



Buildings as Grid Resources

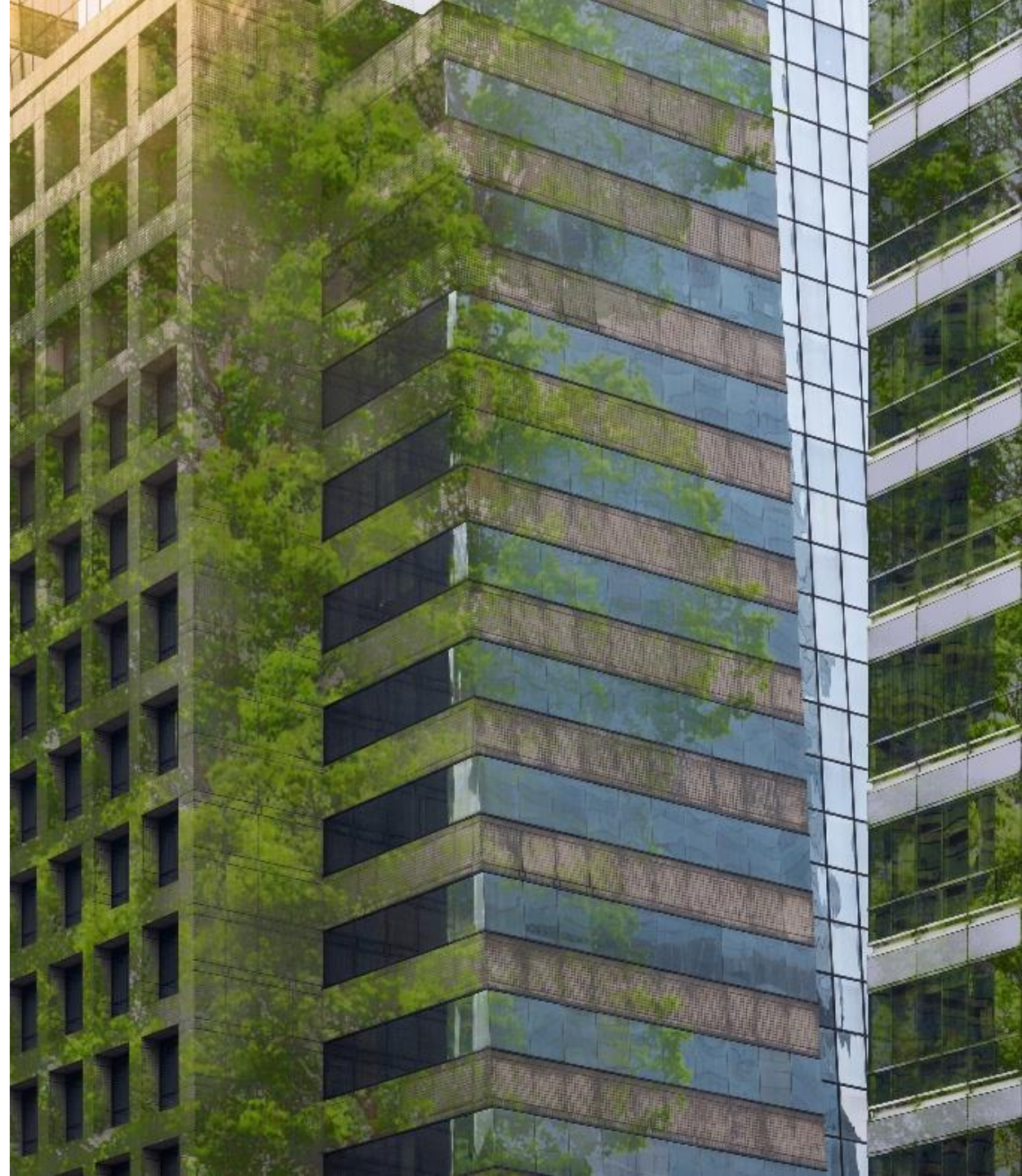
September 2025

Welcome & introductions

Setting the Stage: Buildings as Resources

We are facing unprecedented demand growth and growing concerns about affordability.

Market forces are generating a drive to decarbonize, digitize, and decentralize energy, which is reshaping the role of buildings.



Buildings and energy

Accelerating the role of buildings as resources will be essential to addressing growing energy demand and solving the resource adequacy challenge.



Energy Demand

Buildings now sit at the heart of the energy demand, presenting both challenges and opportunities. They are no longer just recipients of energy but can act as flexible, interactive grid assets, transforming how we produce, store, and consume power.¹



Stakeholder Impact

Buildings are key to achieving decarbonization and grid flexibility. Their energy use and generation capabilities can be harnessed to support renewable energy integration and demand management.



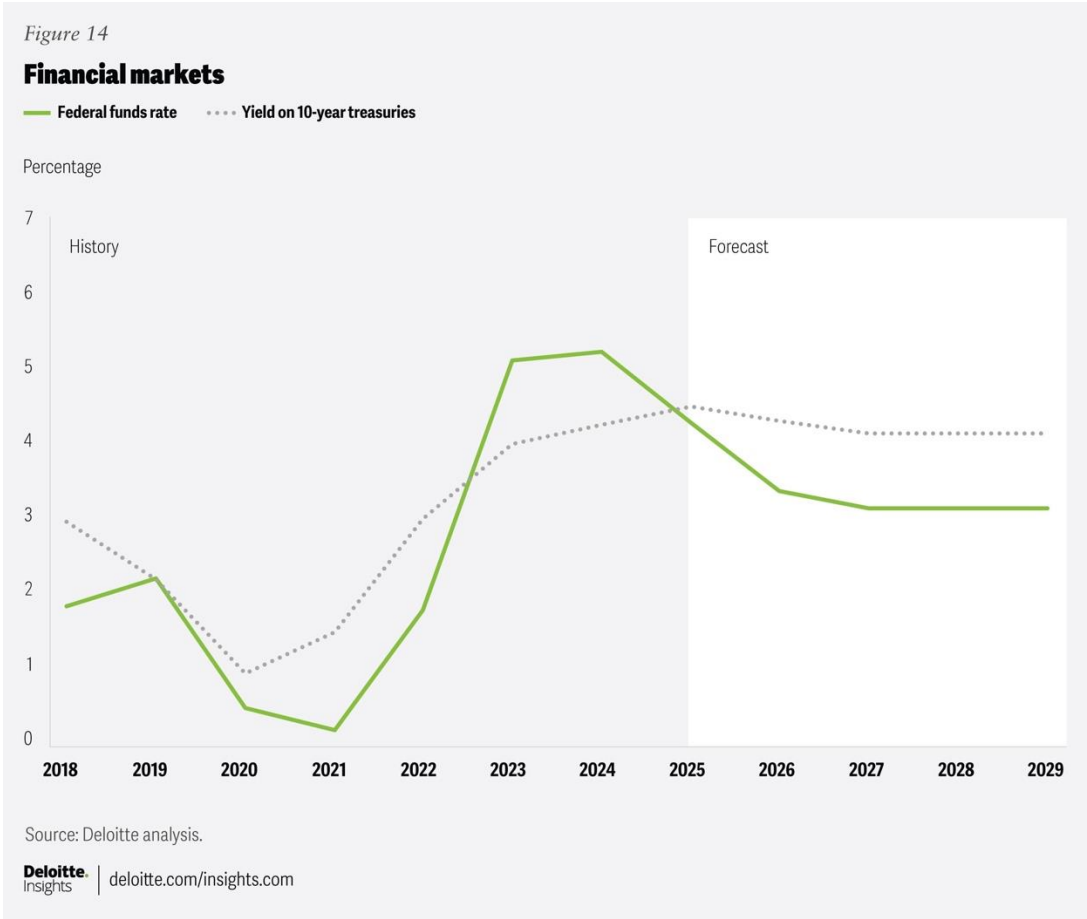
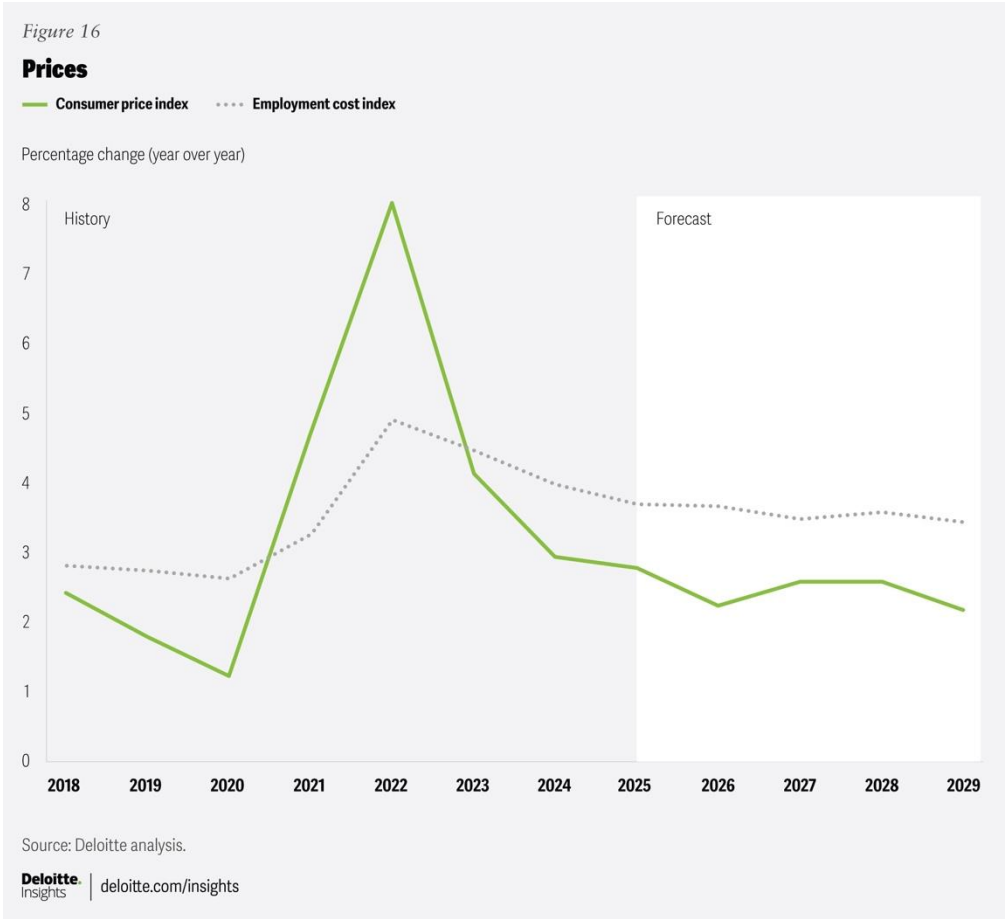
Market Opportunity

From utilities to end-users, the shift in building roles impacts planning, investment, and operations. Stakeholders should look to adapt to exploit new value streams and manage risks as buildings become more active participants.

¹See U.S. Department of Energy. (n.d.). Buildings energy efficiency. [Energy.gov. https://www.energy.gov/topics/buildings-energy-efficiency](https://www.energy.gov/topics/buildings-energy-efficiency)

Economic trends

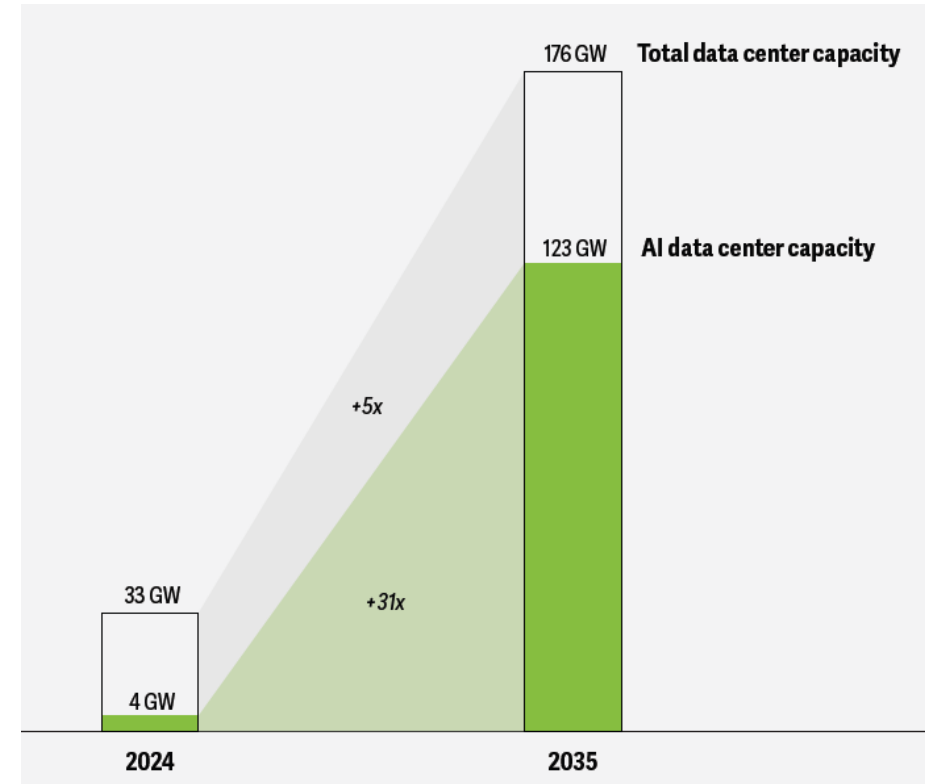
Current economic trends indicate economic uncertainty and supply chain transformations, potentially for current energy sources and potential changes to GDP growth.:-



Scale of AI data centers and their power needs are growing exponentially

- Deloitte estimates that power demand from US AI data centers will grow more than thirtyfold, **reaching 123 gigawatts (GW) by 2035, up from 4 GW in 2024**
- Early-stage data center campuses **could need up to 5 GW**—equivalent to the power needs of **5 million homes**

US power demand from AI data centers is expected to boom

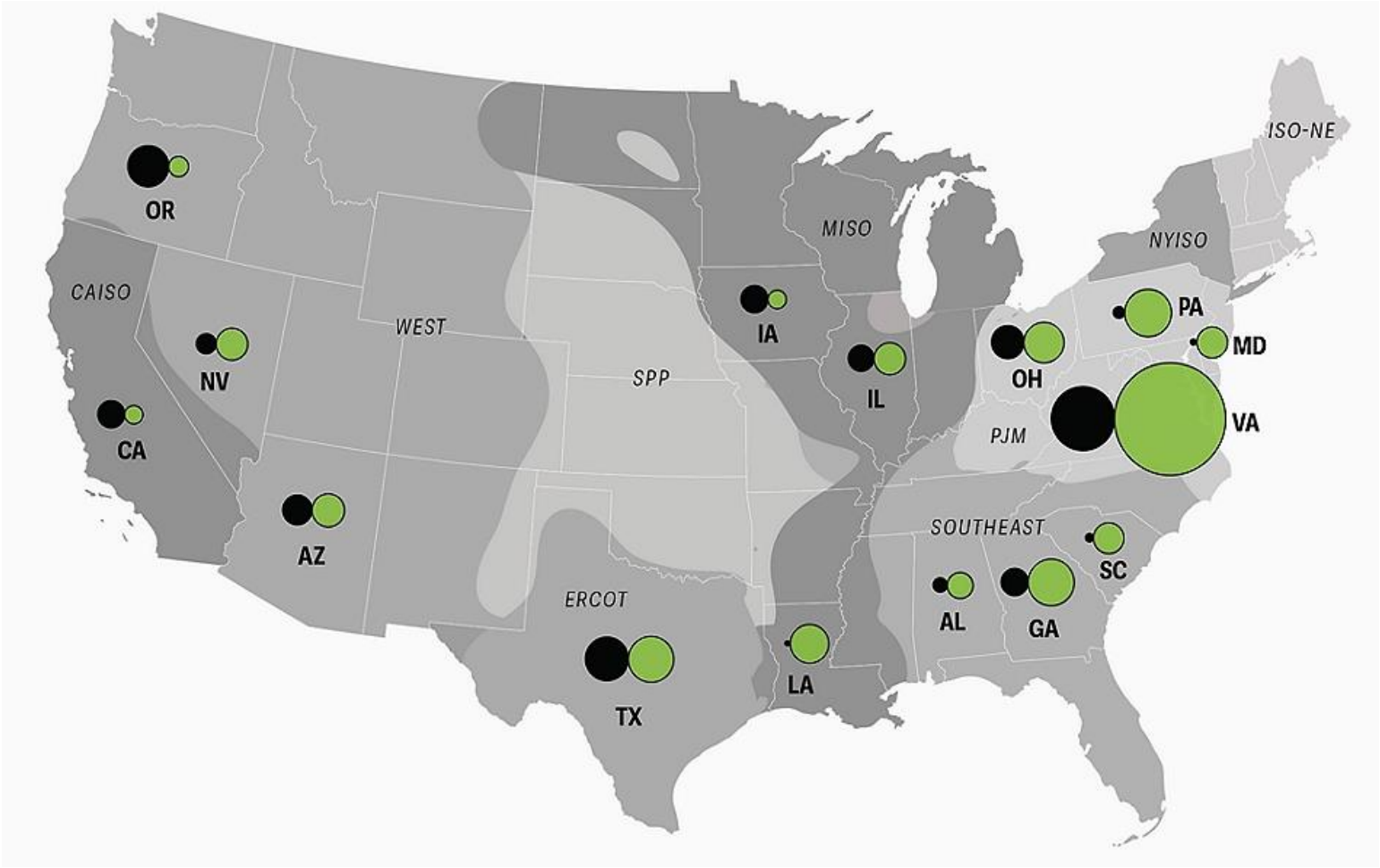


Source: Deloitte analysis of data from DC Byte, Wood Mackenzie, S&P Global, Lawrence Berkeley National Laboratory, Center for Strategic and International Studies, and Wells Fargo.

Data centers and the grid

Data center markets with existing or expected gigawatt capacity
Data center capacity (GW) and RTO/ISO regions

AI data centers create large, concentrated clusters of 24/7 power demand
Growth regions have experienced harmonic distortions, load relief warnings, near-miss incidents, and generation shutdowns
AI data center development is expanding into more US states beyond traditional hubs
In the longer term, some AI models may shift closer to end users to provide faster responses



Source: Deloitte analysis of DC Byte data as of June 2025.

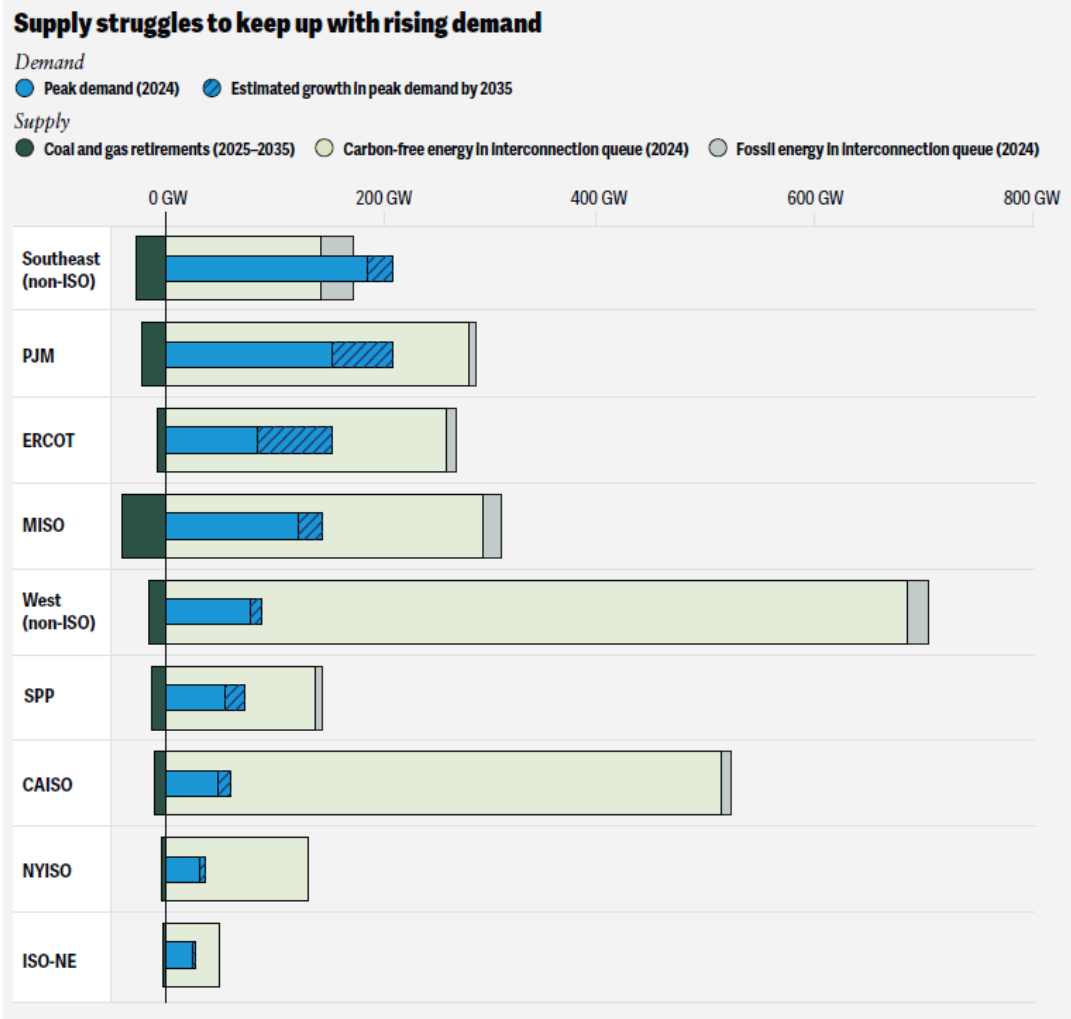
Peak demand is spiking as baseload generation capacity contracts

Data centers are pushing up peak demand, baseload generation is contracting, and new generation is stuck in lengthening interconnection queues

95% of new generation projects in queues are renewables and storage



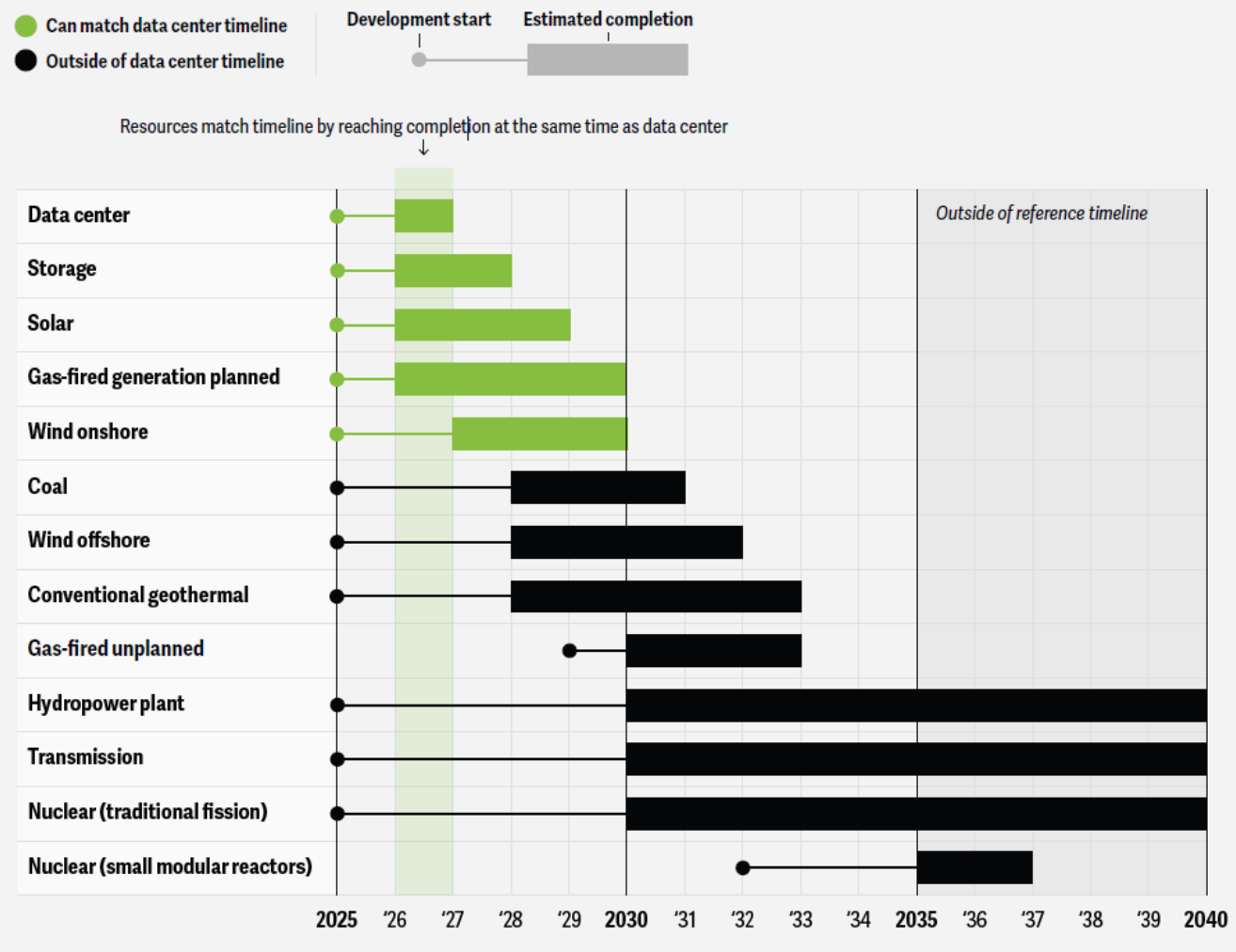
Load growth over the past years in the top markets for data center growth has primarily been met with increased gas generation. More than 99 GW of gas-fired capacity is planned across 38 states through 2035.



Source: Deloitte analysis of data from Energy Markets & Policy Berkeley Lab, “Queued up: 2024 edition, characteristics of power plants seeking transmission interconnection as of the end of 2023,” April 2024; The American Clean Power Association, “US national power demand study,” March 7, 2025; and ISO websites and latest forecasts as of June 2025.

Long—and growing—grid build-out timelines

Most power capacity development can take longer than data center build-outs, which can be completed in a year or two



Source: Deloitte analysis of data from International Energy Agency, Brattle, and Energy Innovation reports.

A Deloitte survey finds the top strategies among respondents for overcoming infrastructure gaps

	Data centers	Power companies
1	Technological innovation	Regulatory changes
2	Regulatory changes	Technological innovation
3	More funding	
4	Computational task mobility	New business models
5	Legislative enablement	Computational task mobility
6	New business models	Legislative enablement
7	Data center resource reallocation	

Note: Ranking is based on the number of respondents who selected "very" or "extremely" challenging.
Source: Deloitte 2025 AI Infrastructure Survey.

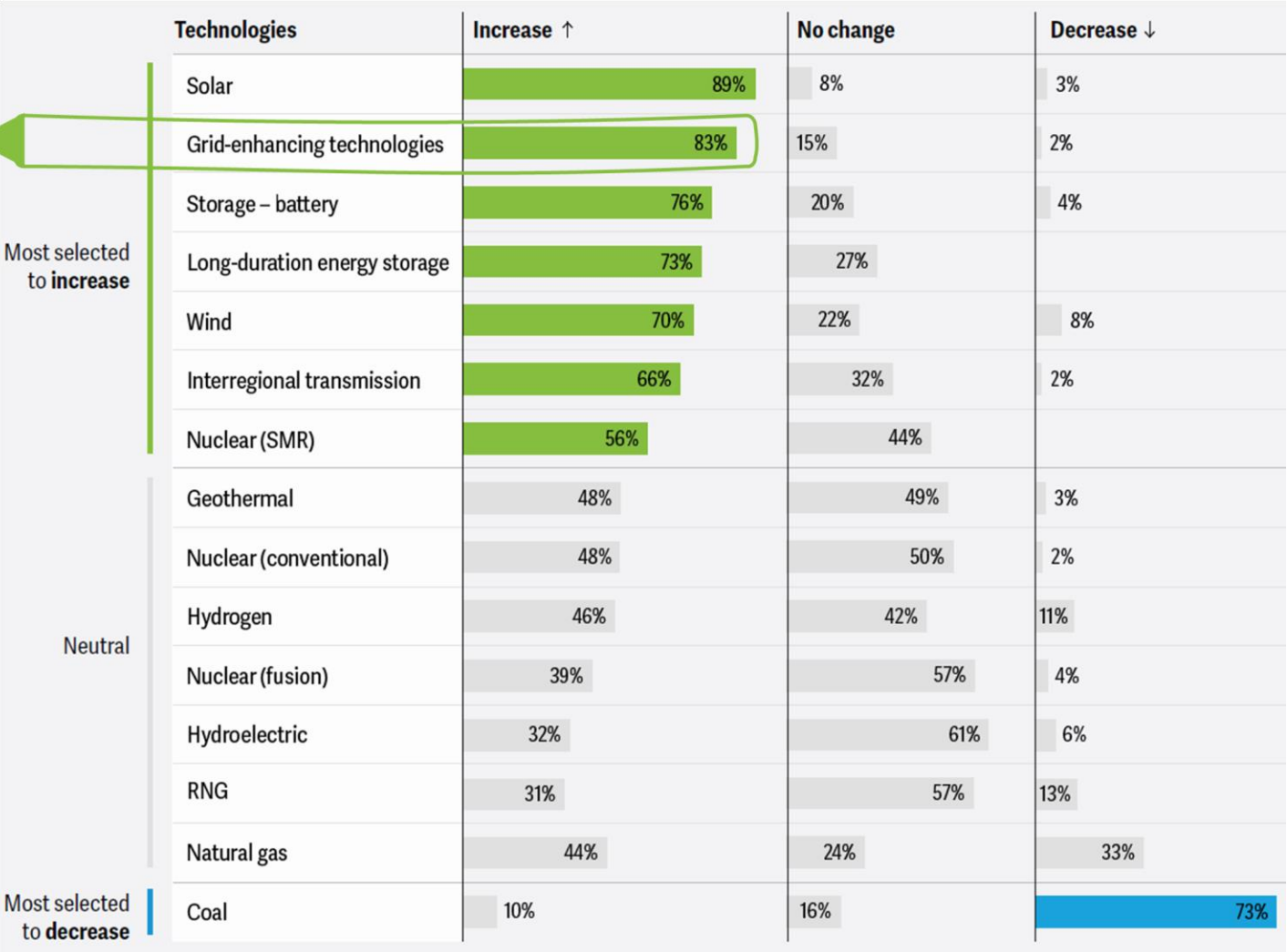
A broad approach is needed to meet future energy demand

Increasing focus on grid-enhancing technologies (GETs) will support our ability to meet increasing energy needs.

95%
of respondents expect GETs to play an increasing role in meeting data center energy demands through 2035, second only to solar (89%)

*GETs, including dynamic line rating, can be developed in three months and increase transmission capacity by **10% to 30%***

*Flexible alternating current transmission systems and reconductoring can be developed in 8 to 18 months and increase capacity as much as **50% to 100%***



Top trends reshaping building development

Policy and regulatory shifts are affecting how buildings are designed and operated.

Affordability



Growing energy costs are prompting both businesses and residents to seek efficiency and alternative supply options. Affordability pressures are shaping investment and technology adoption decisions.

Resource Inadequacy



Energy supply and the capacity of local providers to support existing and new demand have faced conflict, leading to inadequate resources to send to consumers.

Policy



Policy shifts in codes such as building performance standards (NYC, DC) and energy benchmarking ordinances (Chicago) are driving developers to maintain performance of buildings.

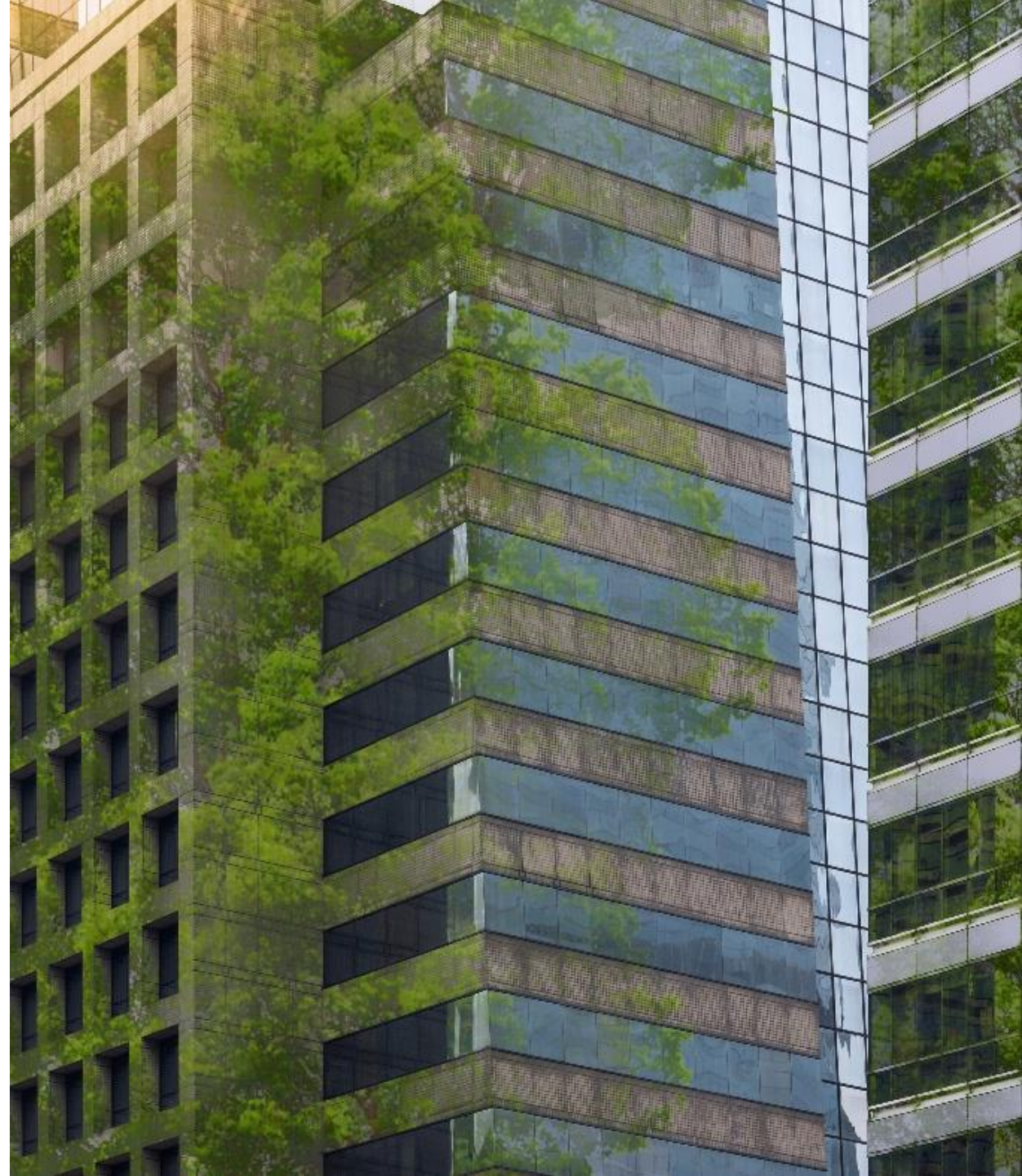
Demand Flexibility



The growing imbalance between electricity supply and demand is now a defining challenge. Grid reliability, price volatility, and risk of outages have made real-time balancing and flexible resources essential. Understanding local extremes and resilience is key for policy and planning.

Efficiency and demand flexibility are increasingly essential as challenges persist and variable renewables grow. Technologies like demand response, storage, and predictive analytics are becoming essential.

Discussion





This presentation contains general information only and Deloitte is not, by means of this presentation, rendering accounting, business, financial, investment, legal, tax, or other professional advice or services. This presentation is not a substitute for such professional advice or services, nor should it be used as a basis for any decision or action that may affect your business. Before making any decision or taking any action that may affect your business, you should consult a qualified professional advisor.

Deloitte shall not be responsible for any loss sustained by any person who relies on this presentation

As used in this document, "Deloitte" means Deloitte Consulting LLP, a subsidiary of Deloitte LLP. Please see www.deloitte.com/us/about for a detailed description of our legal structure. Certain services may not be available to attest clients under the rules and regulations of public accounting.

Copyright © 2025 Deloitte Development LLC. All rights reserved.