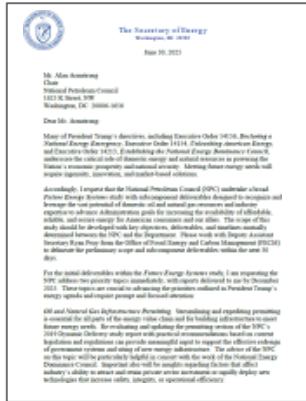


Introduction – NPC Gas-Electric Coordination Report

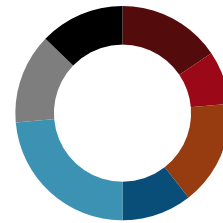
A mission for better coordination ...



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



- Upstream oil & gas
- Midstream pipeline & energy infrastructure
- Natural gas utilities & associations
- Electric grid operators & reliability organizations
- Electric power generation & utilities
- Consulting & advisory services
- Research, non-profit, and academic institutions

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 and studies from the past ~20 years

~5

months of research and analysis

+30

sources reviewed in a comprehensive literature scan

10

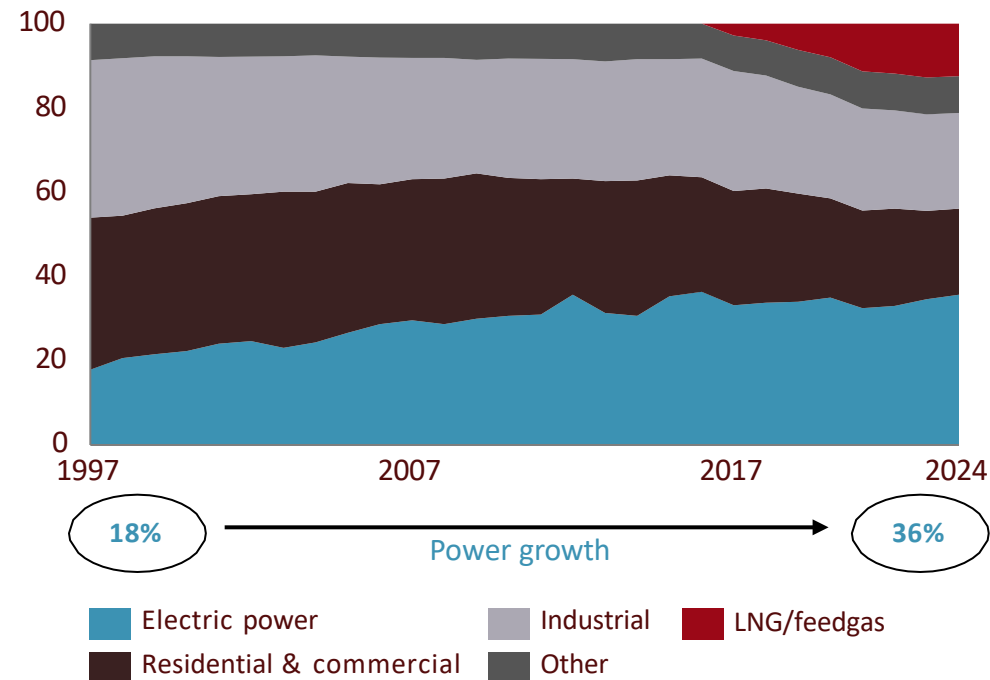
final recommendations developed for the report

Historical development of the gas 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

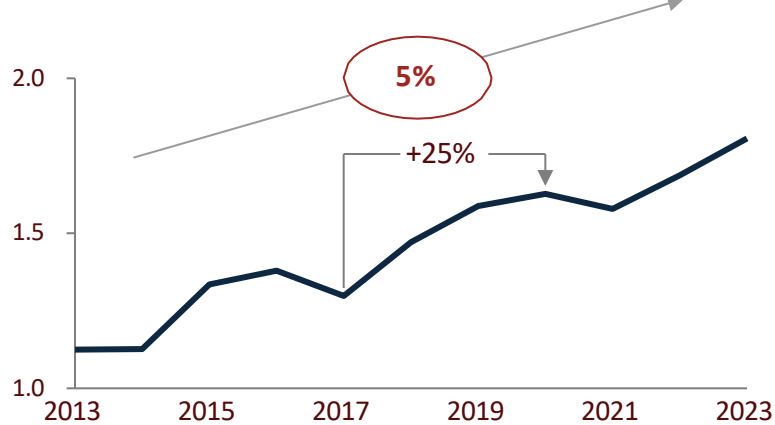
Regulation driven by:

- 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

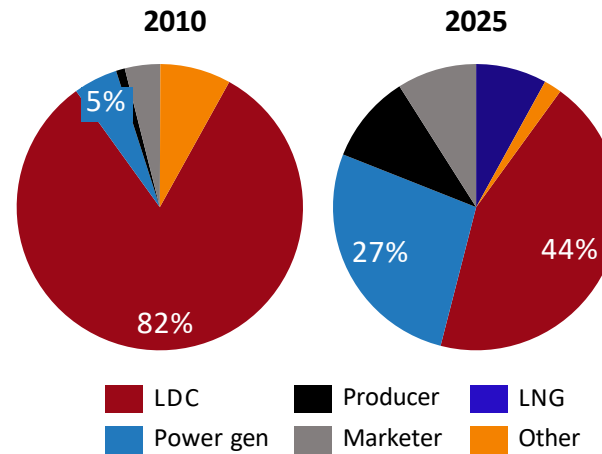
US natural gas generation (Annual), TWh



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**.

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		<ul style="list-style-type: none">Increasing investment and development of fit-for-purpose infrastructure across the energy value chain
2 Market Design – Economic Inefficiencies and Fuel Assurance Misalignments		<ul style="list-style-type: none">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		<ul style="list-style-type: none">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		<ul style="list-style-type: none">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.

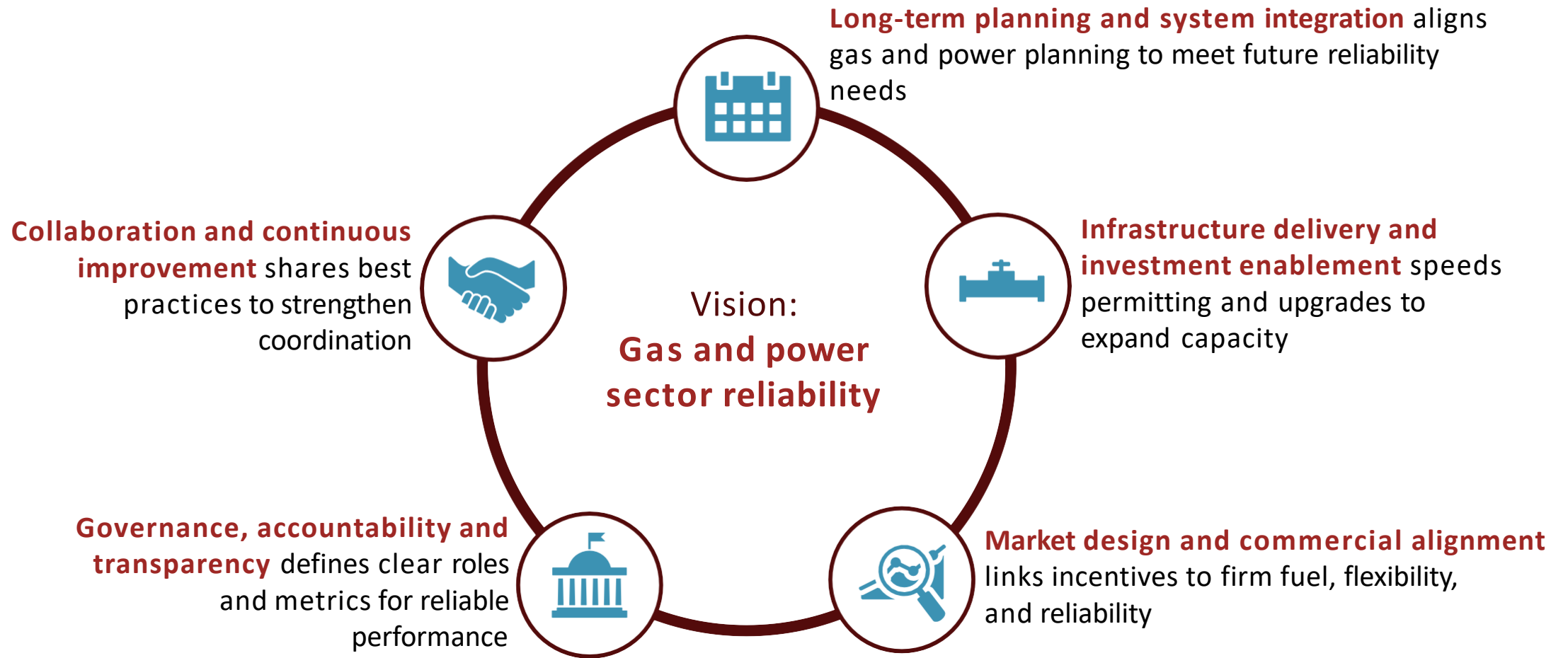


Principles of healthy alignment include:

- 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

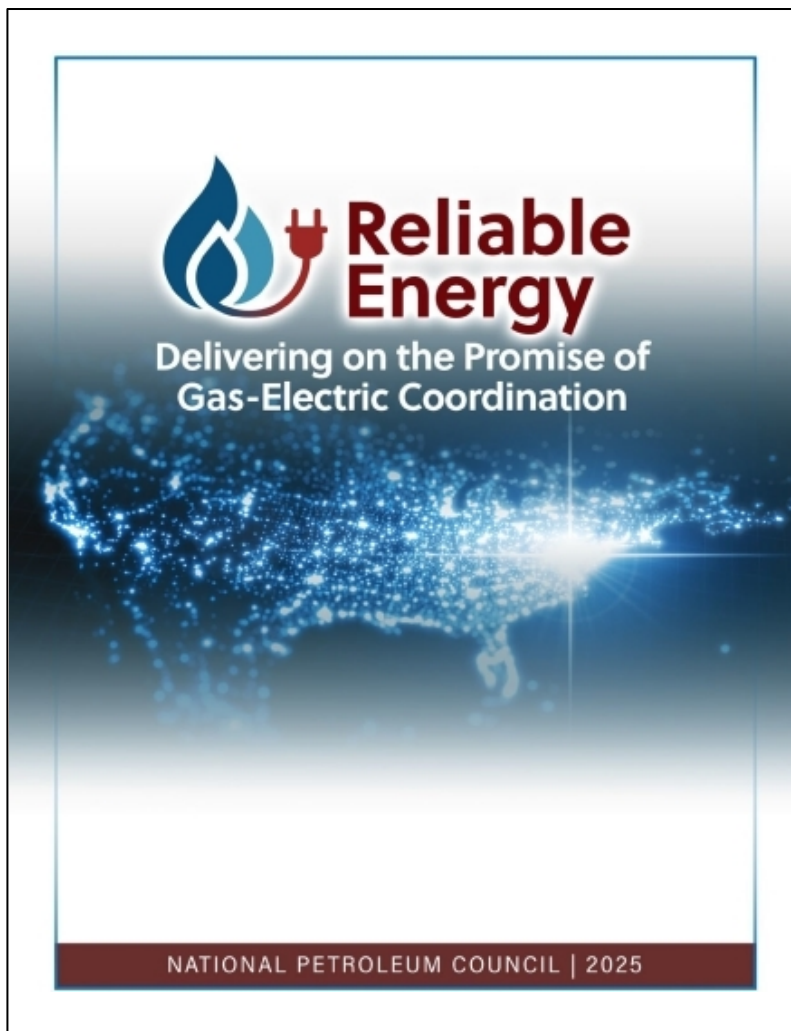
The report makes 10 recommendations across the below 5 buckets:



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.

Download the Report



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



Recommendation 1

Embrace Comprehensive Long-term Planning

Rationale

- Comprehensive long-term planning (including fuel assurance) is fundamental to ensuring natural gas and electricity customers receive reliable service at affordable levels.
- Capacity markets have not always proven to be an adequate substitute for comprehensive long-term planning.
- The abundance of available resource options and load profile combinations across multistate regions requires evaluation, including determination of firm fuel needs.
- Regulatory frameworks for organized markets may need to be revisited to ensure alignment between state obligations and RTO/ISO structures.

Recommendation

The NPC recommends FERC require RTOs/ISOs to conduct comprehensive long-term planning that integrates resource adequacy and fuel assurance considerations, in cooperation with affected states.

Recommendation 2

Reform Permitting

Rationale

- The uncertainty embedded in the current permitting process has a chilling effect on investment, leading to higher costs, longer construction times, and a material increase in the risk of completion.
- Business certainty and durable policies in permitting decisions are essential to mitigate current operational and energy adequacy risk for today's customers as well as respond to the rapidly increasing level of energy demand.
- While the process for obtaining permits should not compromise prudence, a path for expedited and durable outcomes at both the federal and state level must exist.

Recommendation

The NPC recommends Congress and the Executive Branch take immediate legislative and administrative action to reform permitting to unlock fit-for-purpose infrastructure investment.

Recommendation 3

Construct New “Fit-for- Purpose” Infrastructure

Rationale

- The ability for natural gas infrastructure to accommodate changing demand patterns is reaching its limit, elevating the risk of customer outages in certain regions.
- Fit-for-purpose investment across a spectrum of infrastructure solutions—including greenfield pipeline projects, natural gas storage facilities, pipeline expansions, new peak-shaving assets, and other related assets—is needed to accommodate variable load profiles and increasing demand.
- Increasing capacity in the system also enhances liquidity by creating more commercial opportunities, such as allowing for new market products and contracting options.

Recommendation

The NPC recommends that the natural gas and electric industries take urgent action to construct new fit-for-purpose energy infrastructure across the energy value chain, consistent with changing energy consumption patterns.

Recommendation 4

Enhance and Expand Existing Infrastructure

Rationale

- Optimizing and enhancing existing infrastructure may offer faster timelines than building new infrastructure.
- In recent years, most of the incremental pipeline capacity has been achieved through non-pipeline construction upgrades such as adding compression.
- These investment could include utility-scale batteries, expansion of natural gas storage facilities, installation of backup generation, pipeline compression additions, backup fuel solutions, delayed generation retirements, and demand-response programs.

Recommendation

The NPC recommends the natural gas and electric industries, in coordination with policymakers, prioritize actions to enhance and expand existing energy infrastructure where feasible, to manage rapidly changing flow patterns and growing demand.

Recommendation 5

Reform Market Compensation Models

Rationale

- Electric reliability depends on generators being available when needed.
- Generators in certain regions lack sufficient economic motivation to secure firm gas transportation capacity and supply to maximize fuel certainty.
- To minimize generator nonperformance and enhance reliability, compensation and accreditation structures should value readiness and fuel assurance and reduce unnecessary risk.

Recommendation

The NPC recommends appropriate entities (e.g., RTOs/ISOs, federal and state authorities) ensure adequate risk-based compensation for gas-fired power generators to obtain sufficient fuel and operate reliably when called upon and to be prepared to perform during stress periods.

Recommendation 6

Implement an Accountability Framework

Rationale

- A failure of an available generator to operate can have a direct and immediate human impact.
- Some power-generating resources continue to overly depend on spot trading platforms for natural gas, assuming these mechanisms will perform even under system stress. This can leave both the generators and the system exposed.
- More proactive fuel-acquisition practices are becoming increasingly necessary. A “best practice” for gas buyers is to maintain a plan for operation during stressed periods by including a portfolio of base gas supply contracts with credit terms already in place.
- A minimum expectation for participation in the markets should include a portfolio of base gas supply contracts.

Recommendation

The NPC recommends FERC (or RTO/ISOs) endorse or issue an accountability framework to address the risk created by the lack of direct market commitments certain generation owners have to end-use customers.

Recommendation 7

Expand Pipeline Service Offerings

Rationale

- Hourly flow profiles on natural gas pipelines continue to exhibit greater variability, straining traditional operations.
- Electric generators often consume natural gas in less predictable, highly variable patterns
- Admittedly, recommendation will be limited by infrastructure constraints. Some desired product offerings may not be feasible due to a lack of capacity.

Recommendation

The NPC recommends policymakers and market operators / participants work to address changing hourly gas flow patterns by developing alternative tariff structures that enable enhanced gas service offerings and more flexible contracting arrangements between gas suppliers and electric generators.

Recommendation 8

Clearly Identify Roles and Responsibilities

Rationale

- Transparency in an integrated energy system is essential for reducing market friction, enhancing accountability, and supporting effective risk mitigation.
- Governance models, particularly in organized markets, are varied, and responsibilities, particularly concerning fuel assurance, are often unclear.
- Governance and oversight structures must be transparent for stakeholders to effectively engage.
- The Federal and State Issues Collaborative is uniquely composed and positioned to clearly identify and publish the roles associated with electric reliability, fuel assurance, and planning.

Recommendation

The NPC recommends the Federal and State Issues Collaborative publish a framework that clearly identifies and defines the roles and responsibilities for reliability, resource adequacy, and fuel assurance.

Recommendation 9

Utilize Existing Entities to Improve Leading Practices

Rationale

- Leading Management Practices should be documented to enhance transparency and coordination across the natural gas and electric value chains to improve fuel assurance, resilience, and reliability.
- The Natural Gas Readiness Forum is best positioned to convene diverse energy system stakeholders to document existing Leading Management Practices as its mission is improving the communication, preparation, and readiness of the energy sector.
- The Natural Gas Readiness Forum includes representatives from across the natural gas value chain, e.g., natural gas transportation, storage, and distribution operators; natural gas producers; electric utilities and state regulatory utility commissioners; and RTOs; as well as federal and state regulators and officials.

Recommendation

The NPC recommends the National Association of Regulatory Utility Commissioners (NARUC), convene a Natural Gas Readiness Forum working group to broaden stakeholder dialogue and document leading management practices across all interconnected sectors of the energy value chain.

Recommendation 10

Reform Performance Metrics

Rationale

- Transparency and accountability are important tools to guide states and regions as they take action and develop energy policies to inform short and long-term planning necessary to close potential energy reliability gaps.
- In light of current industry conditions, the report should be expanded to incorporate additional reliability metrics for fuel assurance and resource adequacy to demonstrate adequate preparation for the ongoing shift in load profiles and the rapid increase in demand.
- A summary version of the report in the years when the full report is not released would enhance the ability to track progress and to better monitor resource adequacy and fuel assurance during the national energy emergency.

Recommendation

The NPC recommends FERC enhance the Common Metrics report (FERC-922) released biennially and include an interim progress report with a focus on fuel assurance, resource adequacy, and other critical reliability metrics on a state-by-state basis.