## Title

Electricity Rate Designs for Large Loads: Evolving Practices and Opportunities



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# Electricity Rate Designs for Large Loads: Evolving Practices and Opportunities

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Electricity demand from large-load customers such as data centers is projected to grow significantly in the near term. While these large loads play an important role in advancing technology innovation and economic growth in the United States, meeting their energy needs requires utilities and regulators to consider important financial and operational risks from underutilized investments or insufficient energy supply, infrastructure, and operational capabilities, with implications for all ratepayers. This paper provides an overview of how utilities and regulators are managing these risks through different tariffs, including rate structures and service agreements. Utilities, regulators, customers, and other stakeholders can use this paper as a foundation when discussing issues and sharing perspectives on developing new large load tariffs or reviewing existing ones.

## Introduction

U.S. electricity demand is projected to grow significantly in the next decade, largely driven by data center expansion and artificial intelligence (AI) applications but also new domestic manufacturing and electrification in other sectors (NERC, 2024). While maintaining a reliable power grid at least reasonable cost and risk is always an imperative, ensuring new data centers have sufficient energy supply to maintain and continuously develop AI training models in the United States is vital for protecting national security and ensuring that AI systems are safe, secure, and trustworthy. The United States also has a strong interest in supporting the domestic development of AI applications, as they represent U.S. leadership in technology innovation and economic growth.

Reliable energy supply and robust infrastructure are critical to the successful deployment and expansion of large loads such as data centers. Data centers are among the most energy-intensive building types due to their continuous operation, computing equipment, and cooling needs.[1] Lawrence Berkeley National Laboratory estimates that total U.S. data center electricity demand more than doubled (2.3x) from 2018 to 2024 and could triple (3.3x) from 2024 to 2028 (Shehabi et al., 2024). Additionally, the power system impact of these customers may be particularly significant for individual utilities and regions. According to the Electric Power Research Institute (EPRI), 12 states accounted for 84% of data center growth since 2020 (EPRI, 2024).

Regulators, utilities, and large-load customers are exploring tariffs including rate structures, electric service agreements, and special contracts that achieve the objectives of reliable and affordable

[1] There are several types of data centers that differ primarily in terms of application (e.g., cloud data centers supporting data and applications used by cloud service providers), size (e.g., a large technology company or cloud service provider supporting large-scale computing), and ownership (e.g., enterprise data centers that are typically owned and operated by individual companies versus colocation data centers that lease space).

power, mitigate financial risks to ratepayers, and support clean energy and infrastructure deployment. Utility tariffs define the price, terms, and conditions of electricity service to end-use customer classes — such as residential, commercial, and industrial — and require approval by state or local regulators. Tariffs that involve the transmission and sale of electricity in interstate commerce require approval from the Federal Energy Regulatory Commission.

This paper discusses the challenges from the rapid growth in large loads and provides leading examples of proposed and approved tariffs that can mitigate utility financial, planning, and operational risks, as well as support broader power system goals and objectives. Utilities, regulators, customers, and other stakeholders can use this paper as a foundation when discussing issues and sharing perspectives on developing new large load tariffs or reviewing existing ones.

## Background

Utilities and regulators make sustained and significant investments in energy supply and infrastructure to meet growing electricity demand in the context of other regulatory, policy, and economic challenges. These challenges include replacing aging electric grid infrastructure and retiring fossil fuel generation, integrating newer generation and storage technologies, and enhancing grid reliability and resilience. Equipment shortages, interconnection delays, and customer affordability concerns are also contributing to a gap between electricity supply and demand.

Regulated utilities have an obligation to provide safe and reliable electricity to their customers and to propose rates that ensure sufficient cost recovery for their investments. State utility regulators evaluate and approve utility retail electricity rates and service agreements for alignment with these and other ratemaking objectives (as we discuss in the following section). As utilities and regulators explore tariff designs to address the growing electricity demand from large-load customers, several issues have emerged:

- Fair allocation of electricity system costs to large-load customers without unfair shifting of costs to other customers
- Appropriate mitigation of the financial risks associated with stranded assets from underutilized utility system investments if the forecasted electricity demand fails to materialize
- Mitigation of operational and resource adequacy risks if electricity demand exceeds supply or if voltage and power fluctuate because of large-load customers
- Appropriate risk-sharing in commercializing newer electricity technologies such as advanced geothermal, small modular reactors, and long-duration energy storage that may be needed to scale quickly to meet near-term demand growth
- Accommodating the diverse needs of large-load customers, such as having the option to match electricity consumption with output from carbon-free resources or using onsite generation to provide system capacity.

## Tariff Design Objectives and Elements

In this section of the paper, we discuss how regulators and utilities are exploring tariff designs for large-load customers to achieve desired policy and financial outcomes, provide reliable power to data centers, and mitigate risks and adverse impacts to other ratepayers. To date, there is no industry-standard tariff design, and regulators and utilities have considerable latitude to design tariffs applicable to large loads in ways that provide revenue sufficiency, do not unduly discriminate, do not lead to excessive cost shifts, and promote broader state policy objectives. These objectives are not always stated explicitly, though they are often revealed in utility testimony and regulatory decisions, and may include:

- Resource adequacy. The ability of an electric power system to meet demands for electricity using its supply-side and demand-side resources is known as resource adequacy (NERC, 2011). Load-serving entities are generally required to demonstrate that they have procured sufficient, deliverable energy resources to meet projected needs through resource adequacy or capacity market constructs.[2] Designing rate structures that provide greater certainty about future demand requirements will allow load-serving entities to make appropriate infrastructure investments and energy supply arrangements.
- Affordability. Energy affordability is the ability for consumers to pay for their energy bills in addition to other basic household expenses without feeling overburdened (DOE, 2024). Rate structures can support affordability by following cost-causation principles and using appropriate cost-sharing mechanisms between utilities and large-load customers. These approaches can help ensure that costs expended to serve particular customers are not unduly borne by all other customers.
- Desire to attract large-load customers. Some states, counties, and municipalities are interested in attracting large-load customers, such as data centers, for economic development purposes. Designing flexible tariffs or offering expedited interconnection to the utility system if those customers can provide firm demand reductions when needed (e.g., through reliance on onsite generation) can help attract these types of customers.
- Emissions/air pollutant reductions. Designing tariffs to promote or enable the procurement of clean energy supply and energy efficiency can help states, utilities, and large-load customers achieve their decarbonization or emissions reduction goals. Well-designed tariffs can also encourage investment in the infrastructure and portfolio of resources needed to develop a robust, reliable, resilient, and sufficient clean energy supply for all customers.

The remainder of the section uses leading examples of utility tariffs (either proposed, in settlement, or approved by regulators[3]) to illustrate how different tariff design elements such as applicability, contract size, and contract duration are being used in practice to achieve regulator, utility, and large-load customer objectives. The examples are not intended to be exhaustive. In some cases, examples are missing due to limitations associated with commercially sensitive information, such as precise

[2] Vertically-integrated utilities plan and invest in both supply resources and grid infrastructure to ensure resource adequacy based on projected future load growth. In other jurisdictions, other load-serving entities are responsible for procuring sufficient generation capacity, while the utility provides grid infrastructure to deliver electricity.
[3] See Appendix for the regulatory status of tariff examples referenced in this paper as of January 1, 2025, along with citations of the relevant state regulatory dockets.

contracted capacity and energy. Finally, although the tariff design elements are discussed individually, tariffs are typically designed to include several elements to meet multiple objectives. The tariff design elements are presented individually in this paper as the full range of possible elements and aspects that a large-load tariff may include. However, not every tariff will include all the design elements, and developing a comprehensive tariff entails tradeoffs among the individual elements to achieve some broader set of objectives.

## *Eligibility and applicability*

Eligibility terms define which customers qualify for electricity service under the utility tariff. Utilities and regulators may include certain requirements to ensure that costs imposed by large-load customers are consistent with the utility's underlying cost allocation methodology and to mitigate other financial risks.

<u>Minimum load requirement</u>: Utility tariffs may include a lower-bound load (MW) threshold for customers to be eligible for electricity service under the tariff, including whether the requirement applies to individual customers or multiple, aggregated customers.

- NV Energy's Clean Transition Tariff has a 5 megawatt (MW) minimum load requirement (approval is currently pending).
- Entergy Mississippi's Large Power Rate Schedule has a 30 MW minimum load requirement.
- Xcel Energy Minnesota's Competitive Response Rider has a 2 MW requirement for existing customers and 10 MW for new customers with the ability to increase load to 75 MW within 5 years.
- Indiana Michigan Power's Industrial Power Tariff settlement agreement proposes a 70 MW minimum load requirement at an individual plant or a 150 MW minimum load requirement on an aggregated basis (approval is currently pending).

<u>Monthly demand charge</u>: Some utility tariffs require customers to pay a minimum specified percentage of their forecasted maximum demand. This approach ensures credible commitment by the customer to the capacity they have forecasted and can minimize utility financial and resource adequacy risks.

- The monthly demand charge for large-load customers under Indiana Michigan Power's Industrial Power Tariff settlement agreement must be no less than the greater of 80% of the customer's contract capacity or 80% of the customer's highest previously established monthly billing demand during the past 11 months. Large-load customers are also subject to a minimum monthly charge (approval is currently pending).

Applicability to specific customer types: Utility tariffs may be unique to the specific large-load customer type taking service under the tariff.

- Montana-Dakota Utilities' High Density Contracted Demand Response Rate is only for data center-type facilities housing high density computer processing technology.
- Ohio Power's Data Center Tariff settlement agreement proposes to exclude electrified manufacturing facilities from the tariff based on the premise that they are distinct from data centers (approval is currently pending).

Recovery for study costs: Utilities may propose that large-load customers pay for studies considering whether that customer can safely and reliably be added to the grid, especially for sizable demand or energy additions.

- Indiana Michigan Power's Industrial Power Tariff settlement agreement requires large-load customers to pay for the cost of full planning studies, including steady state and dynamic studies (approval is currently pending).

Customer credit rating and/or collateral requirements: Utility tariffs may specify minimum credit ratings and/or collateral requirements for customers to mitigate the financial risks to utilities and ratepayers from nonpayment of future utility bills.

- Ohio Power's Data Center Tariff settlement agreement proposes data center customers must have a credit rating of at least A- from S&P Global and A3 from Moody's Corporation, and cash or cash equivalents on an audited balance sheet greater than 10 times the collateral requirement. Otherwise, when signing the contract, the customer must provide a guarantee or collateral equal to 50% of the total minimum charges for the full term (approval is currently pending).
- Black Hills Energy's Large Power Contract Service Tariff customers may be required to provide a deposit or credit support such as a performance guarantee or letter of credit. This credit support will be held as security for payment of obligations incurred on behalf of the customer.
- Indiana Michigan Power's Industrial Power Tariff settlement agreement proposes customers must satisfy the collateral requirement by having at least one of the following: (1) A guarantee from the customer's ultimate parent or a corporate affiliate for the collateral requirement, as long as the guarantor meets a minimum credit rating and liquidity, (2) a letter of credit indicating a credit rating of at least A- from S&P and A3 from Moody's, or (3) cash for the collateral requirement. Other collateral requirement exemptions exist for customers with minimum ratings (approval is currently pending).

## *Contract size*

The contract size defines the energy and/or capacity customers are obligated to buy from the utility, as well as opportunities to adjust those quantities over time under certain conditions. Because utilities plan and invest in generation, transmission, and distribution assets based on forecasted demand, they may incur substantial financial costs or reliability risks if projections vary significantly from actual demand. The large-load customer's actual capacity and energy requirements may differ from the forecasted demand for a variety of reasons. For example, data center electricity demand may change with the development of AI models that have high utilization rates during earlier learning phases but more variable utilization in later implementation phases. Also, cryptocurrency mining demand is highly responsive to both cryptocurrency prices and energy prices, which may cause sudden and unexpected demand changes that result in significant operational stress on the grid. Utilities can use the contract size terms to make appropriately sized investments to minimize their financial and operational risks.

Contracted capacity and energy: Utility tariffs may define the total amount of capacity (MW) and/or energy (MWh) that a customer is obligated to buy. Utilities can also design the tariff to explicitly share the risk for recovery of existing investments between the customer and the utility.

- Ohio Power’s Data Center Tariff settlement agreement proposes customers will pay minimum charges, even when underutilizing investments or using less than contract capacity, to offset the costs of new infrastructure built to serve them. Customers have an 85% minimum demand provision to incentivize accurate load estimates. Ohio Power can suspend service if a customer's usage exceeds its contract capacity by more than 1 MW (approval is currently pending).
- Utilities may require upfront payments to ensure timely cost recovery as a risk mitigation measure. Montana-Dakota Utilities Company requires a contribution in aid of construction from the customer, in advance of building any facilities, to recover the utility’s estimated cost of installing, furnishing, and removing the facilities used to serve the customer.
- Black Hills Energy will not build new generation capacity for customers under their Large Power Contract Service Tariff. Instead, customers must pay for excess capacity needs beyond 35 MW, which Black Hills will purchase from the market.

Resizing or reassignment of contracted capacity/energy: Utility tariffs may define the terms and conditions for customers to resize their contracted capacity and/or energy obligations for purchase from the utility, or to reassign or sell some of their unused contracted energy and/or capacity obligations to another utility customer.

- Ohio Power’s Data Center Tariff settlement agreement proposes customers can assign up to 25% of their contracted capacity to another customer when exiting the system. If additional capacity is available to serve additional customer load, Ohio Power can adjust the contract capacity with that customer (approval is currently pending).
- Indiana Michigan Power’s Industrial Power Tariff settlement agreement proposes customers may reduce contract capacity by up to 20% after the first 5 years of the contract, with written notice of at least 42 months before the beginning of the PJM Interconnection capacity market delivery year for which the reduction is sought (approval is currently pending).
- Xcel Energy Minnesota’s Competitive Response Rider provides service at a negotiated, discounted rate to customers who can obtain energy from a third-party supplier. However, the discount must not exceed the difference between the standard tariff and the cost to the customer of the lowest-cost competitive energy supply.

Behind-the-meter resources as backup and supplemental power: Large-load customers may use behind-the-meter (BTM) generation and/or electrical and thermal energy storage to improve site reliability, reduce the level of contracted capacity and energy, and manage their demand and/or energy charges. From the utility perspective, BTM generation as a backup resource can contribute to grid needs and improve system reliability. In addition, BTM generation as a supplemental power resource can serve as flexible load to mitigate system peak demand and integrate variable renewable energy resources. However, there are utility concerns that BTM generation may allow customers to avoid certain charges, which can impose utility cost recovery risks. The source of the BTM generation is also an important consideration, as the use of fossil-based backup power may hinder corporate or state-level air pollution/emissions goals. One tariff design approach is to restrict the type of allowable BTM generation technology (e.g., diesel vs. solar, dispatchable vs. non-dispatchable) and to identify implications for planned or unplanned outages of those generation assets (e.g., standby tariff elements). Utility tariffs may also include direct or indirect financial incentives to promote the adoption of load flexibility technologies and operational strategies. Finally, another tariff design approach is to leverage utility control of these technologies to manage the local distribution grid impact of these large loads and/or the broader electric system by providing bulk power grid services.

- NV Energy's Clean Transition Tariff customers can install back-up generation or storage equipment that is either owned or leased by the customer (approval is currently pending).
- Ohio Power's Data Center Tariff settlement agreement proposes that customers can use onsite generation to reduce their contracted capacity, but their equipment must be in place and maintained through the term of the service agreement, and the customers must be able to instantaneously curtail load equal to or greater than the onsite generation (approval is currently pending).
- Black Hills Energy's Large Power Contract Service Tariff customers must agree to allow Black Hills access to their back-up generation.

Load factor: Utility tariffs may define the ratio of average load (MW) and peak load (MW) in a specific time period (monthly, seasonally, or annually) that a customer taking service under the tariff must maintain, typically expressed as a minimum threshold.

- Montana-Dakota Utilities' High Density Contracted Demand Response Rate has an 85% minimum load factor.

## *Contract duration and exit fee*

The contract term and the customer's ability to ease into and exit the contract are some of the most significant tariff elements, including load ramp period, operational commitment period, specific fees over a determined time period, and sunset provisions, to manage utility resource adequacy and cost recovery risks. These details may also provide large-load customers with a longer time to reach contracted energy and demand levels and to navigate retail and wholesale market interconnection processes, as well as a range of contract durations that may be linked to other tariff components (e.g., an exit fee).

Contract duration: Utility tariffs may specify the contract time period as a way to mitigate the financial risk that ratepayers could bear for speculative and underutilized utility infrastructure investments (e.g., by contracting data centers for a longer time period).

- NV Energy's Clean Transition Tariff has a long-term energy supply period. Google's service agreement under this tariff has a 15-year term (approval is currently pending).
- Indiana Michigan Power's Industrial Power Tariff settlement agreement includes a 12-year minimum initial contract term *after* the load ramp period ends (approval is currently pending).
- Portland General Electric's Large Nonresidential Green Energy Affinity Rider, which offers customers a subscription share of a new renewable energy facility, requires a 5- to 20-year contract term.

Ramp times: Utilities can provide data centers with an extended time period to reach contract size requirements and navigate transmission and/or generator interconnection processes.

- Indiana Michigan Power's Industrial Power Tariff settlement agreement includes a maximum 5-year ramp period (approval is currently pending).
- Ohio Power's Data Center Tariff settlement agreement proposes customers have a load ramp period of up to 4 years, during which the applicable contract capacity shall not be less than 50% of full contract capacity in the first year, 65% of full contract capacity in the second year, 80% of full contract capacity in the third year, and 90% of full contract capacity in the fourth year (approval is currently pending).

Duration flexibility: Utilities may offer a range of modifications to contract durations to large-load customers, and these may be linked to other tariff components (e.g., exit fee).

- Xcel Energy Minnesota's Competitive Response Rider has an initial term of 1–7 years for existing customers and 10 years for new customers. Customers can renew for an additional 10 years if they have firm peak demand of at least 75 MW during their final 2 years. Customers can terminate the contract with 1-year notice to Xcel and must make a termination payment equal to the net book value of incremental facilities built to serve the data center.

Exit fee: Utility tariffs may determine the appropriate charges to levy against a large-load customer on the tariff who chooses to exit the tariff or terminate utility service entirely before the end of their term.

- The exit fee for large-load customers under Indiana Michigan Power's Industrial Power Tariff settlement agreement is the nominal value of the remaining minimum bill charge for the terminated or reduced capacity, in excess of the 20% allowed reduction for the first year of the exit fee period (the customer's remaining initial contract term and extensions). For any remaining years of the period, the exit fee is calculated in the same manner as the first year, minus the Off-System Sales Margin Sharing/PJM Cost Rider's contribution to the minimum charge (approval is currently pending).
- Ohio Power's Data Center Tariff settlement agreement proposes an exit fee of 3 years of minimum charges (approval is currently pending).
- The termination payment for NV Energy's Callisto Energy Supply Agreement is based on the price difference between the resource procurement agreement rate and NV Energy's most recent commission-approved renewable facilities taking into account the amount of generation expected from the procured resource (approval is currently pending).

## *Energy source*

The type of generation source that the utility uses to supply energy to large-load customers is often motivated by corporate or state-level air pollution/emission reduction goals. Energy source requirements may also address risks associated with commercializing novel electricity supply technologies (e.g., nuclear small modular reactors or advanced geothermal). The significant increase in overall energy supply needed to meet these new large loads offers the opportunity to make strategic infrastructure and supply investments that can align regulator, utility, and large-load customer emissions/air pollution reduction goals.

Clean energy requirements: Regulatory mechanisms can identify ways to support regional, state, and corporate clean energy or sustainability goals, as well as the terms and conditions for doing so. Further, public-private partnerships can help drive clean energy resource development.[4]

- Idaho Power's Schedule 19 and special contract customers can participate in the utility's Clean Energy Your Way program by purchasing renewable energy certificates, buying a subscription to a new renewable resource that is shared with other subscribing customers (future offering), or constructing a dedicated renewable resource to meet the customer's specific sustainability goals.
- Portland General Electric's Large Nonresidential Green Energy Affinity Rider enables customers to access clean energy through power purchase agreements signed by the customer or utility.
- Black Hills Energy's Large Power Contract Service Tariff allows Black Hills to procure competitively priced renewable resources for customers.

[4] For more details on and examples of utility green tariff programs, see www.epa.gov/green-power-markets/utility-green-tariffs.

Opportunities to leverage specific generation technologies: Data center tariffs, including contracts and energy service agreements, can identify specific generation technologies that the utility will procure on the customer's behalf, as well as the terms and conditions for doing so.

- NV Energy's Clean Transition Tariff allows large industrial customers access to new clean energy resources by paying a premium. For example, under this tariff Google would pay to recover the costs of the enhanced geothermal system resource used to power its data centers (approval is currently pending).

## *Other Elements*

Utility tariffs may include additional elements intended to meet specific objectives or manage specific risks; for example, marginal pricing or cost-sharing mechanisms can limit cross-subsidization. Direct payments from large-load customers to support workforce development or community programs can help achieve economic development objectives.

Marginal pricing: Data center tariffs may use marginal pricing methods to quantify and directly assign utility costs to the customers to limit cross-subsidization and ratepayer financial risks.

- Idaho Power's contract with Brisbie, a data center, requires the utility to procure renewable resources on Brisbie's behalf and to connect them directly to Idaho Power's transmission system. Brisbie pays for the renewable resources and is credited for the value the renewable resources bring to Idaho Power's system. Brisbie pays their load-ratio share of Idaho Power's generation and transmission systems, because these will be used to meet Brisbie's load at any time a renewable resource is not generating, and the renewable resources use existing transmission lines to travel to Brisbie's load or other loads.
- As an example of a "hold harmless" provision, Xcel Energy Minnesota's energy services agreement with a Google subsidiary passes the "regulatory incremental cost test," which ensures incremental costs incurred to serve the customer are offset by incremental revenues.
- Duke Energy Indiana's electric service agreement with a Meta subsidiary uses a dedicated power purchase agreement for the customer that is not included in the utility integrated resource plan and thus does not affect other customers. The data center will pay its share of transmission costs through the open-access transmission tariff charge that includes associated transmission upgrades.

Economic development payments: Data center customers can support economic development and affordability objectives with direct payments to state, county, or local organizations, including for low- to moderate-income/disadvantaged community programs.

- As large-load customers under Indiana Michigan Power's Industrial Power Tariff settlement agreement, Amazon, Google, and Microsoft each agreed to provide $500,000 per year for 5 years to the Indiana Community Action Organization to support income-qualified customers through weatherization programs to improve their health and safety (approval is currently pending).

### *Large Load Co-location with Energy Supply*

Large-load customers such as data center owners may choose to physically connect their facilities directly to onsite generators and enter into bilateral supply agreements. These co-location arrangements typically arise in the Federal Energy Regulatory Commission's standardized process for interconnecting large generators, though may be regulated under state or local law. Co-locating load with generators can provide large-load customers with timely access to power but raises concerns about appropriate cost allocation, as well as potential impacts on reliability and broader benefits to other ratepayers.

For all parties, aligning system services and benefits with costs is key. This will depend on whether the co-located load a) is physically and electrically connected to the transmission or distribution system, or fully isolated to prevent power flow or power quality issues from impacting the grid; b) requires onsite or grid-based backup power, grid reliability services, or ancillary services from the transmission system; c) is located behind or in front of the generator's meter; and/or d) is considered a wholesale network or retail customer. Current rate designs do not contemplate the range of co-location configurations, which makes the fair and accurate allocation of costs challenging.

Co-location arrangements may present both opportunities and risks to reliability. Co-located load does not necessarily require available transmission capacity and has the potential to be leveraged during critical conditions to enhance grid supply and stability. However, fully isolated co-located load is generally physically disconnected from the grid and excluded from future regional planning processes. Further, co-locating load with existing generation sources may impact resource adequacy if the new load is not matched with new capacity. Studies may be needed to further understand the potential benefits, as well as the reliability and cybersecurity risks, of different co-location configurations.

*See* Federal Energy Regulatory Commission Docket No. AD24-11-000, Large Loads Co-Located at Generating Facilities, for different perspectives on co-located arrangements.

## The Opportunity Space

Regulators play an important role in approving tariffs that balance multiple perspectives and objectives, including helping large-load customers secure reliable power, mitigate financial or reliability risks for utilities, and support clean energy deployment without unduly burdening other ratepayers. For example, long-term contracts with capacity commitments from large-load customers can provide assurances for the utility to make supply and infrastructure investments and may be paired with flexibility for large-load customers to ramp into their contracted energy and demand over time. Large-load customers may also mitigate cost-shifting and ratepayer risks with minimum demand charges and collateral requirements but receive flexibility for modifications to service agreements. By sharing perspectives on the challenges and opportunities of new large loads, utilities, regulators, large-load customers, and other stakeholders can work together to make the U.S. energy system more reliable, resilient, and affordable while enabling the United States to stay at the leading edge of AI and other major industrial development.

## *DOE research and resources*

The U.S. Department of Energy (DOE) and the National Laboratories are uniquely positioned to provide technical assistance to various stakeholders on this topic, such as:

- The Utility and Grid Operator Technical Assistance program provides utility and grid operator technical assistance along different pathways. Utilities and grid operators can focus on technical challenges related to operational architectures or specific technology configurations or access 100 hours of subject matter expertise in areas such as load forecasting and distributed energy resources.
- The Better Buildings Initiative partners with owners and operators across sectors of the U.S. economy, including data centers, to help meet ambitious energy and emissions reduction targets. Through a partnership commitment and sharing pathways to success, this program provides technical assistance to help track energy and emissions and pursue cost-effective efficiency improvements. The program also provides case study examples and technical resources.
- The Center of Expertise for Energy Efficiency in Data Centers offer tools, technologies, and analysis to enhance energy performance in data centers.
- The Onsite Energy Program provides technical assistance, market analysis, and best practices to help large energy users, including data centers, increase the adoption of onsite clean energy technologies. DOE's regional network of Onsite Energy Technical Assistance Partnerships helps facilities across the nation integrate the latest onsite energy technologies by providing specialized technical assistance, including initial screenings for multi-technology solutions, more advanced analysis to support project installations, and more.
- The State Technical Assistance Program provides public utility commissions and state energy offices with high-impact technical assistance and resources.
- State Energy Program Technical Assistance provides funding and technical assistance to states, territories, and the District of Columbia to enhance energy security, advance state-led energy initiatives, and increase energy affordability.
- Supercharging the Electric Grid Edge for an Integrated Energy System enhances internal and external coordination in the energy industry through resources and best practices, analytical and capacity support, and field validations. Opportunities include convening regional forums and engaging in other key events to identify high-priority challenges; developing best-in-class data, models, tools, analysis, and best practices informed by real world data (from stakeholders and field validations) to enable decision making; and providing direct analytical support to external entities.

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# Appendix: Regulatory Status of Large Load Tariff Examples

| Utility | Tariff | PUC Case Number | Regulatory Status (as of January 1, 2025) |
|---|---|---|---|
| Idaho Power | Brisbie Energy Services Agreement | IPC-E-21-42 | Approved |
| Montana-Dakota Utilities | High Density Contracted Demand Response | PU-22-337 | Approved |
| Ohio Power | New Tariffs Related To Data Centers and Mobile Data Centers | 24-508-EL-ATA | Pending approval |
| NV Energy | Callisto Energy Supply Agreement | 24-06014 | Pending approval |
| NV Energy | Clean Transition Tariff | 24-05022 and 24-05023 | Pending approval |
| Xcel Energy Minnesota | Google Electric Service Agreement | 19-39 | Approved |
| Black Hills Energy | Large Power Contract Service Tariff | 20003-146-ET-15 | Approved |
| Duke Energy Indiana | Special Agreements with Blocke, LLC | 45975 | Approved |
| Portland General Electric | Voluntary Renewable Energy Tariff | UM 1953 | Approved |
| Indiana Michigan Power | Industrial Power Tariff | 46097 | Pending approval |
| Entergy Mississippi | Large Power Rate | 2014-UN-132 | Approved |

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