DELAWARE ENERGY INSTITUTE

Funding Opportunities

January 30, 2023

*The opportunities listed here may be limited submissions. Please contact the **Research Office** to determine if there is an active or upcoming internal process for any opportunity of interest.*

Department of Energy – Office of Science, Advanced Scientific Computing Research

Scientific Machine Learning for Complex Systems

Pre-Application: March 1, 2023 | Full: April 12, 2023

Summary: The DOE SC program in Advanced Scientific Computing Research (ASCR) hereby announces its interest in research applications to explore potentially high-impact approaches in the development and use of scientific machine learning (SciML) and artificial intelligence (AI) in the predictive modeling, simulation and analysis of complex systems and processes.

The focus of this funding opportunity announcement is on basic research and development at the intersection of uncertainty quantification (UQ) and scientific machine learning (SciML) applied to the modeling and simulation of complex systems and processes. Scientific computing within the Department of Energy traditionally has been dominated by complex, resource-intensive numerical simulations. However, the rise of data-driven SciML models and algorithms provides new opportunities. Traditional scientific computing forward simulations often are referred to as “inner loop” modeling. The combination of traditional scientific computing expertise and machine learning-based adaptivity and acceleration has the potential to increase the performance and throughput of inner-loop modeling. Such hybrid modeling and simulation approaches offer the opportunity, for example, to combine the versatility of neural networks for function and operator approximations, the domain-knowledge and interpretability of differential equations and operators, and the robustness of high-performance scientific computing software across these areas. Relevant domains of application include materials, environmental, and life sciences; high-energy, nuclear and plasma physics, and the DOE Energy Earthshots Initiative, for example. While it is anticipated that proposed projects will focus on specific complex systems, the applied mathematics research advances must have more general applicability.

Estimated Funding/Number of Awards: DOE anticipates a total of $16 million will be used to support awards under this FOA (Ceiling: $1,200,000 per year | Floor: $300,000 per year). A single- or multi-institutional team, whether for as a prime applicant with subawards or as collaborative application, is limited to a request of no more than $1,200,000 per year. The exact number of awards will depend on the number of meritorious applications and the availability of appropriated funds.

Additional Information: DE-FOA-0002958

Department of Energy – Office of Science, Basic Energy Sciences

Energy Innovation Hub Program: Research to Enable Next-Generation Batteries and Storage

Pre-Application: March 9, 2023 | Full: May 18, 2023

Summary: The U.S. Department of Energy (DOE) has announced $125 million for basic research on rechargeable batteries to provide foundational knowledge needed to transform and decarbonize our energy system through the development and adoption of cost-effective and clean energy sources. The Energy Innovation Hub projects supported by this funding opportunity will accelerate discovery and scientific exploration of new battery chemistries, materials, and architectures for transformational energy storage technologies to be deployed in transportation and on the nation’s electricity grid. This FOA will support new awards in the Batteries and Energy Storage Energy Innovation Hub program to advance fundamental knowledge for the next generation of rechargeable batteries and related electrochemical energy storage beyond today’s commercialized batteries. Proposed efforts should assemble large teams to conduct coordinated, collaborative, synergistic, and highly interdisciplinary fundamental research to tackle scientific challenges for the next generation of batteries. Proposed research should address the highest scientific priorities in this area, build on advances and accomplishments in the published literature, and represent a world-leading scientific program when compared to relevant international research efforts.

Estimated Funding/Number of Awards: Applications submitted to this FOA may request support in the range from $10 million to $15 million per year, though award sizes are expected to range from $8 million to $15 million per year. Up to three (3) awards are expected.

Informational Webinar: A webinar on this Funding Opportunity Announcement will be held on February 8, 2023 at 3 pm EST. **Register**

Additional Information: DE-FOA-0002923

Department of Energy – Office of Energy Efficiency and Renewable Energy

Hydrogen and Fuel Cell Technologies Office FOA in Support of Hydrogen Shot

Concept Paper: February 24, 2023 | Full: April 28, 2023

Summary: The U.S. Department of Energy (DOE) has announced up to $47 million in funding to accelerate the research, development, and demonstration (RD&D) of affordable clean hydrogen technologies. This funding opportunity, which is administered by DOE's Hydrogen and Fuel Cell Technologies Office (HFTO), focuses on RD&D of key hydrogen delivery and storage technologies as well as affordable and durable fuel cell technologies. Fuel cell RD&D projects will focus particularly on applications for heavy-duty trucks, to reduce carbon dioxide emissions and eliminate tailpipe emissions that are harmful to local air quality. These efforts will work in concert with hydrogen-related activities funded by President Biden's Bipartisan Infrastructure Law, including the Regional Clean Hydrogen Hubs and an upcoming funding opportunity for RD&D to advance electrolysis technologies and improve the manufacturing and recycling of critical components and materials.

The specific topics to be funded in this interest area are:

- Hydrogen Carrier Development
- Onboard Storage Systems for Liquid Hydrogen
- Liquid Hydrogen Transfer/Fueling Components and Systems
- M2FCT: High Performing, Durable Membrane Electrode Assemblies for Medium- and Heavy-duty Applications

Estimated Funding/Number of Awards: EERE expects to make a total of approximately $47M of federal funding available for new awards under this FOA, subject to the availability of appropriated funds. EERE anticipates making approximately 14-22 awards under this FOA. Individual awards may vary between $1M and $6M.

Additional Information: DE-FOA-0002920