Opening Statement of Energy Subcommittee Chairman Brandon Williams

Energy Subcommittee Hearing
From Theory to Reality: The Limitless Potential of Fusion Energy

June 13, 2023

Good afternoon. Today, the Energy Subcommittee will be examining the development of fusion energy as it progresses from scientific experiment to commercial reality. Our conversation will cover the Department of Energy's Fusion Energy Sciences program as well as the Federal Government's public-private partnerships with the commercial fusion industry.

Fusion is the energy of our sun and the energy of every star in the universe. It has long been the dream of mankind to capture this unlimited, clean source of energy to power our world. Given its potential, the Department of Energy has invested billions of taxpayer dollars in fundamental research and development through the Fusion Energy Sciences program.

Today, fusion is more than just a science experiment— commercial fusion is an engineering challenge similar to putting a man on the moon; it is an economic opportunity even greater than the California gold rush of 1849, and it is a legislative opportunity more consequential to our nation as was the Louisiana Purchase or the Marshall Plan.

I would like to introduce the topic and focus of today's hearing in a very personal way. I want to tell you of my own journey from being a fusion-skeptic just a few months ago, to a fusion-optimist today.

Many of humankind's greatest inventions are inspired by what we observe in creation—the sun tells us that of fusion is real for example. Birds testify to the possibility of flight. Lightning reveals the power and potential of electricity. But consider this: in none of these instances do our modern solutions mimic the exact same mechanics of nature. Modern aircraft do not flap their wings. Lightning does not power our cities. It was up to the Wright Brothers, Michael Faraday, Thomas Edison, Marie Curie, and many others to bridge the scientific discovery into the extraordinary modern world we live in today.

Fusion research, funded by our Federal Government and much of it through this Subcommittee, has focused on understanding and recreating the fusion environment of the sun. What if humankind's harnessing of fusion power did not require recreating the sun, here on earth? What if commercial fusion was achieved through rapid, iterative innovation and the entrepreneurial spirit like the Wright Brothers in their bicycle shop?

The large-scale, government-funded fusion experiments, like ITER or the National Ignition Lab have unlocked invaluable secrets about the nature of fusion, plasma physics, superconducting materials, and much else. But the commercialization of fusion energy into reliable, affordable, and responsible electricity on the grid will be an entrepreneurial solution—aligning scientific,

engineering, environmental, and economic interests. As I have met with and evaluated the technology of private fusion companies over the last several months, I have become much more hopeful that “fusion on the grid” may be possible before the end of the decade. The incredible American spirit of commercial innovation is making progress at far greater speed, and with far fewer resources, than government projects. And I am convinced that this nation must dramatically increase our public investment in these private efforts to ensure that we are the first to harness this history-changing energy source.

Over the last five years, Congress has prioritized funding for fusion energy sciences and has enacted comprehensive reauthorizations of DOE’s programs, including the 2018 Department of Energy Research and Innovation Act, the Energy Act of 2020, and the CHIPS and Science Act.

These strategic investments, along with the development of new public-private partnerships, has helped foster a growing commercial fusion industry in the United States. Private investment has grown to $2.8 billion last year, with 23 of the 37 private fusion companies located here in the U.S., according to the Fusion Industry Association.

In 2015 ARPA-E launched the ALPHA program to help find low-cost pathways to fusion with alternative approaches, and has funded over $120 million in fusion projects, including partnering with one of our witnesses today, Dr. David Kirtley.

Just last month, the Department of Energy selected eight companies to participate in its new $46 million fusion milestone-based development program. This program is modeled on the highly successful NASA program, Commercial Orbital Transportation Services, which spurred the development of our space sector. This program is exactly what Congress can do and must do to ensure that the nascent fusion industry continues to flourish.

It is critical for Congress to continue to provide robust funding for fundamental fusion research and development, AND to fund essential public-private partnerships programs. As the Energy Subcommittee Chairman, I wanted to share with you my own journey from skepticism to optimism. And I will work tirelessly with my colleagues on both sides of the aisle to bring U.S. fusion forward from fundamental research to “fusion on the grid.”

I want to thank our witnesses for their testimony, and I look forward to our conversation.