HOUSE APPROPRIATIONS SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

WRITTEN TESTIMONY OF
CONGRESSMAN ALEX MOONEY OF WEST VIRGINIA'S 2ND DISTRICT

RE: COAL TO LIQUID FUEL TECHNOLOGY

APRIL 18, 2018

Chairman Simpson, Ranking Member Kaptur, and members of the Subcommittee, I, like you, am interested in ensuring our country continues to develop energy technologies to promote American energy independence. Specifically, I would like to note the importance of advancing the United States' capabilities in the coal to liquid fuel technology space. This testimony specifically addresses activities by the U.S. Department of Energy Office of Fossil Energy.

As a member of the Congressional Coal Caucus representing one of the nation's most prominent coal producing regions, I have had the opportunity to learn about advanced energy programs, such as coal to liquid fuel technologies. Companies in this space are presently hard at work researching and developing an exciting coal to liquid fuel ("CTL") process that has the potential to be a transformative energy technology once piloted and scaled. This technology is one of several that are currently being developed that have the potential to not only optimize and revitalize use of domestic coal resources but also to significantly reduce the environmental impact of fossil fuel.

This written testimony is intended to serve as a resource for the House Appropriations Subcommittee on Energy and Water ("Subcommittee") and to provide information on (1) recent progress in the development of technology that produces crude oil equivalents from coal at low pressure and temperatures with no coal burning or carbon emitting gasification; (2) the potential of such technology to help America achieve its goal of energy independence; and (3) the need for Congressional support to test advance concept CTL technologies at the pilot plant phase.

Advancements in Coal to Liquid Fuel Technology

Fossil energy resources such as coal, oil and natural gas generate approximately 65 percent of the nation's electricity and will continue to provide for the majority of our needs for the foreseeable future. According to the U.S. Energy Information Administration's (EIA) most recent Annual Coal Report (published in November 2017), the demonstrated reserve base of coal in the U.S. is significantly larger than estimated remaining natural gas and oil resources, based on total British thermal units (BTUs). Development of a low cost CTL technology could enable the U.S. to utilize these vast coal reserves to stabilize the more limited domestic oil reserves, thereby reducing reliance on foreign oil sources and providing an enduring and secure domestic energy resource.

A number of companies are currently investing in and developing methods for producing crude oil equivalents from coal. The liquefaction processes being tested and developed have

several advantages over past coal to liquid conversion methods that were researched, but never widely-commercialized due to high cost and long conversion time (i.e., Fischer-Tropsch). First, many involve a direct liquefaction process that does not include a gasification step, making them both faster and cleaner, since no carbon is emitted in the conversion process. Second, recent technological advances in process engineering have opened new pathways for coal to liquid conversion, which, if scaled, will drive down overall time and cost of producing oil equivalents to a per barrel price that is competitive with or lower than current crude oil prices.

It is my understanding that any type of coal can be converted into a synthetic crude equivalent using these technologies, though the volume of liquid produced per ton of coal varies according to the BTU content of the coal feedstock. For example, one ton of high BTU Central / Northern Appalachian coal converts to roughly four barrels of crude equivalent, and one ton of lower BTU coal from Uinta or Powder River Basin produces roughly 2-3 barrels of crude. Preliminary testing shows the crude equivalent produced via this conversion process can be easily refined into jet and motor fuels and other chemicals with minimal modification at the refinery level. Further, no hazardous products are used in the conversion process and no known hazardous byproducts are produced.

The technology is designed to be modular, making it easy to fit a specific application and to scale up if greater conversion capacity is required. Current prototypes suggest that one line can process five tons of coal per hour, resulting in 20 barrels of oil per hour (with high BTU coal inputs). Commercial plants can therefore be sized according to BTU content of the coal and amount of coal available at specific locations.

Given these features, this technology, if successfully commercialized, could lead to the development of a low capital cost, low per barrel cost source for crude oil. Further, this technology uses existing infrastructure and natural resources to boost employment opportunities in coal producing regions and move America towards its goal of energy independence. DOE's Office of Fossil Energy is intended to support precisely this sort of transformational technology development.

Benefits of Coal to Liquid Fuel Technologies

For decades, West Virginia has been integral in contributing to America's energy independence. However, with the closure of multiple mines, West Virginia, like the rest of our country, has experienced significant economic impacts due to decreases in coal-related employment. According to the EIA, in 2016, U.S. coal production dropped 18.8 percent year-over-year to the lowest annual production level since 1979.

We must continue to invest in our nation's energy portfolio. Federal support for the development and commercialization of coal to liquid fuel technology is one important way to do so and also aligns with the Department's stated interest in supporting coal-related technologies that can revitalize American manufacturing and energy production. The development and deployment of CTL technology will help secure the future of high paying American coal mining jobs that are critical to the economies of our states.

Moreover, the coal to liquid fuel technologies that are currently being developed can produce crude oil equivalents from coal with minimal or no coal burning or carbon emitting gasification. Thus, the technology represents an environmentally sustainable method to utilizing America's plentiful domestic coal resources.

Need for Advanced Energy Pilot Program

To capitalize on this developing technology and provide for increased employment opportunities in coal producing states, advanced concept CTL technologies must be tested in the field to evaluate scalability. Accordingly, I submitted appropriations report language and encourage the Subcommittee to support the funding of an Advanced Energy Pilot Program by the Department of Energy's Fossil Energy Research and Development ("FERD") program.

Federal funding for such a pilot program is needed to incentivize continued investment in CTL technologies and to ensure that such technologies advance beyond the bench phase. Funding of a CTL advanced energy pilot program is consistent with the DOE Office of Fossil Energy's mission to "ensure the nation can continue to rely on traditional resources for clean, secure and affordable energy while enhancing environmental protection." Indeed, the FERD program was created to fund research, development, and demonstration activities that improve existing technologies and to develop next-generation systems in the full spectrum of fossil energy areas.

Federal partnership in the development of transformational coal conversion technologies will help secure our nation's position as a leader in the fossil energy field and will ensure continued use of our domestic resources in a safe, economically competitive and environmentally sustainable manner.

Conclusion

The United States Department of Energy must continue to invest in our nation's energy portfolio. Federal support for the development and commercialization of coal to liquid fuel technology is one important way to do so and directly aligns with the Department of Energy's stated interest in supporting coal-related technologies that can facilitate a renewal of American manufacturing and energy production. CTL technologies, once scaled, can be used at existing mines across the United States with minimal investment, thereby creating an environmentally sound, economically sustainable, safe and efficient use of existing domestic coal resources.

Put simply, federal investment in transformational CTL technologies provides a pathway towards American energy independence and can contribute to increased employment and economic success. Mr. Chairman, Ranking Member, and members of the Subcommittee, I appreciate your attention to this emerging technology and look forward to working with you as we advance our nation's energy opportunities. I ask you to support funding for an advanced energy pilot program at DOE that will help ensure the potential of this transformational technology is realized.