

DEQ Information on Data Centers and Water Usage

Types of DEQ Permits Potentially Needed from the Water Quality Division

Construction Permit for Water and Sewer Lines
Construction Stormwater Permit
Waste Load Allocation
Industrial Wastewater Discharge Permit
Industrial User Permit
Permit to Supply Non-Potable Reclaimed Water

Water Resources for Data Centers

Water is essential in data center cooling systems to help ensure servers run uninterrupted. Water usage at these facilities includes but is not limited to: cooling towers, chillers, pumps, heat exchangers, condensers, and air handler units.

Data center water needs vary based on facility size, cooling system type, and external temperature and humidity. A larger data center can use in excess of five million gallons of water per day.

Where do data centers get water?

For cooling, data centers primarily use potable water, which is suitable for drinking. Increasingly, these centers may use raw water, non-potable water, such as treated sewage, or recycled/reclaimed water. If using a raw water source directly from a water body, data centers must secure water rights to that source from either the Oklahoma Water Resources Board or an entity that already owns those rights. If using treated or reclaimed water from a municipality or other Publicly/Privately Owned Treatment Works (POTW) data centers must contract with that entity to purchase the requisite water. DEQ does not have regulatory jurisdiction over the amount of water to which a data center may acquire water rights or lawfully purchase.

Less than 5% of a data center's water comes from alternative water sources, such as produced water (from oil and gas extraction) and rainwater harvesting systems.

What happens to water used to cool data centers?

Data centers often reuse water by circulating the same water multiple times through cooling systems. Another method involves the use of stormwater retention ponds at data centers. These ponds collect rainwater, which is then treated and repurposed for various non-potable functions within the facility, including cooling systems.

Once water is used to cool data centers, several outcomes are possible, depending on the cooling system design and environmental regulations:

1. **Recirculation and Reuse:** In many cooling systems, the water is recirculated. After absorbing heat from the data center, the warm water is cooled down again through various methods (like cooling towers or heat exchangers) and then reused.
2. **Discharge:** Some cooling systems discharge used water as industrial wastewater, usually into a nearby wastewater treatment facility or a body of water like a river or lake. This discharge is regulated in accordance with state and federal laws to protect the designated beneficial uses of the receiving waterbody.
3. **Evaporative Cooling:** In systems like cooling towers, a portion of the water evaporates and is *consumed* while cooling the remaining water. This evaporative process is efficient for cooling but results in water loss.

Other

Communication early in the planning process is key between data center developers, state officials, and local water systems. Nationwide, data center developers are implementing strategies to responsibly use water. The Oklahoma DEQ will continue to coordinate with state officials, water systems, and communities as more data centers come to Oklahoma.

Additional Resources

[Cooling the Cloud: Water Utilities in a Data-Driven World - American Water Works Association](#)

[Water-AI Nexus Center of Excellence | Water Environment Federation](#)