
AI, Data Centers, and the U.S. Electric Grid: A Watershed Moment

Rachel Mural, Dipesh Pherwani, Chaitanya Gupta, Yiqi Yu,
Ai Takahashi, Dongjoo Kim, Subir Majumder, Henry Lee,
Minlan Yu, Le Xie

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1. Introduction

Electricity consumption growth rates are increasing across the United States, driven, in part, by a boom in hyperscale data center development. Although the long-term market outlook remains uncertain, the Lawrence Berkeley National Laboratory predicts that data center demand will grow from 176 terawatt hours (TWh) in 2023 (or, about 4.4% of total U.S. electricity consumption) to between 325-580 TWh (6.7-12.0%) by 2028.¹ In some parts of the country, AI-driven energy demand is outpacing available capacity, driving companies to delay projects, contract power directly from private producers, and/or install multiple, inefficient reciprocating generators using natural gas.

Data centers may impact grid reliability in some regions. In July 2024, a voltage fluctuation in northern Virginia triggered the simultaneous disconnection of 60 data centers, prompting a 1,500-megawatt (MW) power surplus, which forced emergency adjustments to prevent cascading outages.² Investors claim that massive investments in energy generation and grid infrastructure are needed to power data center development while mitigating outage risks. However, if the anticipated demand does not materialize, utilities (and their consumers) could face stranded costs.³

Data centers have enjoyed discounted energy tariffs and tax incentives, as state and local governments compete to attract business. Although these early incentives have driven substantial data center investments, emerging regulatory debates are impacting market development across the country. Policy shifts in major data center markets, such as the passage of Texas Senate Bill 6, signal the probability of future market intervention by both regulators and policy makers to address local-level concerns over reliability and affordability.

As data center infrastructure continues to expand, developing effective regulatory policies becomes critical. The future of data centers and their energy needs, as well as the policy decisions made in this realm, will impact U.S. technological competitiveness for decades to come. While overregulation could hinder AI development, insufficient regulation risks grid instability, rising consumer costs, reliance on high-emission energy sources, public backlash, and setbacks to state and corporate climate goals.

This policy brief outlines the current state (and potential consequences) of U.S. data center electricity usage and corresponding grid expansion. The paper provides an overview of the current data center and grid landscape followed by a discussion of potential engineering and policy approaches to address ensuing challenges. The foundations laid herein will inform our future research under the **Project on Grid Integration** at the Harvard Kennedy School (HKS) and the Harvard School of Engineering and Applied Sciences (SEAS). This Initiative aims to advance 1) the development of new regulatory tools to incentivize increased grid flexibility and 2) the creation of more equitable cost-sharing mechanisms in the wake of expanding data center development. The brief concludes by outlining several critical questions which will guide the Project's research over the next year.

1 Shehabi, A., Smith, S.J., Hubbard, A., Newkirk, A., Lei, N., Siddik, M.A.B., Holecek, B., Koomey, J., Masanet, E., Sartor, D. 2024. 2024 United States Data Center Energy Usage Report. Lawrence Berkeley National Laboratory, Berkeley, California. LBNL-2001637. <https://eta-publications.lbl.gov/sites/default/files/2024-12/lbnl-2024-united-states-data-center-energy-usage-report.pdf>.

2 Matthew Gooding, "Virginia narrowly avoided power cuts when 60 data centers dropped off the grid at once," *Data Center Dynamics*, March 20, 2025, <https://www.datacenterdynamics.com/en/news/virginia-narrowly-avoided-power-cuts-when-60-data-centers-dropped-off-the-grid-at-once/>

3 Kunkel, C., & Wamsted, D. (2025, June 3). *Risk of AI-driven, overbuilt infrastructure is real*. Institute for Energy Economics and Financial Analysis. <https://ieefa.org/resources/risk-ai-driven-overbuilt-infrastructure-real>

2. The U.S. Data Center Landscape: An Overview

According to the National Telecommunications and Information Administration (NTIA), there were over 5,000 data centers in the United States in 2024, with demand for data center services expected to grow through 2030.⁴ Accordingly, capital spending on hyperscale data center infrastructure has risen to unprecedented levels over the past five years. Amazon CEO Andy Jassy noted that AWS’s AI-related revenue is already a multi-billion-dollar business “growing at a triple-digit, year-over-year percentage.” In 2024, Amazon, Microsoft, Google, and Meta collectively spent over \$200 billion on capital expenditures (CapEx), representing a 62% year-over-year increase from 2023. Each firm’s spending reached an all-time high: Amazon’s CapEx was \$85.8 billion⁵ (up 78% year-over-year), Microsoft’s was \$44.5 billion⁶ (up 58%), Google’s was \$52.5 billion⁷ (up 63%), and Meta’s was \$39.2 billion⁸ (up 40%). Looking ahead, Amazon’s total CapEx⁹ in 2025 is projected to surpass \$100 billion, while Microsoft’s and Google’s are each expected to exceed \$80 billion. The data center buildout race reflects both strategic and financial drivers, as companies race to secure long-term returns and future competitive advantages. By investing ahead of demand, these companies are ensuring infrastructure is available when customers need it. From the industry’s perspective, failure to build ahead of demand places companies at a competitive disadvantage.

While data center financing stems primarily from parent-company balance sheets, corporate bonds, and public incentives, project finance is occasionally used, with green bonds emerging as a supplementary tool. Financing the electricity infrastructure upgrades needed to power data centers, however, is a much more challenging endeavor, as utilities operate under tight financial and regulatory constraints that complicate the acquisition of the large-scale capital deployment needed to fund expansive upgrades.

As data centers continue to seek rapid power interconnection, alternative financing mechanisms for power procurement—through both utilities and third-party providers—are gaining prominence. For example, firms are increasingly relying on third-party power contracts, which include collateral commitments, long-term power purchase agreements (PPAs),¹⁰ availability payments, and upfront capital payments. Additionally, companies are weighing the costs and benefits of co-locating data centers and power generation, despite challenges surrounding siting rules, asset ownership, and regulatory oversight. Overall, this unprecedented capital outlay exposes both firms and utilities to a range of risks, from increased stranded assets to rising financing costs; therefore, the sustainability of the data center build out depends on both resilient financing structures and continued demand realization.

4 “NTIA Seeks Comments on Supporting U.S. Data Center Growth,” National Telecommunications and Information Administration, 2024, <https://www.ntia.gov/press-release/2024/ntia-seeks-comments-supporting-us-data-center-growth>.

5 Form 10-K for Amazon, 2024, Commission File No. 000-22513, U.S. Securities and Exchange Commission, <https://www.sec.gov/Archives/edgar/data/1018724/000101872425000004/amzn-20241231.htm>

6 Annual Report 2024, Microsoft, <https://www.microsoft.com/investor/reports/ar24/index.html>

7 Form 10-K for Alphabet, 2024, Commission File No. 001-37580, U.S. Securities and Exchange Commission, <https://abc.xyz/assets/77/51/9841ad5c4f8e85b4440c47a4df8d/goog-10-k-2024.pdf>

8 Form 10-K for Meta, 2024, Commission File No. 001-35551, U.S. Securities and Exchange Commission, <https://www.sec.gov/Archives/edgar/data/1326801/000132680125000017/meta-20241231.htm>

9 Annie Palmer, “Amazon Plans to Spend \$100 Billion This Year to Capture ‘Once in a Lifetime Opportunity’ in AI,” CNBC, February 6, 2025, <https://www.cnbc.com/2025/02/06/amazon-expects-to-spend-100-billion-on-capital-expenditures-in-2025.html>. [https://www.datacenterdynamics.com/en/news/aws-achieves-123bn-annualized-revenue-run-rate-capex-for-the-year-set-to-exceed-118bn/#:~:text=Despite%20reassuring%20analysts%2C%20against%20the,bn%2C%20and%20Microsoft's%20\\$24.2bn.](https://www.datacenterdynamics.com/en/news/aws-achieves-123bn-annualized-revenue-run-rate-capex-for-the-year-set-to-exceed-118bn/#:~:text=Despite%20reassuring%20analysts%2C%20against%20the,bn%2C%20and%20Microsoft's%20$24.2bn.)

10 Engie Impact provides a useful overview of the different kinds of power purchasing arrangements, here: <https://www.engieimpact.com/insights/power-purchase-agreements-guide>.

Future data center market expansion, and its consequent energy usage, remains highly uncertain. Past data center energy studies display numerous flaws. In a review of 258 data center energy consumption estimations, Mytton & Ashtine (2022) found systematic defects within study methodologies, particularly with regards to data availability and transparency.¹¹ The opacity of data center operations, site planning, and energy efficiency complicate energy estimations and projections.¹² Subsequently, institutional projections of data center electricity demand range from about 200 TWh to over 1,000 TWh by 2030, according to the World Resources Institute. This range complicates medium-to-long term grid planning, as utilities struggle to determine both the true magnitude of the industry’s future energy needs and its relationship to economy-wide electrification.

The *2024 United States Data Center Energy Usage Report*¹³ attempted to clarify the extent of current and future data center energy consumption. After a period of stagnation from 2014 to 2016, center energy demand grew in 2017 due, in part, to expanded efforts to digitalize data across economic sectors. From 2018 to 2023, data center energy use increased from roughly 76 TWh (comprising 1.9% of the nation’s total annual electricity consumption) to 176 TWh (4.4%); future data center energy usage could range from 325 to 580 TWh by 2028, or 6.7-12.0% of 2028 national electricity consumption. However, this range remains uncertain, due to the continued opacity of data center and utility planning as well as uncertain data center market trajectories.¹⁴

Project risks are assumed by external stakeholders, not just data center companies. For example, utilities face stranded-asset risks with regards to generation and transmission buildout; if infrastructure is built to serve projected data center demand and said demand does not materialize, these assets could be under-utilized. Furthermore, increased contract-based financing has shifted projects away from guaranteed “rate-base” recoveries, instead favoring special tariffs and PPA contracts, arrangements which lack transparency and may shift power costs onto other consumers.

These threats raise urgent questions about who should shoulder data center buildout costs and whether returns (and cost recovery) to the utility will remain predictable. Who should pay for grid improvements spurred, at least in part, by data center development? Who are the beneficiaries of these improvements? How should costs be allocated across consumers? How can local communities be protected from rising energy costs and natural resource depletion as data centers expand to new markets across the United States? Rigorous policy, economic, and engineering research—in conjunction with increased transparency from data center operators and utilities serving them—is crucial for future grid planning as well as for mitigating unwanted environmental, social, and economic impacts.

3. Virginia and Texas – Two Sides of the Regulatory Coin

As data center markets continue to expand, regional differences in electricity market design and energy needs are shaping regulatory and market reforms. Simultaneously, local-level impacts are introducing additional

11 D. Mytton & M. Ashtine, “Sources of data center energy estimates: A comprehensive review,” *Joule*, 6(9), 2022, <https://doi.org/10.1016/j.joule.2022.07.011>.

12 Goldsmith, Ian and Zach Byrum, “Powering the Data Center Boom: Why Forecasting Can Be So Tricky,” *World Resources Institute*, September 17, 2025, <https://www.wri.org/insights/us-data-centers-electricity-demand>.

13 Shehabi, A., Smith, S.J., Hubbard, A., Newkirk, A., Lei, N., Siddik, M.A.B., Holecek, B., Koomey, J., Masanet, E., Sartor, D. 2024. 2024 United States Data Center Energy Usage Report. Lawrence Berkeley National Laboratory, Berkeley, California. LBNL-2001637. <https://eta-publications.lbl.gov/sites/default/files/2024-12/lbnl-2024-united-states-data-center-energy-usage-report.pdf>.

14 Thomas Spencer & Siddharth Singh, “What the data center and AI boom could mean for the energy sector,” IEA, 2024, <https://www.iea.org/commentaries/what-the-data-centre-and-ai-boom-could-mean-for-the-energy-sector>.

variables for policy consideration. This section surveys two of the largest U.S. data center markets, Virginia and Texas, to demonstrate how locales facing similar challenges differ in the pace and substance of their responses.¹⁵

3.1. Virginia

Virginia is the epicenter of the global data center industry, with over 4,900 MW of operating capacity (and another 1,000 MW under construction) in Northern Virginia alone.¹⁶ By some estimates, about 70% of global internet traffic passes through the region daily.¹⁷ The area's dense fiber network, linkages with federal facilities, and systemic incentives enabled its market dominance. First, Northern Virginia was an early node in the U.S. government's ARPANET¹⁸ and still hosts major internet exchange points.¹⁹ Second, the state's low power costs, strong electric reliability, economic incentives, and mild climate reduce data center operation costs, while some Northern Virginia counties provided early permit acceleration for large campuses.

Data center growth in Virginia will add thousands of megawatts of nearly constant demand over the next few years, thereby compressing planning timelines and raising new questions around who should bear the costs of system improvements. Dominion's²⁰ 2024 resource plan projects nearly 27 GW of new generation by 2039, including 21 GW of renewable energy (i.e., solar, wind, and nuclear small modular reactors [SMRs]) and 5.9 GW of gas.²¹ Simultaneously, Virginia's energy rates are increasing. In February 2025, Dominion proposed its first base-rate increase since 1992, adding about \$8.51 per month in 2026 and \$2.00 per month in 2027 for a typical household.²²

Furthermore, rapid demand growth has led PJM, Virginia's regional transmission organization, to review how it both defines firm service and manages reliability obligations. The region's wholesale design depends on a balance between competitive generation, long-term capacity procurement, and regulated local service. This dynamic is strained by data center expansion, as a single, fast-growing class of customers with unique load profiles present system needs that differ from those around which PJM was built. Data centers use large, steady electricity loads with limited ability to reduce (or ramp down) their power usage; simultaneously, their energy demand can fluctuate according to equipment usage and job complexity. This pattern differs from the more gradual, weather-sensitive load patterns. Overall, Virginia is under pressure to embrace new rates, financing, and reliability tools to allocate risks to the drivers of this new demand: data centers.

As the data center industry continues to expand, the Virginia grid must adapt. Cost allocation rules and policy incentives will evolve as the state considers how to sustain reliability investments while stabilizing rates for

15 A companion brief, forthcoming, will expand upon these findings.

16 "Northern Virginia's Data Center Market Faces Record Demand Amid Constrained Power Supply," Washington Business Journal, June 3, 2025, <https://www.bizjournals.com/washington/news/2025/06/03/jll-report-northern-virginia-data-center-market.html>.

17 "The Dawn of Data: How Virginia Became the Data Center Capital of the World," Virginia Economic Development Partnership, 2019, <https://www.vedp.org/news/dawn-data>.

18 ARPANET, or the Advanced Research Projects Agency, was a Cold War era project designed to connect U.S. research computers across the country; for more information on ARPANET and its relation to the modern internet, see: <https://cs.stanford.edu/people/eroberts/courses/soco/projects/distributed-computing/html/history.html>.

19 For additional information on Virginia's electricity market and utility structure, see appendix I.

20 Dominion Energy is Virginia's primary energy provider.

21 Diana DiGangi, "Dominion Unveils Plans to Add 21 GW of Clean Energy, 5.9 GW of Gas Generation by 2039," Utility Dive, October 16, 2024, <https://www.utilitydive.com/news/dominion-integrated-resource-plan-irp-renewables-natural-gas/729989/>.

22 Dominion Energy, *Dominion Energy Virginia Proposes New Rates to Continue Delivering Reliable Service and Increasingly Clean Energy*, Press Release, February 3, 2025, <https://news.dominionenergy.com/press-releases/press-releases/2025/Dominion-Energy-Virginia-proposes-new-rates-to-continue-delivering-reliable-service-and-increasingly-clean-energy/default.aspx>

other customers. Several policy reforms have been proposed. For example, lawmakers have debated scaling back Virginia’s data center tax exemptions for both performance and sales. However, proposals to repeal these incentives stalled in the budget process. Furthermore, several 2025 bills sought 1) to link eligibility to tax incentives to improved energy efficiency or clean energy performance, 2) to pause new projects in Northern Virginia, and/or 3) to set uniform development standards, but none of these advanced.^{23,24} A separate bill establishing statewide standards, including land use reviews, reached the governor’s desk but was vetoed.²⁵ That said, local governments are considering enhancing land use and environmental regulations, in order to slow the data center build out process. As of the time of writing, the state tax exemptions remain in place through 2035, signaling Virginia’s intent to support competitive market development, but serious concerns around land use and affordability are looming on the horizon.

3.2. Texas

Texas, with its lightly regulated, “energy-only” electricity market structure, offers a contrasting example of how U.S. electricity systems are responding to rapid data center development. The state demonstrates how a market that historically favored low-friction interconnection processes is adjusting its regulatory framework in response to unprecedented new load growth.

Over the past several years, Texas data center investments have been attracted by the state’s competitive electricity prices, business-friendly policies (including state sales and use tax exemptions on servers, cooling equipment, backup energy, and other hardware), and rapid interconnection speeds. As a result, the Dallas-Fort Worth area has emerged one of the largest data center markets in the United States and is continuing to witness massive build out. The Electric Reliability Council of Texas (ERCOT)²⁶ projects that peak summer power demand could approach 145 GW by 2031, up from 85 GW in 2024; this represents a significant acceleration relative to the gradual 1-2% annual growth in demand experienced over the past two decades. Over half of this new demand (about 32 GW) is projected to come from data centers (including cryptocurrency miners).²⁷ Unlike past gradual and dispersed growth, the current demand surge is rapid, lumpy, and increasingly clustered around specific localities, leading to increased concerns around demand-supply mismatch, insufficient energy reserve margins, and transmission congestion.²⁸

By mid-2024, state lawmakers grew increasingly alarmed by emerging energy risks, particularly with regards to: (1) fairness in cost recovery, with concerns that data center’s speculative or duplicative²⁹ interconnection requests could shift upgrade costs onto smaller customers; (2) behind-the-meter (BTM) co-location that might pull existing grid-facing generation behind a private fence, reducing available capacity in the system under³⁰

23 Virginia SB800 (2025) – amended version “MR 3-5.25 / 2s” — Virginia State Budget (Introduced)

24 Rip Sullivan, *2025 Post-General Assembly Session Recap*, June 3, 2025, <https://ripsullivan.com/2025-post-general-assembly-session-recap/>

25 “Virginia Governor Vetoes Data Center Bill,” McGuireWoods, May 8, 2025, <https://www.mcguirewoods.com/client-resources/alerts/2025/5/virginia-governor-vetoes-data-center-bill/>

26 ERCOT is an independent energy system operator responsible for 90% of Texas’ electricity. For more information, see: <https://www.ercot.com/about/profile>.

27 Long Term Load Forecast 2025, ERCOT, April 8, 2025, <https://www.ercot.com/files/docs/2025/04/08/2025-LTLF-Report.pdf>

28 2024 Regional Transmission Plan - Final Update, ERCOT, January 2025, https://www.ercot.com/files/docs/2025/01/28/2024 RTP_Final_Update_January_2025 RPG.pdf.

29 Irina Tsvetkova and Ben Jamison, “Senate Bill 6 Reforms Interconnection and Co-Location Rules for Data Centers,” Weil, Gotshal & Manges LLP, July 29, 2025, <https://www.weil.com/-/media/files/pdfs/2025/july/weil-energy-alert--senate-bill-6-reforms-interconnection-and-colocation-rules-for-data-centers-and-o.pdf>

30 “Texas Senate Bill 6: Understanding the Impacts to Large Loads and Co-Located Generation,” Baker Botts, July 18, 2025, <https://www.bakerbotts.com/thought-leadership/publications/2025/july/texas-senate-bill-6-understanding-the-impacts-to-large-loads-and-co-located-generation>

tight conditions; and (3) managing resource adequacy and emergency operations if large loads remained uncurtailed³¹ during an emergency.

In June 2025, the Texas State Senate enacted Senate Bill 6 (SB6), a package of planning, interconnection, cost-sharing, transparency, and emergency operations reforms aimed at strengthening and protecting the state's energy grid. The law formalizes ERCOT's Large Load Interconnection Study (LLIS) process;³² directs the Public Utility Commission of Texas (PUCT) to determine a "reasonable share" of upgrade costs for new large loads;³³ and requires improved disclosure to reduce speculative filings.³⁴ Overall, SB6 signals the growing potential for expanded regulation across regional markets in response to increased energy affordability and cost-sharing concerns.

In conclusion, Virginia and Texas face similar energy challenges in the wake of rapid data center development, but their approaches demonstrate different regulatory philosophies. The actions (or lack thereof) taken in these states will serve as models for regulators elsewhere across the country.

4. Technological Opportunities for Data Center Energy Mitigation

Future policy and regulatory solutions for data center energy usage will only work if they are technically feasible, economically sound, and politically acceptable. Data center interconnection is often framed as a choice between grid reliability and economic growth. However, past policies have not been anchored in how large loads behave in the real world. Effective policy solutions must account not only for local-level impacts and cost sharing concerns, but also for computational realities. A modeling-first approach can elucidate policy opportunities by first screening for system reliability, then evaluating system-wide price and congestion effects under certain operational criteria that reflect real flexibility. This exercise will require close collaboration between policymakers, engineers, and business leaders across both the energy grid and corporate sectors.

Ongoing research at the John A. Paulson School of Engineering and Applied Sciences (SEAS) aims to address this gap. By linking security-constrained operations (i.e., reliability screening, congestion and ramping limits) with market outcomes (i.e., price volatility, renewable curtailment risks, and uplift payments), the SEAS team is developing realistic engineering solutions to be integrated into real-world policy tools. This analysis will extend across operational levels, considering everything from hosting capacity to transformer loading to thermal equipment aging. Together, these views link system-wide constraints to local reliability and power-quality considerations to develop standardized, transparent workflows that can align planner decisions, regulatory approvals, and developer obligations on predictable timelines.

Rigorous modeling of data centers' reliability and economic impacts across transmission and distribution enables evidence-driven policymaking. For example, planners could maintain a public shortlist of locations

31 Keturah Brown, Grace Dickson Gerbas, and Kenneth Irvin, "How New Law Transforms Large-Load Power Projects in Texas," Sidley Austin LLP, November 20, 2025, <https://www.sidley.com/en/insights/publications/2025/11/how-new-law-transforms-large-load-power-projects-in-texas>

32 Market Notice M-A052125-02, "Partial Implementation Details of NPRR1234/PGRR115," ERCOT, November 25, 2025, https://www.ercot.com/services/comm/mkt_notices/M-A052125-02

33 Cameron Sabin, Gabriel Salinas, and Kseniia Kolontai, "Important Texas Regulatory Updates for Data Centers," Mayer Brown, July 3, 2025, <https://www.mayerbrown.com/en/insights/publications/2025/07/important-texas-regulatory-updates-for-data-centers>.

34 The nuances of SB6 will be discussed in greater detail in our forthcoming case study comparing the Texas and Virginia data center energy landscapes.

where the grid can reliably host new large loads, aligning private proposals with places with sufficient grid capacity. A similar structure could apply to transmission and distribution by clarifying non-negotiable conditions (such as contingency margins and equipment limits) and possible trade-offs (such as construction timelines). This transparency would enable faster construction, fairer decisions, and clearer expectations among all stakeholders.

At the same time, AI data center power consumption still lacks a standard electricity load profile. Such a baseline would help grid operators, planners, renewable energy developers, and policymakers compare scenarios, estimate future energy costs, gauge resource adequacy, design demand-side flexibility incentives, and set accurate emissions policies. Job submission scheduling provides opportunities to enhance data center demand-side flexibility. Using a bottom-up, minute-by-minute model informed by real job data (i.e., job-arrival traces, per-job resource demands, GPU power profiles, and standard cluster resource allocation mechanisms), SEAS researchers have demonstrated that queuing dynamics (or, how jobs arrive, wait, and are scheduled under finite resources) shape electricity demand. This detailed modeling provides a more granular understanding of power profile dynamics across multiple time scales, ranging from seconds to hours, thereby clarifying the impact of job dynamics on the energy system. This work will provide the basis for regulatory tools designed to mitigate excess power usage and fluctuations stemming from job-level dynamics.

5. Conclusion and Looking Ahead

While the outlook for data centers and their energy needs remains uncertain, future solutions must leverage robust policy instruments to spur technological and/or operational changes. For example, data centers may be able to improve grid reliability by reducing their power usage during peak periods; however, it is unclear which incentives would best encourage these practices. Theoretical solutions must be translated into effective, real-world policy initiatives that consider economic, political, and social realities as well as technological feasibility. Rigorous policy, economic, and engineering research—in conjunction with increased transparency from data center operators and utilities serving them—will facilitate successful reforms.

The **Project on Grid Integration (PGI)** is well-positioned to address these challenges. A joint project of the Harvard Kennedy School of Government (HKS) and the Harvard John A. Paulson School of Engineering and Applied Sciences (SEAS), the Project aims to develop new policy, technical, and operational tools that leverage the data center boom in order to strengthen and modernize the U.S. electric grid; at the same time, the project works to minimize the economic, social, and environmental repercussions of rapid data center expansion.

Moving forward, the Project will examine the following questions:

- Cost Sharing: Who should pay for grid improvements spurred, at least in part, by data center development? Who are the beneficiaries of these improvements? How should costs (and associated risks) be allocated across consumers? What cost allocation mechanisms would be fair, methodologically feasible, and politically possible?
- Behind-the-Meter Energy: To what extent will data centers rely on third-party energy systems to power their operations? How might behind-the-meter energy buildouts be regulated at the state and federal levels?

- Grid-Level Impacts: How might data center operational reforms be used to increase grid capacity, enhance system reliability, and improve operational stability? How might data centers be incentivized to limit their load during peak hours in order to preserve whole-of-system reliability? What impact is high frequency oscillation in large-scale AI training jobs having on energy generation systems and the electric grid at large? How might these impacts be mitigated?
- Utility Buildouts: Will utilities be able to access sufficient capital to build necessary infrastructure improvements? How can the cost of such improvements be balanced with electric affordability?
- Alternative Energy and Externalities: How can renewable energy and battery storage solutions be better integrated into data center energy needs? How can local communities be protected from rising energy costs and natural resource depletion as data centers expand to new markets across the United States?
- Data Center Site Selection: How might data-driven analyses of the electric grid inform future data center site selection processes? How can tariff designs and public policy incentivize data center developers to choose grid-optimal sites?

Disclaimer

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