources, and specific thresholds for review have been established for both withdrawals from and discharges to the Basin's waters.

The DRBC currently has no applications submitted for water withdrawals directly related to data centers.

Data centers obtaining their water use and/or discharge needs through existing water or wastewater utilities do not need direct approval from the DRBC. Our thresholds are for new or expanded withdrawal or discharge requests. At this time, information on water sources for the data center industry is not readily disclosed. The DRBC is working with utilities and project managers to develop an inventory of current and proposed projects to better understand potential impacts on water supply and quality.

DRBC's general threshold for reviewing water withdrawal projects from ground or surface water is more than 100,000 gallons per day during any consecutive 30-day period.

DRBC's threshold for the discharge of pollutants into the ground or surface waters of the Basin is more than 50,000 gallons per day during any consecutive 30-day period.

Learn more about DRBC's permitting at <https://www.nj.gov/drbc/programs/project/>.

Q: Are there exceptions to these thresholds?

A: Yes. In the [Southeast Groundwater Protected Area](#), our review threshold is lower for groundwater withdrawals, requiring DRBC review for withdrawals of more than 10,000 gallons per day during any consecutive 30-day period.

In [Special Protection Waters](#) (north of Trenton, N.J.), our review threshold is also lower, and approval is needed for discharges over 10,000 gallons per day during any consecutive 30-day period.

Learn more about DRBC's permitting at <https://www.nj.gov/drbc/programs/project/>.

Q: Will the DRBC regulate data centers?

A: This depends. To increase regulatory efficiency and effectively manage its mission, DRBC maintains thresholds for review. Thus, not every water withdrawal or discharge project requires

DRBC approval. The threshold for approval of water withdrawals is an average of 100,000 gallons per day during any consecutive 30-day period.

To date, the DRBC has not received any applications for data center projects because the existing data centers in the Basin purchase water from public water supply systems rather than operate their own withdrawal systems.

Q: What regulatory measures might DRBC consider?

A: Most projects subject to Commission review under the Compact are water withdrawal and wastewater discharge projects. Currently, the Commission requires any withdrawers of more than 5 MGD to have a drought management plan.

DRBC stores water in two reservoirs owned and operated by the U.S. Army Corps of Engineers in Pennsylvania. The water is released at DRBC's direction to protect downstream water intakes and aquatic life. Fees on surface water withdrawals partially offset DRBC's costs to the Corps associated with storing this water.

The effectiveness of a separate threshold for consumptive use to manage water availability could be considered in the future.

Q: Will the DRBC prohibit data center development as it did with high volume hydraulic fracturing?

A: The DRBC's mission is to manage both water quality and quantity, and DRBC has a history of successfully managing consumptive uses from thermoelectric facilities, which may also see water demands that increase when air temperatures increase, corresponding to seasonal periods when low-flow conditions are most likely to occur in the Basin.

Similar strategies could be considered for data centers, and the Commission stands ready to work collaboratively with utilities, the data center industry, and its government partners to ensure reliable access to clean water for all users while managing and protecting the long-term health and viability of the Basin's water resources.

Q: Does the DRBC track approvals from local utilities or other entities regarding data center construction or operation?

A: The DRBC is tracking information on proposed data centers, including those that may not require DRBC approval, to better understand their proposed water supply and wastewater management plans.

Q: What public policy considerations is DRBC focusing on?

A: Thoughtful siting and design of projects will be required to manage these impacts and ensure the Basin's multiple and diverse water needs continue to be met.

Water systems that sell water to data centers must consider whether their supplies are capable of continuing uninterrupted during low-flow conditions.

DRBC and other water resource managers need to consider whether water for data centers should take priority over the needs of other domestic, commercial, industrial, and agricultural uses during periods of shortage.

Where data centers may seek approvals to operate their own withdrawal systems in the future, agencies like the DRBC will need to consider whether and how minimum pass-by flow requirements, consumptive use mitigation, reduced withdrawals during drought, and use of water-saving cooling technologies may be implemented to allow these facilities to continue to operate around the clock.

Ensuring information on water sources and projected water demands is available will be critical to maintaining a sustainable supply of water for the over 14 million people who depend upon the Basin's water resources.

Q: What other actions is the DRBC taking?

A: DRBC is currently working to better understand water demands and potential water resource impacts from this emerging industry.

As a first step, DRBC is inventorying and defining the existing footprint of data centers within the Basin. This is not a straightforward task because many centers are tied into public water supplies, and details of the centers' water use are not readily disclosed. Indeed, transparency is key as regulators, businesses, and communities wrap their arms around this expanding industry.

The DRBC is also collaborating with utilities, states and local governments within the Basin, as well as partners across the country, to share information and best practices.

This continued coordination will ensure reliable access to clean water while managing and protecting the long-term health of surrounding watersheds.

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