Balancing the Load: Managing Electricity Prices Amid Rising Power Demand

Will Kehres

Kalyn Ouk

Sam Malech, MA, MBA

Ben Sokol, MA

Bates White Economic Consulting

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Table of Contents

I. ENERGY SYSTEMS AND PRICING DYNAMICS

The energy system encompasses the generation and delivery of electricity to utility customers, who include residential, commercial, and industrial users. Utilities are the entities responsible for ensuring the reliable delivery of electricity to customers in their geographic service territories by maintaining and operating infrastructure, balancing supply and demand, and planning for future energy needs.

Electricity is measured in units of power: kilowatts (kW), megawatts (MW), and gigawatts (GW), with 1 GW equal to 1,000 MW and 1 MW equal to 1,000 kW. Kilowatts, megawatts, and gigawatts measure instantaneous power consumption or generation, while kilowatt-hours (kWh), megawatt-hours (MWh), and gigawatt-hours (GWh) measure the total power used or generated across one hour—1 MW generated continuously for one hour produces 1 MWh. An average household consumes approximately 1.2 kW at any given moment, and 1 GW is enough electricity to supply approximately 833,000 American households at once.[1]

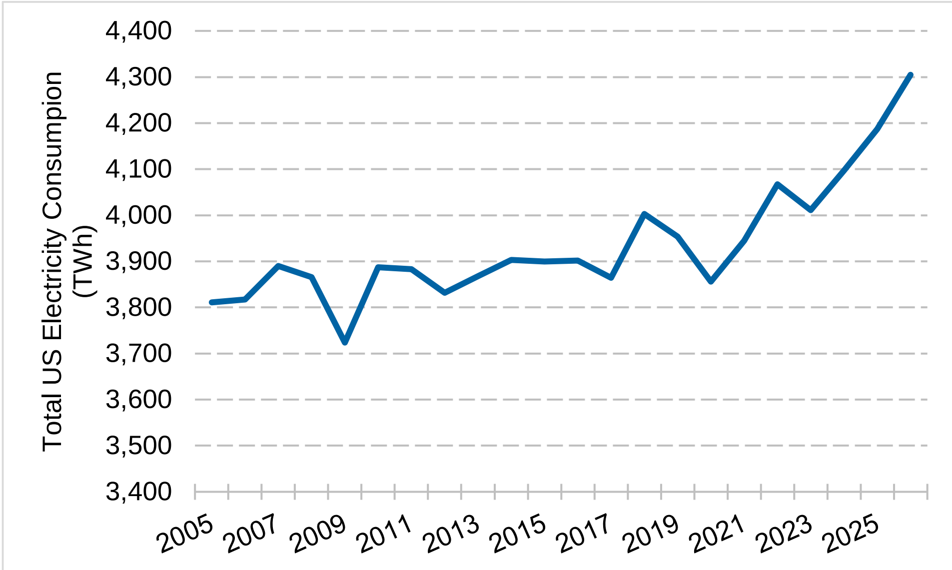
While utility bills include various components, such as fixed charges and delivery fees, one key factor influencing electricity prices is the supply-demand relationship. Energy sources, such as power plants, are used in order of least cost, meaning that as electricity use increases, customers must pay for progressively more expensive generation. If existing generation is insufficient to meet customer needs, utilities must invest in new generation or delivery infrastructure to maintain reliable service. The costs of those investments are typically distributed among all a utility's customers based on cost-causation, which is the assignment of costs to those responsible for them or to those who benefit from the services they support.

II. RISING ELECTRICITY DEMAND IN THE UNITED STATES

The United States is experiencing an increase in electricity consumption that has compelled states and utilities to devise strategies to balance supply and demand while minimizing price impacts on consumers. Demand began rising in 2020 after being relatively flat for nearly two decades. Between 2006 and 2020, the average annual growth rate in electricity consumption was just 0.1%, compared to a projected average of 1.9% per year between 2020 and 2026. This growth represents an additional 360 billion kWh—enough electricity to power over 33 million homes for a year.

[1] "How Much Electricity Does an American Home Use?" EIA, January 8, 2024, https://www.eia.gov/tools/faqs/faq.php?id=97&t.

Figure 1. US Electricity Consumption, 2006 – 2026



Source: EIA Electric Overview (history), https://www.eia.gov/totalenergy/data/browser/index.php?tbl=T07.01#/?f=A&start=1990&end=2024&charted=13 and EIA US Electric Industry Overview (forecast), https://www.eia.gov/outlooks/steo/data/browser/#/?v=19&f=A&s=0&start=2020&end=2026&id=&maptype=0&ctype=linechart&linechart=~ELCOTWH&map=

One crucial aspect of the energy system is "peak demand," which refers to the highest level of electricity consumption on a power grid during a given timeframe. Utilities track peak demand to ensure that they have enough power capacity available to meet it, along with an additional margin to account for unexpected demand spikes or other contingencies. This margin, which is often based on historical use trends and regional reliability standards, helps utilities prevent outages even during periods of unusually high demand.

Demand is increasing nationwide, across states with differing populations, economies, and policy goals:

- Indiana Michigan Power, a utility serving over 600,000 customers[2] in northern Indiana and southern Michigan, forecast that its annual peak demand[3] will more than double from 2023 to 2030.[4]
- The Electric Reliability Council of Texas (ERCOT) has projected statewide annual peak demand to increase by 132%, from 94 GW in 2025 to 218 GW in 2031.[5]
- The California Energy Commission has forecast the state's annual peak demand to increase from 48.3 GW in 2024 to 68 GW in 2040.[6]
- Arizona Public Service, the largest utility in Arizona, expects a 40% increase in annual peak demand between 2024 and 2031.[7]

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[2] Fact Sheet, Indian Michigan Power, 2022, https://qa.indianamichiganpower.com/lib/docs/company/about/2022IMFactSheet.pdf.
[3] Peak demand refers to the highest instantaneous demand on an electrical power-supply system over a specified time interval; a utility must be able to supply enough power to meet its customer base's peak demand plus an additional reserve margin.
[4] Indiana Integrated Resource Plan, Indiana Michigan Power, March 2025, https://www.indianamichiganpower.com/lib/docs/community/projects/IM-irp/2025/IndMich_2024_IN_IRP_Summary_032825.pdf.
[5] "Item 8.1: Long-Term Load Forecast Update (2025-2031) and Methodology Changes," ERCOT, April 7–8 2025, https://www.ercot.com/files/docs/2025/04/07/8.1-Long-Term-Load-Forecast-Update-2025-2031-and-Methodology-Changes.pdf.
[6] Goodman, Elaine, "Data Centers to drive Calif. Power Demand, Sales," *RTO Insider*, January 23, 2025, https://www.rtoinsider.com/96383-cec-data-centers-demand-forecast/.
[7] Ethan Howland, "Rising Data Center Loads Pose Grid Reliability, Residential Cost Risks: APS Executive," *Utility Dive*, November 11, 2024, https://www.utilitydive.com/news/data-center-grid-reliability-residential-cost-aps-load-growth/732480/.

Recently, a significant portion of actual and projected demand growth has been driven by a small number of customers with substantial electricity needs that far exceed those of typical residential customers. While the precise classification of these "large load customers" varies by utility, they all consume several magnitudes more electricity than a typical residential customer. Some consume more electricity than 1 million households when operating at full capacity.[8] Though large load customers span a range of industrial and commercial sectors, their rapid growth is most evident in the proliferation of data centers that have emerged in every state in the United States.[9]

- Indiana Michigan Power estimates that data centers with electricity requirements exceeding 0.5 GW already represent roughly 60% of the system-wide peak demand in its Indiana service territory.[10]
- Texas is expected to add approximately 138 GW of large load customers to its grid between 2025 and 2030, representing a 766% increase in the state's large load customer demand.[11]
- Pacific Gas & Electric, a utility serving northern and central California, is preparing to integrate 5.5 GW of data center demand by 2035.[12]
- Arizona Public Service is currently integrating 4.5 GW of large load customers into its system, with an additional 20 GW of prospective large load customers in its connection queue.[13]

The increase in demand from electricity-intensive facilities has the potential to impact the price that other customers pay for their electricity. As electricity demand grows—accelerated by the addition of large load customers—utilities face pressure to expand supply in order to avoid higher prices. While Texas and Indiana Michigan Power have implemented targeted measures to address the direct impact of large load customers, California and Arizona Public Service are addressing rising electricity demand more broadly, with strategies aimed at expanding supply while balancing clean energy mandates.

III. INDIANA MICHIGAN POWER: IMPLEMENTING A LARGE LOAD TARIFF

Indiana Michigan Power is addressing its large load customer queue by implementing a large load interconnection tariff. A utility tariff outlines the rates, terms, and conditions of service that a utility provides to its customers. Utilities typically design distinct tariffs tailored to each class of customer they serve, such as residential, general business, or industrial.

Large load tariffs are uniquely crafted to address the substantial electricity demands and operational requirements of large load customers. They are typically structured to achieve two key objectives: (1) ensuring large load customers pay a price for electricity commensurate with their demand and infrastructure needs, and (2) preventing general electricity customers, such as residential customers and small businesses, from inadvertently subsidizing the costs incurred by the utility to serve large loads.

Indiana Michigan Power's large load tariff applies to customers with a maximum power usage greater than or equal to 70 MW at an individual facility,[14] or 150 MW in aggregate across multiple facilities.[15] It contains several

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[8] "How Much Electricity Does an American Home Use?" EIA, Meta 2024 Sustainability Report; the Prineville (OR) facility consumed 1,375,321 MWh in 2023.
[9] "USA Data Centers," DataCenterMap, 2025, https://www.datacentermap.com/usa/.
[10] Indiana Integrated Resource Plan, Indiana Michigan Power.
[11] "ERCOT Monthly Issued July 2025," ERCOT, July 2025, https://www.ercot.com/files/docs/2025/08/06/ERCOT-Monthly-July-2025.pdf.
[12] "PG&E Accelerating Connection of New Data Centers throughout Northern and Central California", PG&E, February 13, 2025, https://investor.pgecorp.com/news-events/press-releases/press-release-details/2025/PGE-Accelerating-Connection-of-New-Data-Centers-throughout-Northern-and-Central-California/default.aspx.
[13] Ethan Howland, "Arizona Utilities Sign Up for Gas Pipeline Project, Spurred by Data Center Development," Utility Dive, August 7, 2025, https://www.utilitydive.com/news/arizona-utilities-aps-srp-transwestern-gas-pipeline-data-center/757040/.
[14] For comparison's sake, a US household has an *average* power demand of around 0.0012 MW.
[15] Scheule of tariffs and Terms and Conditions of Service Governing Sale of Electricity in the State of Indiana, Indiana Michigan Power Company, May 8, 2024, p. 88, https://www.indianamichiganpower.com/lib/docs/ratesandtariffs/Indiana/IM_IN_TB_20_09-03-2025.pdf.

provisions designed to protect smaller customers from larger customers' stranded costs. Stranded costs occur when utilities make investments—such as those to upgrade infrastructure or procure additional generation—to serve demand that doesn't materialize. Those costs are then recovered from the utility's remaining customers or result in a financial loss to the utility. While the risk of stranded costs is not exclusive to large load customers, the scale of investments required to serve them makes this risk particularly significant.

Indiana Michigan Power's minimum bill provision establishes a baseline level of revenue that large load customers must provide regardless of their actual electricity use. The utility's mandatory 12-year contract term provision further ensures long-term revenue stability for the utility by requiring large load customers to commit to service for extended periods.[16] Together, these mechanisms result in a predictable, long-term revenue contribution from large load customers that allows the utility to recover the upfront and ongoing investments needed to serve them. By preventing large load customers from substantially reducing the revenue they contribute or exiting the system prior to the end of their contract, these provisions also eliminate the possibility of stranded costs shifting to other customer classes.

While customer protections are central to the tariff, the agreement also affords large load customers certain flexibilities to help the region remain competitive and to appeal to large load developers. Specifically, it allows large load customers to reduce their contracted electricity demand by up to 20% without penalty after the first five years of service.[17] This flexibility is particularly valuable for companies operating new technologies or working in novel markets, as it allows them to adjust their contracted electricity demand to better align with their actualized use and avoid costs associated with unused capacity. Additionally, the tariff introduces incentives for demand management, allowing large load customers to receive payments for curtailing their electricity use during high demand periods or grid emergencies.[18]

IV. THE STATE OF TEXAS: ADDRESSING DEMAND GROWTH WITH LEGISLATION

While Indiana Michigan Power is addressing demand growth through a large load tariff, the Texas state legislature has taken a more direct approach by implementing Senate Bill 6 (SB6) in June 2025. SB6 is a comprehensive legislative response to rising electricity demand. The state legislature specifically crafted SB6 to manage the significant infrastructure and operational challenges posed by large load customers (defined in Texas as customers whose monthly peak demand exceeds 75 MW) while shielding residential and small business ratepayers from increased costs.

SB6 establishes a clear expectation that large load customers should pay their fair share of system costs. The legislation mandates that utilities charge large load customers directly for certain expenses that are specifically incurred to assess and meet their needs, rather than distributing those costs across their customer bases. For example, SB6 imposes a flat $100,000 fee on large load customers to recover the cost of evaluating when and where they can logistically connect to the grid.[19] Additionally, SB6 instructs the Public Utility Commission of Texas to reexamine how certain grid costs are distributed among customer groups to ensure that each group is charged fairly based on the demands they impose on the system.[20]

The bill also addresses transparency and generation asset planning. Large load customers are required to disclose whether they are seeking approval to connect to the grid at multiple locations across the state.[21] This requirement is intended to curb speculative requests that could complicate infrastructure planning and lead to

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[16] Indiana Michigan Power Company, Scheule of tariffs and Terms and Conditions of Service Governing Sale of Electricity in the State of Indiana, p. 88.
[17] Indiana Michigan Power Company, Scheule of tariffs and Terms and Conditions of Service Governing Sale of Electricity in the State of Indiana, p. 89.
[18] Indiana Michigan Power Company, Scheule of tariffs and Terms and Conditions of Service Governing Sale of Electricity in the State of Indiana, p. 133.
[19] Senate Bill No. 6, p. 4, https://capitol.texas.gov/tlodocs/89R/billtext/pdf/SB00006F.pdf#navpanes=0.
[20] Senate Bill No. 6, p. 1, https://capitol.texas.gov/tlodocs/89R/billtext/pdf/SB00006F.pdf#navpanes=0.
[21] Senate Bill No. 6, p. 2, https://capitol.texas.gov/tlodocs/89R/billtext/pdf/SB00006F.pdf#navpanes=0.

unnecessary investments. By improving forecasting accuracy, utilities can avoid overbuilding grid infrastructure and minimize the investment cost burden that would ultimately fall on all its customers.

SB6 also addresses how large load customers must manage their electricity use during grid emergencies. Utilities are required to maintain protocols for curtailing electric service to large load customers during emergency situations to make supply available to residents and critical services. Large load customers must also share details about any on-site backup power generation they have available and activate it when the grid faces critical conditions.[22] These provisions are significant, as they highlight the state's official position that servicing residential and small commercial electricity demand will be prioritized over servicing large load customers' demand in emergency situations.

V. THE STATE OF CALIFORNIA AND ARIZONA PUBLIC SERVICE: CONTRASTING APPROACHES

California faces growing electricity demand, but its ability to build more generation is constrained by its ambitious clean energy transition goals. The state's Renewables Portfolio Standard mandates that utilities meet 60% of their retail electricity sales from renewable sources by 2030, with a commitment to achieving 100% clean energy by 2045.[23] The California Air Resource Board has also imposed severe restrictions on any new fossil fuel projects.[24]

California has been addressing demand growth to date by building renewable generation, such as wind and solar. However, these intermittent resources—dependent on factors like time of day, weather, and season—are insufficient on their own to reliably and consistently meet electricity demand. To address the issue of renewable intermittency, California has invested heavily in battery storage; battery energy storage systems allow for the capture of renewable energy when it is generated in excess of demand and for the deployment of that energy at other times. California's battery storage capacity has increased from 500 MW in 2018 to 15,700 MW in 2025,[25] with an additional 8,600 MW of capacity planned by the end of 2027.[26]

Unlike California, Arizona Public Service has adopted a more flexible approach by revising its clean energy targets. In August 2025, Arizona Public Service changed its carbon emissions goal from "100% clean and carbon-free electricity by 2050"[27] to "an aspirational carbon-neutral approach by 2025", citing unprecedented demand growth.[28] This adjustment has enabled Arizona Public Service to broaden its range of generation options, including active participation in the Transwestern Pipeline Desert Southwest expansion project.

This new natural gas pipeline will increase Arizona utilities' access to abundant natural gas supplies in the Permian Basin, where all current pipeline capacity is fully subscribed.[29] Unlike renewables, natural gas generation is dispatchable, meaning that it can be deployed on demand and its output is not dictated by the weather or time of day. By accessing additional natural gas, Arizona Public Service aims to expand its procurement of a low-cost, reliable energy source to complement its renewable portfolio and ensure that electricity is available during times when wind, solar, or battery storage cannot fully meet demand. This approach provides a safeguard against energy shortages and price volatility.

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[22] Senate Bill No. 6, p. 3, https://capitol.texas.gov/tlodocs/89R/billtext/pdf/SB00006F.pdf#navpanes=0.
[23] "Developing Renewable Energy," California Energy Commission, accessed August 7, 2025, https://www.energy.ca.gov/about/core-responsibility-fact-sheets/developing-renewable-energy.
[24] "CARB approves unprecedented climate action plan to shift world's 4th largest economy from fossil fuel to clean and renewable energy," California Air Resources Board, December 15, 2022, https://ww2.arb.ca.gov/news/carb-approves-unprecedented-climate-action-plan-shift-worlds-4th-largest-economy-fossil-fuels#:~:text=The%20California%20Air%20Resources%20Board%20today%20approved,85%25%20and%20achieves%20carbon%20neutrality%20in%202045.
[25] "California Energy Storage System Survey," California Energy Commission, accessed August 7, 2025, https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/california-energy-storage-system-survey.
[26] California Energy Commission, "California Energy Storage System Survey."
[27] "APS Sets Course for 100 Percent Clean Energy Future," APS, January 22, 2020, https://www.aps.com/en/About/Our-Company/Newsroom/Articles/APS-sets-course-for-100-percent-clean-energy-future.
[28] "Clean Energy," APS, accessed August 11, 2025, https://www.aps.com/en/About/Our-Company/Clean-Energy.
[29] "Arizona Utilities Work to Lock in Critical Natural Gas Delivery to Power Growth," Pinnacle West, August 6, 2025, https://www.pinnaclewest.com/newsroom/company-news/news-release-details/2025/Arizona-Utilities-Work-to-Lock-in-Critical-Natural-Gas-Delivery-to-Power-Growth---/default.aspx.

VI. CONCLUDING REMARKS

Rising electricity demand across the United States presents significant challenges for utilities in balancing supply, reliability, and affordability. In response, states and utilities have implemented a variety of strategies aimed at managing this growing demand while attempting to safeguard their residents and customers from excessive cost burdens.

The cases highlighted in this report demonstrate the complexity of addressing electricity price increases amid demand growth and diverging policy priorities. Each approach reflects distinct trade-offs among affordability, system reliability, and environmental goals. As electricity demand continues to rise, collaboration among policymakers, regulators, and utilities will be crucial in shaping strategies that align with each state and utility's unique needs and aspirations.

BATES WHITE
ECONOMIC CONSULTING

2001 K Street NW
North Building, Suite 500
Washington, DC 20006

BATESWHITE.COM