Subcommittee on Environment and Climate Change
Hearing on
"Building America's Clean Future: Pathways to Decarbonize the Economy"
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The Honorable Paul Tonko (D-NY)

1. Policy can play an important role in driving technology development and deployment, especially when it corrects market failures and creates investment certainty. Potentially effective policies may include those which send a price signal to the private sector. For our purposes, "price signal" can be interpreted broadly, from a direct carbon pricing program to an indirect price, for example the 45Q tax credit.

    a. Do you believe that sending a clear price signal on carbon pollution as part of comprehensive legislation would help support greater energy innovation and clean energy technology deployment?

    RESPONSE: CURC does not take a position on carbon pricing. Rather, members of CURC will evaluate the ability of technology to compete under any proposed carbon pricing scenario, and will inform policymakers regarding the ability of carbon capture and other technologies to be effectively developed and deployed under proposed scenarios. With regards to carbon pricing, CURC encourages policymakers to value a variety of attributes necessary for our electric generation system to be efficient and effective. For example, while low to zero carbon may be a key objective under a carbon pricing system, it is important that such a system place an equal value on the ability of low to zero carbon electricity to be dispatched on demand, and on the need for such generation to be resilient against any potential disruptions.

The Honorable Markwayne Mullin (R-OK)

1. You point out in your testimony that: globally, oil and natural gas consumption will increase to more than double their consumption rates today. Is that because renewable energies like solar and wind are more expensive and less abundant?

    RESPONSE: CURC used the U.S. Energy Information Administration's projections for base case growth in the testimony we submitted to the Committee. The EIA's analysis indicates that the increased use of fossil fuels is a direct result of the combined gross domestic product (GDP) in the countries that are not part of the Organization of Economic Cooperation and Development (OECD), which grows by 3.8% per year on average between 2018 and 2050, compared with 1.5% per year in

the OECD countries. In EIA's international forecasts, most increases in energy consumption come from non-OECD countries, where strong economic growth, increased access to marketed energy, and rapid population growth lead to rising energy consumption.

The industrial sector, which includes refining, mining, manufacturing, agriculture, and construction, accounts for the largest share of energy consumption of any end-use sector—more than 50% of end-use energy consumption during the entire projection period. The industrial sector is largely powered by fossil fuels. EIA analysis indicates that coal continues to be an important end-use fuel in industrial processes, including the production of cement and steel.

Although EIA projects that renewable energy is the world's fastest growing form of energy, fossil fuels continue to meet much of the world's energy demand. Natural gas contends as the world's fastest growing fossil fuel, increasing by 1.1% per year, compared with liquids' 0.6% per year growth and coal's 0.4% per year growth. However, IEA projects that coal use is on the rise in Asia, as a result of increased industrial usage and rising use in electric power generation in non-OECD Asia and China.

a. What can the United States do to ensure we are reducing the cost of carbon capture technologies?

RESPONSE: Today's CCUS technologies are still at the early stages of deployment and relatively expensive to implement in some industries like the power sector. Like the wind and solar industries that were just emerging 15 years ago, a combination of federal incentives such as tax credits and federal funding for research, development, demonstration will be needed to improve the performance of the technology, which will reduce the costs of implementation so it can be deployed in commercial markets. Federal funding to support private sector research, development and demonstration activities are necessary to accelerate the development and commercial application of CCUS across a variety of industries. Such a program is necessary to compliment other federal and state policies that will enable a CCUS industry.

There are novel fossil energy power cycles in development that are designed to facilitate the capture of CO_2 at a lower energy penalty and cost than conventional methods. These processes are inherently more efficient, resulting in fewer emissions of both CO_2 and criteria pollutants, and require less fossil fuel to be used to produce electricity. Recent advances in carbon capture technologies will lower costs, and the development and testing of these technologies at test centers such as the Wyoming Integrated Test Center and the National Carbon Capture Center in Alabama will help in the scale up and commercial deployment of carbon capture.

Many of these technologies are readying for pilot testing now and a few are preparing for commercial-scale demonstration. It is critical that federal policies support not only R&D, but also the piloting and demonstrating of these innovative, first-of-a-kind technologies. This means annual federal budgets should increase in the next several years to support the scale-up effort.

b. Most discussions of Carbon Capture talk about using CO2 for enhanced oil recovery and storage. Can you describe some of the other "Utilizations" in Carbon Capture Utilization and Storage? And how do we make it profitable?

RESPONSE: There are niche opportunities to convert CO_2 into other products, including chemicals, fuels and cement. The graphic below illustrates the current and potential uses of CO_2. However, many of these uses are small scale and do not result in large CO_2 emissions reductions. Some of the more significant current and potential uses of CO_2 are highlighted in the research underway in this focus area.