



ENERGY SCIENCES
COALITION

Fiscal Year 2019 Funding Statement For the U.S. Department of Energy Office of Science

March 30, 2018

The Energy Sciences Coalition (ESC) thanks Congress for its strong, bipartisan support of the U.S. Department of Energy (DOE) Office of Science in the fiscal year (FY) 2018 omnibus bill (H.R. 1625). A 16 percent increase over the FY 2017 enacted level demonstrates a clear commitment to enhancing our energy security and national security, strengthening the U.S. economy, and improving America's global competitiveness. To continue to support groundbreaking scientific discoveries and the construction of world-leading scientific facilities, ESC urges Congress to appropriate \$6.6 billion in FY 2019 for the DOE Office of Science, an increase of 4 percent real growth above FY 2018.

As the nation's primary sponsor of physical sciences research, DOE Office of Science plays a vital role in the American scientific ecosystem, which has proven to be the model for success in discovery and innovation. DOE Office of Science sponsors research programs vital to American prosperity and security; helps maintain the U.S. pipeline of science and engineering talent; builds world-class scientific tools and facilities; and supports the network of DOE National Laboratories.

For more than half a century, the United States held the preeminent global position in science, technology and innovation. But other nations took note of America's success – stemming in large part from its history of strong investments in research and development – and countries across Europe and Asia have bolstered their own national investments. The result: the U.S. is no longer the undisputed leader in science and technology. The Global Innovation Index 2017 ranks the United States 4th among world innovators and 10th in national research investment as a percentage of GDP. If the status quo remains, we risk falling further behind.

By providing DOE Office of Science \$6.6 billion in FY 2019, Congress would show a continued commitment to prioritizing funding for early stage research and send a signal to the rest of the world that the U.S. is primed to remain a global leader in science and technology. This level of funding would enable DOE Office of Science to:

Sponsor Vital Research: Office of Science is the largest government sponsor for basic research in the physical sciences. It is the primary funder for several subdisciplines – such as high energy physics, heavy-element chemistry, plasma physics and catalysis – as well as a leading sponsor in the biological sciences, advanced materials, geosciences, computing and engineering. In FY 2019, Office of Science will continue to make strategic investments in innovative high-risk, high-reward research areas, including machine learning, quantum information science, genomics, matter at extreme conditions, and the search for new elementary particles and states of matter. Discoveries in such pioneering fields have potential far-reaching impacts and can lead to paradigm-shifting innovations that spawn the creation of new industries.

Prepare the Next Generation of American Scientific and Engineering Talent: Office of Science supports a diverse portfolio of research at colleges and universities nationwide. 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.

Steward World-Class Scientific Facilities: Office of Science supports the operation of the largest collection of major scientific user facilities in the world. Located at national laboratories and universities across the country, these 26 open-access facilities include particle accelerators, experimental reactors, X-ray synchrotron and free-electron laser light sources, leadership-class supercomputers and other high-precision instruments. Annually, more than 32,000 researchers from academia, industry and federal agencies use these facilities to support their scientific and engineering needs. Nearly half of the DOE facility users are university and federal researchers working to answer fundamental science questions. Additionally, more than 50 Fortune 500 companies and 150 small businesses use these facilities to conduct the underlying research required to develop new technologies and products that drive the economy. In FY 2019, robust funding for Office of Science would ensure that the construction and upgrades of major facilities are completed on time and on budget. These projects are necessary to maintain U.S. leadership and attract the best scientific talent both at home and abroad.

Support U.S. Economic Growth: During the last decade, Office of Science has made key science investments to advance U.S. leadership in energy technologies. For example, fundamental research in nanostructured cathode materials led to the production and deployment of high-energy, lithium ion batteries used by car companies for electric vehicles; a better understanding of the chemistry of sprays of diesel fuel yielded the design of new, more energy-efficient diesel engines; and interest in how organic films harvest light and generate electricity resulted in the commercialization of a thin film that uses solar energy to power tablets, digital signage, wearable devices, and even buildings as a type of window coating. These are all examples of high-risk, long-term research that is beyond the scope of what industry can or will support.

Ensure National Security: Office of Science facilities offer researchers from the National Nuclear Security Administration (NNSA), Department of Defense, Department of Homeland Security and Intelligence Agency unique capabilities necessary to advance a broad range of national security applications. NNSA scientists, for example, rely on Office of Science facilities to understand the material properties of an aging nuclear weapons stockpile and how to harden electronic components against radiation. Additionally, Office of Science-supported research has helped develop lighter, stronger armor for our soldiers, increase the electric grid's resilience to cyber attacks, and improve our ability to detect nuclear and radiological smuggling at our borders.

For these reasons, we urge Congress to provide \$6.6 billion for DOE Office of Science in FY 2019. ESC looks forward to working with Congress and the Administration to enact a budget that will strengthen our economy, improve our global competitiveness, and enhance our energy security and national security.

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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.

ESC Membership

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