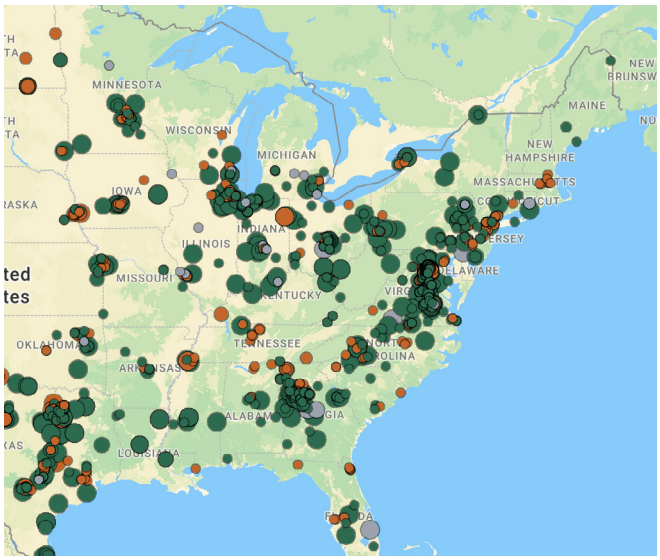
ACADIA CENTER EXPLAINS

Data Centers and Their Energy Impact

Summer 2026

WHAT IS A DATA CENTER?

Data centers are physical locations, as small as a room or as big as a warehouse, that contain information technology (IT) infrastructure—large computer systems used to run software and store and manage associated data. Though data centers started out as on-premises facilities housing traditional IT infrastructure for one company's local use, they have evolved into large, centralized facilities owned or leased by cloud service providers, like Amazon or Google, and artificial intelligence (AI) companies, like OpenAI or Anthropic. These data centers house and sell virtual IT infrastructure services to multiple customers.[1] In the last few years, increasing numbers of very large data centers have been built specifically to serve cryptocurrency mining and AI platforms like ChatGPT or Claude. These facilities, sized to meet the enormous computational requirements of the so-called hyperscalers, are one factor causing energy bills to rise and taking up increasing amounts of electricity, fuel, and grid capacity.[2]



Source: MapLibre | © MapTiler © OpenStreetMap contributors via Clean View

WHAT ARE THE CHALLENGES WITH SUPPLYING ENERGY TO DATA CENTERS?

- **Large Amounts of Energy are Required:** Data centers generally need a significant amount of energy to operate, and the profitability of AI and other data applications gives data center companies a huge appetite to consume, even at high costs. In some states, a single, very large data center could require more than 20% of the state's entire energy supply. For instance, the largest data center in the U.S., owned by Meta, uses the same amount of electricity as Rhode Island's all-time electric peak (about 1,400 MW).[3,4] The amount of electricity consumed at a data center will vary considerably, based on the kind of work being performed (e.g., cloud computing vs. AI "inference" vs. training of new models) as well as the facility's Power Usage Effectiveness (PUE), which reflects non-IT loads such as air conditioning to keep servers cool.

- **Use of Dirty Fuel Sources:** The electric grid is still very reliant on fossil fuels, and energy-hungry data centers can increase the demand for these expensive and polluting energy sources. Data centers also often install back-up generators onsite that operate on diesel and other fossil fuels. Concerningly, some data centers are electing to bypass the grid entirely and install onsite fossil-fuel generation to serve all their demand.

- **EJ and Community Concerns:** Data centers are frequently located in marginalized Environmental Justice (EJ) communities that have less political power to push back. However, community opposition to data center development has recently been mounting (see: Lowell, MA). Building data centers in these communities unfairly continues to burden those who have already been harmed by proximity to power plants, contaminated sites, and other sources of pollution. The presence of and periodic reliance on back-up generators (or around-the-clock onsite fossil generation) also may present severe local public health impacts through the emissions of NOx and other particulates: recent analysis from Sierra Club found that the 10,000 backup diesel generators at data centers in Virginia could cause 177 premature deaths per year from particulates and ozone if operated at permitted levels.

- **Other Concerns:** Grid stability issues; high water consumption; local noise pollution impacts.

The rapid data center build-out has been found to raise bills in many places, but in other circumstances data center load growth can actually lower bills. This is counter-intuitive, but the reason is straightforward: in some places, the cost to add a new data center to the grid is less than the average cost of the system. In such instances, the data center

can reduce overall costs by giving the utility a big new customer it can charge for fixed system costs (meaning, costs that don't increase as a customer uses more energy, like the costs of poles and wires).[5] This appears to have happened in North Dakota, for instance, which has seen energy prices decrease (accounting for inflation) over the past few years as data centers and crypto-miners entered the state.[6]

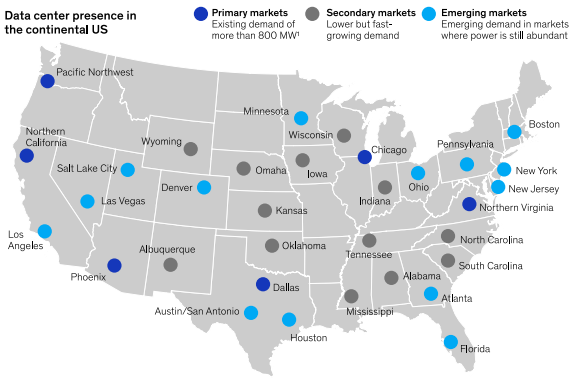
However, if there is *not* space on the grid for a new data center to connect at a lower cost than the system average, then that data center will likely raise the average cost for everyone, unless specific precautions are taken to prevent costs from being shifted to other customers. This has transpired in most places. For instance, in the mid-Atlantic region, which is served by a grid operator called PJM, non-data center customers have already been hit with tens of *billions* of dollars in power costs caused by data centers.[7] Protections should be put in place for non-data center customers to ensure utilities cannot pass on any of the costs associated with serving data centers to any other customers. Otherwise, utilities may be incentivized to give data centers, which are significant potential customers, overly favorable deals on electric service.

Another way to reduce the cost to serve data centers is through more flexible operations: specifically, accepting less power at peak times when the grid is strained.[8] This flexibility can be achieved through a number of potential avenues, such as demand response, scheduling of data center workloads, and onsite clean energy measures like battery energy storage. Protections should prevent, however, flexibility being achieved via switching to harmful alternatives, such as back-up fossil generators. If data centers cannot reduce their own consumption when the grid is strained, they could also reduce consumption in their local area by paying households or businesses nearby to use less energy, or paying for energy efficiency upgrades or solar-plus-storage installations on nearby homes and buildings. Both of these approaches use a virtual power plant (VPP) model to reduce demand on the grid at peak times, which lowers the cost to serve the data center.

WHERE IS DATA CENTER EXPANSION CURRENTLY HAPPENING?

Data center expansion is happening everywhere, to varying degrees—and not just in the U.S., but globally. Several interactive maps (**Business Insider**; **Open Grid Works**; **CleanView**) show all of the data center projects in the U.S. and in the broad Northeast, including information about the facilities and the companies behind them.

In the Northeast, New England and New York have seen diverging data center load growth trends. In New England, the grid operator's (ISO-NE) 2026 system load forecast provided for the first time a large load forecast, **projecting** only minimal impacts on peak load and annual demand through the 2030s. In New York, however, much more significant data center development is occurring, with more than **9,000 MW** of new data center load requests[9]—on top of cryptocurrency-driven computing activity already increasing upstate households' electricity bills by $204 million annually.[10] This surge in development has prompted state lawmakers to advance a one-year moratorium on new large-scale data centers, similar to a bill in Maine vetoed earlier this year.



Source: Datacenters.com; S&P Global Market Intelligence 451 Research; **McKinsey Data Center Demand model**

WHAT ARE ACADIA CENTER'S RECOMMENDATIONS REGARDING DATA CENTERS?

In order for these large loads to be responsibly integrated into the grid and into society more broadly, there need to be comprehensive and proactive protections, such as utility service agreements specific to large customers (i.e., large load tariffs), to ensure that ratepayers are not subsidizing these facilities at the distribution level, the transmission level, or at the supply level (including in the separate energy, capacity and ancillary services markets). There is a history of residential ratepayers paying towards commercial and industrial customers' costs, which should not be repeated with the rapid deployment of this new class of extremely large data center loads.

As tremendously well-resourced companies, hyperscalers and other data center developers should be required to bring their own *new* clean energy generation (capable of fully meeting their added load) to protect local communities from the serious public health impacts of fossil generation, both baseload and back-up, and abide by states' binding clean energy and emission reductions policies. And, because data centers want to come online quickly, they should be working with utilities on the fastest solutions: deploying solar and storage, and enabling energy efficiency and demand flexibility as a means to: 1) defray system costs, 2) avoid reliability concerns during peak periods, and 3) expedite interconnection.

More specific policy recommendations include:

- Data center companies should be required to "bring your own new clean energy" (BYONCE) to meet their demand requirements. This generation should be clean, new, and installed in the grid region or utility service territory where the data center is located.
- Public Utility Commissions (PUCs) should be enabled to require utilities to file large load tariffs that provide adequate protections against residential ratepayers cross-subsidizing data centers.
- Large load tariffs should include mandatory demand flexibility, such that a utility can curtail large load demand in periods of peak demand and exigent grid circumstances. This flexibility should be clean in nature to the greatest extent possible (e.g., not relying on backup diesel generators).
- Data center companies should be required to engage in good faith with local communities, tying robust and enforceable community benefits agreements and local employment opportunities to receipt of any state incentives. States should consider data center tax incentive reform more generally – avoiding a race to the bottom among states and preventing tax breaks that cause negative community outcomes with marginal to moderate job creation benefits.
- Data centers at the large load level should be required to pay for not just the full cost of their distribution upgrades, but also their transmission upgrades.
- Data centers should not be exempt from paying system benefits charges (or any energy bill charges that fund state energy and efficiency policies) or from paying for transmission demand or other system costs through co-location with power plants.
- Where feasible, data centers should be required to maximize the beneficial reuse of waste heat produced by computer servers, such as for use in thermal energy networks (TEN) or other applications.

For more information:

- **Acadia Center Joint Comments Recommending Solutions to Align MA Data Center Regulations with State Climate Policy**
- **Acadia Center Joins Testimony Urging Reforms to MA Data Center Tax Exemption Regulations**
- **Acadia Center Chimes In On Data Center Guardrails for Rhode Island**

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