



ENERGY SCIENCES COALITION

November 9, 2021

Dear Acting Director Young:

Consistent with the Administration’s research and development priorities for fiscal year (FY) 2023, the Energy Sciences Coalition (ESC) urges you to prioritize funding for the Department of Energy Office of Science in the FY 2023 budget request. As you develop the budget, ESC would like to highlight the \$8.8 billion for the Office of Science authorized in the House-passed DOE Science for the Future Act as a prudent and needed investment to accelerate research and development in critical and emerging fields like climate, clean energy, artificial intelligence and quantum information science; support greater investment in education and training programs, including those that promote more inclusive STEM excellence; and to fortify research infrastructure.

The DOE Office of Science is a critical part of the nation’s innovation ecosystem and is the nation’s largest funder of the physical sciences. Among its core mission objectives is conducting fundamental science to deliver solutions and technologies to address climate change, clean energy, and environmental sustainability. Scientific breakthroughs and energy technology innovation are still necessary to decarbonize the U.S. economy and mitigate the worst effects of climate change. Office of Science-supported fundamental research forms the foundation for future energy technologies. The current imperative—energy systems that meet our energy security, economic, and environmental challenges—requires continued, robust investments in all areas of fundamental research to advance all energy systems, including energy storage, negative emission technologies, advanced nuclear, hydrogen, fusion, renewables such as wind and solar, carbon capture, storage and utilization, and next-generation fuels.

The DOE Office of Science is unique among federal science agencies, supporting the network of 17 DOE national laboratories—unique assets of the nation's research and innovation ecosystem— and directly stewarding ten of them. Over 300 universities and other research institutions across all 50 states are also supported by over \$1 billion in Office of Science research funding annually. One of the greatest strengths of the national laboratories and their partnerships with academia and industry is science at scale, which will be required to find solutions to climate change and help deploy clean energy technologies and ensure environmental sustainability and equity.

The DOE Office of Science has a long history of combining the talent and capabilities of the national laboratories’ unique science facilities, the country’s research universities, and industry to bring together multi-disciplinary teams to tackle fundamental science, energy, environmental, and national security grand challenges. The most recent examples are the bioenergy research centers, national quantum information science research centers and the nation’s response to COVID-19. The DOE Office of Science already supports the country’s leading scientists at national laboratories and research universities to address climate change. For example, researchers are developing predictive models of climate change as well changing interactions among climate, water, and energy to help decision makers understand impacts on ecosystems and human well-being and develop strategies to mitigate or adapt to change.

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.

Fundamental, use-inspired research in novel materials at the national labs in collaboration with industry and academia is speeding the delivery of solutions at scale and scope for carbon capture and long duration, grid-scale energy storage.

The DOE Office of Science is also the nation's steward of the most sophisticated, world-class scientific user facilities used by research universities, industry and most federal agencies to advance their scientific and technology goals and objectives. Conceived of, built and managed by Office of Science national laboratories and universities across the country these 28 large scale and world leading include particle accelerators, experimental reactors, X-ray synchrotron and free-electron laser light sources, leadership-class supercomputers and other high-precision instruments – tools that provide unprecedented access to molecular, microbial, atomic, and subatomic structures and chemistry. Annually, more than 36,000 researchers from academia, industry and federal agencies use these facilities to support their pursuits in science and engineering. Other federal agencies involved in addressing climate change rely on access to these facilities, including the National Aeronautics and Space Administration, the National Oceanic and Atmospheric Administration, the National Science Foundation, and the Environmental Protection Agency. As an example related to climate, DOE has operated the Atmospheric Radiation Measurement (ARM) user facility for over 30 years, the country's leading ground-based measurements tools, especially for clouds and aerosols, located in different geographic regions around the world. ARM data has been critical in expanding scientific understanding of atmospheric processes and improving global-scale weather and climate models.

Equally important, the Office of Science prepares the next generation of American scientific and engineering talent. To be world leaders in addressing climate change and transitioning the economy to clean energy requires additional investments in STEM workforce and education programs. Through competitively awarded grants, Office of Science supports approximately 22,000 Ph.D. scientists, engineers, graduate students, undergraduates and technical personnel at more than 300 institutions across all 50 states and the District of Columbia. DOE-funded research and education programs strengthen our nation's scientific knowledge base and prepare the next generation of scientists and engineers by providing hands-on experience for students. Additional funding is needed to expand successful education programs, such as the Office of Science Graduate Fellowship Program, to support the best and brightest students from multidisciplinary areas of research in pursuing their advanced degrees. ESC also urges the creation of new workforce development programs to increase diversity, equity, and inclusion of STEM professionals working in DOE mission-relevant disciplines, and significantly broaden recruitment pools to leverage existing domestic talent. This includes increased engagement and partnerships with Minority Serving Institutions, Historically Black Colleges and Universities, and Tribal Colleges and Universities.

The DOE Office of Science plays a pivotal and leading role in addressing this country's climate, energy, national security, and environmental challenges. ESC again urges you to prioritize and fully leverage DOE Office of Science capabilities and expertise to address these challenges.

Sincerely,

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CC: Secretary of Energy Jennifer Granholm

ESC MEMBERSHIP

American Association for the Advancement of Science
American Association of Physicists in Medicine
American Association of Physics Teachers
American Astronomical Society
American Chemical Society
American Crystallographic Association
American Geophysical Union
American Geosciences Institute
American Institute of Physics
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Society for Industrial and Applied Mathematics
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