ENERGY SCIENCES COALITION

July 22, 2019

The Energy Sciences Coalition (ESC) recommends and strongly encourages Congress to include an investment in the Department of Energy (DOE) Office of Science's research infrastructure as part of any larger infrastructure bill. Office of Science-supported research infrastructure at national laboratories and university research facilities enables scientific breakthroughs and discoveries vital to American prosperity and security.

The 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 27 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 36,000 researchers from academia, industry and federal agencies use these facilities to support their pursuits in science and engineering.

While the Office of Science has been an excellent steward of these world-class scientific facilities, funding constraints have kept these facilities from undergoing the modernization necessary to remain state-of-the-art. Mission-critical support facilities and utilities across the 10 Office of Science national laboratories are falling into disrepair, undermining scientific progress and making it more challenging to attract talent to our national laboratories. In addition to major user facilities, the Office of Science maintains laboratory and office buildings, support facilities and a vast network of utilities that form the backbone of each site. Currently, the average age of these buildings is 42 years and nearly half are rated as substandard or inadequate to meet mission need. In addition, utility systems across several laboratories are suffering from failures and frequent, costly repairs. DOE estimates that deferred maintenance costs across the national labs is $741 million. An infrastructure investment would help address this problem and allow the national laboratories to focus more of their resources on scientific discovery.

Equally important, the U.S. faces increasing competition from our counterparts in Europe and Asia, as they race to build their own state-of-the-art facilities to attract the best minds and lead the world in science and technology. An additional infrastructure investment would accelerate the construction of world-class facilities and scientific instruments to stay ahead of this competition and make sure the U.S. remains the most attractive country in the world for scientific discovery and innovation. With a strong record of completing major construction projects on time and on budget, the Office of Science has been a good steward of taxpayer dollars.

Given the critical role of Office of Science infrastructure to the U.S. scientific ecosystem, ESC recommends that Congress consider the following investments in any infrastructure bill:

- ongoing line item construction projects for world-class scientific facilities;
- Science Lab Infrastructure projects, including ones that advance innovation, partnership, and commercialization activities;
- new and upgraded instruments at Office of Science user facilities and shared research facilities, including those that build on the success of the Human Genome Project between DOE and the National Institutes of Health to catalyze new collaborations in neuroscience and precision medicine;
- general purpose infrastructure;

- high-performance computing and networking infrastructure leveraging new Artificial Intelligence and Machine Learning (AI/ML) applications;
- mid-scale instrumentation for novel, state-of-the-art tools at user facilities to significantly enhance diagnostic and visualization capabilities; and
- research centers and targeted workforce investments to maintain U.S. competitiveness, such as multi-disciplinary quantum science and technology centers, quantum foundries, fellowships, and early career research programs.

Thank you for your consideration on this important topic. Targeted infrastructure investments at Office of Science-supported facilities would have a significant return on investment. In the short-term, such investments would create construction jobs and increased economic activity, while in the long-term they would spur discoveries and innovation, creating the jobs and technologies of tomorrow.

Contacts:

Christopher Carter
Co-chair
610-216-5656
ccc317@lehigh.edu

Leland Cogliani
Co-chair
202-289-7475
Leland@lewis-burke.com

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

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
American Mathematical Society
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Acoustical Society of America (ASA)
American Society of Mechanical Engineers
American Society for Microbiology
American Society of Plant Biologists
American Vacuum Society
Arizona State University
Association of American Universities
Association of Public and Land-grant Universities
Battelle
Binghamton University
Biophysical Society
Boston University
Case Western Reserve University
City College of CUNY
Clemson University
Coalition for Academic Scientific Computation (CASC)
Consortium for Ocean Leadership
Columbia University
Computing Research Association
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Cornell University
Cray Inc.
Crop Science Society of America
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The Ecological Society of America
Florida State University
Fusion Power Associates
General Atomics
Geological Society of America
George Mason University
Georgia Institute of Technology
Harvard University
Health Physics Society
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Iowa State University
Jefferson Science Associates, LLC
Krell Institute
Lehigh University
Massachusetts Institute of Technology
Materials Research Society
Michigan State University
Michigan Technological University
New York University
Northeastern University
Northern Illinois University
Northwestern University
Oak Ridge Associated Universities (ORAU)
OSA—The Optical Society
Pace University
Penn State University
Princeton University
Purdue University
Rensselaer Polytechnic Institute
Rutgers, The State University of New Jersey
Society for Industrial and Applied Mathematics
Soil Science Society of America
South Dakota School of Mines
Southeastern Universities Research Association
SPIE
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