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# U.S. power market in a period of unprecedented growth and transformation

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# At a glance

Following nearly two decades of stagnation, power demand is now surging, with an average annual growth rate of over 1% between 2021 and 2024, and approximately 3% growth in 2024 alone. Current long-term growth expectations range from 2% to well above 3% per year; by some measures, the U.S. is expected to add the equivalent power demand of New York over the next five years. The consistent upward revisions to predictions highlight both the struggle of forecasts to keep up with growth as well as their uncertainty. Clearly, the U.S. power market is at a critical inflection point with multiple forces fundamentally reshaping both market dynamics and the investment landscape: data centers are consuming energy at unprecedented rates and recent federal policy changes are bringing new legislative paradigms, while critical infrastructure bottlenecks and regulatory hurdles are impeding supply expansion and developers are grappling with increasing capital costs amid elevated interest rates. These factors are actively rewriting the power market investment playbook, creating both challenges and compelling opportunities for power market participants and infrastructure investors alike.

**This historic power market transformation is being driven by four major shifts:**

1. **AI-driven power demand:** Explosive growth in AI, cloud computing, and digital infrastructure is projected to more than double U.S. data center electricity consumption by 2030. This unprecedented demand is straining regional grids and accelerating the need for new generation, storage, and transmission investments.

2. **Evolving policy landscape:** The transition from the Inflation Reduction Act (IRA) to the One Big Beautiful Bill Act (OBBBA) marks a decisive shift away from longstanding clean energy support, restricting incentives, compressing project timelines, and increasing regulatory complexity. These changes are driving an acceleration of development activity in order to qualify for tax credits, providing a near-term catalyst for debt financing. While the long-term implications are less clear, the fundamental outlook remains positive.

3. **Renewable growth with bottlenecks:** While renewables are set to account for over 81% of U.S. power capacity additions in 2025, significant longer-term challenges exist in grid integration, transmission capacity, and interconnection queues. Large-scale investments in infrastructure modernization is required across the value chain.

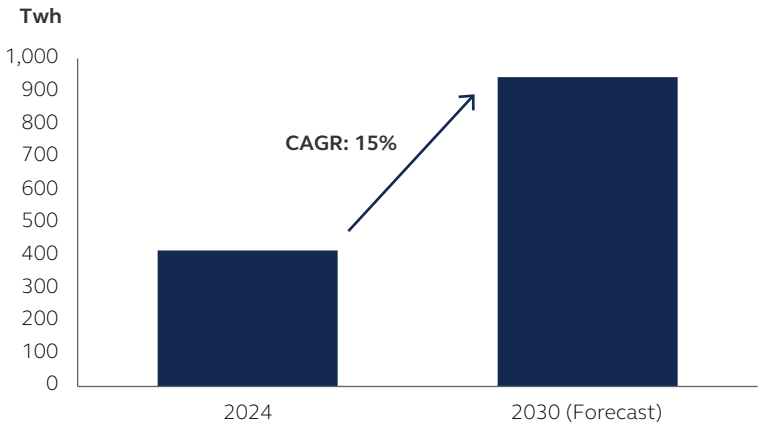
4. **High-interest rate environment:** Rising interest rates are stressing traditional financing mechanisms, with utilities facing credit rating pressures and pursuing record-high rate increase requests. Higher discount rates are also negatively affecting equity valuations and making long-term, capital-intensive investments harder to justify. Private debt capital and more nuanced financing solutions are being increasingly relied upon to fill any gaps in the capital stack.

Significant capital will need to be deployed rapidly as these forces reshape the power market. Success will depend on the ability to identify and structure high-quality opportunities with strong fundamentals, while navigating increased policy, regulatory, and financial complexities. Asset managers with extensive industry knowledge and established relationships are best positioned to provide resilient, long-term results in this highly competitive, relationship-driven power market—leveraging privileged access to proprietary deal flow and appropriately structuring capital to maintain financial resilience amidst potential volatility.

## AI and data center-driven power demand surge

The exponential growth of artificial intelligence (AI), cloud computing, and advanced digital infrastructure is fundamentally reshaping electricity consumption patterns in the U.S. According to the International Energy Agency (IEA), global data center electricity consumption is projected to more than double by 2030, to 945 terawatt-hours (TWh), with the U.S. and China accounting for roughly 80% of that increase.[1] Domestically, data centers consumed an estimated 176 TWh in 2023, equivalent to more than 4% of total U.S. electricity use. This share is expected to grow significantly, potentially approaching 9% by 2035.

**EXHIBIT 1: Projected growth in global power demand**

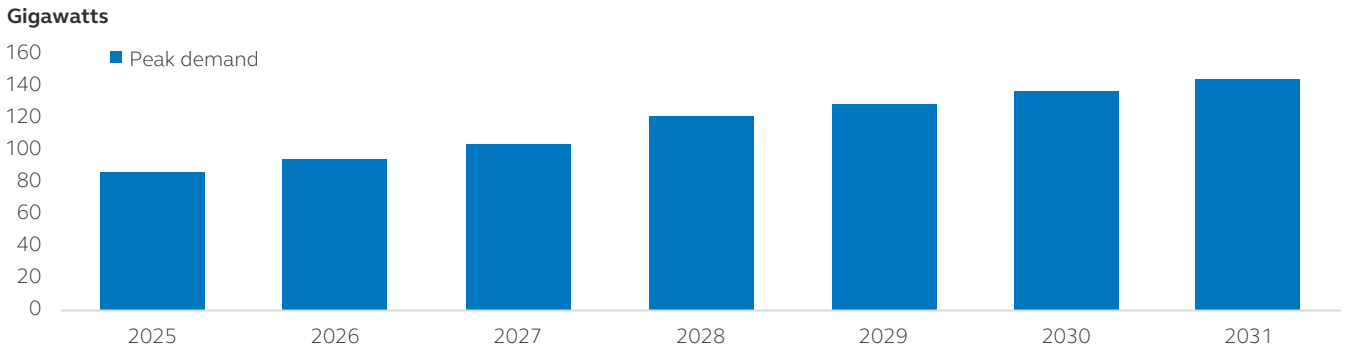



Source: International Energy Agency (IEA), April 2025.

Regional markets with strong data center development pipelines—such as Virginia, Texas, Georgia, and parts of the Midwest—are already experiencing the effects of this demand shock. For example, Texas' ERCOT (Electric Reliability Council of Texas) power market recorded a peak demand of over 85 gigawatts (GW) in August 2023 and projects substantial growth to over 140 GW by 2031, largely driven by rapid onboarding of data centers and other industrial computing facilities. For reference, peak demand during Winter Storm Uri, when extreme electricity needs contributed to the widespread loss of power across Texas, was approximately 77 GW.

[1] 1 megawatt-hour (MWh) of electricity can power an average American home for a month, drive an electric vehicle 3,600 miles, power two 60-watt lightbulbs non-stop for a year, or run two refrigerators for an entire year. 1 TWh is equivalent to 1,000,000 MWh.

## EXHIBIT 2: Peak demand forecast: ERCOT (2025-2031)




Source: Electric Reliability Council of Texas (ERCOT) April 2025.

Grid constraints, transmission bottlenecks, and localized generation shortages are becoming increasingly common. With interconnection queues now exceeding 2,600 GW nationwide and transformer delivery times stretching beyond two years, utilities face significant infrastructure and capacity challenges in meeting the rapid expansion of hyperscale data centers and AI clusters. This underscores the need for investment in new power capacity and grid resilience.

**Investment implications:** The data center-driven demand growth presents opportunities across multiple power infrastructure segments, in front of the meter and behind the meter. Key areas include generation development from natural gas peaking plants to renewable projects with firming capacity and grid-connected battery storage. Additionally, the projected load growth highlights the need for transmission infrastructure upgrades and localized distributed energy solutions to maintain regional grid reliability. These tightening supply conditions observed across multiple markets present notable thematic investment opportunities.

## Policy tailwinds, permitting reform, and regulatory complexity

The One Big Beautiful Bill Act (OBBBA), passed by the Senate in July 2025, reshaped the clean energy incentives introduced or expanded by the 2022 Inflation Reduction Act, introducing a new phase in clean energy investment. While far-reaching in its scope, among the legislation's most significant impacts is the accelerated phase out of its technology-neutral credit provisions. Qualifying for these credits, typically elected by the more mature wind and solar technologies, now requires projects to be placed in service by December 31, 2027, unless construction begins before July 4, 2026 (within 12 months of the bill's enactment).

Projects that begin construction within this deadline are able to maintain the traditional four-year safe harbor to complete construction (i.e., through 2030). A subsequent executive order has also refined the criteria under which the beginning of construction can be qualified, namely by removing in most cases the ability of a developer to claim that construction has started if at least 5% of the total cost of the project has been paid or incurred.

The bill's impact on grid infrastructure is equally substantial, as it rescinds significant IRA funding for transmission development programs. This includes the elimination of funding for transmission facility financing, interstate electricity transmission line siting grants, and interregional and offshore wind transmission planning. These rescissions effectively remove federal support for critical grid expansion and modernization efforts.

The regulatory landscape also evolves under the OBBBA, particularly through the introduction of Foreign Entity of Concern (FEOC) restrictions beginning in 2026. These provisions create intricate requirements around ownership structures and supply chain verification, adding substantial compliance burdens to project development.

While these new policy shifts may raise questions about the future of clean energy, the OBBBA represents a shift rather than a retreat for the renewable energy industry. The lingering uncertainty, which had been hanging over projects, is now dissipating, and renewables pipelines remain largely intact, allowing for recalibration and continuation. While traditional wind and solar face compressed timelines and tighter rules, the transition may present opportunity for debt investors. All else equal, as tax credits phase out, the relative share of debt financing per project should naturally rise—expanding the pool of investable debt. Slower installation growth should tighten supply, driving power purchase agreement (PPA) prices higher. These higher PPA levels could ultimately sustain renewables' competitiveness, with projects returning to market under a more debt-heavy capital stack.

It is worth noting also that energy storage and other non-solar or wind technologies (e.g., geothermal, biomass, hydroelectric) receive more favorable treatment under the OBBBA, with the ability to start construction through 2033 at full credit rates, followed by a phase-down period. This preferential treatment not only accelerates diversification within the clean energy pipeline but also broadens the opportunity set for investors seeking exposure beyond traditional solar and wind.

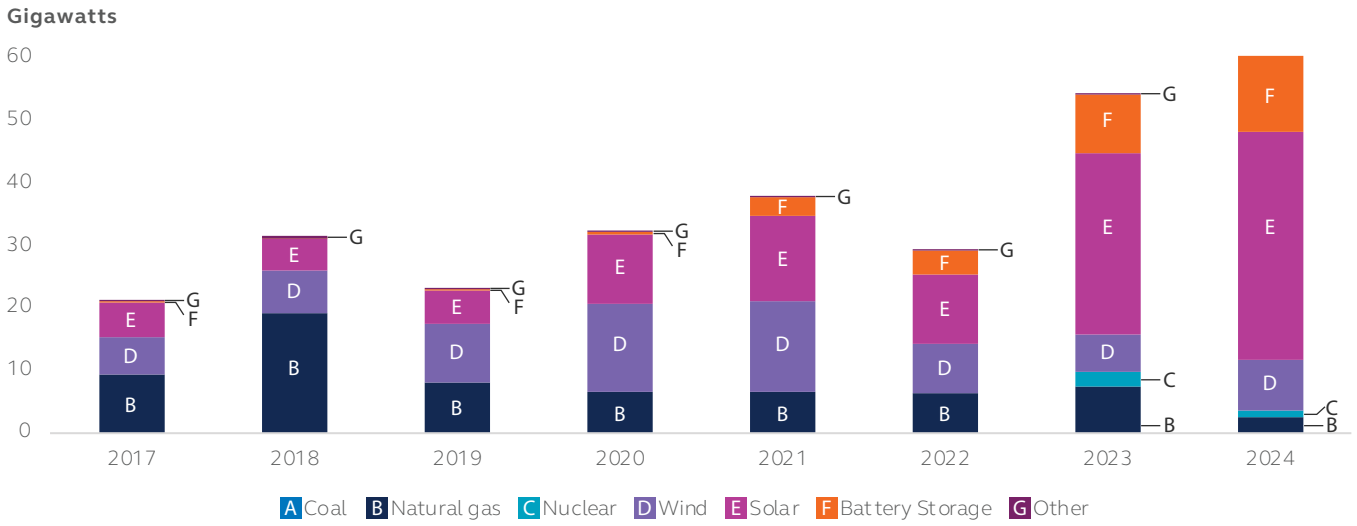
**Investment implications:** For investors and developers, these changes create immediate challenges as well as opportunities. They must navigate compressed timelines for project development, cope with limited grid infrastructure support, and manage increased regulatory complexity around foreign ownership and supply chains. While these regulatory changes can create temporary market inefficiencies, well-capitalized investors with the ability to move quickly can find attractive opportunities, particularly in projects requiring rapid recapitalization to meet new timeline requirements.

A rise in new project announcements and construction-related activities is therefore expected over the short-term as developers race to meet the new deadlines and secure credits. In the medium-to-long term, while a post-tax credit slowdown may be observed as the market grapples with a new economic paradigm, any corresponding capital dislocation should also create additional capacity for debt investors. Over the long term, the fundamental demand for renewables is expected to remain strong.

# Renewable energy growth and system bottlenecks

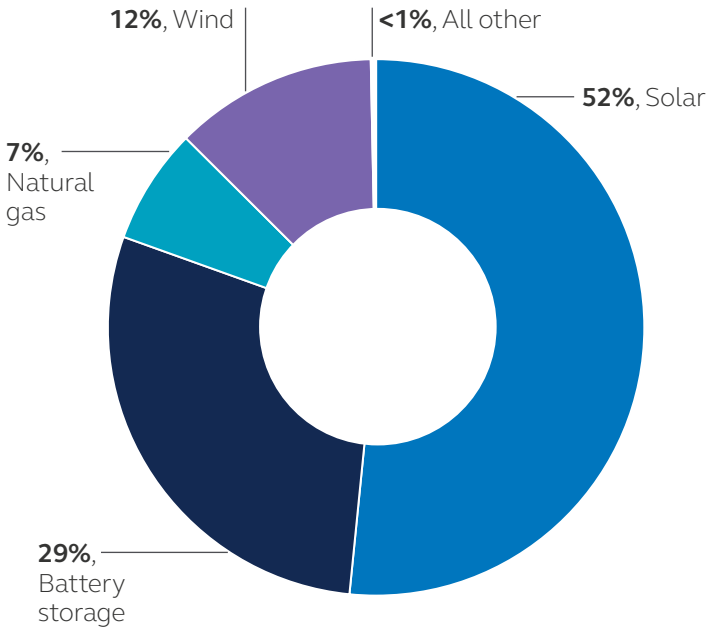
The renewable energy sector continues to experience rapid expansion, driven by declining technology costs, policy support which continues at the state and local levels, increasing corporate clean energy commitments, and rising electricity needs. In 2025, solar and battery storage are expected to account for over 80% of new U.S. utility-scale power capacity additions—up from 26% in 2017. This momentum is expected into the future, with renewables projected to supply 44% of U.S. electricity by 2050, a significant rise from just 21% in 2021.

**EXHIBIT 3: Historical annual capacity additions (2017-2024)**




Source: International Energy Agency (IEA), December 2024.

**EXHIBIT 4: Breakdown of 2025 capacity additions**




Source: International Energy Agency (IEA) February 2025.

The robust project pipeline is evident in PJM's (Pennsylvania-New Jersey-Maryland) interconnection queue—the largest in the country—which holds over 200 gigawatts (GW) of renewable energy projects, awaiting approval, with the average wait time now exceeding five years in 2025. Comparable backlogs persist across other regional transmission organizations (RTOs) and independent system operators (ISOs), which highlight the substantial scale of near-term development potential.

Along with the projects themselves, the scale of demand presents adjacent opportunities for investment in facilitative infrastructure which helps to alleviate the existing structural challenges. Interconnection bottlenecks, grid congestion, and supply chain disruptions have emerged as material barriers to renewable project deployment, and power projects overall.

Transmission infrastructure offers particularly attractive investment opportunities as it remains a critical constraint to renewable energy integration. Resource-rich areas for wind and solar generation await connection to major load centers, creating compelling opportunities for transmission expansion projects. In recent years, the pace of transmission expansion has remained well below what is needed to achieve federal clean energy goals, with current build rates insufficient to fully integrate renewable resources and meet emissions reduction targets. This gap represents a clear market signal for accelerated near-term capital deployment needed to unlock the full potential of available renewable energy resources.

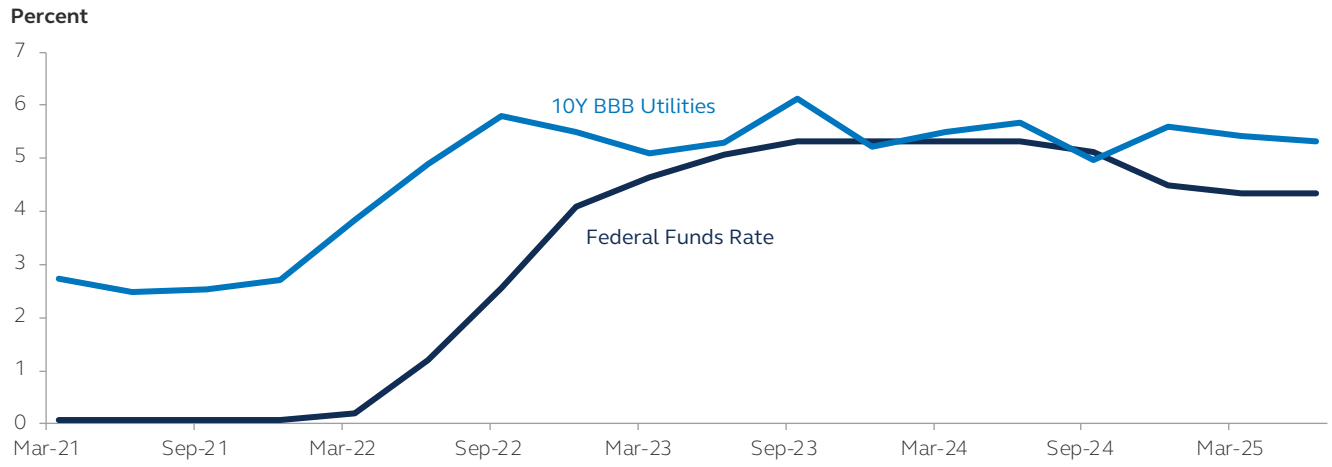
In parallel, new regulations have been introduced to help rationalize and expedite viable projects through ever-lengthening interconnection queues. While these reforms aim to reduce backlogs, discourage speculative projects, and improve the speed and efficiency of connecting new generation and storage to the grid, they also impose stricter financial readiness requirements and financial penalties for missed deadlines. Projects are subsequently requiring more funding overall, and at an earlier stage of development.

**Investment implications:** The higher-certainty cash flows, which typically characterize transmission assets, allow for debt optimization at both senior and junior levels of the capital stack, while efficiency and other nascent services-related opportunities offer the potential for enhanced returns. Investors may increasingly target shovel-ready projects with secured interconnection, pursue transmission and grid-enhancement investments, and consider energy storage as a strategic complement to renewables. Early-stage development investments, while potentially more substantial in number, will require greater patience, risk-adjusted underwriting, and strategic partnerships to manage uncertainty.

## Interest rate environment and power market evolution

The power market's financing landscape has been forced to evolve rapidly, as interest rates have reached levels not seen in decades. The Federal Reserve's monetary tightening has pushed borrowing costs to multi-year highs, with 10-year BBB-rated utility bonds yielding approximately over 5% over the past year, up from 2.6% in 2021.

**EXHIBIT 5: Rising interest rates and market yields**

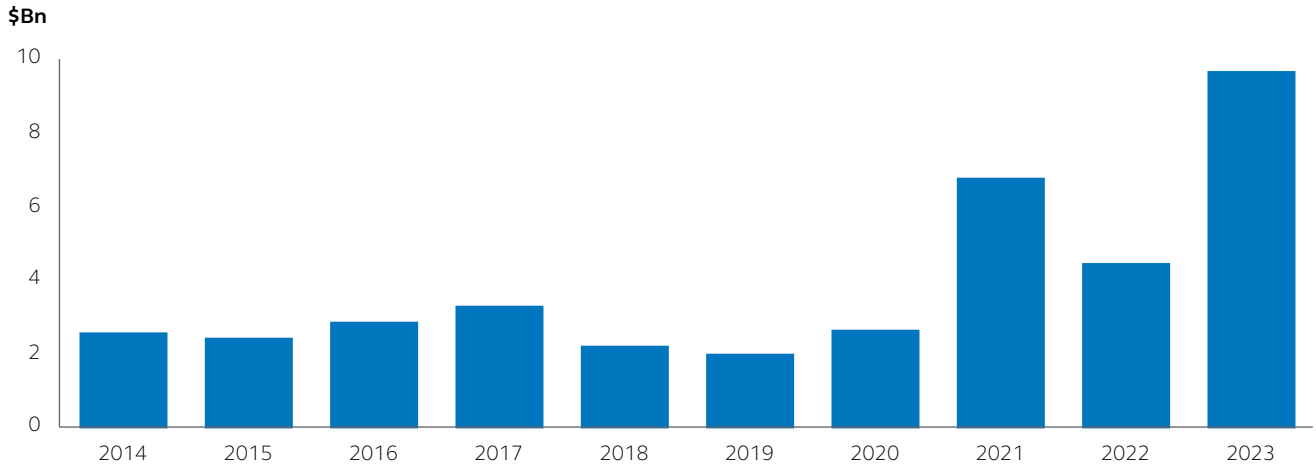



Sources: Federal Reserve Bank of New York, Bloomberg, August 2025.
Notes: Federal Funds Rate represents the effective federal funds rates, calculated as a volume-weighted median of overnight federal funds transactions. 10Y BBB Utilities represents Bloomberg's USD U.S. Utilities BBB BVAL Yield Index, composed of 10-year USD-denominated senior unsecured fixed rate bonds issued by U.S. utilities companies with a Bloomberg composite rating of BBB.

While rates have moderated somewhat recently, they are expected to remain relatively elevated for the foreseeable future. Forward curve projections suggest that 10-year Treasury yields are expected to rise to over 5% by 2030 and remain elevated at least through 2035. This dramatic shift affects the entire power sector value chain, from generation assets and transmission infrastructure to utilities and power purchase agreements (PPAs).

The higher rate environment has particularly impacted project economics across the power market. As most energy investments are debt-financed, rising interest rates can significantly increase the weighted average cost of capital and disproportionately affect more highly leveraged sub-sectors like renewables. For example, a 2% rise in the risk-free rate can push up the levelized cost of electricity for renewables by 20%, compared to 11% for gas-fired generation. For utilities specifically, EIA reports record-breaking rate increase approvals of near $10 billion dollars in 2023—more than double the $4.4 billion authorized in 2022—highlighting the broader pressure on power market participants to maintain investment-grade ratings while funding critical infrastructure. Acting as critical offtake counterparties, the creditworthiness of utilities has wide ranging implications for the efficient financeability of independent projects.

**EXHIBIT 6: Approved utility rate increases**




Surces: S&P Capital IQ, International Energy Agency (IEA) September 2024.
Note: The U.S. dollar amounts are shown In billions of chained 2023 dollars.

The challenging rate environment has not only increased borrowing costs but also reduced access to traditional financing sources. Traditional financing tools—including fixed-rate bonds, tax equity, and construction loans—have become more expensive or harder to access. In response, developers and sponsors are increasingly turning to private market solutions, including subordinated debt, hybrid instruments, and tax credit monetization. While these alternatives often carry higher costs, they offer the execution certainty and structural flexibility needed to maintain project momentum in today's constrained financing environment.

At the same time, higher discount rates have pressured valuations and made equity more expensive to raise, which in turn has contributed to a lag in renewable M&A and associated acquisition financing. Given the pent-up demand, even modest declines in rates could release a wave of new acquisition financing opportunities at both the asset and platform levels.

**Investment implications:** The evolving interest rate landscape is reshaping power market investment strategies across the risk spectrum. Success requires careful evaluation of project returns against higher hurdle rates, innovative financing structures, and strategic positioning within regional power markets. While entities with strong balance sheets and contracted revenues maintain advantages, the trend toward private capital participation and alternative financing mechanisms suggests a fundamental restructuring of power sector investment opportunities and enhanced market appetite for risk. This environment particularly favors investors who can provide flexible and timely capital solutions across the power market value chain, from generation to end-user infrastructure, while remaining diligent and principled in the underwriting and pricing of risk.

## Conclusion

The U.S. power market stands at a critical juncture shaped by four transformative forces: unprecedented AI-driven power demand, shifting policy frameworks under the OBBBA, renewable energy growth despite regulatory and infrastructure constraints, and a high-interest rate environment. The intensifying competition in the market has also led to more aggressive deal terms and compressed returns, requiring careful risk assessment and a disciplined investment approach.

Success in this evolving landscape requires strategic navigation of these interconnected challenges while capitalizing on emerging opportunities. Asset managers that can combine deep industry expertise, strong relationships, and creative financing approaches while maintaining prudent underwriting standards will be best positioned to achieve resilient, long-term results in this complex and rapidly changing market environment.

**Risk Considerations**

Investing involves risk, including possible loss of principal. Past Performance does not guarantee future return. All financial investments involve an element of risk. Therefore, the value of the investment and the income from it will vary and the initial investment amount cannot be guaranteed. Infrastructure companies are subject to risk factors including high interest costs, regulation costs, economic slowdown, and energy conservation policies. Infrastructure investments are long-dated, illiquid investments that are subject to operational and regulatory risks.

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