

Committee on Gas

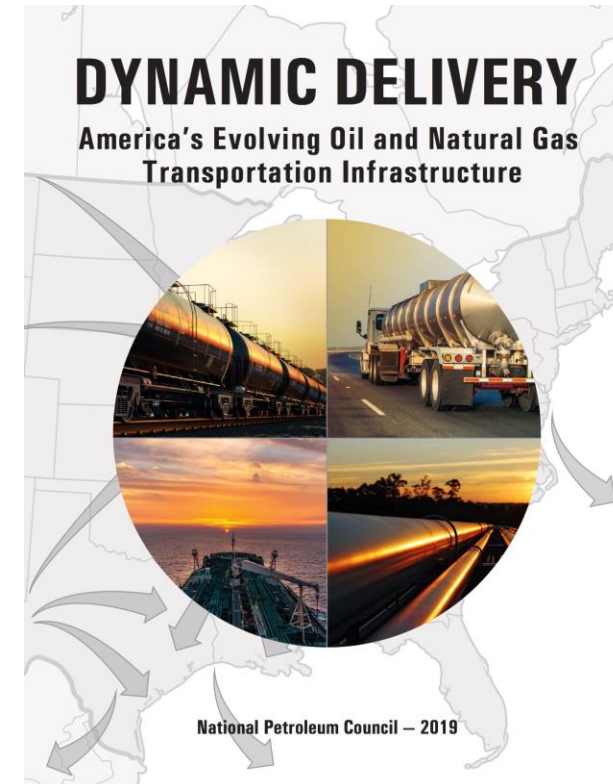
Business Meeting

Tuesday, February 11, 2020

National Petroleum Council

Dynamic Delivery – America's Evolving Oil and Natural Gas Transportation Infrastructure

National Association of Regulatory
Utility Commissioners
Natural Gas Staff Subcommittee
February 9, 2020



National Petroleum Council (NPC)

| | |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Organization | A Federally chartered, self-funded Advisory Committee; not an advocacy group, does not lobby |
| Purpose | Sole purpose of NPC is to advise U.S. Secretary of Energy and Executive Branch by conducting studies at their request |
| Origins | Continuation of WWII government / industry cooperation |
| Membership | Broad and balanced. Approximately 200 members from all segments of the oil and gas industries and many outside interests |
| 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. Reports can be viewed and downloaded at no cost from the NPC website – www.npc.org |

Secretary's Request

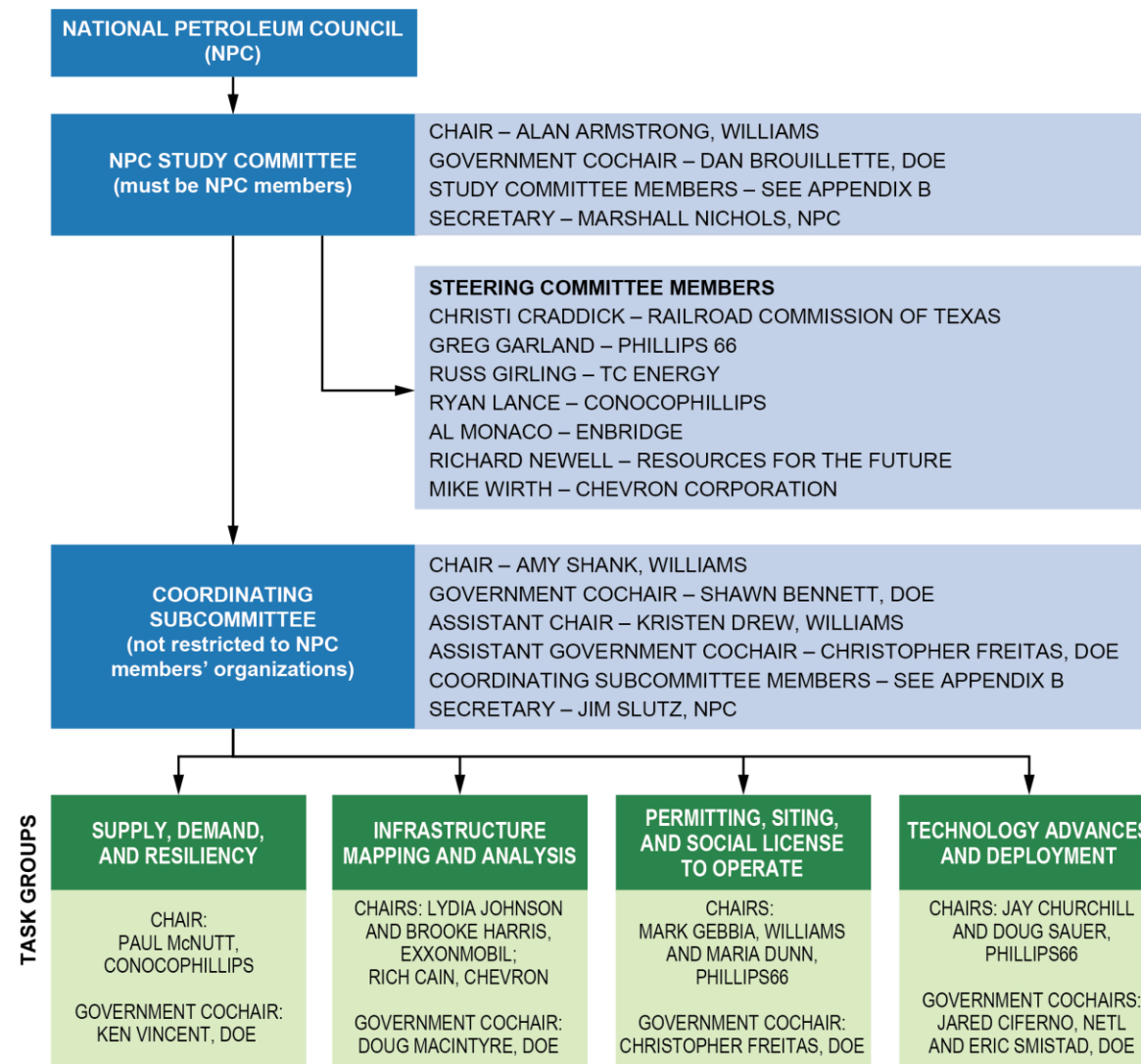
A study that would:

- Explain the extent of the transportation infrastructure today and the United States' infrastructure needs under varying demand assumptions.
- Include a review of any constraints to growing domestic oil and natural gas production caused by infrastructure limitations that reduce domestic demand or energy exports.
- Evaluate technology and policy options for improving infrastructure siting and related permitting processes, and which in turn could improve safety, environmental performance, and resilience of the system.

Key Questions:

- What are the important changes in future supply and demand patterns, and what transportation infrastructure improvements are required to leverage the regional and national opportunities offered by these changes?
- What advances in technology could improve the U.S. oil and natural gas transportation system, in terms of safety, reliability, efficiency, and environmental performance? In what new technology areas should research be progressed?
- How can state and federal governments leverage efforts to support U.S. petroleum and natural gas supply and transportation infrastructure capacity improvements?
- Are there regulatory requirements or policies that may be causing unintended consequences on energy system resilience? If so, what solutions can accomplish the regulatory objective more effectively?
- What emerging issues should policy makers be aware of and what actions should be considered to address these issues?

Infrastructure Study Organization



Study Team Diversity

STUDY COMMITTEE

55 team members

COORDINATING SUBCOMMITTEE

41 team members

SUPPLY AND DEMAND TASK GROUP

49 team members

INFRASTRUCTURE RESILIENCY, MAPPING AND ANALYSIS TASK GROUP

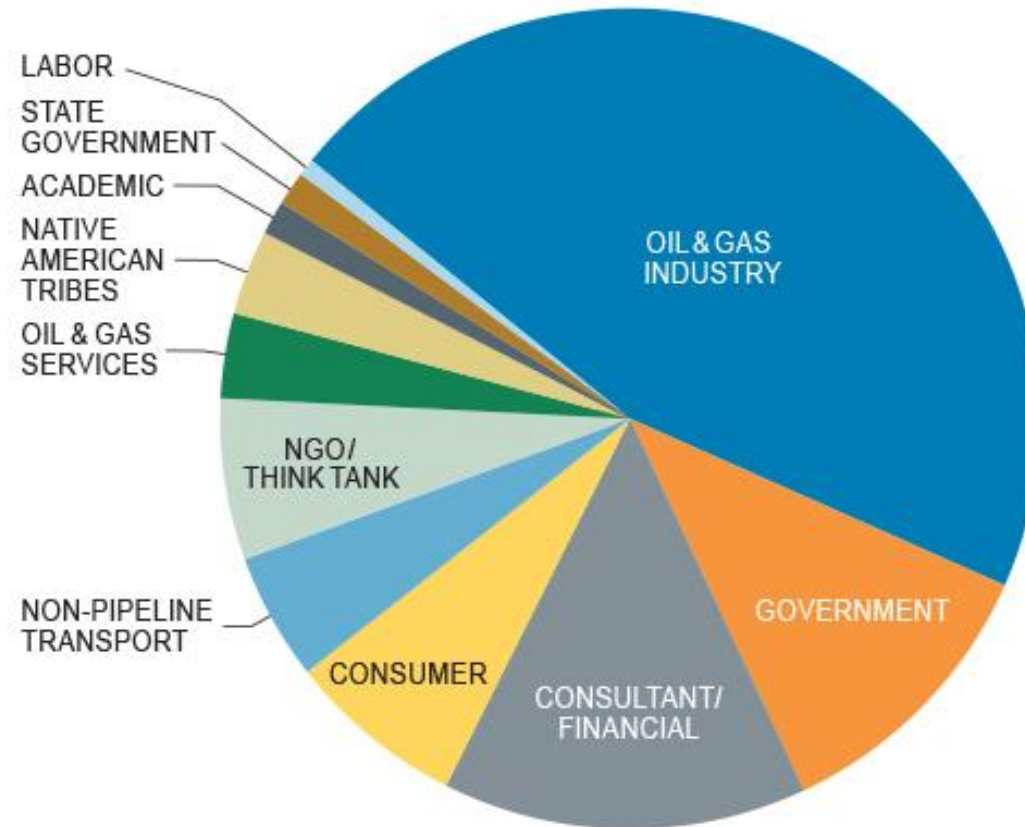
32 team members

PERMITTING, SITING, AND SOCIAL LICENSE TO OPERATE TASK GROUP

45 team members

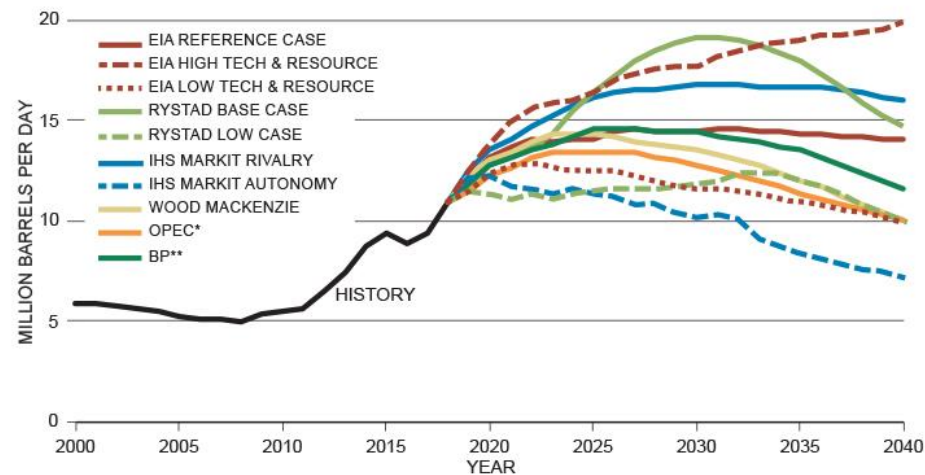
TECHNOLOGY ADVANCES AND DEPLOYMENT TASK GROUP

126 team members

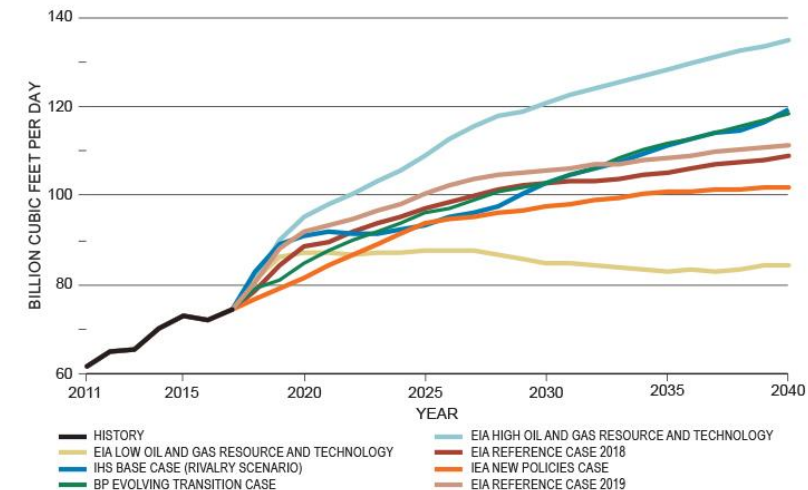


Supply and Demand

Key Finding 1: The United States has become the largest producer of both oil and natural gas in the world, which has provided the nation with increased employment and economic growth, reduced energy imports, and reduced greenhouse gas emissions. Increased natural gas use replacing coal to generate electricity has been the single largest contributor to reducing U.S. CO₂ emissions by 15% since 2005.



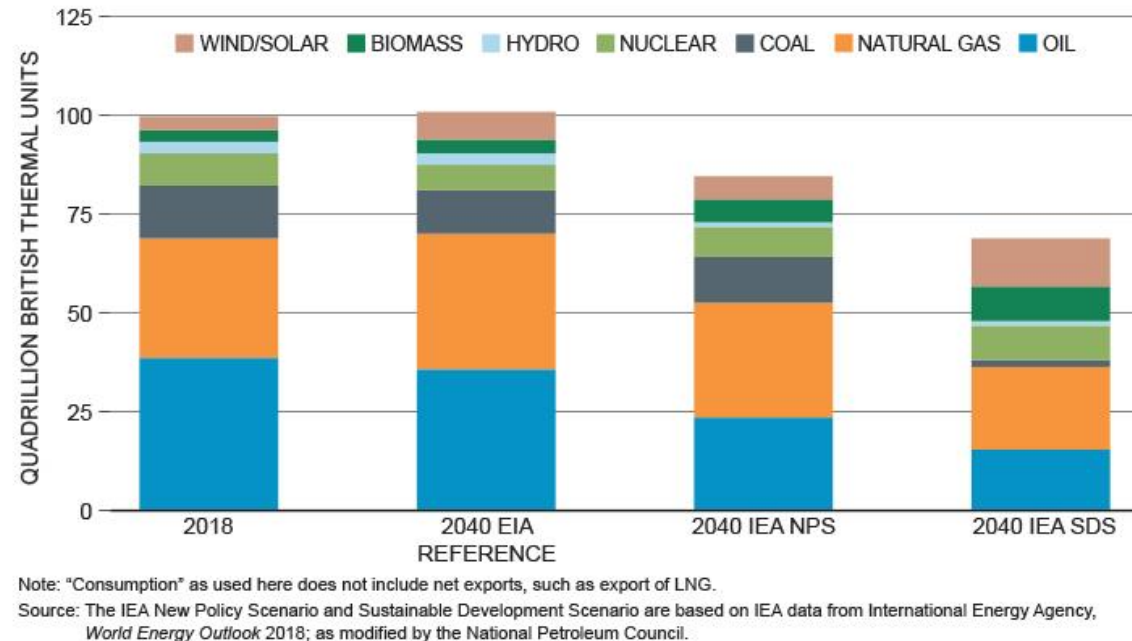
* OPEC outlook released in 2018. Other outlooks from 2019. ** BP 2019 Energy Outlook, Evolving Transitions scenario.
Sources: IHS Markit; EIA Annual Energy Outlook 2019; Rystad Energy; IHS Markit; BP; OPEC, and Wood Mackenzie Q1 2019.



Sources: EIA Annual Energy Outlook 2018 and 2019; IHS Markit; BP Energy Outlook 2019; and International Energy Agency, World Energy Outlook 2018.

Supply and Demand

Even in energy forecasts designed to meet climate change targets, the largest energy sources continue to be oil and natural gas through at least 2040 to provide reliable and affordable energy.

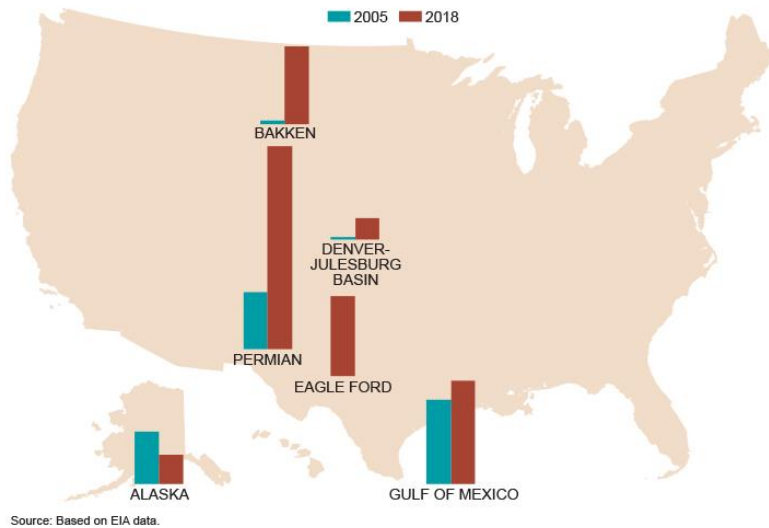


IEA New Policies Scenario – Incorporates existing energy policies as well as an assessment of the results likely to stem from the implementation of announced policy intentions. These policies include the Nationally Determined Contributions countries agreed to under the Paris Agreement.

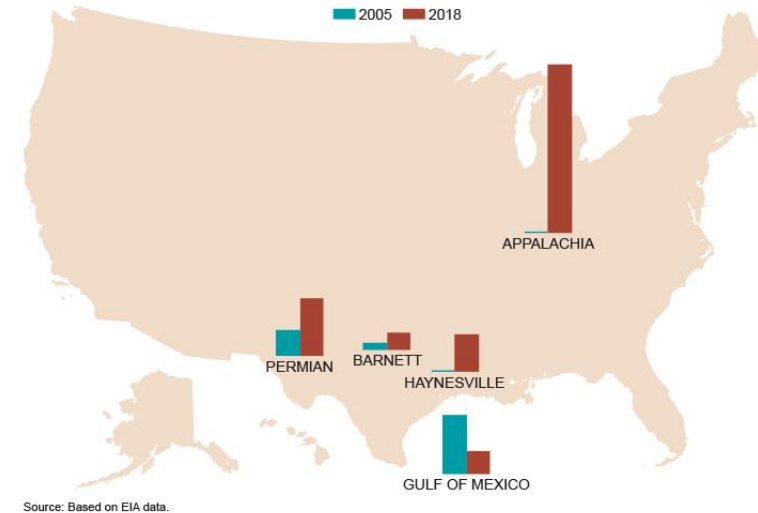
Infrastructure Analysis

Key Finding 3: The benefits of the unprecedented increase in oil and natural gas production could not have come about without the significant expansion and adaptation of transportation infrastructure capacity.

Oil and Natural Gas Production Shifts

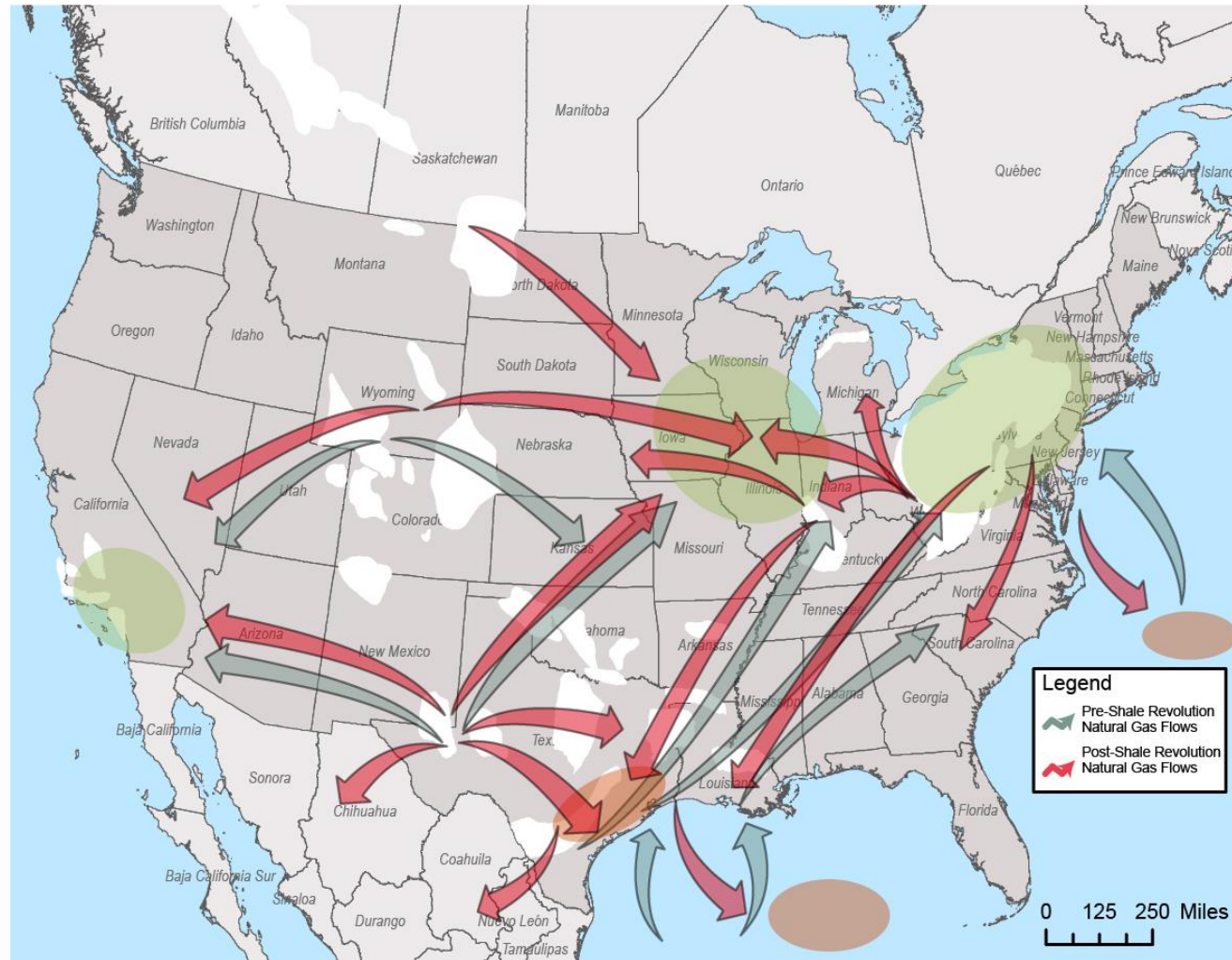


Crude Oil



Natural Gas

Natural Gas Flows Pre- and Post-Shale



Source: RBN Energy and Hart Energy

Infrastructure Analysis

Key Finding 4: The U.S. economy can benefit even further from increased export of oil and natural gas.

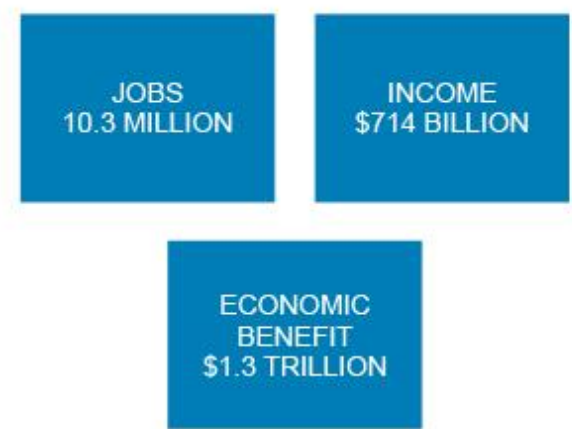
Key Finding 5: Existing infrastructure has been modified and adapted to near-maximum capacity. To connect America's abundant energy supplies with domestic and global demand, significant public and private investment in new and existing pipelines, ports, rail facilities, and inland waterways will be essential.

Key Finding 6: Several critical infrastructure bottlenecks exist: natural gas pipeline access to New England/New York, Port of Houston capacity, and oil and natural gas export capability.

Key Finding 7: It is becoming increasingly challenging to keep pace with hiring and developing a well-qualified workforce to build and maintain existing and future infrastructure. A skilled labor shortage exists in the United States and will continue to grow as the current workforce continues to retire.

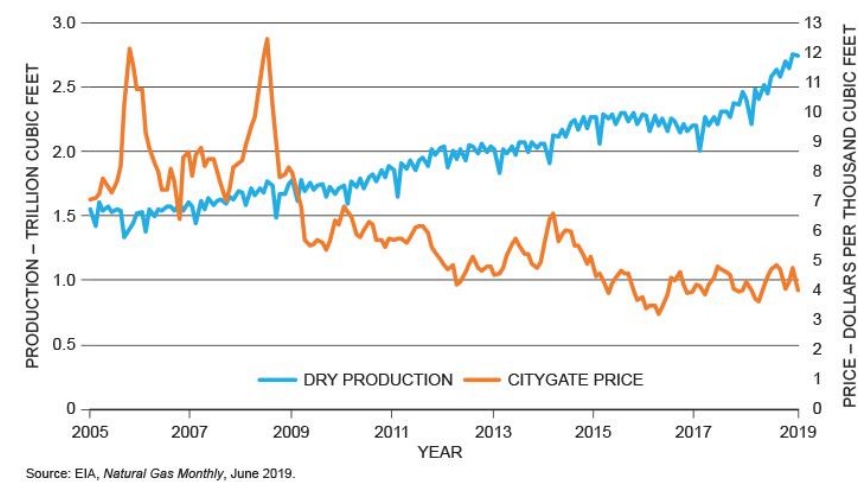
Value of Oil and Natural Gas Infrastructure

Economic Contributions of Oil and Natural Gas



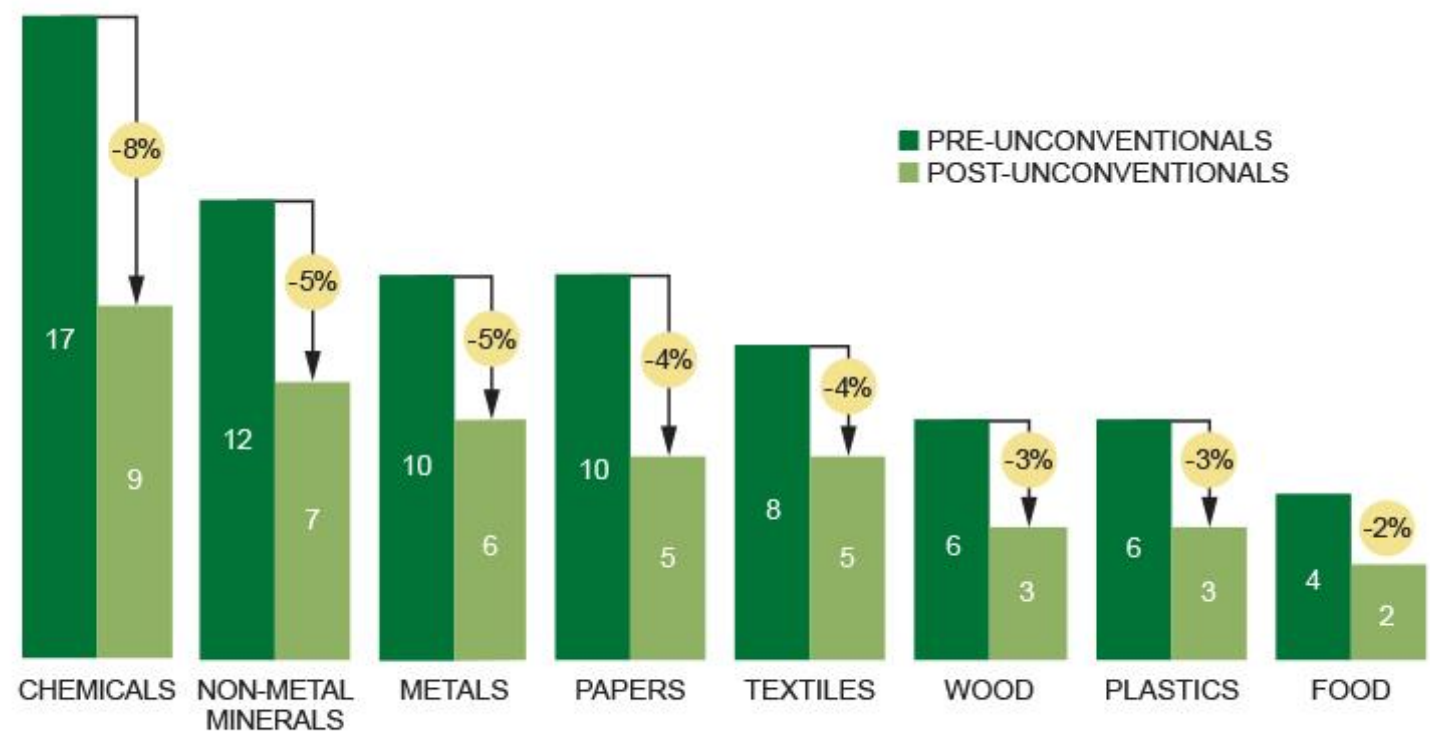
PriceWaterhouseCoopers, “Impacts of the Oil and Natural Gas Industry on the US Economy in 2015,” July 2017.

Lower Energy Costs Benefit Consumers



Source: EIA, Natural Gas Monthly, June 2019.

Value of Oil and Natural Gas Infrastructure



Source: Michael E. Porter, David S. Gee, and Gregory J. Pope, America's Unconventional Energy Opportunity, Harvard Business School & Boston Consulting Group, June 2015; <https://www.hbs.edu/competitiveness/Documents/america-unconventional-energyopportunity.pdf>.

Natural Gas and Electricity Costs as a Percentage of Total
Pre-Unconventional Oil and Natural Gas Manufacturing Costs

Improving Infrastructure Investment

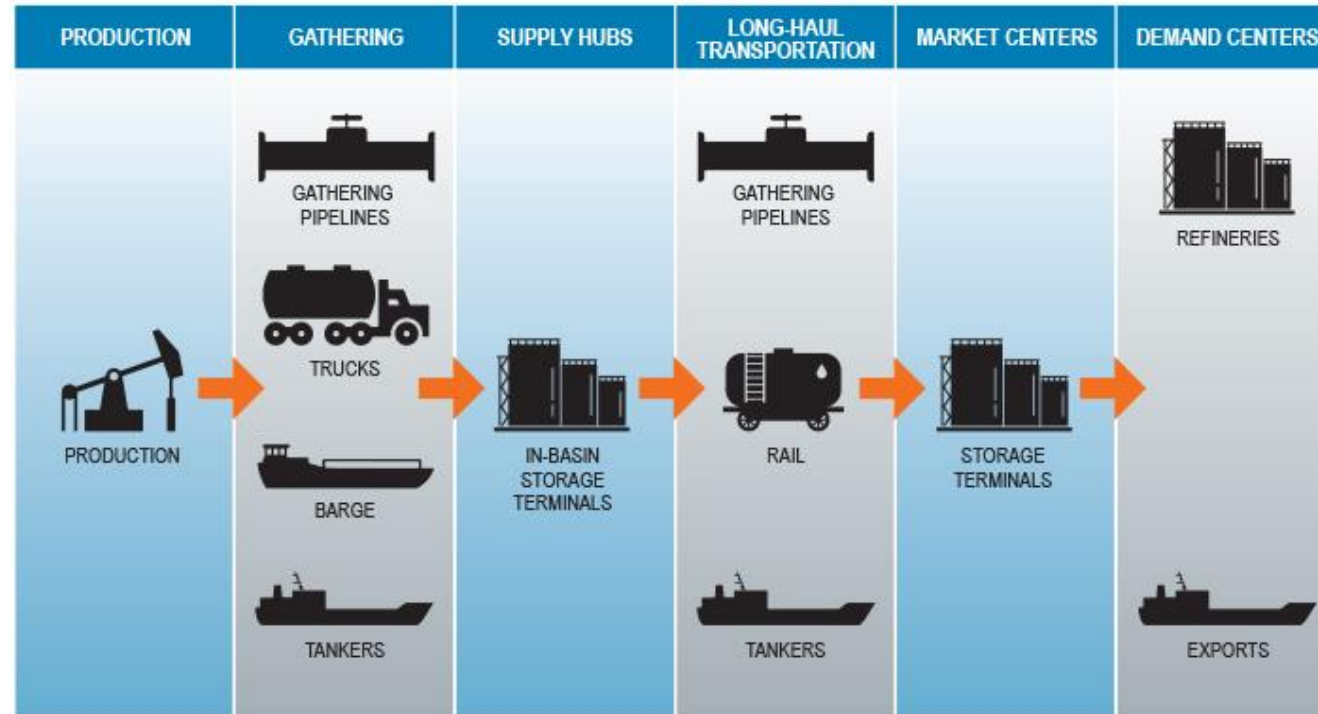
The NPC recommends:

- To mitigate negative impacts on interstate commerce, all levels of government should have constructive dialogue about the overall economic benefits from the nation's energy resources and effectively engaging stakeholders and minimizing local impacts and risks.
- Congress should fully appropriate the revenue coming into the Harbor Maintenance Trust Fund and the Inland Waterways Trust Fund funds to restore and fully maintain all U.S port and waterways infrastructure at their authorized dimensions.
- The U.S. government, states, local communities, secondary schools, and industry should promote vocational career education and technical training of their constituents, members, and communities.
- Industry, along with secondary and technical schools, should advocate for and support registered and accredited apprenticeship programs to ensure an adequate supply of skilled industrial construction, operations, and maintenance workers.

Resiliency

Key Finding 8: An interdependent infrastructure system of pipeline, truck, rail, and marine transport working together with storage ensures the delivery of reliable and affordable energy.

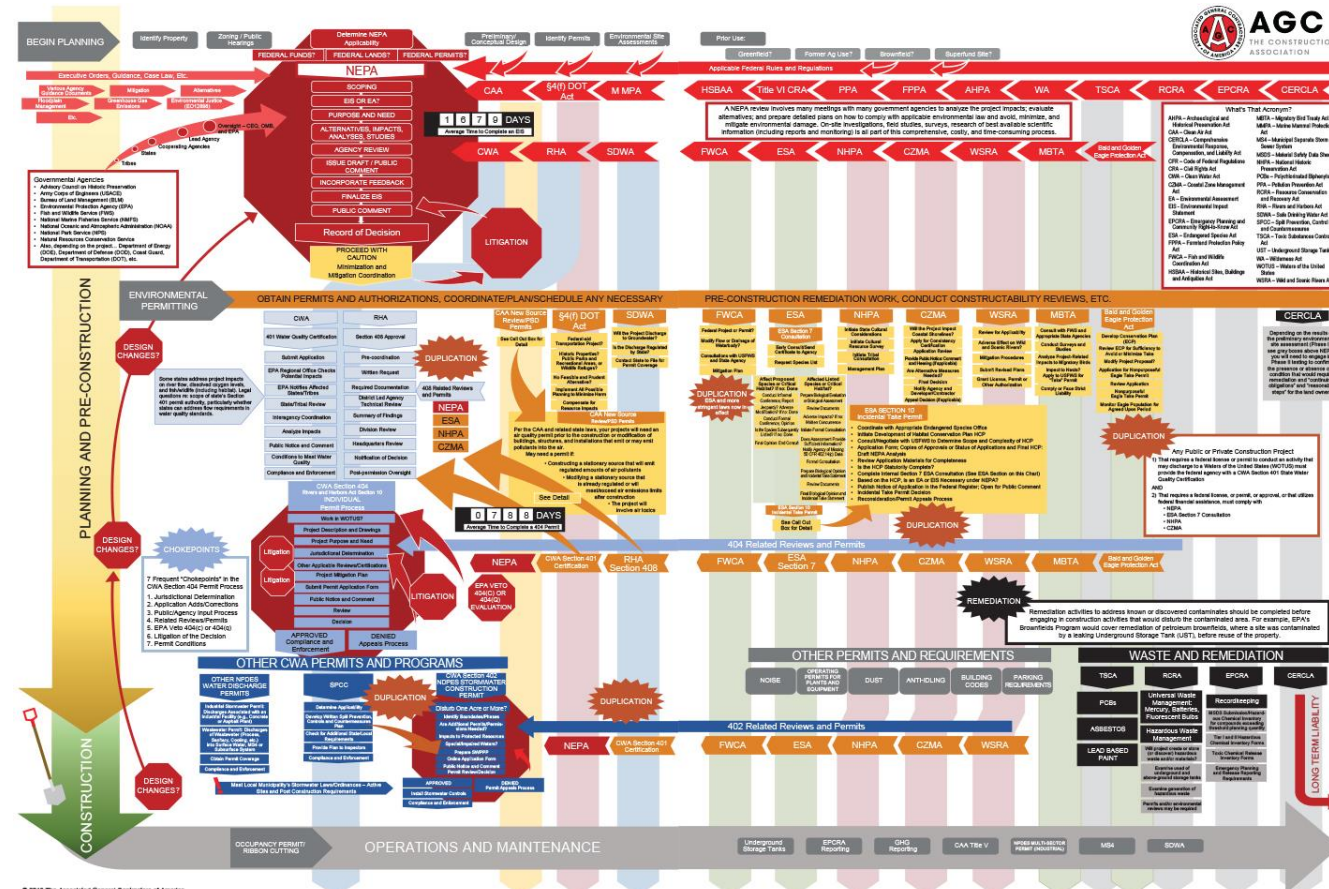
Crude Oil Supply Chain Example



Source: Plains All American, adapted by NPC.

Permitting

Key Finding 9: Overlapping and duplicative regulatory requirements, inconsistencies across multiple federal and state agencies, and unnecessarily lengthy administrative procedures have created a complex and unpredictable permitting process.



© 2019 The Associated General Contractors of America

Permitting

The NPC recommends:

- States should consider utilizing the Environmental Council of the States' relationships with state officials and knowledge of the federal process, to facilitate a common agreement between federal and state jurisdictions when there are potential conflicts between a NEPA review and a SEPA review to avoid delay, confusion, and legal vulnerability.
- A national organization made up of state regulatory agencies, such as the Interstate Oil and Gas Compact Commission or the Environmental Council of the States, and representatives of local governments, communities, interested nongovernmental organizations (NGOs), and industry should collaborate to develop a model master structure for state permitting and coordination of approvals for infrastructure, to provide for efficient collaboration with operators and better coordination with federal agencies.
- States should adopt a single point of contact for permit coordination.

Permitting

The NPC recommends: The U.S. Army Corps of Engineers should:

- Implement rulemaking to provide procedural consistency among nationwide permit programs, potentially requiring pre-application to identify Lead Districts, points of contact, and variations in requirements across watershed and political boundaries.
- Continue working and implementing One Federal Decision process initiatives to improve the efficiencies of the USACE regulatory processes, including a lead district for projects crossing multiple districts and a single point of contact for One Federal Decision and any project crossing District boundaries.
- Clarify when the pre-construction notifications requirements for use of NWP12 are required, e.g., when there are public water supply intakes downstream of the activity, or when the activity may affect listed species or officially designated critical habitat.
- Implement consistent approaches to permit interpretation among its field offices to minimize variation of nationwide permit programs.

Permitting

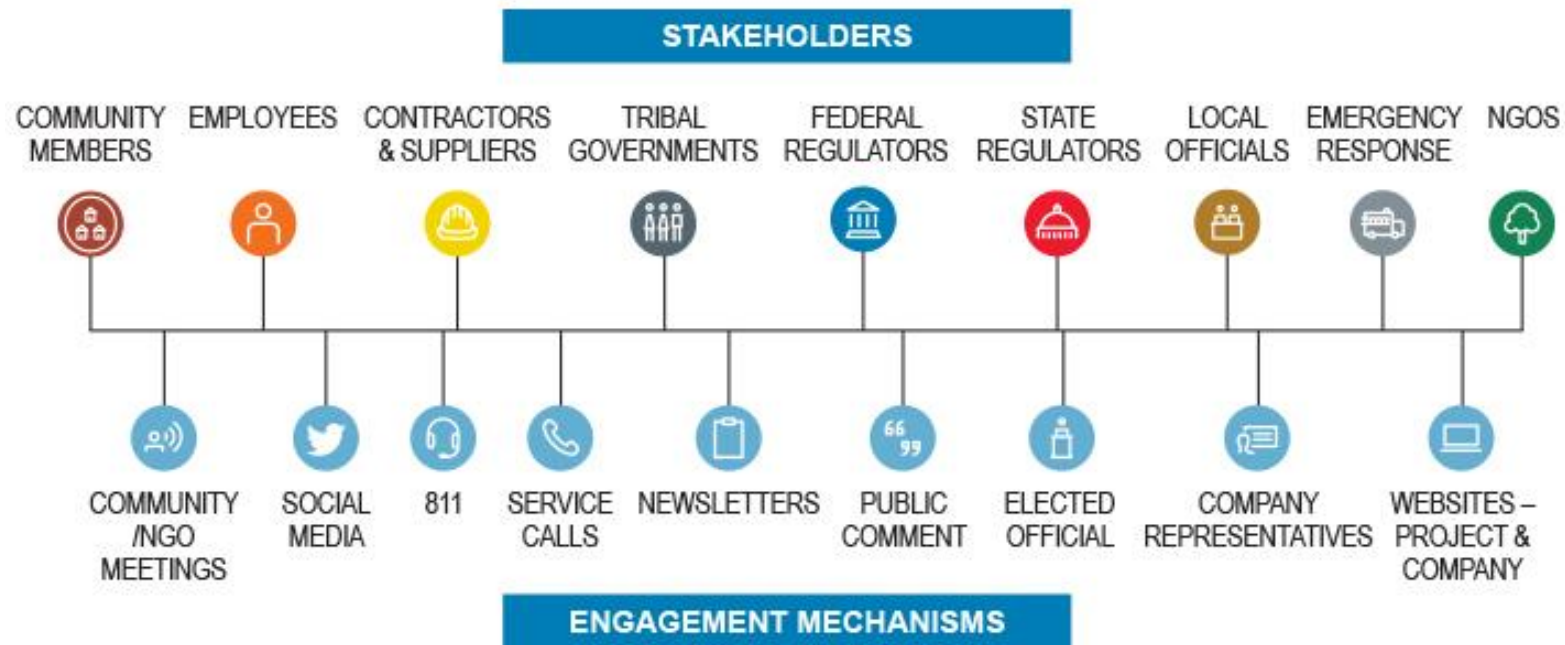
Key Finding 10: Bipartisan actions by Congress and the Executive Branch, including mechanisms to expedite the permitting process for large infrastructure projects, represent positive steps; however, further improvements are necessary.

The NPC recommends:

- A federal agency should consult with FAST-41 project sponsors and other stakeholders to obtain feedback to improve FAST-41 before reauthorization.
- Congress should reauthorize FAST-41 for an additional 7 years and include the following improvements:
 - Expand FAST-41 to include eligibility for all federal energy infrastructure projects and continuing staffing of FPISC.
 - For federal permits or decisions delegated to the states (CZMA, CWA, CAA), states should be incentivized to comply with FAST-41 and One Federal Decision and make decisions in conjunction with federal NEPA process timeline.
 - FPISC should be leveraged to drive concurrent review by the states during federal permitting processes.
- Further reauthorizations by Congress of FAST-41 should consider eliminating sunset provisions.

Stakeholder Engagement

Key Finding 11: Successful infrastructure projects depend upon early, effective, and continuous stakeholder engagement and collaboration.



Stakeholder Engagement

The NPC recommends: Infrastructure companies should:

- Implement existing best practices (e.g. FERC, INGAA, API, AOPL) for early and effective engagement with local governments, communities, private citizens, public interest groups, and American Indian and Alaska Native Tribes to understand and address stakeholder concerns. Infrastructure companies should strive to incorporate stakeholder input into a proposed action wherever practicable and collaborate on finding solutions or conveying reasons in those circumstances where an interest is difficult to accommodate.
- Engage in educational and awareness efforts with communities and stakeholders to increase understanding of the need for infrastructure, the steps to be taken to construct and operate it safely, and how they will be engaged throughout the siting and development process.
- Work collectively towards more effective engagement practices regarding energy, environmental, and related public policies that encourage responsible energy development and transport.

Permitting and Climate Change

Key Finding 12: The nation faces the dual challenge of providing affordable energy to support economic growth and human prosperity while addressing the environmental effects including the risks of climate change. Industry shares the public's concerns that climate change is a serious issue that must be addressed. Litigation of individual projects to address climate concerns is an ineffective approach.

The NPC recommends:

- All infrastructure companies should strive for an outstanding environmental compliance record and to reduce the intensity of greenhouse gas emissions from their operations. Emissions reduction programs, such as One Future, The Methane Challenge, The Environmental Partnership, and EPA's Natural Gas Star Program are all means of demonstrating a company's efforts to reduce methane emissions.

Permitting and Climate Change

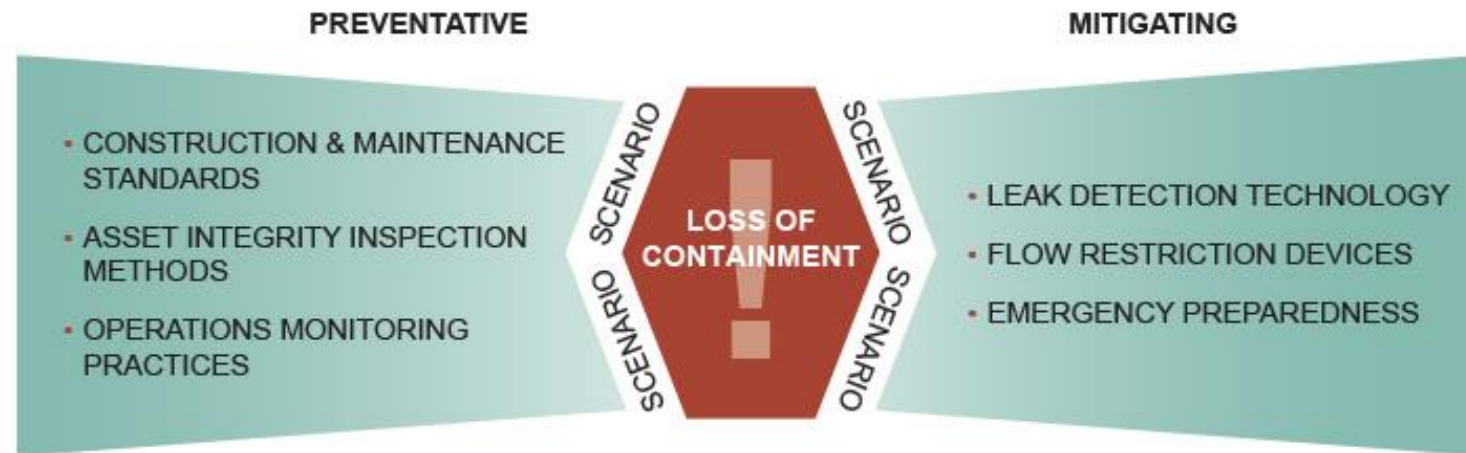
Key Finding 13: The permitting and construction of some energy infrastructure projects has been challenged, delayed, or stopped as a result of litigation by stakeholders concerned about climate change and the associated policy debate.

The NPC recommends: Congress should:

- Clarify that greenhouse gas assessments under NEPA, for oil and natural gas infrastructure projects, are confined to emissions that are (1) proximately caused by the federal action (see *Dep't. of Transportation v. Public Citizen*, 541 U.S. 752 (2004)), and (2) are reasonably foreseeable.
- Enact a comprehensive national policy to reduce greenhouse gas emissions and seek to harmonize federal, state, and sectoral policies to enhance efficiency and effectiveness. Congress should ensure that the enacted national policy is economy wide, applicable to all sources of emissions, market-based, transparent, predictable, technology agnostic, and internationally competitive.

Technology Advancements – Safety

Key Finding 14: Crude oil, petroleum products, and natural gas moved by the nation’s infrastructure reach their destinations with a high degree of safety, resiliency, and environmental performance. However, incidents have occurred, and oil and gas companies are committed to continuous improvement.



Technology Deployment

Key Finding 15: Advancements in new technologies have been an important contributor to industry's safety, reliability, and environmental performance. Overcoming challenges and barriers to new technology development and deployment would accelerate these improvements.

The NPC recommends:

- While working with DOE, EPA, and the U.S. Coast Guard, DOT should lead creation of an agile pathway for evaluation and regulatory acceptance of new technologies that can improve transportation safety and shorten the research, deployment, and adoption cycle time.
- Congress should authorize DOT to lead a collaborative effort, with support from industry, to develop and prioritize pilot programs that can accelerate pipeline, storage, and LNG technology adoption based on performance-based rules with a goal of enhancing public safety. Upon successful completion of pilot programs, regulators should promptly update regulations to allow use of new technology.
- Oil and natural gas transportation companies should establish a collaborative effort with participation from DOT, DOE, EPA, and industry research consortiums to prioritize promising, risk-based research opportunities, establish consistent technical readiness processes, and prioritize field validation testing needs.
- FERC and state regulatory agencies should work with DOT, DOE, and others to promote laws, regulations, and public-private partnerships that support cost recovery for natural gas and oil pipeline safety research.

Cybersecurity

Key Finding 16: Cyber threats to energy infrastructure control systems are increasing and security protections are being challenged due to increasing connectivity and growing malicious cyber activity.

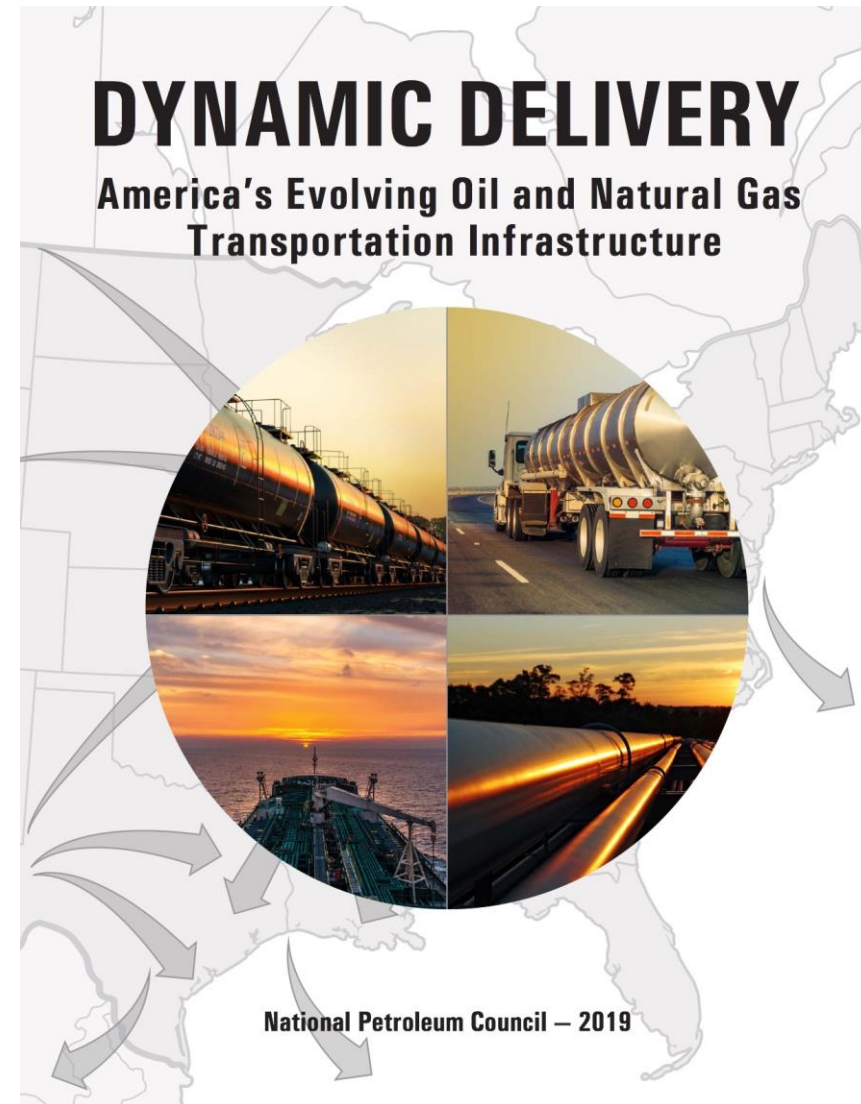
The NPC recommends: Cybersecurity protections should be advanced through:

- Industry, in collaboration with trade associations and federal government agencies, should adopt and maintain up-to-date performance-based Cyber Security Management Standards.
- Increased DHS and DOE capabilities and resources to support independent and secure cyber security assessments and audits prioritized on critical infrastructure.
- DOE, working with industry, DOD, DHS, and DOT, to establish a collaborative process to identify and prioritize research and development aimed at sector-wide protection against nation-state and advanced persistent threat actors.

Dynamic Delivery: America's Evolving Oil and Natural Gas Transportation Infrastructure

Full draft report available at
dynamicdelivery.npc.org

For more information,
email info@npc.org



Committee on Gas

Business Meeting

Tuesday, February 11, 2020

The Forum for America's Ideas

STATE LEGISLATIVE ENERGY TRENDS

KRISTY HARTMAN, ENERGY PROGRAM DIRECTOR

February 11, 2020



NATIONAL CONFERENCE *of* STATE LEGISLATURES

NCSL Overview

□ Bipartisan Organization:

- Serves the 7,383 legislators and 30,000+ legislative staff of the nation's 50 states, commonwealths and territories

□ Activities

- Research and information on topics of interest to the states
- Technical assistance and training
- Opportunities for policymakers to exchange ideas
- Lobbying at the federal level for states' interests



Role of State Legislatures

- ❑ Signal support
- ❑ Initiate dialogue
- ❑ Develop policy study committees
- ❑ Provide incentives, funding or financing
- ❑ Mandate or restrict actions



Legislative Energy Trends

More than 3,500 energy-related measures introduced in the 2019 legislative session. Over 500 bills passed.

- Alternative Fuels & Vehicles
- Clean Energy
- Cybersecurity
- Energy Efficiency
- Energy Security & Resilience
- Energy Storage
- Fossil Fuels
- Grid Modernization
- Infrastructure
- Workforce Development



Policies Impacting Gas Sector

- Hydraulic Fracturing
 - ▣ About 115 bills
 - ▣ Regulatory oversight: CO & NM
- Offshore drilling (6 states)
- Pipeline Safety
 - ▣ Excavation damage prevention
 - ▣ Increased civil penalties
 - ▣ Replacing aging pipeline infrastructure
- RNG (5 states)



Other Policies

- ❑ Workforce & Training
- ❑ Cybersecurity
- ❑ Clean Energy Standards
 - ▣ Reducing methane
- ❑ Carbon pricing



Recent Publications

- Cybersecurity & the Electric Grid
- Modernizing the Electric Grid: State Role & Policy Options
- Engagement between PUCs & Legislatures
- 2019-2020 Legislative Trends
 - 2018 Trends Report
- Safe and Reliable Pipelines: A Primer for State Legislatures



NATIONAL CONFERENCE of STATE LEGISLATURES

Contact and Resources

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