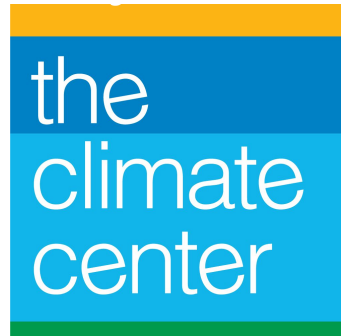


Demand Flexibility as Affordability Solution

California Climate
Policy Summit 2026



New Challenges

After years of stable rates and reliable service, the US power sector needs solutions to new challenges.



“Over the past few years, millions of Americans have seen their electricity bills skyrocket.”

Washington Post, January 15, 2026



“Discontent over rising power bills has become a hot political issue that is expected to spill into the 2026 midterm elections.”

Wall Street Journal, December 29, 2025

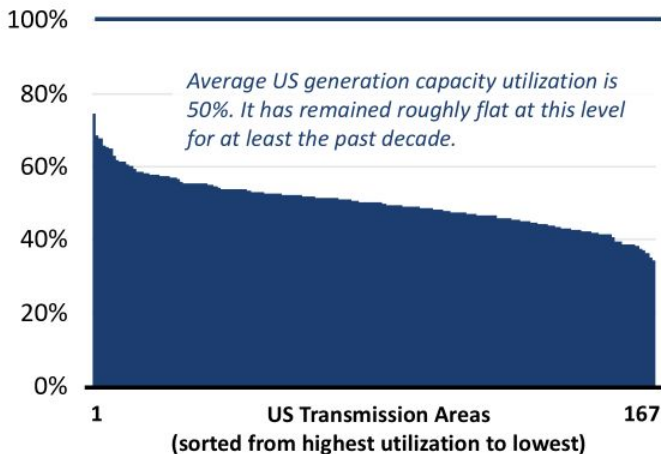


“Concern about rising electricity rates has emerged as a leading economic and political issue. Rising electricity prices played a big role in recent elections, including statewide races in Georgia, New Jersey and Virginia.”

New York Times, December 16, 2025

Making better use of the existing power system can put downward pressure on rates.

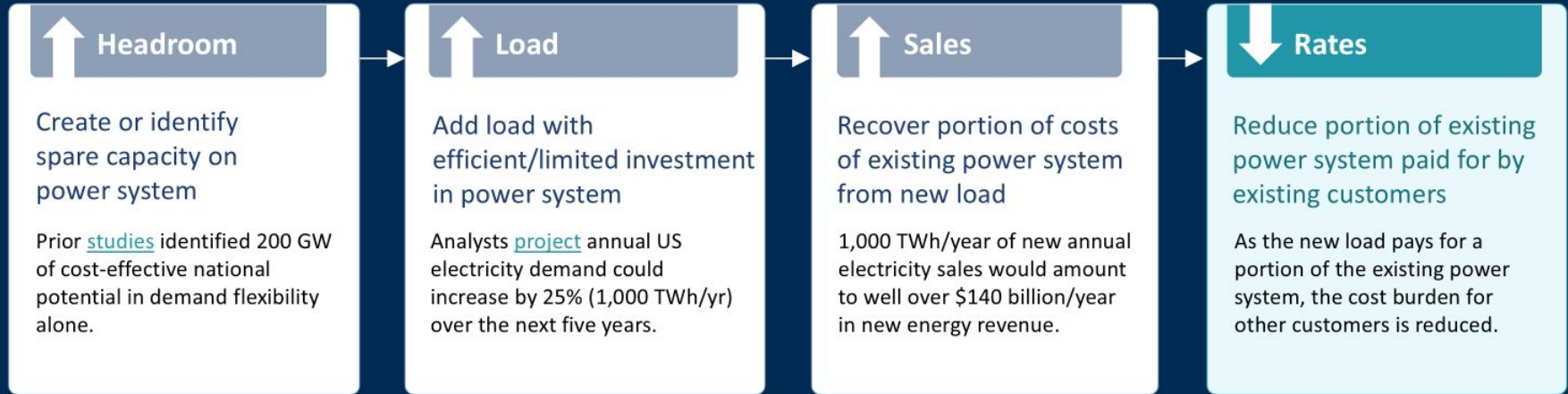
US Generation Capacity Utilization, by Transmission Area
2022–2024 Average



Note: System utilization is represented here as a region’s average annual electricity demand divided by its peak demand plus an illustrative planning reserve margin of 15%.

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 key 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

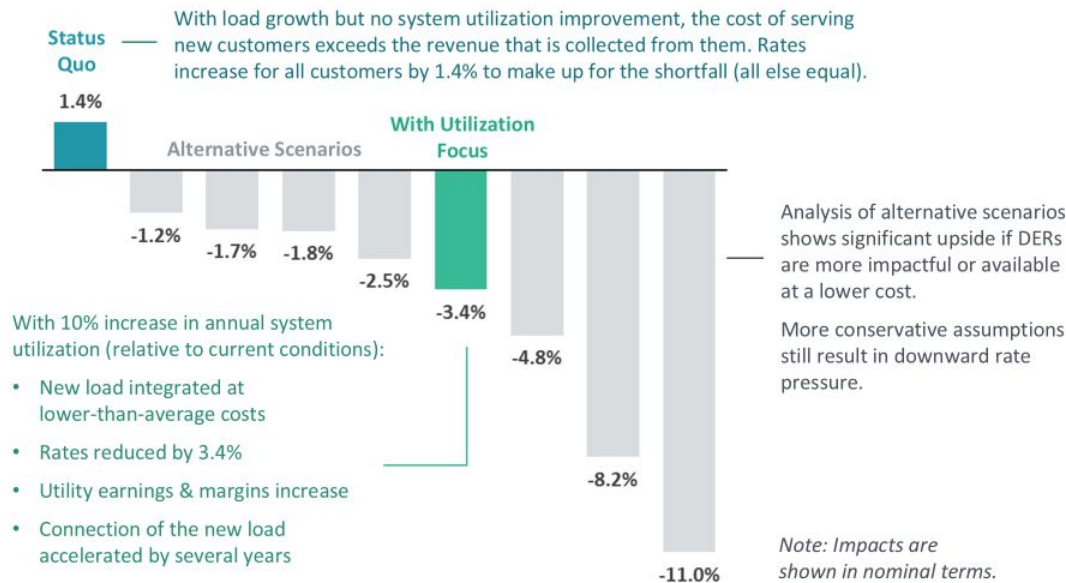
Calculate rate impact of adding load *with* focus on improving system utilization

- 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

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.

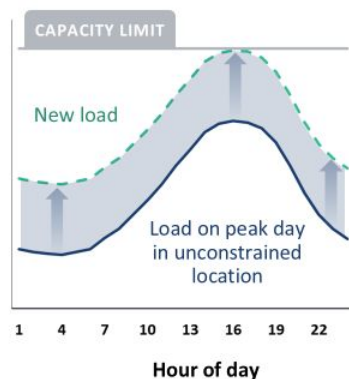
Policy implications. This paper quantifies the impact of increased system utilization but does not propose specific policies or programs in this area.

The Three Ways to Improve System Utilization

System utilization can be improved by adding new load when and where there is spare capacity. System headroom can be created through flexibility, efficiency, and other cost-effective capacity solutions.

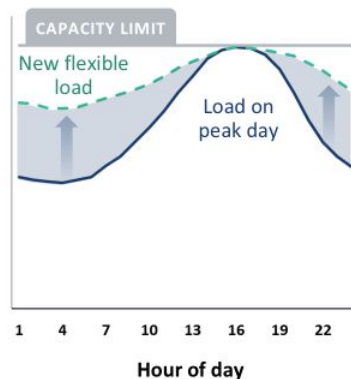
1

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



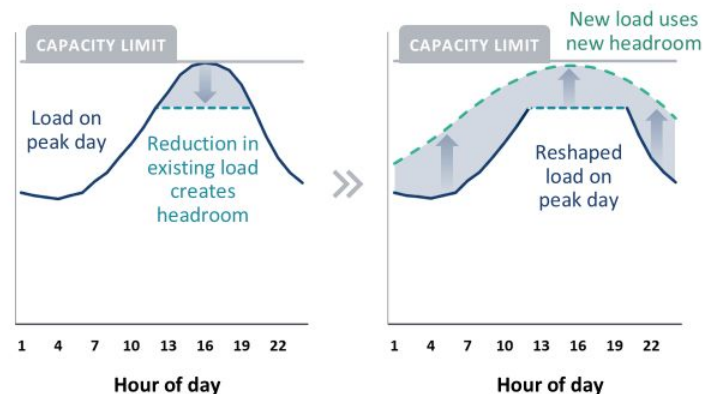
2

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.



Note: These are highly simplified conceptual illustrations. The nuances of how improved system utilization would put downward pressure on rates are discussed in more detail throughout this report.

Ensuring Beneficial Outcomes

As decision-makers develop policies or programs aimed at improving system utilization, the following considerations will increase the likelihood that the outcome reduces rates for all customers.

$$\text{System Utilization (\%)} = \frac{\text{Total energy delivered or produced on system over a given time period}}{\text{Available system capacity over the same time period}}$$

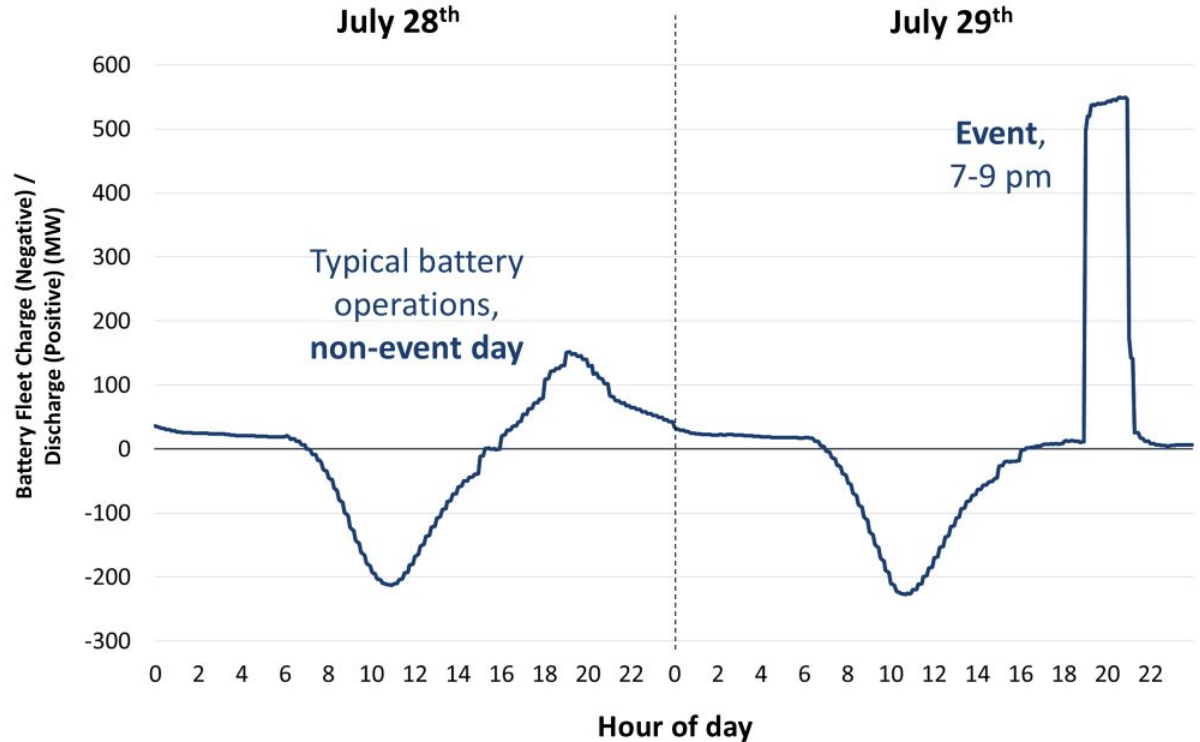
Key considerations

1. System Fundamentals
2. Interaction with Rates
3. Cost-Effectiveness
4. Diminishing Returns
5. Reporting
6. Timescale
7. Applicable System
8. Geographic Granularity
9. Business Model Innovation
10. Weather Effects
11. Interaction with Decarbonization Goals

See report for further discussion.

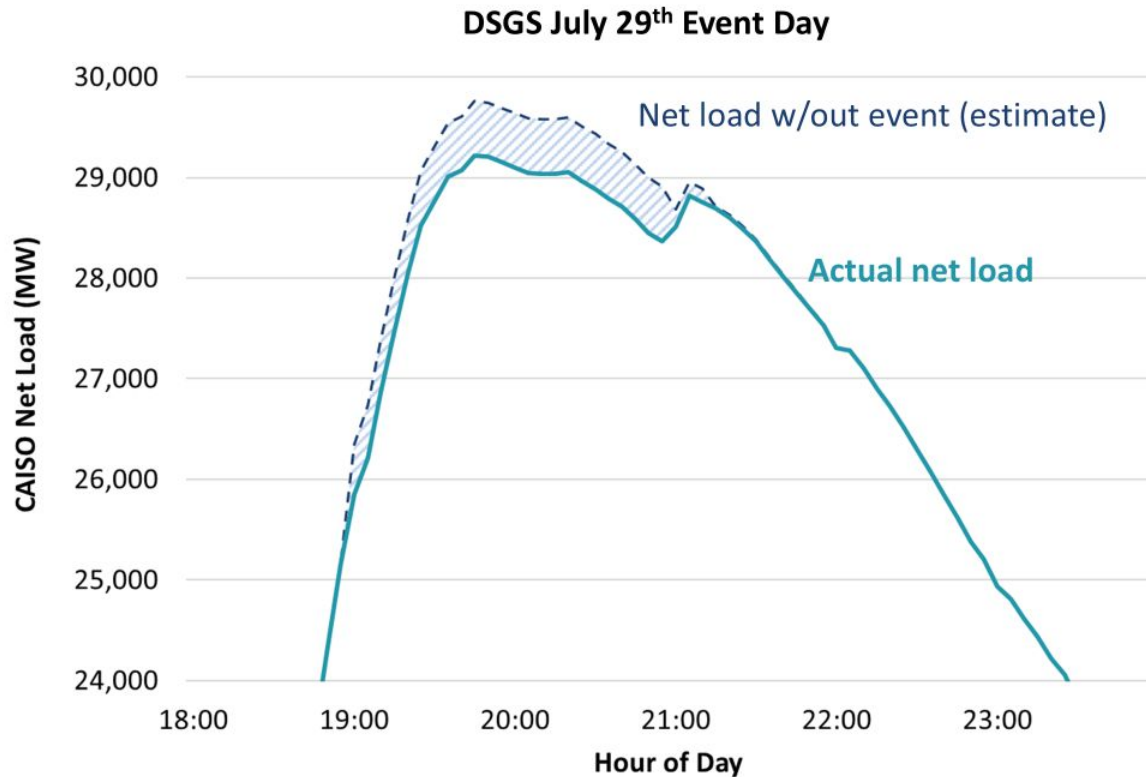
California example: Demand Side Grid Support (DSGS)

- A July 29 VPP test event included over 100,000 residential participants
- 539 MW average output between 7 and 9 pm
- “Largest test of its kind ever done in California—and maybe the world.” - PG&E
- Could scale to 1,300 MW in the next few years



DSGS as a utilization tool

- **Cost effective:** System benefits outweigh program administrative and incentive costs
- **Scalable:** Started in 2023 and already achieved 700 MW and counting
- **Long lasting?**



Notes: Net load sourced from [CAISO](#) and reflects actual demand less solar and wind output. Baseline net load in the absence of the event was constructed using 5-minute and 15-minute telemetry data provided Tesla Energy and Sunrun, respectively. All battery output is shown as a reduction in net load, including exports to the grid.