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BROUILLETTE APPLAUDS NPC REPORTS IDENTIFYING INFRASTRUCTURE PERMITTING SOLUTIONS AND INTRODUCING ROADMAP TO AT-SCALE CARBON CAPTURE, USE, AND STORAGE DEPLOYMENT

WASHINGTON, D.C., DECEMBER 12, 2019—The National Petroleum Council (NPC), at its 129th meeting today, approved two reports, *Dynamic Delivery* and *Meeting the Dual Challenge*, and presented them to Secretary of Energy Dan Brouillette. These two reports are the NPC's responses to requests for advice from Secretary of Energy Rick Perry.

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

The U.S. energy landscape has undergone dramatic changes in the past decade. America's vast energy resources and the infrastructure to deliver them to market are vital to the nation's economy and energy security. "We must ensure that our energy infrastructure remains fully up to the job of delivering the energy we produce," said new Secretary of Energy Dan Brouillette. "Given our historic surge in energy supply, this is an absolute necessity."

Dynamic Delivery, in its analysis through 2040, finds that public and private investment in new and existing pipelines, ports, rail facilities, and inland waterways will be essential in connecting America's abundant energy supplies with domestic and global demand. Project uncertainty caused by regulations and litigation are creating bottlenecks to energy delivery in some regions. Regulations that enable new technology will improve safety and environmental performance. Addressing climate change and creating greater regulatory certainty is critical to ensure cost-effective and reliable energy supplies for consumers. "We will fail, however, unless Congress develops a clear policy that clarifies the permitting process for infrastructure development and enacts a comprehensive national policy to reduce greenhouse gas emissions," said Study Chair Alan Armstrong.

Meeting the Dual Challenge: A Roadmap to At-Scale Deployment of Carbon Capture, Use, and Storage

CCUS is essential to meeting the dual challenge of providing affordable, reliable energy while addressing the risks of climate change at the lowest cost. The United States is uniquely positioned as the world leader in CCUS, with approximately 80% of the world's CCUS capacity and substantial capability to drive widespread deployment in the United States and abroad. Study Chair John Mingé noted that "CCUS is necessary for deep decarbonization. This report is the most comprehensive ever undertaken and provides a highly actionable roadmap to widescale deployment that will shape U.S. policy today and for years to come."

Building on expertise and previous research, *Meeting the Dual Challenge* addresses the entire CCUS supply chain and recognizes that at-scale success requires economic and operational integration across industries, harmonized local/state/federal regulations, innovation and technology development, and broad public acceptance. The report details the actions needed to deploy carbon capture technologies at scale in the United States, an essential climate mitigation technology identified in the majority of global energy outlooks. Secretary Brouillette stated "the CCUS study underscores just how critical this topic is. Using CCUS technologies, we can, and we will drive emissions down even further."

The draft reports are available on the NPC website www.npc.org, where a webcast archive of the meeting is also available.

In other action at the meeting, the Council elected J. Larry Nichols to serve as Chair of the NPC for the traditional one-year term. Mr. Nichols is the co-founder, Chairman Emeritus, and former Chairman, President and Chief Executive Officer of Devon Energy, Inc. A member of the Council since 1994, he has served on several of its study and administrative committees, including Chair of the Agenda Committee. Darren Woods, Chairman, President and Chief Executive Officer, Exxon Mobil Corporation, Irving, Texas, was elected Vice Chair of the Council. Mr. Woods, an active member of the Council, recently served as Chair of the NPC Committee on Arctic Research.

The NPC is a federal advisory committee to the Secretary of Energy. The sole purpose of the Council is to advise, inform, and make recommendations to the Secretary of Energy, at his request, on matters relating to natural gas and oil or to the natural gas and oil industries.

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(Editor's note: Attached are copies of the letters approved today to transmit the reports to Secretary Brouillette.)

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NATIONAL PETROLEUM COUNCIL

An Oil and Natural Gas Advisory Committee to the Secretary of Energy

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December 12, 2019

The Honorable Dan R. Brouillette
Secretary of Energy
Washington, DC 20589

Dear Mr. Secretary,

In response to Secretary Perry's September 21, 2017 request, the National Petroleum Council conducted a comprehensive study analyzing the changing dynamics of U.S. oil and natural gas transportation infrastructure. The U.S. energy landscape has undergone dramatic changes in the past decade. Of particular note—the United States has recently become the largest oil and natural gas producing country in the world and since 2008 the United States has transitioned from net importing the majority of the petroleum it consumes to rapidly approaching self-sufficiency, and from being a net importer of natural gas to a net exporter. America's vast energy resources and infrastructure to deliver them to market are vital to the nation's energy security. In 2015, U.S. oil and natural gas operations and capital investments directly and indirectly generated \$1.3 trillion of value added to the national economy, accounting for 7.6% of U.S. gross domestic product and 10.3 million American jobs.

The Council found that even in energy scenarios designed to meet climate change targets, the largest energy sources will continue to be oil and natural gas through at least 2040. The nation faces the dual challenge of providing affordable energy to support economic growth and human prosperity while addressing the environmental effects of that development, including the risks of climate change. The United States has a vast oil and natural gas infrastructure network, but 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.

The permitting and construction of numerous energy infrastructure projects have been challenged, delayed, or stopped as a result of litigation by stakeholders concerned about climate change and the associated policy debate. The public's concern about climate change is a serious issue that must be addressed and litigation of individual projects to address climate concerns is an ineffective approach. The Council makes several recommendations to overcome these challenges, including clarifying greenhouse gas assessments under the National Environmental Policy Act and enacting a comprehensive national policy to reduce greenhouse gas emissions.

The Council found that several critical infrastructure bottlenecks exist, such as natural gas pipeline access to New England/New York, channel capacity in the port of Houston, and insufficient oil and natural gas export capability. Congress should fully appropriate the revenue coming into the Harbor Maintenance Trust Fund and ensure those funds are used to properly maintain waterways.

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. While there have been bipartisan actions by Congress and the Executive Branch to expedite the permitting process, more improvements are necessary. The Council recommends that states be incentivized to participate in permitting reform efforts and adopt a single point of contact for permit coordination. Industry should collaborate with state organizations to develop a master model structure for state permitting. The Council also makes several recommendations for the U.S. Army Corps of Engineers, including recommendations to provide procedural consistency among nationwide permit programs, improve the efficiency of the Corps' regulatory process, and create consistent approaches to permit interpretation among the Corps' field offices.

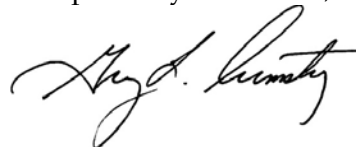
The Council also found that crude oil, petroleum products, and natural gas moved by the nation's infrastructure reach their destinations with a high degree of safety, resiliency, and environmental performance. Advancements in new technologies have been an important contributor to this performance. The Council found that 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 Council makes recommendations to address these issues in the following areas:

- Increase the efficiency, effectiveness, and predictability of permitting processes for siting, construction, operation, and maintenance of infrastructure projects
- Enhance recent regulatory reform efforts
- Improve stakeholder engagement
- Promote economic development of oil and natural gas resources to provide societal benefits
- Promote more rapid development and implementation of technology to increase transportation safety and integrity
- Demonstrate excellent industry safety and environmental performance.

The attached report, *Dynamic Delivery – America's Evolving Oil and Natural Gas Transportation Infrastructure*, provides additional detail and recommendations. The Council looks forward to sharing this study with you, your colleagues, and broader government and public audiences.

Respectfully submitted,



Greg L. Armstrong
Chair

Attachment

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December 12, 2019

The Honorable Dan R. Brouillette
Secretary of Energy
Washington, D.C. 20585

Dear Mr. Secretary,

By letter dated September 21, 2017, Secretary of Energy Rick Perry requested the National Petroleum Council's (NPC) advice on actions needed to deploy commercial carbon capture, use, and storage (CCUS) technologies at scale into the U.S. energy and industrial marketplace. Achieving this objective will promote economic growth, create domestic jobs, protect the environment, and enhance energy security for the United States.

The response to the request required a study that considered technology options and readiness, market dynamics, cross-industry integration and infrastructure, legal and regulatory issues, policy mandates, economics and financing, environmental impact, and public acceptance. The effort involved over 300 participants from diverse backgrounds and organizations, 67% of whom are employed by organizations outside of the oil and natural gas industry.

Over the next two decades, global population and gross domestic product (GDP) are expected to grow significantly. Many outlooks anticipate a 25% to 30% increase in global energy demand by 2040 as well as a need to address rising greenhouse gas (GHG) emissions. The Council found in this "Roadmap to At-Scale Deployment of CCUS" that as global economies and populations continue to grow and prosper, the world faces the dual challenge of providing affordable, reliable energy while addressing the risks of climate change. Widespread CCUS deployment is essential to meeting this dual challenge at the lowest cost.

The United States is uniquely positioned as the world leader in CCUS and has substantial capability to drive widespread deployment. The United States currently deploys approximately 80% of the world's carbon dioxide (CO₂) capture capacity. However, the 25 million tonnes per annum (Mtpa) of CCUS capacity represents less than 1% of the U.S. CO₂ emissions from stationary sources. The study lays out a pathway through three phases of deployment—activation, expansion, and at-scale—that supports the growth of CCUS over the next 25 years, and details recommendations that enable each phase. In the first phase, clarifying existing tax policy and regulations could double existing U.S. capacity within the next 5 to 7 years. Extending and expanding current policies and developing a durable legal and regulatory framework could enable a second phase of CCUS projects (i.e., 75 to 85 Mtpa) within the next 15 years. Achieving CCUS deployment at scale (i.e., additional 350 to 400 Mtpa) within the next 25 years, will require substantially increased support driven by national policies.

In addition, substantially increased government and private research, development, and demonstration (RD&D) is needed to improve CCUS performance, reduce costs, and advance alternatives beyond currently deployed technology. Increasing understanding and confidence in CCUS as a safe and reliable technology is essential for public and policy stakeholder support. The oil and natural gas industry is uniquely positioned to lead CCUS deployment due to its relevant expertise, capability, and resources.

The Council's policy, regulatory, and legal recommendations have been grouped into three phases.

Considering the activation phase, the NPC recommends the following:

- The IRS should clarify the Section 45Q requirements for credit transferability, options for demonstrating secure geologic storage, construction start definition, and credit recapture provisions.
- The Department of the Interior (DOI) and individual states should adopt regulations to authorize access to use pore space for geologic storage of CO₂ on federal and state lands.

Considering the expansion phase, the NPC recommends the following:

- Congress should amend Section 45Q to extend the construction start date, extend the duration of credits, lower the CO₂ volume threshold, and increase the value of the credit for storage and use applications.
- Congress should expand access to Section 48 tax credits and other existing financial incentives to all CCUS projects, effectively expanding current policies to a level of ~\$90 per tonne to provide incentive for further economic investment.
- Congress should amend existing statutes to allow CO₂ storage in federal waters from all anthropogenic sources, and the Department of Energy (DOE) and DOI should establish processes to enable access to pore space and regulate CO₂ storage in federal waters.
- Concurrently with the activation phase, DOE should create a CO₂ pipeline working group to study the best way to harmonize the federal, state, and local permitting processes, establish tariffs, grant access, administer eminent domain authority, and facilitate corridor planning. DOE should also convene an industry and stakeholder forum to develop a risk-based standard to address long-term liability.

Considering the at-scale phase, the NPC recommends the following:

- To achieve at-scale deployment of CCUS, concurrently with the expansion phase, congressional action should be taken to bring cumulative value of economic policies to about \$110 per tonne.
- The oil and natural gas industry should continue to fund research and development at or above current levels in support of new and emerging CCUS technologies.

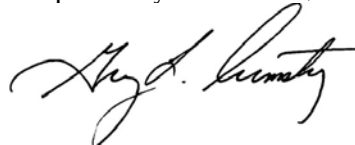
Concurrently with all three phases, and to achieve at-scale deployment of CCUS, Congress should increase the level of RD&D funding for CCUS technologies to \$15 billion over the next 10 years, with a significant amount directed to less mature and emerging technologies that offer the greatest potential for a step change in performance and cost reduction.

Integral to success is adherence to the Council's following recommendations for engaging stakeholders:

- Government, industry, and associated coalitions should design policy and public engagement opportunities to facilitate open discussion, simplify terminology, and build confidence that CCUS is a safe and secure means of managing emissions.
- The oil and natural gas industry should remain committed to improving its environmental performance and the continued development of environmental safeguards.
- Commensurate with the level of policy enactment being recommended, the oil and natural gas industry should continue its investment in CCUS.

The attached report provides additional details and recommendations. The Council looks forward to sharing this study with you, your colleagues, and broader government and public audiences.

Respectfully submitted,



Greg L. Armstrong
Chair