

Planning to Prices

Managing Uncertainty in Electric Power
Systems and Energy Markets

November 5, 2025



Global advisory,
technology services
provider

50+ years in the
energy business

Over 1,100 energy
experts across North
America, Europe,
Asia and Africa

Carbon Neutral since
2006

51% Female Leaders

Top 60 utilities
in North America

Supports **all major
energy NGOs, federal
agencies, and state
DOEs** on energy issues

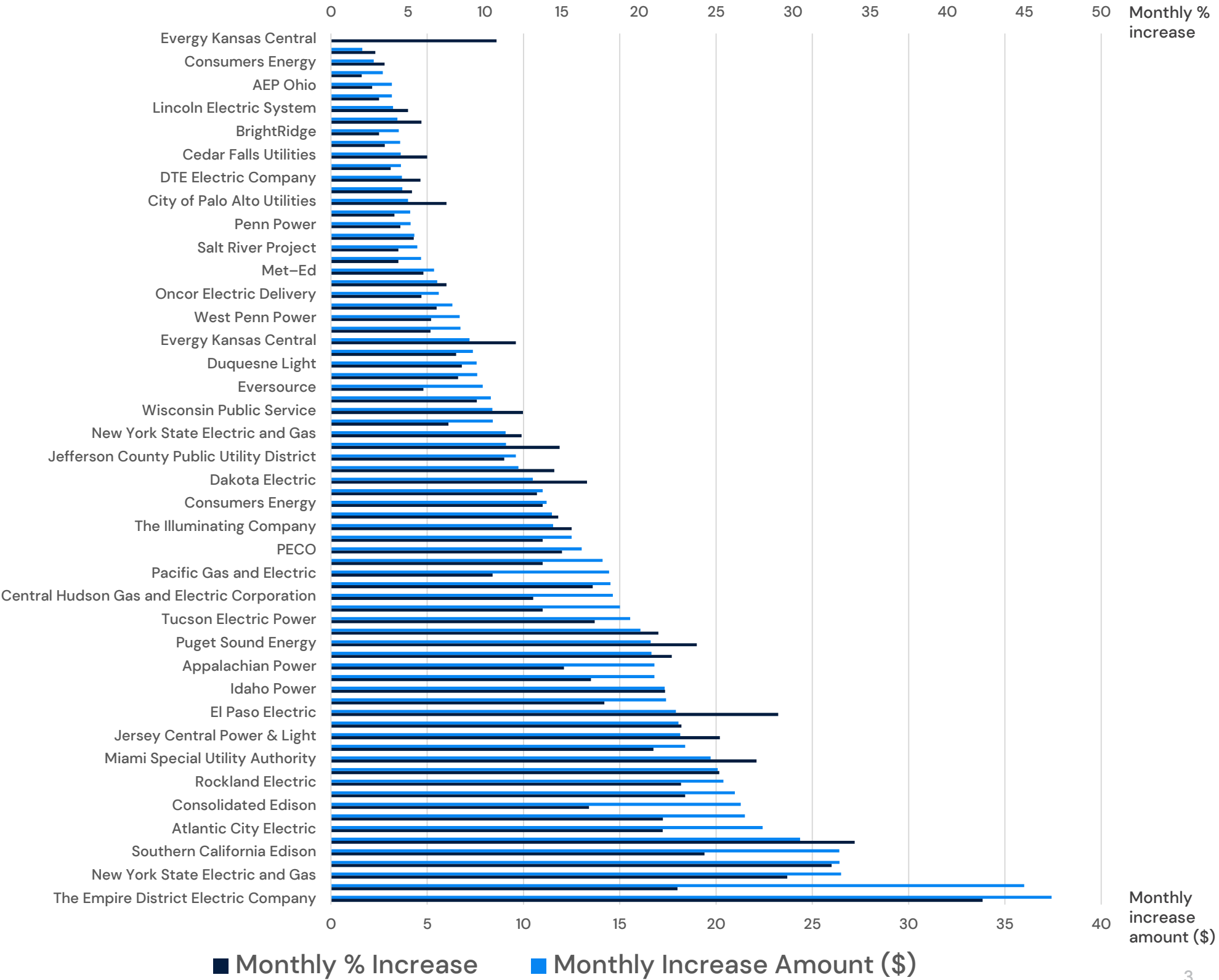
**Largest implementer
of electrification
programs** in the U.S

250+ energy
programs and **\$3.1B**
in energy efficiency
rebates



Residential rates are increasing

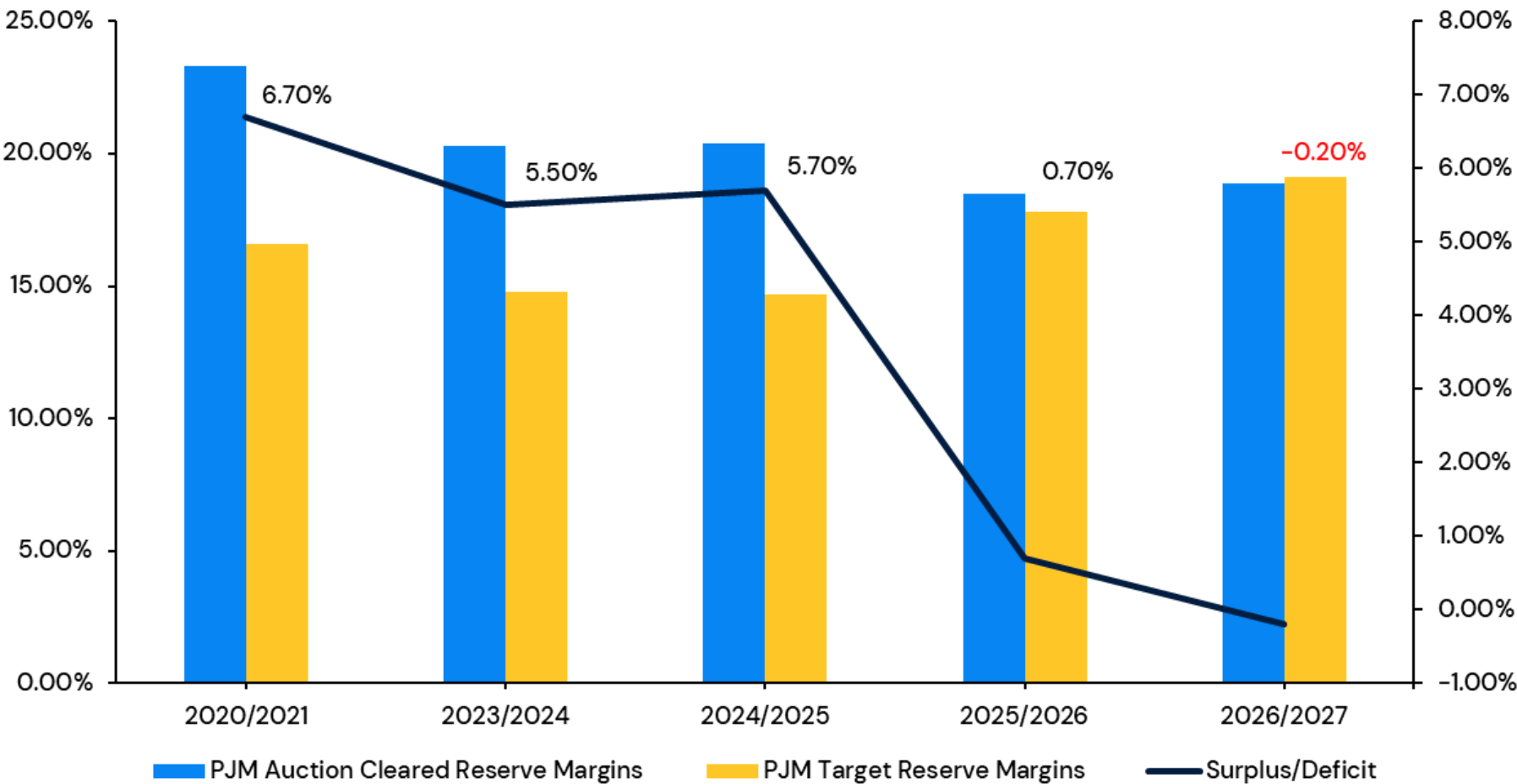
Year-on-Year change June 2024-June 2025 approached 7% nationally



Reserve margins are dropping

Rapid erosion of reserve margins due to accelerated retirements, load growth, and emphasis on winter reliability have driven capacity prices to unprecedented levels.

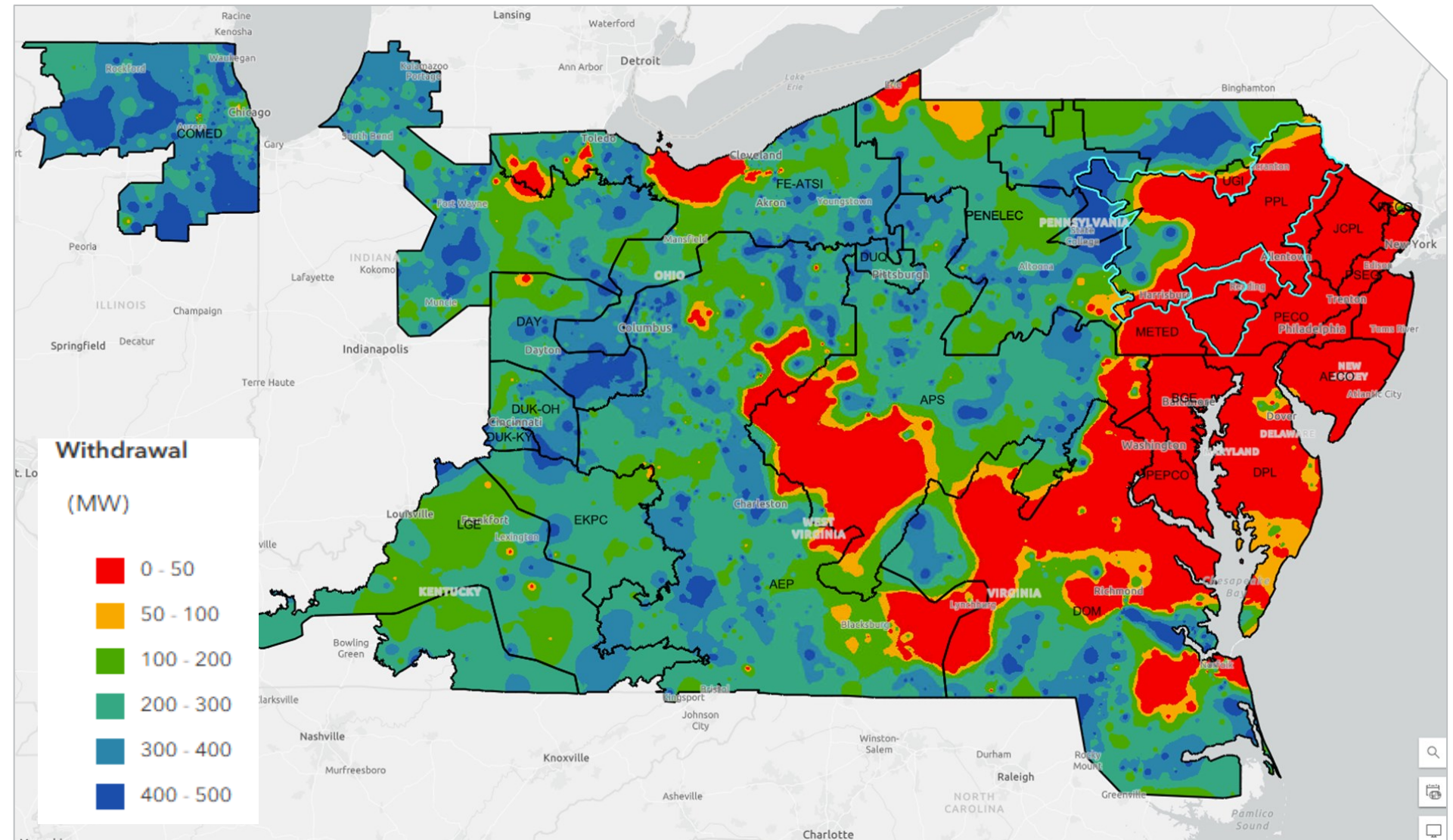
PJM reserve margins (%)



Grid withdrawal capacity tightening

Limited opportunities for large load to connect to the grid in the near-term.

\$2 billion in transmission reinforcements may be required beyond what has already been approved in PJM.

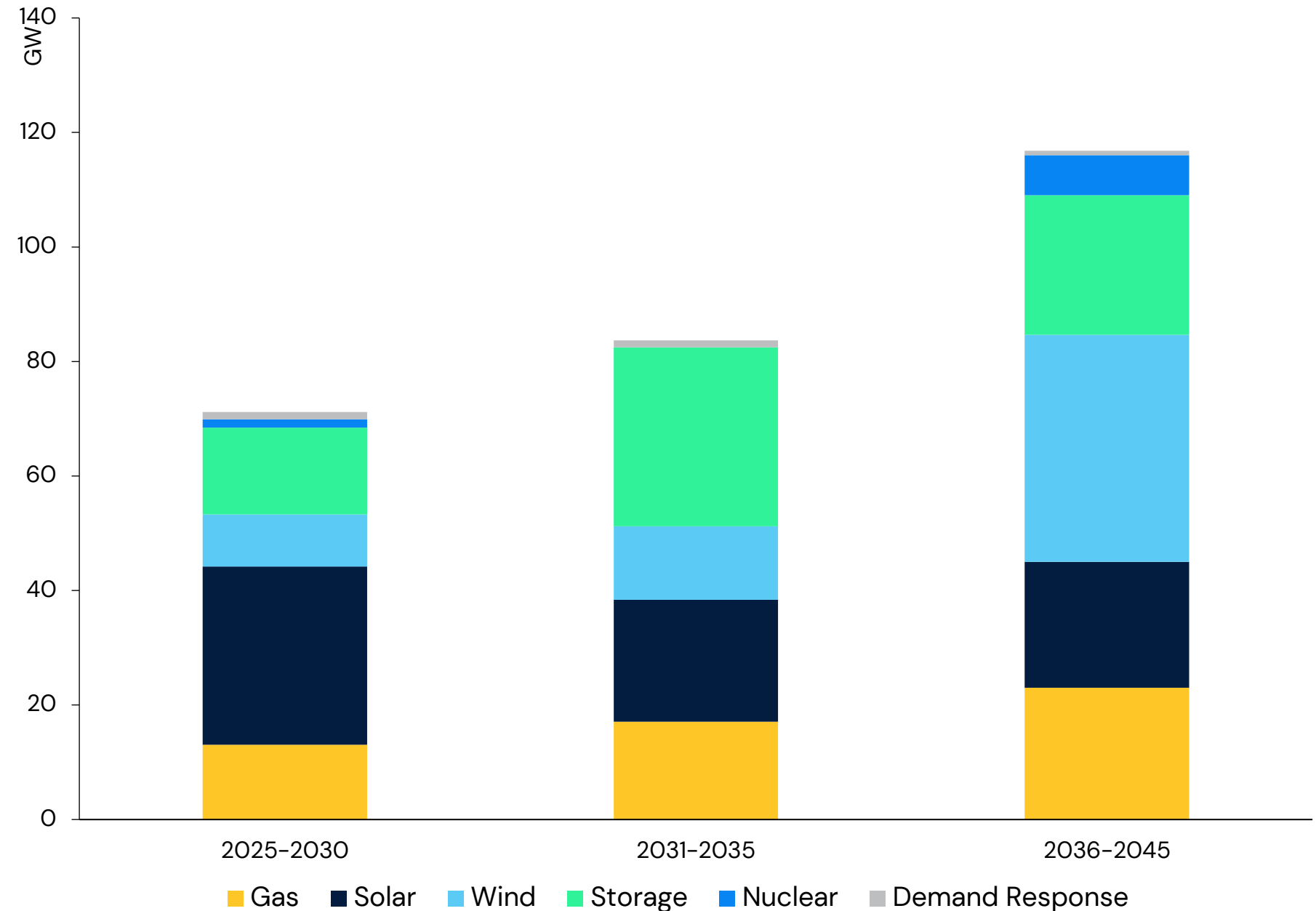


Changing capacity mix

Natural gas represents only 12% of the GW in PJM's interconnection queue.

But it accounts for 70% of the projects selected through PJM's Reliability Resource Initiative.

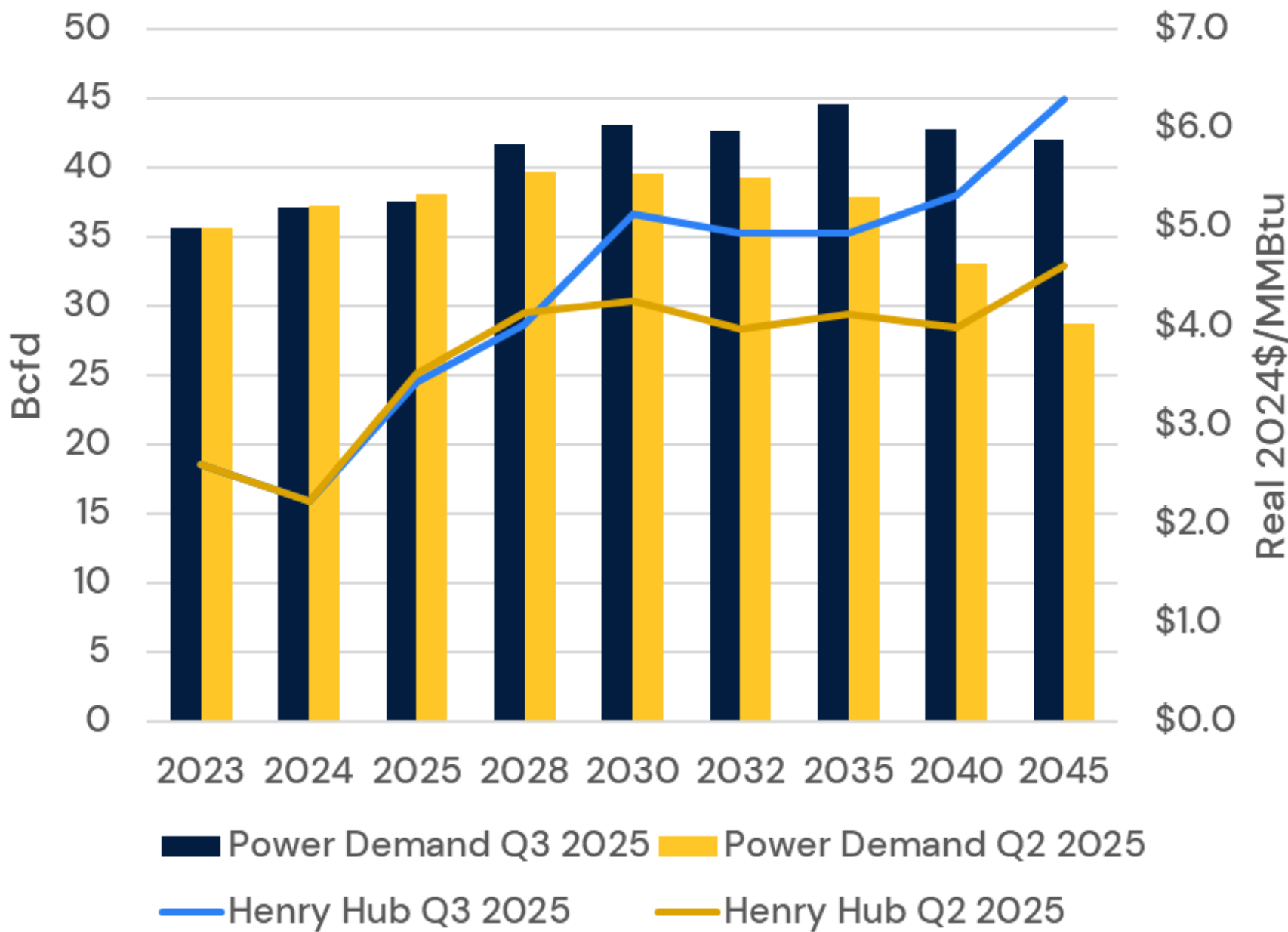
PJM incremental capacity addition (installed capacity)



Natural gas demand surges expected from power sector

One Big Beautiful Bill Act, delayed Section 111 rules, and eased permitting are expected to drive gas demand and Henry Hub prices up 50% by 2030 and 86% by 2045 (in real 2024\$) dollars.

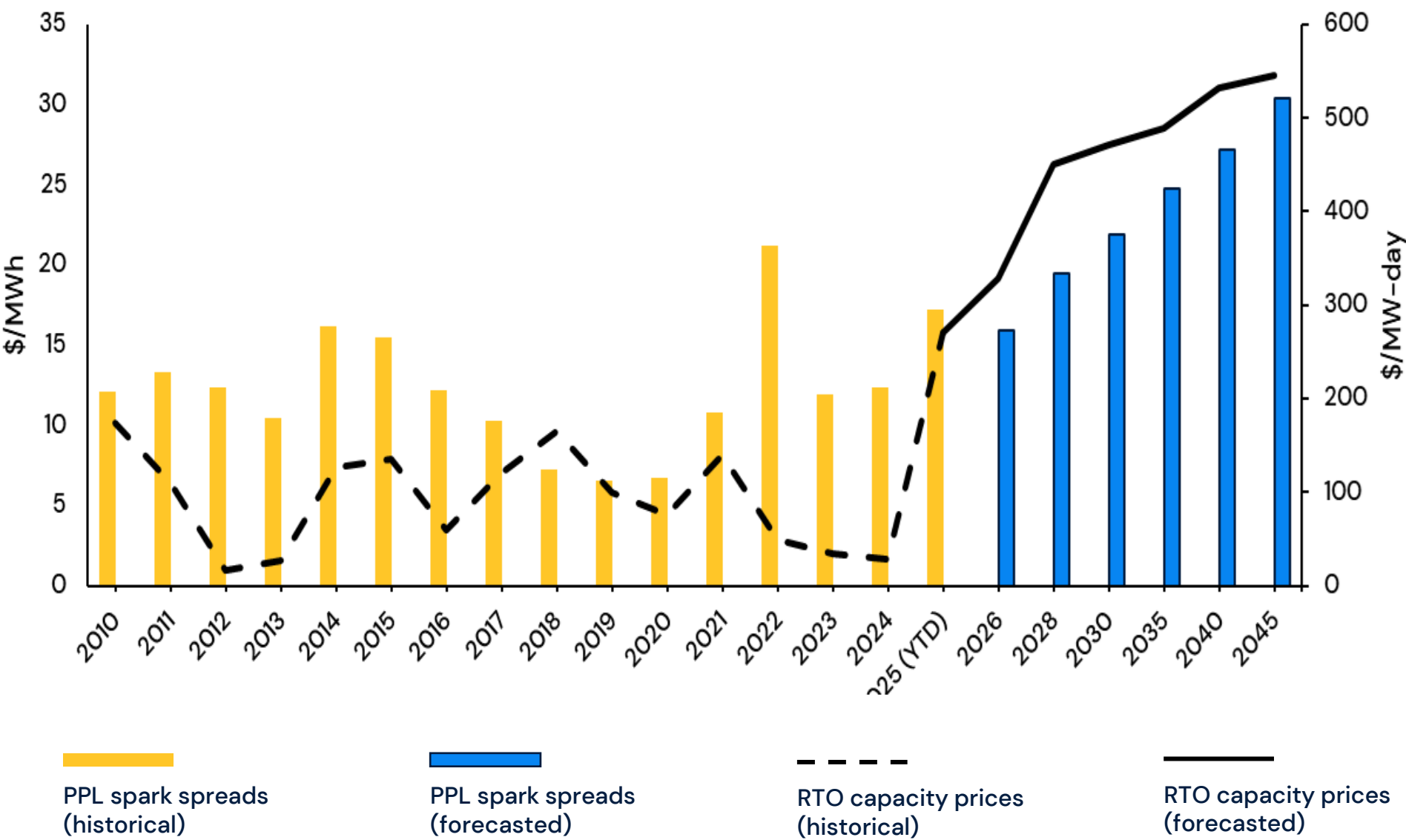
US Power gas consumption (Bcfd) vs Henry Hub (real 2024\$)



Spark spreads and capacity prices are expected to grow rapidly

Spark spreads are expected to grow rapidly, indicating increasing value for gas-fired generation. At the same time, capacity prices are expected to rise to the value needed to maintain continued capacity additions.

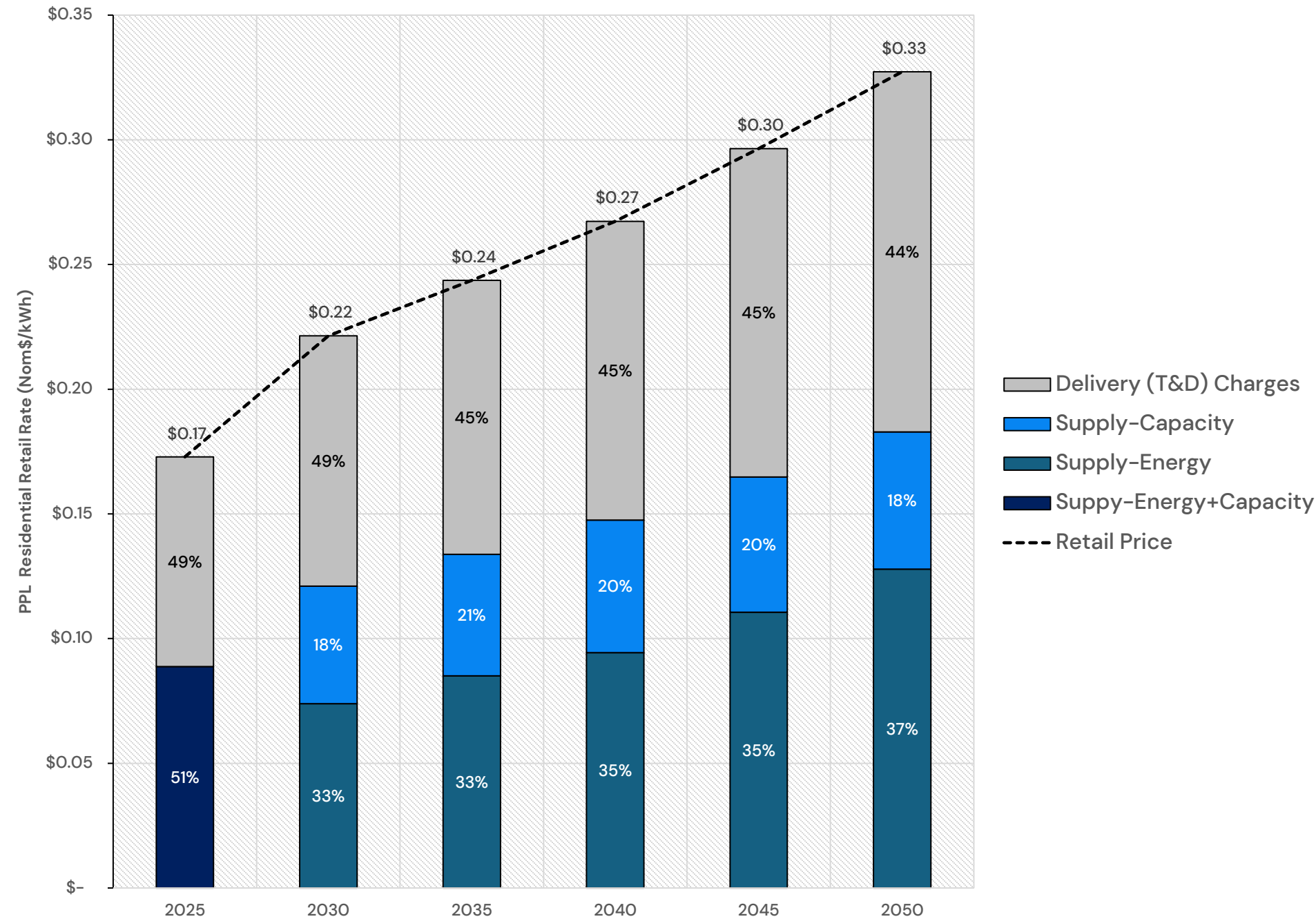
Spark spreads and PJM RTO capacity prices



Values shown for PPL as representative of a Pennsylvania utility.

Fears of untenable residential rate increases

Residential retail rates projected to increase 30% by 2030, with significant increases in both wires and energy supply charges.



Unmitigated Long-term rate impact

Source: ICF Q2 2025 Base Case. Shown for a utility in Pennsylvania.

Solutions utilities can pursue



All of the above solutions and innovation

Customer programs, grid enhancing technologies, life extensions, storage, traditional supply, microgrids. Market re-design, tariffs, rates, etc.



Leveraging technology

Leverage technology and AI to address speed to market.

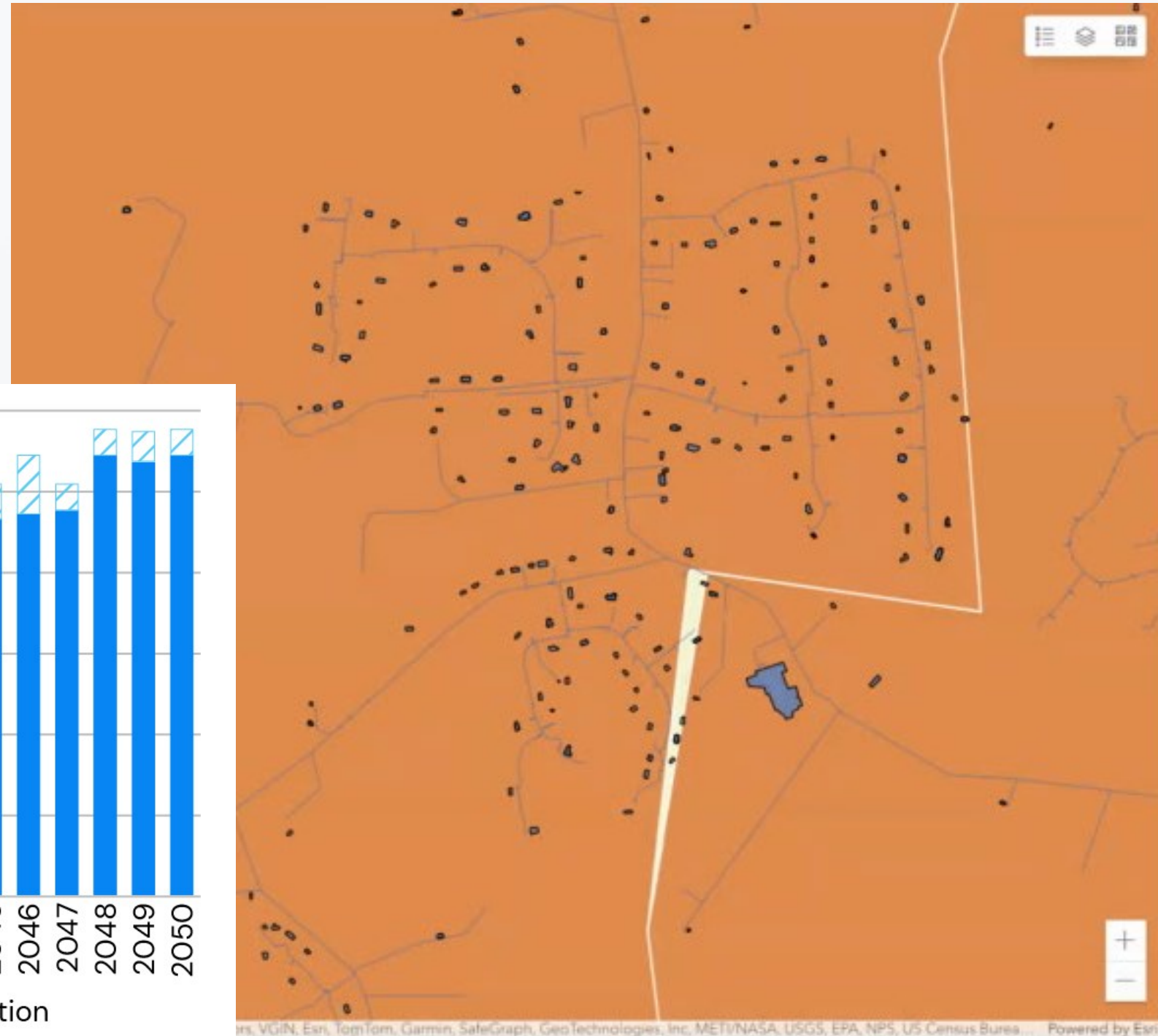
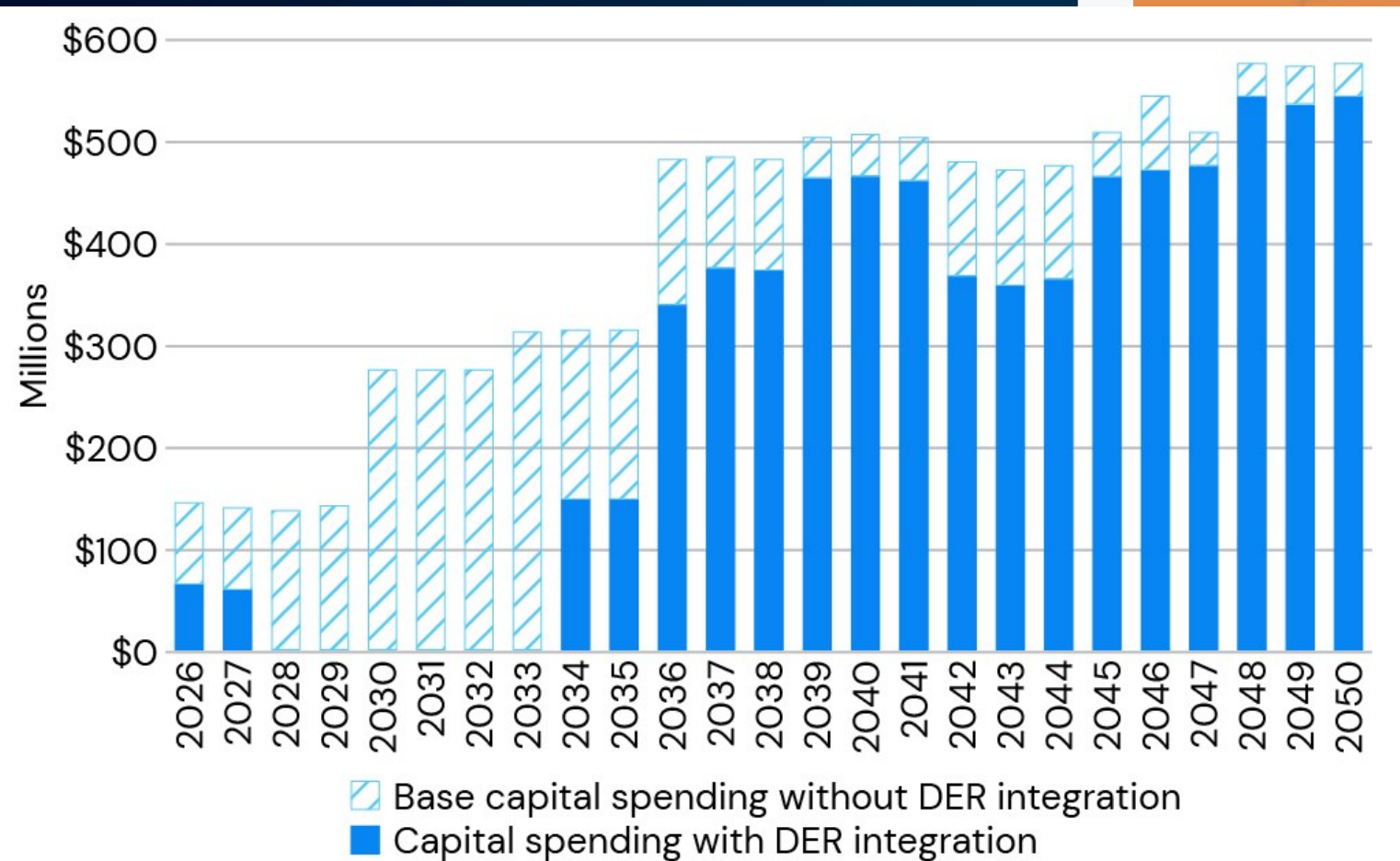


Improving confidence in load forecasting

Information sharing and partnerships to drive more accurate assessments of large load growth potential.

Innovate with all of the above solutions

Enhancing customer programs to better target congested locations on the grid.

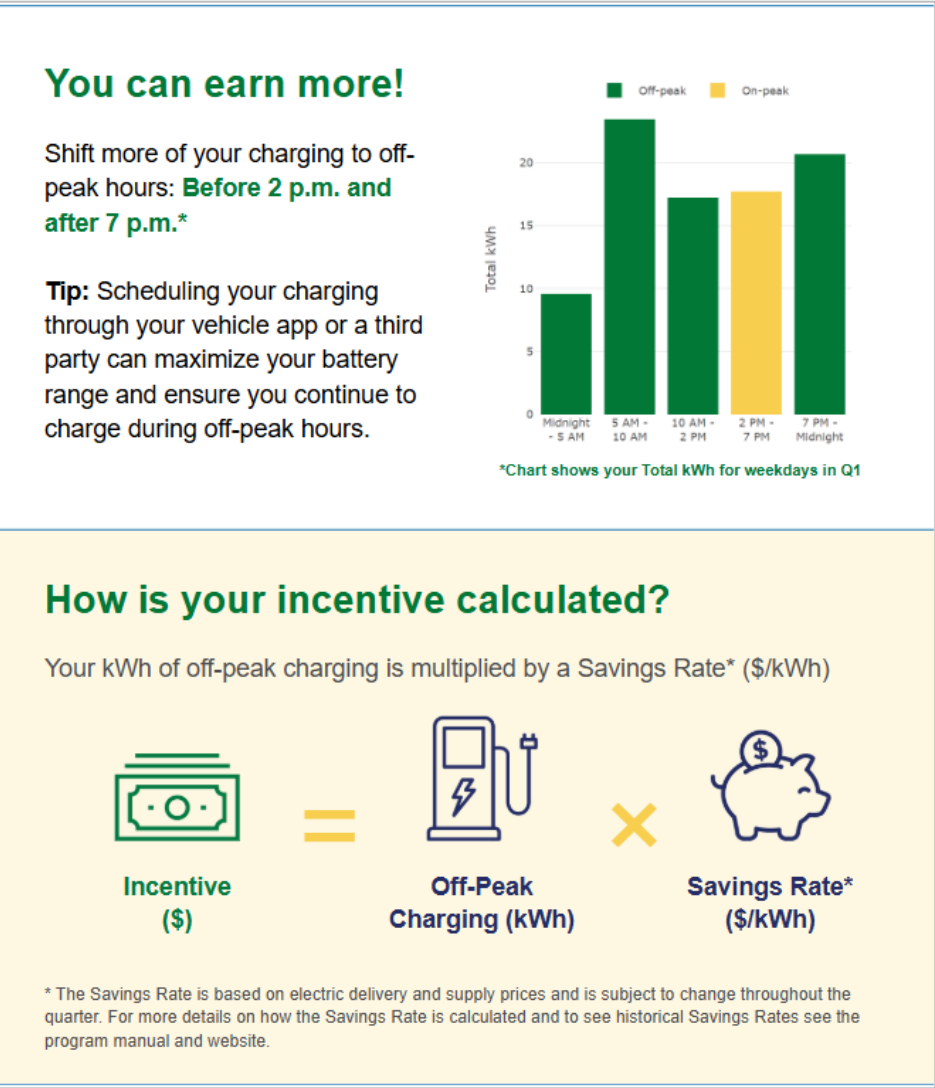
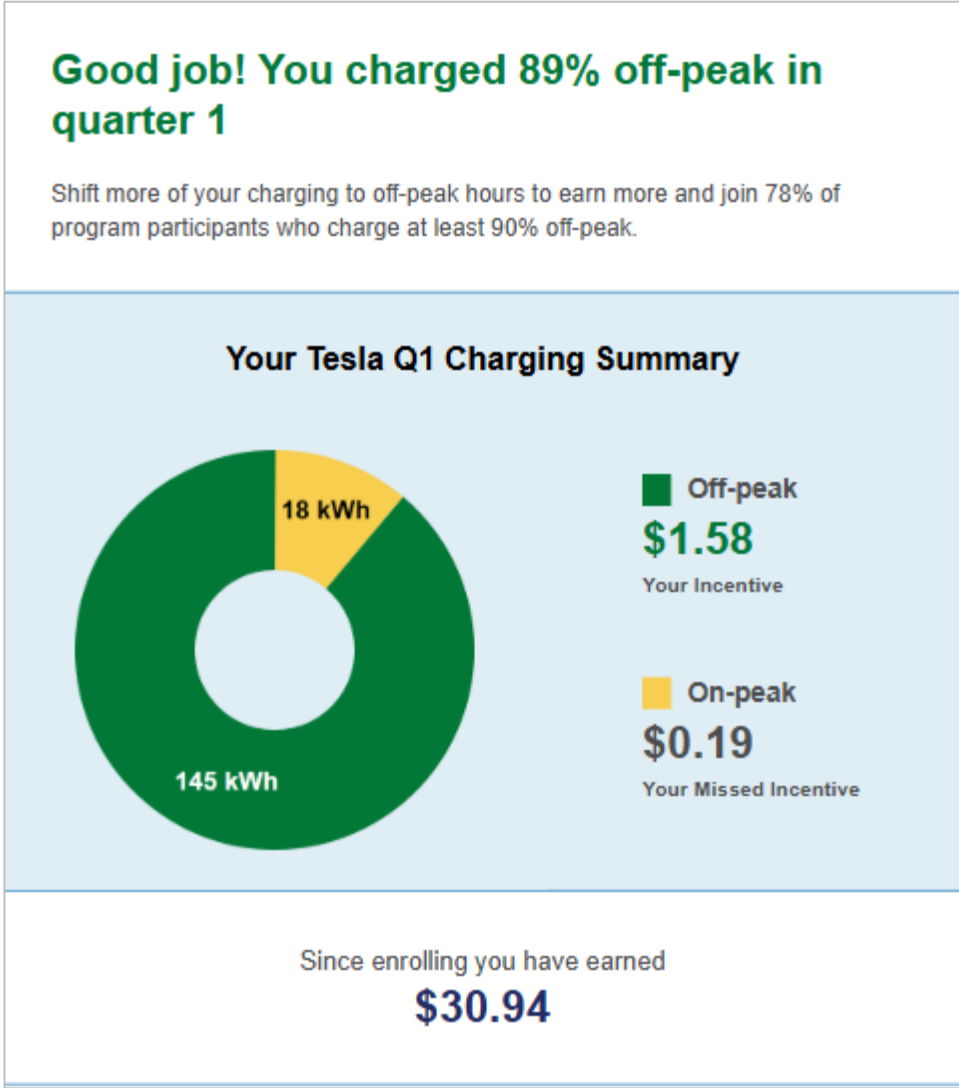


Addressing rising costs in utility projects

What’s driving costs	What could help mitigate rising costs
Grid reliability upgrades (SCADA, EMS, storage)	Demand response and flexible load management
Increasing equipment costs (e.g., transformer costs +70–100%)	Bulk procurement / joint procurement strategies and domestic manufacturing incentives
Large-scale infrastructure buildouts (e.g., hyperscalers, semiconductor plants)	Co-location with existing grid assets / strategic siting aligned with existing grid capabilities / tariff mechanisms / microgrid / responsive load
New generation capacity (gas, solar, nuclear)	Behind-the-meter generation and microgrids
Transmission bottlenecks and permitting delays	Streamlined permitting and interconnection reforms
Fuel price volatility (natural gas, diesel)	Long-term fuel contracts, renewables integration, and supply diversity
Developer timelines misaligned with utility planning	Improved developer-utility coordination
Confidential contracts shifting costs to ratepayers	Transparent cost-sharing frameworks
Labor and logistics inflation	Modular construction and local sourcing and workforce development
Raw materials cost (e.g., electrical steel)	Material substitution and recycling programs

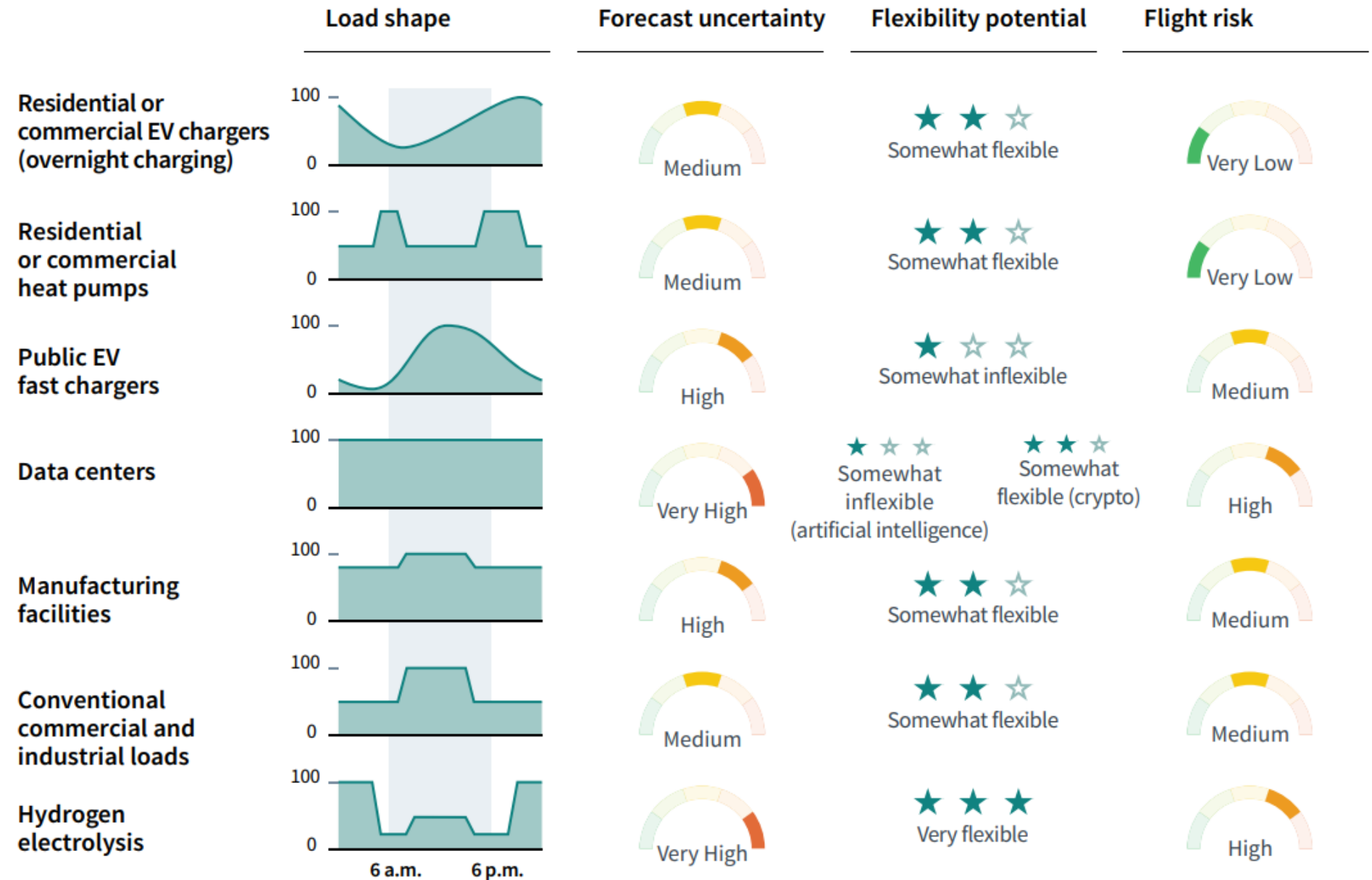
Leveraging technology

- Improving customer relations through offering transparent solutions through Data-powered platform responsibly powered with AI.



Improving confidence in forecasts

- Local and state partnerships can help increase understanding and lead to more robust planning actions.



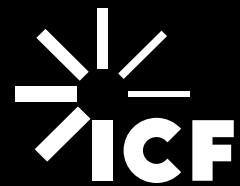
RMI Graphic. Source: RMI analysis



Policy and regulation changes, market dynamics, and rising energy prices are formidable challenges. Improved planning and smarter technology is part of the solution.

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