

Data Center Demand Flexibility

Data center electricity demand can become more flexible by shifting computer workloads across facilities, reducing operations, or relying on backup power or onsite storage. By actively managing data center demand, utilities can meet growing load and minimize the need for new gas generation or grid upgrades. Flexible data centers may be able to connect to the grid faster and reduce ratepayer costs by avoiding the need for new infrastructure. Getting frameworks in place for flexible data centers will set the stage for future load growth from transport and industry.

Potential Impact

- Data center load growth is significant and highly uncertain. Forecasts range from 74 to 132 gigawatts (GW) of demand growth from data centers, using 6.7-12 percent of U.S. electricity by 2028 (Berkeley Lab). Without policy changes including flexible data center operation, data center growth will lead to an additional 25-50 GW of fossil generation by 2030, including several GW of deferred coal retirements. (EPRI)
- 100 GW of data center load can be added to the grid nationwide without needing new peak resources, if those data centers curtail just 0.5 percent of annual electricity use, to avoid periods of peak demand. (Duke University)
- Regions with significant proposed data center buildout – PJM, MISO, ERCOT, SPP, and Southern Company – have the most room to integrate flexible data centers. (Duke University)
- Data centers that can turn down just 25-50 percent during the highest demand periods can significantly reduce the need for new firm generation capacity like gas plants, while lowering costs and emissions. (EPRI)

Policy Tools

- Data center incentives (e.g., property or sales tax exemptions) can include requirements that data centers participate in demand response programs.
- Policy can enable faster interconnection for data centers that meet certain conditions with transparent planning and public data sharing, e.g.:
 - Data centers commit to be flexible and participate in a demand flexibility program (e.g., PG&E's Flex Connect program, PGE's proposed large load tariff)
 - Locations that currently have excess capacity to support new load
 - Data centers co-located with clean energy like solar plus storage
- Utility rates for data centers can allocate costs to data center customers in proportion to the costs those customers drive on the system (e.g., line extension costs or new generation capacity). Flexibility commitments may allow for lower rates or upfront financial commitments from customers.
- Utility rates can enable data center customers to bring their own new clean energy (e.g., Clean Transition Tariff or on-site clean energy parks) and encourage data centers to manage energy usage to align with clean energy supplies (e.g., non-firm, interruptible utility service).

Resources

Berkeley Lab, [2024 United States Data Center Energy Usage Report](#)

Grid Strategies, [Strategic Industries Surging: Driving US Power Demand](#)

Duke University, [Rethinking Load Growth](#)

EPRI, [Powering Data Centers](#)

EPRI, [DCFlex Initiative](#)

Google, [Supporting power grids with demand response at Google data centers](#)

RMI, [How Data Centers Can Set the Stage for Larger Loads to Come](#)

Latitude Media, [PG&E is laying the groundwork for flexible data center interconnection](#)

Portland General, [Proposed Large Load Tariff](#) (Note Flexibility Provisions on I-11/12).