

**DEPARTMENT OF ENERGY  
OFFICE OF SCIENCE  
BASIC ENERGY SCIENCES (BES)**



**RESEARCH TO ENABLE FUELS FROM SUNLIGHT**

**FUNDING OPPORTUNITY ANNOUNCEMENT (FOA) NUMBER:  
DE-FOA-0002254**

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## **REMINDERS**

### RECOMMENDATION

The Department of Energy (DOE) Office of Science (SC) encourages you to register in all systems as soon as possible. You are also encouraged to submit pre-applications, and applications well before the deadline.

### AVOIDING ERRORS

The following advice is compiled from actual experiences of applicants for SC financial assistance awards.

- Please ensure that the research narrative is comprised of one and only one Portable Document Format (PDF) file, including all appendices, when it is attached to the SF-424 (R&R)<sup>1</sup> form.
- When using the PAMS website at <https://pamspublic.science.energy.gov>, please avoid using the back-arrow button in your web browser to navigate.
- Please ensure that the application contains no protected personally identifiable information (PII).
- Please ensure that the budget is calculated using the applicable negotiated indirect cost and fringe benefit rates.

### GRANTS.GOV WORKSPACE

Applications submitted through Grants.gov at <https://www.Grants.gov> must be submitted through a “Workspace” or the applicant’s system-to-system service. Workspace permits members of a team to simultaneously work on their application in an online collaborative environment. Application forms may exist as both online webforms and downloadable forms. More information is available at <https://www.Grants.gov/web/grants/applicants/workspace-overview.html>.

### DATA MANAGEMENT PLAN

Applications submitted under this Funding Opportunity Announcement (FOA) are subject to the Office of Science Statement on Digital Data Management, published at <https://science.osti.gov/funding-opportunities/digital-data-management>. Compliance with this statement is detailed in Section IV of this FOA.

### ACKNOWLEDGMENT OF FEDERAL SUPPORT

SC published guidance about how its support should be acknowledged at <https://science.osti.gov/funding-opportunities/acknowledgements>.

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<sup>1</sup> The Standard Form 424 (SF-424) family of forms is used to apply for Federal financial assistance through <https://www.Grants.gov>. The Research and Related (R&R) set of forms is used by the Office of Science.

## **Section I – FUNDING OPPORTUNITY DESCRIPTION**

### **GENERAL INQUIRIES ABOUT THIS FOA SHOULD BE DIRECTED TO:**

Questions regarding the content of the FOA must be submitted through the FedConnect portal. You must register with FedConnect to respond as an interested party, to submit questions, and to view responses to questions. It is recommended that you register as soon after release of the FOA as possible to have the benefit of all responses. More information is available on the FedConnect website (<https://www.fedconnect.net>).

Questions pertaining to the FedConnect registration process or the submission of questions through FedConnect should be directed by e-mail to [fcsupport@unisonglobal.com](mailto:fcsupport@unisonglobal.com) or by phone to the FedConnect Support Center at 1-800-899-6665.

### **STATUTORY AUTHORITY**

Sections 209 and 646 of Public Law 95-91, U.S. Department of Energy Organization Act  
Section 971 of Public Law 109-58, Energy Policy Act of 2005

### **APPLICABLE REGULATIONS**

Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, codified at 2 CFR 200

U.S. Department of Energy Financial Assistance Rules, codified at 2 CFR 910

U.S. Department of Energy, Office of Science Financial Assistance Program Rule, codified at 10 CFR 605

### **SUMMARY**

The DOE SC program in Basic Energy Sciences (BES) hereby solicits new applications for multi-investigator cross-disciplinary fundamental research to address emerging new directions as well as long-standing challenges in liquid solar fuels generation via artificial photosynthesis approaches. Artificial photosynthesis is typically viewed as the generation of fuels using only sunlight, carbon dioxide, and water as inputs. However, for the purpose of this FOA the concept of artificial photosynthesis approaches will be expanded to include other abundant feedstocks beyond carbon dioxide, such as nitrogen. Regardless of feedstock, the focus must remain on fundamental scientific concepts for solar-driven liquid fuel production.

Applications should focus on the highest scientific priorities in solar fuels production as identified by the 2019 Liquid Solar Fuels Roundtable and will be required to address priority research opportunities (PROs) denoted by the 2019 Liquid Solar Fuels Roundtable at <https://science.osti.gov/bes/Community-Resources/Reports>. The research should capitalize on unique capabilities and accomplishments developed to date, including those from BES-funded efforts in the Fuels from Sunlight Hub, Energy Frontier Research Centers (EFRCs), and BES

core programs. Projects should also integrate experiment and theory to elucidate scientific principles for light energy capture and conversion into chemical bonds.

The nature of the proposed fundamental solar fuels research will impact a broad range of topics, including carbon dioxide use and reduction. Two recent National Academies of Sciences, Engineering, and Medicine reports, “[Gaseous Carbon Waste Streams Utilization: Status and Research Needs](#)” and “[Negative Emissions Technologies and Reliable Sequestration: A Research Agenda](#),” provided an assessment of research needs and opportunities to remove and utilize gaseous carbon. As identified in these studies, key research targets for chemical carbon dioxide utilization include improvement of existing catalysts, discovery of entirely new catalysts, and identification of factors affecting catalysis performance when integrated into reactor systems. These fundamental science topics can advance the production of chemicals and fuel, including liquid solar fuels as noted by the 2019 Liquid Solar Fuels Roundtable (<https://science.osti.gov/bes/Community-Resources/Reports>), as well as the development of effective carbon dioxide reduction, removal, and sequestration technologies.

## **SUPPLEMENTARY INFORMATION**

### **Background**

Transforming our energy system through the development and adoption of cost-effective and sustainable energy sources is critical to the national, economic, and environmental security of the United States. These challenges will not be met solely by incremental improvements to existing technologies and will require transformational technologies founded on new fundamental knowledge and capabilities developed through basic research.

Solar energy is an abundant, renewable energy resource. Through the process of photosynthesis, plants effectively convert energy from the sun into energy-rich chemical fuels using water and carbon dioxide. The benefits for the nation from successful development of an artificial photosynthesis system that generates usable fuels directly from sunlight, carbon dioxide, and water would be substantial. Artificial photosynthesis would diversify the fuel supply to use multiple resources, minimize unwanted byproducts, and increase sustainability of the overall energy system. However, there are considerable scientific barriers, requiring fundamental science breakthroughs, to enable production of fuels directly from sunlight.

In 2010, the Department of Energy established the Fuels from Sunlight Hub, the Joint Center for Artificial Photosynthesis (JCAP), which focuses on the conversion of solar energy to storable chemical fuels. The research targets a breadth of fundamental science needed for solar fuel production, from the understanding and design of catalytic complexes that generate chemical fuel from carbon dioxide and water to the integration and evaluation of essential elements, from light capture to fuel formation components, in early-stage solar fuel generation models. The award to JCAP ends in September 2020.

## Program Objective

This FOA will support new Fuels from Sunlight Hubs to advance fundamental knowledge for solar fuels production via artificial photosynthesis approaches. While several approaches could potentially enable fuel production using sunlight as the only energy input, this FOA focuses solely on artificial photosynthesis approaches – the direct use of sunlight, water, and abundant feedstocks for liquid fuel production. These new projects, coupled with a robust core research portfolio stewarded by the individual BES programs, will create the scientific foundation needed to advance solar fuels generation, resulting in public benefits for national security, economic competitiveness, and leadership in scientific discovery. Proposed research should address the highest scientific priorities in this area and build on all advances in solar energy capture and conversion, including accomplishments resulting from BES core programs, EFRCs, and JCAP. Applications for this FOA will be required to address the priority research opportunities (PROs) denoted by the 2019 Liquid Solar Fuels Roundtable at <https://science.osti.gov/bes/Community-Resources/Reports>.

Proposed efforts should assemble the most talented scientists to conduct coordinated, collaborative, and highly interdisciplinary fundamental research to tackle scientific challenges for generating liquid solar fuels. Applications submitted to this FOA may request support in the range from \$10M to \$20M per year.

- Projects must address **at least two** of the PROs denoted by the 2019 Liquid Solar Fuels Roundtable (see above).
- The PROs to be addressed should be clearly stated on the Cover Page of the Pre-applications and the Proposal Narrative as specified in Sections IV.B.2 and IV.D.2 of this FOA.
- Applications that do not address at least two PROs from the 2019 Liquid Solar Fuels Roundtable (see above) may be declined without review.
- Applications must build upon and go beyond the accomplishments in this field to date, including those of BES-funded research ([Solar Photochemistry program](#), [BES PI meeting abstracts](#), [EFRCs](#), [JCAP](#)).
- An award made under this FOA is expected to be highly collaborative with other research efforts in solar fuels, including any other award that may be made under this FOA as well as the broader solar fuels scientific community.
- With the goals to advance fundamental research and improve competitiveness of the United States, the proposed projects should energize the wider scientific/technical solar fuels communities and serve as national resources, conveners, and leaders. The potential impact of success must be significant.
- The focus of this FOA is fundamental scientific research.

To further the goals of this Announcement, and to advance a statutory purpose of the project(s) to improve U.S. competitiveness, DOE may issue a Determination of Exceptional Circumstances (DEC) or other determination to modify the intellectual property rights in any technology developed under this FOA to meet its obligations to maintain and protect critical national interests in United States leadership in artificial photosynthesis, solar fuels, and their technology applications. The terms and conditions of each award may include a commitment that any products embodying any subject invention or produced through the use of any subject invention

will be manufactured substantially in the United States, unless the applicant can show to the satisfaction of DOE that it is not commercially feasible to do so (referred to hereinafter as “the U.S. Competitiveness Provision”). See Section VIII. F. of this FOA for further details.

Note: The purpose of the FY2020 Fuels from Sunlight Hub program does not include construction (including new buildings or additions to existing building), and costs for such activities will not be funded by awards resulting from this FOA.

### **Management of Research Program**

Success of the proposed research will depend on effective management of scientific programs, research thrusts, capabilities, and resources. Each project must have a well-designed management plan that includes strong, effective leadership by a Project Director who will commit a substantial amount of time to ensure the success of the project. The Project Director is the lead Principal Investigator (PI) and must be employed or have an agreement in place to be hired by the lead organization (prime applicant/prime recipient) at the time of award. Responsibilities of the Project Director would include planning and monitoring progress of scientific efforts; supervising, motivating and evaluating personnel within the organizational structure; budgeting and redirecting resource allocation; and fostering effective communication within a large organization and with the external community. The application must identify a single Project Director; no co-directorship is allowed. However, the management plan may include an Assistant Director and/or a leadership team who can provide additional management skills that are complementary to those of the Project Director.

The research program should focus on fundamental science. Dissemination of results through peer-reviewed publications will be a measure of success. As it is likely that the research could have potential technological value, the project is encouraged to file for patent protection when appropriate.

Applications should provide a clear and substantive description of the management and organization of the proposed project as indicated in Section IV.D.2.

All awards will be subject to regular and rigorous peer review of their scientific program and management structure, policies, and practices by BES. Mechanisms to be used include scheduled detailed progress reports and peer reviews.

### **Staffing**

The research program of the project should be led by internationally recognized scientists that possess cutting-edge expertise in the specific problems to be addressed. The project may comprise diverse institutions including national laboratories, academic institutions, non-profit research institutes, and the private sector as appropriate for its research goals. In assembling its research team, the project should aim for synergies that result when individuals with expertise in different methodologies, disciplines, and knowledge work together to address research problems and scientific challenges from fresh angles and with novel viewpoints.



The research team should enable acceleration of current state-of-the-art energy science and encourage high-risk, high-reward research that can enable revolutionary scientific advances for solar fuels generation. It must combine exceptional skill, creativity, and cutting-edge expertise in the specific problems to be addressed, either by including researchers specializing in this field or developing strong partnerships and working relationships with the individuals and institutions that have been engaged in research on these or related problems.

### **Open Science**

SC is dedicated to promoting the values of openness in Federally-supported scientific research, including, but not limited to, ensuring that research may be reproduced and that the results of Federally-supported research are made available to other researchers. These objectives may be met through any number of mechanisms including, but not limited to, data access plans, data sharing agreements, the use of archives and repositories, and the use of various licensing schemes.

The use of the phrase “open-source” does not refer to any particular licensing arrangement but is to be understood as encompassing any arrangement that furthers the objective of openness.

### **Other Considerations**

Use and leverage of existing facilities, including the Department’s user facilities is encouraged when appropriate. DOE user facilities (<https://science.osti.gov/User-Facilities>), including light sources, neutron scattering sources, nanoscale science research centers, advanced computational facilities, and other specialized user facilities, are foundational resources for a vast range of the scientific user community. As such, these existing facilities may serve as resources for the proposed research project.

### **Collaboration**

Group/team collaborative efforts must be submitted by the lead institution with subawards to teaming institutions. Collaborative applications, e.g. submissions of identical proposals by different institutions, will not be accepted under this FOA.

## Section II – AWARD INFORMATION

### **A. TYPE OF AWARD INSTRUMENT**

DOE may award a cooperative agreement, field work authorization or an interagency agreement under this FOA. A DOE field work authorization or other appropriate instrument will be awarded to a successful DOE/NNSA National Laboratory Contractor. Participation by non-DOE/NNSA Federal agencies and their Federally Funded Research and Development Center (FFRDC) Contractors as subawardees (team members) will be funded under an interagency agreement (see [Section III. A. ELIGIBLE APPLICANTS](#)). A cooperative agreement will be awarded to any other successful entity including, but not limited to, universities, nonprofit organizations, and for-profit organizations.

DOE will consider funding multi-institution collaborations under this FOA (see [Section III. A. ELIGIBLE APPLICANTS](#)).

### **B. ESTIMATED FUNDING**

DOE expects one to two awards for a period of up to five years for each award. Total funding up to \$20,000,000 annually is expected to be available to support the awards from this FOA subject to appropriation of funds by Congress. DOE reserves the right to fund, in whole or in part, any, all, or none of the applications submitted in response to this FOA.

DOE is under no obligation to pay for any costs associated with preparation or submission of applications.

Funding for all awards and future budget periods is contingent upon the availability of funds appropriated by Congress, which could be greater or less than the expected funding level stated above. Funding for out-year support will also be contingent upon satisfactory progress.

### **C. MAXIMUM AND MINIMUM AWARD SIZE**

DOE anticipates that award sizes will range from an average of \$8,000,000 per year to \$20,000,000 per year. The award size will depend on the number of meritorious applications and the availability of appropriated funds. Recognizing that new projects take some time to ramp up full operations, DOE may award less in Year 1 of the five-year project period than in subsequent years for awards made under this FOA.

#### **Ceiling**

\$20,000,000 per year for applications and awards.

#### **Floor**

\$10,000,000 per year for applications.

\$8,000,000 per year for awards. Should DOE request a reduction in project scope for a

recommended award, DOE anticipates the lowest recommended amount (and total reduced budget) would be \$8,000,000 per year (with the exception of the first year when a smaller award may be provided).

#### **D. EXPECTED NUMBER OF AWARDS**

DOE anticipates that the outcome will be two awards although the actual number of awards will depend on the number of meritorious applications and the availability of appropriated funds.

#### **E. ANTICIPATED AWARD SIZE**

The award size will depend on the number of meritorious applications and the availability of appropriated funds. DOE reserves the right to fund, in whole or in part, any, all, or none of the applications submitted in response to this FOA.

#### **F. PERIOD OF PERFORMANCE**

Awards are expected to be made for a period of up to five years.

Continuation funding (funding for the second and subsequent budget periods) is contingent on: (1) availability of funds appropriated by Congress and future year budget authority; (2) progress towards meeting the objectives of the approved application; (3) submission of required reports; and (4) compliance with the terms and conditions of the award. Additionally, funding for the subsequent years of the five-year project period will likely be contingent upon satisfactory completion of annual progress reviews, which may include external peer review. BES will use the annual progress review to assess the productivity and impact of the project including progress toward meeting the stated five-year scientific research goals.

#### **G. TYPE OF APPLICATION**

DOE will accept new applications only under this FOA.

#### **H. VALUE/FUNDING FOR DOE/NNSA NATIONAL LABORATORY CONTRACTORS AND NON-DOE/NNSA FFRDC CONTRACTORS**

For an award funded as a cooperative agreement, the value of, and funding for, a DOE/National Nuclear Security Administration (NNSA) National Laboratory contractor, a non-DOE/NNSA Federally Funded Research And Development Center (FFRDC) contractor, or another Federal agency's portion of the work will not be included in the award to the successful applicant. DOE will fund a DOE/NNSA National Laboratory contractor through the DOE field work authorization system or other appropriate process and will fund non-DOE/NNSA FFRDC contractors and other Federal agencies through an interagency agreement in accordance with the Economy Act, 31 U.S.C. 1535, or other statutory authority.

## **I. RESPONSIBILITY**

The successful prime applicant/awardee (lead organization) will be the responsible authority regarding the settlement and satisfaction of all contractual and administrative issues, including but not limited to, disputes and claims arising out of any agreement between the lead organization and any team member, and/or subawardee.

If an award or subaward is made to a DOE/NNSA National Laboratory, all Disputes and Claims will be resolved in accordance with the terms and conditions of the DOE/NNSA National Laboratory's Management and Operating (M&O) contract, as applicable, in consultation between DOE and the prime awardee.

If a subaward is made to another Federal agency or its FFRDC contractor, all Disputes and Claims will be resolved in accordance with the terms and conditions of the interagency agreement in consultation between DOE and the prime awardee.

## Section III – ELIGIBILITY INFORMATION

### A. ELIGIBLE APPLICANTS

All types of domestic applicants are eligible to apply as a lead institution, except non-DOE/NNSA Federal agencies, their Federally Funded Research and Development Center<sup>2</sup> (FFRDC) Contractors, and their Government Owned/Government Operated entities. Nonprofit organizations described in section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995 are not eligible to apply as lead organizations or as team members under another organization's application. DOE will prioritize funding of multi-institution efforts under this FOA.

DOE/NNSA National Laboratory Contractors are eligible to apply for funding as the lead organization or team member if their cognizant DOE/NNSA Contracting Officer provides written authorization. (See below for more information on the non-DOE/NNSA Federal agencies and their FFRDC contractors.)

Federal agencies and instrumentalities (other than DOE) are not eligible to apply as the lead organization but are eligible to apply for funding as a team member.

All lead organizations receiving funding under this FOA must be incorporated (or otherwise formed) under the laws of a State or territory of the United States.

Foreign entities, whether for-profit or otherwise and with or without a subsidiary or affiliate incorporated (or otherwise formed) under the laws of a state or territory of the United States, are not eligible for a prime award under this announcement, but may be proposed as a team member on another entity's application.

Applications that propose team members (subawardees) that are not domestic organizations must include a detailed demonstration of how the non-domestic entity possesses skills, resources, and abilities that do not exist among potential domestic team members.

#### *DOE/NNSA National Laboratory Contractors*

DOE/NNSA National Laboratory Contractor applicants are eligible for a prime award under this FOA, and may also be proposed as a team member on another entity's application if their cognizant DOE/NNSA Contracting Officer provides written authorization. This authorization should be submitted with the application as part of the Budget Justification for DOE/NNSA National Laboratory Contractor File. [This is not required for the National Energy Technology Laboratory because it is a Government Owned/Government Operated (GOGO).] **Please note that failure to provide this authorization may result in rejection of an application prior to merit review.** If a DOE/NNSA National Laboratory Contractor is selected for award, or

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<sup>2</sup> An authoritative list of all Federally Funded Research and Development Centers (FFRDCs) may be found at <https://www.nsf.gov/statistics/ffrdclist>

proposed as a team member, the proposed work will be authorized under the DOE field work authorization system or other appropriate process and performed under the laboratory Contractor's M&O contract, as applicable. The following wording is acceptable for the authorization:

“Authorization is granted for the \_\_\_\_\_ Laboratory to participate in the proposed project. The work proposed for the laboratory is consistent with or complementary to the missions of the laboratory and will not adversely impact execution of the DOE/NNSA assigned programs at the laboratory.”

### ***Non-DOE/NNSA Federal Agencies and their FFRDC Contractors***

Non-DOE/NNSA Federal agencies and their FFRDC contractors are not eligible for a prime award under this announcement, but may be proposed as a team member on another entity's application subject to the following guidelines:

The prime applicant must obtain written authorization for non-DOE/NNSA FFRDC participation. The cognizant Contracting Officer for the Federal agency sponsoring the FFRDC contractor must authorize in writing the participation of the FFRDC contractor on the proposed project and this authorization should be submitted with the application. The written authorization must also contain a determination that the use of a FFRDC contractor is consistent with the contractor's authority under its award and does not place the FFRDC contractor in direct competition with the private sector, in accordance with FAR Part 17.5. **Please note that failure to provide this authorization may result in rejection of an application prior to merit review.** The following wording is acceptable for the authorization:

“Authorization is granted for the \_\_\_\_\_ Laboratory to participate in the proposed project. The work proposed for the laboratory is consistent with or complementary to the missions of the laboratory and will not adversely impact execution of the (insert agency) assigned programs at the laboratory. This laboratory is authorized to perform the work proposed in the application submitted under DOE Funding Opportunity Announcement DE-FOA-0002254 by the following statutory authority (insert statute name, citation, and section).”

### ***Incorporated Consortia***

Incorporated consortia, which may include domestic and/or foreign entities, are eligible to apply for funding as a prime recipient (lead organization) or subawardee (team member).

Each incorporated consortium must have an internal governance structure and a written set of internal rules. Upon request, the consortium must provide a written description of its internal governance structure and its internal rules to the DOE contracting officer.

## *Unincorporated Consortia*

Unincorporated consortia (team arrangements), which may include domestic and foreign entities, must designate one member of the consortium to serve as the prime recipient/consortium representative (lead organization). The prime recipient/consortium representative must be incorporated (or otherwise formed) under the laws of a State or territory of the United States.

Upon request, unincorporated consortia must provide the DOE contracting officer with a collaboration agreement, commonly referred to as the articles of collaboration, which sets out the rights and responsibilities of each consortium member. This agreement binds the individual consortium members together and should discuss, among other things, the consortium's:

- Management structure;
- Method of making payments to consortium members;
- Means of ensuring and overseeing members' efforts on the project;
- Provisions for members' cost sharing contributions; and
- Provisions for ownership and rights in intellectual property developed previously or under the agreement.

Note that a consortium is applied for in one application and results in one award with subawards to consortia members.

## **B. COST SHARING AND INSTITUTIONAL COMMITMENTS**

Section 988(b) of EPAAct 2005 requires not less than 20 percent cost sharing from non-Federal sources for research and development (R&D) activity, but allows for an exclusion from this requirement for R&D activities "of a basic or fundamental nature, as determined by the appropriate officer of the Department," and also allows a reduction or elimination of the requirement for R&D activities of an applied nature, "if the Secretary determines that the reduction is necessary and appropriate."

An exclusion from the cost sharing requirement for basic and fundamental research and a waiver to eliminate the cost sharing requirement for applied research funded under this FOA is in process for all non-Federal entities except for-profit entities. If granted, cost-sharing will not be required for basic and applied research awarded under this FOA, except to for-profit entities. For-profit entities, whether prime recipients (lead organizations) or subawardees (team members), would be required to provide not less than 20% cost share for both basic and applied R&D activities. This cost share would be based on the portion of the total budget proposed by each for-profit entity and would be required to be not less than 20% of the total allowable R&D costs of that entity. Applicants would have to include any required cost share in their proposed budgets, as applicable. Non-federal sources must provide all cost shared funding unless otherwise permitted by law. Cost sharing amounts proposed in the budget are subject to validation during the period of performance and/or during closeout of the award.

An amendment will be issued to this FOA to finalize any cost share requirements after a determination has been issued on the waiver. Additionally, demonstrations of institutional or third-party commitment to the proposed activity, as described in Section IV.D., Appendix 12, are

strongly encouraged for applications.

Examples of non-Federal contributions that may be considered as demonstrating institutional or third-party commitment include, but are not limited to, the following:

- The provision of space, facilities, equipment, or resources at no or reduced charge;
- The provision of release time for faculty;
- The provision of scholarship support for students; or
- The waiver of facilities and administrative costs, in whole or in part.
- Third party contributions (e.g., state, private entities, etc.)

The institutional commitment is not to be documented on the application's budget: It is not a formal cost sharing, but it must be described in Appendix 12.

Cost sharing and Institutional commitments may not include the following:

- Revenues or royalties from the prospective operation of an activity beyond the time considered in the award;
- Proceeds from the prospective sale of an asset of an activity; or
- Other Federal awards.

Additionally, cost sharing may be required under a potential class patent waiver, if applicable, as discussed in Section VIII.G.

### **C. ELIGIBLE INDIVIDUALS**

Individuals with the skills, knowledge, and resources necessary to carry out the proposed research as a PI are invited to work with their organizations to develop an application for assistance. Individuals from underrepresented groups as well as individuals with disabilities are always encouraged to apply for assistance.

### **D. LIMITATIONS ON SUBMISSIONS**

Applicant institutions are limited to no more than one (1) pre-application and one (1) application **as the lead institution**. DOE will consider the latest received submission to be the institution's intended submission. However, there is no limitation on the number of applications in which a specific eligible entity can participate as a team member/subawardee.

- Pre-applications in excess of the limited number of submissions may be discouraged.
- Applications in excess of the limited number of submissions may be declined without review.

An investigator may be proposed as the Project Director (lead PI) on no more than one (1) pre-application and one (1) application.

The scope of work (i.e. total work effort as indicated by the budget) to be performed by lead institution must be greater than that of any other institution involved in the application.



## Section IV – APPLICATION AND SUBMISSION INFORMATION

### A. ADDRESS TO REQUEST APPLICATION PACKAGE

Application forms and instructions are available at Grants.gov. To access these materials, go to <https://www.Grants.gov>, select “Apply for Grants”, and then select “Download Application Package.” Enter the CFDA number (81.049) and/or the FOA number (DE-FOA-0002254) shown on the cover of this FOA and then follow the prompts to download the application package.

Applications submitted through [www.FedConnect.net](http://www.FedConnect.net) will not be accepted.

### B. LETTER OF INTENT AND PRE-APPLICATION

#### 1. Letter of Intent

Not applicable.

#### 2. Pre-application

PRE-APPLICATION DUE DATE

March 24, 2020 at 5:00 PM Eastern Time.

ENCOURAGE/DISCOURAGE DATE

April 14, 2020 at 5:00 PM Eastern Time

Applicants who have not received a response regarding the status of their pre-application by this date are responsible for contacting the program to confirm this status.

A Pre-Application is *required* for all applications. **Any application received for which there is not an associated pre-application in response to which DOE allowed a full application will be rejected without further review. Applications that have not been encouraged by DOE will be declined without merit review.**

In addition, the lead organization identified in the full application must be the same lead organization identified in the pre-application. **If an application is received for which the lead organization has changed since submission of the pre-application, the application will be rejected without further review.** The Lead PI (Project Director) should not be changed unless unavoidable and only minor edits should be made, if necessary, to the title of the project. If necessary, the applicant may make changes to other senior/key personnel and other participating institutions, although DOE discourages extensive changes.

The pre-application attachment must include, at the top of the first page, the following information:

Title of Pre-application  
Principal Investigator Name, Job Title

Institution  
PI Phone Number, PI Email Address  
FOA Number: DE-FOA-0002254  
PROs to be Addressed by Project

**This cover page must be signed by an official of the lead organization who has the authority to commit institutional/entity support for the application and by the proposed Project Director (Lead PI).** For DOE National Laboratory contractor applicants, the institutional/entity official who signs the cover page should be the Laboratory Director. For other applicants, the official who signs the cover page should be someone who has authority over research activities for the entire institution/entity, such as the Vice President for Research, Chief Technology Officer, or the equivalent. **All applicants must provide both of these signatures on the pre-application cover page.** Applicants that fail to provide both signatures on the pre-application must provide a corrected pre-application with both signatures on or before March 31, 2020 at 5:00 PM Eastern Time in order for their application to be considered.

The cover page should be followed by a narrative description of the mission, scientific goals, and research approaches, a potential scientific impact of the proposed project, including at least the following elements:

- A clear and concise statement of the scientific mission of the proposed project;
- An explicit set of five-year research goals designed to support that mission;
- A description of the research methods and approaches that will be used to achieve the goals of the project;
- An explanation of the potential scientific impact of the proposed research, the expertise of the integrated, multi-disciplinary research team to conduct the project, and the project's potential national scientific, technological, and competitiveness impact;
- A discussion of how the proposed research is responsive to the objectives of this FOA. Specifically, to be responsive the research must address at least two PROs denoted by the 2019 Liquid Solar Fuels Roundtable as indicated in [Section I](#).

This description of the proposed project should not exceed **five** pages (excluding the cover page) when printed on standard letter-size (8.5 by 11 inch) paper with 1 inch margins (top, bottom, left, and right) with font not smaller than 11 point. Any figures and references, if included, must fit within the five-page limit. If the pre-application exceeds five pages, only content on the first five pages will be read and considered.

In addition to the narrative, **the pre-application should list in a separate section the PROs that would be addressed by the project.** The PROs should be listed in priority order, with the primary PRO listed first followed by any secondary ones that are addressed. The applicable report containing the PROs is referenced in Section I of this FOA; no priority research directions or opportunities from other reports should be listed in the pre-application. This list of PROs will not count toward the page limit for the pre-application.

**The information requested below on participating investigators, collaborators, advisors and advisees is required** and does not count towards the five-page limit for the pre-application. Failure to include this information will result in the pre-application being discouraged from submitting a full application.

1. On a separate page(s), the pre-application must include a list of the names and institutional affiliations of all participating investigators, including funded collaborators and consultants on the proposed project (one name per line with institutional affiliation, i.e., last name, first name, institution – no titles are needed). Identify any non-domestic institutions and provide an addendum for each non-domestic institution demonstrating how the non-domestic institution possesses skills, resources, and abilities that do not exist among potential domestic institutions.
2. On a separate page(s), for all funded individuals, provide a single list (one name per line with institutional affiliation, i.e., last name, first name, institution – no titles are needed) of collaborative investigators and co-authors of the past 48 months, co-editors of the past 24 months, past graduate and postdoctoral advisors/advisees, and close associations. Do not include individuals from the investigators' home institutions, as these individuals would not be asked to review the application regardless of their engagement as a collaborator/co-author.

#### ***Limitation on Number of Pre-Applications Submitted by Each Lead Organization***

An entity may not submit more than one pre-application as the lead organization. **If more than one qualified pre-application is received from a lead organization, DOE will consider the latest qualified pre-application received based on the PAMS date and time stamp. The remaining pre-applications will be deemed non-responsive and the applicant will not be allowed to submit full applications tied to those pre-applications.** However, there is no limitation on the number of pre-applications in which an entity may participate as a team member or subcontractor.

#### ***Limitation on Number of Pre-Applications Submitted by a Project Director***

The Project Director is the lead Principal Investigator and must be employed or have an agreement in place to be hired by the lead organization in the event of award. An individual may not be named as the Project Director on more than one pre-application. **If more than one qualified pre-application is received from an applicant identifying the same individual as the Project Director, DOE will consider the latest qualified pre-application received based on the PAMS date and time stamp. The remaining pre-applications will be deemed non-responsive and the applicant will not be allowed to submit full applications tied to those pre-applications.** However, there is no restriction on the number of pre-applications in which an individual may participate as a PI or senior/key personnel.

## PRE-APPLICATION REVIEW

Federal Program Managers may evaluate all or some portion of pre-applications to determine their competitiveness within a scientific topic.

Any review will be based on the following criteria:

1. Responsiveness to the objectives of the FOA.
2. Scientific and technical merit.
3. Appropriateness of the proposed research approaches.
4. Likelihood of scientific impact.

Any such pre-application review will be conducted by no less than three federal program managers chosen for their topical knowledge and diversity of perspective. This will be a comparative review with priority given to scientifically innovative and forward-looking fundamental research with the highest likelihood of success as full proposals. Applicants with the highest rated pre-applications will be allowed to submit full proposals; all others will be disallowed from submitting. DOE will communicate these decisions to the applicants by April 14, 2020 at 5:00 PM Eastern Time. Applicants who are disallowed from submitting full proposals may request written feedback from the review, which will be provided only after award selections have been announced.

The following pre-applications will be discouraged from submitting applications:

- Pre-applications from non-domestic Lead Institutions
- Pre-applications that do not focus on fundamental science
- Pre-applications that do not address at least two PROs from the 2019 Liquid Solar Fuels Roundtable

DOE expects to allow approximately 10 full proposals, with the exact number based on the review. A sufficient number of applicants will be encouraged to submit applications to foster a competitive merit review of the applications. DOE's intent in discouraging submission of certain applications is to save the time and effort of applicants in preparing and submitting applications with a negligible likelihood of success.

The PI will be automatically notified when the pre-application is encouraged or discouraged. The DOE SC Portfolio Analysis and Management System (PAMS) will send an email to the PI from [PAMS.Autoreply@science.doe.gov](mailto:PAMS.Autoreply@science.doe.gov), and the status of the pre-application will be updated at the PAMS website <https://pamspublic.science.energy.gov>. Notifications are sent as soon as the decisions to encourage or discourage are finalized.

## PRE-APPLICATION SUBMISSION

It is important that the pre-application be a single file with extension .pdf, .docx, or .doc. The filename must not exceed 50 characters. The pre-application must be submitted electronically through the DOE SC Portfolio Analysis and Management System (PAMS) website <https://pamspublic.science.energy.gov>. The PI and anyone submitting on behalf of the PI must register for an account in PAMS before it will be possible to submit a pre-application. All PIs

and those submitting pre-applications on behalf of PIs are encouraged to establish PAMS accounts as soon as possible to avoid submission delays.

You may use the Internet Explorer, Firefox, Google Chrome, or Safari browsers to access PAMS.

**Please see Section IV, Part I, 4., DOE SC Portfolio Analysis and Management System (PAMS) for instructions about how to register in PAMS.**

### **Submit Your Pre-Application:**

- Create your pre-application (called a preproposal in PAMS) outside the system and save it as a file with extension .docx, .doc, or .pdf. Make a note of the location of the file on your computer so you can browse for it later from within PAMS.
- Log into PAMS and click the Proposals tab. Click the “View / Respond to Funding Opportunity Announcements” link and find the current announcement in the list. Click the “Actions/Views” link in the Options column next to this announcement to obtain a dropdown menu. Select “Submit Preproposal” from the dropdown.
- On the Submit Preproposal page, select the institution from which you are submitting this preproposal from the Institution dropdown. If you are associated with only one institution in the system, there will only be one institution in the dropdown.
- Note that you must select one and only one PI per preproposal; to do so, click the “Select PI” button on the far right side of the screen. Find the appropriate PI from the list of all registered users from your institution returned by PAMS. (Hint: You may have to sort, filter, or search through the list if it has multiple pages.) Click the “Actions” link in the Options column next to the appropriate PI to obtain a dropdown menu. From the dropdown, choose “Select PI.”
- If the PI for whom you are submitting does not appear on the list, it means he or she has not yet registered in PAMS. For your convenience, you may have PAMS send an email invitation to the PI to register in PAMS. To do so, click the “Invite PI” link at the top left of the “Select PI” screen. You can enter an optional personal message to the PI in the “Comments” box, and it will be included in the email sent by PAMS to the PI. You must wait until the PI registers before you can submit the preproposal. Save the preproposal for later work by clicking the “Save” button at the bottom of the screen. It will be stored in “My Preproposals” for later editing.
- Enter a title for your preproposal.
- Select the appropriate technical contact from the Program Manager dropdown.
- To upload the preproposal file into PAMS, click the “Attach File” button at the far right side of the screen. Click the “Browse” (or “Choose File” depending on your browser) button to search for your file. You may enter an optional description of the file you are attaching. Click the “Upload” button to upload the file.
- At the bottom of the screen, click the “Submit to DOE” button to save and submit the preproposal to DOE.
- Upon submission, the PI will receive an email from the PAMS system <[PAMS.Autoreply@science.doe.gov](mailto:PAMS.Autoreply@science.doe.gov)> acknowledging receipt of the preproposal.

You are encouraged to register for an account in PAMS at least a week in advance of the

preproposal submission deadline so that there will be no delays with your submission.

**WARNING:** The PAMS website at <https://pamspublic.science.energy.gov> will permit you to edit a previously submitted pre-application in the time between your submission and the deadline. If you choose to edit, doing so will remove your previously submitted version from consideration. If you are still editing at the time of the deadline, you will not have a valid submission. Please pay attention to the deadline.

For help with PAMS, click the “External User Guide” link on the PAMS website, <https://pamspublic.science.energy.gov>. You may also contact the PAMS Help Desk, which can be reached Monday through Friday, 9:00 AM – 5:30 PM Eastern Time. Telephone: (855) 818-1846 (toll free) or (301) 903-9610, email: [sc.pams-helpdesk@science.doe.gov](mailto:sc.pams-helpdesk@science.doe.gov). All submission and inquiries about this FOA should reference the FOA number DE-FOA-0002254 on the cover of this document.

Pre-applications submitted outside PAMS will not be considered. Pre-applications may not be submitted through Grants.gov or [www.FedConnect.net](http://www.FedConnect.net).

## **C. GRANTS.GOV APPLICATION SUBMISSION AND RECEIPT PROCEDURES**

This section provides the application submission and receipt instructions for applications to SC. Please read the following instructions carefully and completely.

### **1. Electronic Delivery**

SC is participating in the Grants.gov initiative to provide the grant community with a single site to find and apply for grant funding opportunities. SC requires applicants to submit their applications online through Grants.gov.

### **2. How to Register to Apply through Grants.gov**

a. Instructions: Read the instructions below about registering to apply for SC funds. Applicants should read the registration instructions carefully and prepare the information requested before beginning the registration process. Reviewing and assembling the required information before beginning the registration process will alleviate last-minute searches for required information.

Organizations must have a Data Universal Numbering System (DUNS) Number, active System for Award Management (SAM) registration, and Grants.gov account to apply for grants. If individual applicants are eligible to apply for this FOA, then you may begin with step 3, Create a Grants.gov Account, listed below.

Creating a Grants.gov account can be completed online in minutes, but DUNS and SAM registrations may take several weeks. Therefore, an organization’s registration should be done in sufficient time to ensure it does not impact the entity’s ability to meet required application submission deadlines.

The complete organization registration instructions can be found on Grants.gov here:  
<https://www.Grants.gov/web/grants/applicants/organization-registration.html>

1) *Obtain a DUNS Number*: All entities applying for funding, including renewal funding, must have a DUNS Number from Dun & Bradstreet (D&B). Applicants must enter the DUNS Number in the data entry field labeled “Organizational DUNS” on the SF-424 form. For more detailed instructions for obtaining a DUNS Number, refer to:  
<https://www.Grants.gov/web/grants/applicants/organization-registration/step-1-obtain-duns-number.html>

2) *Register with SAM*: All organizations applying online through Grants.gov must register with SAM at <https://www.sam.gov>. Failure to register with SAM will prevent your organization from applying through Grants.gov. SAM registration must be renewed annually. For more detailed instructions for registering with SAM, refer to:  
<https://www.Grants.gov/web/grants/applicants/organization-registration/step-2-register-with-sam.html>

3) *Create a Grants.gov Account*: The next step is to register an account with Grants.gov. Follow the on-screen instructions or refer to the detailed instructions here:  
<https://www.Grants.gov/web/grants/applicants/registration.html>

4) *Add a Profile to a Grants.gov Account*: A profile in Grants.gov corresponds to a single applicant organization the user represents (i.e., an applicant) or an individual applicant. If you work for or consult with multiple organizations and have a profile for each, you may log in to one Grants.gov account to access all of your grant applications. To add an organizational profile to your Grants.gov account, enter the DUNS Number for the organization in the DUNS field while adding a profile. For more detailed instructions about creating a profile on Grants.gov, refer to:  
<https://www.Grants.gov/web/grants/applicants/registration/add-profile.html>

5) *EBiz POC Authorized Profile Roles*: After you register with Grants.gov and create an Organization Applicant Profile, the organization applicant’s request for Grants.gov roles and access is sent to the Electronic Business Point of Contact (EBiz POC). The EBiz POC will then log in to Grants.gov and authorize the appropriate roles, which may include the Authorized Organizational Representative (AOR) role, thereby giving you permission to complete and submit applications on behalf of the organization. You will be able to submit your application online any time after you have been assigned the AOR role. For more detailed instructions about creating a profile on Grants.gov, refer to:  
<https://www.Grants.gov/web/grants/applicants/registration/authorize-roles.html>

6) *Track Role Status*: To track your role request, refer to:  
<https://www.Grants.gov/web/grants/applicants/registration/track-role-status.html>

b. *Electronic Signature*: When applications are submitted through Grants.gov, the name of the organization applicant with the AOR role that submitted the application is inserted into the signature line of the application, serving as the electronic signature. The EBiz POC **must**

authorize people who are able to make legally binding commitments on behalf of the organization as a user with the AOR role; **this step is often missed and is crucial for valid and timely submissions.**

### 3. How to Submit an Application to SC via Grants.gov

Grants.gov applicants can apply online using Workspace. Workspace is a shared, online environment where members of a grant team may simultaneously access and edit different webforms within an application. For each FOA, you can create individual instances of a workspace.

Below is an overview of applying on Grants.gov. For access to complete instructions on how to apply for opportunities, refer to:

<https://www.Grants.gov/web/grants/applicants/apply-for-grants.html>

1) Create a Workspace: Creating a workspace allows you to complete it online and route it through your organization for review before submitting.

2) Complete a Workspace: Add participants to the workspace, complete all the required forms, and check for errors before submission.

a. Adobe Reader: If you decide not to apply by filling out webforms you can download individual PDF forms in Workspace so that they will appear similar to other Standard forms. The individual PDF forms can be downloaded and saved to your local device storage, network drive(s), or external drives, then accessed through Adobe Reader.

NOTE: Visit the Adobe Software Compatibility page on Grants.gov to download the appropriate version of the software at:

<https://www.Grants.gov/web/grants/applicants/adobe-software-compatibility.html>

b. Mandatory Fields in Forms: In the forms, you will note fields marked with an asterisk and a different background color. These fields are mandatory fields that must be completed to successfully submit your application.

c. Complete SF-424 Fields First: The forms are designed to fill in common required fields across other forms, such as the applicant name, address, and DUNS number. To trigger this feature, an applicant must complete the SF-424 information first. Once it is completed, the information will transfer to the other forms.

3) Submit a Workspace: An application may be submitted through workspace by clicking the Sign and Submit button on the Manage Workspace page, under the Forms tab. Grants.gov recommends submitting your application package *at least 24-48 hours prior to the close date* to provide you with time to correct any potential technical issues that may disrupt the application submission.

4) Track a Workspace: After successfully submitting a workspace package, a Grants.gov



Tracking Number (GRANTXXXXXXXX) is automatically assigned to the package. The number will be listed on the Confirmation page that is generated after submission.

For additional training resources, including video tutorials, refer to:

<https://www.Grants.gov/web/grants/applicants/applicant-training.html>

Applicant Support: Grants.gov provides applicants 24/7 support via the toll-free number 1-800-518-4726 and email at support@Grants.gov. For questions related to the specific grant opportunity, contact the number listed in the application package of the grant you are applying for.

If you are experiencing difficulties with your submission, it is best to call the Grants.gov Support Center and get a ticket number. The Support Center ticket number will assist SC with tracking your issue and understanding background information on the issue.

#### **4. Timely Receipt Requirements and Proof of Timely Submission**

Proof of timely submission is automatically recorded by Grants.gov. An electronic date/time stamp is generated within the system when the application is successfully received by Grants.gov. The applicant AOR will receive an acknowledgement of receipt and a tracking number (GRANTXXXXXXXX) from Grants.gov with the successful transmission of their application. Applicant AORs will also receive the official date/time stamp and Grants.gov Tracking number in an email serving as proof of their timely submission.

When SC successfully retrieves the application from Grants.gov, and acknowledges the download of submissions, Grants.gov will provide an electronic acknowledgment of receipt of the application to the email address of the applicant with the AOR role. Again, proof of timely submission shall be the official date and time that Grants.gov receives your application. Applications received by Grants.gov after the established due date for the program will be considered late and may not be considered for funding by SC.

Applicants using slow internet, such as dial-up connections, should be aware that transmission can take some time before Grants.gov receives your application. Again, Grants.gov will provide either an error or a successfully received transmission in the form of an email sent to the applicant with the AOR role. The Grants.gov Support Center reports that some applicants end the transmission because they think that nothing is occurring during the transmission process. Please be patient and give the system time to process the application.

#### **D. CONTENT AND APPLICATION FORMS**

##### **APPLICATION PREPARATION**

You must submit the application through Grants.gov at <https://www.Grants.gov>, using either the online webforms or downloaded forms. (Additional instructions are provided in Section IV, Part C of this FOA.)

You are required to use the compatible version of Adobe Reader software to complete a [Grants.gov](#) Adobe application package. To ensure you have the [Grants.gov](#) compatible version of Adobe Reader, visit the software compatibility page at <https://www.Grants.gov/web/grants/applicants/adobe-software-compatibility.html>.

You must complete the mandatory forms and any applicable optional forms (e.g., Disclosure of Lobbying Activities (SF-LLL)) in accordance with the instructions on the forms and the additional instructions below.

Files that are attached to the forms must be PDF files unless otherwise specified in this FOA. Attached PDF files must be plain files consisting of text, numbers, and images without editable fields, signatures, passwords, redactions, or other advanced features available in some PDF-compatible software. Do not use PDF portfolios or binders.

Please note the following restrictions that apply to the names of all files attached to your application:

- Please limit file names to 50 or fewer characters
- Do not attach any documents with the same name. All attachments must have a unique name.
- Please use only the following characters when naming your attachments: A-Z, a-z, 0-9, underscore, hyphen, space, period, parenthesis, curly braces, square brackets, ampersand, tilde, exclamation point, comma, semi colon, apostrophe, at sign, number sign, dollar sign, percent sign, plus sign, and equal sign. Attachments that do not follow this rule may cause the entire application to be rejected or cause issues during processing.

#### LETTERS

Letters of recommendation/support are discouraged and will not be reviewed by DOE.

#### RENEWAL APPLICATIONS

Renewal applications will not be accepted under this FOA.

#### RESUBMISSION OF APPLICATIONS

Applications submitted under this FOA may be withdrawn from consideration by using the PAMS website at <https://pamspublic.science.energy.gov>. Applications may be withdrawn at any time between when the applicant submits the application and when DOE makes the application available to merit reviewers. Such withdrawals take effect immediately and cannot be reversed. Please exercise due caution.

After the application is made available to merit reviewers, the applicant may contact the DOE program office identified in this FOA to request that it be withdrawn. After an application is withdrawn, it may be resubmitted, if this FOA is still open for the submission of applications. Such resubmissions will only count as one submission if this FOA restricts the number of applications from an applicant.

Note that there may be a delay between the application's submission in Grants.gov and when it is available to be withdrawn in PAMS. SC will usually consider the last submission, according to its Grants.gov timestamp, to be the intended version. Please consult with your program manager to resolve any confusion about which version of an application should be considered.

#### IMPROPER CONTENTS OF APPLICATIONS

Applications submitted under this FOA will be stored in controlled-access systems, but they may be made publicly available if an award is made. As such, it is critical that applicants follow these guidelines:

- Do not include information subject to any legal restriction on its open distribution, whether classified, export control, or unclassified controlled nuclear information.
- Do not include sensitive and protected personally identifiable information, including social security numbers, birthdates, citizenship, marital status, or home addresses. Pay particular attention to the content of biographical sketches and curriculum vitae.
- Do not include letters of support from Federal officials.
- Do not include letters of support on Federal letterhead. Letters that are not letters of support (such as letters confirming access to sites, facilities, equipment, or data; or letters from cognizant contracting officers) may be on Federal letterhead.
- Clearly mark all proprietary or trade-secret information.

#### 1. SF-424 (R&R)

Complete this form first to populate data in other forms. Complete all the required fields in accordance with the pop-up instructions on the form. The list of certifications and assurances referenced in Field 17 is available on the DOE Financial Assistance Forms Page at <https://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms> under Certifications and Assurances.

Applicants that have updated or started their registrations in <https://www.SAM.gov> on or after February 2, 2019, will also be bound by their representations and certifications in SAM.gov.

#### DUNS AND EIN NUMBERS (FIELDS 5 AND 6)

The DUNS and Employer Identification Number (EIN) fields on the SF-424 (R&R) form are used in PAMS to confirm the identity of the individual or organization submitting an application.

- Enter each number as a nine-digit number.
- Do not use hyphens or dashes.
- SC does not use the twelve-digit EIN format required by some other agencies.
- SC does not use the DUNS+4 format.

#### TYPE OF APPLICATION (FIELD 8)

A **new** application is one in which DOE support for the proposed research is being requested for the first time. **Only new applications should be submitted to this FOA.**

Please answer “yes” to the question “Is this application being submitted to other agencies?” if substantially similar, identical, or closely related research objectives are being submitted to another Federal agency. Indicate the agency or agencies to which the similar objectives have been submitted.

## 2. Research and Related Other Project Information

Complete questions in fields 1 through 6 of the SF-424 Research and Related Other Project Information form.

### **Note regarding question 4.a. and 4.b.:**

If any environmental impact, positive or negative, is anticipated, indicate “yes” in response to question 4.a., “potential impact – positive or negative - on the environment.” Disclosure of the impact should be provided in response to question 4.b. First indicate whether the impact is positive or negative and then identify the area of concern (e.g., air, water, exposure to radiation, etc.). Should the applicant have any uncertainty, they should check “yes.”

DOE understands the phrase in field 4.a., “potential impact ... negative” to apply if the work described in the application could potentially have any of the impacts listed in (1) through (5) of 10 CFR 1021, Appendix B, Conditions that Are Integral Elements of the Classes of Action in Appendix B. (<http://www.ecfr.gov>)

Additionally, for actions which could have any other adverse impacts to the environment or have any possibility for adverse impacts to human health (e.g., use of human subjects, Biosafety Level 3-4 laboratory construction/operation, manufacture or use of certain nanoscale materials which are known to impact human health, or any activities involving transuranic or high level radioactive waste, or use of or exposure to any radioactive materials beyond de minimis levels), applicants should indicate a “negative” impact on the environment.

Lastly, 1) if there would be extraordinary circumstances (i.e., scientific or public controversy) related to the significance of environmental effects (10 CFR 1021.410 (b)(2)), 2) if the work is connected to other actions with potentially significant impacts (10 CFR 1021.410 (b)(3)), or 3) if the work is related to other nearby actions with the potential for cumulatively significant impacts (10 CFR 1021.410 (b)(3)), applicants should indicate a “negative” impact on the environment.

The bulk of your application will consist of files attached to the Research and Related Other Project Information form. The files must comply with the following instructions:

## PROJECT SUMMARY/ABSTRACT (FIELD 7 ON THE FORM)

The project summary/abstract is a summary of the proposed activity suitable for distribution to the public and sufficient to permit potential reviewers to identify conflicts of interest. It must be a self-contained document. Provide the name of the applicant, the project title, the PI and the PI's institutional affiliation, any coinvestigators and their institutional affiliations, the objectives of the project, a description of the project, including methods to be employed, and the potential impact of the project (i.e., benefits, outcomes. A sample is provided below:

<p>A Really Great Idea</p> <p>A. Smith, Lead Institution (Principal Investigator) A. Brown, Institution 2 (Co-Investigator) A. Jones, Institution 3 (Co-Investigator)</p> <p>Text of abstract</p>
---

The project summary must not exceed 1 page when printed using standard standard letter-size (8.5 by 11 inch) paper with 1 inch margins (top, bottom, left, and right) with font not smaller than 11 point. To attach a Project Summary/Abstract, click “Add Attachment.”

If an application is recommended for award, the project summary will be used in preparing a public abstract about the award. Award abstracts and titles form a Government document that describes the project and justifies the expenditure of Federal funds in light of the DOE and SC mission statements at <https://energy.gov/mission> and <https://science.osti.gov/about>.

- Do not include any proprietary or sensitive business information.
- DOE may use the abstract may to prepare public reports about supported research.

## DOE COVER PAGE

(PART OF PROJECT NARRATIVE ATTACHED TO FIELD 8 ON THE FORM)

The application narrative must begin with a cover page that will not count toward the project narrative page limitation. The cover page must include the following items:

- The project title
- Applicant/Institution:
- Street Address/City/State/Zip:
- Postal Address:
- Lead PI name, telephone number, email:
- Administrative Point of Contact name, telephone number, email:
- FOA Number: DE-FOA-0002254
- DOE/SC Program Office: Basic Energy Sciences
- PAMS Preproposal tracking number:
- PROs to be Addressed:

On a separate page, as a supplement to the cover page, include the following table providing budget information for the entire project (including all institutions).

**Table 1: Summary Budget Information by Institution** (\$ in thousands)

Institution	Year 1 Budget	Year 2 Budget	Year 3 Budget	Year 4 Budget	Year 5 Budget	Total Budget
<b>Total</b>						

Provide the total costs (\$ in thousands) of the budget request in each year for each institution and totals for all rows and columns. For any for-profit entities, whether prime recipients (lead organizations) or subawardees (team members), for which cost sharing is required in accordance with Section III. B, include 2 separate lines: the first for the proposed DOE-funded budget amount and the second for proposed cost-share amount. The sum of all lines should equal the “Total Budget” amount.

**Important Instructions to the Sponsored Research Office of Submitting Institutions:** SC requires that you create one single PDF file that contains the DOE Cover Page, project narrative, biographical sketch, current and pending support, bibliography and references cited, facilities and other resources, equipment, data management plan, and other attachments. This single PDF file must be attached in Field 8 on the Grants.gov form. Do not attach any of the items listed in this paragraph separately in any other field in Grants.gov. If you do, these additional attachments will not become part of the application in PAMS.

PROJECT NARRATIVE (FIELD 8 ON THE FORM)

The project narrative **must not exceed an 80-page limit**, including technical information charts, graphs, maps, photographs, and other pictorial presentations, when printed using standard letter-size (8.5 by 11 inch) paper with 1 inch margins (top, bottom, left, and right). The font must not be smaller than 11 point. Merit reviewers will only consider the number of pages specified in the first sentence of this paragraph. This page limit does not apply to the Cover Page, Budget Page(s), Budget Justification, biographical material, publications and references, and appendices.

Do not include any Internet addresses (URLs) that provide supplementary or additional information that constitutes a part of the application. Merit reviewers are not required to access Internet sites; however, Internet publications in a list of references will be treated identically to print publications. See Section VIII, Part D for instructions on how to mark proprietary application information. To attach a Project Narrative, click “Add Attachment.”

The Project Narrative comprises the research plan for the project. There should be no ambiguity about which personnel will perform particular parts of the project, and the time at which these activities will take place.

The Project Narrative should include the following three components:

**I. Overview of the Project Plan.** This section should provide a concise overview summarizing the vision for the proposed project including:

- Clearly stated five-year fundamental research goal(s) of the proposed effort;
- The strategy for operations, including an overview of project organization and management;
- The integration of the research components of the project into an effective whole; and
- How the research program will address critical fundamental science needs as described in the PROs for liquid solar fuels generation.

**II. Organization and Management Plan.** This section must provide a clear and substantive plan for the organization and management of the project that encourages high-risk, high-reward research and fosters synergy and cohesion among investigators. It should include:

- An organizational structure that delineates the roles and responsibilities of senior/key personnel and describes the means of obtaining external guidance for scientific and technical direction of the research program;
- A description of the relevant experience of the lead institution and senior/key personnel in project, program, and personnel management of diverse teams of science and technical professionals for projects of comparable magnitude;
- A description of the relevant scientific and technical expertise, experience, role, intellectual contribution, and time commitment of the senior/key personnel in the research disciplines needed for project success including any plans for collaboration with outside scientists or for recruiting any additional scientific and technical personnel;
- A description of the management approach that would be used to foster productive and appropriately-focused research, including steps to ensure progress and redirect efforts when necessary, mechanisms to establish and maintain a collaborative, synergistic, well-coordinated research effort, and approaches to strategically integrate external collaborators into the overall program;
- A description of the approaches to be used to ensure the project operates within the proposed scope, cost, and schedule;
- A description of the planned approach to sharing and disseminating information both internally and externally, including, for example, when and how publications are created;
- A description of the approaches to work with the scientific community and researchers who are not part of the proposed project to create synergies and form partnerships when appropriate; the approach may include research partnerships, research personnel exchanges, institution-sponsored post-doctoral or graduate fellowships, participation in advisory committees, and multi-institutional seminars and conferences;
- A description of the roles, responsibilities and prospective membership of one or more external advisory committee(s), which should include representation from industry, academia, and federal laboratories.

If desired, applicants may provide a detailed Project Plan as Appendix 10. This plan is optional but if included, it must be consistent with the information in this section.

**III. Proposed Research Program.** Provide detailed information regarding the fundamental research proposed for the project. This section, which may be organized into subtasks, must clearly describe the proposed research and:

- Briefly describe the scientific and technical background (include references to peer-reviewed literature) leading to the application, critically evaluate existing knowledge, concisely describe the relationship of the proposed research to that conducted outside of the project, including how the proposed research goes beyond the accomplishments in this field to date (such as those from BES-funded research), and specifically identify the PROs and associated scientific gaps that the project is intended to fill;
- State concisely the importance of the research described in the application, how the proposed program lies at the forefront of the topical area, and how the proposed program will have an impact on the artificial photosynthesis approach to liquid solar fuels generation;
- Provide an account of any preliminary studies that may be pertinent to the proposed research, including any other information that will help to establish the experience and competence of the investigators to pursue the proposed project;
- Describe a balanced and comprehensive program of research that supports experimental and theoretical/computational efforts and includes a set of well-defined, high-level five-year goals;
- Delineate proposed objectives for the fundamental research strategy, including an explanation as to how the objectives will ensure that the program remains focused on the proposed five-year goals and the approach to measuring performance against the objectives;
- Provide a timeline for the major activities of the proposed project and indicate which project personnel will be responsible for these activities;
- Address potential scientific and technical obstacles to achieving the research objectives and the approaches to be used to overcome them;
- Delineate plans for external collaborations and partnerships including potential utilization of unique capabilities and DOE user facilities;
- Briefly outline the resources available to the proposed project including access to existing research space, instrumentation, and facilities at the lead institution and its partners.

If a detailed Project Plan is provided as Appendix 10, the information in this section must be consistent with the information in Appendix 10.

**Do not attach any of the requested appendices described below as files for fields 9, 10, 11, and 12 in Grants.gov. Follow the instructions below to include the information as appendices in the single, bundled project narrative file.**

#### APPENDIX 1: BIOGRAPHICAL SKETCH

Provide a biographical sketch for the PI and each senior/key person listed in Section A on the R&R Budget forms.

As part of the sketch, provide information that can be used by reviewers to evaluate the PI's



potential for leadership within the scientific community. Examples of information of interest are invited and/or public lectures, awards received, scientific program committees, conference or workshop organization, professional society activities, special international or industrial partnerships, reviewing or editorship activities, or other scientific leadership experiences. If a participant (PI or senior/key person) is from a non-domestic institution, provide information indicating how the non-domestic institution possesses skills, resources, and abilities that do not exist among potential domestic institutions.

- Provide the biographical sketch information as an appendix to your project narrative.
- Do not attach a separate file.
- The biographical sketch appendix will not count in the project narrative page limitation.
- The biographical information (curriculum vitae) for each person must not exceed 2 pages when printed on standard letter-size (8.5 by 11 inch) paper with 1 inch margins (top, bottom, left, and right) with font not smaller than 11 point and must include:

SC does not require a particular format for a biosketch. Applicants may use a format developed for other agencies or generated by any software package, including SciENCv (Science Experts Network Curriculum Vitae), a cooperative venture maintained at <https://www.ncbi.nlm.nih.gov/sciencv/>. The biographical information (curriculum vitae) must include the following items within its page limit:

- **Education and Training:** Undergraduate, graduate and postdoctoral training, provide institution, major/area, degree and year.
- **Research and Professional Experience:** Beginning with the current position list, in chronological order, professional/academic positions with a brief description.
- **Publications:** Provide a list of up to 10 publications most closely related to the proposed project. For each publication, identify the names of all authors (in the same sequence in which they appear in the publication), the article title, book or journal title, volume number, page numbers, year of publication, and website address if available electronically. Patents, copyrights and software systems developed may be provided in addition to or substituted for publications. An abbreviated style such as the Physical Review Letters (PRL) convention for citations (list only the first author) may be used for publications with more than 10 authors.
- **Synergistic Activities:** List no more than five (5) professional and scholarly activities related to the effort proposed.

In addition, the biographical sketch must include information to permit DOE to identify individuals who are conflicted with or potentially biased (favorably or unfavorably) against the investigator. Include a section entitled “**Identification of Potential Conflicts of Interest or Bias in Selection of Reviewers**” that will not count in a page limit. Provide the following information in this section:

- **Collaborators and Co-editors:** List in alphabetical order all persons, including their current organizational affiliation, who are, or who have been, collaborators or co-authors with you on a research project, book or book article, report, abstract, or paper during the 48 months preceding the submission of this application. For publications or collaborations with more than 10 authors or participants, only list those individuals

in the core group with whom the PI interacted on a regular basis while the research was being done. Also, list any individuals who are currently, or have been, co-editors with you on a special issue of a journal, compendium, or conference proceedings during the 24 months preceding the submission of this application. If there are no collaborators or co-editors to report, state “None.”

- **Graduate and Postdoctoral Advisors and Advisees:** List the names and current organizational affiliations of your graduate advisor(s) and principal postdoctoral sponsor(s). Also, list the names and current organizational affiliations of your graduate students and postdoctoral associates.

**Personally Identifiable Information:** Do not include sensitive and protected personally identifiable information including social security numbers, birthdates, citizenship, marital status, or home addresses. Do not include information that a merit reviewer should not make use of.

#### APPENDIX 2: CURRENT AND PENDING SUPPORT

Provide a list of all current and pending support (both Federal and non-Federal) for the PI and senior/key persons, including subawardees, for ongoing projects and pending applications. List all sponsored activities or awards requiring a measurable commitment of effort, whether paid or unpaid. SC does not require a particular format for current and pending support. Applicants may use a format developed for other agencies or generated by any software package, including SciENcv (Science Experts Network Curriculum Vitae), a cooperative venture maintained at <https://www.ncbi.nlm.nih.gov/sciencv/>.

For every activity, list the following items:

- The sponsor of the activity or the source of funding
- The award or other identifying number
- The title of the award or activity
- The total cost or value of the award or activity, including direct and indirect costs. For pending proposals, provide the total amount of requested funding.
- The award period (start date – end date).
- The person-months of effort per year being dedicated to the award or activity
- Briefly describe the research being performed and explicitly identify any overlaps or synergies with the proposed research.

Provide the Current and Pending Support as an appendix to your project narrative. Concurrent submission of an application to other organizations for simultaneous consideration will not prejudice its review.

- Do not attach a separate file.
- This appendix will not count in the project narrative page limitation.

#### APPENDIX 3: BIBLIOGRAPHY & REFERENCES CITED

Provide a bibliography of any references cited in the Project Narrative. Each reference must include the names of all authors (in the same sequence in which they appear in the publication), the article and journal title, book title, volume number, page numbers, and year of publication.

For research areas where there are routinely more than ten coauthors of archival publications, you may use an abbreviated style such as the Physical Review Letters (PRL) convention for citations (listing only the first author). For example, your paper may be listed as, “A Really Important New Result,” A. Aardvark et. al. (MONGO Collaboration), PRL 999. Include only bibliographic citations. Applicants should be especially careful to follow scholarly practices in providing citations for source materials relied upon when preparing any section of the application. Provide the Bibliography and References Cited information as an appendix to your project narrative.

- Do not attach a separate file.
- This appendix will not count in the project narrative page limitation.

#### APPENDIX 4: FACILITIES & OTHER RESOURCES

This information is used to assess the capability of the organizational resources, including subawardee resources, available to perform the effort proposed. Identify the facilities to be used (Laboratory, Animal, Computer, Office, Clinical and Other). If appropriate, indicate their capacities, pertinent capabilities, relative proximity, and extent of availability to the project. Describe only those resources that are directly applicable to the proposed work. Describe other resources available to the project (e.g., machine shop, electronic shop) and the extent to which they would be available to the project. For proposed investigations requiring access to experimental user facilities maintained by institutions other than the applicant, please provide a document from the facility manager confirming that the researchers will have access to the facility. Please provide the Facility and Other Resource information as an appendix to your project narrative.

- Do not attach a separate file.
- This appendix will not count in the project narrative page limitation.

#### APPENDIX 5: EQUIPMENT

List major items of equipment already available for this project and, if appropriate identify location and pertinent capabilities. Provide the Equipment information as an appendix to your project narrative.

- Do not attach a separate file.
- This appendix will not count in the project narrative page limitation.

#### APPENDIX 6: DATA AND SOFTWARE MANAGEMENT

This appendix should include the required Data Management Plan (DMP) and an Open Source Software Distribution plan if appropriate.

##### 6A: DATA MANAGEMENT PLAN

Provide a DMP that addresses the following requirements:

1. DMPs should describe whether and how data generated in the course of the proposed research will be shared and preserved. If the plan is not to share and/or preserve certain data, then the plan must explain the basis of the decision (for example, cost/benefit considerations, other parameters of feasibility, scientific appropriateness, or limitations discussed in #4). At a

minimum, DMPs must describe how data sharing and preservation will enable validation of results, or how results could be validated if data are not shared or preserved.

2. DMPs should provide a plan for making all research data displayed in publications resulting from the proposed research open, machine-readable, and digitally accessible to the public at the time of publication. This includes data that are displayed in charts, figures, images, etc. In addition, the underlying digital research data used to generate the displayed data should be made as accessible as possible to the public in accordance with the principles stated in the Office of Science Statement on Digital Data Management (<https://science.osti.gov/funding-opportunities/digital-data-management>). This requirement could be met by including the data as supplementary information to the published article, or through other means. The published article should indicate how these data can be accessed.
3. DMPs should consult and reference available information about data management resources to be used in the course of the proposed research. In particular, DMPs that explicitly or implicitly commit data management resources at a facility beyond what is conventionally made available to approved users should be accompanied by written approval from that facility. In determining the resources available for data management at SC User Facilities, researchers should consult the published description of data management resources and practices at that facility and reference it in the DMP. Information about other Office of Science facilities can be found at <https://science.osti.gov/user-facilities/>.
4. DMPs must protect confidentiality, personal privacy, , and U.S. national, homeland, and economic security; recognize proprietary interests, business confidential information, and intellectual property rights; avoid significant negative impact on innovation, and U.S. competitiveness; and otherwise be consistent with all applicable laws, and regulations. There is no requirement to share proprietary data.

DMPs will be reviewed as part of the overall SC research proposal merit review process.

Applicants are encouraged to consult the SC website for further information and suggestions for how to structure a DMP: <https://science.osti.gov/funding-opportunities/digital-data-management>.

- Do not attach a separate file.
- This appendix will not count in the project narrative page limitation.

#### 6B: OPEN SOURCE SOFTWARE DISTRIBUTION PLAN (IF APPROPRIATE)

If software will be developed on the project, applicants should submit an Open Source Software Distribution Plan as part of their proposal. This plan describes how software produced as the part of the project will be distributed. For a DOE National Laboratory or a FFRDC, the data rights clause, including rights and requirements pertaining to computer software, in its M&O Contract shall apply. The plan, if provided, should include the following elements:

1. A complete description of any existing software that will be modified or incorporated into software produced as part of the project, including a description of the license rights. The license rights should allow the modified or incorporated software to be distributed as open source.
2. A discussion of the open source license that the Applicant plans to use for the software produced as part of this project. The discussion should also address whether the proposed license is approved by the Open Source Initiative (OSI) <http://www.opensource.org>. Use of an OSI approved license is preferred.
3. A method for depositing the software in a source code repository or otherwise making the code widely available.

4. A method for sharing and disseminating the software and other information to team members or others when multiple parties will contribute to the development of the software.
  - Do not attach a separate file; and
  - This appendix will not count in the Project Narrative page limitation.

#### APPENDIX 7: INTELLECTUAL PROPERTY (IP) MANAGEMENT PLAN

Each project should include within their application a proposed IP management plan that ensures and facilitates compliance with federal IP laws and policies, the public interest regarding dissemination of scientific reports/results, and the rapid transfer of technology in the topical area of the project. The plan should address title to inventions and other IP among the project members. The statutes and policies governing disposition of title to new inventions under government agreements will be as follows:

1. The Bayh-Dole Act, 35 U.S.C. 200 et seq., requires that universities, nonprofits and small businesses who are participating under a funding agreement will have the option to retain title to their own employees' inventions.
2. The federal Non-Nuclear Energy Act of 1974, 42 U.S.C. 5908, will govern disposition of title for all other parties, regardless of whether they receive government funding and requires that the government obtains title to new inventions unless a waiver is granted. DOE regulations at 10 CFR part 784 address the factors that are considered in the granting of waivers, including whether the waiver is needed to secure participation, private investment being made or likely to be made, the commercial position of the waiver requestor, etc.
3. Inventions made by employees of an FFRDC will be subject to the M&O contract terms and conditions with respect to ownership of inventions made by lab employees.
4. The agreement will provide the capability to license other forms of IP such as copyright in software and bailment of biological materials.

The plan should also address a simplified means of IP licensing by the project and should include a discussion of the means to distribute the benefits (royalties and equity) after expenses of any licensing among appropriate team members.

- Do not attach a separate file.
- This appendix will not count in the Project Narrative page limitation.

#### APPENDIX 8: REQUIRED EMPLOYMENT AND TIME COMMITMENT DOCUMENTATION

All three sub-appendices below are required to demonstrate the overall commitment to the proposed project. As denoted below, they should address the Project Director's employment at the prime applicant, individual senior/key personnel commitment, and institutional commitment.

##### 8A: PROJECT DIRECTOR STATEMENT OF EMPLOYMENT

For the Project Director, submit documentation stating that the proposed Project Director either is currently an employee of the prime applicant, or has committed to accept employment with the prime applicant, if the applicant is selected for an award under this FOA. The statement of employment, or letter of commitment to accept employment, is limited to one page and must be signed by both the Project Director and an authorized representative of the prime applicant.

- Do not attach a separate file.
- This appendix will not count in the Project Narrative page limitation.

##### 8B: INDIVIDUAL LETTERS OF COMMITMENT

For each senior/key person, including the Project Director and Principal Investigator(s), provide a current signed and dated letter of commitment that confirms their intent to participate on this project, including their individual level of time commitment. Multiple personnel representing the same institution may sign the same letter of commitment, as applicable. Each letter of commitment is limited to one page.

- Do not attach a separate file.
- This appendix will not count in the Project Narrative page limitation.

#### 8C: ORGANIZATIONAL LETTERS OF COMMITMENT

An organizational letter of commitment is required from each organization participating as a team member. Each organizational letter of commitment is limited to one page and must be signed and dated by a person authorized to commit the participating organization to a legally binding agreement for this project.

- Do not attach a separate file.
- This appendix will not count in the Project Narrative page limitation.

#### APPENDIX 9: ENVIRONMENT, SAFETY AND HEALTH (ES&H) AND SECURITY APPROACHES

Provide a brief overview (1-2 pages) of the approach for handling environment, safety and health, and security considerations during the work planning and control process and assuring environmental compliance during research and development activities; procedures for ensuring security, including access to data stored on project computers; the ES&H compliance history of the lead and partner institutions over the last five years (e.g. Environmental Protection Agency (EPA) and state environmental notices of violation, Occupational Safety and Health Administration (OSHA) citations, status of any resulting action plans); and any anticipated environmental permit requirements, including National Environmental Policy Act (NEPA), for the research and proposed schedule for compliance with environmental permits and NEPA requirements.

- Do not attach a separate file.
- This appendix will not count in the Project Narrative page limitation.

#### APPENDIX 10: DETAILED PROJECT PLAN (Optional)

If desired, applicants may include a detailed Project Plan. It should outline as a function of time, year by year, all the major activities including the major substantive and measurable milestones on the critical path to the goal(s) of the project, as well as clear metrics to evaluate success. The plan should include multiple alternate strategies and key decision points to achieve particularly critical milestones or mitigate higher risk elements of the project; describe internal review mechanism(s) that will be used to track and measure progress; and present a strategy to periodically evaluate the project plan and define the conditions under which the plan will be revised. The detailed project plan in this appendix should be consistent with the program proposed in the Project Narrative.

- Do not attach a separate file.
- This appendix will not count in the Project Narrative page limitation.

#### APPENDIX 11: CONFLICT OF INTEREST LIST

At the time of submission, the applicant shall include information identifying potential, apparent, or actual organizational and individual conflicts of interest and proposed mitigation. This shall include the applicant, their team members, and senior/key personnel named in the application. Negative responses are also required. Prior to award, DOE reserves the right to require the submission of a Conflict of Interest Management Plan describing the applicant's approach to managing conflicts of interest.

- Do not attach a separate file.
- This appendix will not count in the Project Narrative page limitation.

#### APPENDIX 12: ADDITIONAL INSTITUTIONAL COMMITMENT

Discuss any additional contributions to the proposed project, and the source of the contributions, institutional or third party, foreign or domestic, including, but not limited to:

- The provision of space, facilities, equipment, or resources at no or reduced charge;
- The provision of release time for faculty;
- The provision of scholarship support for students; or
- The waiver of facilities and administrative costs, in whole or in part.
- Third party contributions (e.g., state, private entities, etc.)

Institutional commitments may not include the following:

- Revenues or royalties from the prospective operation of an activity beyond the time considered in the award;
- Proceeds from the prospective sale of an asset of an activity; or
- Other Federal awards.

You must provide a letter from the institution stating that it is committed to providing a specific contribution. The letter should also identify the proposed type of contribution. Letters must be signed by a person authorized to commit the organization to the contribution and are limited to one-page. If there are no additional institutional commitments, this must be indicated in this appendix.

- Do not attach a separate file.
- This appendix will not count in the Project Narrative page limitation.

#### APPENDIX 13: OTHER ATTACHMENT

If you need to elaborate on your responses to questions 1-6 on the "Other Project Information" document, please provide the Other Attachment information as an appendix to your project narrative. Information not easily accessible to a reviewer may be included in this appendix, but do not use this appendix to circumvent the page limitations of the application. Reviewers are not required to consider information in this appendix.

- Do not attach a separate file.
- This appendix will not count in the project narrative page limitation.

#### REMINDERS REGARDING ALL APPENDICES

- **Follow the above instructions to include the information as appendices to the project**

narrative file.

- These appendices will not count toward the project narrative's page limitation.
- Do not attach any files to fields 9, 10, 11, or 12.

### 3. Research and Related Budget

Complete the Research and Related Budget form in accordance with the instructions on the form (Activate Help Mode to see instructions) and the following instructions. You must complete a separate budget for each year of support requested. The form will generate a cumulative budget for the total project period. You must complete all the mandatory information on the form before the NEXT PERIOD button is activated. You may request funds under any of the categories listed as long as the item and amount are necessary to perform the proposed work, meet all the criteria for allowability under the applicable Federal cost principles, and are not prohibited by the funding restrictions in this FOA (See [Section IV, Part H](#)).

**Cost Share:** Any proposed cost share cannot be included on the budget form itself but must be included in the budget justification. If cost share is proposed, please include a separate section in the budget justification labeled "Cost Share" and include details of the proposed costs share with the same level of detail that is required for DOE-funded items in the budget form. At a minimum, for each budget year, identify the budget categories for which cost share is proposed, the dollar amount of cost share per category, and information supporting the amount.

The following advice will improve the accuracy of your budget request:

- Funds requested for personnel (senior, key, and other) must be justified as the product of their effort on the project and their institutional base salary.
- Funds requested for fringe benefits must be calculated as the product of the requested salary and, if present, the negotiated fringe benefit rate contained in an institution's negotiated indirect cost rate agreement.
- Funds requested for indirect costs must be calculated using the correct indirect cost base and the negotiated indirect cost rate.
- You are encouraged to include the rate agreement used in preparing a budget as a part of the budget justification.

If you are proposing indirect costs and do not already have an Indirect Cost Rate Agreement with your Cognizant Federal Agency or documentation of rates accepted for estimating purposes by DOE or another Federal agency, it is recommended that you begin preparing an Indirect Cost Rate Proposal to be submitted, upon request, to the DOE contract specialist/grants management specialist who will evaluate your application if you are selected for award.

For your convenience in preparing an Indirect Cost Rate proposal, a link to applicant resources, including indirect rate model templates, has been provided below:

<https://science.osti.gov/sbir/applicant-resources/grant-application>.



## Budget Fields

Section A Senior/Key Person	For each Senior/Key Person, enter the requested information. List personnel, base salary, the number of months that person will be allocated to the project, requested salary, fringe benefits, and the total funds requested for each person. The requested salary must be the product of the base salary and the effort. Include a written narrative in the budget justification that justifies the need for requested personnel.
Section B Other Personnel	List personnel, the number of months that person will be allocated to the project, requested salary fringe benefits, and the total funds requested for each person. Include a written narrative in the budget justification that fully justifies the need for requested personnel.
Section C Equipment	For the purpose of this budget, equipment is designated as an item of property that has an acquisition cost of \$5,000 or more and an expected service life of more than one year, unless a different threshold is specified in a negotiated Facilities and Administrative Cost Rate. (Note that this designation applies for proposal budgeting only and differs from the DOE definition of capital equipment.) List <b>each</b> item of equipment separately and justify each in the budget justification section. Do not aggregate items of equipment. Allowable items ordinarily will be limited to research equipment and apparatus not already available for the conduct of the work. General-purpose office equipment is not eligible for support unless primarily or exclusively used in the actual conduct of scientific research.
Section D Travel	For purposes of this section only, travel to Canada or to Mexico is considered domestic travel. In the budget justification, list each trip's destination, dates, estimated costs including transportation and subsistence, number of staff traveling, the purpose of the travel, and how it relates to the project. Indicate the basis for the cost estimate (quotes from vendors or suppliers, past experience of similar items, or some other basis). To qualify for support, attendance at meetings or conferences must enhance the investigator's capability to perform the research, plan extensions of it, or disseminate its results. Domestic travel is to be justified separately from foreign travel.
Section E Participant/Trainee Support Costs	If applicable, submit training support costs. Educational projects that intend to support trainees (precollege, college, graduate and post graduate) must list each trainee cost that includes stipend levels and amounts, cost of tuition for each trainee, cost of any travel (provide the same information as needed under the regular travel category), and costs for any related training expenses. Participant costs are those costs associated with conferences, workshops, symposia or institutes and breakout items should indicate the number of participants, cost for each participant, purpose of the conference, dates and places of meetings and any related administrative expenses.

	Indicate the basis for the cost estimate (quotes from vendors or suppliers, past experience of similar items, or some other basis).
Section F Other Direct Costs	<ul style="list-style-type: none"> <li>• <b>Materials and Supplies:</b> Enter total funds requested for materials and supplies in the appropriate fields. In the budget justification, indicate general categories such as glassware, and chemicals, including an amount for each category (items not identified under “Equipment”). Categories less than \$1,000 are not required to be itemized. Indicate the basis for the cost estimate (quotes from vendors or suppliers, past experience of similar items, or some other basis).</li> <li>• <b>Publication Costs:</b> Enter the total publication funds requested. The proposal budget may request funds for the costs of documenting, preparing, publishing or otherwise making available to others the findings and products of the work conducted under the award. In the budget justification, include supporting information. Indicate the basis for the cost estimate (quotes from vendors or suppliers, past experience of similar items, or some other basis).</li> <li>• <b>Consultant Services:</b> Enter total funds requested for all consultant services. In the budget justification, identify each consultant, the services he/she will perform, total number of days, travel costs, and total estimated costs. Indicate the basis for the cost estimate (quotes from vendors or suppliers, past experience of similar items, or some other basis).</li> <li>• <b>ADP/Computer Services:</b> Enter total funds requested for ADP/Computer Services. The cost of computer services, including computer-based retrieval of scientific, technical and education information may be requested. In the budget justification, include the established computer service rates at the proposing organization if applicable. Indicate the basis for the cost estimate (quotes from vendors or suppliers, past experience for similar items, or some other basis).</li> <li>• <b>Subawards/Consortium/Contractual Costs:</b> Enter total costs for all subawards/consortium organizations and other contractual costs proposed for the project. In the budget justification, justify the details.</li> <li>• <b>Equipment or Facility Rental/User Fees:</b> Enter total funds requested for Equipment or Facility Rental/User Fees. In the budget justification, identify each rental/user fee and justify. Indicate the basis for the cost estimate (quotes from vendors or suppliers, past experience for similar items, or some other basis).</li> <li>• <b>Alterations and Renovations:</b> Enter total funds requested for Alterations and Renovations. In the budget justification, itemize by category and justify the costs of alterations and renovations, including repairs, painting, removal or installation of partitions,</li> </ul>

	shielding, or air conditioning. Where applicable, provide the square footage and costs. <ul style="list-style-type: none"> <li>• <b>Other:</b> Add text to describe any other Direct Costs not requested above. Enter costs associated with “Other” item(s). Use the budget justification to further itemize and justify.</li> </ul>
Section G Direct Costs	This represents Total Direct Costs (Sections A through F)
Section H Other Indirect Costs	Enter the Indirect Cost information, including the rates and bases being used, for each field. Only four general categories of indirect costs are allowed/requested on this form, so please consolidate if needed. Include the cognizant Federal agency and contact information if using a negotiated rate agreement.
Section I Total Direct and Indirect Costs	This is the total of Sections G and H

**BUDGET JUSTIFICATION (FIELD L ON THE FORM)**

Provide a justification that explains all costs proposed in the budget. The following items of advice are offered to assist you in developing a justification.

- Organize the justification by listing items in the same order as presented on the budget.
- Ensure that the narrative matches the budget in dollar amounts and language.
- Explain the line items. If costs are estimated, provide a basis for the estimate. Explain if costs are based on prior experience of similar activities. If a cost is based on the product of two numbers (such as a number of items at a per-item price), ensure that your math is correct.
- If including an inflationary factor for future budget periods, explain the basis for the inflation.

Provide any other information you wish to submit to justify your budget request. Note that any proposed cost share cannot be included on the budget form itself but must be included in the budget justification. If cost share is proposed, please include a separate section in the budget justification labeled “Cost Share” and include details of the proposed costs share with the same level of detail that is required for DOE-funded items in the budget form. At a minimum, for each budget year, identify the budget categories for which cost share is proposed, the dollar amount of cost share per category, and information supporting the amount.

Include the indirect cost rate agreement as a part of the budget justification.

**Attach a single budget justification file for the entire project period in field L.** The file automatically carries over to each budget year.

**4. R&R Subaward Budget Attachment(s) Form**

**Budgets for Subawardees:** You must provide a separate R&R budget and budget justification for each subawardee, including but not limited to DOE/NNSA National Laboratory Contractors

and non-DOE/NNSA Federal Agencies and their FFRDC Contractors.

Download the R&R Budget Attachment from the R&R SUBAWARD BUDGET ATTACHMENT(S) FORM and either e-mail it to each subawardee that is required to submit a separate budget or use the collaborative features of Workspace. Any proposed cost share cannot be included on the budget form itself but must be included in the budget justification. If cost share is proposed, please include a separate section in the budget justification labeled “Cost Share” and include details of the proposed costs share with the same level of detail that is required for DOE-funded items in the budget form. At a minimum, for each budget year, identify the budget categories for which cost share is proposed, the dollar amount of cost share per category, and information supporting the amount. After the subawardee has either e-mailed its completed budget back to you or completed it within Workspace, attach it to one of the blocks provided on the form. Use up to 10 letters of the subawardee’s name (plus.pdf) as the file name (e.g., ucla.pdf or energyres.pdf). Filenames must not exceed 50 characters.

If the project involves more subawardees than there are places in the SUBAWARD BUDGET ATTACHMENT(S) FORM, the additional subaward budgets may be saved as PDF files and appended to the Budget Justification attached to Field L.

Applicants should consult their local information technology (“IT”) support resources for any necessary assistance in converting the forms downloaded from Grants.gov into plain PDF files that can be combined into one non-Portfolio PDF file (the Budget Justification).

Ensure that any files received from subawardees are the PDF files extracted from the SUBAWARD BUDGET ATTACHMENT(S) FORM. Errors will be created if a subawardee sends a prime applicant a budget form that was not extracted from the application package.

The budget justification(s) for any subawardee(s) should include the same information supporting each proposed cost that is required of prime awardees in their budget justification, as specified in the table under “Research and Related Budget”, above.

Note: If an application proposes subawards to a DOE National Laboratory, a Federal agency, or another Federal Agency’s FFRDC, the value of such proposed subawards will be deducted from any resulting award: Those classes of organizations must be paid directly by SC. However, the details of such proposed budgets are essential for understanding and analyzing the proposed research.

DOE National Laboratories should not submit a DOE Field Work Proposal (FWP) at this time. SC will request FWPs later from those selected for funding consideration under this FOA.

**If a subaward is being proposed to a DOE/NNSA or non-DOE/NNSA FFRDC Contractor, the required authorization by the cognizant Contracting Officer for the Federal sponsoring agency, as required in [Section III.A. ELIGIBLE APPLICANTS](#), should be submitted.** Submit this letter as a part of the subawardee budget justification.

**5. Project/Performance Site Location(s)**

Indicate the primary site where the work will be performed. If a portion of the project will be performed at any other site(s), identify the site location(s) in the blocks provided.

Note that the Project/Performance Site Congressional District is entered in the format of the 2-digit state code followed by a dash and a 3-digit Congressional district code, for example “VA-001”. Hover over this field for additional instructions.

Use the “Next Site” button to expand the form to add additional Project/Performance Site Locations.

**6. Disclosure of Lobbying Activities (SF-LLL)**

If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the grant/cooperative agreement, you must complete and submit Standard Form - LLL, “Disclosure Form to Report Lobbying.”

**7. Summary of Required Forms/Files**

Your application must include the following items:

<b>Name of Document</b>	<b>Format</b>	<b>Attach to</b>
<b>SF 424 (R&amp;R)</b>	Form	N/A
<b>RESEARCH AND RELATED Other Project Information</b>	Form	N/A
Project Summary/Abstract	PDF	Field 7
Project Narrative, including required appendices	PDF	Field 8
<b>RESEARCH &amp; RELATED BUDGET</b>	Form	N/A
Budget Justification	PDF	Field L
<b>R&amp;R SUBAWARD BUDGET ATTACHMENT(S) FORM (if applicable)</b>	Form	N/A
Subaward Budget Justification (if applicable)	PDF	Field L of the subaward budget
<b>PROJECT/PERFORMANCE SITE LOCATION(S)</b>	Form	N/A
<b>SF-LLL Disclosure of Lobbying Activities, if applicable</b>	Form	N/A

## **E. SUBMISSIONS FROM SUCCESSFUL APPLICANTS**

If selected for award, DOE reserves the right to request additional or clarifying information for any reason deemed necessary, including, but not limited to:

- Indirect cost information
- Other budget information
- Name and phone number of the Designated Responsible Employee for complying with national policies prohibiting discrimination (See 10 CFR 1040.5)
- Representation of Limited Rights Data and Restricted Software, if applicable
- Commitment Letter from Third Parties Contributing to Cost Sharing, if applicable
- Environmental Information

Applicants that are not institutions of higher education, that request indirect costs, and that do not already have an Indirect Cost Rate Agreement with their Cognizant Federal Agency or documentation of rates accepted for estimating purposes by DOE or another Federal agency, are advised to begin preparing an Indirect Cost Rate Proposal for submission, upon request, to the DOE contract specialist/grants management specialist who will evaluate your application if you are selected for award.

## **F. SUBMISSION DATES AND TIMES**

### **1. Letter of Intent Due Date**

N/A

### **2. Pre-application Due Date**

March 24, 2020 at 5:00 PM Eastern Time.

You are encouraged to submit your pre-application well before the deadline. Pre-applications may be submitted at any time between the publication of this FOA and the stated deadline.

### **3. Application Due Date**

May 27, 2020 at 11:59 PM Eastern Time.

You are encouraged to transmit your application well before the deadline. Applications may be submitted at any time between the publication of this FOA and the stated deadline.

### **4. Late Submissions**

Delays in submitting pre-applications and applications may be unavoidable. DOE has accepted late submissions when applicants have been unable to make timely submissions because of widespread technological disruptions or significant natural disasters. DOE has made accommodations for incapacitating or life-threatening illnesses and for deaths of immediate family members. Other circumstances may or may not justify late submissions. Unacceptable justifications include the following:

- Failure to begin submission process early enough.
- Failure to provide sufficient time to complete the process.

- Failure to understand the submission process.
- Failure to understand the deadlines for submissions.
- Failure to satisfy prerequisite registrations.
- Unavailability of administrative personnel.
- An upper respiratory infection (a “cold”) the week of the deadline.

You are responsible for beginning the submission process in sufficient time to accommodate reasonably foreseeable incidents, contingencies, and disruptions.

Applicants must contact the Program Office/Manager listed in this FOA to discuss the option of a late submission. Contacting the Program Office/Manager after the deadline may reduce the likelihood that a request will be granted.

DOE notes that not all requests for late submission will be approved.

## **G. INTERGOVERNMENTAL REVIEW**

This program is not subject to Executive Order 12372 Intergovernmental Review of Federal Programs.

## **H. FUNDING RESTRICTIONS**

Funding for all awards and future budget periods are contingent upon the availability of funds appropriated by Congress for the purpose of this program and the availability of future-year budget authority.

Costs for construction (including new buildings or additions to an existing building) will not be funded by awards resulting from this FOA.

**Cost Principles:** Costs must be allowable, allocable and reasonable in accordance with the applicable Federal cost principles referenced in 2 CFR 200 as modified by 2 CFR 910 (DOE Financial Assistance Regulation).

**Pre-award Costs:** Recipients may charge to an award resulting from this FOA pre-award costs that were incurred within the 90 day calendar period immediately preceding the effective date of the award, if the costs are allowable in accordance with the applicable Federal cost principles referenced in 2 CFR 200 as modified by 2 CFR 910 (DOE Financial Assistance Regulation). Recipients must obtain the prior approval of the contracting officer for any pre-award costs that are for periods greater than this 90-day calendar period.

Pre-award costs are incurred at the applicant’s risk. DOE is under no obligation to reimburse such costs if for any reason the applicant does not receive an award or if the award is made for a lesser amount than the applicant expected.

## **I. OTHER SUBMISSION AND REGISTRATION REQUIREMENTS**

### **1. Systems to Register In**

Applicants must complete a series of registrations and enrollments to submit applications in response to this FOA. Applicants not currently registered with SAM and Grants.gov should allow **at least 4 weeks** to complete these requirements.

You should start the process as soon as possible.

You may not be able to use your preferred Internet browser: Each system has its own requirements.

Applicants must obtain a DUNS number at <https://fedgov.dnb.com/webform>.

Applicants must register with SAM at <https://www.sam.gov>. If you had an active registration in the Central Contractor Registry (CCR), you should have an active registration in SAM. More information about SAM registration for applicants is found at [https://www.sam.gov/SAM/transcript/Quick\\_Guide\\_for\\_Grants\\_Registrations.pdf](https://www.sam.gov/SAM/transcript/Quick_Guide_for_Grants_Registrations.pdf). SAM maintains a complete user guide at [https://www.sam.gov/SAM/transcript/SAM\\_Non\\_Federal\\_User\\_Guide.pdf](https://www.sam.gov/SAM/transcript/SAM_Non_Federal_User_Guide.pdf).

Applicants must provide a Taxpayer Identification Number (TIN) to complete their registration in [www.SAM.gov](http://www.SAM.gov). An applicant's TIN is an EIN assigned by the Internal Revenue Service (IRS). In limited circumstances, a Social Security Number (SSN) assigned by the Social Security Administration (SSA) may be used as a TIN. You may obtain an EIN from the IRS at <https://www.irs.gov/businesses/small-businesses-self-employed/apply-for-an-employer-identification-number-ein-online>.

DOE discourages the use of a SSN as a TIN. You are encouraged to obtain a TIN from the IRS using the website listed above.

Applicants must register with FedConnect at [www.FedConnect.net](http://www.FedConnect.net). The full, binding version of assistance agreements will be posted to FedConnect.

Recipients must register with the Federal Funding Accountability and Transparency Act Subaward Reporting System at <https://www.fsr.gov>. This registration must be completed before an award may be made: you are advised to register while preparing your application.

### **2. Registering in Grants.gov**

Applicants must register with Grants.gov, following the instructions at <https://www.Grants.gov/web/grants/applicants/registration.html>.



### 3. Where to Submit an Application

You must submit the application through Grants.gov at [www.Grants.gov](http://www.Grants.gov), using either the online webforms or downloaded forms. (Additional instructions are provided in [Section IV, Part A](#) of this FOA.)

Submit electronic applications through the “Apply for Grants” function at [www.Grants.gov](http://www.Grants.gov). If you have problems completing the registration process or submitting your application, call Grants.gov at 1-800-518-4726 or send an email to [support@Grants.gov](mailto:support@Grants.gov).

Please ensure that you have read the applicable instructions, guides, help notices, frequently asked questions, and other forms of technical support on Grants.gov.

### 4. DOE SC Portfolio Analysis and Management System (PAMS)

After you submit your application through Grants.gov, the application will automatically transfer into the Portfolio Analysis and Management System (PAMS) for processing by the DOE SC. Many functions for grants and cooperative agreements can be done in PAMS, which is available at <https://pamspublic.science.energy.gov>.

You will want to “register to” your application: a process of linking yourself to the application after it has been submitted through Grants.gov and processed by DOE.

You must register in PAMS to submit a pre-application or a letter of intent.

You may use the Internet Explorer, Firefox, Google Chrome, or Safari browsers to access PAMS.

Notifications sent from the PAMS system will come from the PAMS email address <[PAMS.Autoreply@science.doe.gov](mailto:PAMS.Autoreply@science.doe.gov)>. Please make sure your email server/software allows delivery of emails from the PAMS email address to yours.

Registering to PAMS is a two-step process; once you create an individual account, you must associate yourself with (“register to”) your institution. Detailed steps are listed below.

#### 1. CREATE PAMS ACCOUNT:

To register, click the “Create New PAMS Account” link on the website <https://pamspublic.science.energy.gov>.

- Click the “No, I have never had an account” link and then the “Create Account” button.
- You will be prompted to enter your name and email address, create a username and password, and select a security question and answer. Once you have done this, click the “Save and Continue” button.
- On the next page, enter the required information (at least one phone number and your mailing address) and any optional information you wish to provide (e.g., FAX number, website,

mailstop code, additional email addresses or phone numbers, Division/Department). Click the “Create Account” button.

- Read the user agreement and click the “Accept” button to indicate that you understand your responsibilities and agree to comply with the rules of behavior for PAMS.
- PAMS will take you to the “Having Trouble Logging In?” page. (If you have been an SC merit reviewer or if you have previously submitted an application, you may already be linked to an institution in PAMS. If this happens, you will be taken to the PAMS home page.)

## 2. REGISTER TO YOUR INSTITUTION:

- Click the link labeled “Option 2: I know my institution and I am here to register to the institution.” (Note: If you previously created a PAMS account but did not register to an institution at that time, you must click the Institutions tab and click the “Register to Institution” link.)
- PAMS will take you to the “Register to Institution” page.
- Type a word or phrase from your institution name in the field labeled, “Institution Name like,” choose the radio button next to the item that best describes your role in the system, and click the “Search” button. A “like” search in PAMS returns results that contain the word or phrase you enter; you do not need to enter the exact name of the institution, but you should enter a word or phrase contained within the institution name. (If your institution has a frequently used acronym, such as ANL for Argonne National Laboratory or UCLA for the Regents of the University of California, Los Angeles, you may find it easiest to search for the acronym under “Institution Name like.” Many institutions with acronyms are listed in PAMS with their acronyms in parentheses after their names.)
- Find your institution in the list that is returned by the search and click the “Actions” link in the Options column next to the institution name to obtain a dropdown list. Select “Add me to this institution” from the dropdown. PAMS will take you to the “Institutions – List” page.
- If you do not see your institution in the initial search results, you can search again by clicking the “Cancel” button, clicking the Option 2 link, and repeating the search.
- If, after searching, you think your institution is not currently in the database, click the “Cannot Find My Institution” button and enter the requested institution information into PAMS. Click the “Create Institution” button. PAMS will add the institution to the system, associate your profile with the new institution, and return you to the “Institutions – List” page when you are finished.

For help with PAMS, click the “External User Guide” link on the PAMS website, <https://pamspublic.science.energy.gov>. You may also contact the PAMS Help Desk, which can be reached Monday through Friday, 9AM – 5:30 PM Eastern Time. Telephone: (855) 818-1846 (toll free) or (301) 903-9610, email: [sc.pams-helpdesk@science.doe.gov](mailto:sc.pams-helpdesk@science.doe.gov). All submission and inquiries about this FOA should reference DE-FOA-0002254.

## 5. Viewing Submitted Applications

Each Grants.gov application submitted to the DOE SC automatically transfers into PAMS and is subsequently assigned to a program manager. At the time of program manager assignment, the three people listed on the SF-424 (R&R) cover page will receive an email with the subject line,

“Receipt of Proposal 0000xxxxxx by the DOE Office of Science.” These three people are the PI (Block 14), Authorized Representative (Block 19), and Point of Contact (Block 5). In PAMS notation, applications are known as proposals, the PI is known as the PI, the Authorized Representative is known as the Sponsored Research Officer/Business Officer/Administrative Officer (SRO/BO/AO), and the Point of Contact is known as the POC.

There will be a period of time between the application’s receipt at Grants.gov and its assignment to a DOE SC program manager. Program managers are typically assigned two weeks after applications are due at Grants.gov: please refrain from attempting to view the proposal in PAMS until you receive an email providing the assignment of a program manager.

Once the email is sent, the PI, SRO/BO/PO, and POC will each be able to view the submitted proposal in PAMS. Viewing the proposal is optional.

You may use the Internet Explorer, Firefox, Google Chrome, or Safari browsers to access PAMS.

Following are two sets of instructions for viewing the submitted proposal, one for individuals who already have PAMS accounts and one for those who do not.

If you already have a PAMS account, follow these instructions:

1. Log in to PAMS at <https://pamspublic.science.energy.gov>.
2. Click the “Proposals” tab and click “Access Previously Submitted Grants.gov Proposal.”
3. Enter the following information:
  - Proposal ID: Enter the ten-digit PAMS proposal ID, including the leading zeros (e.g., 00002xxxxx). Do not use the Grants.gov proposal number. Use the PAMS number previously sent to you in the email with subject line, “Receipt of Proposal ...”.
  - Email (as entered in Grants.gov application): Enter your email address as it appears on the SF424(R&R) Cover Page.
  - Choose Role: Select the radio button in front of the role corresponding to the SF-424 (R&R) cover page. If your name appears in block 19 of the SF-424 (R&R) cover page as the authorizing representative, select “SRO/BO/AO (Sponsored Research Officer/Business Officer/Administrative Officer).” If your name appears in block 14 of the SF424 R&R cover page as the PI, select “Principal Investigator (PI).” If your name appears in block 5 of the SF424 R&R as the point of contact, select “Other (POC).”
4. Click the “Save and Continue” button. You will be taken to your “My Proposals” page. The Grants.gov proposal will now appear in your list of proposals. Click the “Actions/Views” link in the options column next to this proposal to obtain a dropdown list. Select “Proposal” from the dropdown to see the proposal. Note that the steps above will work only for proposals submitted to the DOE SC since May 2012.

If you do not already have a PAMS account, follow these instructions:

1. To register, click the “Create New PAMS Account” link on the website <https://pamspublic.science.energy.gov>.
2. Click the “No, I have never had an account” link and then the “Create Account” button.
3. You will be prompted to enter your name and email address, create a username and

password, and select a security question and answer. Once you have done this, click the “Save and Continue” button.

4. On the next page, enter the required information (at least one phone number and your mailing address) and any optional information you wish to provide (e.g., FAX number, website, mailstop code, additional email addresses or phone numbers, Division/Department). Click the “Create Account” button.
5. Read the user agreement and click the “Accept” button to indicate that you understand your responsibilities and agree to comply with the rules of behavior for PAMS.
6. You will be taken to the Register to Institution page. Select the link labeled, “Option 1: My institution has submitted a proposal in Grants.gov. I am here to register as an SRO, PI, or POC (Sponsored Research Officer, Principal Investigator, or Point of Contact).”
7. Enter the following information:
  - Proposal ID: Enter the ten-digit PAMS proposal ID, including the leading zeros (e.g., 00002xxxxx). Do not use the Grants.gov proposal number. Use the PAMS number previously sent to you in the email with subject line, “Receipt of Proposal ...”.
  - Email (as entered in Grants.gov proposal): Enter your email address as it appears on the SF424(R&R) Cover Page.
  - Choose Role: Select the radio button in front of the role corresponding to the SF-424 (R&R) cover page. If your name appears in block 19 of the SF-424 (R&R) cover page as the authorizing representative, select “SRO/BO/AO (Sponsored Research Officer/Business Officer/Administrative Officer).” If your name appears in block 14 of the SF424 R&R cover page as the PI, select “Principal Investigator (PI).” If your name appears in block 5 of the SF424 R&R as the point of contact, select “Other (POC).”
8. Click the “Save and Continue” button. You will be taken to your “My Proposals” page. The Grants.gov proposal will now appear in your list of proposals. Click the “Actions/Views” link in the options column next to this proposal to obtain a dropdown list. Select “Proposal” from the dropdown to see the proposal.

If you were listed as the PI on a prior submission but you have not previously created an account, you may already be listed in PAMS. If this is the case, you will be taken to the PAMS home page after agreeing to the Rules of Behavior. If that happens, follow the instructions listed above under “If you already have a PAMS account...” to access your Grants.gov proposal.

The steps above will work only for proposals submitted to the DOE SC since May 2012.

For help with PAMS, click the “External User Guide” link on the PAMS website, <https://pamspublic.science.energy.gov>. You may also contact the PAMS Help Desk, which can be reached Monday through Friday, 9:00 AM – 5:30 PM Eastern Time. Telephone: (855) 818-1846 (toll free) or (301) 903-9610, Email: [sc.pams-helpdesk@science.doe.gov](mailto:sc.pams-helpdesk@science.doe.gov). All submissions and inquiries about this FOA should reference DE-FOA-0002254.

## **Section V - APPLICATION REVIEW INFORMATION**

### **A. CRITERIA**

#### **1. Initial Review Criteria**

Prior to a comprehensive merit evaluation, DOE will perform an initial review in accordance with 10 CFR 605.10(b) to determine that (1) the applicant is eligible for the award; (2) the information required by the FOA has been submitted; (3) all mandatory requirements are satisfied; (4) the proposed project is responsive to the objectives of the FOA, and (5) the proposed project is not duplicative of programmatic work.

In addition, to be responsive to the objectives of this FOA, the scientific research proposed in the application must satisfy the following requirement:

- Address at least two PROs from the Liquid Solar Fuels Roundtable listed in Section I.

Failure to provide any information required by the FOA may cause an application to fail the initial review. DOE reserves the right to contact applicants to request the correction of minor omissions if an application is otherwise responsive to the requirements and objectives of the FOA.

#### **2. Merit Review Criteria**

Applications will be subjected to scientific merit review (peer review) and will be evaluated against the following criteria as found in 10 CFR 605.10 (d), the Office of Science Financial Assistance Program Rule.

- 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.

Merit reviewers will be asked to evaluate additional criteria of equal significance to the criteria established by regulation.

- Strength of the Leadership and Project Management Plan; and
- Synergy Among Researchers and Integration of Research Thrusts.

Note that external peer reviewers are selected with regard to both their scientific expertise and the absence of conflict-of-interest issues. Both Federal and non-Federal reviewers may be used, and submission of an application constitutes agreement that this is acceptable to the investigator(s) and the submitting institution. Included within each criterion are questions and issues that reviewers will consider.

### **Scientific and/or Technical Merit of the Project**

- What aspects of the fundamental research are innovative, novel and at the forefront in the scientific topic areas to be addressed? Consider, for example, the proposed research with respect to other national and international efforts in these scientific fields.
- Assess how the proposed research strategy will address critical scientific topics and research needs to advance the PRO(s).
- How will the research results influence the direction, progress, and thinking in relevant scientific fields of research and impact U.S. science and technology at a national scale?
- Assess the extent to which the vision of the proposed project, and its scientific and technological goals, may advance fundamental research in solar fuels generation and improve the competitiveness of the U.S.
- Comment on the Data Management Plan and how it will support the validation of research results and make the data available and useful to the scientific community.

### **Appropriateness of the Proposed Method or Approach**

- Comment on the proposed methods and approaches and their likelihood to achieve the stated scientific goals.
- How well does the application justify the need for a multidisciplinary approach and demonstrate an integrated research effort with multiple senior investigators jointly pursuing key scientific objectives? Consider, for example, whether the stated goals could be achieved by researchers working independently and whether the research challenges are more likely to be overcome by a centrally managed integrated multidisciplinary team.
- Comment on how the proposed research strategy will provide flexibility to overcome key scientific and technical challenges as well as respond to or take advantage of emerging key scientific advances and promising technical developments.
- Assess whether the plans for external collaborations and partnerships are appropriate and would be beneficial for the proposed efforts.

### **Competency of the Applicant's Personnel and Adequacy of the Proposed Resources**

- Assess whether the lead organization, the Project Director, and leadership team if applicable, have proven records of success in program and personnel management of diverse scientific and technical teams.
- To what extent do the senior/key personnel have proven records of research in the disciplines needed for success of this project? Assess whether the project has the right balance of expertise to address the project goals.
- How will the staffing mix (e.g. senior, junior, technical support, postdoctoral, students) facilitate a successful research program over the term of the 5-year award?
- How will the proposed access to research space, instrumentation and facilities at the host institution and its partners meet the needs of the proposed project?

### **Reasonableness and Appropriateness of the Proposed Budget**

- Comment on the appropriateness of the proposed budget and the distribution of the funds/staffing among research thrusts/tasks, PIs, and participating institutions. Identify any budget items that are not well justified or appear anomalous.

- Assess whether the proposed budget includes adequate support for the appropriate personnel to carry out the proposed research and provide effective leadership and management of the project.

### **Strength of the Leadership and Project Management Plan**

- Comment on the comprehensive management plan and its strategy, such as the inclusion of a qualified Project Director, an appropriate leadership structure with clear roles and responsibilities, and justifications for the expected contributions from each participating institution. What attributes does the proposed Project Director bring for leadership and management of the project?
- How will the management plan enable a culture of centralized research management across all participating institutions, foster high-risk/high-reward research, and encourage synergy and cohesion among investigators?
- Comment on the proposed organizational structure, delineation of the roles and responsibilities of senior/key personnel, the means for obtaining external guidance for the scientific direction of the research program. Consider, for example, the expertise and roles of participating investigators and the quality, roles, and staffing (e.g., industry, academia, and federal laboratory representation) of external advisory committees.
- Assess the mechanisms that would be used to identify and maintain a focus on the highest priority scientific challenges, evaluate success/failure at all levels of effort and reconfigure research activities and shift resources when necessary.

### **Synergy Among Researchers and Integration of Research Thrusts**

- Comment on the plans to integrate and coordinate the elements of the research. How will the research elements work together synergistically to build an overall effort that is greater than the sum of the parts?
- What evidence is presented that indicates the proposed team of researchers is likely to work together in an integrated, cohesive, and synergistic manner? What mechanisms are proposed for coordination of efforts across participating institutions?
- What mechanisms are proposed for the coordination of the project's efforts with research activities in the scientific topics conducted by other researchers/institutions?

## **B. REVIEW AND SELECTION PROCESS**

### **1. Merit Review**

Applications that pass the initial review will be subjected to a formal merit review and will be evaluated based on the criteria codified at 10 CFR 605.10(d) in accordance with the guidance provided in the “Office of Science Merit Review System for Financial Assistance,” which is available at: <https://science.osti.gov/grants/policy-and-guidance/merit-review-system>.

DOE may, as part of the merit review process, schedule in person or virtual meetings between representatives of one or more applicants and the Merit Review Panel to allow Merit Review Panel members to obtain answers to their questions or additional information about the contents of the most meritorious applications. Applicants may be required to travel, at their own expense,

to a designated location for a presentation to the Merit Review Panel.

## **2. Program Policy Factors**

The Selection Official may consider any of the following program policy factors in making the selection, listed in no order of significance:

- Availability of funds
- Relevance of the proposed activity to BES priorities
- Ensuring an appropriate balance of activities within BES programs and the relationship of the proposed project to other research programs in DOE
- Potential for developing synergies between the proposed project and other solar fuels projects or ongoing DOE research activities
- Past performance in conducting research
- Training the next generation of researchers, including development of a diverse cadre of researchers
- Appropriate use of unique capabilities, including DOE user facilities
- Ensuring opportunities to investigators not currently supported by BES
- Commitment to sharing the results of research
- Strength of impact on U.S. competitiveness

## **3. Selection**

The Selection Official will consider the findings of the merit review and may consider any of the Program Policy Factors described above as well as the amount of funds available. As part of the selection process, DOE reserves the right to seek clarifications in writing from those applications deemed to have the highest scientific merit in order to facilitate the selection process.

## **4. Review of Risk**

Pursuant to 2 CFR 200.205, DOE will conduct an additional review of the risk posed by applications submitted under this FOA. Such review of risk will include:

- Quality of the application,
- Reports and findings from audits performed under 2 CFR 200 or OMB Circular A-133, and
- Systems maintained under 2 CFR 180.

DOE may make use of other publicly available information and the history of an applicant's performance under DOE or other Federal agency awards.

Applicants with no prior performance of DOE awards may be asked to provide information about their financial stability and or their ability to comply with the management standards of 2 CFR 200.



## REPORTING OF MATTERS RELATED TO RECIPIENT INTEGRITY AND PERFORMANCE (DECEMBER 2015)

DOE, prior to making a Federal award with a total amount of Federal share greater than the simplified acquisition threshold, is required to review and consider any information about the applicant that is in the designated integrity and performance system accessible through SAM (currently FAPIIS) (see 41 USC 2313).

The applicant, at its option, may review information in the designated integrity and performance systems accessible through SAM and comment on any information about itself that a Federal awarding agency previously entered and is currently in the designated integrity and performance system accessible through SAM.

DOE will consider any written comments by the applicant, in addition to the other information in the designated integrity and performance system, in making a judgment about the applicant's integrity, business ethics, and record of performance under Federal awards when completing the review of risk posed by applicants as described in 2 CFR 200.205 Federal awarding agency review of risk posed by applicants.

### **5. Discussions and Award**

The Government may enter into discussions with a selected applicant for any reason deemed necessary, including but not limited to the following: (1) the budget is not appropriate or reasonable for the requirement; (2) only a portion of the application is selected for award; (3) the Government needs additional information to determine that the recipient is capable of complying with the requirements in 2 CFR 200 as modified by 2 CFR 910 (DOE Financial Assistance Regulation); and/or (4) special terms and conditions are required. Failure to resolve satisfactorily the issues identified by the Government will preclude award to the applicant.

### **C. ANTICIPATED NOTICE OF SELECTION AND AWARD DATES**

It is anticipated that the award selection will be completed by August 2020. It is expected that awards will be made in Fiscal Year 2020.

DOE is interested in seeing projects supported under this FOA begin work by September 30, 2020.

## **Section VI - AWARD ADMINISTRATION INFORMATION**

### **A. AWARD NOTICES**

#### **1. Notice of Selection**

**Selected Applicants Notification:** DOE will notify applicants selected for award. This notice of selection is not an authorization to begin performance. (See [Section IV, Part H](#) with respect to the allowability of pre-award costs.)

**Non-selected Notification:** Organizations whose applications have not been selected will be advised as promptly as possible. This notice will explain why the application was not selected.

#### **2. Notice of Award**

An Assistance Agreement issued by the contracting officer is the authorizing award document. It normally includes, either as an attachment or by reference, the following items: (1) Special Terms and Conditions, (2) Intellectual Property Provisions, (3) Federal Assistance Reporting Checklist and Instructions, (4) Budget Pages, (5) The Federal-Wide Research Terms and Conditions and DOE Agency Specific Requirements, available at <https://www.nsf.gov/awards/managing/rtc.jsp>, (6) Applicable program regulations, 10 CFR 605 at <https://www.ecfr.gov>, (7) DOE Assistance Regulations, 2 CFR part 200 as amended by 2 CFR part 910 at <https://www.ecfr.gov>, (8) Application/proposal as approved by DOE, (9) National Policy Assurances to Be Incorporated as Award Terms in effect on date of award at <https://www.nsf.gov/awards/managing/rtc.jsp>.

Research awards made under this FOA will be subject to the government-wide Research Terms and Conditions published at [https://www.nsf.gov/pubs/policydocs/rtc/rcoverlay\\_march17.pdf](https://www.nsf.gov/pubs/policydocs/rtc/rcoverlay_march17.pdf) and the DOE Agency Specific Standard Research Terms and Conditions published at [https://www.nsf.gov/pubs/policydocs/rtc/agencyspecifics/doe\\_417.pdf](https://www.nsf.gov/pubs/policydocs/rtc/agencyspecifics/doe_417.pdf). These Terms and Conditions will be incorporated in the award by reference.

### **B. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS**

#### **1. Administrative Requirements**

The administrative requirements for DOE grants and cooperative agreements are contained in 2 CFR 200 as modified by 2 CFR 910 (DOE Financial Assistance Regulation).

#### **NONDISCLOSURE AND CONFIDENTIALITY AGREEMENTS REPRESENTATIONS (JUNE 2015)**

In submitting an application in response to this FOA the Applicant represents that:

- (1) It **does not and will not** require its employees or contractors to sign internal nondisclosure or confidentiality agreements or statements prohibiting or otherwise restricting its employees or contractors from lawfully reporting waste, fraud, or abuse to a designated investigative or law enforcement representative of a Federal department or agency authorized to receive such information.

- (2) It **does not and will not** use any Federal funds to implement or enforce any nondisclosure and/or confidentiality policy, form, or agreement it uses unless it contains the following provisions:
- a. *“These provisions are consistent with and do not supersede, conflict with, or otherwise alter the employee obligations, rights, or liabilities created by existing statute or Executive order relating to (1) classified information, (2) communications to Congress, (3) the reporting to an Inspector General of a violation of any law, rule, or regulation, or mismanagement, a gross waste of funds, an abuse of authority, or a substantial and specific danger to public health or safety, or (4) any other whistleblower protection. The definitions, requirements, obligations, rights, sanctions, and liabilities created by controlling Executive orders and statutory provisions are incorporated into this agreement and are controlling.”*
  - b. The limitation above shall not contravene requirements applicable to Standard Form 312, Form 4414, or any other form issued by a Federal department or agency governing the nondisclosure of classified information.
  - c. Notwithstanding provision listed in paragraph (a), a nondisclosure or confidentiality policy form or agreement that is to be executed by a person connected with the conduct of an intelligence or intelligence-related activity, other than an employee or officer of the United States Government, may contain provisions appropriate to the particular activity for which such document is to be used. Such form or agreement shall, at a minimum, require that the person will not disclose any classified information received in the course of such activity unless specifically authorized to do so by the United States Government. Such nondisclosure or confidentiality forms shall also make it clear that they do not bar disclosures to Congress, or to an authorized official of an executive agency or the Department of Justice, that are essential to reporting a substantial violation of law.

#### REGISTRATION REQUIREMENTS

Additional administrative requirements for DOE grants and cooperative agreements are contained in 2 CFR 25 (See: [www.eCFR.gov](http://www.eCFR.gov)). Prime awardees must keep their data in SAM current at [www.SAM.gov](http://www.SAM.gov). SAM is the government-wide system that replaced the Central Contractor Registry (CCR). If you had an active registration in the CCR, you have an active registration in SAM. Subawardees at all tiers must obtain DUNS numbers and provide the DUNS to the prime awardee before the subaward can be issued.

#### SUBAWARD AND EXECUTIVE REPORTING

Additional administrative requirements necessary for DOE Grants and Cooperative Agreements to comply with the Federal Funding and Transparency Act of 2006 (FFATA) are contained in 2 CFR 170. (See: [www.eCFR.gov](http://www.eCFR.gov) ). Prime awardees must register with the new FSRS database at <https://www.fsrs.gov> and report the required data on their first tier subawardees. Prime awardees must report the executive compensation for their own executives as part of their registration profile in SAM.

## PROHIBITION ON LOBBYING ACTIVITY

By accepting funds under this award, you agree that none of the funds obligated on the award shall be expended, directly or indirectly, to influence congressional action on any legislation or appropriation matters pending before Congress, other than to communicate to Members of Congress as described in 18 USC 1913. This restriction is in addition to those prescribed elsewhere in statute and regulation.

## 2. Terms and Conditions

The DOE Special Terms and Conditions for Use in Most Grants and Cooperative Agreements are located at <https://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms> under Award Terms.

The standard DOE financial assistance intellectual property provisions applicable to various types of recipients are located at:

<https://energy.gov/gc/standard-intellectual-property-ip-provisions-financial-assistance-awards>

## 3. National Policy Assurances

The National Policy Assurances To Be Incorporated As Award Terms are located at <https://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms> under Award Terms.

## 4. Statement of Substantial Involvement

A cooperative agreement may be awarded under this FOA. If the award is a cooperative agreement, the DOE Contract Specialist and DOE Project Officer/Program Manager will negotiate a Statement of Substantial Involvement prior to award.

## 5. Additional Conditions

### CONFERENCE SPENDING (FEBRUARY 2015)

The recipient shall not expend any funds on a conference not directly and programmatically related to the purpose for which the grant or cooperative agreement was awarded that would defray the cost to the United States Government of a conference held by any Executive branch department, agency, board, commission, or office for which the cost to the United States Government would otherwise exceed \$20,000, thereby circumventing the required notification by the head of any such Executive Branch department, agency, board, commission, or office to the Inspector General (or senior ethics official for any entity without an Inspector General), of the date, location, and number of employees attending such conference.

## CORPORATE FELONY CONVICTION AND FEDERAL TAX LIABILITY REPRESENTATIONS (MARCH 2014)

In submitting an application in response to this FOA the Applicant represents that:

- It is **not** a corporation that has been convicted of a felony criminal violation under any Federal law within the preceding 24 months,
- It is **not** a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

For purposes of these representations the following definitions apply:

- A Corporation includes any entity that has filed articles of incorporation in any of the 50 states, the District of Columbia, or the various territories of the United States [but not foreign corporations]. It includes both for-profit and non-profit organizations.

## PUBLICATIONS

The recipient is expected to publish or otherwise make publicly available the results of the work conducted under any award resulting from this FOA. Publications and other methods of public communication describing any work based on or developed under an award resulting from this FOA must contain an acknowledgment of SC support. The format for such acknowledgments is provided at <https://science.osti.gov/funding-opportunities/acknowledgements>. The author's copy of any peer-reviewed manuscript accepted for funding must be announced to DOE's Office of Scientific and Technical Information (OSTI) and made publicly available in accordance with the instructions contained in the Reporting Requirements Checklist incorporated in all Assistance Agreements.

## C. REPORTING

Reporting requirements are identified on the Federal Assistance Reporting Checklist, DOE F 4600.2, attached to the award agreement. The checklist is available at <https://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms> under Award Forms.

## Section VII - QUESTIONS/AGENCY CONTACTS

### A. QUESTIONS

Questions relating to the Grants.gov registration process, system requirements, how an application form works, or the submittal process must be directed to Grants.gov at 1-800-518-4726 or [support@Grants.gov](mailto:support@Grants.gov). DOE cannot answer these questions.

Please only contact the Grants.gov help desk for questions related to Grants.gov.

For help with PAMS, click the “External User Guide” link on the PAMS website, <https://pamspublic.science.energy.gov>. You may also contact the PAMS Help Desk, which can be reached Monday through Friday, 9AM – 5:30 PM Eastern Time. Telephone: (855) 818-1846 (toll free) or (301) 903-9610, Email: [sc.pams-helpdesk@science.doe.gov](mailto:sc.pams-helpdesk@science.doe.gov). All submission and inquiries about this FOA should reference DE-FOA-0002254.

Please contact the PAMS help desk for technological issues with the PAMS system.

Questions regarding the content of this FOA must be submitted through the FedConnect portal. You must register with FedConnect and respond as an interested party to submit questions, and to view responses to questions. It is recommended that you register as soon after release of the FOA as possible to have the benefit of all responses. More information is available at <https://www.fedconnect.net>.

Due to the time required to provide complete and accurate answers to questions, all questions must be submitted through FedConnect no later than 12:00 Noon Eastern Time on May 8, 2020. DOE will not respond to questions submitted after the designated time.

### B. AGENCY CONTACTS

Grants.gov Customer Support	800-518-4726 (toll-free) <a href="mailto:support@Grants.gov">support@Grants.gov</a>
PAMS Customer Support	855-818-1846 (toll-free) 301-903-9610 <a href="mailto:sc.pams-helpdesk@science.doe.gov">sc.pams-helpdesk@science.doe.gov</a>
DOE Contact	Warren Riley <a href="mailto:warren.riley@science.doe.gov">warren.riley@science.doe.gov</a>

## **Section VIII - OTHER INFORMATION**

### **A. MODIFICATIONS**

Notices of any modifications to this FOA will be posted on Grants.gov and the FedConnect portal. You can receive an email when a modification or an FOA message is posted by registering with FedConnect as an interested party for this FOA. It is recommended that you register as soon after release of the FOA as possible to ensure you receive timely notice of any modifications or other FOAs. More information is available at [www.FedConnect.net](http://www.FedConnect.net).

### **B. GOVERNMENT RIGHT TO REJECT OR NEGOTIATE**

DOE reserves the right, without qualification, to reject any or all applications received in response to this FOA and to select any application, in whole or in part, as a basis for negotiation and/or award.

### **C. COMMITMENT OF PUBLIC FUNDS**

(a) A DOE financial assistance award is valid only if it is in writing and is signed, either in writing or electronically, by a DOE Contracting Officer.

(b) Recipients are free to accept or reject the award. A request to draw down DOE funds constitutes the Recipient's acceptance of the terms and conditions of this Award.

### **D. PROPRIETARY APPLICATION INFORMATION**

Patentable ideas, trade secrets, proprietary or confidential commercial or financial information, disclosure of which may harm the applicant, should be included in an application only when such information is necessary to convey an understanding of the proposed project. The use and disclosure of such data may be restricted, provided the applicant includes the following legend on the first page of the project narrative and specifies the pages of the application which are to be restricted:

“The data contained in pages \_\_\_\_\_ of this application have been submitted in confidence and contain trade secrets or proprietary information, and such data shall be used or disclosed only for evaluation purposes, provided that if this applicant receives an award as a result of or in connection with the submission of this application, DOE shall have the right to use or disclose the data herein to the extent provided in the award. This restriction does not limit the government's right to use or disclose data obtained without restriction from any source, including the applicant.”

To protect such data, each line or paragraph on the pages containing such data must be specifically identified and marked with a legend similar to the following:

“The following contains proprietary information that (name of applicant) requests not be released to persons outside the Government, except for purposes of review and evaluation.”

## **E. EVALUATION AND ADMINISTRATION BY NON-FEDERAL PERSONNEL**

In conducting the merit review evaluation, the Government may seek the advice of qualified non-Federal personnel as reviewers. The Government may also use non-Federal personnel to conduct routine, nondiscretionary administrative activities. The applicant, by submitting its application, consents to the use of non-Federal reviewers/administrators. Non-Federal reviewers must sign a conflict of interest agreement and a certificate of confidentiality prior to reviewing an application. Non-Federal personnel conducting administrative activities must sign a non-disclosure agreement.

## **F. INTELLECTUAL PROPERTY DEVELOPED UNDER THIS PROGRAM**

**Patent Rights:** The government will have certain statutory rights in an invention that is conceived or first actually reduced to practice under a DOE award and may, under a potential Determination of Exceptional Circumstances, retain greater IP rights than would otherwise be permitted. 42 USC 5908 provides that title to such inventions vests in the United States, except where 35 USC 202 provides otherwise for nonprofit organizations or small business firms. However, the Secretary of Energy may waive all or any part of the rights of the United States subject to certain conditions. (See “Notice of Right to Request Patent Waiver” in paragraph G below.)

Determination of Exceptional Circumstances (DEC): DOE may issue a DEC pursuant to 37 CFR 401.3(a)(2) that would apply to agreements issued under this FOA requiring each applicant to agree to a U.S. Competitiveness Provision. Exceptional circumstances may exist that warrant the modification of the standard patent rights clause for small businesses and non-profit awardees under the Bayh-Dole Act, 35 U.S.C. 200 et seq., to the extent necessary to ensure that DOE “obtains sufficient rights in the federally supported inventions to meet the needs of [DOE]” and “to promote the commercialization and public availability of inventions made in the United States by United States industry and labor” and/or further promote other purposes of the Bayh-Dole Act. 35 U.S.C. § 200.

The DEC would allow DOE, in its discretion, to retain greater IP rights than would otherwise be permitted under the Bayh-Dole Act and small businesses and nonprofit organizations may need to request a waiver from those requirements should they be implemented. Appeals of the determination of exceptional circumstances would be made available pursuant to 37 CFR 401.4

- Specifically, as previously stated, each award may include a commitment that any products embodying any subject invention or produced through the use of any subject invention will be manufactured substantially in the United States, unless the applicant can show to the satisfaction of DOE that it is not commercially feasible to do so (referred to hereinafter as “the U.S. Competitiveness Provision”). The applicant would further agree to make the U.S. Competitiveness Provision binding on any sub-awardee and any assignee or licensee or any entity otherwise acquiring rights to any subject invention, including subsequent assignees or licensees. A subject invention is any invention conceived of or first actually reduced to practice under an award. An applicant would retain the ability to seek a waiver or modification of these requirements, such waivers/modifications to be granted at the sole discretion of DOE and with



the written concurrence of the Department's Assistant General Counsel for Technology Transfer and Intellectual Property.

- The U.S. Competitiveness Provision may also be required for large businesses and other Non-Bayh-Dole entities under this FOA through the potential Class Patent Waiver described in Section VIII.G. below.

**Rights in Technical Data:** Normally, the government has unlimited rights in technical data created under a DOE agreement. Delivery or third-party licensing of proprietary software or data developed solely at private expense will not normally be required except as specifically negotiated in a particular agreement to satisfy DOE's own needs or to insure the commercialization of technology developed under a DOE agreement.

## **G. NOTICE OF RIGHT TO REQUEST PATENT WAIVER**

Applicants may request a waiver of all or any part of the rights of the United States in inventions conceived or first actually reduced to practice in performance of an agreement as a result of this FOA, in advance of or within 30 days after the effective date of the award. Even if such advance waiver is not requested or the request is denied, the recipient will have a continuing right under the award to request a waiver of the rights of the United States in identified inventions, i.e., individual inventions conceived or first actually reduced to practice in performance of the award. Any patent waiver that may be granted is subject to certain terms and conditions in 10 CFR 784 and will be subject to a default 20% cost share requirement. For more information, see <https://energy.gov/gc/services/technology-transfer-and-procurement/office-assistant-general-counsel-technology-transf-1>

**Class Patent Waiver:** DOE may issue a class patent waiver that applies to this FOA for any domestic large business that is a recipient, or subrecipient at any tier to this FOA and is providing at least 20% cost share. Under such a class patent waiver, domestic large businesses would be able to elect title to their subject inventions similar to the right provided to the domestic small businesses, educational institutions, and nonprofits by law. In order to avail itself of the potential class patent waiver, a domestic large business would have to agree that any products embodying or produced through the use of a subject invention first created or reduced to practice under this program would be substantially manufactured in the United States. Entities not eligible under a potential Class Patent Waiver would still be able to petition DOE for rights under an Advanced or Identified Patent Waiver as described above.

Domestic small businesses and domestic nonprofit organizations will receive the patent rights clause at 37 CFR 401.14, i.e., the implementation of the Bayh-Dole Act, including the U.S. Competitiveness Provision pursuant to the possible DEC. This clause permits domestic small business and domestic nonprofit organizations to retain title to subject inventions. Therefore, small businesses and nonprofit organizations do not need to request a waiver.

## **H. NOTICE REGARDING ELIGIBLE/INELIGIBLE ACTIVITIES**

Eligible activities under this program include those which describe and promote the

understanding of scientific and technical aspects of specific energy technologies, but not those which encourage or support political activities such as the collection and dissemination of information related to potential, planned or pending legislation.

#### **I. AVAILABILITY OF FUNDS**

Funds are not presently available for this award. The Government's obligation under this award is contingent upon the availability of appropriated funds from which payment for award purposes can be made. No legal liability on the part of the Government for any payment may arise until funds are made available to the contracting officer for this award and until the awardee receives notice of such availability, to be confirmed in writing by the contracting officer.

#### **J. ENVIRONMENTAL, SAFETY AND HEALTH (ES&H) PERFORMANCE OF WORK AT DOE FACILITIES**

With respect to the performance of any portion of the work under this award which is performed at a DOE-owned or controlled site, the recipient agrees to comply with all state and Federal ES&H regulations, and with all other ES&H requirements of the operator of such site.

Prior to the performance on any work at a DOE-Owned or controlled site, the recipient shall contact the site facility manager for information on DOE and site specific ES&H requirements.

The recipient shall apply this provision to all subawardees at any tier.

#### **K. FEDERAL, STATE, AND LOCAL REQUIREMENTS**

With respect to the performance of any portion of the work under this award, the recipient agrees to comply with all applicable local, state, and Federal ES&H regulations. The recipient shall apply this provision to all sub awardees at any tier.

#### **L. NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) COMPLIANCE**

If question 4.a. on the "Research and Related Other Project Information" document indicates "potential impact on the environment", or if DOE's own review indicates it, DOE may ask the applicant to provide additional information on those impacts in order to prepare an environmental critique/synopsis per 10 CFR 1021.216. Note that this pre-award environmental critique/synopsis process would be separate from the preparation of a NEPA document such as an environmental impact statement (EIS) or an environmental assessment (EA). If DOE determines the latter documentation is necessary, this process would need to be completed, funded by and with the participation of the awardee, prior to them taking any action on the proposed project that could have adverse environmental effects or that could limit the choice of reasonable alternatives. Note that in most cases, even when "Potential Impact to the Environment" is checked "Yes," preparation of such NEPA documents is rarely necessary, but DOE has the expectation that the Applicant will disclose the potential, which would serve to initiate dialog with DOE if necessary. The inability to satisfy the NEPA requirements after an award would result in cancellation of the award.

## Section IX - APPENDICES/REFERENCE MATERIAL

### Glossary of Useful Grants and Cooperative Agreement terms

<b>Acquisition cost</b>	<i>Acquisition cost</i> means the cost of the asset including the cost to ready the asset for its intended use. Acquisition cost for equipment, for example, means the net invoice price of the equipment, including the cost of any modifications, attachments, accessories, or auxiliary apparatus necessary to make it usable for the purpose for which it is acquired. Acquisition costs for software includes those development costs capitalized in accordance with generally accepted accounting principles (GAAP). Ancillary charges, such as taxes, duty, protective in transit insurance, freight, and installation may be included in or excluded from the acquisition cost in accordance with the non-Federal entity's regular accounting practices.
<b>Administrative requirements</b>	<i>Administrative requirements</i> means the general business management practices that are common to the administration of all grants, such as financial accountability, reporting, equipment management, and retention of records.
<b>Advance payment</b>	<i>Advance payment</i> means a payment that a Federal awarding agency or pass-through entity makes by any appropriate payment mechanism, including a predetermined payment schedule, before the non-Federal entity disburses the funds for program purposes.
<b>Allocation</b>	<i>Allocation</i> means the process of assigning a cost, or a group of costs, to one or more cost objective(s), in reasonable proportion to the benefit provided or other equitable relationship. The process may entail assigning a cost(s) directly to a final cost objective or through one or more intermediate cost objectives.
<b>Allocability</b>	<i>Allocability</i> means the principle which requires that an expense or service charged must directly benefit and be necessary for the performance of the project; when multiple projects are benefited reasonable proportions must be able to be assigned.
<b>Allowable cost</b>	<i>Allowable cost</i> means a cost incurred by a recipient that is: (1) reasonable for the performance of the award; (2) allocable; (3) in conformance with any limitations or exclusions set forth in the Federal cost principles applicable to the organization incurring the cost or in the award documents as to the type or amount of cost; (4) consistent with regulations, policies, and procedures of the recipient that are applied uniformly to both federally supported and other activities of the organization; (5) accorded consistent treatment as a direct or indirect cost; (6) determined in accordance with generally accepted accounting principles; and (7) not included as a cost in any other federally supported award (unless specifically authorized by statute).
<b>Application</b>	<i>Application</i> means a request for financial support of a project or activity submitted to DOE on specified forms and in accordance with DOE instructions. Also known as a proposal.
<b>Appropriation Act</b>	<i>Appropriation act</i> means the statute that provides the authority for Federal agencies to incur obligations to and make payments out of the U.S. treasury for specified purposes.
<b>Approved budget</b>	<i>Approved budget</i> means the financial expenditure plan for the grant-supported project or activity, including revisions approved by DOE and permissible revisions made by the grantee. The approved budget consists of Federal (grant) funds and, if required by the terms and conditions of the award, non-Federal participation in the form of matching or cost sharing. The approved budget specified in the award documents may be shown in detailed budget categories or as total costs without a categorical breakout. Expenditures charged to an approved budget that consists of both Federal and non-Federal shares are deemed to be borne by the grantee in the same proportion as the percentage of Federal/non-Federal participation in the overall budget.
<b>Assurance</b>	<i>Assurance</i> means a certification by an applicant, normally included with the application or State plan, indicating that the entity is in compliance with, or that it will abide by, a particular requirement if awarded a Federal grant.
<b>Authorized organizational representative</b>	<i>Authorized organizational representative</i> means the individual, named by the applicant organization, who is authorized to act for the applicant and to assume the obligations imposed by the Federal laws, regulations, requirements, and conditions that apply to grant

	applications or grant awards.
<b>Award</b>	<i>Award</i> means the provision of funds by DOE, based on an approved application and budget or progress report, to an organizational entity or an individual to carry out a project or activity.
<b>Award documents</b>	<p><i>Award documents</i> means the entirety of the documents describing the legal relationship between DOE and an awardee or recipient. The award documents include an Assistance Agreement and other documents which may be incorporated by reference or as attachments to the Assistance Agreement. The award documents are the official, legally binding document, signed (or the electronic equivalent of signature) by a contracting officer that:</p> <ul style="list-style-type: none"> <li>• notifies the recipient of the award of a grant;</li> <li>• contains or references all the terms and conditions of the grant and Federal funding limits and obligations; and,</li> <li>• provides the documentary basis for recording the obligation of Federal funds in the DOE accounting system.</li> </ul>
<b>Bayh-Dole Act</b>	<i>Bayh-Dole Act</i> means a law which encourages universities and researchers to develop their inventions into marketable products; formal citation is Section 6 of the Patent and Trademark Amendment of 1980, Pub. L 96-517.
<b>Budget</b>	<i>Budget</i> means the financial plan for the project or program that the Federal awarding agency or pass-through entity approves during the Federal award process or in subsequent amendments to the Federal award. It may include the Federal and non-Federal share or only the Federal share, as determined by the Federal awarding agency or pass-through entity.
<b>Budget period</b>	<i>Budget period</i> means the intervals of time (usually 12 months each) into which a project period is divided for budgetary and funding purposes.
<b>Business officer</b>	<i>Business officer</i> means the financial official of the grantee who has primary fiscal responsibility for the grant. Also known as authorized organizational representative.
<b>Capital assets</b>	<p><i>Capital assets</i> means tangible or intangible assets used in operations having a useful life of more than one year which are capitalized in accordance with GAAP. Capital assets include:</p> <p style="margin-left: 40px;">(a) Land, buildings (facilities), equipment, and intellectual property (including software) whether acquired by purchase, construction, manufacture, lease-purchase, exchange, or through capital leases; and</p> <p style="margin-left: 40px;">(b) Additions, improvements, modifications, replacements, rearrangements, reinstallations, renovations or alterations to capital assets that materially increase their value or useful life (not ordinary repairs and maintenance).</p>
<b>Carryover</b>	<i>Carryover</i> means unobligated Federal funds remaining at the end of any budget period that, with the approval of the contracting officer or under an automatic authority, may be carried forward to another budget period to cover allowable costs of that budget period (whether as an offset or additional authorization). Obligated, but unliquidated, funds are not considered carryover.
<b>Change in scope</b>	<i>Change in scope</i> means an activity whereby the objectives or specific aims identified in the approved grant application are significantly changed by the grantee after award. Contracting officer prior approval is required for a change in scope to be allowable under an award.
<b>Closeout</b>	<i>Closeout</i> means the process by which a Federal awarding agency determines that all applicable administrative actions and all required work under an award have been completed by the grantee and the Federal awarding agency.
<b>Competitive segment</b>	<i>Competitive segment</i> means the initial project period recommended for support or each extension of a project period resulting from a renewal award.
<b>Conference (domestic or international)</b>	<i>Conference (domestic or international)</i> means a symposium, seminar, workshop, or any other organized and formal meeting, whether conducted face-to-face or via the Internet, where individuals assemble (or meet virtually) to exchange information and views or explore or clarify a defined subject, problem, or area of knowledge, whether or not a

	published report results from such meeting.
<b>Consortium or sub-award agreement</b>	<i>Consortium or sub-award agreement</i> means a formalized agreement whereby a research project is carried out by the grantee and one or more other organizations that are separate legal entities. Under the agreement, the grantee must perform a substantive role in the conduct of the planned research and not merely serve as a conduit of funds to another party or parties. These agreements typically involve a specific level of effort from the consortium organization's PD/PI and a categorical breakdown of costs, such as personnel, supplies, and other allowable expenses, including F&A costs. The relationship between the recipient and the collaborating organizations is considered a sub-award relationship.
<b>Consultant</b>	<i>Consultant</i> means an individual who provides professional advice or services for a fee, but normally not as an employee of the engaging party. In unusual situations, an individual may be both a consultant and an employee of the same party, receiving compensation for some services as a consultant and for other work as a salaried employee. To prevent apparent or actual conflicts of interest, grantees and consultants must establish written guidelines indicating the conditions of payment of consulting fees. Consultants also include firms that provide professional advice or services.
<b>Continuation application/award</b>	<i>Continuation application/award</i> means a financial assistance request (in the form of an application or progress report) or resulting award for a subsequent budget period within a previously approved project period for which a recipient does not have to compete with other applicants.
<b>Contract</b>	<i>Contract</i> means a legal instrument by which a non-Federal entity purchases property or services needed to carry out the project or program under a Federal award. The term as used in this part does not include a legal instrument, even if the non-Federal entity considers it a contract, when the substance of the transaction meets the definition of a Federal award or sub-award (see 2 CFR 200.92 Sub-award).
<b>Contractor</b>	<i>Contractor</i> means an entity that receives a contract as defined in 2 CFR 200.22 Contract.
<b>Contract (or Grants Management) officer</b>	<i>Contract (or Grants Management) officer</i> means a DOE official responsible for the business management aspects of grants and cooperative agreements, including review, negotiation, award, and administration, and for the interpretation of grants administration policies and provisions. COs and GMOs are delegated the authority to obligate DOE to the expenditure of funds and permit changes to approved projects on behalf of DOE.
<b>Contract (or Grants Management) specialist</b>	<i>Contract (or Grants Management) specialist</i> means a DOE staff member who works with a contract or grants management officer and is assigned the day-to-day management of a portfolio of grants and/or cooperative agreements. These activities include, but are not limited to, evaluating grant applications for administrative content and compliance with statutes, regulations, and guidelines; negotiating grants; providing consultation and technical assistance to grantees; and administering grants after award.
<b>Cooperative agreement</b>	<i>Cooperative agreement</i> means a type of financial assistance used when there will be substantial Federal scientific or programmatic involvement. Substantial involvement means that, after award, scientific or program staff will assist, guide, coordinate, or participate in project activities.
<b>Cost principles</b>	<i>Cost principles</i> means the government-wide principles, issued by OMB (or, in the case of commercial organizations, the Federal Acquisition Regulation [48 CFR 21], or, in the case of hospitals, 45 CFR 74, Appendix E, "Principles For Determining Costs Applicable to Research and Development Under Grants and Contracts with Hospitals"), on allowability and unallowability of costs under federally sponsored agreements. As of December 26, 2014, the cost principles were consolidated in 2 CFR 200.
<b>Cost sharing or matching</b>	<i>Cost sharing or matching</i> means the portion of project costs not paid by Federal funds (unless otherwise authorized by Federal statute). See also 2 CFR 200.306 Cost sharing or matching.
<b>Deadline</b>	<i>Deadline</i> means the published date and/or time that a grant application is to be either postmarked/mailed or electronically submitted to the funding agency.
<b>Debarment and suspension</b>	<i>Debarment and suspension</i> means the actions taken by a debarring official in accordance with OMB guidance at 2 CFR 180, "Non-procurement Debarment and Suspension," to exclude a person or organization from participating in grants and other non-procurement

	awards government-wide. If debarred or suspended, the person or organization may not receive financial assistance (under a grant, cooperative agreement, or sub-award, or contract under a grant) for a specified period of time. Debarments and suspensions carried out pursuant to 2 CFR 376 are distinct from post-award suspension action by an awarding agency.
<b>Direct costs</b>	<i>Direct costs</i> means costs that can be identified specifically with a particular sponsored project, an instructional activity, or any other institutional activity, or that can be directly assigned to such activities relatively easily with a high degree of accuracy.
<b>Disallowed costs</b>	<i>Disallowed costs</i> means those charges to a Federal award that the Federal awarding agency or pass-through entity determines to be unallowable, in accordance with the applicable Federal statutes, regulations, or the terms and conditions of the Federal award.
<b>Domestic organization</b>	<i>Domestic organization</i> means a public (including a State or other governmental agency) or private non-profit or for-profit organization that is located in the United States or its territories, is subject to U.S. laws, and assumes legal and financial accountability for awarded funds and for the performance of the grant-supported activities.
<b>DUNS number</b>	<i>DUNS number</i> means a nine-digit number established and assigned by Dun and Bradstreet to uniquely identify a business entity.
<b>Effort</b>	<i>Effort</i> means the amount of time, usually expressed as a percentage of the total, which a faculty member or other employee spends on a sponsored project. No one is allowed to spend more than 100% total commitment on all academic activities, including grant-sponsored research, university-sponsored research, teaching, administration, advising and other contracted duties. Effort is indicated on the budget in units of person-months.
<b>Equipment</b>	<i>Equipment</i> means tangible personal property (including information technology systems) having a useful life of more than one year and a per-unit acquisition cost which equals or exceeds the lesser of the capitalization level established by the non-Federal entity for financial statement purposes, or \$5,000. See also 2 CFR 200.12 Capital assets, 200.20 Computing devices, 200.48 General purpose equipment, 200.58 Information technology systems, 200.89 Special purpose equipment, and 200.94 Supplies.
<b>Expanded authorities</b>	<i>Expanded authorities</i> means authorization to grantees under certain research grant mechanisms which waives the requirement for prior agency approval for specified actions related to awards. Example: 90-day pre-award spending authority, no cost extensions for up to one additional year, and automatic carryover of unobligated funds from one budget period to the next. The expanded authorities are now contained in the standard terms and conditions for most research grants.
<b>Expiration date</b>	<i>Expiration date</i> means generally, the date signifying the end of the current project period, after which the grantee is not authorized to obligate grant funds.
<b>Facilities and administrative costs</b>	<i>Facilities and administrative costs</i> means costs that are incurred by a grantee for common or joint objectives and that, therefore, cannot be identified specifically with a particular project or program. These costs also are known as indirect costs.
<b>Federal financial report</b>	<i>Federal financial report</i> means submitted on Standard Form (SF) 425, to indicate the status of awarded funds for the period covered. Frequency of reporting is specified in the Reporting Checklist provided as part of the award documents. Replaces the SF-269 Financial Status Report (FSR).
<b>Financial assistance</b>	<i>Financial assistance</i> means transfer by DOE of money or property to an eligible entity to support or stimulate a public purpose authorized by statute.
<b>Financial status report</b>	<i>Financial status report</i> means see Federal Financial Report.
<b>Foreign travel</b>	<i>Foreign travel</i> is meant to include travel outside of the United States and its territories and possessions (Guam, American Samoa, Puerto Rico, the Virgin Islands, and the Canal Zone) and Canada. A trip is considered foreign travel for all legs of the itinerary if the traveler does not return to his or her post prior to departure for a foreign destination. Costs for foreign travel may be restricted by the language of a Funding Opportunity Announcement.
<b>Funding opportunity</b>	<i>Funding opportunity announcement (FOA)</i> means A publicly available document by which a Federal Agency makes known its intentions to award discretionary grants or

<b>announcement (FOA)</b>	cooperative agreements, usually as a result of competition for funds. Funding opportunity announcements may be known as program announcements, requests for applications, notices of funding availability, solicitations, or other names depending on the Agency and type of program. Funding opportunity announcements can be found at <a href="http://www.Grants.gov">www.Grants.gov</a> . An FOA may also be known as a solicitation.
<b>Grant agreement</b>	<p><i>Grant agreement</i> means a legal instrument of financial assistance between a Federal awarding agency or pass-through entity and a non-Federal entity that, consistent with 31 USC 6302, 6304:</p> <p>(a) Is used to enter into a relationship the principal purpose of which is to transfer anything of value from the Federal awarding agency or pass-through entity to the non-Federal entity to carry out a public purpose authorized by a law of the United States (see 31 USC 6101(3)); and not to acquire property or services for the Federal awarding agency or pass-through entity's direct benefit or use;</p> <p>(b) Is distinguished from a cooperative agreement in that it does not provide for substantial involvement between the Federal awarding agency or pass-through entity and the non-Federal entity in carrying out the activity contemplated by the Federal award.</p> <p>(c) Does not include an agreement that provides only:</p> <ol style="list-style-type: none"> <li>(1) Direct United States Government cash assistance to an individual;</li> <li>(2) A subsidy;</li> <li>(3) A loan;</li> <li>(4) A loan guarantee; or</li> <li>(5) Insurance.</li> </ol>
<b>Grant-supported project or activity</b>	<i>Grant-supported project or activity</i> means those activities specified or described in a grant application or in a subsequent submission that are approved by DOE for funding, regardless of whether Federal funding constitutes all or only a portion of the financial support necessary to carry them out.
<b>Grantee</b>	<i>Grantee</i> means the organization or individual awarded a grant or cooperative agreement by DOE that is responsible and accountable for the use of the funds provided and for the performance of the grant-supported project or activity. The grantee is the entire legal entity even if a particular component is designated in award documents. The grantee is legally responsible and accountable to DOE for the performance and financial aspects of the grant-supported project or activity. Also known as awardee or recipient.
<b>Grants.gov</b>	<i>Grants.gov</i> ( <a href="https://www.Grants.gov">https://www.Grants.gov</a> ) has been designated by the Office of Management and Budget as the single access point for all grant programs offered by 26 Federal grant-making agencies. It provides a single interface for agencies to announce their grant opportunities and for all applicants to find and apply for those opportunities.
<b>Indirect costs (facilities &amp; administrative)</b>	<i>Indirect (F&amp;A) costs</i> means those costs incurred for a common or joint purpose benefitting more than one cost objective, and not readily assignable to the cost objectives specifically benefitted, without effort disproportionate to the results achieved. To facilitate equitable distribution of indirect expenses to the cost objectives served, it may be necessary to establish a number of pools of indirect (F&A) costs. Indirect (F&A) cost pools must be distributed to benefitted cost objectives on bases that will produce an equitable result in consideration of relative benefits derived.
<b>Institutional base salary</b>	<i>Institutional base salary</i> means the annual compensation paid by an organization for an employee's appointment, whether that individual's time is spent on research, teaching, patient care, or other activities. Base salary excludes any income that an individual may be permitted to earn outside of duties for the applicant/grantee organization. Base salary may not be increased as a result of replacing organizational salary funds with grant funds.
<b>Matching or cost sharing</b>	<i>Matching or cost sharing</i> means the value of third-party in-kind contributions and the portion of the costs of a federally assisted project or program not borne by the Federal government. Matching or cost sharing may be required by statute or program regulation. Costs used to satisfy matching or cost-sharing requirements are subject to the same policies governing allowability as other costs under the approved budget.
<b>Merit (or peer) review</b>	<i>Merit (or peer) review</i> means the process that involves the consistent application of standards and procedures that produce fair, equitable, and objective examinations of

	applications based on an evaluation of scientific or technical merit or other relevant aspects of the application. The review is performed by experts (reviewers) in the field of endeavor for which support is requested. Merit review is intended to provide guidance and to the DOE individuals responsible for making award decisions.
<b>Monitoring</b>	<i>Monitoring</i> means a process whereby the programmatic and business management performance aspects of a grant are assessed by reviewing information gathered from various required reports, audits, site visits, and other sources.
<b>NEPA</b>	NEPA means the National Environmental Policy Act (NEPA), Public Law 91-190, was signed into law on January 1, 1970. NEPA requires Federal agencies to assess the environmental effects of proposed major Federal actions prior to making decisions.
<b>No-cost extension</b>	<i>No-cost extension</i> means an extension of time to a project period and/or budget period to complete the work of the grant under that period, without additional Federal funds or competition.
<b>Non-Federal share</b>	<i>Non-Federal share</i> means when cost sharing or matching is required as a condition of an award, the portion of allowable project/program costs not borne by the Federal government.
<b>Obligations</b>	<i>Obligations</i> when used in connection with a non-Federal entity's utilization of funds under a Federal award, <i>obligations</i> means orders placed for property and services, contracts and sub-awards made, and similar transactions during a given period that require payment by the non-Federal entity during the same or a future period.
<b>OMB circulars</b>	<i>OMB circulars</i> means government-wide guidance issued to Heads of Federal agencies by the Director of OMB. OMB Circulars directly pertinent to grants include the following: <ul style="list-style-type: none"> <li>• cost principles (OMB Circular A-21, OMB Circular A-87, and OMB Circular A-122);</li> <li>• uniform administrative requirements (OMB Circular A-102 and OMB Circular A-110);</li> <li>• audit requirements for non-profit organizations (OMB Circular A-133).</li> </ul> Some (but not all) of these OMB Circulars have been reissued in Title 2 of the Code of Federal Regulations. DOE administrative regulations are located in Title 10 of the Code of Federal Regulations.
<b>Other significant contributors</b>	Other significant contributors means individuals who have committed to contribute to the scientific development or execution of the project, but are not committing any specified measurable effort (i.e., person months) to the project. These individuals are typically presented at "effort of zero person months" or "as needed." Individuals with measurable effort may not be listed as Other Significant Contributors (OSCs). Consultants should be included if they meet this definition.
<b>Program participant</b>	<i>Program participants</i> are the recipients of service or training provided at a workshop, conference, seminar, symposium or other short-term instructional or information-sharing activity funded by an external grant or award, or the training beneficiaries of the project or program funded by an external grant or award. A participant is not involved in providing any deliverable to the grantee or a third party or would not be terminated or replaced for failure to perform.
<b>Participant support costs</b>	<i>Participant support costs</i> means direct costs for items such as stipends or subsistence allowances, travel allowances, and registration fees paid to or on behalf of participants or trainees (but not employees) in connection with conferences, or training projects.
<b>Person months</b>	<i>Person months</i> is the metric for expressing the effort (amount of time) PD/PI(s), faculty and other senior/key personnel devote to a specific project. The effort is based on the type of appointment of the individual with the organization; e.g., calendar year, academic year, and/or summer term; and the organization's definition of such. For instance, some institutions define the academic year as a 9-month appointment while others define it as a 10-month appointment.
<b>Pre-application or pre-proposal</b>	<i>Pre-application or pre-proposal</i> means a brief outline or narrative of proposed work and sometimes budget, for informal review by a sponsor to determine whether an application should be submitted. Three predominant reasons for requiring submission of a preliminary pre-application are:



	<ul style="list-style-type: none"> <li>• Reduce the applicant’s unnecessary effort in proposal preparation when the chance of success is very small. This is particularly true of exploratory initiatives where the community senses that a major new direction is being identified, or competitions that will result in a small number of actual awards.</li> <li>• Increase the overall quality of the submission.</li> <li>• Distill the number of applications that will be submitted to the agency and the number of anticipated reviewers needed to review.</li> </ul>
<b>Pre-award costs</b>	<i>Pre-award costs</i> means any cost incurred prior to the beginning date of the project period or the initial budget period of a competitive segment (under a multi-year award), in anticipation of the award and at the applicant’s own risk, for otherwise allowable costs.
<b>Prior approval</b>	<i>Prior approval</i> means written approval from the designated contracting officer required for specified post-award changes in the approved project or budget. Such approval must be obtained before undertaking the proposed activity or spending DOE funds.
<b>Principal Investigator</b>	<i>Principal Investigator</i> means the individual(s) designated by the applicant organization to have the appropriate level of authority and responsibility to direct the project or program to be supported by the award. The applicant organization may designate multiple individuals as principal investigators (PIs). When multiple PIs are named, each is responsible and accountable to the applicant organization, or as appropriate, to a collaborating organization for the proper conduct of the project or program including the submission of all required reports. The presence of more than one PI on an application or award diminishes neither the responsibility nor the accountability of any individual PI.
<b>Program income</b>	<i>Program income</i> means gross income earned by the non-Federal entity that is directly generated by a supported activity or earned as a result of the Federal award during the period of performance except as provided in 2 CFR 200.307 paragraph (f). (See 2 CFR 200.77 Period of performance.) Program income includes but is not limited to income from fees for services performed, the use or rental of real or personal property acquired under Federal awards, the sale of commodities or items fabricated under a Federal award, license fees and royalties on patents and copyrights, and principal and interest on loans made with Federal award funds. Interest earned on advances of Federal funds is not program income. Except as otherwise provided in Federal statutes, regulations, or the terms and conditions of the Federal award, program income does not include rebates, credits, discounts, and interest earned on any of them. See also 2 CFR 200.407 Prior written approval (prior approval). See also 35 USC 200-212 “Disposition of Rights in Educational Awards” applies to inventions made under Federal awards.
<b>Program Manager</b>	<i>Program Manager</i> means the DOE official responsible for the programmatic, scientific, and/or technical aspects of a grant. The same role is filled by Program Directors, Program Officers, or Project Directors at other Federal agencies.
<b>Progress report</b>	<i>Progress report</i> means periodic, frequently annual, report submitted by the grantee and used by DOE to assess progress and to determine whether to provide funding for the budget period subsequent to that covered by the report.
<b>Project/performance site</b>	<i>Project/performance site</i> means location(s) of where the work described in the research plan will be conducted.
<b>Project period</b>	<i>Project period</i> means the total time for which Federal support of a project has been programmatically approved as shown in the award documents; however, it does not constitute a commitment by the Federal government to fund the entire period. The total project period comprises the initial competitive segment, any subsequent competitive segments resulting from a renewal award(s), and extensions.
<b>Proposal</b>	See application.
<b>Re-budgeting</b>	<i>Re-budgeting</i> means reallocation of funds available for spending between budget categories to allow best use of funds to accomplish the project goals.
<b>Recipient</b>	<i>Recipient</i> means the organizational entity or individual receiving a grant or cooperative agreement.

<b>Renewal application</b>	<i>Renewal application</i> means an application requesting additional funding for a period subsequent to that provided by a current award. Renewal applications compete for funds with all other peer reviewed applications and must be developed as fully as though the applicant is applying for the first time.
<b>Research</b>	<i>Research</i> means a systematic, intensive study intended to increase knowledge or understanding of the subject studied, a systematic study specifically directed toward applying new knowledge to meet a recognized need, or a systematic application of knowledge to the production of useful materials, devices, and systems or methods, including design, development, and improvement of prototypes and new processes to meet specific requirements. Also termed “research and development.”
<b>Research misconduct</b>	Research misconduct means fabrication, falsification, plagiarism, or other practices that seriously deviate from those that are commonly accepted within the scientific community in proposing, performing, or reporting research, or in reporting research results; does not include honest error or honest differences in interpretations or judgments of data.
<b>SAM.gov</b>	<i>SAM.gov</i> is the System for Award Management (SAM), the Government-wide system that consolidated the Central Contractor Registration (CCR), the Excluded Parties List System (EPLS), the Online Representations and Certifications Application (ORCA), and the Federal Agency Registration (FedReg).
<b>Scope of work</b>	<i>Scope of work</i> means the aims, objectives, and purposes of a grant; as well as the methodology, approach, analyses or other activities; and the tools, technologies, and timeframes needed to meet the grant’s objectives. This includes the research or training plan included with the original grant application, along with any approved modifications.
<b>Senior/Key Personnel</b>	<i>Senior/Key personnel</i> means the PD/PI and other individuals who contribute to the scientific development or execution of a project in a substantive, measurable way, whether or not they receive salaries or compensation under the grant. Typically, these individuals have doctoral or other professional degrees, although individuals at the masters or baccalaureate level may be considered senior/key personnel if their involvement meets this definition. Consultants and those with a postdoctoral role also may be considered senior/key personnel if they meet this definition. “Zero percent” effort or “as needed” is not an acceptable level of involvement for Senior/Key Personnel.
<b>Significant re-budgeting</b>	<i>Significant re-budgeting</i> means a threshold that is reached when expenditures in a single direct cost budget category deviate (increase or decrease) from the categorical commitment level established for the budget period by more than 25 percent of the total costs awarded. Significant re-budgeting is one indicator of change in scope.
<b>Small business concern</b>	<i>Small business concern</i> means a business that is independently owned and operated and not dominant in its field of operation; has its principal place of business in the United States and is organized for profit; is at least 51 percent owned, or in the case of a publicly owned business, at least 51 percent of its voting stock is owned by U.S. citizens or lawfully admitted permanent resident aliens; has, including its affiliates, not more than 500 employees; and meets other regulatory requirements established by the SBA at 13 CFR 121.
<b>Solicitation</b>	See Funding Opportunity Announcement.
<b>Sub-award</b>	<i>Sub-award</i> means a legal instrument by which a recipient provides funds (or property in lieu of funds) to an eligible sub-recipient (or a lower-tier transaction) to perform a substantive portion of the grant-supported program or project. The term includes such financial assistance when provided by any legal agreement (even if the agreement is called a contract) but does not include any form of assistance which is excluded from the definition of a grant, including the recipient’s procurement of property or services needed to carry out the project or program. The term includes consortium agreements.
<b>Sub-recipient</b>	<i>Sub-recipient</i> means a non-Federal entity that receives a sub-award from a pass-through entity to carry out part of a Federal program; but does not include an individual that is a beneficiary of such program. A sub-recipient may also be a recipient of other Federal awards directly from a Federal awarding agency.
<b>Supplement</b>	<i>Supplement</i> means a request for an increase in support during a current budget period for expansion of the project’s scope or to meet increased costs unforeseen at the time of the

	new or renewal application. A supplement may increase support for future years in addition to the current year. Supplements require applications and are subject to administrative and merit review.
<b>Terms and conditions of award</b>	<i>Terms and conditions of award</i> means all legal requirements imposed on a grant by DOE, whether based on statute, regulation, policy, or other document referenced in the grant award, or specified by the grant award document itself. The award documents may include both standard and special conditions that are considered necessary to attain the grant's objectives, facilitate post-award administration of the grant, conserve grant funds, or otherwise protect the Federal government's interests.
<b>Unallowable costs</b>	<i>Unallowable costs</i> means specific categories of costs that cannot be charged, directly or indirectly, to federally sponsored agreements in accordance with federal regulations or the terms and conditions of the award.
<b>Unliquidated obligation</b>	<i>Unliquidated obligations</i> means, for financial reports prepared on a cash basis, obligations incurred by the non-Federal entity that have not been paid (liquidated). For reports prepared on an accrual expenditure basis, these are obligations incurred by the non-Federal entity for which an expenditure has not been recorded.
<b>Unobligated balance</b>	<i>Unobligated balance</i> means the amount of funds under a Federal award that the non-Federal entity has not obligated. The amount is computed by subtracting the cumulative amount of the non-Federal entity's unliquidated obligations and expenditures of funds under the Federal award from the cumulative amount of the funds that the Federal awarding agency or pass-through entity authorized the non-Federal entity to obligate.
<b>Validate</b>	In the context of the data management plan requirements, <i>validate</i> means to support, corroborate, verify, or otherwise determine the legitimacy of the research findings. Validation of research findings could be accomplished by reproducing the original experiment or analyses, comparing and contrasting the results against those of a news experiment or analyses, or by some other means.