Opening Statement of Energy Subcommittee Chairman Brandon Williams

Joint Research & Technology and Energy Subcommittee Hearing
Federal Science Agencies and the Promise of AI in Driving Scientific Discoveries

February 6, 2024

Good morning. Today, the Subcommittee on Research and Technology and the Subcommittee on Energy will be examining the Federal government's science agencies' abilities to drive innovation and deliver scientific achievements using artificial intelligence.

AI will play a crucial and important role in our society and our economy in the coming decades. To be clear, artificial intelligence is like the first powerful microscopes that allowed humans to see details into the physical world hundreds of years ago, unlocking innovations in medicine, materials, and countless other inventions. AI is also like the emergence of computer technologies in just the last 75 years. Machines help us solve problems at unprecedented speed and unimaginable complexity in seconds— like how to safely navigate to the moon and get home safely. Or, like how to examine DNA information looking for clues to diseases and the potential cures. AI is simply a tool that allows humans to see complexity and insight into huge amounts of data of our modern digital age. For example, artificial intelligence may vastly reduce the time it takes and to increase the accuracy when doctors evaluate cancer cells, increasing diagnosis and treatment options. AI is a powerful and exciting tool. And like all new tools and technologies, the risks and opportunities must be understood as we also move confidently forward.

Given its untapped potential, the federal government and its agencies have an important tole to play. Why? Simply put, the billions of dollars the federal government has invested in science over a long period of time has produced invaluable sets of data that hold secrets that AI alone can unlock. These AI-enabled discovery could be transformational to Energy, Medicine, and Materials. Similarly, the federal government has tools, like high performance computing resources, that are unique and powerful for creating AI generated algorithms from this remarkable data. Let me dive in here.

The National Science Foundation supports university research while fostering a next generation workforce. The National Institute of Standards and Technology, part of the Department of Energy, develops standards for trustworthiness in collaboration with industry. The Department of Defense uses its advanced industrial base to develop AI technologies. And of particular relevance to the Energy Subcommittee, the Department of Energy maintains the federal government's AI infrastructure while providing expertise through its National Laboratories and hands-on workforce development.

Given its unique data sources and its dedicated access to computing and unique experimental facilities, DOE is strategically positioned to lead and accelerate AI development. The Advanced

Scientific Computing Research program, located within the Office of Science, conducts cutting edge computational and networking research. It also manages the most advanced computing systems in the world. According to the Top 500 List of the fastest supercomputers, DOE operates four of the top ten, including the only two exascale computers in the world: Frontier at Oak Ridge National Laboratory and Aurora at Argonne National Laboratory.

Developed through the Exascale Computing Project, these supercomputers can perform life-changing work. For example, with this compute power alongside AI, researchers can accelerate pharmaceutical drug development by screening billions of drugs against specific cancer cells, potentially finding cures in seconds that were impossible before.

With this AI infrastructure, DOE is playing a larger role in the broader ecosystem through interagency partnerships. Recently, the National Science Foundation announced that it will be launching the National Artificial Intelligence Research Resource pilot, known as NAIRR. Authorized in the National AI Initiative of 2020, NAIRR supports fundamental AI research by bringing together academia, industry, non-profits, and government. As a partner, DOE will extend its operation of the Summit supercomputer at Oak Ridge and provide access for NAIRR, empowering researchers, enhancing U.S. competitiveness in emerging technologies, and stimulating economic growth.

In addition, DOE's computing power has supported NASA's mission to land humans on Mars. Using Summit, NASA scientists simulated six different flight scenarios, which are informing future missions to the planet. My bill, H.R. 2988, the DOE and NASA Interagency Research Coordination Act, codifies these types of successful interagency partnerships using advanced computing and artificial intelligence.

To make the best use of AI, Congress must continue to support research that accelerates innovation, improves interagency collaboration, and strengthens workforce development opportunities. As the Chairman of the Energy Subcommittee, I understand the world leading resources available at the Department of Energy and firmly believe they need to have a leading role in the government's approach to AI.

With that, I look forward to our conversation and yield back.