



March 15, 2024



The Honorable Chuck Fleischmann
The Honorable Marcy Kaptur
House Committee on Appropriations
Energy and Water Development Subcommittee
2362-B Rayburn House Office Building
Washington, DC 20515



Dear Chairman Fleischmann and Ranking Member Kaptur:



We are writing to request your support for increased research and development funding within the Fiscal Year (FY) 2025 Energy and Water Development Appropriations Bill to invest in innovations which will enable us to keep essential energy sources affordable, further reduce emissions and develop the next generation of clean fuels.



Today, natural gas is delivered safely through more than 2.7 million miles of transmission and distribution pipes to more than 188 million Americans, who use this clean affordable fuel to heat their homes, their water, and cook their food. More than 4.1 million jobs are connected to the natural gas industry, with 3.4 million associated with local distribution companies, or those delivering energy directly to America's homes and businesses. Today 83 percent of the jobs in the gas distribution sector are local, hiring from the communities they serve.

The impacts of climate change are evident in our communities today, adding to the urgency to secure reductions in carbon emissions economy-wide. Continued investment in research, development, and innovation will demonstrate U.S. leadership on clean energy and open the door to revolutionary technologies and fuels, such as renewable natural gas (RNG) and hydrogen. Today, RNG is used to fuel the cleanest commercially available heavy-duty trucks, resulting in a carbon neutral or carbon negative fuel, depending on the feedstock. Further research is needed to make our vehicles and power cycles cleaner and more efficient while continuing to drive down costs. Additionally, since RNG can be used in the same distribution infrastructure as natural gas, it provides a near-term renewable and low-carbon alternative for use in homes and businesses, and a sustainable energy option for the industrial sector, all while utilizing the existing, skilled workforce. Still, federal investment is needed to ensure RNG can be produced more efficiently and continue to be delivered safely to our homes and businesses, enabling existing energy infrastructure to be leveraged to provide access to low-carbon fuels.

Hydrogen also shows great promise as a low-carbon fuel for power generation, harder to decarbonize economic sectors such as manufacturing and heavy duty transport, and for energy storage. Additional research and demonstration funding is needed to develop new lower-cost pathways to produce hydrogen from both fossil and renewable sources; to enable the long-term storage of hydrogen at scale; to ensure we leverage existing natural gas infrastructure to deliver hydrogen safely and efficiently; and to safely use hydrogen

in our homes, businesses, industry, and power grid. These vital tasks will require both funding and thought leadership to achieve aggressive decarbonization goals.

The continued transition to a lower-carbon U.S. energy sector is also aided by the natural gas industry's continued focus on energy efficient technologies, both for the pipeline system and direct use applications. Continued federal R&D investment along with private capital deployment remain necessary to accelerate energy efficiency measures that can contribute even more to our shared emissions reductions goals. In the last decade, the U.S. added 5.92 million natural gas customers, yet greenhouse gas emissions dropped more than 10.7 percent over that time.

With unprecedented challenges come the opportunity for American leadership, technology, and innovation to provide the backbone of not only our economic recovery efforts, but of our fight against climate change. To that end, the undersigned companies respectfully request the inclusion of the following funding requests and Report Language to the Fiscal Year 2025 Energy and Water Development Appropriations Bill:

Account: Fossil Energy & Carbon Management, Resource Technologies & Sustainability, Natural Gas Hydrogen R&D

Request: \$50,000,000 for Natural Gas Hydrogen R&D

Report Language: Natural gas is an abundant and cost-effective natural resource that continues to have a tremendous environmental, national security, and energy benefits, but further innovation is needed to decarbonize our economy. The Committee supports the Department's efforts within the Resource Technologies and Sustainability office to utilize natural gas and related infrastructure more effectively for decarbonization solutions. The Committee provides \$50,000,000 for critical research to convert abundant, low-cost natural gas, natural gas liquids and other gas streams to low-carbon, sustainable products, including chemicals and fuels, such as hydrogen, ammonia and methanol while reducing or eliminating air emissions. Comprehensive planning approaches for transitioning segments of the economy (e.g., the power sector) using hydrogen and other low-carbon fuels (e.g., ammonia) should be part of the program, including analysis of the infrastructure required to store and transport these fuels and the conversion of today's fossil fuel end users, energy-intensive industries, and disadvantaged communities alike, to safely and effectively adopt these fuels. This may include feasibility assessments on using existing infrastructure such as pipelines and underground storage facilities for low-carbon fuels.

Account: Fossil Energy & Carbon Management, Resource Technologies & Sustainability, Methane Emissions

Request: \$80,000,000 for Emissions Mitigation and Quantification

Report Language: The Committee provides \$80,000,000 for Methane Mitigation Technologies. The Department is encouraged to support activities to develop and demonstrate implementable, maintainable, and low-cost integrated methane monitoring

platforms and standardized measurement protocols to better understand where and how much methane is being emitted. The Department is encouraged 1) to collaborate with external stakeholders in making use of commercially available technology solutions to monitor methane emissions and isolate sources of emissions at the individual facility level or finer scales, and 2) to explore, advance, and scale-up new and innovative methane emission detection and quantification solutions that further support reduction of methane emissions, including coordination with public-private partnerships.

The committee is encouraged by what the Department is doing through Advanced Scientific Computing Research (ASCR) to better understand machine learning and uncertainty quantification for complex systems, and directs the Department to provide \$10,000,000 to set up a similar program in FECM to further evaluate advanced data collection, storage, and integration. Additionally, this program can direct the development of new data science, statistical modeling, and uncertainty quantification approaches to improve the interpretation and understanding of methane emissions data.

Account: Energy Efficiency & Renewable Energy, Building Technologies Office

Request: \$30,000,000 for Delivered Fuels R&D in Buildings

Report Language: The Committee recognizes that significant R&D gaps remain to decarbonize buildings with delivered fuels, including the transition to lower-carbon and zero-carbon fuels in buildings. The Committee encourages the Department to continue to explore research and development that can advance systems and appliances to meet consumer demand for high efficiency and environmentally friendly products in residential and commercial building applications, including dual fuel space heating and water heating systems, thermally-driven heat pumps, increased utilization of renewable fuels and hydrogen, appliance venting and indoor air quality research, distributed carbon capture and utilization, mitigation of utility customer methane emissions, self-powered appliances and on-site combined heat and power to include cooling and integration with renewables. The Committee emphasizes the development and demonstration of advanced dual fuel (fuel-fired and electrically-driven) systems for existing buildings in heating-dominant climates and existing buildings in all climates with central space or water heating systems to drive effective and equitable decarbonization while mitigating peak energy demand constraints at the grid edge. The Committee provides not less than \$30,000,000 to support these efforts.

The Committee is encouraged by the potential of hydrogen use in buildings to increase demand and reduce the cost of clean hydrogen, while decarbonizing delivered fuels in hard-to-electrify commercial and industrial buildings. The Committee encourages the Buildings Technologies Office, in coordination with the Hydrogen and Fuel Cell Technologies Office, to consider hydrogen safety, reliability, and cost compression into its building energy efficiency and renewable energy technologies initiatives and funding opportunities. The Committee directs the Department to provide a briefing to the

Committee not later than 90 days after enactment of this Act regarding steps it is taking to increase the use of this cost-saving technology.

Account: Energy Efficiency & Renewable Energy, Hydrogen Fuel Cell Technology Office

Request: \$30,000,000 for blending pilots

Report Language: The Committee supports the efforts of the Department to examine the value of hydrogen blending in existing infrastructure, but more work is needed. The Committee provides \$30,000,000 to establish pilot sites for blended hydrogen / natural gas at a facility or facilities that closely simulates actual gas distribution networks. The projects should evaluate the emissions reductions potential for various blends of hydrogen, as well as the reliability and scalability issues associated with blending. The site should apply lessons learned from HyBlend lab analyses and models to a near-commercial, controlled, instrumented site which represents an intermediate step prior to broader, commercial blending in “real-world” applications.

Account: Energy Efficiency & Renewable Energy, Vehicle Technologies, Fuels and Lubricant Technologies

Request: \$20,000,000 for Natural Gas Vehicle Research

Report Language: The Committee is concerned with the lack of federal investment in natural gas vehicles and vehicles powered by renewable natural gas, including hybrids. The transportation sector is the leading cause of NOx emissions (particularly in urban areas, areas surrounding ports, and other priority communities) that are causing detrimental respiratory health effects today across the country. Medium- and heavy-duty natural gas vehicles and natural gas-powered rail and marine equipment can be at the forefront of delivering dramatic improvements in the transportation sector. Within available funding, the Committee includes \$20,000,000 to address technical barriers to the increased use of natural gas hybrid vehicles, with a focus on those utilizing non-fossil based, renewable natural gas. Technical barriers include demonstrations of advanced natural gas hybrid vehicles and fueling infrastructure, energy efficiency improvements, emission reduction technologies, hydrogen combustion research, natural gas storage, fueling infrastructure optimization, and renewable natural gas production research and development.

Account: Fossil Energy & Carbon Management, Supercritical, Transformational Electric Power Initiative

2024 Request: \$24,000,000

The Committee provides \$24,000,000 for supercritical CO₂ (sCO₂) research and development activities. The Committee supports efforts to perform demonstration testing of the sCO₂ recompression power cycle at high-temperature to achieve the significantly-high efficiencies predicted for this cycle to de-risk deployment, while leveraging the substantial prior investment in the STEP facility to operate under these conditions consistent with the original STEP project scope of work. The Committee also supports competitively awarded research and development activities under any remaining funds,

coordinated with the Offices of Nuclear Energy and Energy Efficiency and Renewable Energy, to advance the maturity of supercritical CO2 cycles.

Account: Energy Efficiency & Renewable Energy, Bioenergy Technology Office

Request: \$20,000,000 increase for RNG & Hydrogen R&D; \$50,000,000 for Renewable LPG

Report Language: Renewable Natural Gas (RNG) and hydrogen can be low-to- negative carbon fuels which can be sourced from a variety of renewable feedstocks, but deployment has been limited to RNG production from manure, organic wastes and biogas from landfills, and for hydrogen from fossil fuels or electrolyzers. To dramatically expand RNG and renewable hydrogen production to assist in meeting climate goals, gasification of wood wastes and other carbonaceous materials will need to be realized.

To assist in technology solutions, particularly around syngas clean-up and lower carbon intensities for RNG and hydrogen produced, the Committee recommends \$20,000,000 to perform R&D of technologies to advance the deployment of conversion and purification processes to advance the supply of RNG and clean hydrogen, including the development of gasification and clean up technologies that can successfully and economically convert wood, agricultural and municipal solid waste to RNG or hydrogen.

Research should include technologies to enable the production of RNG, which can be produced with biogenic CO2 and hydrogen derived from renewable or other zero-carbon electricity to create a carbon-neutral methane that can be blended in existing gas infrastructure.

Propane is being used by millions of Americans for heating and cooking purposes especially in rural areas, as well as in the commercial and (to some extent) the industrial sectors. In volume, the consumption of propane is comparable to that of aviation fuels, and more than half is consumed in the residential sector. Today, propane supply is covered as a by-product from petroleum refining, i.e. fossil based. With the shift away from fossil transportation fuels, propane supply is expected to decrease substantially, unless a sustainable alternative can be found. Approaches to sustainable propane include biogas derived propane as well as propane made by utilizing CO2, are in early stages of development and will need to be scaled up. To address this need, the Committee recommends not less than \$50,000,000 for research related to the development, pre-piloting, piloting and demonstration scale-up of renewable LPG or alternative fuels production, in parallel to the Department's focus on the scale-up of sustainable aviation fuels technologies.

Account: Fossil Energy & Carbon Management, Hydrogen with Carbon Management

Request: \$110,000,000

Report Language: The Committee encourages the Department to continue expanding its research and demonstration capabilities toward production, storage, transport, and utilization of hydrogen. This work shall focus on net-negative carbon hydrogen

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production from gasification and co-gasification of mixed wastes, biomass, plastics and traditional feedstocks, solid oxide electrolysis cell technology development, carbon capture, advanced turbines, natural gas-based hydrogen production, hydrogen pipeline infrastructure, and subsurface hydrogen storage. Research on emerging technologies with low-cost CO₂ capture, such as dry reforming and sorbent enhanced reforming, should be addressed.

The Committee is encouraged by the collaborative efforts with industry under the Geothermal Energy Oil and Gas Demonstrated Engineering (GEODE) Program, and provides \$20,000,000 for the Department to launch a similar industry-led effort in FECM regarding underground hydrogen storage.

Account: Energy Efficiency & Renewable Energy, Hydrogen and Fuel Cell Technologies

Request: \$30,000,000 for Technology Validation

Report Language: Equipment demonstrations to pilot hydrogen and fuel cell technologies have generally been implemented in mild climates, urban areas, and large ports, limiting the lessons learned and opportunities for industry. Reports of reduced capabilities and the increased cost of full electric vehicles in challenging climates and rural settings are increasingly common. To further innovate in these environments, support of the Department's efforts within the Hydrogen and Fuel Cell Technologies office to validate fuel cell functionality and hydrogen related infrastructure in challenging climates, rural conditions, and small ports will be effective for decarbonization solutions in those settings. The Committee provides \$30,000,000 for technology validation efforts in such settings while reducing or eliminating emissions. Limiting availability of these funds to rural areas, small ports, and/or challenging (cold weather) climates will target areas otherwise neglected.

Thank you for your consideration of these important research and development initiatives. Your continued support for these R&D investments will result in new jobs across the country, enhanced energy independence, and ensure that our resources – such as our resilient infrastructure – are used more safely, efficiently, and in a more environmentally sustainable manner as we continue to address the critical challenge of reducing greenhouse gas emissions in the atmosphere.

Sincerely,