

Achieving American Energy, Infrastructure, and Economic Wins Simultaneously

Leveraging policy to scale private sector innovation for nationwide impact

America is prioritizing new energy expansion that emphasizes economic growth, national resilience, and resource abundance. Realizing that abundance requires policy that works alongside industry.

Innovation is the engine of America's energy industry, driving continued progress and creating prosperity. American energy drives down costs and builds up communities. Among current federal energy priorities, strategies that deliver multiple benefits – economic, environmental, and industrial – have a unique opportunity to take center stage. Multi-benefit approaches allow federal, state, and private sector leaders to share in the gains – boosting local economies, lowering costs for consumers, and delivering positive public impacts without delay. One such solution centers on rethinking a traditional energy resource.

Past: Burn natural gas for fuel, heat, and power

Future: Crack natural gas for cleaner, more efficient fuel, heat, and power **and** new building material

Through innovation in the energy sector, existing infrastructure can now do more than it ever could before. The critical multi-million mile network of natural gas pipelines can not only contribute to cleaner air, more efficient fuel, and boosting the energy sector with new demand for natural gas, but it also can produce next-generation asphalt and building materials to upgrade American roads, highways, and more.

The new administration's focus on lowering prices and boosting the energy sector coincides uniquely with an innovative technique for generating power. Distributed natural gas pyrolysis ("DNG pyrolysis") is a new way to take natural gas and turn it into clean hydrogen for energy applications and solid carbon as a manufacturing and construction material.¹ As one of many pathways, commercial availability of DNG is well timed.

DNG pyrolysis advances core Administration priorities and delivers broad national benefits by:

- Increasing demand for natural gas
- Improving the efficiency of the energy sector
- Supporting emerging energy solutions
- Leveraging existing infrastructure to promote efficiency and reduce costs
- Lowering energy costs by avoiding new infrastructure buildouts
- Improving energy security
- Delivering cleaner air through market-driven innovation and private sector leadership, complementing regulatory efforts where appropriate
- Rebuilding American roads, bridges, and hard infrastructure

DNG pyrolysis utilizes the existing natural gas distribution network, and requires no new large-scale infrastructure investments, saving time and money.² That means pyrolysis is available for deployment much faster than other energy production methods. Leveraging cutting-edge technology like DNG pyrolysis allows for efficient development of clean hydrogen as an energy and industrial resource while producing solid carbon to directly improved asphalt and related materials.³ The natural gas sector may see growth. The manufacturing sector will benefit from carbon byproduct. The building sectors receive valuable new raw materials without increasing strain on the power grid.

Delivering on the new administration's priorities requires innovation and efficiency. Through DNG pyrolysis and related energy innovations, the American public can experience multiple tangible energy, infrastructure, and economic benefits. Targeted, coordinated public policy can amplify these outcomes.

Policy Considerations

Department of Energy (DOE)

DNG can help meet the DOE's stated goal of advancing energy addition. This technology can fulfill the mission of the new administration to expanding natural gas production and promoting innovative new technology. The Office of Fossil Energy and Carbon Management should consider exploring and developing DNG, which will both expand energy production and match the office mission statement "...to reduce emissions from fossil energy production and use and key industrial processes, while strengthening U.S. energy and critical minerals security."⁴

Internal Revenue Service (IRS)

Congress and the IRS should clarify the eligibility of DNG projects under Sections 45V and 45Q tax credits. Section 45V supports clean hydrogen production, while Section 45Q incentivizes carbon capture and storage.⁵ The models used to determine eligibility currently do not account for methane pyrolysis, despite meeting the general requirements.⁶ Formal IRS guidance would provide certainty for project developers and investors, accelerating deployment of DNG in the U.S. energy portfolio.

Department of Transportation (DOT)

The DOT and Federal Highway Administration should recognize the value of solid carbon such as from DNG in federal infrastructure programs. Carbon can be integrated into the production of asphalt used in roads and bridges, offering a low-emissions alternative to traditional materials.⁷ Programs such as the Bridge Investment Program may provide opportunities to demonstrate these materials in practice.

From Policy to Deployment

Federal policy is a critical enabler, but technologies like DNG pyrolysis reach full potential only when:

- Utilities demonstrate integration at the local level
- Regulators provide enabling frameworks
- Private sector partners invest and innovate

Coordinated action across these domains ensures technologies deliver measurable value to consumers and communities.

Congress

The 119th congress can analyze the effectiveness of DNG by commissioning a study on the economic viability and impact of pyrolysis technology compared to other hydrogen routes. DNG with pyrolysis requires can easily utilize existing infrastructure without large new investments, unlike hub-based hydrogen strategies.^{8,9} Surface Transportation reauthorization provides further opportunity to promote solid carbon as a building material.

Interagency Working Groups

Potential applications of DNG pyrolysis extend to multiple sectors, including energy, transportation, and the environment. The efficacy of DNG can be maximized with coordination between agencies, ensuring consistent regulations and minimal delay. An interagency working group between the DOE, DOT, EPA, and the Department of Commerce could reduce regulatory friction and align agency guidance. Coordination with private sector and state-level partners will be essential to translate policy into deployment, ensuring new technologies integrate smoothly into the nation's infrastructure and energy landscape.

Conclusion

Distributed natural gas pyrolysis, among other opportunities, offers a practical energy solution that uses existing infrastructure and innovative technology to deliver efficient and low-cost energy while producing new markets for domestic resources like carbon in building and manufacturing applications. The White House has emphasized "supporting cutting-edge technologies like carbon capture and storage" and "ensuring America leads in both energy production and environmental innovation – producing the cleanest energy in the world."¹⁰ Integrating private sector advancements into infrastructure solutions can happen today, and policy levers can reward existing solutions while incentivizing new technology.

While federal policy clarity and coordination can accelerate deployment of technologies like DNG pyrolysis, long-term success will depend on cross-sector collaboration. The private sector, state utility regulators, and local infrastructure leaders will each play a vital role in turning national innovation into local implementation. The foundation for this collaboration can be laid now, even as federal mechanisms are explored and refined.

Citations and Notes

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- ¹⁰ The United States Government. (2025, April 22). *On earth day, we finally have a president who follows science*. The White House. <https://www.whitehouse.gov/articles/2025/04/on-earth-day-we-finally-have-a-president-who-follows-science/>.



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