

Data Centers and Water Resources in West Virginia

A guide from WV Rivers Coalition

Overview

During the 2025 session, the West Virginia Legislature passed House Bill 2014 to encourage data center development.

The law allows data centers to be powered by microgrids, in which nearby power plants supply all or most of the electricity needed to operate the facility. But House Bill 2014 did not address water resources.

Impacts to local water resources are caused by both the data center and the adjacent power plant.

What is a Data Center?

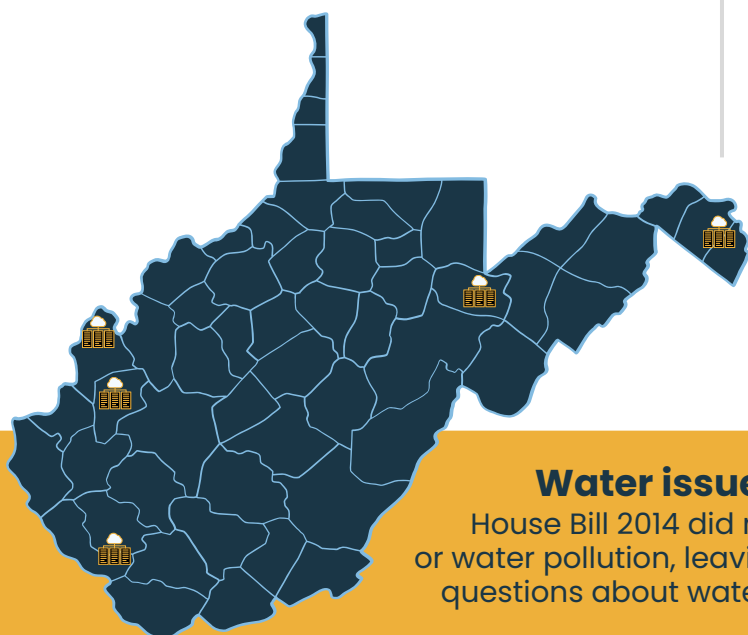
Data centers are large industrial facilities that house computer servers used for artificial intelligence, cloud storage, social media, online banking, and other internet services. As demand for AI grows, companies are rapidly expanding data center construction across the country.



Proposed in West Virginia

Several large projects have been proposed across the state, including in Berkeley, Jefferson, Logan, Mason, Mingo, Tucker, and Putnam counties.

West Virginia only requires Large Quantity Users (LQU) to report on their annual water usage after water is used, but no permit is required for usage. This creates uncertainty about how water demands from new data centers could affect local water supplies, communities, and aquatic ecosystems.



Water issues are key concerns.

House Bill 2014 did not address water withdrawals or water pollution, leaving communities with unanswered questions about water availability and stream health.

Data Centers Can Impact Water Quantity



Overview

Data centers can withdraw large amounts of water for cooling. Google's data centers use billions of gallons of water annually across their data center operations.

An analysis of the Chesapeake Bay region predicted that by 2050, data centers could consume one-third of the total freshwater supply.

Coal, natural gas, and nuclear power plants supplying electricity to data centers require additional water withdrawals to cool the plants.

Existing Regulations in WV

The Department of Environmental Protection (DEP) regulates water withdrawals and no permits are required prior to withdrawals. Large Quantity Users self report their withdrawals annually, after the water is used. The Department of Commerce can approve a data center development without the public having access to the information of the water source or quantity of water.

Potential Impacts

Groundwater

Large withdrawals can lower water tables, affecting nearby farms, homes, communities, and businesses that rely on wells. If the water table is lowered, the risk of subsidence goes up, threatening homes and infrastructure. Subsidence is the gradual caving in or sinking of an area of land.

Surface Water

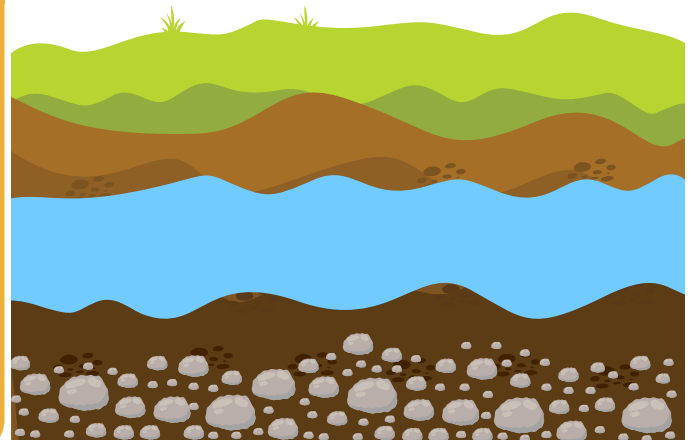
Withdrawals from streams and rivers can reduce flows, particularly during drought conditions.

Downstream water supply

Reduced streamflows may limit water available to downstream public water systems.

Aquatic Habitat

Lower flows can harm fish and other aquatic ecosystems. Species face difficulties migrating and finding suitable nesting sites while competition for resources decreases fish populations in the affected area.



When data centers and power plants are proposed, the public and state agencies have a **right to know** how much water will be used, where the water will come from, and how discharges will impact groundwater and surface water. Transparency will also benefit data center developers, because the public will have the facts and will be less likely to engage in speculation.

Data Centers Can Impact Water Quality



Construction runoff aerial Photo by: Shane McLendon

Overview

Data centers and nearby power plants can degrade water quality by using chemical additives such as PFAS and biocides in their cooling lines that become concentrated during evaporative cooling — which are then discharged to rivers and streams.

Also, water used to cool data centers and power plants becomes hot. Then the heated water is returned to nearby rivers and streams. Higher temperatures can impact fish and aquatic life.

Existing Regulations

Discharges to surface waters in West Virginia require WV/NPDES permits under the federal Clean Water Act and state Water Pollution Control Act. These permits limit pollutants and regulate temperatures in discharges to protect streams for public water supply use and aquatic habitat. They also require monitoring to ensure compliance with water quality standards.

Stormwater construction permits will also be required to limit sediment discharges from the construction site.

Types of Pollution

Chemical pollution

- Cooling systems may use biocides and PFAS, which can accumulate and enter surface waters if not properly managed.
- Pumping groundwater can change the way the groundwater flows, mobilizing acid mine drainage or other pollutants into surface waters.
- Data centers and power plants can disturb hundreds or thousands of acres. Runoff from construction sites can harm nearby streams.

Thermal pollution

Heated water returned to streams and rivers can lower oxygen levels, stress or kill fish, and disrupt migration and reproductive cycles in aquatic ecosystems.

Effects on Ecosystems

Reduced oxygen

Warm water holds less oxygen, creating hypoxic (low oxygen) conditions.

Algal blooms

Low oxygen levels promote the growth of algae that thrive in such environments. These blooms block sunlight needed for healthy aquatic ecosystems, further depleting oxygen and releasing toxins that kill wildlife.

Species loss

Organisms with limited temperature tolerance die off. Native species including trout, salamanders, freshwater mussels, candy darters, and more are at risk.



Brook Trout

Photo by: Ryan Hagerty



Hypoxia (or suffocation) effect on aquatic populations

Photo by: Rebecca Cermak

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Data Centers & the Importance of Local Control



Local control gives communities the ability to plan for development in ways that protect their water, land, and infrastructure. When projects like data centers are proposed, local leaders should be able to weigh the benefits and the impacts. Unfortunately, the passage of HB 2014 removed that ability from local governments during the 2025 legislative session. Below are examples of local ordinances that would be impacted by data centers.

Buffer Area

Buffer areas separate incompatible land uses by requiring either physical buffers like walls, fences, berms, or landscaping, or spatial buffers between unwanted uses.

Without adequate buffers, data centers and power plants could be located right next to homes or neighborhoods — without any screening.

Examples

A

In Canaan Valley, all new industrial development must reserve 10 percent of the property for a landscape buffer consisting of trees, shrubs, and other landscaping.

B

Hardy County requires at least a 150-foot border around all industrial zoning districts to remain free of any structure.

Noise from Cooling

Noise ordinances regulate loud and continuous sounds that are produced at a certain place and time. Cooling systems used by data centers often generate almost continuous low-frequency noise from compressors and water pumps.

Without sound mitigation, data centers can be disruptive to nearby communities.

Examples

A

Clarksburg's noise ordinance prohibits all continuous sounds for industrial uses above 70 decibels (dBs). Your average alarm clock produces sounds between 70-80 dBs.

B

Continuous noise of at least 65 dBs for at least 30 minutes is considered a public nuisance in Brooke County.

Farmland Protection

Farmland is an essential local resource with many communities experiencing significant farmland loss since the mid-twentieth century. Amongst other issues, the sprawl of non-agricultural development into rural spaces has amplified this loss.

Data centers require large tracts of land. A typical corporate operated data center building can range from 5,000 to 50,000 square feet. Without farmland protections like zoning ordinances, communities will continue to lose valuable farmland.

Example

A

Hardy County's Farmland Protection Board ensures farmland protection through easements. This legislation could make existing farmland easements null and void.

Land Development

In West Virginia, local governments are authorized to regulate land development and subdivision under Chapter 8A (§8A-4-2 of the WV Code), including standards for roads, drainage, utilities, stormwater management, and development in flood-prone or subsidence areas.

SB 4001 and HB 2014 would strip local governments of their authority to review data center projects or enforce these common-sense development standards, including protections for flood-prone and subsidence-prone areas.

Example

A Charles Town lies over carbonate bedrock that allows precipitation into its water table. Accordingly, Charles Town provides limitations and standards for development to minimize the risk of sinkholes and ensure public health and safety.

B Jefferson County requires a 500-foot buffer from non-residential development along the Potomac and Shenandoah Rivers to protect to help conserve these essential assets.

Performance Zoning

Performance zoning helps local governments address how development affects surrounding communities, including impacts on viewsheds, neighborhood character, and traffic. It can require design changes, buffers near residential areas, or road improvements to reduce these impacts.

HB 2014 removes local governments' ability to enforce these targeted, common-sense safeguards for data center development, limiting their ability to protect nearby communities.

Example

A The City of Ranson provides performance standards for Industrial districts that limit noise or vibration, electrical disturbances, explosive materials, air pollution, and other potential noxious uses in industrial districts.

B The City of Morgantown's performance standards ensure compatible development by guiding characteristics such as materials and sidewalk design.

Public Hearings

West Virginia's Open Governmental Meetings Act (OGMA), sometimes referred to as sunshine laws, requires that governmental decisions are conducted openly before the public. Open government allows for an informed public, promotes attendance at meetings, and improves discussion of issues by participating officials.

Without public hearings under OGMA, communities are not given notice of proposed data centers near them, provided a chance to review applications, and are not provided a chance to speak to their concerns about a proposal.

A The City of Morgantown requires a public hearing and approval from the Planning Commission for all development of significant impact. This includes all industrial development.



Data Center Myth-Busting

with WV Rivers Coalition

MYTHS

1

“Data centers don’t use much water.”

2

“Data centers will discharge the same amount of water that they withdraw.”

3

“There is already a permit that regulates water usage.”

4

“Air-cooled data centers use no water.”

5

“Water withdrawals are small compared to the amount of water in rivers.”

FACTS

Large data centers can use millions of gallons per day, depending on how they stay cool and where they are placed geographically.

Closed-loop systems lose water because of evaporation and cleaning systems. Some water is permanently lost and never returns to the river, stream, or reservoir.

In West Virginia, large quantity users only report how much water they use once per year. They are not required to prove enough water exists before building.

Air-cooled systems use less water on-site, but need more electricity — and powerplants use water, too.

During dry times, even small withdrawals matter, especially in smaller West Virginia streams.

MYTHS

6

“Municipal water supply eliminates environmental concerns.”

7

“Water demand is constant year-round.”

8

“If a data center uses groundwater, it won’t affect nearby wells.”

9

“Data centers use only clean water in closed-loop systems.”

10

“Using mine-pool water for cooling is better for the environment.”

11

“Water use is negligible compared to economic benefits.”

FACTS

Using city water systems shifts the burden to public resources, which may increase:

- Surface-water withdrawals
- Groundwater pumping
- Treatment and energy demand
- Ratepayers may also absorb infrastructure expansion costs.

Water use increases during:

- Hot weather
- Peak computing loads
- Low humidity (more evaporation)
- Summer water demand can coincide with seasonal low streamflows and drought.

High-volume groundwater withdrawals can lower water tables locally, affecting:

- Private wells
- Springs
- Baseflow to streams
- Wetland hydrology
- Impacts depend on aquifer type (e.g., fractured sandstone/shales, karst, alluvial systems).

Data centers use biocides and other chemicals that are discharged into the environment.

Mine-pool contaminants can become more concentrated in discharged water.

Water use tradeoffs are site-specific. In water-limited watersheds, new consumptive use can affect:

- Residential supply reliability
- Agricultural users
- Stream temperature
- Aquatic habitat