Data Center Regulation Policy

Synchronizing Digital Growth with Grid Resilience

PREPARED FOR:
Regulatory Stakeholders, Grid Operators, and Data Center Developers

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I. Executive Summary

The unprecedented scaling of Artificial Intelligence (AI) requires immense, continuous power to train and deploy models. Data center power consumption is rising at an accelerating rate, forcing utilities to secure capacity far ahead of actual need.

Because standard market incentives take 2 to 5 years to successfully expand power generation, market remedies alone are insufficient to mitigate the immediate impacts on grid reliability and affordability. This brief outlines a two-tiered policy framework of short-term interventions and long-term market reforms to sustainably manage data center development.

II. The Problem: Navigating the Energy Trilemma

Policymakers and grid operators must balance three competing priorities, collectively known as the Energy Trilemma: reliability, affordability, and sustainability. The presence of additional and regional infrastructure must be rapidly upgraded to prevent the frequent overloads, voltage dips, and outages currently plaguing neighborhoods experiencing rapid demand spikes.

To ensure affordability, compensation models must be reformed so that the massive power and load additions required by hyperscalers do not distribute new infrastructure costs onto existing ratepayers. Finally, achieving sustainability requires leveraging current capital availability to aggressively accelerate renewable and low-carbon energy buildouts.

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III. Exploratory Data Analysis

To ensure this framework addresses both regulatory constraints and market realities, our group conducted semi-structured interviews with key experts across the energy value chain:

- **Regulatory Oversight:** *FERC Judge Stephanie Nagel '92* provided insights into the legal hurdles of "expedited interconnection" and the necessity of maintaining non-discriminatory access.
- **Nuclear & Baseload Power:** *Tay Stevenson '10 (Nuclear Political Consultant)* highlighted the role of Small Modular Reactors (SMRs) and the long lead times required for "firm" zero-carbon generation. Discussed the importance of meeting people at a human level, understanding how nuclear build-out affects them personally, and meeting them where they are at.
- **Utility & Ratepayer Impact:** *Public Service Commissioner Ted Trabue '82* emphasized the political necessity of insulating residential ratepayers from the high costs of hyperscale infrastructure. Discussed the difficulty of regulating grids because of the interconnected nature of grids, especially with how close Virginia is to DC. Pointed to the importance of federal regulation to build-out.
- **Urban Energy Policy:** *Peter Damrosch (DC DOEE)* offered a perspective on "District-level" resilience and the potential for "waste-to-heat" circularity in dense urban corridors. He also provided insights into regional grid operators and the requirements for clean energy policy.

Key Finding: There is a consensus that while "market signals" exist, the physical reality of grid construction cannot keep pace with AI deployment without a fundamental shift in how large loads are interconnected and proceed to operate into the system in any responsible and sustainable manner.

IV. Short-Term Policy Recommendations: Promoting "Grid Stewardship"

Immediate interventions must mitigate the grid impacts of data center growth by shifting costs away from residential ratepayers. Current market remedies result in a substantial lag-time between a market signal, either in the form of a Request for Proposal (RFP) or a price spike.

Once a market signal has been seen, developers, utilities and Independent Power Producers (IPPs) each operate on a timeline of 2-3 years to greenfield or retrofit energy infrastructure to meet the system needs. While long-term system upgrades can be achieved through this mechanism, the rate at which data

centers, and their corresponding load, have been added to the grid, provides substantial challenges to the grid.

Hence, both a short term remedy and long term institutional reforms will be needed to manage the “once in a generation” load additions. Based on this framework, we propose a "**Grid Steward**" **framework**: The Federal Energy Regulatory Commission (FERC) in cooperation with Independent System Operators and Regional Transmission Operators (ISOs/RTOs) should adopt three mutually reinforcing guidelines for large loads seeking an expedited interconnection process:

1. **Demand Response Thresholds:** Hyperscalers should be subject to mandated demand response thresholds, requiring data centers to halt utilization when power prices exceed a specific price limit. By being bid into the power market as demand response, this mandate would increase available reserve margins for system operators and lower overall costs.

2. **Capital Fronting:** Hyperscalers must front the capital for necessary grid transmission, interconnection and upgrades and colocated energy and capacity additions to insulate existing ratepayers from rate increases, both from ancillary service tariffs and additional surcharges on rates.

3. **Renewable Maturation:** To guarantee renewable market maturation, data centers must secure 60% of their power via Power Purchase Agreements and Renewable Energy Credits (PPAs/RECs), creating necessary revenue certainty for future clean energy builds.

In exchange for adopting these requirements, data center developers and energy asset owners will receive expedited interconnection approvals, allowing hyperscalers to develop additional data center infrastructure within a shorter time scale without placing an undue burden on other energy market and grid participants.

V. Long-Term Policy Recommendations: Market & Sector Reform

Sustaining long-term digital growth requires structural sector remedies to create fair, competitive power markets.

Permitting and Interconnection Reform

Policymakers must execute reform by ending two-tiered permitting for renewable resources and expediting transmission construction timelines in high-utilization zones. Current permitting and interconnection regulations unfairly penalize existing market participants operating across jurisdictions and subject developers to additional state and federal scrutiny. Fast-tracking permitting and standardizing the interconnection process would provide greater certainty for developers and IPPS.

Market Unbundling and Liberalization

The sector requires market unbundling; unbundling highly concentrated markets and liberalizing vertically integrated utilities will establish independent, competitive rule-setting for all participants. Coupled with existing and additional market reforms would create additional competition between energy market incumbents and competitive market entry for challengers.

Targeted Compensation Reforms

Targeted reforms, such as Clean Transition Tariffs and specialized capacity compensation, are necessary to adequately incentivize independent power producers to develop reliable, dispatchable, and renewable generation. Reintroducing energy transition policies which were originated from the Inflation Reduction Act (IRA) under the Biden Administration, further aligns the incentives of energy market participants with sustainable energy goals.

VI. Anticipated Outcomes

If implemented successfully, these policies will sustainably align digital infrastructure with grid stability. The grid will achieve active resilience as data centers utilize "Interruptible Service Tariffs" to flexibly ramp down during peak system stress. Ratepayers will be fully insulated, as the "Bring-Your-Own-Power" (BYOP) mandate will successfully internalize 100% of new generation and transmission costs.

Furthermore, the industry will achieve firm decarbonization by moving beyond unbundled RECs to actively fund 24/7 carbon-free energy, including geothermal, SMRs, and advanced storage. Ultimately, this framework fosters systemic

circularity by transforming stranded fossil fuel assets into "Coal-to-Compute" hubs, driving high-tech workforce retraining and generating community "waste-to-heat" benefits.

VII. Conclusion

The exponential growth of AI presents a critical challenge to our current energy infrastructure, but it also offers a unique catalyst for modernizing the grid. By implementing the "Grid Steward" framework, policymakers can immediately protect ratepayers and stabilize regional power supplies without stifling technological advancement. In the long term, comprehensive market unbundling, permitting reform, and firm decarbonization mandates will ensure that data center expansion actively funds the clean energy transition. Ultimately, synchronizing digital innovation with grid resilience is essential to achieving both our economic and climate goals.