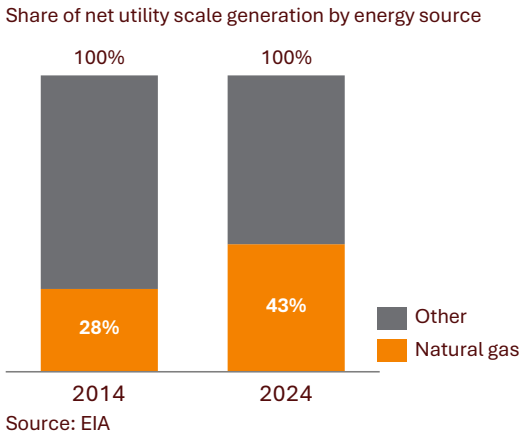
Reliable Energy

Delivering on the Promise of Gas-Electric Coordination

NPC Annual Meeting: December 3, 2025

Context – NPC Gas-Electric Coordination Report

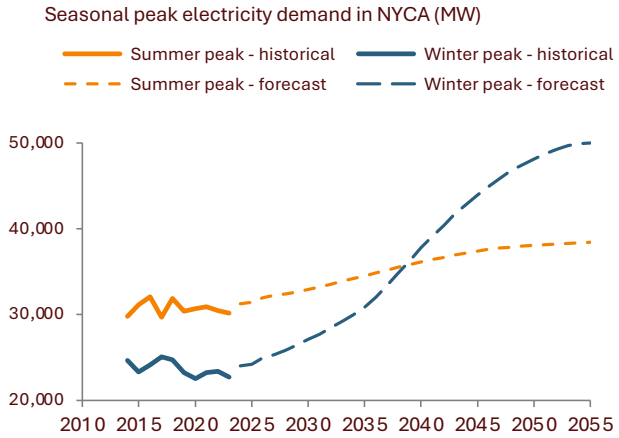
Natural gas is helping to power the US economy …



Source: EIA

Natural gas is now the dominant fuel for US electricity generation, providing **43%** of utility-scale power supply in 2024, up from **28%** in 2014

…but there is pressure on both gas and electric sectors …



- Both sectors face rapid demand growth (particularly in winter), infrastructure constraints, & more frequent extreme weather events
- Disruptions in one sector can now cascade into the other, risking widespread outages & higher costs

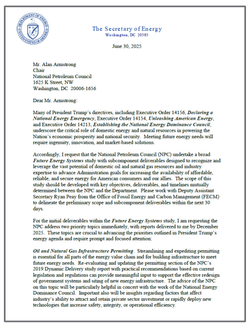
… and a clear need for a better path forward

We need to:

- Analyze the **roots and impacts** of gas-electric misalignment
- Highlight **key risks** and recent reliability events
- Recommend **actionable strategies for better alignment**, reliability, and resilience across both sectors

Introduction – NPC Gas-Electric Coordination Report

A mission for better coordination …



The Secretary of Energy
Washington, DC 20585

June 30, 2025

Mr. Alan Armstrong
Chair
National Petroleum Council
1625 K Street, NW
Washington, DC 20006-1656

Dear Mr. Armstrong:

Many of President Trump's directives, including Executive Order 14156, ***Declaring a National Energy Emergency***, Executive Order 14154, ***Unleashing American Energy***, and Executive Order 14213, ***Establishing the National Energy Dominance Council***, underscore the critical role of domestic energy and natural resources in powering the Nation's economic prosperity and national security. Meeting future energy needs will require ingenuity, innovation, and market-based solutions.

Accordingly, I request that the National Petroleum Council (NPC) undertake a broad ***Future Energy Systems*** study with subcomponent deliverables designed to recognize and leverage the vast potential of domestic oil and natural gas resources and industry expertise to advance Administration goals for increasing the availability of affordable, reliable, and secure energy for American consumers and our allies. The scope of this study should be developed with key objectives, deliverables, and timelines mutually determined between the NPC and the Department. Please work with Deputy Assistant Secretary Ryan Peay from the Office of Fossil Energy and Carbon Management (FECM) to delineate the preliminary scope and subcomponent deliverables within the next 30 days.

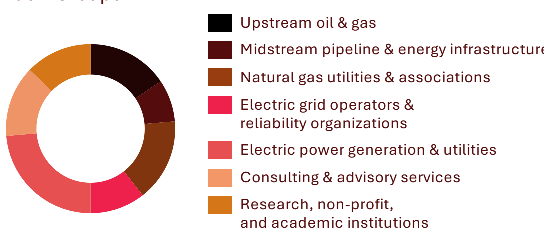
For the initial deliverables within the ***Future Energy Systems*** study, I am requesting the NPC address two priority topics immediately, with reports delivered to me by December 2025. These topics are crucial to advancing the priorities outlined in President Trump's energy agenda and require prompt and focused attention:

Oil and Natural Gas Infrastructure Permitting. Streamlining and expediting permitting is essential for all parts of the energy value chain and for building infrastructure to meet future energy needs. Re-evaluating and updating the permitting section of the NPC's 2019 Dynamic Delivery study report with practical recommendations based on current legislation and regulations can provide meaningful input to support the effective redesign of government systems and siting of new energy infrastructure. The advice of the NPC on this topic will be particularly helpful in concert with the work of the National Energy Dominance Council. Important also will be insights regarding factors that affect industry's ability to attract and retain private sector investment or rapidly deploy new technologies that increase safety, integrity, or operational efficiency.

DOE Secretary Wright requested the NPC bring unique insights into the misalignment of the gas and electric sectors, which may threaten energy security, reliability and affordability.

…to develop a holistic cross-sectoral review…

Organization representation by sector on the Study Committee, Coordinating Subcommittee, and Task Groups



Report was directed by a study team composed of senior leaders from the gas and electric power industries, along with representatives from government, academia, and public interest organizations.

…that covers major events from the past ~20 years

~5 **months** of research and analysis

+30 **sources** reviewed in a comprehensive literature scan

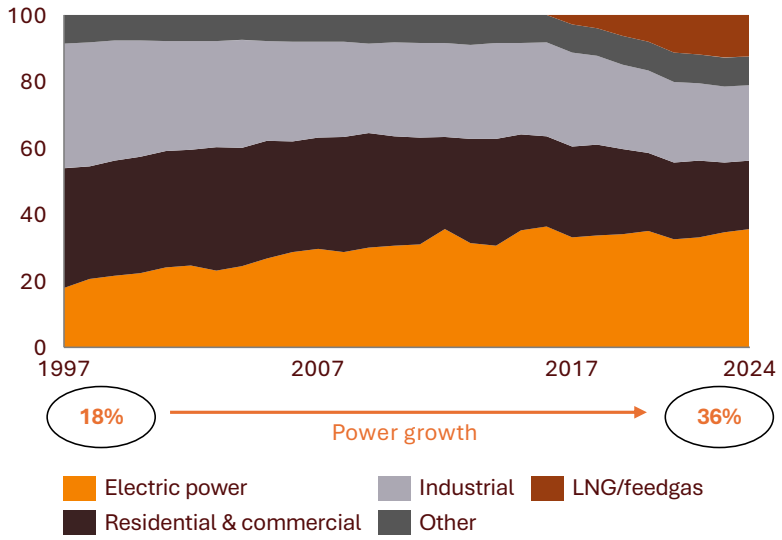
10 final **recommendations** developed for the report

Historical development of the gas & electric sectors

Electric power is the largest consumer of gas and is forecast to continue to grow

US Natural Gas Consumption by End Use
Share % (1997-2024)

Source: EIA



Gas and power sector regulation has historically developed separately

Gas

Regulation driven by:

- Supporting peak load
- Supply gas to large non-power consumers (industrial loads)
- Cost recovery
- Regional production dynamics and supply basins

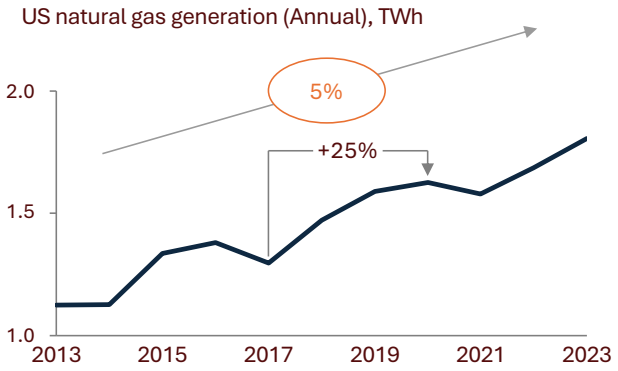
Power

Regulation driven by:

- Competitive markets
- Arranged across ISOs/RTOs
- Balance of short-term availability and supply
- Reliability standards

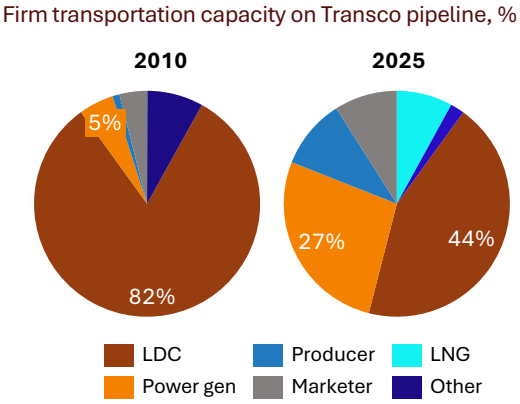
The state of the gas & electric markets today

Gas use is growing in the US electricity sector



Gas generation has grown at a 5% CAGR from 2013 to 2023, including a 25% surge between 2017 and 2020 during the early years of the shale revolution

Gas demand is more variable with rise in flexible gas power



- Power generation has overtaken LDCs as the largest user of gas pipeline capacity.
- Gas demand is now more variable, with generators often relying on interruptible capacity.
- Gas power plants are critical for grid balancing.

This strong connection between the two sectors and the growing variability in demand means **misalignments are growing** and becoming **more consequential**

Fundamental differences between gas & power

Non-exhaustive examples

	Gas	Power
Operational	• Gas day from 9:00 a.m. Central through 9:00 a.m. Central the following day • Physical delivery dependent on pipeline capacity and storage • Limited short-term flexibility; linepack and storage are main balancing tools	• Power day trades within the standard calendar day of midnight to midnight in local time zones • Must balance instantaneously (supply = demand at every moment) • System operators dispatch in real time (e.g., every 5 minutes) • Frequency control and spinning reserves maintain reliability
Commercial	• Nominations and re-nominations on fixed schedules • Bilateral contracts common (firm vs. interruptible transport)	• Variable demand patterns to supporting peakers & intermittent renewables • Locational marginal pricing (LMP) reflects congestion & losses
Market design	• Limited transparency; less centralized trading • No single real-time balancing market	• Centralized organized markets (ISO/RTOs) • Co-optimization of energy, reserves, and ancillary services
Governance	• Regulated by FERC (interstate) and state commissions (intrastate) • Market participants include producers, pipelines, and local distribution companies	• Overseen by FERC and regional ISOs/RTOs • Stakeholder committees influence market rules and planning

4 key challenges have developed that need to be addressed

There are 4 key categories of challenges or ongoing misalignments emerging from the literature review that still exist in the current market:

Key challenges/misalignments	Ways it can be improved
1 **Operational** Inefficiencies and Misalignments	• Increasing investment and development of fit-for-purpose infrastructure across the energy value chain
2 **Market Design –** Economic Inefficiencies and Fuel Assurance Misalignments	• Fuel assurance, resource adequacy, and other critical reliability metrics on a state-by-state basis
3 **Commercial –** Gas Services Design and Fuel Assurance and Power Sector Misalignments	• Ensure gas generators have incentives to secure firm gas transportation capacity and supply to maximize fuel certainty
4 Fragmented **Governance**, Planning, and Reliability Coordination	• Embrace comprehensive long-term planning by regulators & government to take immediate action to ensure permitting reform unlocks fit-for-purpose infrastructure investment

Why healthy alignment matters

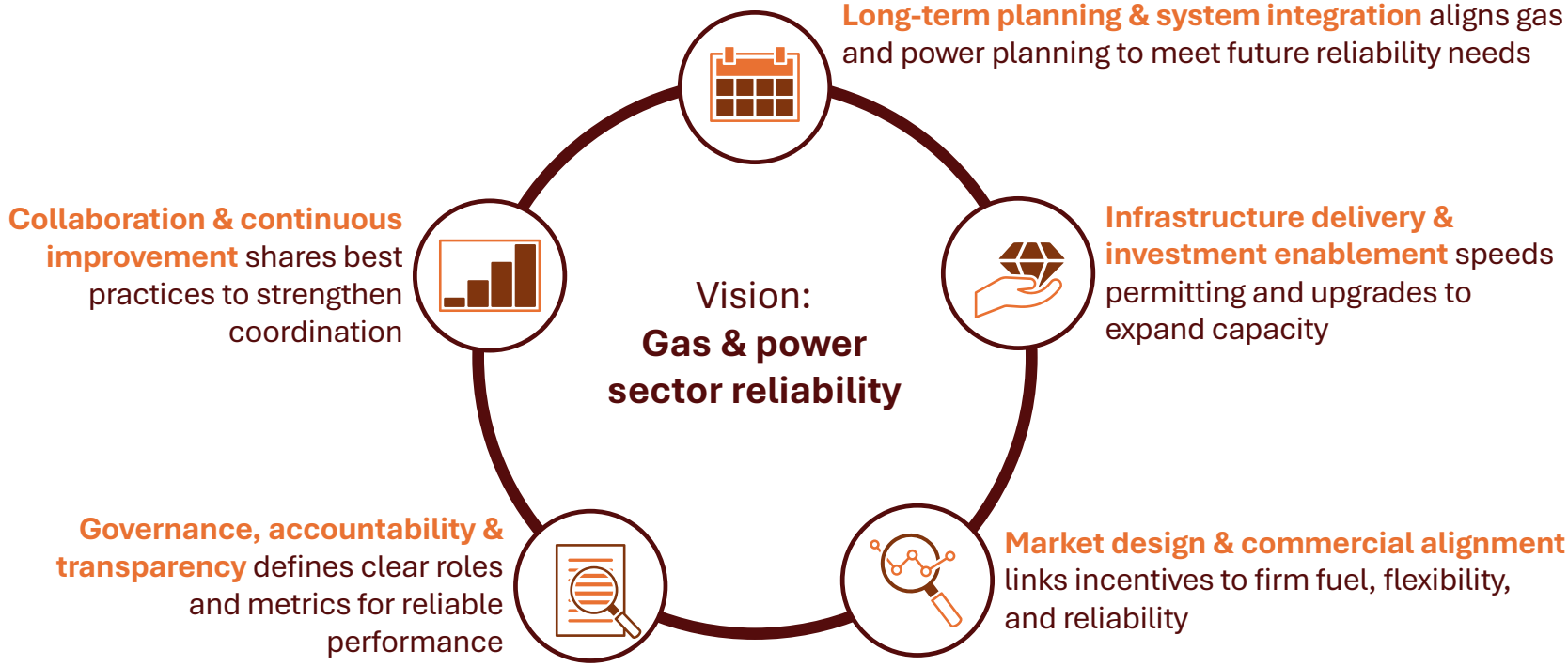
Healthy alignment requires robust infrastructure, shared priorities, clear accountability, and flexible market design. Failing to address misalignments increases the risk of outages, higher costs, and reduced resilience for consumers.

Principles of healthy alignment include:

1. Infrastructure Serves as the Foundation for Healthy Alignment: Strong, well-planned infrastructure enables reliable, flexible markets.
2. Inherent Physical Limitations Between Natural Gas and Electric Sectors Are Acknowledged: Recognize and plan around physical constraints like pipelines and storage.
3. Reliability and Resilience Are Shared Priorities: Coordinate to ensure dependable performance under all conditions.
4. Accountability Requires Transparency→ Clear roles improve risk management and system response.
5. Level of Service Expectations are Consistent→ Shared reliability standards align performance across sectors.
6. Commercial Solutions Enhance Alignment and Mitigate Risk→ Market tools manage risk and improve reliability efficiently.
7. Market Design Provides Flexibility to Adapt to Changes in Supply and Demand→ Flexible designs balance evolving system and market needs.
8. Policy Environment is Constructive→ Stable policies foster investment and accountability.
9. Participants Are Motivated to Reduce Misalignment and Friction→ Stakeholders collaborate to minimize inefficiencies.
10. Costs of Alignment Are Clearly Identified→ Transparent cost analysis guides effective action.

Recommendations to deliver on principles of healthy alignment

The report makes 10 recommendations across the below 5 buckets:



Full List of Recommendations

1. **Comprehensive Long-Term Planning:** Integrate resource adequacy and fuel assurance across sectors.
2. **Permitting Reform:** Streamline processes to accelerate infrastructure investment.
3. **Build New Infrastructure**: Construct fit-for-purpose pipelines, storage, and assets.
4. **Enhance Existing Infrastructure:** Upgrade current assets for near-term reliability.
5. **Reform Market Compensation**: Incentivize generators to secure reliable fuel supply.
6. **Accountability Framework**: Require prudent fuel supply arrangements and readiness plans.
7. **Expand Pipeline Services:** Develop flexible gas service offerings for variable generator needs.
8. **Clarify Roles & Responsibilities**: Clearly define accountability for reliability and fuel assurance.
9. **Leverage Existing Forums:** Use current industry groups to share leading practices.
10. **Improve Performance Metrics**: Expand and regularly report on reliability and fuel assurance metrics.