February 25, 2020

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

Dear Chairwoman Kaptur and Ranking Member Simpson:

We are writing to request your support for increased federal research and development funding within the Fiscal Year (FY) 2021 Energy and Water Development Appropriations Bill. This will bolster our efforts to develop innovative approaches for the economical and environmentally beneficial use of natural gas resources and to develop the next generation of clean fuels.

The energy landscape in the U.S. has changed dramatically over the last decade. Previous concerns about scarcity and high commodity prices are now resolved as the U.S. has become the world’s number one oil and gas producer. According to the 2020 Sustainable Energy in America Factbook, domestic natural gas production jumped more than 50% from 2010 to 2019. The abundance of natural gas has resulted in dramatically lower prices for the fuel, which has made our economy more competitive and led to increased use of domestic natural gas in the residential, commercial, industrial, power, and transportation sectors.

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 fuel to heat their homes, their water, and cook their food. Furthermore, natural gas has been an economic force multiplier, driving an economy that has posted ten consecutive years of economic growth. Remarkably, while the nation’s GDP has risen, we have seen a decoupling between economic growth and energy prices, saving American consumers billions of dollars annually and creating new jobs.

Our power generation portfolio has become increasingly affordable while simultaneously reducing air emissions, as retiring coal-fired power has been replaced by combined cycle natural gas units, paired with the increased penetration of renewables. Along with a continued focus on energy efficiency, the natural gas industry is transforming the U.S. energy sector from higher to lower carbon, and transitioning from lower to higher efficiency equipment. Despite the fact that the U.S. added 40 million people over the last decade, greenhouse gas (GHG) emissions dropped more than 12% over that time, and by more than 2% in 2019 over the prior year.

With the impacts of climate change on our communities clearly evident, and the need for reducing emissions economy-wide, more work needs to be done. Continued investment
in research, development and innovation will demonstrate the U.S.’s leadership position in clean energy. Further research is needed to make our power cycles cleaner and more efficient; our delivery networks safer and more resilient with less emissions; our utilization of natural gas broader and more beneficial; our equipment more efficient and affordable; and our fuels more diverse and lower in carbon content. 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).

Today, RNG is used to fuel the cleanest commercially available heavy-duty trucks, resulting in 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 interchangeably with natural gas, it provides a renewable and low carbon alternative for heating homes and businesses, and a sustainable energy option for the industrial sector. Federal investment in RNG production technologies, delivery networks and direct use applications is needed so that our existing energy infrastructure can be leveraged to provide more renewable energy and drive down emissions.

Despite the incredible impacts that research and technology development have had in this sector, the President’s proposed budget plans would decimate important Applied Research Programs at the Department of Energy. To that end, I respectfully request the inclusion of the following funding requests and Report Language to the Fiscal Year 2021 Energy and Water Development Appropriations Bill:

**EERE, Building Technologies**

**Request: $5,000,000 for the Thermal Heat Pump Consortium**

**Report Language:** 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 gas (GHG) emissions by 40% or greater from a condensing gas efficiency baseline. Further work is needed to test and evaluate these technologies in the field. The Committee directs the Department to establish a Thermal Heat Pump Consortium, led by a non-profit, to integrate and deploy new THP technologies in a joint industry partnership.

**EERE, Building Technologies**

**Request: $30,000,000 for R&D for the Efficient Use of Natural Gas in Buildings**

**Report Language:** The Committee is concerned with the lack of funding for applied natural gas R&D within the Buildings Technology Program. Within available funds, the Committee provides $30,000,000 for applied research and development for energy efficiency efforts related to the direct use of natural gas in residential and light-commercial applications, including natural gas-powered heat pumps that provide space heating and/or water heating, on site combined heat and power (CHP), self-powered natural gas appliances to improve reliability and resilience, and further venting research.
EERE, Vehicle Technologies, Fuels and Lubricant Technologies
Request: $15,000,000 for Natural Gas Vehicle Research
Report Language: The Committee is concerned with the lack of funding for natural gas vehicles. Abundant, domestic, low-cost natural gas provides the largest and most cost-effective NOx emissions reductions and is often the only viable alternative fuel for high fuel-use fleets. Further research is needed on natural gas storage, natural gas engines, fueling infrastructure optimization, and the use of renewable natural gas as a vehicle fuel. Within available funding, the Committee includes $15,000,000 to address technical barriers to the increased use of natural gas vehicles, including medium and heavy duty on-road natural gas engine research and development, energy efficiency improvements, emission reduction technologies, fuel system enhancements, natural gas storage, fueling infrastructure optimization, and renewable natural gas research and development.

Fossil Energy R&D, Natural Gas Technologies, Emissions Mitigation R&D
Request: $15,000,000
Report Language: The Committee recommends funds to support natural gas upstream, midstream and distribution infrastructure research, including advanced materials 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.

Fossil Energy R&D, Natural Gas Technologies, Emissions Quantification R&D
Request: $7,000,000

EERE, Bioenergy Technology Office
Request: $10,000,000 increase for RNG R&D
Report Language: Renewable Natural Gas (RNG) is a low- to negative-carbon fuel which can be sourced from a variety of renewable pathways (e.g. biomass, digesters, landfills), but deployment has been limited due to cost, the availability of technologies that can be scaled up to meaningful production volumes and concerns regarding compatibility of existing transportation and distribution infrastructure. The Committee recommends $10,000,000 to perform R&D for technologies to advance the deployment of conversion processes to advance the supply of RNG as a clean fuel option, to include the assessment of associated transportation and distribution infrastructure to enable RNG use across existing and planned natural gas transportation and infrastructure networks with particular emphasis on the infrastructure compatibility of the increased hydrogen content of biomass-derived RNG.

Fossil Energy, Supercritical, Transformational Electric Power Initiative
Request: $22,000,000 –STEP Program
Report Language: Within available funds, the recommendation provides $16,000,000, consistent with the original scope of work, to complete the necessary design and construction of the 10–MW pilot and to conduct the necessary testing for the facility. The
recommendation provides additional funds for competitively awarded component 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 R&D, Natural Gas Technologies, Gas Utilization R&D**

**Request:** $20,000,000

**Report Language:** Natural gas is an abundant and cost-effective natural resource that has had a tremendous environmental benefit. The Committee directs the Department to establish a new research and development initiative within the Oil and Gas office to effectively utilize natural gas for purposes in addition to power generation and direct use applications. The Committee provides $20,000,000 for the Gas Utilization program to provide valuable research converting abundant low-cost natural gas and carbon-based feedstocks to low-carbon, higher-value products, including chemicals, liquids and hydrogen. The Committee also supports the establishment of a Gas Utilization Center of Excellence at the National Energy Technology Lab and provides $5,000,000 to start this initiative from within available funds.

**Fossil Energy R&D, Unconventional Fossil Energy Technologies**

**Request:** $50,000,000

**Report Language:** The Permian basin of West Texas is estimated to have an oil and gas resource in place that equals or exceeds the giant reserves in the Middle East. While US unconventional resources are vast, the challenge in producing them is that they are locked up within very low permeability shale formations leading to low well recoveries. Optimized resource development and well completions technologies are required, that can only be achieved through the Department’s Field Test Sites, comprehensive field experiments that collect critical data and insights. These Field Test Sites are also leveraged to test methods for improving recoveries from the growing inventory of existing wells, via well re-stimulation and/or enhanced recovery techniques, that will lessen the need for large numbers of new wells to meet supply demands. Continued research focused on produced water management and beneficial re-use, and methane emissions (particularly flaring) capture and beneficial re-use, are also needed.

**Fossil Energy R&D, Coal R&D, Advanced Energy Systems**

**Request:** $30,000,000 for Advanced Gas Turbine R&D

**Report Language:** At the request of the Department, the National Academies of Science (NAS) recently completed a report, “Advanced Technologies for Gas Turbines”, providing recommendations for high-priority goals within the turbine program, including improved efficiencies, reduced emissions, fuel flexibility, and reducing the cost of electricity. Within available funds, the Committee directs $30,000,000 for natural gas turbine research to be aligned with the NAS report recommendations, including fuel flexibility with hydrogen and other renewable fuels, to increase power generation efficiency with reduced emissions.
Fossil Energy R&D, Coal R&D, Carbon Capture R&D

Request: $20,000,000 for Direct Air Capture

Report Language: The Committee recommends $20,000,000 for technology research and development on direct air carbon capture and removal. The program is directed to coordinate with the Office of Science and the Office of Energy Efficiency and Renewable Energy to develop a coordinated program, as 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. Support for these areas will result in additional jobs across the country, enhanced energy independence, and ensure that our resources are used more safely, more efficiently, and in a more environmentally sustainable manner.

Sincerely,

David Carroll
President & CEO
GTI

Karen A. Harbert
President & CEO
American Gas Association

Dave Schryver
President & CEO
American Public Gas Assn.

Daniel Gage
President
NGVAmerica

Dave Schryver
President & CEO
APGA Research Foundation

Ashley Remillard
Vice President, Legal
Agility Fuel Solutions

Drew West
Founder & CEO
American Natural Gas

Grant Zimmerman
CEO
Amp Americas

Ray Watkins
Vice President, Business Strategy
Applied Natural Gas Fuels, Inc.
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The Honorable Mike Simpson
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Gregory Pilkinton
VP US Sales & Business Development
Enerdyn, Inc.

David Weiss
Executive Director
Energy Solutions Center

William J. Akley
President, Gas Operations
Eversource Energy

William Winters
Owner & Managing Partner
Freedom CNG

Roger Oldigs
Chief Financial Officer
Freedom Equipment LLC

Ira H. Dorfman
Executive Director
Greater Washington Region Clean Cities Coalition

Ronald P. Cuenod, Jr
President & CEO
Indumar Products

Aaron Johnson
President & CEO
Kinetrex Energy

Johnny Johnson
Chief Operating Officer
Liberty Utilities

Dennis Foose
CEO
Nat-G CNG Solutions

David P. Bauer
President and CEO
National Fuel Gas Company

Ross Turrini
Chief Gas Engineer, Senior Vice President, US Gas Engineering and Process
National Grid

Rodney Dill
President & Chairman
Natural Gas Association of Georgia

Mark G. Kahrer
Vice President
Regulatory Affairs
New Jersey Natural Gas

Joe Hamrock
President & CEO
NiSource Inc.
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<td>Sr. Vice President, Operations &amp; Chief Marketing Officer</td>
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