



May 2, 2022



The Honorable Dianne Feinstein  
The Honorable John Kennedy  
Senate Committee on Appropriations  
Energy and Water Development Subcommittee  
140 Dirksen Senate Office Building  
Washington, DC 20510

Dear Chairwoman Feinstein and Ranking Member Kennedy:



We are writing to request your support for increased research and development funding within the Fiscal Year (FY) 2023 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 million miles of transmission and distribution pipes to more than 179 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.



As the process for considering FY 2023 appropriations is underway, our nation continues to battle the ongoing COVID-19 pandemic, presenting an unprecedented public health crisis and ongoing challenges to our economy. As was the case during the Great Recession, America's natural gas industry can play a pivotal role in jumpstarting our economy, driving jobs, innovation, and clean energy solutions for years to come. As we again look to rebuild our economy, natural gas provides a path that helps us clean our air, reduce emissions, and fight climate change. In addition, America's natural gas plays a major role in enhancing our own (and our allies) energy security.



The impacts of climate change are evident in our communities today, pointing to the need for reducing emissions economy-wide. More work needs to be done as soon as possible. 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 and continue to drive down costs. Additionally, since RNG can be used in the same infrastructure as natural gas, it provides a 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 the current energy infrastructure to be leveraged to provide more renewable energy and drive down emissions.

In addition to RNG, the use of hydrogen as a low-carbon resource shows much promise, especially in those harder to decarbonize sectors of the economy. 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 effectively; to deliver hydrogen safely and efficiently through our natural gas infrastructure; and to safely utilize hydrogen in our homes, businesses, industry, and power grid. These are not trivial tasks and 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. As evidence, the U.S. added 40 million natural gas customers over the last decade, yet greenhouse gas (GHG) emissions dropped more than 12 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 2023 Energy and Water Development Appropriations Bill:

**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 to establish a new research and development initiative 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 ammonia and hydrogen. 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. This may include feasibility



assessments on using existing infrastructure such as pipelines and underground storage facilities for low-carbon fuels. Research on emerging technologies with low-cost CO<sub>2</sub> capture, such as dry reforming and sorbent enhanced reforming, should be addressed. The Committee also supports the Center for Sustainable Fuels and Chemicals at the National Energy Technology Lab and provides \$15,000,000 for this initiative from within available funds.

### **Fossil Energy & Carbon Management, Resource Technologies & Sustainability, Methane Emissions**

#### **Request: \$60,000,000 for Emissions Mitigation and Quantification**

**Report Language:** The Committee recommends \$60,000,000 for the Methane Emissions Mitigation and Quantification Programs to support natural gas storage, upstream, midstream and distribution infrastructure research, including advanced mitigation solutions and novel sensor technologies that allow for continuous and remote monitoring of emissions. The Committee remains supportive of investment in smart pipeline sensors and controls, internal pipeline inspection and repair, and composite and advanced material science technologies. The Committee also recognizes the importance of leveraging our tremendous infrastructure as we develop technologies and solutions to achieve reduction in GHG emissions which includes the potential for transporting low-carbon fuels and energy carriers such as hydrogen. Hydrogen blending efforts are already being initiated and there is a need for additional research to understand the impacts to existing natural gas infrastructure, such as pipelines, storage, and other system components but also to ensure the safety and integrity of the system as we transition to higher blends and potentially 100 percent scenarios. Within available funds, the Committee provides not less than \$15,000,000 for this natural gas/hydrogen-related infrastructure research.

### **EERE, Building Technologies**

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

**Report Language:** The Committee recognizes that significant R&D gaps remain to 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, driven by delivered fuels including renewable fuels and hydrogen, to meet consumer demand for high efficiency and environmentally friendly products in residential and commercial building applications, including heat pumps with power generation and water heating, increased utilization of renewable fuels and hydrogen, appliance venting, hybrid fuel-fired and electrically-driven systems, distributed carbon capture, mitigation of behind-the-meter methane emissions, and on-site (micro) combined heat and power to include cooling and integration with renewables. The Committee provides \$30,000,000 to support these efforts.

Thermally-driven heat pumps (THPs) offer the next generation of space conditioning and/or water heating for low-load buildings and have the potential to reduce greenhouse



**nationalgrid**



**NORTH SHORE GAS**



**PEOPLES GAS**

gas (GHG) emissions by 40 percent or greater in a typical home. Further work is needed to test and evaluate these technologies in the field, including application for waste heat recovery. The Committee provides \$5,000,000 for the Thermally-Driven Heat Pump Consortium, led by a non-profit, to integrate and deploy new THP technologies in a joint industry partnership.

### **EERE, 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. Natural gas vehicles are the only option to reduce heavy-duty vehicle greenhouse gas emissions and NOx emissions this decade, particularly at the scale that is needed today. When using renewable natural gas, heavy-duty vehicles are the cleanest available technology and drive drastic carbon and criteria pollutant emission reductions. 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 vehicles, with a focus on those utilizing non-fossil based, renewable natural gas. Technical barriers include demonstrations of advanced natural gas vehicles and fueling infrastructure, medium and heavy duty on-road natural gas engine research and development, energy efficiency improvements, emission reduction technologies, natural gas storage, fueling infrastructure optimization, and renewable natural gas production research and development.

### **EERE, Bioenergy Technology Office**

#### **Request: \$20,000,000 increase for RNG & Hydrogen R&D; \$10,000,000 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 waste and municipal solid waste to RNG or hydrogen.





Liquid propane gas (LPG) 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. Today, LPG supply is covered as a by-product from petroleum refining, i.e. fossil based. With the shift away from fossil transportation fuels, LPG supply is expected to decrease substantially, unless a bio-derived LPG alternative can be found. To address this need, the Committee recommends \$10,000,000 for research related to the development and demonstration of renewable LPG or alternative fuels.

**Fossil Energy & Carbon Management, Hydrogen with Carbon Management**  
**Request: \$50,000,000 for Hydrogen R&D**

**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 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.

**Fossil Energy & Carbon Management, Supercritical, Transformational Electric Power Initiative**

**Request: \$15,000,000 – STEP Program**

**Report Language:** The Committee provides \$15,000,000 for STEP. Within available funds for STEP, the agreement supports efforts, consistent with the original scope of work, to complete the necessary design and construction of the 10-MWe pilot and to conduct the necessary testing at the facility. The agreement also provides funds for enhanced research and development activities, coordinated with the Offices of Nuclear Energy and Energy Efficiency and Renewable Energy, to advance the use of supercritical power cycles.

**Fossil Energy & Carbon Management, Resource Technologies & Sustainability, Unconventional Field Test Sites**

**Request: \$30,000,000 for Unconventional Field Test Sites**

**Report Language:** Within available funds, the Committee provides not less than \$30,000,000 for Unconventional Field Test Sites.

**Direct Air Carbon Capture R&D**

**Request: \$40,000,000 for Direct Air Capture in Fossil Energy; Energy Efficiency and Renewable Energy; and Office of Science**

**Report Language:** The Committee recommends \$40,000,000 for technology research and development on direct air carbon capture and removal. These efforts should be coordinated with the Office of Science, the Office of Energy Efficiency and Renewable Energy and the Office of Fossil Energy to develop a coordinated program, as

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recommended by the National Academies, that supports research, development, and demonstration projects to advance the development and commercialization of direct air capture technologies on a significant scale.



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 climate change.



Sincerely,

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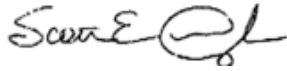
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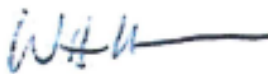
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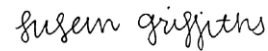
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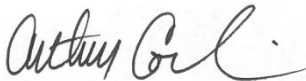
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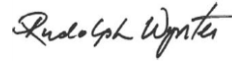
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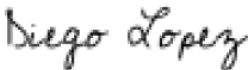
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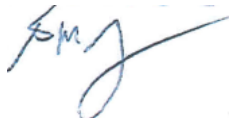
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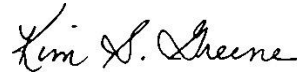
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