ENERGY SCIENCES COALITION

Statement in Support of the Department of Energy Artificial Intelligence Act

July 30, 2024

The Energy Sciences Coalition (ESC) strongly supports and urges swift passage of the bipartisan Department of Energy (DOE) Artificial Intelligence (AI) Act. Consistent with prior ESC recommendations, the legislation gives DOE a central role in AI research and development, including unique applications in science, energy, and national security to advance DOE missions, while also mitigating risks associated with this new sector of innovation. New and expanded programs at DOE would fully leverage the agency's unique high performance computing infrastructure, existing investments in AI and machine learning, and expertise and vast amounts of data from DOE's 17 national laboratories and 35 user facilities, to drive AI innovation and address societal grand challenges.

In particular, ESC supports the four key pillars of the DOE AI Act:

- **Frontiers in Artificial Intelligence for Science, Security, and Technology (FASST) program.** This cross-cutting, whole-of-DOE effort would bring together the world's leading scientists and engineers from all 17 DOE national labs, research universities, and other research organizations to drive AI innovation for unique science, energy, and national security missions and more broadly maintain U.S. leadership in AI. This program would support fundamental math and computer science, the development and deployment of safe and trustworthy AI models and systems, early-stage engineering and prototyping of AI hardware and software technologies, and development of next-generation computing platforms and infrastructure. This program is needed to accelerate the pace of scientific discovery and technological innovation in a responsible and secure manner.
- **AI Research and Development Centers.** Consistent with prior ESC recommendations, the legislation would authorize the creation of at least 8 AI innovation centers focused on advancing unique AI applications for DOE science, energy, and national security missions. These teams of DOE national labs, universities, industry, and other research organizations would bring together unique DOE research expertise, infrastructure, and STEM education and workforce training to have significant impact. DOE has successfully used these large-

scale centers to integrate, test, and deploy new technologies and complements the innovative work advanced by individual researchers and small research groups.

- **AI Risk Evaluation and Mitigation program.** ESC supports a risk evaluation and mitigation program which would require DOE to identify and find solutions to mitigate safety and security risks related to the use of AI. This is particularly important for DOE's nuclear and other national security missions, protection of critical energy infrastructure, assessing capabilities of adversaries, and overall general understanding of potential consequences of deploying AI tools.
- **STEM Education and Workforce Development.** ESC supports allocating at least 10 percent, or about $240 million per year, of AI research and development funding to support DOE STEM education and workforce development programs in AI. This targeted investment in training programs, research opportunities, and support for new degree and certificate programs in AI-related disciplines at research universities and community colleges is needed to meet growing demand for a highly skilled and AI-literate workforce. ESC also supports efforts to expand the number of AI researchers from underrepresented groups interested in pursuing and attaining AI-relevant skills.

The legislation authorizes bold investments—$12 billion over five years—and bold new programs needed by DOE to fully develop and utilize AI for unique science, energy, and national security missions. An ESC-sponsored congressional event in July highlighted some of the early applications of AI using high performance computing capabilities. These include, to name a few: grid resilience and security; designing advanced materials that can resist very high temperatures and extremely hot plasmas for fusion reactors; safe and reliable long-term carbon dioxide storage, geothermal energy, nuclear waste isolation, and petroleum extraction; improved climate modeling prediction based on better understanding of cloud behavior and associated droughts and floods; and, in partnership with the National Institutes of Health, automating complex data analysis for new insights into cancer and developing improved treatment options, just to name a few. This important piece of legislation would help unlock DOE's potential to tackle and help solve major challenges for the nation.

We look forward to working with Congress to advance this legislation.

Sincerely,

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