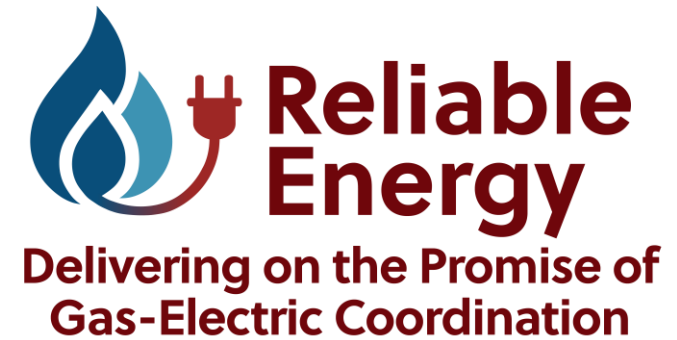


2025 Reports



2026-2027 Studies

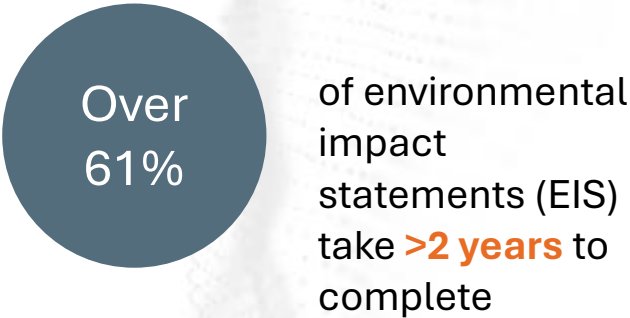
National Petroleum Council (NPC)

Origins	Petroleum Industry War Council in WWII.
Purpose	Sole purpose of NPC is to advise U.S. Secretary of Energy and Executive Branch by conducting studies at their request.
Organization	A Federally chartered, self-funded Advisory Committee; not an advocacy group, does not lobby.
Membership	Approximately 200 members from all segments of the oil and gas industries and non-industry members; NGOs, Academics, Professional Societies, State Government.
Study Participants	Diverse interests and expertise relating to the topic being addressed.
Study Reports	All NPC advice is provided in reports approved by its members and is available to the public.

Additional Information – www.npc.org



Legacy environmental permitting laws require modernization



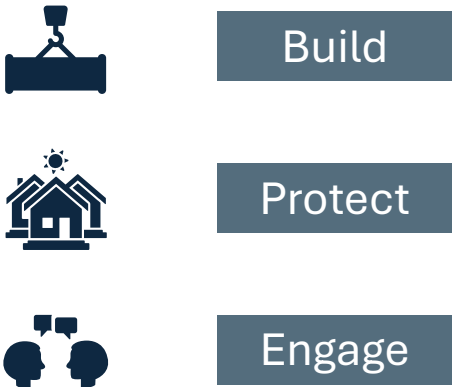
- Over time, legal interpretations have expanded scope without changes to statutory language
- Original intent has evolved into **lengthy, litigation-prone processes that slow development**

Cumulative process and litigation delays create instability



- Cumulative delays jeopardize project viability
- Instability contributes to the bottleneck where **infrastructure cannot expand at the speed required** to provide energy security, reliability, and affordability

The 'Triple Mandate' proving harder to balance

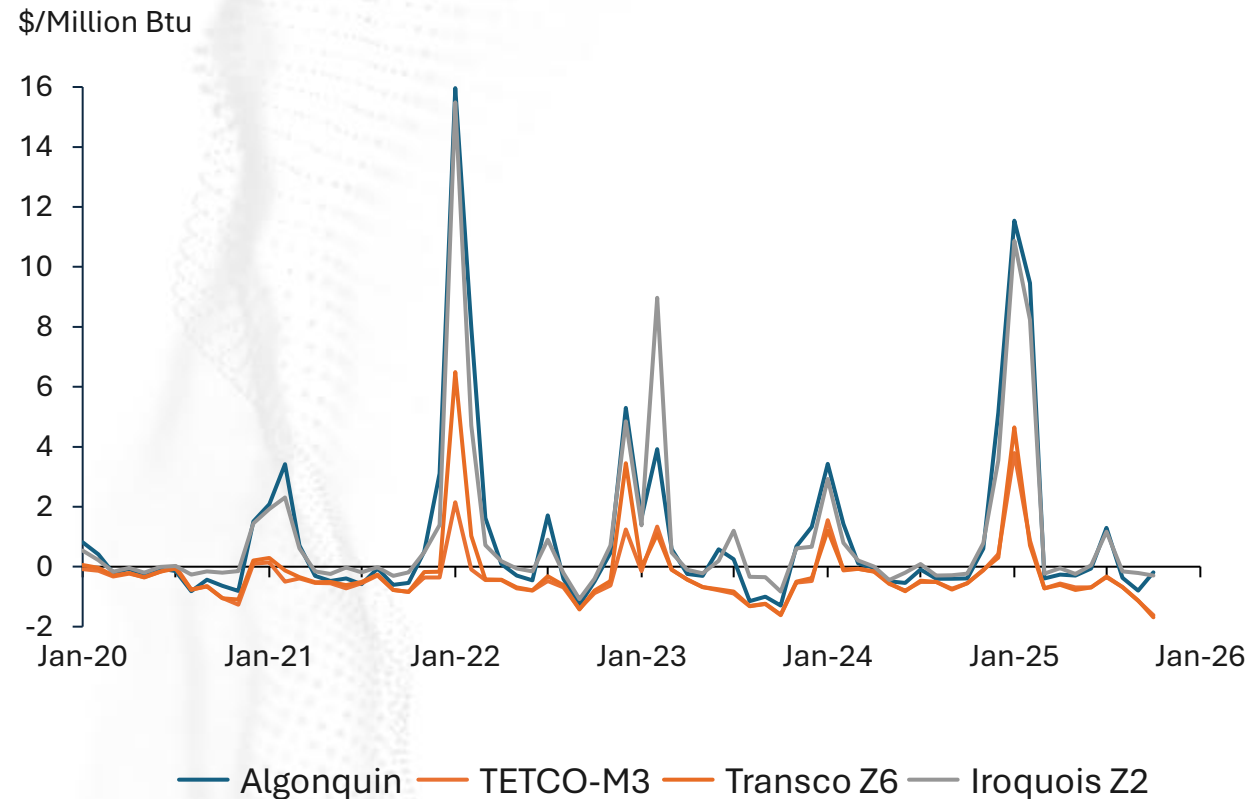


- Permitting has long operated under a “Build–Protect–Engage” mandate
 - This is **no longer balanced**
- Requirements have grown more complex while mechanisms that enable timely infrastructure buildout **have not kept pace**



These bottlenecks results in higher costs, price volatility and regional affordability issues for US consumers

Average natural gas basis differential to Henry Hub at major Northeast trading hubs



- Natural gas pipeline constraints along the East Coast continue to limit Appalachian gas flows, driving cost overruns and system inefficiencies

Example

Project delays from slow permitting also add to capital costs such as the Atlantic Coast Pipeline where costs rose from \$5.1B to ~\$8B

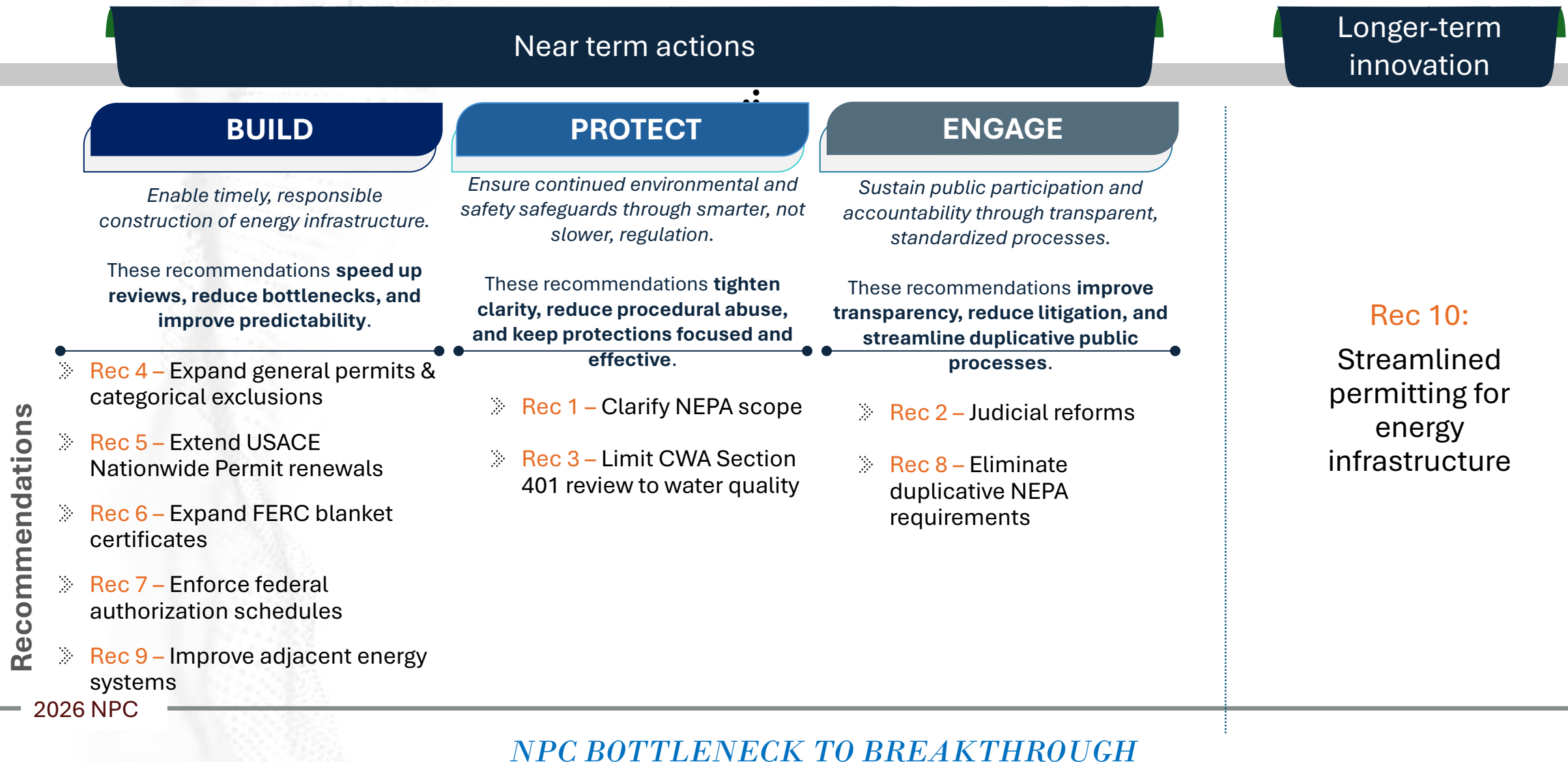
- Delayed pipeline build-out tightens takeaway capacity, amplifying regional price volatility and differences for end users

Example

NE hubs exhibit pronounced seasonal price spikes - during the Jan 2025 cold snap, Algonquin's differential was \$11.54, three times Tetco-M3's \$3.79 peak vs. Henry Hub



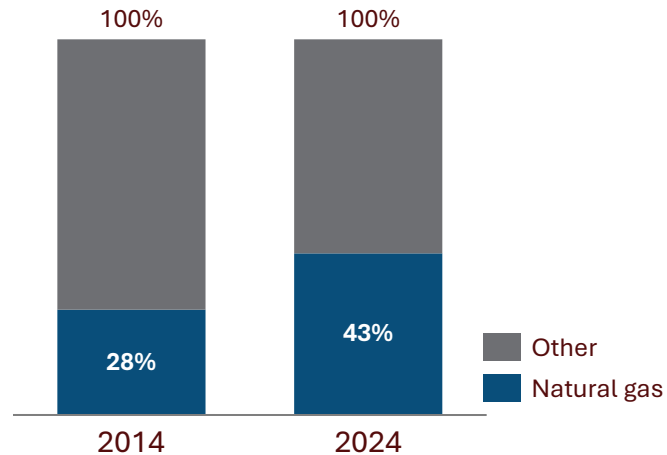
Recommendations | How to support the Build–Protect–Engage framework



Context – NPC Gas-Electric Coordination Report

Natural gas is helping to power the US economy ...

Share of net utility scale generation by energy source

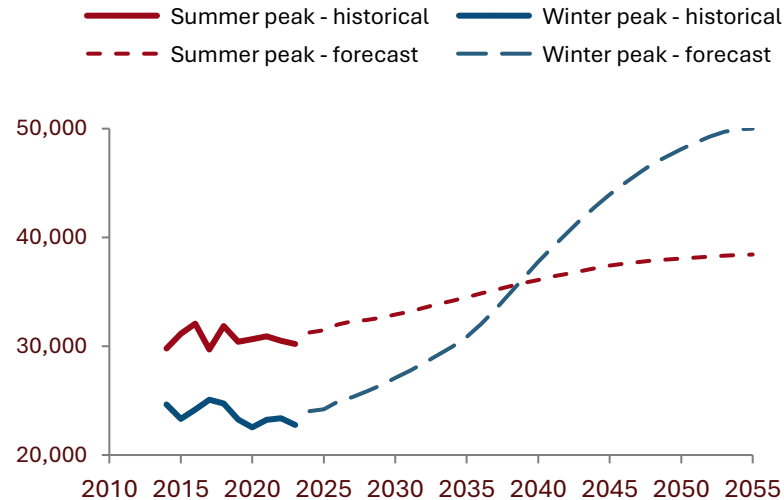


Source: EIA

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 ...

Seasonal peak electricity demand in NYCA (MW)



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

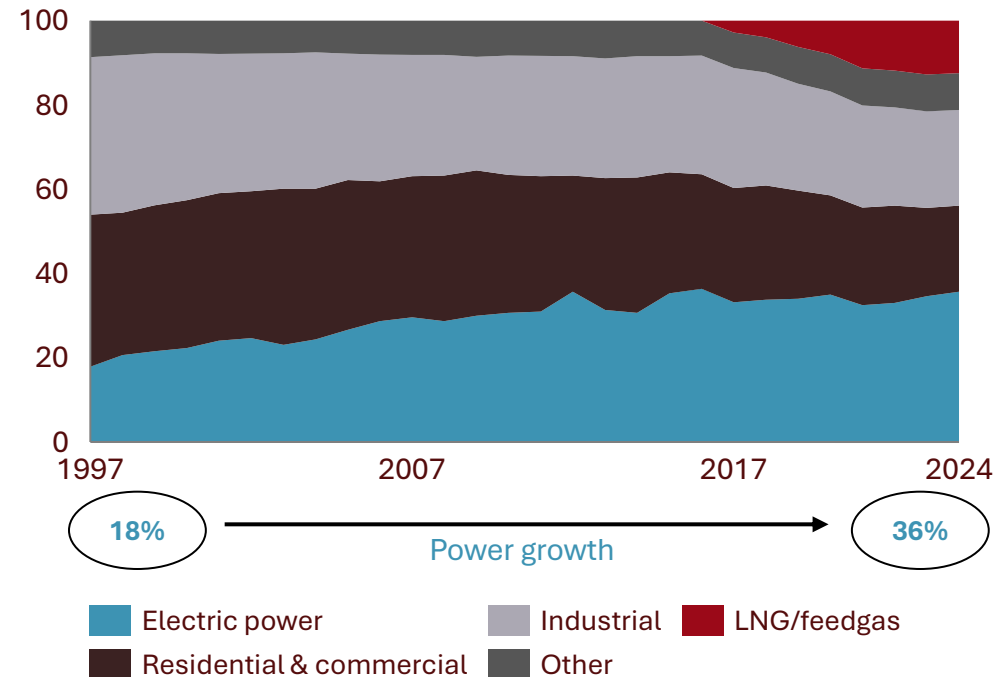
Historical development of the gas and electric sectors

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



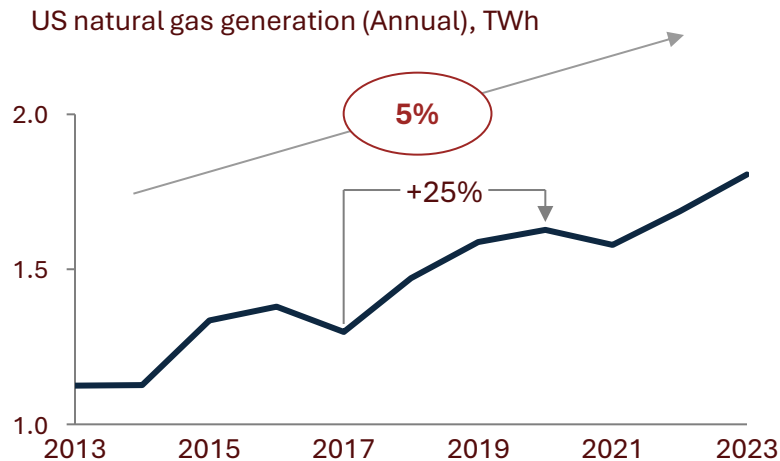
Power

Regulation driven by:

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

The state of the gas and electric markets today

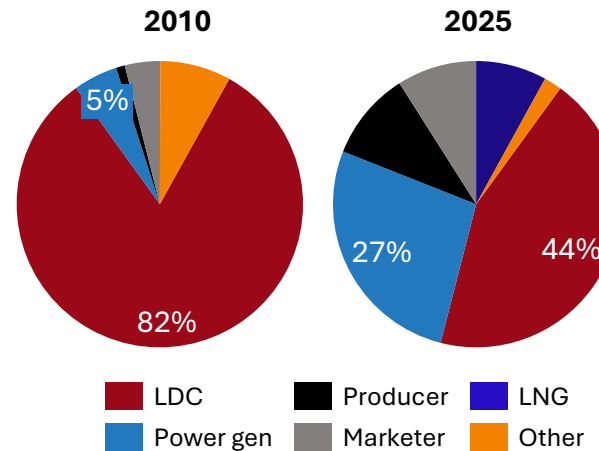
Gas use is growing in the US electricity sector



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

Firm transportation capacity on Transco pipeline, %



- Power generation has significantly increased its use 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 and power

Non-Exhaustive Examples



Gas



Power

Operational	- Physical delivery dependent on pipeline capacity and storage - Limited short-term flexibility; linepack and storage are main balancing tools - Gas Day from 9:00 a.m. Central through 9:00 a.m. Central the following day	- 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 - Power Day trades within the standard calendar day of midnight to midnight in local time zones
Commercial	- Nominations and re-nominations on fixed schedules - Bilateral transportation and storage contracts - Flexible commodity acquisition opportunities	- Variable demand patterns to supporting peakers and intermittent renewables - Locational marginal pricing (LMP) reflects congestion and 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 adequate risk-based 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 and 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

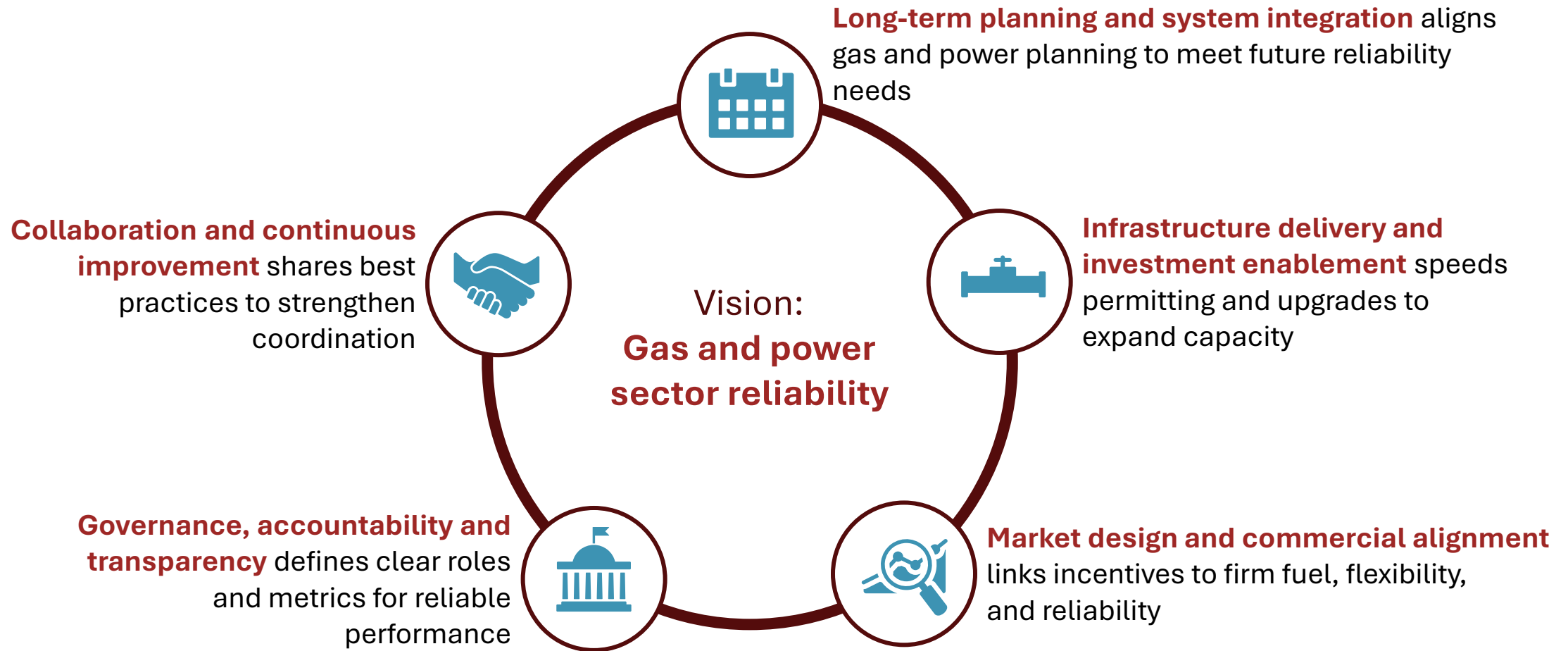
Participants Are Motivated to Reduce Misalignment and Friction → Stakeholders collaborate to minimize inefficiencies.

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. **Reform Permitting :** 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 Service Offerings:** Develop flexible gas service offerings for variable generator needs.
8. **Clarify Roles and 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.

2026/2027 Current Studies

- **Resource Assessment (August)**
- **Future Energy Systems – Natural Gas Storage (December)**
- **Produced Water (December)**
- **Future Energy Systems – Full Report (1st Qtr. 2027)**

QUESTIONS?

Reliable Energy: Delivering on the
Promise of Gas-Electric Coordination



<https://gas-electric.npc.org/>

Bottleneck to Breakthrough: A
Permitting Blueprint to Build



<https://permitting.npc.org/>

Download the Reports