The Changing Role of Natural Gas in the New Energy Landscape

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Executive Summary

The energy transition has proven more complex than recently envisioned, with affordability, reliability and resilience emerging as critical counterweights to broad support for rapid decarbonization. In this environment, natural gas is not a step backward but a practical, scalable energy foundation that enables progress while supporting long-term sustainability goals.

To understand the role natural gas can play, it is important to recognize the critical pressures and considerations influencing the transition:

- **Complicating factors:** Inflation, supply chain bottlenecks, interconnection delays and erratic federal policy have undermined project economics and complicated the timing and scale of the renewables build-out.
- **Reliability risks:** Extreme weather events and blackouts—both in the U.S. and abroad—highlight the vulnerabilities of grids relying too heavily—and too quickly—on intermittent resources.
- **Essential role of gas:** Natural gas provides dispatchable capacity, affordability and resilience advantages, supported by abundant domestic supply and alignment with system operator needs.
- **Pragmatic path forward:** Balancing near-term realities with long-term ambitions requires harmonized planning, adaptive policies and clear communication of the value gas brings to ratepayers and the electric grid.

Effective stakeholder engagement will require operators clearly and proactively answer two important questions: (1) how cost effective are these gas resiliency investments relative to their alternatives and (2) why are incumbent utilities best positioned to develop & operate these solutions?

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What Factors Have Complicated the Energy Transition?

The changing macroeconomic and operational backdrop

In recent years, the noble pursuit of a low-carbon future through accelerated renewable development and broad electrification initiatives has found advocates among traditional energy suppliers, governments and investors alike. In a world of abundant wind and solar resources, many parts of the country concluded that the path of least resistance to meet decarbonization targets was to 'electrify everything.' That approach likely underestimated the impact of several external factors that operators would need to navigate in delivering these goals over such aggressive timelines.

First, project economics have become a persistent and growing challenge, as manufacturing bottlenecks,[1] lengthy generator interconnection queues[2] and unfavorable federal policy[3] each make renewables less competitive on a unit-cost basis. Exacerbating the cost picture, some of the most ambitious state-level energy transition goals were established just before the post-pandemic inflation surge, complicating regulators' efforts to balance system affordability and reliability against climate policy.

Next, natural disasters – such as wildfires, droughts and other extreme weather events – are becoming more frequent and longer in duration, consistently straining the grid and exposing system vulnerabilities across the U.S. (see Figure 1). These ongoing stress tests are forcing operators to confront a growing accumulation of operational risks in an energy value chain increasingly exposed to large-scale shifts on both the supply and demand sides.

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[1] US solar panel production soars but still lags demand - E&E News by POLITICO
[2] Queued Up: Characteristics of Power Plants Seeking Transmission Interconnection | Energy Markets & Policy
[3] Effects Of "One Big Beautiful Bill" On Projects | Norton Rose Fulbright - July 2025

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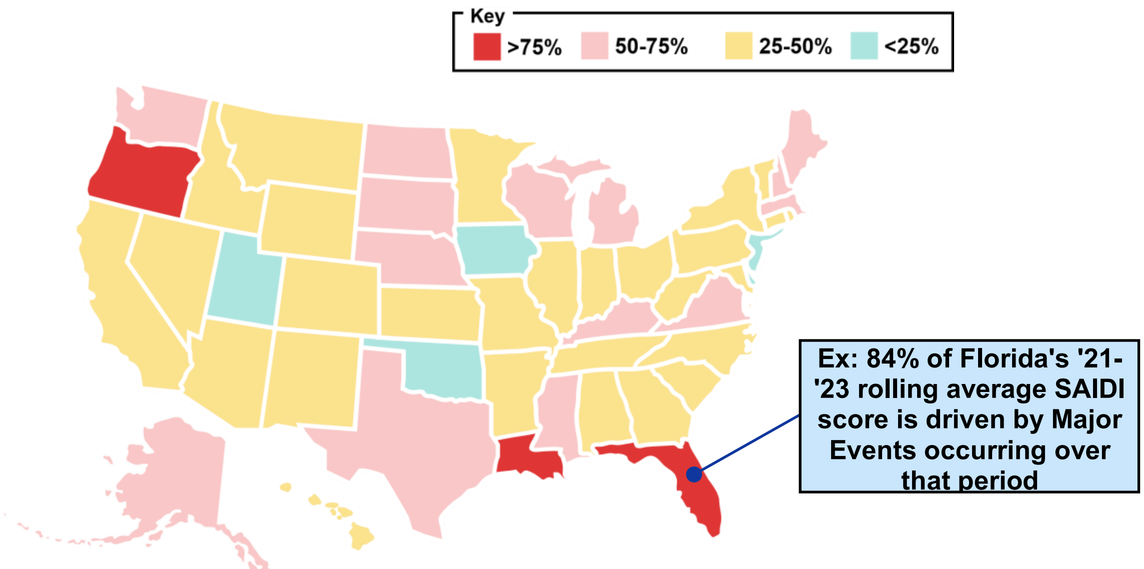
Figure 1: Contribution percentage of Major Events (e.g., severe weather or disasters) to 3 yr. avg. SAIDI scores by state (2021-2023)

Sensitivity of reliability to major events by state

Relative Contribution of major events to rolling average SAIDI (2021-2023)



Top 10: Major Events contribution to statewide SAIDI

State	Statewide SAIDI ('23)	Avg. SAIDI ('21-'23)	Major Events % of Avg. SAIDI ('21-'23)
Louisiana	192	1769	**88%**
Florida	68	429	**84%**
Oregon	105	639	**83%**
Texas	124	504	**74%**
Nebraska	57	218	**73%**
North Dakota	69	238	**71%**
Rhode Island	52	194	**68%**
Michigan	162	516	**67%**
Massachusetts	81	254	**67%**
Kentucky	143	399	**65%**

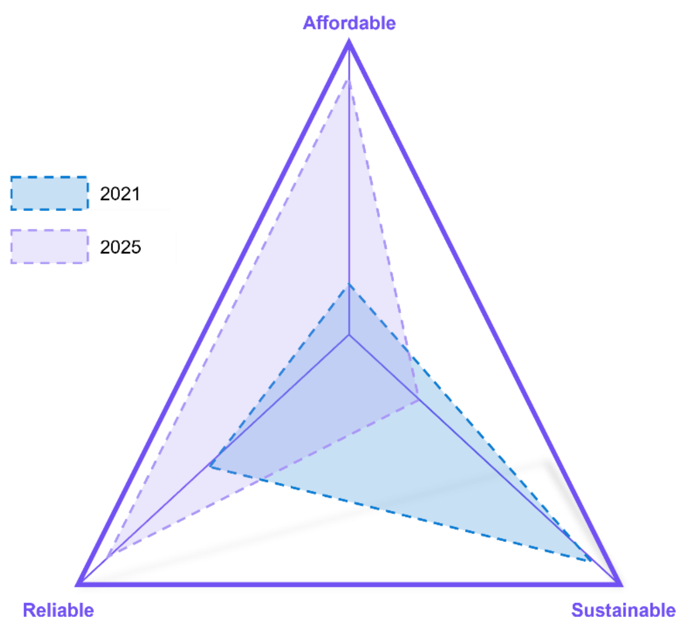
Finally, these reliability risks are not limited to geographies with the highest exposure to natural disasters like hurricanes or ice storms. Spain's widespread blackout in April 2025 is a great illustration of the technical complexities, and risks, of integrating inverter-based, intermittent resources (solar, wind) into an aging bulk power system originally designed for thermal resources (gas, coal, nuclear).[4]

The practical challenges for operators and ratepayers

In the aftermath of the electric sector's race toward sustainability investment, gas Local Distribution Companies (LDCs) were faced with navigating a significantly more difficult environment for justifying natural gas infrastructure investments, particularly in the U.S. and Western Europe. Gas operators were instead directed to develop their own decarbonization plans based on ambitious targets for energy efficiency, replacement of gas furnaces & boilers with electric heat pumps and rapid integration of bio-methane (RNG) and hydrogen into the gas fuel supply. However, execution against these goals has led to several important realizations, and shifts in priorities, that impact both electric and gas operators (Figure 2).

Figure 2: Illustrative representation of the post-Covid shift in priorities for U.S. regulators and policymakers

The energy trilemma: finding balance across the three-part mandate



[4] Spanish Lessons in the Dark: Implications of the Iberian Outage for Energy Planners and Investors | Teneo

1. Economic barriers to implementation

Early-stage sustainability initiatives have revealed higher-than-anticipated infrastructure costs, schedule overruns and complexity across the full value chain—from generation to transmission and distribution. These challenges have led regulators in several jurisdictions to deny cost recovery for high-visibility pilot programs, citing a lack of proven economic value:

- Renewable Natural Gas (RNG) projects in both Philadelphia and broader Pennsylvania have been denied inclusion in the rate base in recent years, with regulators citing insufficient cost-effectiveness and low market maturity.[5]
- Proposed hydrogen blending pilots by California utilities, including SoCalGas and SDG&E, have faced regulatory delays and were excluded from rate recovery pending further demonstration of safety, emissions reduction benefits, customer affordability and program scalability.[6]
- PG&E's proposed zonal electrification project at CSU Monterey Bay was withdrawn from its investment plan, citing drawn out disputes about the solution's cost-effectiveness as an alternative to pipe replacement and how to equitably allocate those costs between electric and gas customers.

2. Growing strain on grid reliability

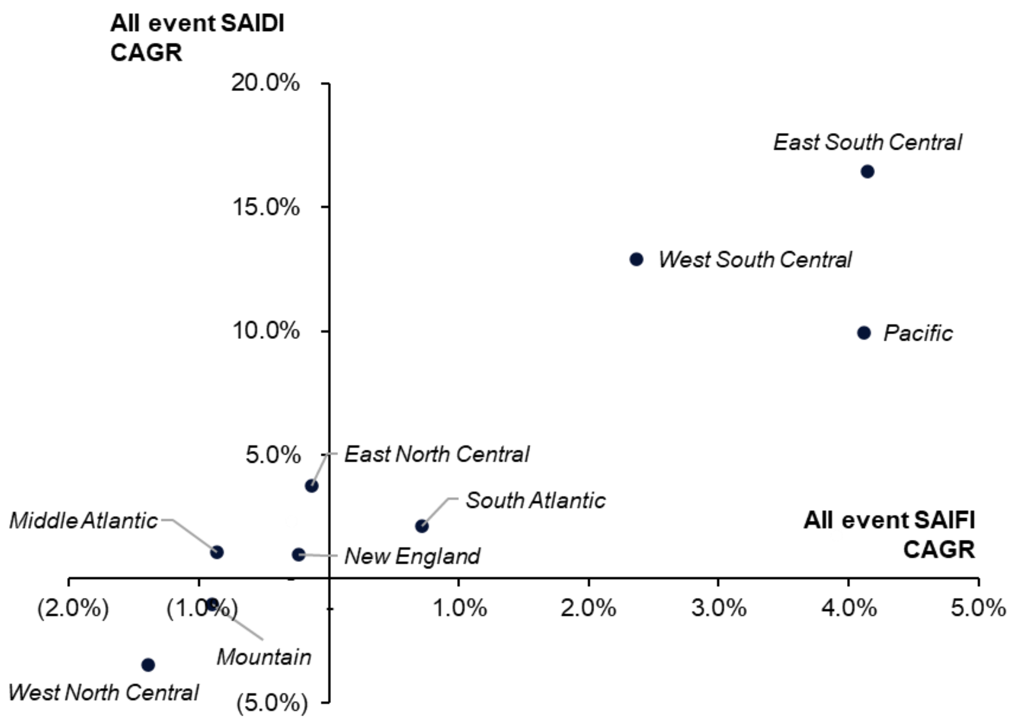
Grid operators are also contending with increasing reliability pressures as intermittent renewables are layered onto legacy infrastructure without adequate backup resources or battery storage. Recent high-profile grid disruptions—from the Iberian Peninsula blackout to Winter Storms Uri and Elliott in the U.S.—highlight the vulnerability of systems operating without dispatchable reserves.[7]

This isn't theoretical. As shown in Figure 3, regions like East South Central (AL/KY/MS/TN) and West South Central (AR/LA/TX/OK) are experiencing double-digit compound annual growth in both outage duration (SAIDI) and outage frequency (SAIFI)—a clear sign that grid stress is intensifying over time. In contrast, regions with more resilient infrastructure or lower exposure to extreme events are holding the line or even improving.

These trends point to a broader challenge: managing reliability risk in parallel with long-term decarbonization goals. Without a coordinated approach to investment and infrastructure planning, the bulk energy system risks becoming both less affordable and less reliable—even as it becomes nominally more sustainable.

[5] PA ignores RNG's non-energy benefits, rejects Philadelphia utility's green-energy plan - American Biogas Council
[6] UCI's Hydrogen Blending Pilot: Safety, Feasibility and Controversy
[7] Spanish Lessons in the Dark: Implications of the Iberian Outage for Energy Planners and Investors | Teneo

Figure 3: SAIDI 10-year CAGR vs SAIFI 10-year CAGR



Source(s): SAS Output (11.04), SAS Output (11.05)
Note: 'All event' SAIDI and SAIDI data was used in this analysis

How Can the Energy Sector Create Space for Gas Investments?

Align reliability expectations across infrastructure operators

As the energy system becomes more interconnected, aligning expectations for reliability across sectors – especially between electricity and natural gas – is becoming increasingly urgent. Grid operators are leaning more heavily on gas-fired generation to backstop variable resources (solar, wind) and manage system stress during peak demand. Even in hydro-rich systems like Québec, electric utilities have invested in access to gas peaking capacity to ensure reliability during winter extremes—passing those costs through to ratepayers as a necessary part of system planning.

Despite this growing interdependence, responsibility for ensuring reliability is not consistently understood or shared across the value chain. A recent example: 87% of electric sector participants in the North American Energy Standards Board (NAESB) Gas-Electric Harmonization Forum[8] supported state action to ensure 24/7 operational readiness of gas suppliers during extreme weather. Only 41% of gas sector

[8] North American Energy Standards Board, Gas Electric Harmonization Forum Report, July 28, 2023

participants supported the same measure – highlighting a gap in how risk and responsibility are perceived and assigned.

Bridging this divide requires more than infrastructure investment or regulatory reform. It calls for greater alignment of expectations across market participants, sectors and jurisdictions—and a shared understanding among stakeholders of the trade-offs, risks and value propositions associated with reliability. Without that, technical solutions may stall in the face of public skepticism, policy fragmentation or investor uncertainty.

Shift the policy narrative to energy security and affordability

In the face of rising concern about affordability, reliability and the technical limits of accelerated electrification, natural gas is increasingly recognized as an essential enabler of a pragmatic, phased energy transition. As such, state regulators and operators should together examine several categories of ratepayer benefits from additional gas infrastructure investment:

Reliable and Dispatchable Generation

U.S. regional transmission organizations (RTOs/ISOs) like MISO, ISO-NE, PJM and SPP have each emphasized that electricity system reliability "has never been more dependent upon the round-the-clock continuity of just-in-time natural gas delivery."[9] With intermittent renewable power growing as a share of total output and dispatchable capacity retiring, natural gas will need to provide a critical firming function across regions indefinitely.

Abundant and Scalable North American Supply

The U.S. is the world's largest producer of natural gas and, when factoring in technically recoverable resources, has supply capacity to meet current production levels for over 80 years. As noted in NERC's Summer 2024 Reliability Assessment, nearly every region relies on gas-fired generation during peak demand, and this dependency will only continue to grow as electrification increases.

Affordability Advantage for Consumers

Natural gas remains competitively priced compared to electricity and continues to offer more predictable bills for residential customers. According to a recent AGA-CGA investor report (2024),[10] affordability and cost predictability are cited by investors as key reasons why customers and regulators continue to support gas as part of the household energy mix.

[9] 2024 Long-Term Reliability Assessment Report
[10] AGA-CGA_Investor_Report_FINAL_11-5-24

Industry, Regulator and Grid Operator Support

The NAESB Gas-Electric Harmonization Forum,[11] as well as the joint RTOs cited above, have issued clear guidance on the operational necessity of natural gas to meet reliability standards and system resilience expectations. The recommendation from these forums is not only to protect gas infrastructure but also to improve harmonization, coordination and market incentives between gas and electric system investments.

Balance near-term realities with long-term ambitions

As policymakers and market participants reevaluate their pathways to net zero, there is growing consensus that the transition will be slower, more complex and more costly than initially envisioned. That reality is not a failure—it is a recalibration. Striking the right balance between decarbonization goals and near-term deliverability is essential for public confidence and economic continuity. Operators need to develop a balanced communication and stakeholder engagement strategy that more effectively conveys the basis of their long-term gas plans.

We must invest in both the future and the present	Long-term climate goals remain important, but so too is ensuring ratepayers can afford energy today. Strategic use of natural gas infrastructure can serve as a "reliability dividend" – offsetting higher upfront costs of electrification and allowing for more deliberate, staged investment in grid modernization and renewables.
Gas will be an important "rainy day' resource	Maintaining and modernizing natural gas infrastructure is not redundant—it is resilience. As highlighted in the Congress's 2024 report on reliability,[12] and supported by recent events (Winter Storms Uri, Elliott and the Iberian blackout), natural gas remains essential during extreme weather events when renewable output is constrained or energy demand spikes unexpectedly.
Capital must flow where it delivers both economic and reliability value	Investor sentiment, as documented in the AGA-CGA 2024 investor survey, is cautiously bullish on natural gas. The sector is increasingly viewed as a critical hedge against volatility in both electricity markets and ESG-driven capital allocation cycles.

[11] North American Energy Standards Board, Gas Electric Harmonization Forum Report, July 28, 2023
[12] Natural Gas Reliability: Issues for Congress | Congress.gov | Library of Congress

Where Does the Energy Sector Go From Here?

As the energy transition plows ahead, urgency around rapid electrification and decarbonization is giving way to a more pragmatic understanding of real-world constraints. Affordability, reliability and operational resilience have become central concerns – alongside sustainability – as stakeholders navigate rising demand, grid strain and consumer cost pressures.

Across the industry, consensus is forming on what must change. NERC, NAESB, NARUC, FERC, MISO, PJM, ISO-NE and others have produced extensive studies and aligned recommendations. Yet despite this volume of analysis, meaningful action has lagged. We believe the missing ingredient is enthusiastic, bottom-up support, with stewardship from infrastructure operators. To move from ideas to implementation, constituents – regulators, communities, customers – must better understand the challenge in practical terms, the viable solutions and their trade-offs.

Natural gas infrastructure offers a critical energy foundation: scalable, affordable and dependable. Investing in gas is not a step back—it is a necessary enabler of a stable, inclusive energy transition. When communicated clearly, and connected to the local outcomes people care about, natural gas becomes a practical answer to a complex problem—and a way to turn alignment (within industry forums) into actual progress working against the risks.

Recognizing the role and importance of gas infrastructure is no longer a policy debate – it is now a strategic imperative.

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