

The Impacts of Data Centers *continued*



Water Use

The operation of the servers and other equipment within data centers produces substantial heat, requiring the buildings and the equipment to be cooled. While there is ongoing research and development to invent and perfect new, more-efficient cooling systems, most data centers now use evaporative cooling for this purpose. This means that most of the water used for cooling is lost to the air and cannot be recirculated. A study by the Houston Advanced Research Center (HARC) and the University of Houston found that data centers in Texas will use 49 billion gallons of water in 2025, and as much as 399 billion gallons in 2030. That would be equivalent to drawing down the largest reservoir in the US — 157,000-acre Lake Mead — by more than 16 feet in a year.

Given that local groundwater is the primary source of water in Florida and that some areas of Florida are already withdrawing too much water to be sustainable under drought conditions, water use is likely a major factor in data-center siting and management in this state. Yes, recycled water can be used for cooling, but it, too, will be lost in the most widely used cooling systems.

There are air-cooling systems that can be used for data systems, and, as noted above, new cooling systems are being explored. However, air cooling and some other approaches use more power. Thus, there is a tradeoff between water use and the impacts of power demands discussed above.



Direct Air Quality

The primary direct air-quality issue from data centers is when their diesel generators are in operation. This is an intermittent problem not as significant as the larger air-quality issues from base electric generation, but generator noise and emissions can be a concern for adjacent residential neighborhoods.

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