SANJAY SUCHAK

SOUTHERN ENVIRONMENTAL LAW CENTER

Protecting Our Environment in the Digital Age

Data centers are an integral part of our modern economy but consume vast amounts of energy, water, and land. SELC is working to ensure that data centers undergo a fair and transparent review and permitting process, rely on clean energy sources, pay their fair share for energy and water to protect consumers from rate hikes, and do the least amount of harm possible,including by limiting air pollution and water consumption and pollution.

What is a Data Center?

Data centers are the engines that keep the gears of the internet turning, including the work of artificial intelligence (AI) models, by processing, storing, and distributing huge amounts of data. These large warehouses contain three components: computer servers, support infrastructure (storage, networking, power supply, cabling), and cooling systems.

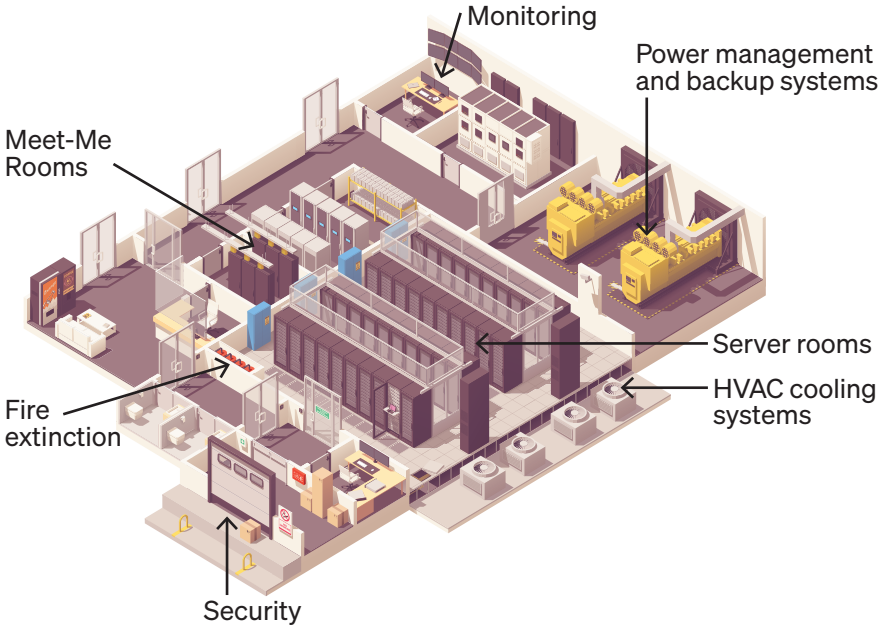
A "hyperscale" data center is an enormous facility engineered to support large-scale workloads, including AI and other big data computing like cryptomining. Hyperscale facilities can occupy the same amount of land as dozens of football fields.

The South is experiencing rapid data center development and expansion due to its affordable land, access to a strong and growing fiber network, generous tax incentives, relatively low-cost energy and water, and a general lack of oversight.

The global race among tech companies to deploy increasingly powerful AI models has led to skyrocketing demand to build new, bigger data centers in the South. And companies are withholding information about how much energy or water proposed data centers will use.

A growing number of Southern communities are raising the alarm about how data centers are driving up electricity costs, impacting neighborhoods and landscapes, polluting the air, and draining water and energy resources.

Data Center Interior Structure



Hyperscale data centers can use 100 MW of power, which is roughly equivalent to the annual energy demand of 80,000 homes.

Environmental Impacts

Energy

Data centers need electricity to both power servers and operate their cooling systems. Hyperscale data centers can use 100 MW of power — which is roughly equivalent to the annual energy demand of 80,000 homes.[1] Many data centers source their energy from the local utility provider. However, a growing number of facilities are constructing their own power sources. While some are adding solar and battery storage, the largest in our region — like xAI's Colossus facility in Memphis — are using polluting gas turbines.

Water

The computer servers inside a data center need to be cooled to ensure they continue to function properly. Many data centers use an approach called evaporative cooling which requires a significant amount of potable water. A 50 MW hyperscale data center can use more than 530 million gallons of water a year,[2] enough to fill 804 Olympic-size swimming pools. The data center's total water footprint also includes the water needed to generate power, an additional 5.1 billion gallons a year.[3]

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Data center cooling systems may also generate significant quantities of wastewater that can strain local sewer infrastructure and cause downstream pollution.

Air Pollution

Utilities are using projected data center power demand to justify building new fossil fuel power plants that emit harmful air pollutants, including fine particulate matter (for which there is no safe exposure level), nitrogen oxides, and volatile organic compounds.

CORNELIUS LEWIS/SELC

Data centers that draw their primary power from the grid often also install dozens or even hundreds of large backup generators to ensure their servers are always running. These diesel- or methane gas-fired generators emit a host of harmful pollutants — especially during power outages when many operate at once.

Other data centers are generating their own power using large methane gas-fired turbines, emitting harmful pollutants around the clock. Whether generating their own power or using backup generators, these facilities expose surrounding communities to pollutants that are associated with cardiovascular and respiratory illnesses, increased hospitalization risk, and even premature death.

Land Use and Community Impacts

Data center campuses continue to grow larger with some proposed projects exceeding 2,000 acres.[4] These large areas of pavement and built infrastructure push more pollution from stormwater runoff into local bodies of water, disrupting the local hydrology. In


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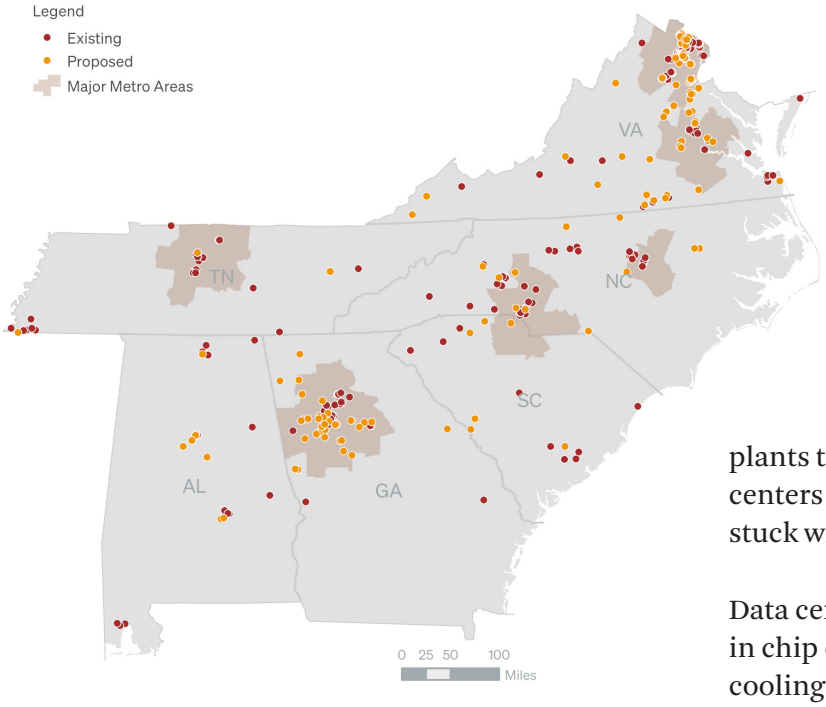
Existing and Proposed Data Centers in the South



SELC is tracking almost 500 existing data centers and nearly 200 that are in some stage of development from proposed to under construction.

the search for affordable land, data centers are often located near residential areas. If those decisions are not made carefully, the data center can change the landscape of neighborhoods, industrialize rural communities, and alter historic and scenic viewsheds. Additionally, new transmission infrastructure to power these facilities can cut through communities and natural areas beyond the immediate vicinity of the data centers themselves. Finally, data centers can disrupt nearby residents because they generate noise pollution from the constant humming of fans used to cool the servers.

Other Major Challenges

Overstated Energy Demand

Utilities and regulators anticipate unprecedented increases in energy demand from data centers. National electricity needs are projected to increase 600 percent by 2030 — the equivalent of 15 times the energy needed to power New York City at its highest demand.[5] But a report by the London Economics Institute,[6] commissioned by SELC, found that much of this demand is due to proposed data centers that may never be built. Overstating energy demand could lead to overbuilding fossil fuel infrastructure that isn't needed.

In the South, investor-owned electric utilities receive a generous return on their capital investments, so they have an incentive to build new power plants. Right now, utilities are rushing to build expensive new gas plants to serve projected data center demand. If data centers cancel their plans, utility customers could be stuck with the bill for those plants.

Data centers and AI are changing rapidly. Innovation in chip design, grid management tools, and new cooling systems can dramatically reduce their energy, water, and land use. We must not overbuild today with the expectation that generation needs will remain constant.

Lack of Transparency

States and localities often don't have enough information on the full costs and resource needs of data centers — and the public certainly does not. Contracts and tax incentive agreements between tech companies and localities are often negotiated behind closed doors and treated as confidential, with some companies relying on broad non-disclosure agreements to stop elected officials from publicly discussing details of proposed projects. There are no central sources of information on the number, location, size, or water and energy demands of data centers, so no one knows the cumulative impacts.

States and localities should be allowed to pursue their own policies, including demanding more disclosure of energy and water consumption, transmission and distribution needs, the type of backup generation used, and air quality and noise impacts. Some localities like Henrico County, Virginia and Atlanta, Georgia have passed their own ordinances to more fully evaluate the impacts of data centers on nearby communities. Legislators in several Southern states have advanced bills to require better reporting on data center energy and water use, but — largely due to intense industry opposition and generous political spending — none have been enacted.

Solutions

The large tech companies driving data center development are some of the richest, most powerful companies in the world, with the potential and promise to be a transformational driver for clean energy deployment and sustainability. There are solutions to reduce the environmental footprint of data centers and help communities navigate the benefits of the internet and AI without sacrificing community and environmental health and safety. Some examples include:

- **Improve transparency to prevent harm to communities and resources:** States and localities need better information about the impacts of individual data center proposals and the cumulative resource needs of data centers and cryptomines. States should limit the duration and scope of non-disclosure agreements and require reporting on facility and cumulative water and energy use. Local elected officials should require local legislative approval for land to be used for data centers and cryptomines to allow for thorough public review and oversight. Project details like setbacks, stormwater management, community and habitat impacts, noise abatement, energy and water use, and sourcing, wastewater, and generator use must be carefully considered to avoid impacts on surrounding communities.
- **Require data centers to pay their fair share:** Data center customers should pay their fair share of the costs of public resources, including the cost of power plants, water, and transmission infrastructure. Public, verifiable cost data is critical. Policies like standard contracts between electric utilities and data centers that include extended terms, collateral requirements, exit fees, and minimum usage requirements offer important consumer protections. This ensures the costs of energy infrastructure improvements and load growth are paid fairly by data center companies, not residential ratepayers.

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- **Incentivize clean, efficient energy:** States should reduce the impacts of data centers by providing incentives to invest in new sources of clean energy generation, such as tying tax incentives to commitments to use carbon free energy. They should also require utilities to offer programs that allow data centers to power their operations with new clean energy resources. These policies can successfully jumpstart investments in new, clean energy generation while keeping the burden of the cost for new energy capacity on the private hyperscalers that are creating more demand. Grid management policies that limit data center electricity use from the grid during times of peak demand can improve reliability and limit the need for new generation. Finally, tech companies must use their political influence to press for policies that will help modernize the energy grid, overcome state barriers to clean energy deployment, and ensure that integrated monopoly utilities are not overbuilding costly, damaging fossil fuel infrastructure.
- **Protect Local Decison-making:** Local and state decision-makers are the best equipped to assess project impacts and address community needs and concerns. Policymakers must reject efforts to preempt state and local decision-making that would override local concerns and crucial efforts to ensure that data center development rests on responsible water, energy, grid, and land use planning.

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