

Fuel Supply | Generation: Secure and Scale an Evolving Fuel Mix

Summary of Comments - August 13, 2025

On August 13, 2025, OurEnergyPolicy hosted a discussion that unpacks the role of fuel supply in the grid of the future. Find the recording [here](#).

SPEAKERS



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OurEnergyPolicy is a non-partisan organization. The following represents a summary of comments from the panelists.

Summary of Key Points

- Weather-dependent energy resources like solar and “just-in-time” resources like natural gas characteristic of the energy transition create new management challenges to the grid.
- Storage capacity, distributed energy resources, inter-regional transmission, and nuclear power improve grid reliability.
- Careful planning and using a “whole system” approach can mitigate transmission needs, reduce costs, and accelerate project timelines.
- Financial mechanisms must adapt to the evolving needs of the grid.

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Bolstering Grid Reliability

- Over the past 20 years, natural gas grew from 15% of generation to ~40%.
- In Q1 2025, solar accounted for ~69% of new generation capacity added to the grid.
- The increased reliance on weather-dependent and “just-in-time” resources--such as solar and natural gas, respectively-- requires strategies to maintain grid reliability.
- Nuclear power plants typically operate 24/7 with a ~94% capacity factor, making them a reliable baseload energy provider.
- Availability of transmission infrastructure is the greatest risk to solar capacity.
 - Development of inter-regional transmission would optimize solar generation.
 - Storage capacity and distributed energy resources also create further demand flexibility for renewable energy sources.
- Replacing decommissioned coal plants with small modular reactors utilizes existing connections to grid infrastructure, employs local workforce, and reduces cost.
- Distributed resources and microreactors can bolster microgrids with minimal transmission capacity.

Load Growth and Supply Chains

- Expected load growth is less predictable with electrification efforts and the addition of energy-intensive data centers.
- The true pressure placed on the grid by the scaling of AI is yet to be determined.
 - Similar to the expected load growth with the advent of the internet, the actual load growth could be significantly less than expected.
- The primary bottleneck in nuclear supply chains is enriched uranium.
 - While uranium naturally occurs worldwide, most enrichment capacity lies in Russia. Financial constraints hinder the growth of U.S. enrichment capacity.

Further Readings Highlighted

- [Characteristics and Risks of Emerging Large Loads](#)
- [2024 Long-Term Reliability Assessment](#)
- [Interregional Transfer Capability Study \(ITCS\)](#)
- [Potential Customer Benefits of Interregional Transmission](#)
- [Virtual Power Plant Flipbook](#)