Energy Policy Research Foundation

IER INSTITUTE FOR ENERGY RESEARCH

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Event Report

Dominating Power

Charting the Next Decade of Electricity Growth

Washington, DC

Message from the Organizers

The United States is entering a new era of energy security, energy abundance, and energy competitiveness. Rapid advances in AI and the onshoring of energy-intensive manufacturing are driving electricity demand at a pace and scale not seen in decades. Aging infrastructure, regional supply constraints, and market and regulatory challenges are testing the electric grid's ability to deliver affordable and reliable power.

On December 11, 2025, the Energy Policy Research Foundation and the Institute for Energy Research jointly hosted the workshop *Dominating Power: Charting the Next Decade of America's Electricity Growth* at the World Bank's Executive Conference Room. The workshop brought together policymakers, industry leaders, and technical experts to assess whether the United States can build fast enough, plan far enough ahead, and align policy with the realities of sustained demand growth.

Featuring The Honorable Katie Jereza, the new Assistant Secretary for Electricity at the Department of Energy, the workshop examined electricity as a foundation of national competitiveness, economic growth, and security. Across four panels and a roundtable, participants explored the expanding energy footprint of AI and manufacturing, the drivers of rising costs and reliability risks, the challenges of rebuilding a nuclear supply chain, and the role of natural gas in supporting near-term and long-term load growth and grid stability.

Our two institutes plan on continuing this effort as part of our mission to help policymakers and industry to consider the most practically optimal pathway to meet load growth in the United States at a low cost and reliably. Watch this space – more events are coming soon!

Sincerely,

Lucian Pugliaresi

President
Energy Policy Research Foundation

Thomas J. Pyle

President
Institute for Energy Research

Special Thanks

We would like to extend our special thanks to The Honorable Katie Jereza for giving us the opportunity to learn from her about the administration's electricity sector policies and activities. We'd also like to extend our sincere gratitude to the following experts and industry leaders:

Moderators:

Dominick Blue, Distinguished Fellow, EPRINC

The Honorable Joyce Connery, Distinguished Fellow, Atlantic Council's Global Energy Center

Michelle Michot Foss, Advisor, L'Acadie Network

Diana Furchtgott-Roth, Director, Center for Energy, Climate, and Environment, Heritage Foundation

Speakers:

Robert Atkinson, President, Information Technology and Innovation Foundation

Thomas Coleman, Senior Power Advisor, Argonne National Lab

Jason Hayes, Director of Energy and Environment, America First Policy Institute

Hyun Gook Kang, Professor of Nuclear Engineering Program, Rensselaer Polytechnic Institute (RPI)

Darin Knapp, Senior Vice President, Layton Construction

Mario Loyola, Senior Fellow in Law, Economics, and Technology, Heritage Foundation

The Honorable Bernie McNamee, Former Commissioner, FERC

Richard Meyer, Vice President of Energy Markets, Analysis, and Standards, American Gas Association

Patrick O'Brien, Director, Government Affairs and Communications, Holtec International

Janet Sena, Retired SVP, NERC External Affairs

Ashutosh Shastri, Distinguished Fellow, Energy Policy Research Foundation

Yuki Shimazu, Special Advisor, Ministry of Economy, Trade and Industry of Japan

The Honorable Adam Sieminski, Senior Adviser, King Abdullah Petroleum Studies and Research Center (KAPSARC)

Kenny Stein, Vice President of Policy, Institute for Energy Research

Patrick Woody, Founder & CEO, Point of Warning Advisory & Consulting

John Young, Senior Manager, Government Relations, Mitsubishi Power Americas

Keynote Conversation with The Honorable Katie Jereza

The Honorable Katie Jereza, Assistant Secretary for Electricity at the U.S. Department of Energy (DOE), characterized the coming decade as a competitiveness race defined by three requirements: reliable electricity, affordable electricity, and speed to build. She cautioned that recent policy trends have leaned toward increasingly costly decarbonization pathways that could undermine reliability and affordability, and emphasized that DOE's core objective is to expand the energy system rather than constrain it. Meeting rising demand from data centers, reindustrialization, and households, she noted, will require adding capacity across all major resource types, including nuclear and natural gas.

She outlined DOE's framework as a progression from stabilization to optimization and growth. Stabilization prioritizes extending the life of existing firm generation, avoiding premature retirements, repairing aging infrastructure, and streamlining regulatory processes. Optimization focuses on enhancing system performance through emergency authorities, microgrids, grid-scale storage, intelligent load management, dynamic line ratings, and advanced conductors, supported by planning that anticipates future demand rather than building solely to current needs. Growth centers on accelerating new generation and storage and better aligning supply with emerging load, while keeping security, affordability, and reliability at the forefront.

Assistant Secretary Jereza also underscored the importance of strengthening analytical foundations, pointing to the North American Energy Resilience Model as a robust physics-based platform that would benefit from the addition of an economic layer to inform investment decisions. She called for modernizing reliability definitions and metrics, and for clearer accountability when system risks are identified. Emphasizing the value of long-term planning, she highlighted the need to anticipate where load and generation will locate in order to reduce uncertainty and avoid stranded assets, rather than optimizing narrowly for emissions outcomes. She concluded by stressing urgency, committing DOE to move more quickly, improve models and standards, accelerate deployment of proven technologies, and use its convening role to support a rapid, reliable, and affordable expansion of the U.S. power system.

Panel One: The Value of AI and Powering Up the American Economy

AI is emerging as a structural, long-term driver of electricity demand. Meeting this growth requires sustained investment across the full electricity value chain, including generation, transmission, substations, and skilled labor. Short-term fixes are insufficient; the challenge calls for coordinated, multi-decade strategies that align infrastructure development, workforce training, and capital deployment.

There is a widening gap between the economic value of AI infrastructure and local public acceptance of the assets needed to support it. Resistance to data centers, substations, and transmission lines is driven primarily by concerns over land use, property values, electricity costs, and perceived environmental or health risks. These concerns are often reinforced by incomplete narratives, while the underlying causes of rising power costs remain poorly understood. Closing this gap requires clearer public communication that ties infrastructure investment to tangible local benefits such as jobs, tax revenues, and long-term affordability.

The scale and pace of AI-related construction are unprecedented. Data center development is increasingly constrained by labor availability, equipment supply, and access to power rather than by capital. Project sizes have expanded dramatically, reshaping contracting models and placing sustained pressure on the electrical supply chain. Efficiency gains in

computing as well as energy use are unlikely to offset the absolute increase in electricity consumption from AI and data centers. Planning assumptions must therefore accommodate both rising efficiency and rising total demand, and near-term investment will be needed in commercially available energy technologies.

AI infrastructure is foundational to future economic competitiveness, national security, and technological leadership. Policy choices affecting supply chains, export controls, and market access carry significant second-order effects, influencing domestic investment, global market structure, and long-term innovation trajectories. The primary constraint on realizing AI's economic potential is increasingly institutional rather than technological. Long-horizon infrastructure investments require credible pathways to staged returns, regulatory certainty, and faster permitting. Success depends on the capacity of public institutions to manage trade-offs, reduce friction, and align markets, communities, and policy with the realities of sustained electricity growth.

Panel Two: Challenges to Reliability and Cost in the Power Sector

Current reliability and affordability issues are best understood as system-level outcomes shaped by legacy institutional design, evolving resource mixes, and fragmented governance. The US power system is not a single unified grid but a patchwork of regional and state-specific structures, each with different rules, market designs, and planning obligations.

Reliability is often treated as a byproduct of markets, not as something that is explicitly valued, financed, and procured. Existing regulatory and market frameworks do not consistently pay for firm, dispatchable availability across all hours, even as the system increasingly depends on attributes such as ramping capability, inertia, voltage support, and fuel assurance. As variable generation expands, the gap between nameplate capacity and dependable capacity widens, which increases operational volatility unless it is matched by investment in grid-supporting services, transmission, and backup supply.

Accountability remains a central challenge. Responsibility for reliability and cost outcomes is dispersed across multiple institutions, and it often leaves no clear line of authority when outages occur or prices go up. In RTOs, consumers turn to state officials, state officials defer to regional entities, and regional entities point to limited authority to mandate new capacity or enforce fuel and performance standards.

Political constraints further complicate the system. Rapid rate increases that affect customers and consumers can manifest in political responses, even though (instead of "when") price signals are necessary to induce investment. At the same time, policy mandates can steer capital toward resources that do not align with local system needs. This can result in overbuilding, curtailment, and rising ancillary costs, especially when variable resources exceed certain penetration levels without corresponding reinforcements.

Cyber risk and the rising cost of compliance and grid hardening are becoming material contributors to both operational risk and customer bills. Improving outcomes requires mechanisms that explicitly procure and compensate reliability attributes. A portfolio approach is preferred that combines firm generation, transmission buildout, distribution hardening, and market or planning frameworks that enforce long-term adequacy.

Rising electricity prices and accelerating load growth have created a narrow window to reset priorities. The opportunity lies in directing investment toward assets and systems that deliver dependable service over decades, while improving public and legislative understanding that reliability is not free and that total system costs ultimately determine affordability.

Panel Three Summary: Fixing the Broken Supply Chain and Making the U.S. Nuclear Revival Work This Time

US nuclear construction stalled for decades after the 1970–1990 buildout due to rising costs, execution risk, workforce attrition, and supply-chain erosion. The current nuclear revival reflects growth in electricity demand, but durable expansion requires rebuilding the institutional, industrial, and human foundations needed for timely project delivery.

Execution discipline and institutional experience are central constraints. International experience shows that continuous construction programs preserve engineering, manufacturing, and construction "muscle memory," enabling more predictable schedules and costs. In the United States, long gaps between projects fragmented supply chains, dispersed skilled teams, and weakened accountability. Nuclear construction performs best when a clearly designated entity is responsible for delivery and projects are supported by consistent policy signals and a credible pipeline of follow-on builds. Without continuity, first-of-a-kind costs are repeatedly relearned rather than amortized across a fleet.

Standardization and repeatability are essential to cost control. Some view that the historical tendency to customize reactor designs site by site increased regulatory complexity, slowed construction, and reduced workforce efficiency. A successful revival depends on common designs, factory fabrication, and modular construction that allow licensing, training, and labor deployment to scale across projects. Advanced reactors and small modular reactors are not inherently low-cost, but they can enable industrialized construction if deployed repeatedly rather than as isolated demonstrations.

Resilient and open supply chains are another prerequisite. Manufacturing capabilities in large forgings, precision components, and fuel services can accelerate US nuclear deployment if integrated early through allied partnerships. International collaboration complements rebuilding domestic capacity. Leveraging established suppliers in both the United States and allies can reduce near-term risks while US manufacturing is restored in parallel.

Workforce constraints remain among the most vexing issues. Construction labor and long-term operations staffing face demographic pressure from retirement and decades of

underinvestment in nuclear education and skilled trades. While interest in nuclear careers is recovering, rebuilding the workforce requires multiple entry points. Apprenticeships, community colleges, and on-the-job training must complement university programs, particularly given persistent trade shortages.

Public acceptance and local engagement are also critical. National policy alone is insufficient without sustained engagement with host communities and regional authorities. Trust, transparency, and visible economic benefits are critical for restarts and new builds, especially after long shutdowns. Siting new reactors at or near existing nuclear facilities offers advantages in workforce availability, infrastructure readiness, and public familiarity.

The nuclear revival will unfold over decades beyond election cycles. Near-term priorities include restarting viable plants, completing initial SMR deployments, and restoring supply-chain confidence through partnerships with US allies. Over the longer term, expansion is a generational project: first meeting new demand and eventually replacing aging fleets. Success depends less on any single technology than on restoring execution credibility through standardization, clear accountability, workforce rebuilding, and sustained policy consistency.

Panel Four: From Pipeline to Power Plant: Expanding Natural Gas Delivery and Generation Capacity

Natural gas is positioned to serve as the main growth fuel for the U.S. power system over the next decade to meet fast load growth driven by data centers and re-industrialization. Natural gas is viewed as the only resource that can be deployed quickly and reliably while new capacity is built.

Rising demand itself is not the problem. Demand growth reflects economic expansion and should be a positive signal if supply and infrastructure are allowed to scale. Higher prices and reliability stress instead reflect policy and regulatory constraints that limit investment in generation and fuel delivery. The gas and power systems are now deeply interdependent, but their market and operational rules have not kept pace. Natural gas has shifted from a primarily baseload role to a balancing and reliability backbone, providing ramping capability when wind and solar output falls. Reliability depends not only on installed capacity but on fuel deliverability. Gas-fired plants expected to perform during peaks require firm pipeline transportation and adequate storage, yet many market structures do not compensate these attributes.

Infrastructure constraints are an important driver of affordability and reliability. Pipeline

bottlenecks and limited storage capacity were linked to higher electricity and gas prices, especially during cold weather. While demand has risen sharply over the past decade, storage and peak deliverability have barely increased. Expanded pipelines and storage are essential to connect large new loads, support gas-fired generation, and reduce the risk of curtailments.

The other major issue is market design and coordination. Priorities include building infrastructure where demand is growing, aligning gas and power market rules to reflect operational interdependence, and compensating reliability services, including performance during extreme weather. Reliability has a cost, and competitive markets struggle when asked to deliver firm service without paying for firm fuel arrangements. Behind-the-meter generation and data center self-supply could be part of the solution, provided they are supported by gas infrastructure. Supply-side fears that LNG exports or new loads will sharply raise domestic prices are not well supported, as sustained demand can increase new production and infrastructure.

Speed is the binding constraint, and better modeling and planning are needed to identify bottlenecks and prioritize investments. A gas-centered reliability strategy is achievable, but only with permitting reform, expanded pipelines and storage, and market rules that properly value firm deliverability and reliability.

Roundtable: Charting the Path Forward

The theme of the workshop, "Dominating power," reflects not a slogan but rather a strategic doctrine. Energy dominance now centers on shaping the hubs and networks that underpin national competitiveness, especially electricity supply for AI and data centers, dispatchable generation, LNG, permitting, and technology leadership. In this framing, abundant and reliable power functions as a geopolitical asset, similar to the role U.S. LNG exports play in global energy security.

Experience in Europe illustrates the risks of poorly sequenced liberalization. In the UK, low barriers to retail entry led to supplier failures and cost socialization, while in Germany regulatory and policy choices compounded system stress. These outcomes do not imply that markets are inherently flawed, but that results depend on market design and clear allocation of responsibility. European grid codes and network standards offer examples that could be adapted in a U.S. context.

Reliability and affordability are central challenges in U.S. power markets. Prolonged electricity shortages are politically intolerable, and the system has increasingly drifted away from being designed around end-user needs. Regional market structures often

diffuse accountability and weaken investment signals for firm, always-available resources, particularly in systems with high levels of subsidized intermittent generation. One potential reform is greater reliance on bilateral contracting by load-serving entities, with centralized markets focused on residual balancing rather than primary procurement.

Transmission planning is frequently misaligned with customer outcomes. The issue is not simply building more transmission, but building the right transmission, grounded in realistic load forecasts, disciplined planning, and clearer alignment with reliability and cost objectives.

Durability in policy and investment remains critical. Large swings in energy policy destabilize capital formation, reinforcing the need for a more stable framework anchored in competitiveness and affordability. Accelerating AI-driven demand, heightened voter sensitivity to electricity prices, and evolving legal constraints may help support a more durable and predictable policy environment.

Photo credit: Caleb Jasso, IER.
Report prepared by Batt Odgerel, EPRINC.

Recommended Resources

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