Flexible Interconnections for Large Loads: Regulatory and Tariff Considerations

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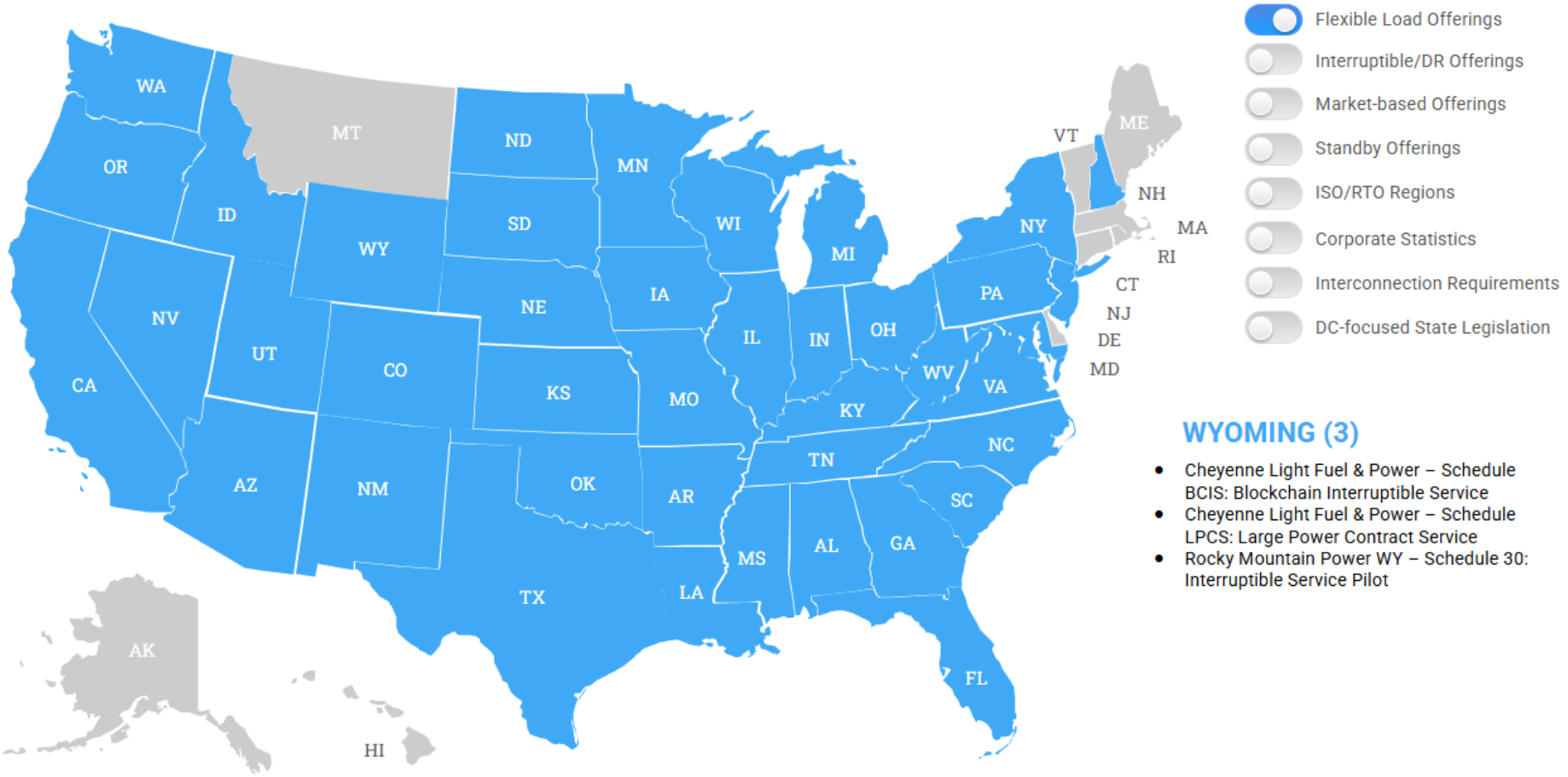
2026 ESIG SUMMER WORKSHOP
DENVER, CO
JUNE 17, 2026

Brattle

Flexibility Traditionally Focuses on Resource Adequacy

The Electric Power Research Institute has identified flexible load tariffs in almost every state; many examples are interruptible service or load curtailment which are not focused on data centers but can apply to large loads.

STATES WITH FLEXIBLE LOAD OFFERINGS



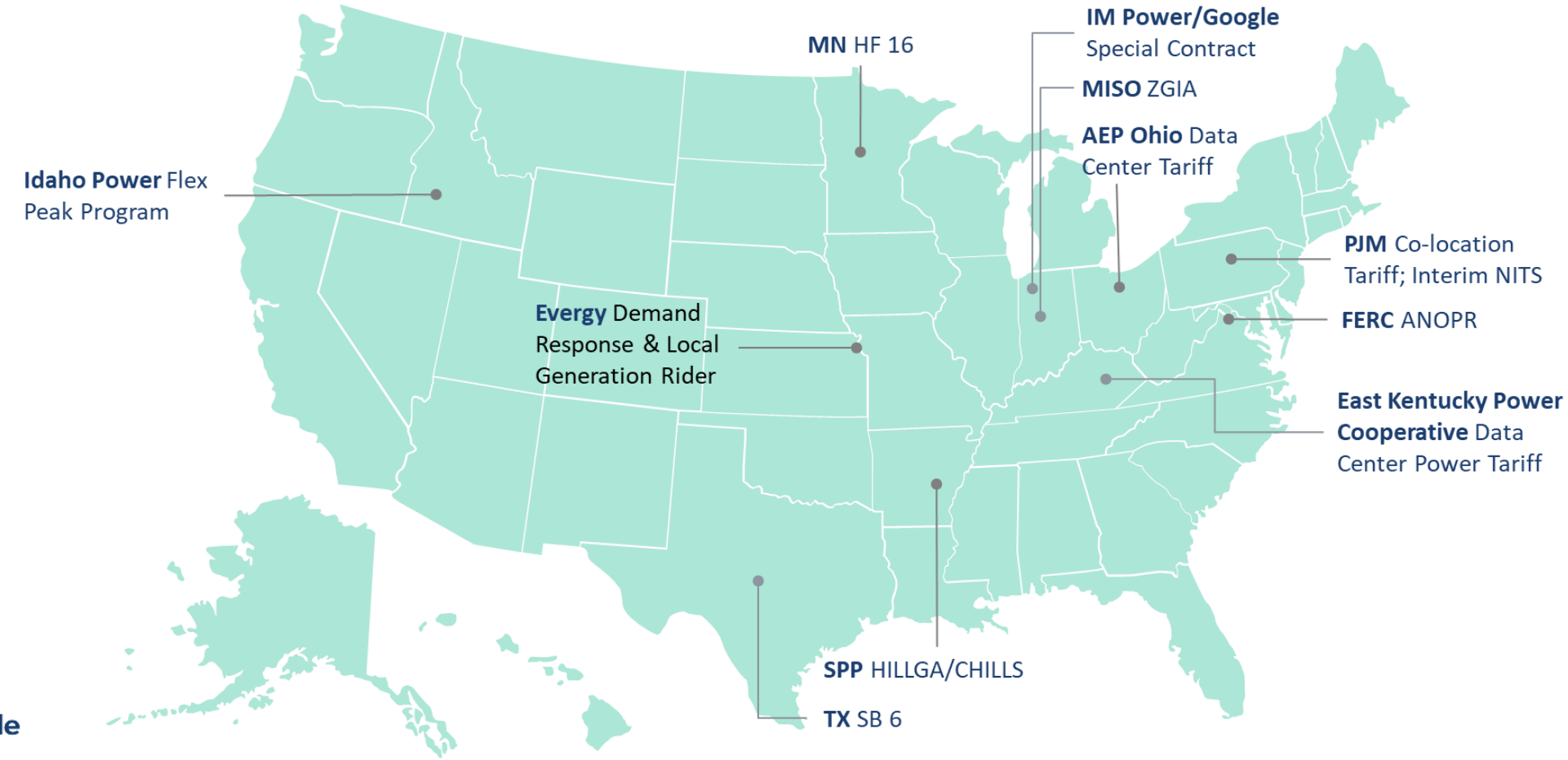
WYOMING (3)

- Cheyenne Light Fuel & Power – Schedule BCIS: Blockchain Interruptible Service
- Cheyenne Light Fuel & Power – Schedule LPCS: Large Power Contract Service
- Rocky Mountain Power WY – Schedule 30: Interruptible Service Pilot

Challenges that Large Loads Pose Put Flexibility in New Focus

The next generation of flexible interconnection rules and programs are being introduced through federal and state legislation, regulations, utility and RTO tariffs—addressing both resource adequacy and transmission needs

NOTABLE FLEXIBLE INTERCONNECTION DEVELOPMENTS

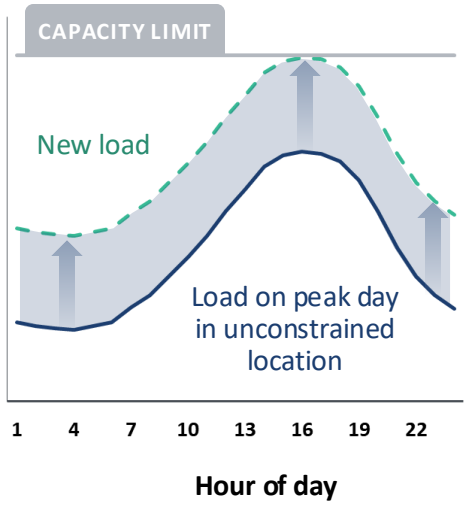


Flexible Interconnection Helps Improve System Utilization

System utilization can be improved by adding new load when and where there is available capacity

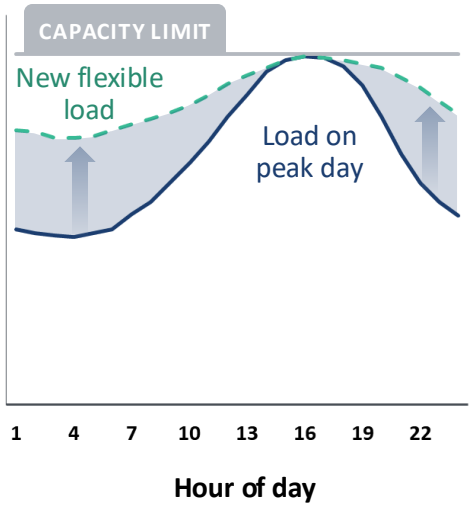
1

Add new load in **locations** where sufficient headroom already exists on the system.



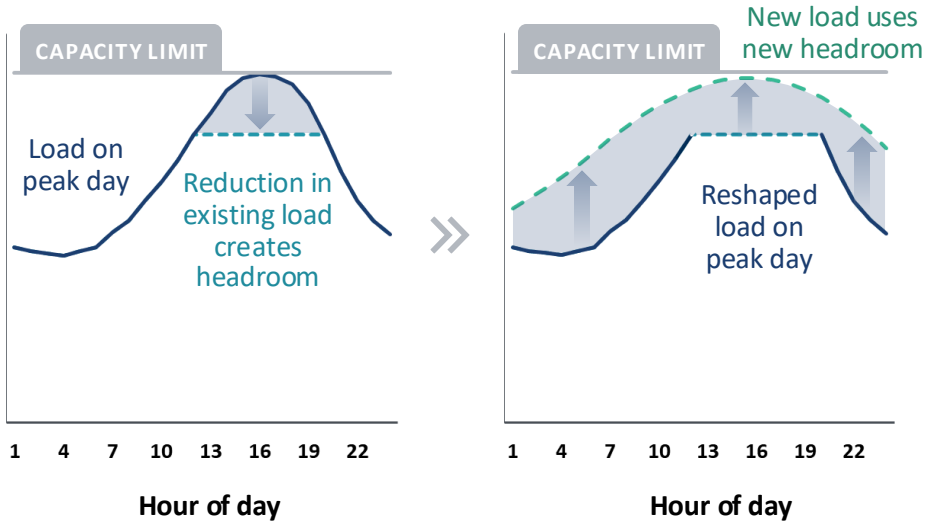
2

Add new load at **times** when there is spare capacity. This is possible if the new customers are flexible and/or can self-supply during peak conditions.



3

Incentivize technologies and behavioral changes that reduce peak demand of existing load. This creates new headroom on the system, which can then accommodate the addition of new load.



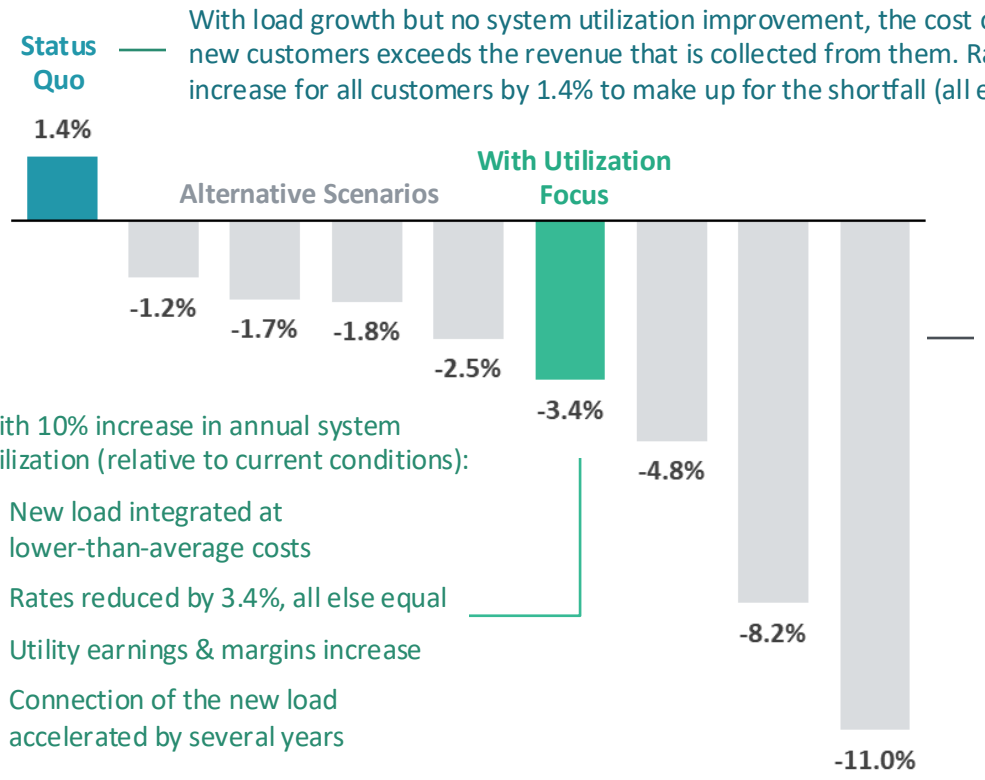
Source: The Untapped Grid, Brattle, 2026

The Impacts of Improved System Utilization: An Illustrative Example

In this illustrative analysis, improving system utilization can reduce customer bills and accelerate the connection of new load while still allowing utility earnings to grow relative to current levels, all else equal.

All-in Average Rate Impact Due to Load Growth

For various characterizations of the power system



INTERPRETING THE RESULTS

Proof-of-concept. Tailored, jurisdiction-specific analysis is needed to understand the opportunities for any given system.

Other rate impacts. This study does not analyze other factors that could independently drive rate changes, such as the replacement of aging transmission and distribution (T&D) infrastructure or fluctuations in natural gas prices.

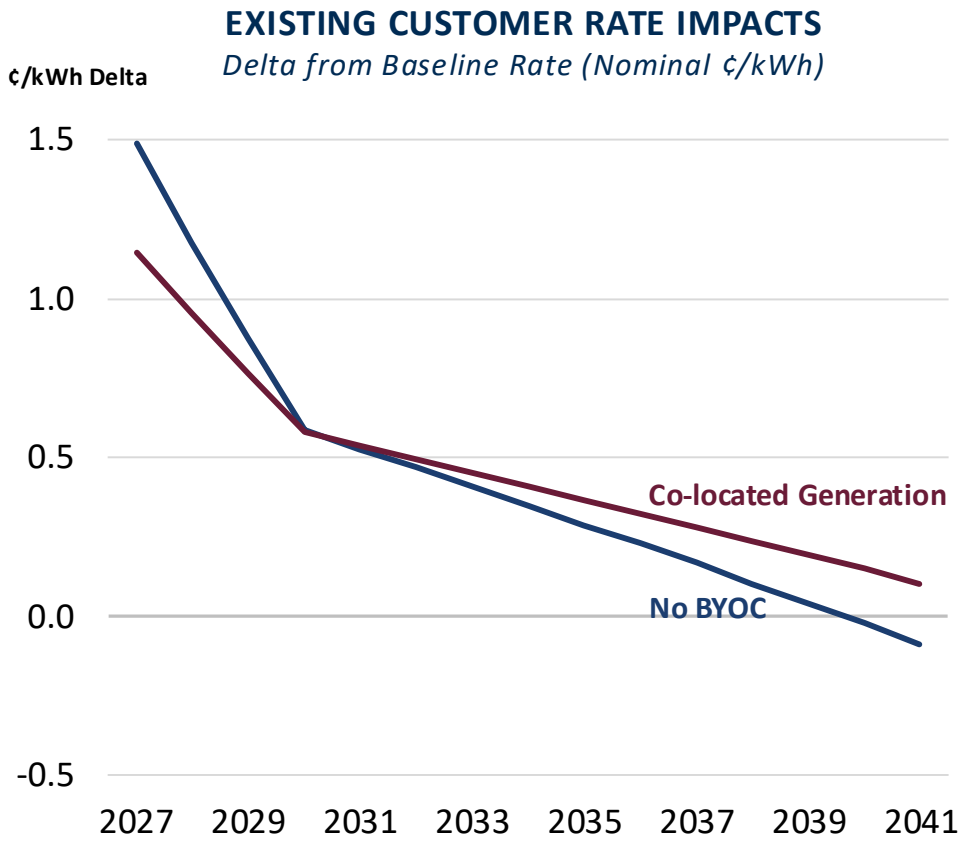
Rate design. In practice, rate design can also be an effective tool for mitigating cost shifts from new loads to existing customers.

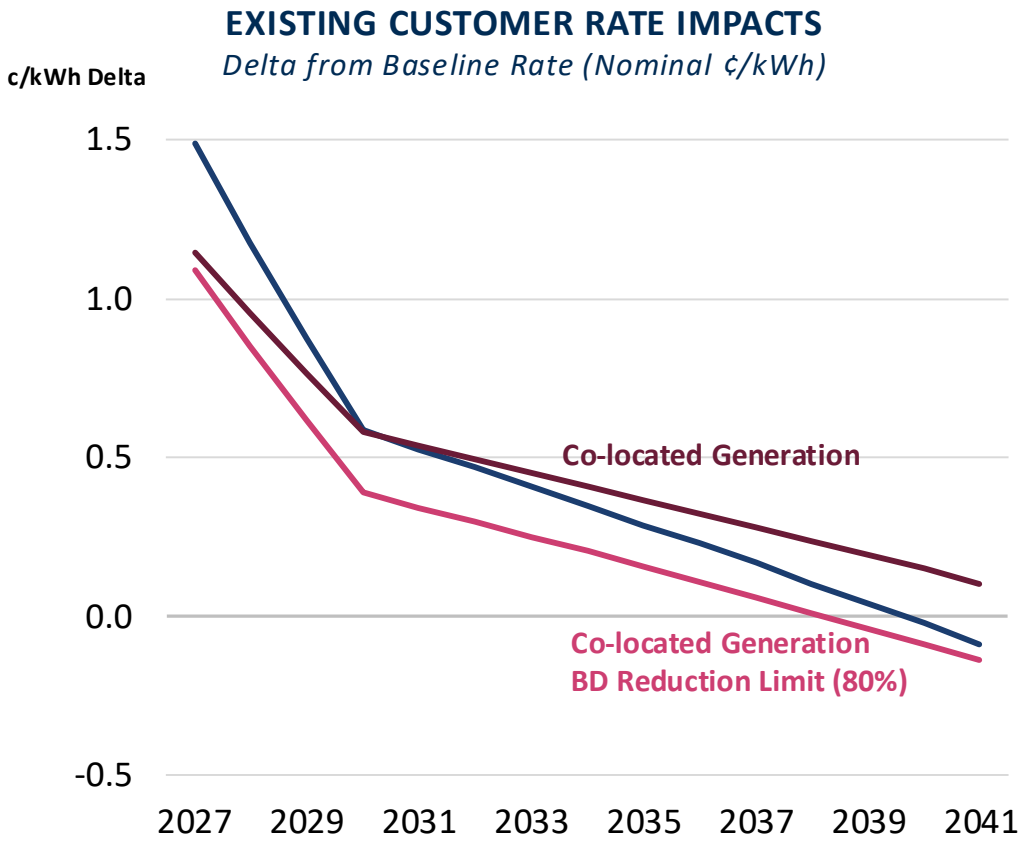
Policy implications. This paper quantifies the impact of increased system utilization but does not propose specific policies or programs in this area.

Source: The Untapped Grid, Brattle, 2026

Beneficial Flexible Interconnections Require Effective Integration with Tariff Design…

Thoughtful integration of flexible interconnection and existing/new tariffs for large loads is needed to achieve rate reduction benefits for existing customers

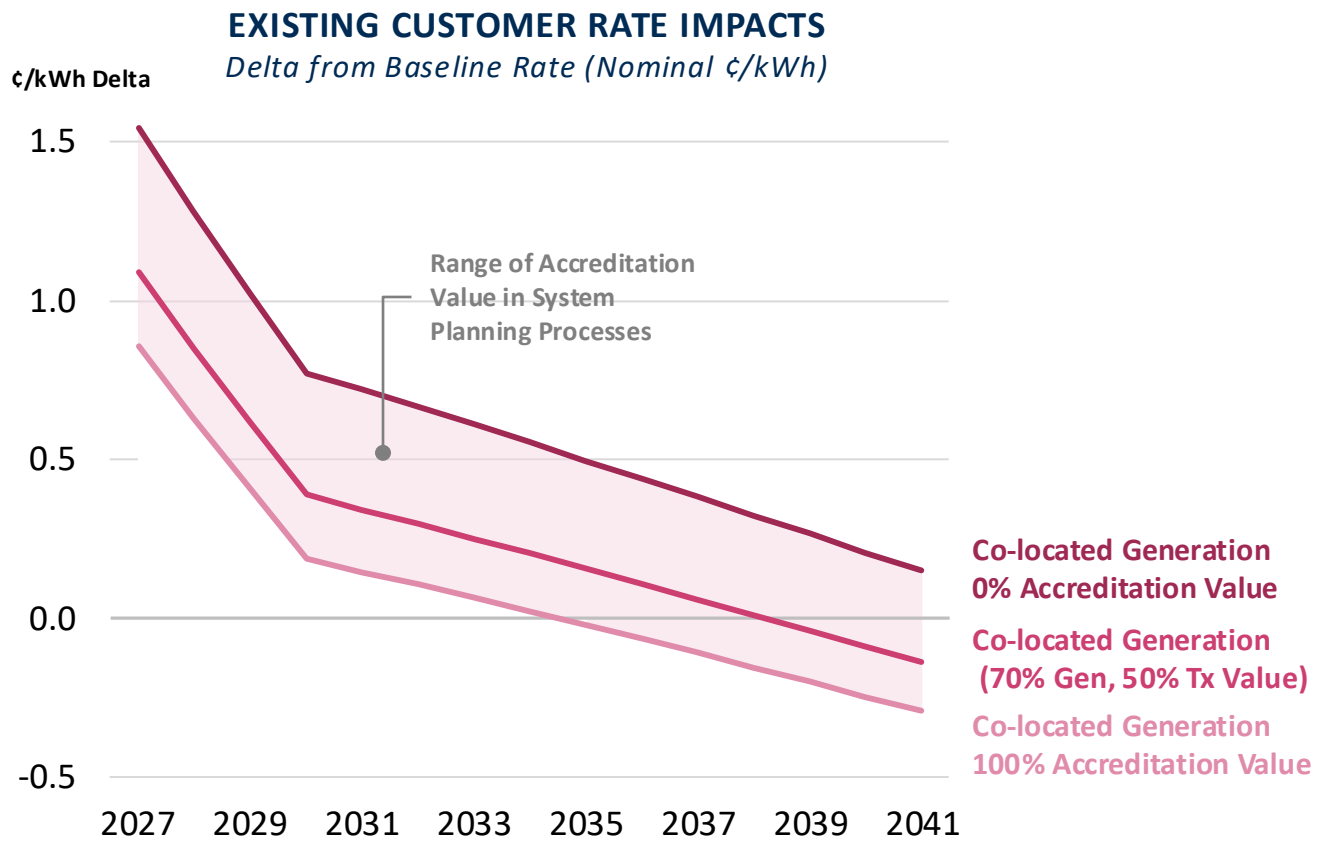




Note and source: 500 MW customer ramps up gradually until 2030. 40% of large customer's load is served by co-located generation resource, which receives 70% generation value and 50% transmission value. Preliminary results from ESIG Task Force on Large Load Rate Impacts.

…And System Planning

Maximizing the value of flexible interconnection to the power system and existing customers requires (i) large loads to be flexible in ways that benefit the system and (ii) that flexibility properly recognized and integrated into broader system planning



Note: All have billing determination reduction limit of 80%. Preliminary results from ESIG Task Force on Large Load Rate Impacts.

Conclusion

Load flexibility is a tremendous grid resource—and it remains largely untapped. Unlocking this resource in a way the benefits the system, new and existing customers alike will require thoughtful planning, pricing, and governance

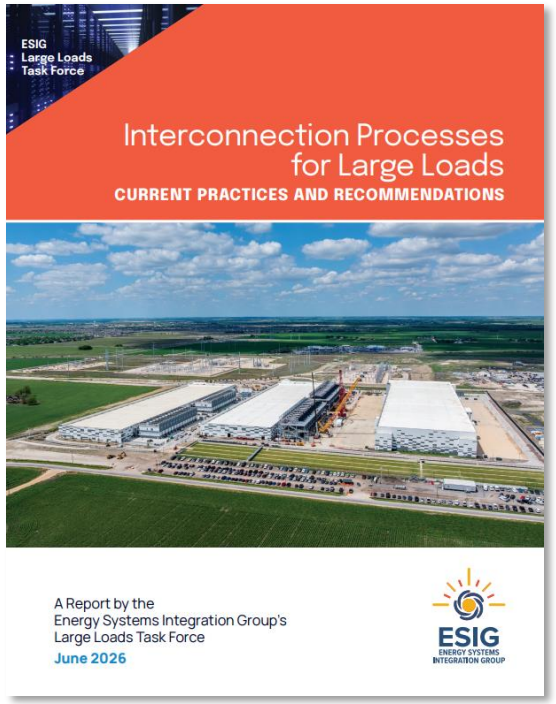
- **Making flexibility a forecasting and planning input**: forecast and plan to the flexible shape of load, rather than modeling every megawatt as firm and coincident

- **Integrating flexibility with cost allocation and tariff design processes**: assign cost responsibility based on the firm portion, and possibly more if the objective is to reduce rates for existing customers

- **Answer the control-rights question**: under what control rights, commercial model, and operational priority can flexibility actually be delivered?

Further Readings

- Frick, N. M. and V. Srinivasan, 2026 Large Load Literature Review and Data Sources, LBNL, May 2026
- Kahrl, F. and N. M. Frick, Speed to Power: Solutions for Accelerating Large Load Connections, LBNL, June 2026
- Hledik et al., The Untapped Grid: How Better Utilization of the Power System Can Improve Energy Affordability, Brattle, March 2026
- Levitt et al., Accelerating the Integration of New Co-located Generation and Loads, Brattle, April 2025
- Levitt et al., Proposed Options for Bilateral Integration of Generation Portfolios and Load, Brattle, September 2025



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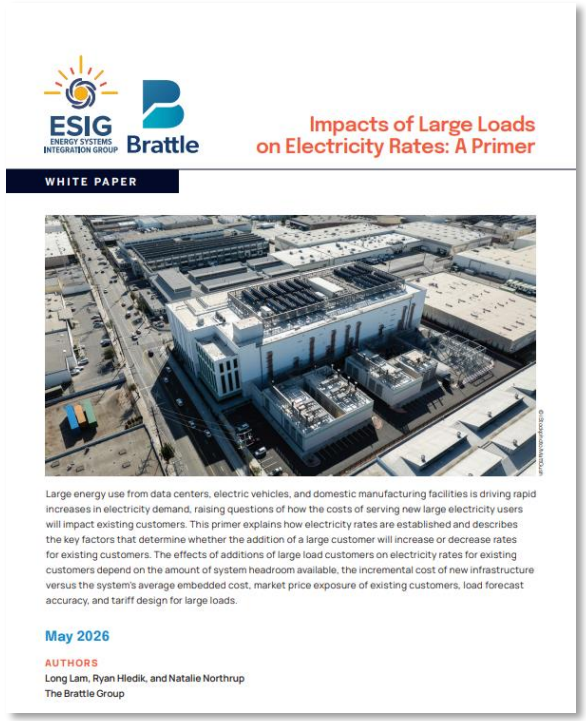

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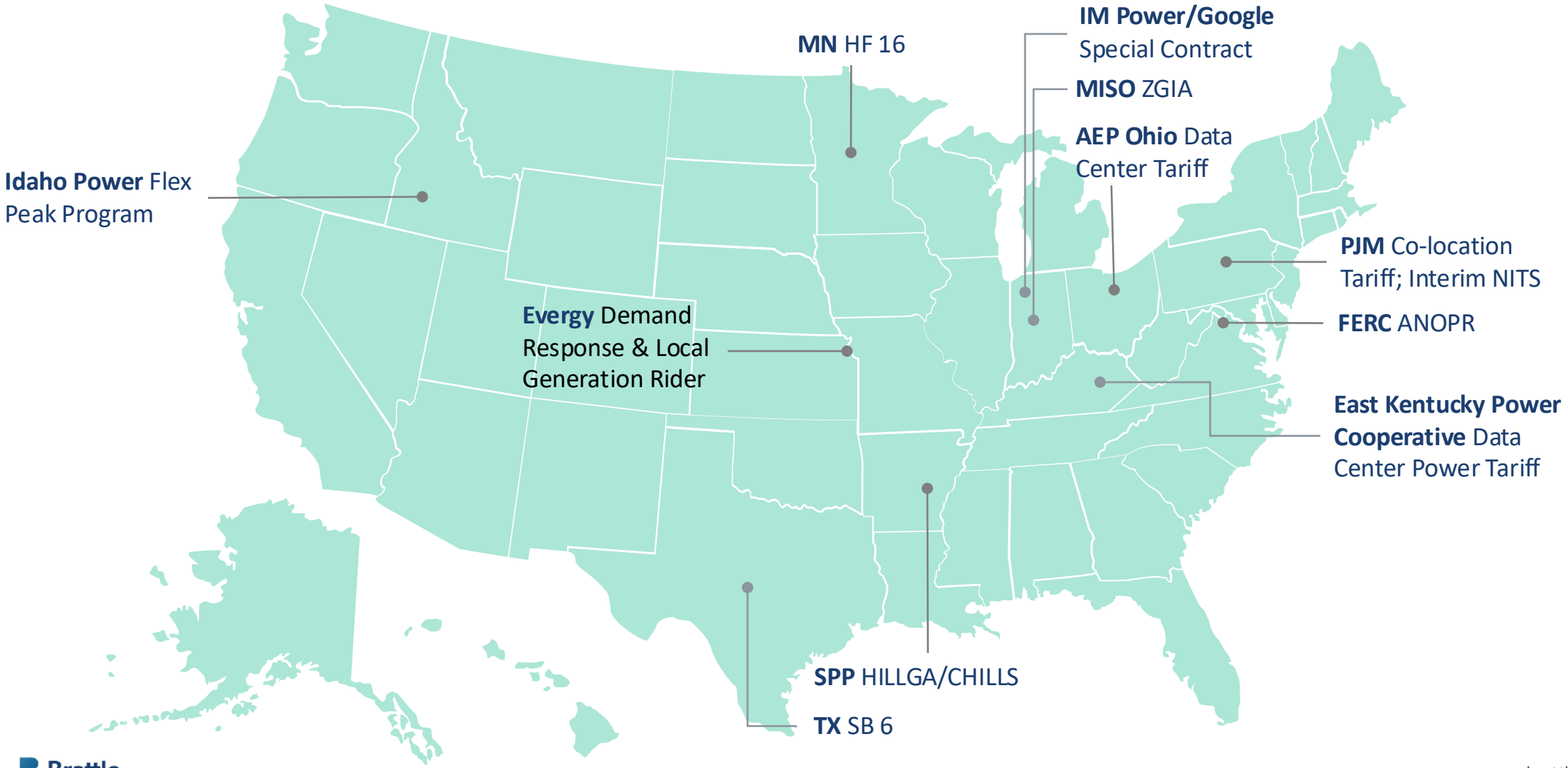
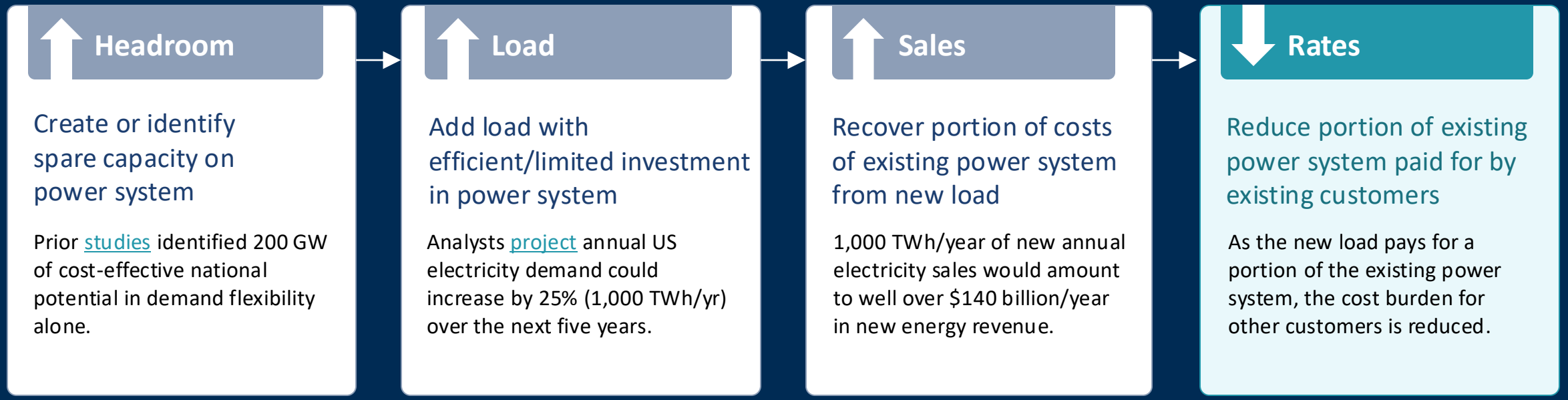
Appendix

Current Focus on Flexible Interconnection of Large Loads



Converting Utilization Improvements into Downward Rate Pressure

Improvements in system utilization enable capital-efficient load growth, which puts downward pressure on rates.



Tools for improving system utilization: Batteries, HVAC controls, EV charging controls, smart panels, time-varying rates, flexible interconnection policies, targeted energy efficiency, grid-enhancing technologies, data center flexibility, improved system planning…

Approach Overview

We analyze the rate impacts of adding load to an illustrative utility system for two scenarios: one scenario focuses on improving system utilization, and the other scenario does not.

1

Define illustrative characteristics of utility system and new load

- Illustrative mid-sized utility
- 3,000 MW of existing peak demand
- 14 cents/kWh average all-in retail rate
- Marginal costs exceed average costs
- 1,000 MW of new load:
- 500 MW transmission-connected (e.g., data center)
- 500 MW distribution-connected (e.g., transportation electrification).

2

Calculate rate impact of adding load *without* improving system utilization (status quo)

- Load growth served entirely through investment in traditional infrastructure
- Retail rate based on average costs; does not fully recover new incremental costs
- Costs not recovered from the new load are collected through a uniform rate increase for all customers

3

Calculate rate impact of adding load *with* focus on improving system utilization

- Load accommodated with reduced investment in new infrastructure
- Half of new transmission-level load connects flexibly
- 500 MW portfolio of distributed energy resources is developed at average net cost to utility of $50/kW-yr.
- Capacity contribution of DERs is derated to reflect that it offsets only a portion of needed infrastructure