ENERGY SCIENCES COALITION

March 4, 2025

The Energy Sciences Coalition (ESC) thanks Congress for continuing its strong, bipartisan support of the U.S. Department of Energy (DOE) Office of Science. To build on this support, **ESC urges Congress to appropriate $9.5 billion in FY 2026 for DOE Office of Science.** This level of funding is necessary to maintain U.S. competitiveness and unleash innovation in new energy and emerging technologies. Doubling down on DOE Office of Science investments will be essential to meet the current imperatives—an abundant domestic supply of reliable energy and positioning the U.S. to lead the industries of the future.

Bold new investments in fundamental research are needed to stay ahead of international competition and create American jobs of the future in key energy sectors as well as new technology areas such as quantum information science, artificial intelligence, high-performance computing, biotechnology, and microelectronics. DOE Office of Science is well poised to scale up activities given unique competitive advantages, including:

- A proven model of success in **discovery and innovation** with more than 100 Nobel Prizes associated with DOE Office of Science research, and breakthroughs tied directly to U.S. energy technology commercialization in every energy sector, such as nuclear power, energy storage, smart grid technologies, biofuels and bioproducts, geothermal, carbon capture and storage, and solar photovoltaics.

- Support for **a network of 17 DOE national laboratories** with direct stewardship over 10 of them. A source of competitive advantage for the nation, the DOE national labs represent the greatest collection of technical talent, scientific tools, and unique research facilities found anywhere in the world, and are critical to maintaining and enhancing U.S. global leadership in science and technology and competing with foreign adversaries like China.

- It built and continues to operate **28 world-leading, large scale research facilities**, such as light sources, particle accelerators, and supercomputers, used by more than 40,000 researchers from academia, industry and federal agencies to advance science and engineering solutions in energy, national security, health, and manufacturing. DOE Office of Science has consistently delivered these complicated and first-of-a-kind projects on time and on budget.

- A leader in **STEM education, traineeship, and workforce programs** to prepare the next generation of scientists, engineers, and technicians to be world leaders in science and technology and find innovative solutions to the nation's pressing energy and national security challenges. Through research and STEM programs, DOE Office of Science supports over 29,000 Ph.D. scientists, engineers, graduate students, undergraduates and technical personnel at more than 300 institutions across all 50 states and the District of Columbia.

Overall, ESC's **$9.5 billion** recommendation would:

- **grow core research** at national laboratories and research universities across all six major Office of Science program areas. This includes investments in the physical sciences, biological sciences, advanced materials, geosciences, computing and engineering to help develop future energy technologies such as advanced nuclear energy, fusion, carbon capture and utilization, next-generation fuels, and grid sensors;

- **advance new, strategic investments** in innovative **high-risk, high-reward research areas**, such as quantum science and technology; artificial intelligence and scientific machine learning; genomics, biotechnology, and other convergence science; microelectronics; next-generation communications; accelerator and laser systems; and optical detectors;

- **train the next generation of American scientific and engineering talent** through competitively awarded grants and expansion of existing workforce and education programs, such as the DOE Office of Science Graduate Fellowship and Computational Sciences Graduate Fellowship, while also creating new programs to address the nation's growing workforce needs in STEM and energy industries;

- **accelerate the construction and upgrades of world-class scientific user facilities and maximize operations** to let U.S. scientists fully utilize cutting-edge tools and instrumentation to drive discovery; and

- **maintain and grow multi-disciplinary centers** focused on addressing scientific grand challenges, such as Energy Frontier Research Centers, Bioenergy Research Centers, Energy Innovation Hubs, National Quantum Information Science Research Centers, and Microelectronics Science Research Centers.

ESC also proposes specific funding for **cross-cutting research initiatives and programs**. The proposed funding increases are compared to FY 2024 appropriations of $8.24 billion for DOE, the most recent congressional appropriations. Of the $1.26 billion in additional funding proposed in FY 2026, ESC recommends:

- **Fundamental research in discovery science:** +$287 million to increase all Office of Science core research programs by 7 percent. This would reverse two years of cuts—7.4 percent overall in the last two years—to fundamental research that supports Nobel-Prize-winning discoveries and drives innovation in energy solutions and emerging

technologies**.** ESC is concerned in particular with reductions in critical research disciplines including materials, chemistry, geosciences, biological sciences, particle physics and nuclear physics. The U.S. risks falling behind if cuts continue to research programs that serve as the scientific foundations for innovations in energy and emerging technologies. More concerning is that these cuts translate into less support for U.S. researchers and students in STEM fields. The U.S. needs to grow, not shrink, its workforce. This additional funding would start to reverse cuts or flat funding for core research in most programs and advance the highest priority research areas outlined in Office of Science advisory committee reports, strategic plans, and workshop reports.

- **Maximize facility operations:** +$291 million to increase facility operations across the Office of Science. This is necessary to operate existing facilities and experiments and support more than 40,000 researchers from academia, industry and federal agencies who rely on these facilities for their science and engineering pursuits. This level of funding would allow 91% of facility operations and fund critical maintenance activities to ensure long-term operation.

- **Accelerate the construction and upgrades of world-class scientific user facilities and major equipment:** +$200 million to fully fund and accelerate construction projects and state-of-the-art equipment and +$100 million for research and development of next-generation facilities. ESC encourages Congress to fund line-item construction projects and major items of equipment at DOE-approved project profile funding levels to complete them on time and on budget. There are also opportunities to add funding to some key projects that could be accelerated since they are funding constrained rather than schedule constrained. There is also limited research and development funding to define and guide future facility needs.

- **Upgrade national lab scientific infrastructure:** +$200 million to advance new national lab infrastructure upgrades to retire risk to lab operations faster. ESC strongly supports the Science Laboratories Infrastructure program. The program is critically important in upgrading and replacing aging utilities, roads, office buildings and other general-purpose infrastructure are essential for the safe, reliable, and resilient operation of the 10 Office of Science national laboratories as well as a critical tool in the recruitment and retention of leading scientists and engineers. However, ESC is concerned that based on current budget projections no new projects will start until 2028. Based on a DOE Office of Science FY 2022 assessment of the 10 national labs it stewards, 43 percent of general-purpose buildings were rated as substandard or inadequate to meet mission needs, 71 percent of utility systems were rated as substandard or inadequate, and 35 percent of the remaining support infrastructure was rated as substandard or inadequate. According to DOE, the substandard and inadequate condition of facilities results in operational inefficiencies, reduced resiliency and reliability, unplanned outages, costly repairs, and elevated safety risks.

ESC also recommends funding for **emerging technology initiatives**, including:

- **$400 million for quantum information science (QIS) (+$121 million), consistent with the *DOE Quantum Innovation Act***. This includes $135 million to fully fund DOE National QIS Research Centers; $100 million for quantum networking and communications research and development and regional test beds; $70 million for innovative, high-risk quantum research; $50 million for quantum foundries and novel quantum instrumentation; $36 million for the Quantum User Expansion for Science and Technology program; $20 million for an early-stage quantum high-performance computing research and development program; and $5 million for a quantum-focused traineeship training program.

- **$260 million for Artificial Intelligence and machine learning (+93 million), including $100 million for the new Frontiers in AI for Science, Security, and Technology (FASST) initiative**. DOE and its network of 17 national laboratories play a unique leadership role among federal science agencies in advancing innovation and the responsible use of AI. A focused DOE AI Initiative should be guided by the vision outlined in the 2023 *Advanced Research Directions on AI for Science, Energy, and Security*. AI can play a major role in finding important scientific and technological solutions for DOE missions, such as the search for new quantum materials for quantum computing, sensing, and networking applications; new nuclear and fusion reactor designs; and improved extreme weather modeling to increase resiliency and mitigate the worst effects of extreme weather events.

- **$200 million for microelectronics research and development (+$127 million)**, including $100 million for Microelectronics Science Research Centers.

The United States must maintain its leadership in science, technology and innovation globally. The DOE Office of Science plays a pivotal and leading role in addressing our country's energy and national security challenges. For these reasons, we urge Congress to provide $9.5 billion for the Office of Science in FY 2026. We look forward to working with you to advance the critical missions of this invaluable agency.

Sincerely,

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The Energy Sciences Coalition (ESC) is a broad-based coalition of organizations representing scientists, engineers and mathematicians in universities, industry and national laboratories who are committed to supporting and advancing the scientific research programs of the U.S. Department of Energy (DOE), and in particular, the DOE Office of Science.