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Planning for a grid under pressure

Electricity load forecasting for
state energy offices

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Electricity demand is rising in the United States after almost 20 years of flat demand. US electricity generation set a record in 2025 for the second year in a row, totaling 4.43 thousand terawatt hours (TWh).¹ This demand is projected to rise further due to the proliferation of AI data centers, electric vehicles, heat pumps, and new industrial loads. PJM Interconnection, the century-old electricity market serving more than 67 million Americans across 13 states and the District of Columbia, has predicted over 3% annual load growth in its territory over the next 10 years.²

These developments, combined with economy-wide inflation since the COVID-19 pandemic, have increased prices of delivered electricity substantially in the past five years, making affordability a kitchen table issue that state policymakers need to address, while providing for future economic growth and reliability of the electricity grid.

Today's emerging loads differ from historical sources of load growth, rendering legacy approaches to electricity demand forecasting insufficient. To serve these novel sources of demand, the electricity sector should focus on modernizing resource planning.

Forecasting drives policy decisions

Load forecasting has been used by utilities for decades to facilitate data-driven decision-making in resource and infrastructure planning to avoid missing the mark on meeting grid needs. This helps them achieve their mandates for reliability, resource adequacy, and state goals and initiatives. However, accurate load forecasting can also help state energy offices (SEOs) identify opportunities within their jurisdiction to shield ratepayers from unnecessary infrastructure costs and support policy proposals with governors' offices, legislatures, and regulators.

As technical and policy advisors to all power purchasers, SEOs should add load forecasting as a strategic capability to inform legislation, program design, and infrastructure planning and to help achieve the objectives of affordability, reliability, and resource adequacy in a rapidly changing environment.

What makes forecasting difficult today

In April 2026, the National Association of State Energy Officials (NASEO) hosted a workshop with energy officials from six mid-Atlantic states and the District of Columbia on load forecasting. During the workshop, state energy officials identified three principal challenges with load forecasting in their states.³



Data access and transparency gaps: State energy officials cite challenges with obtaining meaningful insights from utility and regional load forecasts, or consistent, accurate, granular data to produce their own load forecasts. Without sufficiently detailed data providing insight into the drivers of load growth, SEOs may find it difficult to analyze and recommend policy responses to ambiguous load forecasts.

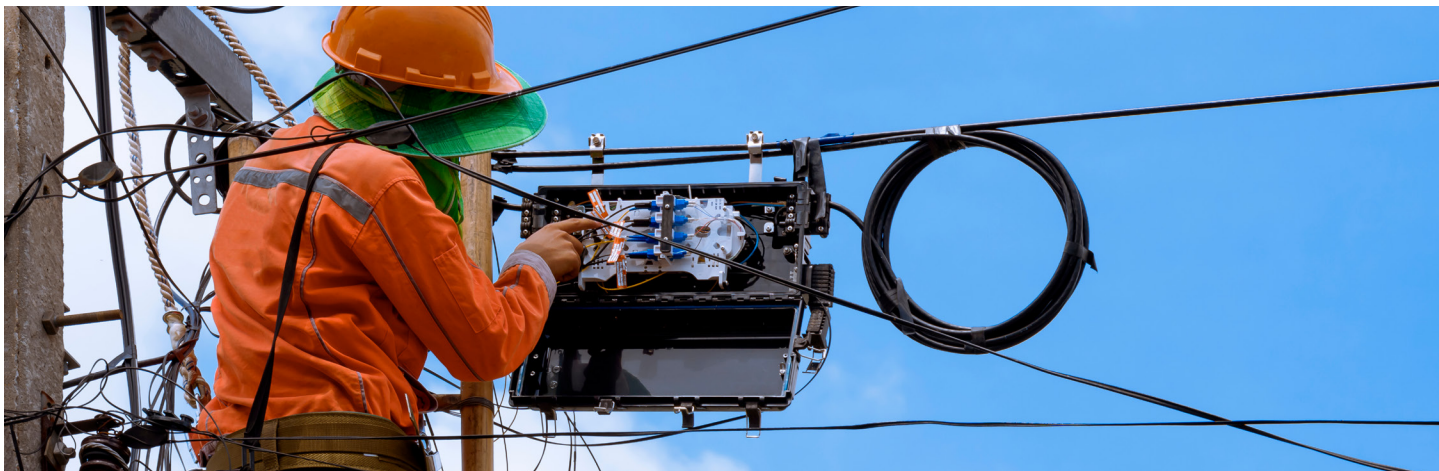


Uncertainty around increased loads on the grid: Regions of the country that are focused on electrification, increasing manufacturing facilities, and other economic development projects that require large constant loads create a significant challenge for load forecasting. Commercial maturity standards can differ by utility and regional grid operator, leading to the inclusion of commercially unviable projects in forecasts and sometimes causing projects to be double counted. This "phantom load" makes it difficult for SEOs to validate load forecasts and increases the risk of overstating future electricity demand.



Capacity and coordination constraints: Not all SEOs are in the same place on their load forecasting journey. While some SEOs are building in-house modeling capabilities, others are consumers of regional and utility load forecasts. Some states noted that utilities in their jurisdictions do not consistently produce load forecasts or integrated resource plans (IRPs).⁴





How SEOs can develop a load forecasting strategy

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Define and prioritize reasons for load forecasting capabilities

First, an SEO should identify and prioritize the purpose(s) of building load forecasting capabilities. These purposes may include providing background analysis for policy recommendations, engaging with utility IRP submissions to right-size infrastructure investment, responding to utility rate case requests to ensure electricity affordability, or designing state energy programs. Each use case requires different data inputs, modeling methodologies and tools, and levels of effort, so proper definition and prioritization of each use case is essential to success. By beginning with the end in mind, SEOs can monitor for the efficient spending of taxpayer dollars and support better outcomes for ratepayers.

Choose a fit-for-purpose forecasting methodology

With a clear understanding of purpose, SEOs can select the forecasting methodology best suited to their objectives and planning needs. There is an abundance of methodologies (and tools to execute them), but these can be broadly categorized across three dimensions: temporal, geospatial, and structural. Granularity can be tuned across each dimension according to specific goals, as well as the costs and benefits associated with increasing granularity.



Temporal granularity determines how well an SEO can understand electricity demand at a given moment in time, and ranges from measuring annual total energy consumption to measuring sub-hourly electricity demand. Increasing temporal granularity supports optimized infrastructure sizing, better peak load prediction, and improved utilization of variable resources like wind and solar.



Geospatial granularity determines how well an SEO can understand the electricity demand of a specific location, and ranges from measuring electricity demand at the independent system operator (ISO) or state level to the meter or customer level. Increasing geospatial granularity helps identify congestion and supports both reliability and improved utilization of variable resources.



Structural granularity describes how a modeling tool translates data inputs into results, and ranges from trend- or regression-based modeling to engineering simulations like power flow studies. Increasing structural granularity supports better program adoption and policy impact evaluation.

More granular forecasting can provide deeper insights, but it also increases data requirements. Inputs may include Supervisory Control and Data Acquisition (SCADA) and Advanced Metering Infrastructure (AMI) data, hourly load and generation profiles, dynamic customer behavior data, asset ratings, and other detailed operational information. SEOs can choose the methodology that meets their needs without imposing unrealistic data requirements, a task often requiring support from grid modeling consultants.

Assess the current state of load forecasting

After determining the reason for load forecasting and identifying a preferred methodology, SEOs should evaluate their current load forecasting capabilities. One method is by evaluating their data readiness and capabilities across some specific criteria. Below are some illustrative criteria by which SEOs can evaluate themselves:

-  Access to large utility project pipelines
-  Inputs from zonal/regional transmission planning
-  Data on adoption of programs such as demand response and demand side management as well as measurement & verification data
-  Experience with and access to macroeconomic modeling tools
-  Experience with and access to power flow modeling tools

Not all capabilities and data inputs are necessary for an SEO to produce or respond to load forecasts. For example, an SEO seeking to use load forecasting to design a demand response program has different data input needs than an SEO wanting to use load forecasting to provide input to a utility rate case proceeding.

SEO's also need to identify the other stakeholders in their states and their load forecasting capabilities, including utilities, grid operators, regulators, economic development agencies, and large-load developers. In many cases, SEOs will need to source modeling data inputs from one of these stakeholders. It can therefore be more difficult for an SEO to grow its load forecasting capabilities in an ecosystem where the data inputs for load forecasts do not exist or are not shared between stakeholders.

Improve data access and make strategic hires

After deciding on a fit-for-purpose forecasting methodology, SEOs can review their data readiness and capabilities and decide which gaps to close. Improving data access often requires determined engagement from stakeholders, for example regional grid operators, utilities, and public utility commissions. SEOs should develop capabilities alongside external collaborators including their peers, national laboratories, and consultants.

Using forecasts to inform policy and planning

The roadmap toward better load forecasting does not end with simulation outputs. Returning to the purpose can help translate outputs into action. Properly leveraged, more accurate load forecasts can clearly explain to policymakers the costs and benefits of their energy policy choices, provide justification for state energy program funding, assist with equitable cost allocation during utility rate case proceedings, and ensure grid reliability in an environment of high load growth.

Finally, SEOs should maintain flexibility in their load forecasting ambitions, revisiting modeling assumptions and tools as markets, policies, and project pipelines evolve.

In today's environment of electricity demand growth and affordability concerns, load forecasting is a strategic planning capability. SEOs who embrace this new challenge can provide stronger policy advice to their governors and state legislatures, engage more intelligently with other grid stakeholders, and drive better infrastructure decisions. In turn, this capability can better protect ratepayers while enabling economic growth.



Endnotes

1. "[U.S. electricity generation in 2025 hit a record again](#)," U.S. Energy Information Administration, March 5, 2026.
2. "[2026 PJM Load Forecast Report](#)," PJM Resource Adequacy Planning Department, January 14, 2026.
3. [NASEO Mid-Atlantic Regional Meeting](#), April 7-8, 2026, Washington, DC.
4. These findings are compiled from [NASEO Mid-Atlantic Regional Meeting](#) workshop participants during pre-workshop interviews and facilitated workshop sessions.

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