

**FINANCIAL ASSISTANCE
FUNDING OPPORTUNITY ANNOUNCEMENT**



**U. S. Department of Energy
Office of Science
Office of Basic Energy Sciences**

Energy Innovation Hub Renewal – Fuels from Sunlight

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REGISTRATIONS

A. Required Registrations

There are several one-time actions you must complete in order to submit an application in response to this Announcement.

In addition to registering in Grants.gov and the DOE Office of Science Portfolio Analysis and Management System (PAMS) as described in B and C below, the following actions are required:

- Applicant must obtain a DUNS number at <http://fedgov.dnb.com/webform>.
- Applicant must register with the System for Award Management (SAM) at <http://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 is found at https://www.sam.gov/sam/transcript/Quick_Guide_for_Grants_Registrations_v1.7.pdf.
- Applicant must register with FedConnect at www.fedconnect.net. The full, binding version of assistance agreements will be posted to FedConnect. Applicant must be registered with FedConnect to submit questions.
- Recipient 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.

B. Registering in Grants.gov

Applicant must register in Grants.gov.

For organizations, please follow the procedures detailed below, making use of the checklist provided below:

<http://www.grants.gov/web/grants/applicants/organization-registration.html>

<http://www.grants.gov/documents/19/18243/OrganizationRegChecklist.pdf>

For individuals, please follow the procedures detailed below:

<http://www.grants.gov/web/grants/applicants/individual-registration.html>

Organizations and individuals must have an E-Business (E-Biz) Point of Contact (POC). You may find the checklist at http://www.grants.gov/documents/19/18243/E-Biz_POC_Checklist.pdf useful.

Grants.gov maintains a User Guide at <http://www.grants.gov/web/grants/applicants/applicant-resources.html> and a list of Frequently Asked Questions at

<http://www.grants.gov/web/grants/applicants/applicant-faqs.html>.

Questions relating to the **registration process, system requirements, or how an application form works** must be directed to Grants.gov at 1-800-518-4726 or support@grants.gov.

IMPORTANT NOTICE: When you have completed the Grants.gov registration process, you should call the Grants.gov Helpdesk at 1-800-518-4726 to verify that you have completed the final step (i.e., Grants.gov registration).

The Applicant must download the application package, application forms and instructions, from Grants.gov at <http://www.grants.gov/> (Additional instructions are provided in Section IV of this Funding Opportunity Announcement (FOA)).

The Application must be submitted through Grants.gov to be considered for award. You cannot submit an application through Grants.gov unless you are registered. Please read the registration requirements carefully and start the process immediately. Remember you have to update your SAM registration annually. If you have any questions about your registration, you should contact the Grants.gov Helpdesk at 1-800-518-4726 to verify that you are still registered in Grants.gov.

C. DOE Office of Science 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 Office of Science. 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>. Please make sure your email server/software allows delivery of e-mails 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 Office of Science 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 “PAMS 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. All submission and inquiries about this FOA should reference **DE-FOA-0001205**.

RECOMMENDATION

The Office of Science encourages you to register in all systems as soon as possible. You are also encouraged to submit the application before the deadline.

UPDATES AND REMINDERS

DATA MANAGEMENT PLAN

The Office of Science has published a new Statement on Digital Data Management, published at <http://science.energy.gov/funding-opportunities/digital-data-management/>, which governs the application submitted under this FOA, and is detailed in Section IV of this FOA.

ACKNOWLEDGMENT OF FEDERAL SUPPORT

The Office of Science published guidance about how its support should be acknowledged at <http://science.energy.gov/funding-opportunities/acknowledgements/>.

REGULATIONS

Effective December 26, 2014, this FOA and any awards made under it will be governed by 2 CFR 200, the Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, as modified by 2 CFR 910, the Department of Energy Financial Assistance Rules, and 10 CFR 605, the Office of Science Financial Assistance Program.

Section I – FUNDING OPPORTUNITY DESCRIPTION

DIRECT ALL GENERAL INQUIRIES TO:

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 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>.

STATUTORY AUTHORITY

Public Law 95-91, U.S. Department of Energy Organization Act
Public Law 109-58, Energy Policy Act of 2005

APPLICABLE REGULATIONS

DOE assistance regulations at 10 CFR Part 600 or for awards issued after December 26, 2014, the Financial Assistance regulations contained in 2 CFR 200 which will be codified by Part IX of 2 CFR (DOE's new financial assistance regulations).

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

SUMMARY

Transforming our energy system through the development and widespread adoption of clean, 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. Achieving these goals will require new transformational technologies driven by basic and applied energy research capabilities and accompanied by commensurate investments in engineering and development to accelerate the deployment of revolutionary energy technologies.

In 2010, the Department of Energy funded the establishment of the Energy Innovation Hub - Fuels from Sunlight (Fuels From Sunlight Hub), which focuses on the conversion of solar energy to storable chemical fuels. This multi-disciplinary, multi-investigator, and multi-institutional effort aims to create transformative advances in the development of artificial photosynthetic systems for converting sunlight, water, and carbon dioxide into a range of commercially useful fuels. Its research and development (R&D) efforts target the understanding and design of catalytic complexes that generate chemical fuel from carbon dioxide and/or water; integration of

the essential elements, from light capture to fuel formation components, into an effective solar fuel generation prototype; and pragmatic evaluation of the solar fuel system under development.

This FOA solicits a renewal application for the existing Fuels from Sunlight Hub. The renewal project should build on previous efforts and focus particularly on R&D needed to enable efficient, sustainable and scalable photochemical reduction of carbon dioxide. The project should advance all aspects of discovery research, incorporating prototype development where appropriate to examine component integration or demonstrate capabilities. The Hub should continue to operate according to a comprehensive project plan that includes well-defined five-year goal(s), substantive measurable scientific and technical milestones, key decision points, and alternate strategies as needed to achieve milestones on the critical path to success. Leadership by a full-time Director (at least 80% of a full time position) remains a critical component of a Hub management plan.

The funding level awarded to the Fuels from Sunlight Hub will be determined by Federal officials based on the outcome of rigorous review procedures as detailed in Section V of this FOA. DOE reserves the right to fund, in whole or in part, any, all, or none of the renewal project proposed in the application submitted in response to this FOA. Hub progress will be monitored by DOE Senior Leadership, acting upon recommendations of DOE staff and external reviewers.

SUPPLEMENTARY INFORMATION

BACKGROUND

Solar energy is a significant yet relatively untapped clean energy resource. Through the process of photosynthesis, plants effectively convert energy from the sun into energy-rich chemical fuels using the abundant feedstocks of water and carbon dioxide. Should science develop an artificial photosynthesis system capable of generating usable fuels directly from sunlight, carbon dioxide, and water, the potential energy benefits for the Nation could be substantial and include significantly reduced dependence on fossil fuels. Development of such a system, however, involves considerable scientific and engineering challenges, and transformational science breakthroughs are urgently needed to enable production of fuels directly from sunlight.

In fiscal year (FY) 2010, the Department of Energy awarded funding for the establishment of several Energy Innovation Hubs to accelerate progress and foster transformational science towards high priority goals and specific technological challenges. The Fuels from Sunlight Hub was among those funded in FY 2010 and focuses on achieving critical transformative advances in fundamental research and technology necessary for the development of artificial photosynthetic systems that can convert sunlight, water, and carbon dioxide into commercially useful fuels.

HUB REQUIREMENTS

Overview

The purpose of the Energy Innovation Hubs is to assemble the most talented scientists and technologists to conduct coordinated, intense research and development on focus areas that are critical to national energy needs.

The Hubs are expected to adopt a holistic, systems approach to science and technology and act as an integrator of basic and applied R&D. They should embrace a centrally led, integrated model of R&D; such a model has historically proven to accelerate the current state-of-the art energy science and technology by effectively promoting high-risk, high-reward research projects that can enable revolutionary changes in how we produce and use energy.

It is critical for the Hub's research team to understand in depth the potential roadblocks and bottlenecks that must be overcome in order to implement a sustainable and commercially viable technology. The Hub must combine exceptional skill and creativity in general energy technology research with 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, governmental and nongovernmental, that have been engaged in research on these or related problems.

Technical Capabilities and Instrumentation

The Hub should include all technical capabilities the applicant considers necessary to implement its proposed approach, including experimental and computational tools. To carry out the proposed research program, the Hub will be expected to develop core capabilities in or have access to the full range of synthetic, characterization, manipulation, and computational capabilities requisite for the development of a solar fuel generation process. A portion of the research at the Hub may be devoted to developing new technological capabilities for overcoming challenges that cannot be addressed with currently available technologies and instrumentation. Research capabilities and resources to be accessed outside of the Hub should be clearly identified.

Management

Effective management of scientific facilities, programs, and projects is critical to the success of research. The Hub must have well-designed management plan that includes strong, effective leadership by a full-time Director (at least 80% of a full time position). Responsibilities of the Director would include planning and monitoring progress of technical projects that have a complexity comparable to the Hub; supervising, motivating and evaluating personnel within a hierarchical organization structure; budgeting and actively redirecting resource allocation; and fostering effective communication within a large organization and with the external community. 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 Director.

The management structure must enable empowered scientist-managers to execute quick decisions to shape the course of research. Management of the Hub's research, technology development, resources (both personnel and physical resources), and scientific data are critical to the success of the Hub, its overall contribution to the Energy Innovation Hubs initiative, and the Department of Energy's (Department or DOE) missions. Plans should include provisions for coordination with other basic and applied R&D activities supported by the Department. The Hub must also have an advisory board that includes industry (private for-profit and non-profit) participation.

The Hub will be subject to regular and rigorous peer review of its scientific program and its management structure, policies, and practices. Within DOE, the Energy Innovation Hub Oversight Board will periodically review the progress of the Hubs. Each Hub is managed by a particular DOE program office, which is responsible for holding the Hub accountable and conducting annual site visit reviews of the Hub. The Fuels from Sunlight Hub is managed by the Office of Basic Energy Sciences.

Staffing

The research program of the Hub should be led by internationally recognized scientists that possess cutting-edge expertise in the specific problems to be addressed. The Hub may be composed of diverse institutions including national laboratories, academia and non-profit research institutes, and the private sector. In assembling its research team, the Hub will strive to achieve the synergies that arise when individuals with forefront expertise in different methodologies, technologies, disciplines, and areas of content knowledge tackle a problem together, overcoming impasses by attacking the issue from fresh angles and discovering novel solutions.

Project Plan

The work of the Hub will span from basic research to proof-of-concept engineering development. The Hub should support cross-disciplinary R&D focused on the barriers to transforming energy technologies into commercially deployable materials, devices, and systems. The project should advance highly promising areas of energy science and technology from early stages of research to the point that the risk level will be low enough for industry to consider demonstration and deployment strategies. As such, the Energy Innovation Hub must develop and conduct research according to a comprehensive project plan that includes well-defined five-year goal(s), substantive measurable scientific and technical milestones, key decision points, and alternate strategies to achieve those milestones that fall on the critical path to success.

Research Integration and Coordination

The applicant should describe plans for integrating the results of its fundamental research and technology development with other basic and applied R&D activities supported by the Department, including the work conducted at other Energy Innovation Hubs and Energy Frontier Research Centers. The Hub may require research and technology capabilities that are beyond the scope of the applicant's skills and resources; if so, the application should demonstrate plans for

obtaining these additional capabilities, including collaboration with outside scientists. In the course of pursuing a focused project by the Hub, it is likely (and desirable) that new avenues of basic and applied R&D will be discovered. To the extent that such new opportunities diverge from the Hub's primary mission, these new opportunities should be developed separately as potential candidates for support from other programs within or outside of the Department.

Collaboration with Industry

The Hub is expected to foster and encourage robust interaction with private industry beyond the scope of R&D directly funded through this FOA. The interactions should aim at accelerating technological innovation and reducing the barriers to movement of new technologies to the marketplace. Examples of this type of activity include (but are not limited to) industry-sponsored research partnerships, research personnel exchanges, industry-sponsored post-doctoral or graduate fellowships, and industry-sponsored seminars and conferences. The applicant is encouraged to provide information regarding its plans to create a research environment that promotes collaboration with industry to enable organizational cognizance of industry readiness, technology transfer, and eventual market penetration.

Other Considerations

Use and leverage of existing facilities, including the Department's user facilities, is encouraged by the Hub. DOE user facilities (for example at <http://science.energy.gov/user-facilities/>) including light sources, neutron scattering sources, nanoscale science, research centers, advanced computational facilities, and other specialized user facilities, are considered foundational resources for a vast range of the scientific user community. As such, these existing facilities are expected to serve as resources for the Hub.

RESEARCH FOCUS: FUELS FROM SUNLIGHT

Nature can effectively convert sunlight into energy-rich chemical fuels using the abundant feedstocks of water and carbon dioxide. All fuels used today to power vehicles and create electricity, whether from fossil or biomass resources, are ultimately derived from photosynthesis. While biofuels are renewable resources that avoid the environmental consequences of burning the sequestered carbon of fossil fuels, their scalability and sustainability are ongoing issues. Furthermore, the current overall energy efficiency of converting sunlight to plant material and then converting biomass into fuels is low.

The natural photosynthetic apparatus is a remarkable machine, but plants and photosynthetic microbes were not designed to meet human energy needs – much of the energy captured from the sun is necessarily devoted to the life processes of the plants. Imagine the potential energy benefits if we could generate fuels directly from sunlight, carbon dioxide, and water in a manner analogous to the natural system, but without the need to maintain life processes. The impact of replacing fossil fuels with fuels generated directly by sunlight would be immediate and revolutionary.

This FOA solicits a renewal application for the existing Fuels from Sunlight Hub. The renewal application must be submitted by the prime awardee of the existing Fuels from Sunlight Hub. In its initial award period, the lead institution made progress both in fundamental research and in prototype development for a solar fuel generation system. Building on these efforts, the renewal project should address the R&D needed for efficient, sustainable and scalable photochemical reduction of carbon dioxide. All aspects of discovery research – knowledge, materials, and components – should be advanced. Research targeted solely on hydrogen production should be de-emphasized. The renewal project should also include the design and development of test-bed prototypes as appropriate to demonstrate the capability of new concepts, components, and materials at their respective stages of technical readiness.

Critical issues for the production of fuels from sunlight include:

- (1) *Understanding and designing catalytic complexes or solids that generate chemical fuel from carbon dioxide and water.* This research would necessarily be coordinated with complementary efforts to comprehend and design other essential elements required for the overall conversion of solar energy into chemical fuels. These include solar photon capture, energy transfer, charge separation, and electron transport. A fundamental concern is the design and discovery of materials that will be cost effective and sustainable in the future economy.
- (2) *Integration of all essential elements from light capture to fuel formation into an effective solar fuel generation system.* This would require research and methodology that seek to understand complex issues of the system as an operating unit. Unlike natural photosynthesis, successful systems within the scope of this FOA should function efficiently at full solar flux; hence, the efficacy of system components should be evaluated in consideration of such a demanding environment. Expertise in complex systems engineering will be required to affect this integration.
- (3) *Pragmatic evaluation of the solar fuel system under development.* While a robust solar fuels industry does not presently exist for deployment of resulting technologies, the applicant should have the capacity to determine the practicality of a solar fuel system as a prototype and as a potential product in the marketplace. Guidance and input from industry will be an essential aspect of this evaluation.

More detailed information regarding research needs for the production of fuels from sunlight can be found in two of the DOE Basic Research Needs workshop reports: *Basic Research Needs for Solar Energy Utilization* and *Basic Research Needs: Catalysis for Energy*. In addition, the conversion of sunlight into chemical fuels requires significant progress in meeting the scientific grand challenges described in the BESAC report, *Directing Matter and Energy: Five Challenges for Science and the Imagination*. All of these reports can be found at:

<http://science.energy.gov/bes/news-and-resources/reports/>.

Section II – AWARD INFORMATION

A. TYPE OF AWARD INSTRUMENT

DOE may award a field work authorization, an interagency agreement, or a cooperative agreement under this FOA. The successful lead applicant will be awarded a cooperative agreement. DOE/NNSA National Laboratory contractors participating as team members will be funded under DOE field work authorizations or other appropriate instruments. Non-DOE/NNSA Federal agencies and their Federally Funded Research and Development Center (FFRDC) contractors participating as team members will be funded under interagency agreements.

B. ESTIMATED FUNDING

The Hub may be funded up to \$15 million per year for up to five years, pending availability of funds. Funding for the award and all 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.

DOE is under no obligation to pay for any costs associated with preparation or submission of applications. DOE reserves the right to fund, in whole or in part, any, all, or none of the project proposed in the application submitted in response to this FOA.

C. MAXIMUM AND MINIMUM AWARD SIZE

Ceiling

The maximum amount for an individual award made under this FOA: \$75 million for a five-year project period.

Floor

The minimum amount for an individual award made under this FOA: None.

D. EXPECTED NUMBER OF AWARDS

DOE anticipates making one award under this FOA.

E. ANTICIPATED AWARD SIZE

DOE anticipates that a maximum of one award will be issued for up to \$15 million per year for up to five years.

F. PERIOD OF PERFORMANCE

A cooperative agreement award is 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.

Any renewal award resulting from this FOA will be the final renewal to the existing Energy Innovation Hub – Fuels from Sunlight award.

G. TYPE OF APPLICATION

DOE will only accept one renewal application under this FOA and, if awarded, this will serve as the renewal.

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

For the cooperative agreement, the value of, and funding for, a DOE/NNSA National Laboratory contractor, a non-DOE/NNSA 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 DOE/NNSA National Laboratory contractors through DOE field work authorizations or other appropriate instruments and will fund non-DOE/NNSA FFRDC contractors and other Federal agencies through interagency agreements in accordance with the Economy Act, 31 U.S.C. 1535, or other statutory authority.

I. RESPONSIBILITY

The successful prime applicant/awardee/lead organization/lead institution 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 institution and any team member and/or subawardee.

If a DOE field work authorization or other appropriate instrument is executed with a DOE/NNSA National Laboratory in support of the prime applicant, all Disputes and Claims will be resolved in accordance with the terms and conditions of the DOE/NNSA National Laboratory's M&O contract, as applicable, in consultation with DOE and the prime awardee.

If an interagency agreement is executed with another Federal agency or its FFRDC contractor in support of the prime applicant, all Disputes and Claims will be resolved in accordance with the terms and conditions of the interagency agreement in consultation with DOE and the prime awardee.

Section III – ELIGIBILITY INFORMATION

A. ELIGIBLE APPLICANT

The prime applicant must be the prime awardee of the existing Fuels from Sunlight Hub. 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.

Under 10 CFR 600.6 Eligibility, DOE may restrict the eligibility of applicants to its Funding Opportunity Announcements. Further, under 10 CFR 600.6(c)(1), DOE may award a noncompetitive agreement if: “(1) The activity to be funded is necessary to the satisfactory completion of, or is a continuation or renewal of, an activity presently being funded by DOE or another Federal agency, and for which competition for support would have a significant adverse effect on continuity or completion of the activity.” DOE is restricting the eligibility of the prime applicant of this FOA to the prime awardee of the existing Fuels from Sunlight Hub because DOE anticipates that the application submitted under this FOA will result in an award that is a renewal of an activity presently funded by DOE for which competition for support would have a significant adverse effect on continuity or completion of the activity.

The research progress made by existing Fuels from Sunlight Hub would be impacted by competition. The potential renewal award would build on the considerable foundational studies, unique resources, and effective working relationships developed at the existing Fuels from Sunlight Hub during the first award period. A re-competition to establish a new Fuels from Sunlight Hub would delay progress in this scientific area and would not be an effective, prudent use of Federal funds given the existing Fuels from Sunlight Hub’s substantial investment in human capital and infrastructure, the long lead time in establishing a fully operational Hub, the development of new unique research tools, and the breadth of the research already completed by the existing Hub.

Team Members

All types of domestic and foreign entities including but not limited to DOE/NNSA National Laboratory contractors and non-DOE/NNSA Federal agencies and their non-DOE/NNSA FFRDC contractors are eligible to serve as team members under the prime applicant. 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 serve as team members.

Team Arrangements

Entities proposing as a team or consortium must designate a lead organization, with strong scientific leadership and a clearly defined central location. A single application must be submitted on behalf of the team members by the lead organization and DOE will enter into a

prime award relationship with the designated lead organization. The lead organization must be the prime awardee of the existing Fuels from Sunlight Hub.

The successful prime applicant/awardee/lead organization/lead institution must perform a greater percentage of the effort than any other institution that is a team member or subawardee.

DOE/NNSA National Laboratory Contractors

DOE/NNSA National Laboratory contractors are eligible to apply for funding as team members under this announcement if their cognizant Contracting Officer provides written authorization and this authorization is submitted with the application as part of the Budget for the DOE/NNSA National Laboratory Contractor File. If a DOE/NNSA National Laboratory contractor is proposed as a team member, the proposed work will be authorized under the DOE field work authorization system and performed under the laboratory contractor's Management and Operating (M&O) contract. 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.”

If the application submitted by the lead organization does not include the required cognizant Contracting Officer written authorization as specified above, the documents provided by the DOE/NNSA National Laboratory contractor may be deemed non-responsive and the DOE/NNSA National Laboratory contractor may be rejected as a team member without further review.

Non-DOE/NNSA Federally Funded Research and Development Center (FFRDC) Contractors

Non-DOE/NNSA FFRDC contractors may be proposed as team members under this announcement subject to the following guidelines: 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 must 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 Federal Acquisition Regulation (FAR) Part 17.5.

B. COST SHARING

For-profit entities are required to provide a minimum of 20% cost share for both Basic and Applied Research and Development (R&D) and Technology Demonstration and Deployment (D&D) activities. This cost share will be based on the portion of the Hub budget proposed by each for-profit entity. For all other non-Federal entities, cost sharing is encouraged, but not required for R&D, and a minimum of 20% is required for D&D activities. The cost share for

D&D activities will be based on the portion of the Hub budget proposed by each entity. All entities must include required cost share in their proposed budgets. All cost shared funding must come from non-Federal sources unless otherwise permitted by law.

These cost sharing requirements are consistent with EPO Act 2005, Sec. 988. D&D as defined in this FOA falls under the category of “demonstration and commercial application” specified in EPO Act 2005, Sec. 988. However, there is no expectation that the Hub will commercialize the energy technology it develops, but will assist in the deployment of that technology through transfer to industry, which will perform the commercial applications.

DEFINITION OF TERMS

For the purposes of cost sharing, the proposed activities of the Hub are divided into two types, following the definitions put forth below:

- Basic and applied research and development (R&D)
- Technology demonstration and deployment (D&D)

This information is primarily derived from the article, Energy-Technology Innovation, by Kelly Sims Gallagher, John P. Holdren, and Ambuj D. Sagar, which was published in the *Annual Review of Environment and Resources*, Vol. 31: 193-237 (2006).

Energy Technologies

The term *energy technology* refers to the means of locating, assessing, harvesting, transporting, processing, and transforming the primary energy forms found in nature (e.g., sunlight, biomass, crude petroleum, coal, uranium-bearing rocks) to yield either direct energy services (e.g., heat from fuel wood or coal) or secondary forms more convenient for human use (e.g., charcoal, gasoline, electricity). Also included under the heading of energy technology is the means of distributing secondary forms to their end users and the means of converting these forms to energy services (e.g., electricity to light and refrigeration, electricity and gasoline to motive power).

A distinction is often made between *energy-supply technologies*, meaning those used to bring energy forms to a point of final use, and *energy end-use technologies*, meaning those applied at this point of use to convert an energy form to a service such as light or motive power.

Research and Development (R&D)

Research includes basic and fundamental research that yields discoveries with potential application to the improvement of energy technologies, and applied research and

development that is directed at the invention or improvement of specific energy technologies. Development is aimed at converting the fruits of fundamental and applied research into working prototypes of new or improved technologies.

The Office of Management and Budget (OMB) provides the following federal definitions of basic research, applied research, and development in OMB Circular No. A-11 (2006, Section 84, pp 8-9). Federal expenditures in the conduct of R&D are subcategorized by these three definitions. R&D facilities and major equipment are also reported by OMB as a separate subcategory.

- **Basic research** is defined as systematic study directed toward fuller knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications towards processes or products in mind. Basic research, however, may include activities with broad applications in mind.
- **Applied research** is defined as systematic study to gain knowledge or understanding necessary to determine the means by which a recognized and specific need may be met.
- **Development** is defined as systematic application of knowledge or understanding, directed toward the production of useful materials, devices, and systems or methods, including design, development, and improvement of prototypes and new processes to meet specific requirements.

Demonstration and Deployment (D&D)

The staged model of innovation as a linear, sequential process beginning with R&D and proceeding to demonstration and finally commercialization is generally refined to capture some two-way or iterative interactions whereby learning in one phase is linked to the other phases. An even more integrated model of innovation merges the research, development, demonstration, and deployment (RDD&D) phases by designed interactions between each activity so that no work occurs in isolation. Nonetheless, it is useful to understand and define the stages separately.

The Office of Management and Budget (OMB) does not provide federal definitions of demonstration and deployment in OMB Circular No. A-11. Federal expenditures in the conduct of demonstration activities are usually (but not always) categorized as R&D depending on the nature of the activities. Deployment activities are categorized as non-R&D.

- Demonstration activities test scalability and preliminary operating issues to help bring promising technologies closer to market in order to increase chances of adoption by manufacturers. Demonstration projects test new technologies in conditions that approximate real-world applications in order to gain economic and performance data that improve technologies and enhance their potential for commercialization.

- Deployment is market support that promotes the adoption of a new technology through greater visibility and familiarization. Even if the technological feasibility was proven during the demonstration phase, there may be a variety of barriers that make it difficult for the new technology to compete or gain acceptance in the market and thus achieve wide-scale adoption. Deployment activities that help support market penetration can help a new technology reach a tipping point into widespread commercialization. Deployment activities can take many forms, including education, marketing, communication, market research, and other non-R&D market conditioning activities, as well as incentives for adoption.

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 <http://www.grants.gov>, select “Apply for Grants”, and then select “Download Application Package.” Enter the CFDA number (81.049) and/or the funding opportunity number (DE-FOA-0001205) shown on the cover of this FOA and then follow the prompts to download the application package.

Applications submitted through www.FedConnect.net will not be accepted.

B. CONTENT AND APPLICATION FORMS

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 in Adobe Portable Document Format (PDF) unless otherwise specified in this announcement.

Personally Identifiable Information: Do not include sensitive personally identifiable information such as a Social Security Number or date of birth anywhere within the application package, including within any of the appendices.

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 <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms> under Certifications and Assurances.

2. Research and Related Other Project Information

Complete questions 1 through 6.

Note concerning question 4.a.

DOE understands the phrase in field 4.a., “potential impact on the environment,” to apply if the work described in the application could potentially have any of the impacts listed in (1) through (5) of [10 CFR PART 1021, Appendix B, Conditions that Are Integral Elements of the Classes of Action](#). See Subpart D—Typical Classes of Actions, Appendix B to Subpart D of Part 1021—Categorical Exclusions Applicable to Specific Agency Actions, B. Conditions that Are Integral Elements of the Classes of Actions in Appendix B. (Click on the preceding link to go to Appendix B or navigate from the website: <http://www.gpo.gov/fdsys/browse/collectionCfr.action?collectionCode=CFR>)

Additionally, for actions which could have any other high consequence impacts to the environment or have any possibility for high consequence 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 materials or exposure to any radioactive materials beyond de minimis levels), applicants should indicate “potential impact on the environment.”

Lastly, if there would be 1) 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 “potential impact on the environment.”

Note: If question 4.a. is answered “yes”, the applicant will be required to complete the form entitled “National Environmental Policy Act (NEPA) Environmental Evaluation Notification Form” (SC-CH Form 560) upon request by the contracting officer.

a. Attach Files:

The file attachments 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. It must be a self-contained document. Provide the name of the applicant, the project title, the Hub Director, the Principal Investigators 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).

The project summary must not exceed 1 page when printed using standard 8.5” by 11” paper with 1” margins (top, bottom, left and right) with font not smaller than Times New Roman 12 point. To attach a Project Summary/Abstract, click “Add Attachment.”

- 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 Project Narrative should begin with a cover page that will not count toward the Project Narrative page limitation. Include the following items:

- The project title:
- Prime Applicant/Lead Institution:
- Street Address/City/State/Zip:

- Postal Address:
- Lead PI (Hub Director) name, telephone number, email:
- Administrative Point of Contact name, telephone number, email:
- Funding Opportunity FOA Number: DE-FOA-0001205
- DOE/Office of Science Program Office: Basic Energy Sciences
- DOE/Office of Science Program Office Technical Contact: Dr. Barbara Gail McLean
- DOE Award Number: DE-SCXXXXXX

On a separate page, as a supplement to the cover page, include the following summary budget table containing information for all partner institutions:

Table 1: Summary budget information for all partner institutions

Institution Name	Year 1 Budget	Year 2 Budget	Year 3 Budget	Year 4 Budget	Year 5 Budget	Total Budget
Total Budget						

Provide the total costs (\$ in thousands) of the budget request in each year for each institution and totals for all rows and columns.

PROJECT NARRATIVE (FIELD 8 ON THE FORM)

The Project Narrative **must not exceed 100 pages** of technical information, including charts, graphs, maps, photographs, and other pictorial presentations, when printed using standard 8.5” by 11” paper with 1 inch margins (top, bottom, left, and right). The font must not be smaller than Times New Roman 12 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, Table of Contents, Budget Page(s), Budget Justification, Biographical Material, Publications & References, and Appendices, each of which may have its own page limit.

Do not include any Internet addresses/Uniform Resource Locators (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.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. The Project Narrative should include the following four components:

I. Overview of the Project Plan. This section **must not exceed five pages** and should provide a concise overview summarizing the vision for the proposed Hub including:

- Clearly stated five-year R&D goal(s) of the Hub, including metrics to evaluate success relative to the goal(s);

- The strategy for operating the Hub, including an overview of Hub organization and management;
- How the R&D components of the Hub will be integrated into an effective whole; and
- How the R&D program will address critical research needs in the Hub's topical area.

II. Organization and Management Plan. This section, which must be consistent with the Project Plan in Appendix 8, must provide a clear and substantive plan for the organization and management of the proposed Hub, including:

- A comprehensive management plan for a world-leading program that encourages high-risk, high-reward R&D and encourages synergy and cohesion among investigators by infusing a culture of empowered central research management throughout the Hub;
- An organizational structure that delineates the roles and responsibilities of senior/key personnel and describes the means of providing external oversight and guidance for scientific and technical direction and approval 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 and experience of the senior/key personnel in the research disciplines needed for project success including any plans for collaboration with outside scientists funded by the Department;
- An assessment of the availability of the Hub Director and senior/key personnel, including analysis of their potential involvement in other major projects;
- A description of the expertise and experience of other current relevant scientific and technical personnel such as senior staff;
- A description of the major needs and recruiting strategy for any additional scientific and technical personnel including new senior staff, students, and postdocs;
- A description of how the Hub will manage its work across the complete spectrum of basic and applied R&D, and how it will accelerate technological innovation, including institutional experience/expertise in these activities and any proposed industrial partnerships beyond the Hub participants;
- A description of the performance monitoring systems to be utilized to ensure the Hub operates within the proposed scope, cost, and schedule;
- A clear commitment to the use of state-of-the-art technology and frequent virtual meetings to enable meaningful long distance collaboration as needed;
- A description of the planned approach to information sharing and data management;
- A description of any training and/or outreach program(s) that provides opportunities to inspire, train, and support leading scientists and engineers of the future and supports energy awareness within the technical community;
- A description of the roles and responsibilities and prospective membership of one or more external advisory committee(s), which should include representation from industry, academia, and federal laboratories; and
- A discussion of how the proposed research relates to existing and planned research programs at the lead institution.

III. Progress Report. Provide a summary of the research progress made by the Fuels from Sunlight Hub since its initiation.

- Provide an overview of the high-level goal(s) and deliverables for the original project, and identify the gaps that the project was intended to fill;
- Provide a description of technical progress toward the goal(s) of the original project, concisely describing the milestones and the progress toward them. Research accomplishments important for reaching the project goal(s) but not part of the original project milestones may be included; and
- Describe how the Hub management has ensured the R&D remains focused, including steps taken to ensure progress and redirect efforts where necessary. Illustrate how the research projects are integrated into a collaborative, synergistic overall program including how projects and sub-projects are coordinated; how synergies among researchers are built and maintained; and how external collaborators are strategically integrated into the overall program.

IV. Proposed Program of R&D. Provide detailed information regarding the program proposed for the Hub. This section, which may be organized into subtasks and must be consistent with the Project Plan in Appendix 8, must clearly describe the proposed R&D 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 current Hub research to that conducted outside of the Hub, and specifically identify the gaps in science and technology that the Hub is intended to fill;
- State concisely the importance of the R&D described in the application, how the proposed program lies at the forefront in the Hub's topical area, and how the proposed program will have an impact on developing innovative new energy technology within the purview of the Hub;
- Provide an account of any preliminary studies (beyond those mentioned in the Progress Report) that may be pertinent to the proposed R&D, 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 R&D that supports experimental and theoretical/computational efforts and develops new approaches in the Hub's research topic;
- Delineate proposed benchmarks, including an explanation as to how the benchmarks will ensure that the program remains focused on the proposed five-year goals and the approach to measuring performance against the stated benchmarks;
- State the proposed approach to rapidly reconfigure R&D thrusts to respond to key scientific challenges and promising developments;
- Outline potential scientific and technical obstacles to achieving the research objectives and the approaches to be used to overcome them;
- Describe the role and intellectual contribution of the Hub Director, each Principal Investigator, and each senior/key person in the application;
- Delineate plans for external collaborations and partnerships including utilization of DOE user facilities;

- Briefly outline the resources available to the proposed Hub including access to existing research space, instrumentation, and facilities at the lead institution and its partners;
- Delineate plans to coordinate multiple R&D efforts, integrating subsystems into a prototype energy technology system; and
- Provide plans to accelerate technological innovation and reduce the barriers to movement of new technologies to the marketplace.

APPENDIX 1: BIOGRAPHICAL SKETCH

Provide a biographical sketch for the Project Director/Principal Investigator (PD/PI) and each Senior/Key Personnel listed in Section A on the R&R Budget form.

- 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; and
- The biographical information (curriculum vitae) for each person **should not exceed 2 pages** when printed on 8.5” by 11” paper with 1 inch margins (top, bottom, left, and right) with font not smaller than 11 point and must include:

Education and Training: Provide institution, major/area, degree and year for undergraduate, graduate and postdoctoral training.

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.

Synergistic Activities: List no more than five professional and scholarly activities related to the effort proposed.

Identification of Potential Conflicts of Interest or Bias in Selection of Reviewers: 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 Principal Investigator 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.”; and

- **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 (PII): Do not include sensitive personally identifiable information such as a Social Security Number or date of birth.

- Provide “BIOGRAPHICAL SKETCH” as Appendix 1 to the Project Narrative within the same file. Do not attach a separate file; and
- This appendix will not count in the Project Narrative page limitation.

APPENDIX 2: CURRENT AND PENDING SUPPORT

Provide a list of all current and pending support (both Federal and non-Federal) for the Project Director/Principal Investigator(s) (PD/PI) and senior/key persons, including subawardees, for ongoing projects and pending applications. For each organization providing support, show the total award amount for the entire award period (including indirect costs) and the number of person-months per year to be devoted to the project by the senior/key person. 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.

- Provide “CURRENT AND PENDING SUPPORT” as Appendix 2 to the Project Narrative within the same file. Do not attach a separate file;
- This appendix will not count in the Project Narrative page limitation; and

The Current & Pending template used for the Hub annual science review may be used for this section. The template is located at the end of Section IX - APPENDICES/REFERENCE MATERIAL.

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, a 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.

- Provide “BIBLIOGRAPHY & REFERENCES CITED” as Appendix 3 to the Project Narrative within the same file. Do not attach a separate file; and
- 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.

- Provide “FACILITIES & OTHER RESOURCES” as Appendix 4 to the Project Narrative within the same file. Do not attach a separate file; and
- 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.

- Provide “EQUIPMENT” as Appendix 5 to the Project Narrative within the same file. Do not attach a separate file; and
- This appendix will not count in the Project Narrative page limitation.

APPENDIX 6: DATA MANAGEMENT PLAN

Provide a data management plan (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 (<http://science.energy.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 Office of Science 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 in the additional guidance from the sponsoring program; and
4. DMPs must protect confidentiality, personal privacy, Personally Identifiable Information, 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 Office of Science research proposal merit review process. The Applicant is encouraged to consult the Office of Science website for further information and suggestions for how to structure a DMP: <http://science.energy.gov/funding-opportunities/digital-data-management/>.

- Provide “DATA MANAGEMENT PLAN” as Appendix 6 to the Project Narrative within the same file. 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

Provide within the application an IP Management Plan (current or updated) 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 Hub. The plan should address title to inventions and other IP among the Hub members. The statutes and policies governing disposition of title to new inventions under Government agreements will be as follows:

- 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;
- 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.;

- 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; and
- The agreement will provide the capability for the Hub 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 Hub, and should include a discussion on the means to distribute the benefits (royalties and equity) after expenses of any licensing among appropriate team members.

The IP Management Plan will be submitted to and reviewed by DOE Field Patent Counsel for appropriateness before formal implementation.

- Provide “INTELLECTUAL PROPERTY (IP) MANAGEMENT PLAN” as Appendix 7 to the Project Narrative within the same file. Do not attach a separate file; and
- This appendix will not count in the Project Narrative page limitation.

APPENDIX 8: PROJECT PLAN

This section should outline as a function of time, year by year, all the major activities in the form of a project plan. The plan should include the major substantive and measurable technical milestones that are on the critical path to the goal(s) of the project, as well as clear metrics to evaluate success. To achieve particularly critical milestones or mitigate higher risk elements of the project, the plan should include multiple alternate strategies and key decision points. The project plan should be consistent with the program proposed in the Project Narrative.

The successful applicant will be expected to employ standard project management discipline and must use this project timetable to report progress. The plan should describe internal review mechanism(s) that will be used to track and measure progress. It should also describe a strategy to periodically evaluate the project plan and define the conditions under which the plan will be revised.

- Provide “PROJECT PLAN” as Appendix 8 to the Project Narrative within the same file. Do not attach a separate file; and
- This appendix will not count in the Project Narrative page limitation.

APPENDIX 9: PUBLICATION LIST

Include a list of all archival journal publications that resulted from prior Hub-funded research. This list must be separated into two sections: 1) publications that resulted solely from Hub support; and 2) publications that resulted from work supported by the Hub and other funding sources. For the latter, briefly describe the portion of the work that was supported by the Hub. Note that “solely from Hub support” includes publications that made use of multi-user facilities unless the user facility staff were research participants beyond the “normal” range of engagement of user facility staff in the research (examples of multi-user facilities include but are not limited to DOE Office of Science user facilities (<http://science.energy.gov/user-facilities/>) and facilities funded by the National Science Foundation such as the Materials Research Science and

Engineering Centers). In addition, publications can be listed as a “solely supported Hub publication” if the only “other support” is for graduate students and postdoctoral staff who are supported on a fellowship that was awarded to them as an individual.

- Provide “PUBLICATION LIST” as Appendix 9 to the Project Narrative within the same file. Do not attach a separate file; and
- This appendix will not count in the Project Narrative page limitation.

APPENDIX 10A: HUB DIRECTOR STATEMENT OF EMPLOYMENT

For the Hub Director, submit documentation stating that the proposed Hub 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 a renewal award under this Hub. The statement of employment, or letter of commitment to accept employment, is limited to one page and must be signed by both the Hub Director and an authorized representative of the prime applicant.

- Provide “HUB DIRECTOR STATEMENT OF EMPLOYMENT” as Appendix 10A to the Project Narrative within the same file. Do not attach a separate file; and
- This appendix will not count in the Project Narrative page limitation.

APPENDIX 10B: INDIVIDUAL LETTERS OF COMMITMENT

For each senior/key person, including the Hub 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, for the renewal award period. A commitment of no less than 80% of a full time position time is expected for the Hub Director. Multiple personnel representing the same institution may sign the same letter of commitment, as applicable. Each letter of commitment is limited to one page.

- Provide “INDIVIDUAL LETTERS OF COMMITMENT” as Appendix 10B to the Project Narrative within the same file. Do not attach a separate file; and
- This appendix will not count in the Project Narrative page limitation.

APPENDIX 11: 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.

- Provide “ORGANIZATIONAL LETTERS OF COMMITMENT” as Appendix 11 to the Project Narrative within the same file. Do not attach a separate file; and
- This appendix will not count in the Project Narrative page limitation.

APPENDIX 12: ENVIRONMENT, SAFETY AND HEALTH (ES&H) AND SECURITY APPROACHES

Provide information on the approach for:

- handling environment, safety and health, and security considerations during the work planning and control process and assuring environmental compliance during Hub research and development activities;
 - procedures for ensuring security, including access to data stored on Hub 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 Hub and proposed schedule for compliance with environmental permits and NEPA requirements.
- Provide “ENVIRONMENT, SAFETY AND HEALTH (ES&H) AND SECURITY APPROACHES” as Appendix 12 to the Project Narrative within the same file. Do not attach a separate file; and
 - This appendix will not count in the Project Narrative page limitation.

APPENDIX 13: STATEMENT OF CONFLICTS OF INTEREST

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, the applicant shall also submit for approval by the DOE Contracting Officer, a new or updated Conflict of Interest Management Plan describing the applicant’s approach to managing conflicts of interest

- Provide “STATEMENT OF CONFLICTS OF INTEREST” as Appendix 14 to the Project Narrative within the same file. Do not attach a separate file; and
- This appendix will not count in the Project Narrative page limitation.

APPENDIX 14: OTHER ATTACHMENTS

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. Do not use this appendix to circumvent the page limitations of the application. Reviewers will not consider information in this appendix that was included to avoid the page limitations of the application.

- Provide “OTHER ATTACHMENTS” as Appendix 13 to the Project Narrative within the same file. Do not attach a separate file; and
- This appendix will not count in the Project Narrative page limitation.

Do not attach any of the requested appendices described above as files for fields 9, 10, 11,

or 12. 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.

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, F).

BUDGET FIELDS

Section A Senior/Key Person	For each Senior/Key Person, enter the requested information. List personnel, base salary, and 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 article of tangible nonexpendable personal property that has a useful life of more than 1 year and an acquisition cost per unit that equals or exceeds \$5,000 or the capitalization threshold established by the organization, whichever is less. List each 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. Indicate the basis for the cost estimate (quotes from vendors or suppliers, past experience of similar items, or some other basis).
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

	<p>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.</p>
<p>Section E Participant/Trainee Support Costs</p>	<p>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).</p>
<p>Section F Other Direct Costs</p>	<ul style="list-style-type: none"> • Materials and Supplies: 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). • Publication Costs: 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). • Consultant Services: 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). • ADP/Computer Services: 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 of similar items, or some other basis).

	<ul style="list-style-type: none"> • Subawards/Consortium/Contractual Costs: Enter total costs for all subawards/consortium organizations and other contractual costs proposed for the project. In the budget justification, justify the details. • Equipment or Facility Rental/User Fees: 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 of similar items, or some other basis). • Alterations and Renovations: 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, shielding, or air conditioning. Where applicable, provide the square footage and costs. • Other: 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.
Section G Direct Costs	This represents Total Direct Costs (Sections A through F)
Section H Other Indirect Costs	Enter the Indirect Cost information 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 K ON THE FORM)

Provide the required supporting information for the following costs (See R&R Budget instructions): equipment; domestic and foreign travel; participant/trainees; materials and supplies; publication; consultant services; ADP/computer services; subaward/consortium/contractual; equipment or facility rental/user fees; alterations and renovations; and indirect cost type. Provide any other information you wish to submit to justify your budget request. **Attach a single budget justification file for the entire project period in field K.** The file automatically carries over to each budget year.

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

Budgets for Team Members/Subawardees: You must provide a separate R&R budget and budget justification for each team member/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 e-mail it to each subawardee that is required to submit a separate budget. After the subawardee has e-mailed its completed budget back to you, attach it to one of the blocks provided on the form. Use up to 10 letters of the team member’s/subawardee’s

name (plus.pdf) as the file name (e.g., ucla.pdf or energyres.pdf).

If the project involves more team members/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 K.

Ensure that any files received from team members/subawardees are the PDF files extracted from the SUBAWARD BUDGET ATTACHMENT(S) FORM. An error will occur if a team member/subawardee sends a prime applicant a budget form that was not extracted from the application package.

If a teaming arrangement is proposed for a DOE/NNSA National Laboratory Contractor, then the applicant must also submit the appropriate Field Work Proposal and cognizant Federal Contracting Officer authorization as described in “Budget for DOE/NNSA National Laboratory Contractor” below. If a teaming arrangement is proposed for a non-DOE/NNSA FFRDC contractor, the required authorization by the cognizant Contracting Officer for the Federal sponsoring agency, as required in Section III.A. must be submitted. Use up to 10 letters of the non-DOE/NNSA FFRDC contractor name as the file name and attach to the R&R Other Project Information form in Field 12.

Budget for DOE/NNSA National Laboratory Contractor, if applicable: If a DOE/NNSA National Laboratory contractor is to perform any portion of the work as a team member, the DOE/NNSA National Laboratory must provide a DOE Field Work Proposal in accordance with the requirements in DOE Order 412.1A Admin Chg 1, Work Authorization System. This order and a sample of the DOE Field Work Proposal (FWP) form are available at

<https://www.directives.doe.gov/directives-documents/400-series/0412.1-BOrder-a-admchg1> .

For purposes of satisfying this requirement, the applicant is required to submit the DOE Field Work Proposal (FWP) face and budget pages (pages 1 and 2 of the sample form) with the application as part of the Budget for DOE/NNSA National Laboratory Contractor file.

Furthermore, the information requested in blocks 1. through 15. and 17. through 19. of the sample FWP must be furnished with the application. The remainder of the information requested in blocks 16, 20, and 21. of the sample form will be required to be submitted through the DOE Work Authorization System by the successful applicant after selection.

In addition, include the required cognizant Federal Contracting Officer approval authorizing the participation of the DOE/NNSA National Laboratory as described in Section III.A. This information is required in addition to the budgetary information requested herein (R&R Budget, R&R Subaward Budget, and Budget Justification, as applicable). Use up to 10 letters of the DOE/NNSA National Laboratory name as the file name and attach to the R&R Other Project Information form in Field 12.

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. Summary of Required Forms/Files

Your application must include the following items:

Name of Document	Format	Attach to
SF 424 (R&R)	Form	N/A
RESEARCH AND RELATED Other Project Information	Form	N/A
Project Summary/Abstract	PDF	Field 7
Project Narrative, including required appendices	PDF	Field 8
Cognizant Federal Contracting Officer Approval; if applicable	PDF	Field 12
RESEARCH & RELATED BUDGET	Form	N/A
Budget Justification	PDF	Field K
R&R SUBAWARD BUDGET ATTACHMENTS(S) FORM	Form	N/A
Subawardee Budget Justification	PDF	Field K
PROJECT/PERFORMANCE SITE LOCATION(S)	Form	N/A
*SF-LLL Disclosure of Lobbying Activities, if applicable	Form	N/A

*Applicability: 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 Federal 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 SF-LLL, "Disclosure Form to Report Lobbying".

C. SUBMISSIONS FROM SUCCESSFUL APPLICANT

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

D. SUBMISSION DATES AND TIMES

1. Application Due Date

December 29, 2014 at 11:59 PM Eastern Time

You are encouraged to transmit your application well before the deadline.

2. Late Submissions

DOE has only accepted late submissions when applicants have been unable to make timely submissions because of DOE/national technological disruptions or significant natural disasters. Other circumstances do not justify late submissions. Unacceptable justifications include, but are not limited to, 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.

Applicant must contact the DOE Contracting Officer listed in Section VII.B. of this Funding Opportunity Announcement to request acceptance of a late submission.

Requests for late submission are only rarely approved.

E. INTERGOVERNMENTAL REVIEW

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

F. FUNDING RESTRICTIONS

Funding for the Hub renewal award 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 new construction (including new buildings or additions to existing buildings) will not be allowed in this Renewal of the Hub award.

Cost Principles: Costs must be allowable, allocable and reasonable in accordance with the

applicable Federal cost principles referenced in 10 CFR 600. The cost principles for commercial organizations are in FAR Part 31 and DEAR Parts 931 and 970.31. For awards issued after December 26, 2014, the Financial Assistance regulations contained in 2 CFR 200 will be codified by Part IX of 2 CFR (DOE's new financial assistance regulations, which succeed 10 CFR 600).

Pre-award Costs: Recipients may charge to an award resulting from this announcement pre-award costs that were incurred within the ninety (90) calendar day period immediately preceding the effective date of the award, if the costs are allowable in accordance with the applicable Federal cost principles referenced in 10 CFR 600. 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.

G. OTHER SUBMISSION AND REGISTRATION REQUIREMENTS

1. Where to Submit

The application must be submitted through Grants.gov to be considered for award.

Submit the electronic application through the "Apply for Grants" function at 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.

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

2. Registration Process

(See also "REGISTRATIONS" on pages i to iv of this Funding Opportunity Announcement.)

ONE-TIME REGISTRATION PROCESS

You must complete the one-time registration process (all steps) before you can submit your first application through www.grants.gov. (See <http://www.grants.gov/web/grants/applicants/grant-application-process.html>). We recommend that you start this process at least six weeks before the application due date. Use the Grants.gov Organizational Registration Checklists at <http://www.grants.gov/web/grants/applicants/organization-registration.html> to guide you through the process. IMPORTANT: During the SAM registration process, you will be asked to designate an E-Business Point of Contact (EBIZ POC). The EBIZ POC must obtain a special password called "Marketing Partner Identification Number" (MPIN). When you have completed the process, you should call the Grants.gov Helpdesk at 1-800-518-4726 to verify that you have completed the final step (i.e., Grants.gov registration).

3. Application Receipt Notices

After an application is submitted, the Authorized Organization Representative (AOR) will receive a series of four e-mails. It is extremely important that the AOR watch for and save each of the emails. It may take up to two (2) business days from application submission to receipt of email Number 2. The titles of the four e-mails are:

Number 1 - Grants.gov Submission Receipt Number

Number 2 - Grants.gov Submission Validation Receipt for Application Number

Number 3 - Grants.gov Grantor Agency Retrieval Receipt for Application Number

Number 4 - Grants.gov Agency Tracking Number Assignment for Application Number

4. Viewing Submitted Application

Each Grants.gov application submitted to the DOE Office of Science (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 Principal Investigator (Block 14), Authorized Representative (Block 19), and Point of Contact (Block 5). In PAMS notation, applications are known as proposals, the Principal Investigator 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 Office of Science 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/AO, 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 Office of Science 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 Office of Science 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. All submission and inquiries about this Funding Opportunity Announcement should reference FOA number **DE-FOA-0001205**.

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 funding opportunity announcement; and (5) the proposed project is not duplicative of programmatic work. Failure to provide any information required by the FOA may cause an application to fail the initial review. DOE reserves the right to contact the applicant to request the correction of minor omissions if an application is otherwise responsive to the requirements and objectives of FOA.

If the application fails to pass the initial review, it will not be forwarded for merit review and will be rejected without further review.

2. Merit Review Criteria

The application will be subjected to scientific merit review (peer review) and will be evaluated against the following criteria, the first six of which will be weighted more heavily than the final two. The first six criteria are of equal value with each other. The final two criteria are of equal value with each other. The questions after each are intended to guide the reviewers; reviewers will not be required to provide written responses to each of these questions.

- Scientific and/or technical merit of the project;
- Strength of the Hub leadership;
- Appropriateness of the proposed method or approach;
- Strength of the Hub management plan;
- Competency of the applicant's personnel and adequacy of the proposed resources;
- Synergy among the researchers and integration of research and development (R&D);
- Reasonableness and appropriateness of the proposed budget; and
- Environment, safety and health and security considerations

Scientific and/or technical merit of the project

- Will the Hub research program provide R&D that is in the forefront in the research area pertinent to the Hub?
- Have the scientific results and progress made by the Hub since it was initiated in 2010 been appropriate for a Hub-scale effort and had significant impact on the field(s) in which the Hub is operating?
- Is the proposed program for the Hub appropriately focused on the research topic specified in the FOA (building on results from the first award to conduct R&D to enable efficient, sustainable and scalable photochemical reduction of carbon dioxide)?

- Is the proposed program well-balanced and comprehensive and does it, as needed, support experimental, theoretical/computational efforts and develop new capabilities and approaches?
- Does the project plan, including major technical milestones, ensure the research remains focused on one or more well-defined project goals?
- Is the applicant likely to overcome key scientific and technical challenges and be able to shift research directions in response to promising developments?
- Is the Data Management Plan suitable for the proposed research and to what extent does it support the validation of research results?

Strength of the Hub leadership

- Is the Hub led by a full-time Director (at least 80% effort of a full time position) who has appropriate project management skills to oversee all Hub activities? Does the Director have experience in leading or coordinating projects of comparable complexity?
- Does the Director have sufficient technical expertise in the subject matter of the project to make informed decisions about its scientific goals and approach? Is that expertise sufficiently broad to supervise all of the proposed research activities?
- Do the Director and the leadership team engender confidence that key decision points will be appropriately addressed and research efforts and resources will be redirected when necessary?
- Do other members of the senior leadership team possess complementary strengths in specific project management skills and technical/scientific areas to those of the Director?

Appropriateness of the proposed method or approach

- Does the program proposed by the applicant adequately address research needs/gaps in the Hub topical area and is the R&D approach likely to contribute to reaching the proposed short, intermediate, and long term goals?
- Is the approach to measuring performance against the stated benchmarks and deliverables adequate and appropriate?
- Does the proposed approach allow rapid reconfiguration of R&D thrusts to respond to key scientific challenges and promising developments?
- Are the plans for external collaborations and partnerships reasonable and appropriate, including utilization of DOE user facilities?
- Does the program present opportunities to inspire, train, and support leading scientists of the future and/or provide outreach to the technical community?
- Is the planned approach to information sharing and data management appropriate?

Strength of the Hub management plan

- Does the applicant present a comprehensive management plan for a world-leading program that encourages high-risk/high-reward R&D and encourages synergy and cohesion among investigators by infusing a culture of empowered central research management throughout the Hub?
- Does the applicant present an organizational structure that delineates the roles and responsibilities of senior/key personnel and describes the means of providing external oversight and guidance for scientific and technical direction and approval of the research

program?

- Is there sufficient commitment by the senior/key personnel to the Hub?
- Does the applicant present a plan that defines how it will manage its work across the complete spectrum from basic research through engineering development and how it will foster commercialization of innovative energy technology, including institutional experience/expertise in these activities and industry engagement?
- Is there a clear commitment to the use of state-of-the-art technology and frequent virtual meetings to enable meaningful long distance collaboration as needed?
- Are the roles of external advisory committees adequately described and appropriately staffed?

Competency of the applicant's personnel and adequacy of the proposed resources

- Are the senior/key personnel internationally-recognized scientists that possess cutting-edge expertise in the specific problems to be addressed?
- Is the plan for recruiting additional scientific and technical personnel, including graduate students and postdoctoral researchers where appropriate, reasonable and appropriate?
- Is the proposed access to existing research space, instrumentation and facilities at the host institution and its partners likely to meet the needs of the proposed Hub?

Synergy among the researchers and integration of research and development (R&D)

- Are the elements of the proposed research appropriately integrated, coordinated, and synergistic?
- Is the proposed team of researchers likely to work together in a cohesive and integrated manner? Have they demonstrated their ability to do so in the past?
- Does the project present a coherent plan for the integration of basic research and engineering development that will lead to prototype-scale application of energy technology that would be developed by the Hub?
- Does the applicant present an adequate plan to foster and encourage robust interaction with private industry to accelerate technological innovation and reduce the barriers to movement of new technologies to the marketplace?

Reasonableness and appropriateness of the proposed budget

- Is the requested operating budget for the proposed Hub renewal reasonable for the planned program?
- Are the resources adequately distributed to address the scope and ensure sufficient engagement of key personnel?

Environment, safety and health and security considerations

- Is the approach for handling environmental, safety and health and security considerations appropriate?
- Does the approach assure environmental compliance during Hub R&D activities?
- Do the lead and partner institutions have a strong history of compliance with environment, safety and health requirements?

B. REVIEW AND SELECTION PROCESS

1. Merit Review

If the Application passes the initial review for eligibility and responsiveness to the FOA, it will be subjected to formal merit review and evaluated based on the criteria stated above in Section V.A.2. The merit review process will assist DOE in determining whether to award a renewal of the cooperative agreement with the applicant. The application will be found to have merit if the reviewers do not find any significant weaknesses in the most heavily weighted criteria.

The evaluation process may include consideration of program policy and management factors (see below). 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.

2. Selection

The Selection Official will consider the findings of the Merit Review Panel and the recommendations of Federal officials as well as the following unweighted program policy and management factors:

- Diversity of research activities that will lead to new and expanded options for energy technology under the Hub's purview;
- Integration of the proposed Hub with the other research and development programs in DOE;
- Strategy for developing synergies between this Hub and existing institutional infrastructure and science;
- Potential to become an internationally recognized research enterprise that sets new standards for management of research;
- Total amount of DOE funds available; and
- Applicant's approach to intellectual property and technology transfer as described in its IP Management Plan.

3. Discussions and Award

The Government may enter into discussions with the 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 10 CFR 600 and 10 CFR 605; 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 January 31, 2015. It is expected that a maximum of one award will be made in Fiscal Year 2015.

Section VI - AWARD ADMINISTRATION INFORMATION

A. AWARD NOTICES

1. Notice of Selection

Selected Applicants Notification: DOE will notify the applicant selected for award. This notice of selection is not an authorization to begin performance. (See Section IV. F with respect to the allowability of pre-award costs.)

Non-selected Notification: Should the renewal application not be selected for award, DOE will notify the applicant as promptly as possible. The 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: (1) Special Terms and Conditions; (2) Applicable program regulations at 10 CFR 605; (3) Application as approved by DOE; (4) DOE assistance regulations at 10 CFR part 600 or for awards issued after December 26, 2014, the Financial Assistance regulations contained in 2 CFR 200 which will be codified by Part IX of 2 CFR (DOE's new financial assistance regulations); (5) National Policy Assurances To Be Incorporated As Award Terms; (6) Budget Summary; (7) Federal Assistance Reporting Checklist, which identifies the reporting requirements; and (8) Intellectual Property Provisions.

B. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS

1. Administrative Requirements

The administrative requirements for DOE grants and cooperative agreements are contained in 10 CFR 600 and 10 CFR 605. For awards issued after December 26, 2014, the Financial Assistance regulations contained in 2 CFR 200 will be codified by Part IX of 2 CFR (DOE's new financial assistance regulations, which succeed 10 CFR 600).

REGISTRATION REQUIREMENTS

Additional administrative requirements for DOE grants and cooperative agreements are contained in 2 CFR 25 (See: <http://www.ecfr.gov>). Prime awardees must keep their data at the System for Award Management (SAM) current at <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: <http://www.ecfr.gov>). Prime awardees must register with the new Federal Funding Accountability and Transparency Act Subaward Reporting System (FSRS) database 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 the System for Award Management (SAM).

2. Terms and Conditions

The DOE Special Terms and Conditions for Use in Most Grants and Cooperative Agreements are located at <http://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:

<http://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 <http://www.nsf.gov/bfa/dias/policy/rtc/appc.pdf> and at <http://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. The DOE grants management/contract specialist and DOE project officer will negotiate a Statement of Substantial Involvement prior to award.

5. Additional Conditions

CONFERENCE SPENDING (MARCH 2014)

The recipient shall not expend funds for the purpose of defraying the cost to the United States Government of a conference held by any Executive branch department, agency, board, commission, or office funded by FY2013 or future year appropriations for which the cost to the United States Government was more than \$20,000, or 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 that is not directly and programmatically related to the purpose for which the grant or cooperative agreement was awarded.

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.

LOBBYING RESTRICTIONS (MARCH 2012)

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.

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 <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms> under Award Form.

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. 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, 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. All submissions and inquiries about this Funding Opportunity Announcement should reference number **DE-FOA-0001205**.

Please contact the PAMS help desk for technological issues with the PAMS system (See B. below).

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 December 22, 2014**. DOE will not respond to questions submitted after the designated time on December 22, 2014.

DOE will try to respond to questions within 3 business days, unless a similar question and answer have already been posted.

B. AGENCY CONTACTS

Grants.gov Customer Support	800-518-4726 (toll-free) support@grants.gov
PAMS Customer Support	855-818-1846 (toll-free) 301-903-9610 sc.pams-helpdesk@science.doe.gov
DOE Contracting Officer	Warren Riley 630-252-2485 warren.riley@science.doe.gov

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 <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

The contracting officer is the only individual who can make awards or commit the Government to the expenditure of public funds. A commitment by other than the contracting officer, either explicit or implied, is invalid.

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 conflict of interest and non-disclosure agreements 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. 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.) Subject 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. If teaming arrangements are created among a prime recipient and other team members, title to subject inventions among the Hub members will be addressed in the required IP Management Plan of the Project Narrative, Appendix 7.

Rights in Technical Data:

Special Protected Data Statutes: Since the anticipated award term is up to five years, DOE must have appropriate rights in data to assure long term access to generated data under this award to assure dissemination. Except for the special data protection discussed below, this can be accomplished, either through DOE ownership of and/or unlimited rights in technical data, so that DOE will have access to and the ability to direct delivery of a copy of such data first produced under the Agreement. Delivery or third party licensing of proprietary software or data developed solely at private expense will not normally be required except as necessary to operate the Hubs or as specifically negotiated in a particular agreement to satisfy DOE’s own needs or to ensure the commercialization of technology developed under a DOE agreement. This program is covered by a special protected data statute. The provisions of the statute provide for the protection from public disclosure, for a period of up to five (5) years from the development of the information, of data that would be trade secret, or commercial or financial information that is privileged or confidential, if the information had been obtained from a non-Federal party. Generally, the provision entitled, Rights in Data – Programs Covered Under Special Protected Data Statutes, (10 CFR 600 Appendix A to Subpart D), would apply, but may be modified to accommodate particular circumstances(e.g., access to or expanded use rights in protected data among consortium or team members), or to list and identify data or categories of data first produced in the performance of the award that will be made available to the public, notwithstanding the statutory authority to withhold data from public dissemination, and may also identify data that will be recognized by the parties as protected data.

G. NOTICE OF RIGHT TO REQUEST PATENT WAIVER

DOE may issue a class waiver that would provide awardees, not subject to the Bayh-Dole Act, the option to retain title to their inventions subject to an agreement by the awardees to manufacture products embodying or produced through the use of a waived invention in the U.S. The class waiver would be for all awards associated with the identified Energy Innovation Hub, which DOE expects will cover most large business recipients and team members of an award. The class patent waiver would be subject to the same Government retained rights that apply to awardees under the Bayh-Dole Act and minimum cost share requirements.

If DOE does not issue a class waiver or if the applicant does not meet the criteria of the class waiver, the applicant 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. For more information, see <http://energy.gov/gc/services/technology-transfer-and-procurement/office-assistant-general-counsel-technology-transf-1>.

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. 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. PROPERTY

Real property: With respect to the use, management, and disposition of all real property, 10 CFR 600.132 shall be applicable to grants and subawards with institutions of higher education, hospitals, and other non-profit organizations; and 10 CFR 600.321 shall be applicable to grants and subawards with for-profit organizations. For DOE/NNSA contractors, the terms and conditions of the respective Management and Operating contract will apply. For non-DOE/NNSA FFRDC contractors and other Federal agencies, the terms and conditions of the interagency agreement will apply.

Personal Property: Federally Owned and Exempt, Equipment, and Supplies and Other Expendable Property: With respect to the use, management and disposition of all personal property, 10 CFR 600.133, 134 and 135 shall be applicable to grants and subawards with institutions of higher education, hospitals, and other non-profit organizations; and 10 CFR 600.321, 322, 323 and 324 shall be applicable to grants and subawards with for-profit organizations. For DOE/NNSA contractors, the terms and conditions of the respective Management and Operating contract will apply. For non-DOE/NNSA FFRDC contractors and other Federal agencies, the terms and condition of the interagency agreement will apply.

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

K. NATIONAL ENVIRONMENTAL POLICY ACT COMPLIANCE

If the disclosure 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 a NEPA document such as an environmental assessment or environmental impact statement. If DOE determines it is necessary, this process would need to be completed, both 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. The inability to satisfy the NEPA requirements after an award would result in cancellation of any said award.

L. AVAILABILITY OF FUNDS

Funds are not presently available for this award.

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.

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.

Section IX - APPENDICES/REFERENCE MATERIAL

Glossary of Useful Grants and Cooperative Agreement terms

Note: All references to “grant(s)” and “grantee(s)” can be interpreted to mean “cooperative agreement(s)” or “recipient(s)”.

acquisition cost	The cost of an asset, including the cost to put it in place. When used with equipment (capital expenditure), the term means the net invoice price of property or supplies including cost of modifications, attachments, accessories, or auxiliary apparatus necessary to make the property usable for the purpose for which it was acquired. Other charges, such as the cost of installation, transportation, taxes, duty, or protective in-transit insurance, are included or excluded from the unit acquisition cost in accordance with the recipient’s regular accounting practices. It does not include costs for rental of property or alteration and rental of real property.
administrative requirements	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.
allocation	The process of assigning costs to one or more cost objectives, in reasonable and realistic proportion to the benefit provided or other equitable relationship.
allocability	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.
allowable cost	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).
application	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.
Appropriation Act	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.
approved budget	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 Federally-funding costs 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.
assurance	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 or cooperative agreement.
authorized organizational representative	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.
award	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.
award documents	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: <ul style="list-style-type: none"> • notifies the recipient of the award of a grant; • contains or references all the terms and conditions of the grant and Federal funding limits and obligations; and, • provides the documentary basis for recording the obligation of Federal funds in the DOE accounting system.
Bayh-Dole Act	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.
budget	An estimate of expenditures to be incurred in the performance of a proposed statement of work, or the financial plan or cost assessment for the financial assistance application. The budget represents costs associated with project implementation.
budget period	The intervals of time (usually 12 months each) into which a project period is divided for budgetary and funding purposes.
business officer	The financial official of the grantee who has primary fiscal responsibility for the grant. Also known as authorized organizational representative.
carryover	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 liquidated, funds are not considered carryover.

change in scope	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.
closeout	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.
competitive segment	The initial project period recommended for support (up to 5 years) or each extension of a project period resulting from a renewal award.
conference (domestic or international)	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.
consortium or subaward agreement	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 subaward relationship.
consultant	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.
continuation application/award	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.
contract	An award instrument used to acquire from a non-federal party, by purchase, lease, or barter, property or services for the direct benefit or use of the Federal government. The same term may be used to describe a vendor relationship between a recipient and another party under a grant (to acquire routine goods and services); however, the recipient may use subaward to describe the contract under a grant relationship.

Contract (or Grants Management) Officer	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.
Contract (or Grants Management) Specialist	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.
cooperative agreement	A type of financial assistance instrument 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.
cost principles	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.
cost sharing	The portion of the costs of a project or program not borne by the sponsor; these could be grantee contributions or third-party in-kind contributions; costs used to satisfy cost sharing requirements are subject to the same policies governing allowability as other costs of the project. Also known as matching.
deadline	The published date and/or time that a grant application is to be either postmarked/mailed or electronically submitted to the funding agency.
debarment and suspension	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 subaward, 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.
direct costs	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.

disallowance	A charge to a grant that the Federal awarding agency determines to be unallowable in accordance with the applicable Federal cost principles or other terms and conditions contained in the award.
domestic organization	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.
DUNS number	A nine-digit number established and assigned by Dun and Bradstreet to uniquely identify a business entity.
effort	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.
equipment	An article of tangible nonexpendable personal property that has a useful life of more than 1 year and an acquisition cost per unit that equals or exceeds \$5,000 or the capitalization threshold established by the organization, whichever is less.
expanded authorities	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 preaward spending authority, recipient-initiated no cost extensions for up to one additional year for the final budget period, 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.
expiration date	Generally, the date signifying the end of the current project period, after which the grantee is not authorized to obligate grant funds.
facilities and administrative costs	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.
Federal Financial Report	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).
financial assistance	Transfer by DOE of money or property to an eligible entity to support or stimulate a public purpose authorized by statute.
Financial Status Report	See Federal Financial Report.
foreign travel	Foreign travel includes 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 and Mexico. A trip is

	<p>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.</p>
funding opportunity announcement	<p>A publicly available document by which a Federal Agency makes known its intentions to award discretionary grants or cooperative agreements. 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 Grants.gov/FIND. An FOA may also be known as a solicitation.</p>
grant	<p>A financial assistance mechanism providing money, property, or both to an eligible entity to carry out an approved project or activity. A grant is used whenever DOE anticipates no substantial programmatic involvement with the recipient during performance of the financially assisted activities.</p>
grant-supported project or activity	<p>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.</p>
grantee	<p>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.</p>
Grants.gov	<p>Grants.gov (http://www.grants.gov/) 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.</p>
indirect costs	<p>See facilities and administrative costs definition.</p>
institutional base salary	<p>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.</p>
matching or cost sharing	<p>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.</p>

merit (or peer) review	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 to the DOE individuals responsible for making award decisions.
monitoring	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.
NEPA	National Environmental Policy Act of 1969. The Long Title describes it as follows: “An Act to establish a national policy for the environment, to provide for the establishment of a Council on Environmental Quality, and for other purposes.” NEPA requires Federal Agencies to assess and consider potential impacts from Federal actions in their decision-making.
no-cost extension	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.
non-Federal share	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.
Notice of Financial Assistance Award obligations	See award documents. The amounts for which the recipient has made binding commitments for orders placed for property and services, contracts and subawards, and similar transactions during a funding period that will require payment during the same or a future period.
OMB Circulars	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"> • cost principles (OMB Circular A-21, OMB Circular A-87, and OMB Circular A-122); • uniform administrative requirements (OMB Circular A-102 and OMB Circular A-110); • audit requirements for non-profit organizations (OMB Circular A-133). 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.
OSHA	Occupational Safety and Health Act of 1970. The long Title describes it as follows: “An Act to assure safe and healthful working conditions for working men and women; by authorizing enforcement of the standards developed under the Act; by assisting and encouraging the States in their

	efforts to assure safe and healthful working conditions; by providing for research, information, education, and training in the field of occupational safety and health; and for other purposes.”
Other Significant Contributors	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.
participant	Program participants 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.
participant costs	Costs used to pay program participants small stipends and reimbursement of travel costs or other out-of-pocket costs incurred to support attendance at a workshop, conference, seminar, symposium, or other short-term training or information-sharing activity.
person months	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.
pre-application or pre-proposal	A brief outline or narrative of proposed work and sometimes budget, for informal review by a sponsor to determine whether a full application should be submitted. Three predominant reasons for requiring submission of a preliminary pre-application are: <ul style="list-style-type: none"> • 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. • Increase the overall quality of the full submission. • Distill the number of applications that will be submitted to the agency and the number of anticipated reviewers needed to review.
pre-award costs	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.

prior approval	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.
Program Director/ Principal Investigator	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 program directors/principal investigators (PD/PIs) who share the authority and responsibility for leading and directing the project, intellectually and logistically. When multiple PD/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 PD/PI on an application or award diminishes neither the responsibility nor the accountability of any individual PD/PI.
program income	Program income is gross income earned by a research grant recipient from the activities, part or all of which are borne as a direct cost by the grant. Examples are fees for services performed under the grant, rental or usage fees charged for use of equipment purchased with grant funds, third party patient reimbursements for hospital or medical services paid from the grant, funds generated by the sale of commodities, such as cell lines or research animals developed from or paid for from the grant, and patent or copyright royalties.
Program Manager	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.
progress report	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.
project/performance site	Location(s) of where the work described in the research plan will be conducted.
project period	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.
proposal re-budgeting	See application. Reallocation of funds available for spending between budget categories to allow best use of funds to accomplish the project goals.
recipient	The organizational entity or individual receiving a grant or cooperative agreement.
renewal application	An application requesting additional funding for a period subsequent to

research	<p>that provided by a current award. Renewal applications must be developed as fully as though the applicant is applying for the first time. 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.”</p>
research misconduct	<p>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.</p>
SAM.gov	<p>The System for Award Management (SAM) is 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).</p>
scope of work	<p>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.</p>
Senior/Key Personnel	<p>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.</p>
significant rebudgeting	<p>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 rebudgeting is one indicator of change in scope.</p>
small business concern	<p>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</p>

	121.
solicitation subaward	See Funding Opportunity Announcement. A legal instrument by which a recipient provides funds (or property in lieu of funds) to an eligible subrecipient (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.
subrecipient	A party that receives a subaward from a recipient or another subrecipient under a Federal financial assistance award and is accountable to the recipient or subrecipient for the use of the Federal funds provided by the subaward.
supplement	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/or may be subject to administrative and merit review.
terms and conditions of award	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.
unallowable costs	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.
unliquidated obligation	For reports prepared on a cash basis, the amount of obligations incurred by the recipient that has not been paid; or For reports prepared on an accrued expenditure basis, the amount of obligations incurred by the recipient for which an outlay has not been recorded.
unobligated balance	The portion of the funds authorized by the Federal agency for expenditure by the recipient that has not been obligated by the recipient.

Current and Pending Support (for use in Appendix 2)*

Support information is required for each key personnel/senior investigator, including persons at collaborating institutions funded through subcontracts. All financial resources (Federal, non-Federal, commercial, or institutional) should be included. A separate entry should be included for each grant, FWP, or other source of support for the PI.

Enter the Hub senior investigator’s name in the “Investigator” box for each award listed on the Current and Pending Support form. If another investigator is the lead PI on the grant, put the lead PI’s last name in parentheses after the Hub senior investigator’s name in the same “Investigator” box.

For each project, provide a brief description of the research. Explicitly delineate the scientific scope with respect to Hub. If there is no relationship to Hub research, provide a statement to that effect.

For laboratory staff, if support does not total 12 person-months, an explanation should be provided. For university faculty, explanations should be provided for support beyond normal summer-month levels.

Copy the table below and add additional sheets as necessary.

*This form has been modified from NSF 00form1239.

Investigator:	Other Agencies to which this proposal has been/will be submitted:
Support (Current, Pending, Submission Planned in Future or Transfer of Support):	
Project/Proposal Title and grant number, if appropriate:	
Source of Support:	Location of Project:
Annual Award Amount: \$	Total Award Period:
Annual Award Amount to PI’s Research: \$	
Describe Research Including Synergies and Delineate with Respect to the Hub Award:	
Person-Months Per Year Committed to Project: ____ Pers. Months; Specify: <u>Cal.</u> , <u>Acad.</u> , or <u>Sumr</u> :	