

Funding Opportunity: DOE Releases \$400 Million Open Call to Seed Investments in Fundamental Research in the Physical Sciences

Lewis-Burke Associates LLC – October 12, 2022

The Department of Energy (DOE) Office of Science released its annual open funding call to solicit applications for fundamental research that help address DOE’s discovery science, energy, national security, and environmental missions. For fiscal year (FY) 2023, DOE has set aside \$400 million with approximately \$300 million for new awards and \$100 million for award renewals. The funding call, known as the [FY 2023 Continuation of Solicitation for the Office of Science Financial Assistance Program](#), is open from October 1, 2022 through September 20, 2023; however, Lewis-Burke encourages applicants to apply earlier in the fiscal year to take advantage of funding availability. In particular, DOE is seeking applications in research areas not covered by more specific, topical funding opportunity announcements that are issued throughout the fiscal year and awards from the open funding call often serve as seed funding for larger-scale research programs in the future based on community interest and demand. DOE plans to make up to 350 new awards averaging from \$200,000 to \$1 million per year for Principal Investigators and from \$2 million to \$4 million per year for multi-institution teams over three to five years.

Priority Research Directions

All eight major Office of Science programs participate in the open call. See graphic below for more information on each of the programs and their principal mission.

Advanced Scientific Computing Research	• Delivering world leading computational and networking capabilities to extend the frontiers of science and technology
Basic Energy Sciences	• Understanding, predicting, and ultimately controlling matter and energy flow at the electronic, atomic, and molecular levels
Biological and Environmental Research	• Understanding complex biological, earth, and environmental systems
Fusion Energy Sciences	• Building the scientific foundations for a fusion energy source
High Energy Physics	• Understanding how the universe works at its most fundamental level
Nuclear Physics	• Discovering, exploring, and understanding all forms of nuclear matter
Isotope R&D and Production	• Supporting National Preparedness for isotope production and distribution during national crisis
Accelerator R&D and Production	• Supporting new technologies for use in SC’s scientific facilities and in commercial products

Every year, DOE updates priority research areas in all of its fields of science. Many of the priorities highlighted in FY 2022 remain the same in FY 2023 including in the physical sciences, biological sciences, advanced materials, and geosciences focused on advancing clean energy technologies, improving predictions of climate change, and understanding the constituent states of matter. This also includes continuing investments in emerging technology areas such as quantum information science, advanced

computing, next-generation networking and communications, microelectronics, AI and machine learning, and biotechnology.

The biggest change in priority research areas is in computer science. DOE is significantly increasing funding for applied mathematics and computer science to prepare for the next-generation of computing, networking, data storage and data management architectures as well as maximizing the use of exascale computing systems. New topics of interest in FY 2023 include:

- **Data analysis and visualization;** in particular, visual analytic approaches to understanding artificial intelligence/machine learning outcomes or the state and behavior of a supercomputing system at scale. Also of interest are machine learning or AI techniques for data analysis that are scalable, energy-efficient, explainable, or involve knowledge extraction.
- **Continuum computing;** in particular, continuum-computing capabilities that can run on computing platforms at a variety of scales; be automated and controllable; be more interoperable and composable; and use provenance and metadata for transparent results.
- **Storage systems and input/output technologies (SSIO);** in particular, SSIO capabilities that enable science understandability and reproducibility; accelerate scientific discovery; enhance SSIO usability, performance, and resilience; and improve efficiency and integrity of data movement and storage as well as combining of data streaming and cloud storage uses for Office of Science infrastructure and visualization needs at the edge for Office of Science experimental facilities.
- **Software ecosystem;** in particular, the maintenance and improvement of the software ecosystem, including that developed through the Exascale Computing Project (ECP), which provides shared software packages, novel evaluation systems, and applications relevant to the science and engineering requirements of DOE.

Application and Review Process

A pre-application, or white paper, is not required before submitting a full proposal. However, Lewis-Burke strongly recommends that applicants submit a white paper with a summary of the research idea tied to the most relevant topical subprogram. The white paper should be sent to the specific DOE program manager, whose name and contact information is listed with each subtopic in the open funding call. Once a white paper has been submitted, Lewis-Burke strongly recommends that the Principal Investigator request a meeting with the program manager to discuss the relevance of the proposed research idea and advise on how to further improve the white paper. Lewis-Burke has found that the rate of success on awards increases significantly after direction and encouragement to apply from a program manager.

Applications will be subject to scientific peer review. New in FY 2023 is one additional review criteria focused on promoting inclusive and equitable research consistent with [new guidance](#) for all FY 2023 awards. Applicants are now required to submit a Promoting Inclusive and Equitable Research (PIER) Plan that describes the activities and strategies applicants will incorporate to promote diversity, equity, inclusion, and accessibility in their research projects. The five review criteria include:

- scientific and/or technical merit of the project;
- appropriateness of the proposed method or approach;
- competency of applicant's personnel and adequacy of proposed resources;
- reasonableness and appropriateness of the proposed budget; and

- **NEW:** quality and efficacy of the plan for promoting inclusive and equitable research.

Program managers also have discretion in selecting final awards based on 10 program policy factors. New in FY 2023 are two new program policy factors to evaluate proposals:

- Increasing participation of institutions historically underrepresented in the Office of Science research portfolio and
- Promoting principal investigators with a commitment to improving diversity, equity, and inclusion in the STEM community.