

**FINANCIAL ASSISTANCE  
FUNDING OPPORTUNITY ANNOUNCEMENT**



**U.S. Department of Energy  
Golden Field Office**

**Advancements in Sustainable Algal Production (ASAP)**

**Funding Opportunity Announcement Number: DE-FOA-0000615**

**Announcement Type: **Amendment 002****

**CFDA Number: 81.087**

**Issue Date: 02/23/2012**

**Application Due Date: **05/02/2012**, 5:00 PM Eastern Time**



## Department of Energy

Golden Field Office  
1617 Cole Boulevard  
Golden, Colorado 80401-3393

Amendment No. 002

DATE: April 17, 2012  
FROM: Molly Hames, Contracting Officer  
TO: All Prospective Applicants  
SUBJECT: Amendment No. 002 to Announcement DE-FOA-0000615,  
Advancements in Sustainable Algal Production (ASAP)

- I. The purpose of this amendment is to add language to the Algae FOA in Section VI.B.4, “Statement of Substantial Involvement” as follows:

#### **4. Statement of Substantial Involvement**

The DOE Specialist and DOE Project Officer will negotiate a Statement of Substantial Involvement prior to award. Anticipated areas of involvement may include but are not limited to review and approval of site access plan.

DOE has the right to intervene in the conduct or performance of project activities for programmatic reasons. Intervention includes the interruption or modification of the conduct or performance of project activities.

- II. All other parts of the FOA remain unchanged.



## Department of Energy

Golden Field Office  
1617 Cole Boulevard  
Golden, Colorado 80401-3393

Amendment No. 001

DATE: April 12, 2012  
FROM: Molly Hames, Contracting Officer  
TO: All Prospective Applicants  
  
SUBJECT: Amendment No. 001 to Announcement DE-FOA-0000615,  
Advancements in Sustainable Algal Production (ASAP)

- I. The purpose of this amendment is to extend the Full Application deadline to May 2, 2012 at 5:00pm Eastern Time.
- II. All other parts of the FOA remain unchanged.

## REGISTRATION REQUIREMENTS

There are several one-time actions before submitting an Application in response to this Funding Opportunity Announcement (FOA), as follows:

- Register and create an account on EERE Exchange at <https://eere-exchange.energy.gov/>. This account will then allow the user to register for any open EERE FOAs that are currently in EERE Exchange. It is recommended that each organization or business unit, whether acting as a team or a single entity, use only one account as the contact point for each submission.

The applicant will receive an automated response when the Application is received. This will serve as a confirmation of receipt. Please do not reply to the automated response. The applicant will have the opportunity to re-submit a revised Application for any reason as long as the relevant submission is submitted by the specified deadline. The Users' Guide for Applying to the Department of Energy EERE Funding Opportunity Announcements is found at <https://eere-exchange.energy.gov/Manuals.aspx>.

The EERE Exchange registration does not have a delay; however, the remaining **registration requirements below could take several weeks to process and are necessary in order for a potential applicant to receive an award under this announcement**. Therefore, although not required in order to submit an Application through the EERE Exchange site, **all potential applicants lacking a DUNS number, or not yet registered with CCR or FedConnect should complete those registrations as soon as possible**.

Questions related to the registration process and use of the EERE Exchange website should be submitted to: [EERE-ExchangeSupport@hq.doe.gov](mailto:EERE-ExchangeSupport@hq.doe.gov).

- Obtain a Dun and Bradstreet Data Universal Numbering System (DUNS) number (including the plus 4 extension, if applicable) at <http://fedgov.dnb.com/webform>.
- Register with the Central Contractor Registry (CCR) at <https://www.ccr.gov/>. Designating an Electronic Business Point of Contact (EBiz POC) and obtaining a special password called an MPIN are important steps in CCR registration. Please update your CCR registration annually.

Register in FedConnect at <https://www.fedconnect.net/>. To create an organization account, your organization's CCR MPIN is required. For more information about the CCR MPIN or other registration requirements, review the FedConnect Ready, Set, Go! Guide at [https://www.fedconnect.net/FedConnect/PublicPages/FedConnect\\_Ready\\_Set\\_Go.pdf](https://www.fedconnect.net/FedConnect/PublicPages/FedConnect_Ready_Set_Go.pdf).

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## **SECTION I – FUNDING OPPORTUNITY DESCRIPTION**

### **Description**

#### **Objective**

The objective of the Advancements in Sustainable Algal Production Funding Opportunity Announcement is to support outdoor phototrophic algae research and development in two areas: 1) nutrient and water use in algal production systems and 2) the development of algal technology testbed facilities. This research will support the Biomass Program's goals to model pathways for significant (>1 billion gallons per year) volumes of cost-competitive algal biofuels by 2022.

#### **Background**

DOE's Office of Energy Efficiency and Renewable Energy (EERE), through the Office of the Biomass Program (OBP), works with industry, academia, and national laboratory partners on a balanced portfolio of research in biomass feedstocks and conversion technologies. Through research, development, and demonstration efforts geared toward the development of Integrated Biorefineries, the Biomass Program is helping transform the nation's renewable and abundant biomass resources into commercially viable, high-performance biofuels, bioproducts, and biopower.<sup>1</sup>

The Biomass Program began scoping activities to understand the critical technical barriers to affordable and scalable algae-based biofuels with the 2008 National Algal Biofuels Technology Roadmap Workshop.<sup>2</sup> Results of that workshop, published as The National Algal Biofuels Technology Roadmap (the Roadmap), serve as guidance for DOE to identify topics needing additional research funding. Subsequently, four research consortia were competitively selected to begin a national applied research program (see DE-FOA-0000123) to address many of the technical challenges for successful large-scale algae biomass production.<sup>3</sup> OBP also funds additional activities that aim to systematically address barriers along the algae biofuel supply chain to eventually produce economically viable renewable aviation fuel, diesel, and gasoline that can be transported and sold using existing fueling infrastructure.

To build upon the R&D activities already underway, the Biomass Program announces the availability of funding for two topic areas in the Advancements in Sustainable Algal Production (ASAP) Funding Opportunity Announcement (FOA). Topic Area 1 will support the development and demonstration of integrated cultivation and recycling technologies for algal biomass production that demonstrate minimal water and external nutrient inputs and/or the use of waste/effluent nutrients. Topic Area 2 will establish Regional Algal Feedstock Testbed (RAFT) partnerships. For purposes of this FOA, a "Testbed Facility" is defined as a single geographical location within the United States equipped with instruments and expertise for testing a variety of algal biomass processes. The RAFT Partnerships must have a total production capacity equal to or exceeding 500 kg ash-free dry weight (afdwt) algal biomass per year and have the flexibility to accommodate the testing of innovative algal process configurations.

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<sup>1</sup> <http://www1.eere.energy.gov/biomass/about.html>

<sup>2</sup> U.S. Department of Energy (2010). [National Algal Biofuels Technology Roadmap](#)

<sup>3</sup> <http://www1.eere.energy.gov/biomass/algae.html>

The ASAP FOA will accelerate efforts to increase the scalability of algae production and help the Biomass Program meet its aggressive goals for algal biofuels by: supporting the development of innovative technologies to capture and recycle water and nutrients; developing testbed facilities that serve as engines for algal technology innovation, job training, and validation; and creating long-term cultivation data necessary to understand and promote algae biomass production.

The ASAP FOA addresses the objectives set forth in the following statutes:

**Energy Independence and Security Act of 2007 (EISA):** EISA provisions support the continued development and use of biofuels, including a Renewable Fuel Standard (RFS) requiring 36 billion gallons per year of renewable fuels by 2022 with annual requirements for advanced biofuels.

**Energy Policy Act of 2005 (EPAct 2005):** EPAct 2005 renewed and strengthened existing Federal policies fostering ethanol production, and provides incentives for the production and purchase of biobased products. The projects selected from this FOA will support the objectives of EPAct 2005, Section 932.

By accelerating algal biofuel R&D, the ASAP FOA will serve three primary goals of EERE: 1) increase the viability and deployment of renewable energy technologies, thereby 2) spurring the creation of a domestic bio-industry, resulting in 3) a dramatic reduction in dependence on imported oil.

Projects awarded as a result of this FOA will be phased. Projects proposed under Topic Area 1 will have two Phases, separated by a go/no review. Topic Area 2 projects are expected to have three Phases, each of which will be separated by a go/no go review. Applicants must present baseline data, propose specific Phase targets, and designate the go/no go decision point between Phases. Applications must include descriptions of each Phase including all necessary work and targets to accomplish objectives. A go/no go review will be used to determine project readiness to advance from initial Phase into each subsequent Phase. Funding for subsequent Phases will be released, subject to the availability of appropriations, to the project only after a successful go/no go review. This review will be performed by the awardee, DOE and/or outside reviewers to verify accomplishment of proposed Phase goals and project readiness for next Phase. DOE will make the go/no go determination of project readiness to advance based on results and recommendations of the review.

### **Topic Area 1: Reducing Water and Nutrient Use in Algae Cultivation**

The Roadmap and other recent analyses note that sustainable water and nutrient use could become major concerns for scaling up domestic algae biomass production. Further development of algae cultivation systems that minimize water and nutrient use is essential<sup>4,5</sup>.

This FOA seeks to accelerate the development and demonstration of integrated cultivation and

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<sup>4</sup> Pate, RC et al. (2011). Resource demand implications for US algae biofuels production scale-up. *Applied Energy*. 88(10):3377-3388

<sup>5</sup> Wigmosta, MS et al. (2011). National microalgae biofuel production potential and resource demand. *Water Resource Research*, 47:W00H04

recycling technologies for algal biomass production that demonstrate minimal water and external nutrient inputs through the use of nutrient-laden source water and/or nutrient and water recycling systems. **Projects cultivating algae heterotrophically are NOT eligible for funding under this FOA.**

The goal of Topic Area 1 is to demonstrate an outdoor cultivation system for extended (i.e. 90 plus days) cultivation periods that:

- Significantly reduces external nutrient input requirements (eg: Nitrogen and Phosphorus) relative to the baseline presented in the application (see suggested table below).
- Returns carbon to the cultivation system.
- Primarily uses a non-potable water source such as waste water from agricultural run-off, municipal or industrial waste sources, produced water, brackish water, or seawater. Freshwater consumption should be shown to be a great deal less than applicant's baseline and/or current practices in biofuel production<sup>6</sup>.
- Cultivates an algae strain(s) (appropriate for downstream conversion into biofuels) using the identified water source.
- Has the potential to be scaled economically.

Open, closed or novel outdoor cultivation systems are eligible for this topic. Applications seeking funding for the construction of new cultivation facilities or algae strain development are **NOT** eligible for funding and will not be considered under this FOA. Projects must demonstrate that they have access to and experience with cultivating phototrophic algae that are proven amenable to downstream biofuels production via bench-scale compositional, processing, and conversion/upgrading analysis. Applicants must identify the intended biofuel(s) including arguments for the suitability of the selected strain(s) for the production of the identified biofuel(s). **Projects cultivating algae heterotrophically are NOT eligible for funding under this FOA.**

Projects awarded as a result of this FOA will be phased. Projects proposed under Topic Area 1 will have two Phases, separated by a go/no review. Applicants must present baseline data, propose specific Phase targets and designate the go/no go decision point between Phases. Applications must include descriptions of each Phase, including all necessary work and targets to accomplish objectives. A go/no go review will be used to determine project readiness to advance from initial Phase into each subsequent Phase. Funding, subject to availability of funds, for subsequent Phases will be released to the project only after a successful go/no go review. This review will be performed by the awardee, DOE and/or outside reviewers to verify accomplishment of proposed Phase goals and project readiness for next Phase. DOE will make the determination of project readiness to advance based on results and recommendations of the Review.

All proposed targets should include descriptions of sampling protocols based on best practices. Projects should propose both aggressive but achievable Phase I and Phase II targets, including:

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<sup>6</sup> Consumptive water use in fuel production is a sustainability concern. An analysis "Consumptive Water Use in the Production of Ethanol and Petroleum Gasoline" by M. Wu, M. Mintz, M. Wang, and S. Arora (2009) at the Argonne National Laboratory discusses many issues related to water use and biofuel and petroleum production. Algae-based biofuels should demonstrate the possibility of comparable or lower water consumption relative to current biofuel practices.



- algal productivity (g afdw / m<sup>2</sup> / day)
- target biomass yield (% dry weight)
- nutrient reduction from the baseline (g input / kg biomass)
- cultivation system uptime and scale (days and volume)
- freshwater consumption (L / kg biomass) and waste or brackish water consumption (L / kg biomass)

Applicants may use the suggested table below, or a similar format to provide the requested data.

Growth and Productivity		Baseline		Phase I Target		Phase II Target		Method of Measurement
Biomass Productivity	g afdw/ m2 / day							
Target Biomass Yield	% dry weight							
Fresh Inputs		Baseline Amount	Source and Frequency	Phase II Target Amount	Source and Frequency	Phase II Target Amount	Source and Frequency	Method of Measurement
Carbon	g input / kg biomass	<i>e.g. 2.0 g / g</i>	<i>e.g. delivered bottles; continuous sparge</i>	<i>e.g. 1.5 g / g</i>	<i>e.g. delivered bottles; continuous sparge with 0.5 g in recycle stream</i>	<i>e.g. 1.0 g / g</i>	<i>e.g. delivered bottles; continuous sparge with 1.0 g in recycle stream</i>	<i>Metered feed</i>
Nitrogen	g input / kg biomass							
Phosphorus	g input / kg biomass							
Other (add as necessary)	g input / kg biomass							
Fresh water consumption	L H2O / kg biomass							
Non-potable water consumption	L H2O / kg biomass							
System Performance		Baseline		Phase I Target		Phase II Target		Method of Measurement
Cultivation system uptime	days / year							
Cultivation system scale	L							

\*This table is a suggested format for the Topic Area 1 baseline, Phase I and II target data. Data will be considered by the merit review panel. The data should be supported by detailed information given in the application narrative.

Applicants must identify the intended biofuel(s) and include supporting arguments for the suitability of the selected strain(s). Applicants must provide a discussion of the impacts of recycling and/or reducing nutrient input on the biomass quality. Projects must establish final targets for biomass quantity, quality, and other characteristics that will support scale-up projections. Existing techno-economic and life-cycle analyses suggests ample room for improvement.<sup>7,8</sup>

Projects may not use more than 15% of the total project cost for capital expenditures to improve/expand the existing cultivation system capacity (new ponds, photobioreactors (PBR), etc.). The scope of the project should not include work on conversion and upgrading to finished products beyond what is necessary for proof-of-concept analyses. **Projects cultivating algae heterotrophically are NOT eligible for funding under this FOA. Applications seeking funding for the construction of new cultivation facilities or algae strain development are NOT eligible for funding and will not be considered under this FOA.**

Awardees will be strongly encouraged to make timely efforts to share and present results of their research at a relevant algae conference and or publish results in peer reviewed journals.

Proposals must include the following:

- A discussion of data dissemination, intellectual property (IP) and commercialization strategies.
- A discussion of techno-economic analysis demonstrating economic basis for pursuing the technology(s).
- Life cycle analysis (LCA) discussion addressing water and greenhouse gas (GHG) impacts of required energy inputs of the technology(s).

### **Topic Area 2: Regional Algal Feedstock Testbed Partnership**

The intent of Topic Area 2 is to fund the creation of Regional Algal Feedstock Testbed partnerships (RAFT). RAFT Partnerships are defined as collaborations among two or more organizations that have the relevant expertise, facilities, permitting, and partnership structures in place to perform the two basic functions addressed below. Applications to perform only one of the two functions will not be considered for funding. For purposes of this FOA, a “Testbed Facility” is defined as a single geographical location within the United States equipped with instruments and expertise for testing a variety of algal biomass processes. Each RAFT Partnership must have a total production capacity equal to or exceeding 500 kg afdw algal biomass per year and have the flexibility to accommodate the testing of innovative algal process configurations. RAFT Partnerships must be able to provide several cultivation units at multiple sites to provide datasets in replicates, and to compare datasets between sites. RAFT Partnership cultivation facilities should largely be situated outdoors, exposed to the natural elements, and simulate future production conditions.

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<sup>7</sup> Davis, R et al. (2011). Techno-economic analysis of autotrophic microalgae for fuel production. *Applied Energy*. 88(10):3524-3531

<sup>8</sup> Frank, ED et al. (2011) Life-Cycle Analysis of Algal Lipid Fuels with the Greet Model. Argonne National Laboratory ANL/ESD/11-5, <http://greet.es.anl.gov/publications>

The **first** function of the RAFT Partnership is to serve as a testing facility for the algal research community. Specifically, DOE intends to use Federal funds to support the operation of existing outdoor algae cultivation systems to allow researchers access to real-world conditions for algal biomass production for biofuel. Funding from this FOA will be used to improve stakeholder access to testing facilities for cultivation of various algal strains and/or trials of associated novel technologies. Funding will also be used for the testbed facility to provide stakeholders with needed expertise and/or testbed materials (i.e. strains or biomass) for research in the cultivation process.

The **second** function for RAFT is to conduct long term algal cultivation trials. The RAFT partnership must make the resulting algal cultivation datasets available and widely distributed to the research community for use in establishing a realistic and coherent state of technology for algal biofuel production. Much uncertainty still remains about long-term productivity parameters, predator-prey relationships, seasonality impacts, and other environmental consequences of scaling up the cultivation of any promising algal strain for biofuels. The RAFT Partnership will be expected to utilize the testbed facilities and expertise to accomplish longer term feedstock trial research to enable comparisons of promising production strains, at meaningful scale, across different regional, seasonal, environmental, and operational conditions.

Applicants are strongly encouraged to utilize this feedstock trial data to strengthen existing algal biofuels models in order to establish a robust analysis of the state of technology. **It is not the intent of this FOA to support the creation of new models and DOE will not fund the creation of new models with this FOA.** There are several modeling efforts in the algal biofuels arena that have been developed over the past few years and Applicants are strongly encouraged to partner with an organization with demonstrated modeling capabilities to ensure that the data obtained from the testbeds is disseminated to the algal biofuels community (e.g. peer-reviewed publications, reports, technical conferences).

In order to fulfill the two main functions, the RAFT Partnerships must be able to:

1. Cultivate algae and perform integrated assessments of algae biofuels units at scales exceeding 500 kg of ash-free dry weight (afdwt) equivalents of algae per year, per Partnership.
2. Provide a variety of cultivation strategies and be equipped to monitor and track cultivation conditions, including the quantity and quality of water and nutrients, pH, and temperature parameters.
3. Accommodate the use of external equipment at each site for testing novel extraction, harvesting or dewatering technologies.
4. Have analytical capabilities to enable high quality analyses to take place on site. Examples of the types of analysis include:
  - a. Visualize and molecularly characterize/identify algal and other microbial species present in the cultivation vessels.
  - b. Measure physical and chemical properties of algal biomass, such as organic and inorganic component analyses and moisture content.

- c. Conduct quality control/quality assurance testing.
5. Perform basic downstream algae processing functions that include: concentration of algal biomass to a minimum of 5% solids and separation of algal biomass into discrete proteins, lipids and carbohydrates fractions.
6. Handle, track and ship characterized materials to domestic and international locations, upon request.
7. Provide expertise to include, but not limited to: phycologist(s), chemist(s) and process/chemical engineer(s), agri/aquacultural or mechanical engineer(s), facility managers, and technology transfer specialist(s).
8. Provide a detailed site access plan for how DOE funding and Recipient cost share funds will be used to support the various projects and stakeholders that plan to use the testbed facilities. This plan should include:
  - a. A set of procedures and criteria to ensure that all stakeholders (innovators, inventors, and researchers from academia, industry, and non-profit groups) have equitable access to the testbeds.
  - b. A discussion of the arrangement for various institutions that will be using the facility repeatedly.
  - c. Justification for tiered facility use fee schedule.
  - d. A plan for using funding under this award to provide stakeholders with needed expertise and/or testbed materials (i.e. strains or biomass) for research in the cultivation process.
  - e. A plan for accommodating visiting researchers and engineers who need to oversee the analyses of technologies on-site, or other partners who desire testbed materials or expert knowledge. These accommodations should include temporary business facilities (internet, workstation, meeting rooms); overnight accommodations within reasonable proximity; including any applicable institutional firewalls and legal documents that are mutually agreeable.
9. Include a plan that details how the RAFT Partnership will utilize the testbed facilities and expertise to perform longer term feedstock trial research that will enable comparisons of promising production strains, at meaningful scale, across different regional, seasonal, environmental and operational conditions. Include a detailed outline of the datasets and that will be created for further use in establishing the state of technology. Examples of key variables that should be included (but not limited to) in the datasets/models include:
  - a. Strain identification;
  - b. Operating conditions;
  - c. Water source, amount, recycle process;
  - d. Nutrient source, amount, recycle process; and
  - e. Costs associated with all inputs.

Proposals applying to Topic Area 2 must also include the following:

- A drawn-to-scale schematic of the testbed layout showing major units of operation (cultivation vessels, harvester, etc.). Include and clearly identify all proposed changes. This

schematic should be included in the project narrative and WILL count towards the 25 pg. limit.

- A discussion of the potential for future operations of the testbed facility to become self-sustaining. This discussion should be included in the project narrative and WILL count towards the 25 pg. limit.
- At least 3 Letters of Participation Commitment from organizations with interest in using the testbeds to benchmark or demonstrate production strains or processing technologies. These letters are considered attachments to the project narrative and WILL NOT count towards the 25 pg. limit. Instructions for submitting these files are listed below.
- An intellectual property framework. The IP framework should describe handling of IP that is consistent with the terms and conditions of the award, including cross-licensing of team members' IP, licensing of team members' background IP, handling of joint inventions, plans for information sharing among team members, testbed users, and the public, handling of IP developed by testbed users, and how IP will be licensed to the general research community. One IP management plan based on the submitted IP framework must be signed by all team members and must be submitted by the awardee no later than 30 days after notification of selection for negotiation of an award. DOE expects the team members to conduct business to facilitate the free flow of information among themselves. This document is considered an attachment to the project narrative and WILL NOT count towards the 25 pg. limit. Instructions for submitting this file are listed below.

Awardees are strongly encouraged to share and present the results of their research at a relevant algae conference and/or publish these results in a peer reviewed journal.

Projects awarded as a result of this FOA will be phased. Topic Area 2 projects are expected to have three Phases, each of which will be separated by a go/no go review. Applicants must present baseline data, propose specific Phase targets and designate the go/no go decision point between Phases. Applications must include descriptions of each Phase including all necessary work and targets to accomplish objectives. A go/no go review will be used to determine project readiness to advance from initial Phase into each subsequent Phase. Funding, subject to availability of funds, for subsequent Phases will be released to the project only after a successful go/no go review. This review will be performed by the awardee, DOE and/or outside reviewers to verify accomplishment of proposed Phase goals and project readiness for next Phase. DOE will make the determination of project readiness to advance based on results and recommendations of the Review.

Topic Area 2 projects are expected to have three Phases that will be separated by go/no go reviews. Applications must identify elements of each Phase including all required work needed to achieve specific Phase targets. Although the scope of work that defines each phase will be fully defined by the applicant, some general guidelines are:

- Phase I is expected to be relatively short (in the time frame of less than 1 year) to complete any plan development, including any site or equipment modifications to fulfill both functions 1 and 2 (as defined on pg.10). This phase should also include the initiation, recruitment, and prioritization of projects that will be using the facility. A go/no-go review will be used to evaluate whether the Testbeds have met Phase I targets and are ready to proceed into Phase II.
- Phase II is expected to be approximately 1-2 years in duration, during which the testbed will

be operating to fulfill both function 1 and 2 (as defined above). It is expected that a substantial number of users will have access to the facility during this phase. It is also expected that the longer term feedstock trials will begin during this phase and data will be provided to the algal research community. A go/no-go review will be used to ensure that the RAFT Partnerships have met Phase II targets, are ready to proceed into Phase III, and to assess the value that the RAFT Partnership is providing to the algal biofuel community.

- Phase III is expected to be approximately 2-3 years and continue the operations that began during Phase II. This phase should demonstrate increasing numbers of users accessing the facilities. In addition, data from the feedstock trials is expected to be input into various models and be disseminated to the algal biofuels community.

### **Construction requirements**

**No major construction activities can be undertaken as part of this FOA.** For both topic areas, the applicants are expected to bring together both the human and physical capital necessary to achieve the objectives of this FOA. It is permissible to make modifications to existing experimental infrastructure (such as vessels, reactors, analytical equipment, instrumentation, etc.) at one or more partnering research facilities. Such modifications and the total of all new major equipment, however, may not exceed 15% of the total project cost. Capital expenditure for analytical tools and instrumentation to enhance existing infrastructure is permissible.

### **Multiple applications**

Applicants may submit applications to either or both Topic Areas under this announcement. Each application, however, must be a stand-alone application. Each application must address only one Topic Area, and all applications must, in the Project Summary/Abstract file and on the cover of the Project Narrative file, designate the specific Topic Area under which that application is being submitted (See Part IV.C., Content and Form of Application).

## **SECTION II – AWARD INFORMATION**

### **A. Type of Award Instrument - Cooperative Agreements**

DOE anticipates awarding cooperative agreements under this program announcement. If it is determined that a cooperative agreement is the appropriate award instrument, the nature of the Federal involvement will be included in a special award condition.

### **B. Estimated Funding**

#### **Amount New Awards**

Approximately \$21,000,000 is expected to be available for new awards under this announcement. All awards under this announcement are subject to the appropriation and availability of funding.

**Amount Multiple Year Awards**

Approximately \$14,300,000 is expected to be available for new awards in FY 2012 and an additional \$6,700,000 is expected to be available for awards made under this announcement in FY 2014. All awards under this announcement are subject to the appropriation and availability of funding.

Topic Area	Total Available Funding	Year 1	Year 2	Year 3	Years 4-5	Total Project
Topic Area 1: Water and Nutrient Recycle	\$6M	\$6M	NA	NA	NA	\$500,000-3M
Topic Area 2: Test Bed Facilities	\$15M	\$8.3M	NA	\$6.7M*	NA	\$10-15M

\* Note that recipients in both Topic Area 1 and 2 must successfully undergo a go/no go review to become eligible to receive funds for subsequent Phases. Topic Area 1 projects will be fully funded for all Phases, with funding for Phase II released only after successful go/no go review. Topic Area 2 project funding for Phases II and III will be dependent on successful go/no go reviews and the appropriation and availability of funds to DOE in out years.

**C. Maximum and Minimum Award Size**

- Ceiling (i.e., the maximum amount for an individual award made under this announcement):  
\$3,000,000 for Topic Area 1  
\$15,000,000 for Topic Area 2
- Floor (i.e., the minimum amount for an individual award made under this announcement):  
\$500,000 for Topic Area 1  
\$3,000,000 for Topic Area 2

**D. Expected Number of Awards**

**Number of Awards per Program/Topic Area**

- Under this announcement, DOE expects to make the following number of awards for each Program/Topic Area:

Program/Topic Area	Number of Awards
Topic Area 1	3-10
Topic Area 2	1-2

- Applicants may submit applications to either or both Topic Areas under this announcement. Each application, however, must be a stand-alone application. Each application must address only one Topic Area, and all applications must, in the Project Summary/Abstract file and on the cover of the Project Narrative file, designate the specific Topic Area under which that application is being submitted (See Part IV.C., Content and Form of Application).



**Award Size per Program Area**

- The anticipated award size for projects under each Program/Topic Area in this announcement is:

<b>Program/Topic Area</b>	<b>Award size</b>
Topic Area 1	\$500,000-\$3M
Topic Area 2	Up to \$15M

**E. Cost Share Summary by Topic Area**

<b>Topic Areas</b>		<b>Recipient or Sub-Recipient Type</b>	<b>Cost Share Requirement</b>
Topic Area 1		All Applicants	20%
Topic Area 2	First Function (Testing Facility)	All Applicants	20%
	Second Function (Cultivation Trials)	Institutions of Higher Education, US National Laboratories, FFRDCs	0%
		All Other Entities	20%

**F. Period of Performance per Program Area**

The anticipated period of performance for projects under each Program/Topic Area in this announcement is:

<b>Program/Topic Area</b>	<b>Period of Performance</b>
Topic Area 1	FY12-FY15
Topic Area 2	FY12-FY17

Each award recipient for Topic Area 1 will undergo a go/no go review at the end of Phase I. Each award recipient for Topic Area 2 will undergo a go/no go review at the end of Phase I and Phase II.

**G. Type of Application – New Applications Only**

DOE will accept only new applications under this announcement (i.e., applications for renewals of existing DOE funded projects will not be considered).

**SECTION III – ELIGIBILITY INFORMATION**

**A. Eligible Applicants**

- All types of domestic entities, except nonprofit organizations described in section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995. Eligible applicants include but are not limited to: (1) institutions of higher education; (2) National Laboratories and Federally Funded Research and Development Centers

(FFRDCs); (3) nonprofit and for-profit private entities; (4) State, local governments, and tribal governments; and (5) consortia of entities (1) through (4). If applying as a consortium, an established member of the consortium must be designated as the lead applicant.

- A foreign legal entity may be proposed as a team member on a domestic entity’s application. Eligible foreign legal entities include but are not limited to: (1) institutions of higher education; (2) nonprofit and for-profit private entities; (3) foreign governments; and (4) consortia of entities (1) through (3). If the foreign team member is a consortium, an established member of the consortium must be designated as the lead applicant.

**B. Cost Sharing (20%)**

**Topic Area 1** projects awarded under the FOA will be required to provide a cost share of at least 20% of the total allowable costs for these research and development projects (i.e., the sum of the Government share, including FFRDC costs if applicable, and the recipient share of allowable costs equals the total allowable cost of the project) and must come from non-Federal sources unless otherwise allowed by law. (See 10 CFR Part 600 for the applicable cost sharing requirements, and Appendix C titled “Cost Share Information.”).

**Topic Area 2** projects awarded under this FOA must fulfill both functions described previously (see description of activities comprising Topic Area 2 in Section I). All projects recipients must provide cost share of at least 20% of the total allowable costs for activities comprising the **first function** under Topic Area 2 (i.e., the sum of the Government share, including FFRDC costs if applicable, and the recipient share of allowable costs equals the total cost of the project) and must come from non-Federal sources unless otherwise allowed by law. (See 10 CFR Part 600 for the applicable cost sharing requirements, and Appendix C titled “Cost Share Information.”).

Projects awarded to Institutions of Higher Education, National Laboratories and FFRDCs funded under this announcement are eligible for a waiver of the cost share requirement otherwise applicable to the **second function only** under Topic Area 2 (regional, long-term cultivation and data collection). See description of activities comprising the second function of Topic Area 2 in Section I. Recipients not eligible for the cost share waiver for the **second function only** under Topic Area 2 (regional, long-term cultivation and data collection) as defined above must provide cost share of at least 20% of the total allowable costs for these research and development projects (i.e., the sum of the Government share, including FFRDC costs if applicable, and the recipient share of allowable costs equals the total allowable cost of the project) and must come from non-Federal sources unless otherwise allowed by law. (See 10 CFR Part 600 for the applicable cost sharing requirements, and Appendix C titled “Cost Share Information.”)

Topic Areas		Recipient or Sub-Recipient Type	Cost Share Requirement
Topic Area 1		All Applicants	20%
Topic Area 2	First Function (Testing Facility)	All Applicants	20%
	Second Function (Cultivation Trials)	Institutions of Higher Education, US National Laboratories, FFRDCs	0%
		All Other Entities	20%

### C. Other Eligibility Requirements

#### **DOE National Laboratory Contractors and Other Federally Funded Research and Development Center (FFRDC) Contractors.**

A DOE National Laboratory Contractor is eligible to apply for funding under this announcement if its cognizant Contracting Officer provides written authorization and this authorization is submitted with the application. If a DOE National Laboratory Contractor is selected for award, the proposed work will be authorized under the DOE work authorization process and performed under the laboratory's Management and Operating (M&O) contract.

Please be advised that those entities that form teams with National Laboratories in which the Laboratory is a Prime Recipient (i.e., lead participant) will be required to enter into subcontracts with the Laboratory. As such, the terms and conditions of the Management and Operating contract between the Laboratory and the Department of Energy will be in effect for any subcontracts, and not the traditional provisions associated with a financial assistance award. National Laboratories acting as Prime Recipients must make all applicable terms and conditions available to their subcontractors prior to submission of their applications. Any entities considering such teaming arrangements should request the Laboratory to provide the applicable terms and conditions prior to the Prime Recipient submitting a response to this FOA.

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, will not adversely impact execution of the DOE assigned programs at the laboratory, and will not place the laboratory in direct competition with the domestic private sector.”

FFRDC contractors may be proposed as team members on another entity's application, subject to the following guidelines:

Authorization for non-DOE FFRDCs. The Federal agency sponsoring the FFRDC contractor must authorize in writing the use of the FFRDC contractor on the proposed project and this authorization must be submitted with the application. The use of a FFRDC contractor must be consistent with the contractor's authority under its award.

Authorization for DOE FFRDCs. The cognizant Contracting Officer for the FFRDC must authorize in writing the use of a DOE FFRDC contractor on the proposed project and this authorization must be submitted with the application.

The following wording is acceptable for this 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, will not adversely impact execution of the DOE assigned programs at the laboratory, and will not place the laboratory in direct competition with the domestic private sector.”

Value/Funding. The value of, and funding for, the FFRDC contractor portion of the work will not normally be included in the award to a successful applicant. Usually, DOE will fund a DOE FFRDC contractor through the DOE field work proposal system and other FFRDC contractors through an interagency agreement with the sponsoring agency.

Cost Share. The applicant’s cost share requirement will be based on the total cost of the project, including the applicant’s and the FFRDC contractor’s portions of the effort.

FFRDC Contractor Effort:

- For Topic Area 1, the FFRDC effort can perform up to 100% of the scope of work proposed.
- For Topic Area 2, there is a partnership requirement that will prevent the prime applicant from completing 100% of the work. As such, the FFRDC should propose the level of effort that will be required to perform the defined scope of work.

Responsibility. The applicant, if successful, 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 applicant and the FFRDC contractor.

## SECTION IV – APPLICATION AND SUBMISSION INFORMATION

### A. Address to Request Application Forms

The Application forms and instructions are available on EERE Exchange. To access these materials, go to <https://eere-exchange.energy.gov/> and select the appropriate funding opportunity number.

### B. Letter of Intent and Pre-Application

Letter of Intent Not Required

Pre-applications Not Required

### C. Content and Form of Application

You must complete the following application forms found on the EERE Exchange website at <https://eere-exchange.energy.gov/>, in accordance with the instructions. **Applicants will receive a Control # once they “Apply to this FOA” on the EERE Exchange website and should include the Control # in the file name, as indicated below.**

**1. SF-424 – Application for Federal Assistance**

Complete all required fields in accordance with the instructions on the form. The list of certifications and assurances in Field 21 can be found at:

<http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms>, under Certifications and Assurances. Note: The dates and dollar amounts on the SF 424 are for the complete project period and not just the first year, first phase or other subset of the project period. See the “Summary of Required Forms/Files” for the required file format and file name.

**2. Project Summary/Abstract File**

The project summary/abstract must contain a summary of the proposed activity suitable for dissemination to the public. It should be a self-contained document that identifies the name of the applicant, the project director/principal investigator(s), the project title, the objectives of the project, a description of the project, including methods to be employed, the potential impact of the project (i.e., benefits, outcomes), and major participants (for collaborative projects). This document must not include any proprietary or sensitive business information, as the Department may make it available to the public if an award is made. 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), single spaced, with font not smaller than 11 point. See the “Summary of Required Forms/Files” for the required file format and file name.

**3. Project Narrative File**

The project narrative must not exceed 25 pages, including cover page, table of contents, charts, graphs, maps, photographs, and other pictorial presentations, when printed using standard 8.5” by 11” paper with 1” margins (top, bottom, left, and right), single spaced. EVALUATORS WILL REVIEW ONLY THE FIRST 25 PAGES IN THE PROJECT NARRATIVE FILE. The font must not be smaller than 11 point. Do not include any Internet addresses (URLs) that provide information necessary to review the application. See Section VIII.D for instructions on how to mark proprietary application information. See the “Summary of Required Forms/Files” for the required file format and file name.

The project narrative must include:

- Project Objectives.  
This section should provide a clear, concise statement of the specific objectives/aims of the proposed project.
  
- Merit Review Criterion Discussion.  
This section should be formatted to address each merit review criterion and sub-criterion listed in Part V. A. below. Provide sufficient information so that reviewers will be able to evaluate the application in accordance with these merit review criteria. DOE WILL EVALUATE AND CONSIDER ONLY THOSE APPLICATIONS THAT ADDRESS EACH MERIT REVIEW CRITERION.

- Relevance and Outcomes/Impacts.  
This section should explain the relevance of the effort to the objectives in the program announcement and the expected outcomes and/or impacts. The justification for the proposed project should include a clear statement of the importance of the project in terms of the utility of the outcomes and the target community of beneficiaries.
- Roles of Participants.  
For multi-organizational or multi-investigator projects, describe the roles and the work to be performed by each participant/investigator, business agreements between the applicant and participants, and how the various efforts will be integrated and managed.
- Facilities and Other Resources.  
Identify the facilities (e.g., office, laboratory, computer, etc.) to be used at each performance site listed, and, 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. Provide any information describing the other resources available to the project, such as machine and electronics shops.
- Equipment.  
List important items of equipment already available for this project, and if appropriate, note the location and pertinent capabilities of each. If you are proposing to acquire equipment, describe comparable equipment, if any, already at your organization and explain why it cannot be used.
- Bibliography and References, if applicable.  
Provide a bibliography for any references cited in the Project Narrative section. This section must include only bibliographic citations.
- Statement of Project Objectives (SOPO).  
The Statement of Project Objectives should be provided in a similar format as the SOPO template shown in Appendix E . The SOPO must address how the project objectives will be met. It must contain a clear, concise description of all activities to be completed during the project performance and follow the requirements in the template. The SOPO may be released to the public by DOE, in whole or in part, at any time. Therefore, it is required that it shall not contain proprietary or confidential business information.

All the components of your Project Narrative must be within the specified Narrative page limit of 25 pages. Documents listed below may be included as clearly marked appendices to your Narrative and will not count towards the Project Narrative page limit. Please note that some of the required documents listed below may have their own page limits to which you must adhere.

#### 4. **Letters of Participation Commitment (Topic Area 2 Only)**

At least 3 Letters of Participation Commitment from organizations with interest in using the testbeds to benchmark or demonstrate production strains or processing technologies. See the “Summary of Required Forms/Files” for the required file format and file name.

#### 5. **Resume File**

Provide a resume for each key person proposed, including subawardees and consultants if they meet the definition of a key person. A key person is any individual who contributes in a substantive, measurable way to the execution of the project. The biographical information for each resume must not exceed 2 pages when printed on 8.5” by 11” paper with 1” margins (top, bottom, left, and right), single spaced, with font not smaller than 11 point and should include the information below, if applicable. See the “Summary of Required Forms/Files” for the required file format and file name.

Education and Training. Undergraduate, graduate and postdoctoral training; provide institution, major/area, degree and year.

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 5 professional and scholarly activities related to the effort proposed.

\* Of the key personnel identified in this file, indicate the Principal Investigator(s) (PI(s)).

For Multiple Principal Investigators:

The applicant, whether a single organization or team/partnership/consortium, must indicate if the project will include multiple PIs. The decision to use multiple PIs for a project is the sole responsibility of the applicant. If multiple PIs will be designated, the application must identify the Contact PI/Project Coordinator and provide a “Coordination and Management Plan” that describes the organization structure of the project as it pertains to the designation of multiple PIs. This plan should, at a minimum, include:

- Process for making decisions on scientific/technical direction;
- Publications;
- Intellectual property issues;
- Communication plans;
- Procedures for resolving conflicts; and

- PIs' roles and administrative, technical, and scientific responsibilities for the project.

The resume file does not have a page limitation.

## 6. Budget File

### **SF 424 A Excel, Budget Information – Non-Construction Programs File**

You must provide a separate budget for each year of support requested and a cumulative budget for the total project period. Use the SF 424 A Excel, “Budget Information – Non Construction Programs” form on the DOE Financial Assistance Forms Page at:

<http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms>. The SF424A provides columns for each individual budget-year as well as the commulative project-budget.

You may request funds under any of the Object Class Categories 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 announcement (see Section IV, G). See the “Summary of Required Forms/Files” for the required file format and file name.

## 7. Budget Justification File

### **PMC 123.1 Budget Justification File (See Appendix D for further information)**

You must justify the costs proposed in each Object Class Category/Cost Classification category (e.g., identify key persons and personnel categories and the estimated costs for each person or category; provide a list of equipment and cost of each item; identify proposed subaward/consultant work and cost of each subaward/consultant; describe purpose of proposed travel, number of travelers and number of travel days; list general categories of supplies and amount for each category; and provide any other information you wish to support your budget). Provide the name of your cognizant/oversight agency, (if known) and the name and phone number of the individual responsible for negotiating your indirect rates. If cost share is required, you must have a letter from each third party contributing cost share (i.e., a party other than the organization submitting the application) stating that the third party is committed to providing a specific minimum dollar amount of cost share. In the budget justification, identify the following information for each third party contributing cost share: (1) the name of the organization; (2) the proposed dollar amount to be provided; (3) the amount as a percentage of the total project cost; and (4) the proposed type of cost share – cash, services, or property. See the “Summary of Required Forms/Files” for the required file format and file name.

## 8. Letters of Commitment

If cost share is required, you must have a letter from each third party contributing cost share (i.e., a party other than the organization submitting the application) stating that the third party is committed to providing a specific minimum dollar amount of cost share. Identify the following information for each third party contributing cost share: (1) the name of the organization; (2) the proposed dollar amount to be provided; (3) the amount as a percentage of the total project cost; and (4) the proposed type of cost share – cash, services, or property. Letters of Commitment from parties participating in the project, exclusive of vendors, who will not be contributing cost share, but will be integral to the



success of the project must be included as part of this Appendix to the Narrative. See the “Summary of Required Forms/Files” for the required file format and file name.

**9. Subaward Budget File(s)**

You must provide a separate budget (i.e., budget for each budget year and a cumulative budget) for each subawardee that is expected to perform work estimated to be more than \$100,000 or 50 percent of the total work effort (whichever is less). Use the SF 424 A Excel for Non Construction Programs. These forms are found on the DOE Financial Assistance Forms Page at: <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms>.

A budget justification for the subaward budget is also required. The budget justification must include the same justification information described in Paragraph 6 above. See Appendix D for further information. See the “Summary of Required Forms/Files” for the required file format and file name.

**10. Field Work Proposal for DOE Federally Funded Research and Development Center (FFRDC) Contractor File, if applicable**

If a DOE FFRDC contractor is to perform a portion of the work, you must provide a DOE Field Work Proposal (FWP) in accordance with the requirements in DOE Order 412.1 Work Authorization System. The DOE Order 412.1, Work Authorization System and the DOE O 412.1, Field Work Proposal form are available at the following link, under “DOE Budget Forms”: <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms>. See the “Summary of Required Forms/Files” for the required file format and file name.

**11. Authorization for non-DOE or DOE FFRDCs**

Save the Authorization for non-DOE or DOE FFRDCs, as specified in Section III.C. See the “Summary of Required Forms/Files” for the required file format and file name.

**12. Project Management Plan**

This plan should identify the activities/tasks to be performed, a time schedule for the accomplishment of the activities/tasks, the spending plan associated with the activities/tasks, and the expected dates for the release of outcomes. Applicants may use their own project management system to provide this information. This plan should identify any decision points and go/no-go decision criteria. Successful applicants must use this plan to report schedule and budget variances. See the “Summary of Required Forms/Files” for the required file format and file name.

**13. SF-LLL Disclosure of Lobbying Activities**

If applicable, complete the SF- LLL. 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 agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the grant/cooperative agreement, you must complete and submit Standard Form - LLL, "Disclosure Form to Report Lobbying." See the “Summary of Required Forms/Files” for the required file format and file name.

#### **14. Site Access Plan**

**For Topic Area 2,** This plan should include:

- a. A set of procedures and criteria to ensure that all stakeholders (innovators, inventors, and researchers from academia, industry, and non-profit groups) have equitable access to the testbeds.
- b. A discussion of the arrangement for various institutions that will be using the facility repeatedly.
- c. Justification for tiered facility use fee schedule.
- d. A plan for using funding under this award to provide stakeholders with needed expertise and/or testbed materials (i.e. strains or biomass) for research in the cultivation process.
- e. A plan for accommodating visiting researchers and engineers who need to oversee the analyses of technologies on-site, or other partners who desire testbed materials or expert knowledge. These accommodations should include temporary business facilities (internet, workstation, meeting rooms); overnight accommodations within reasonable proximity; including any applicable institutional firewalls and legal documents that are mutually agreeable.
- f. See the “Summary of Required Forms/Files” for the required file format and file name.

#### **15. IP Framework**

**For Topic Area 2,** submit an intellectual property framework. The IP framework should describe handling of IP that is consistent with the terms and conditions of the award, including cross-licensing of team members' IP, licensing of team members' background IP, handling of joint inventions, plans for information sharing among team members, testbed users, and the public, handling of IP developed by testbed users, and how IP will be licensed to the general research community. One IP management plan based on the submitted IP framework must be signed by all team members and must be submitted by the awardee no later than 30 days after notification of selection for negotiation of an award. DOE expects the team members to conduct business to facilitate the free flow of information among themselves. See the “Summary of Required Forms/Files” for the required file format and file name.

### Summary of Required Forms/Files

Your application must include the following documents:

	<b>Name of Document</b>	<b>Format</b>	<b>File Name</b>
1.	SF 424 - Application for Federal Assistance	PDF	ControlNumber_LeadOrganization_App424
2.	Project Summary/Abstract File	PDF	ControlNumber_LeadOrganization_Summary
3.	Project Narrative File, including required appendices	PDF	ControlNumber_LeadOrganization_Project
4.	Letters of Participation Commitment (Topic Area 2 only)	PDF	ControlNumber_LeadOrganization_LOP
5.	Resume File	PDF	ControlNumber_LeadOrganization_Resume
6.	SF 424A Excel – Budget Information for Non-Construction Programs File	Excel	ControlNumber_LeadOrganization_SF424A
7.	PMC 123.1 Budget Justification File	Excel	ControlNumber_LeadOrganization_Budget
8.	Letters of Commitment	PDF	ControlNumber_LeadOrganization_LOC
9.	Subaward Budget File(s), if applicable	Excel	ControlNumber_LeadOrganization_Subawardee_SF424A
10.	Budget Justification(s), if applicable	Excel	ControlNumber_LeadOrganization_Subawardee_PMC123_1_Budget
11.	Field Work Proposal for Federally Funded Research and Development Center (FFRDC) Contractor File, if applicable	PDF	ControlNumber_LeadOrganization_FFRDC_FWP
12.	Authorization from cognizant Contracting Officer for FFRDC, if applicable	PDF	ControlNumber_LeadOrganization_FFRDC
13.	Project Management Plan	PDF	ControlNumber_LeadOrganization_PMP
14.	SF-LLL Disclosure of Lobbying Activities, if applicable	PDF	ControlNumber_LeadOrganization_SF LLL
15.	Site Access Plan (Topic Area 2 only)	PDF	ControlNumber_LeadOrganization_SAP.pdf
16.	IP Framework (Topic Area 2 only)	PDF	ControlNumber_LeadOrganization_IP.pdf

#### **D. Submissions from Successful Applicants**

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

- Indirect cost information
- Other budget information
- Name and phone number of the Designated Responsible Employee for complying with national policies prohibiting discrimination (See 10 CFR 1040.5)
- Representation of Limited Rights Data and Restricted Software, if applicable
- Environmental Questionnaire

By submitting an application in response to this FOA the Applicant certifies that:

It is **not** a corporation that has been convicted (or had an officer or agent of such corporation acting on behalf of the corporation convicted) of a felony criminal violation under any Federal law within the preceding 24 months,

- (1) 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,
- (2) If the Applicant's financial assistance application is chosen for award and the award is in excess of \$1,000,000, the applicant will, by the end of the fiscal year, upgrade the efficiency of their facilities by replacing any lighting that does not meet or exceed the energy efficiency standard for incandescent light bulbs set forth in Section 325 of the Energy Policy and Conservation Act (42 U.S.C. 6295).

#### **E. Submission Dates and Times**

1. Letter of Intent Is Not Required
2. Pre-applications Are Not Required.
3. **Application Due Date and Submission Time**  
Applications must be received by **05/02/2012**, not later than **5:00 PM Eastern Time**.  
You are encouraged to transmit your application well before the deadline.  
**APPLICATIONS RECEIVED AFTER THE DEADLINE WILL NOT BE REVIEWED OR CONSIDERED FOR AWARD.**

#### **F. Intergovernmental Review**

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

## G. Funding Restrictions

Cost Principles. Costs must be allowable in accordance with the applicable Federal cost principles referenced in 10 CFR Part 600. The cost principles for commercial organization are in FAR Part 31.

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 and no earlier than the selection date, if the costs are allowable in accordance with the applicable Federal cost principles referenced in 10 CFR part 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.

## H. Submission and Registration Requirements

### 5. Where to Submit

**APPLICATIONS MUST BE SUBMITTED UNDER THIS ANNOUNCEMENT THROUGH EERE EXCHANGE at:**

**<https://eere-exchange.energy.gov/> TO BE CONSIDERED FOR AWARD.** You cannot submit an application through EERE Exchange unless you are registered. Please read the registration requirements below carefully and start the process immediately. Applications submitted by any other means will not be accepted.

If you have problems completing the registration process or submitting your application, send an email to the EERE Exchange helpdesk at [EERE-ExchangeSupport@hq.doe.gov](mailto:EERE-ExchangeSupport@hq.doe.gov). It is the responsibility of the applicant to verify successful transmission, prior to the Application due date and time.

### 6. Registration Process Requirements

There are several one-time actions that must be completed before submitting an Application in response to this Funding Opportunity Announcement (FOA), as follows:

- Register and create an account on EERE Exchange at: <https://eere-exchange.energy.gov/>. This account will then allow the user to register for any open EERE FOAs that are currently in Exchange. It is recommended that each organization or business unit, whether acting as a team or a single entity, use only one account as the appropriate contact point for each submission.

The applicant will receive an automated response when the Application is received. This will serve as a confirmation of receipt. Please do not reply to the automated response. The applicant will have the opportunity to re-submit a revised Application for any reason as long as the relevant submission is submitted by the specified deadline. The Users' Guide for Applying to the Department of Energy EERE

Funding Opportunity Announcements is found at: <https://eere-exchange.energy.gov/Manuals.aspx>.

The EERE Exchange registration does not have a delay; however, the remaining **registration requirements below could take several weeks to process and are necessary in order for a potential applicant to receive an award under this announcement**. Therefore, although not required in order to submit an Application through the EERE Exchange site, **all potential applicants lacking a DUNS number, or not yet registered with CCR or FedConnect should complete those registrations as soon as possible**.

Questions related to the registration process and use of the EERE Exchange website should be submitted to: [EERE-ExchangeSupport@hq.doe.gov](mailto:EERE-ExchangeSupport@hq.doe.gov)

- Obtain a Dun and Bradstreet Data Universal Numbering System (DUNS) number (including plus 4 extension, if applicable) at: <http://fedgov.dnb.com/webform>
- Register with the Central Contractor Registry (CCR) at: <https://www.bpn.gov/ccr/default.aspx>. Designating an Electronic Business Point of Contact (EBiz POC) and obtaining a special password called an MPIN are important steps in CCR registration. Please update your CCR registration annually.
- Register in FedConnect at: <https://www.fedconnect.net/>. To create an organization account, your organization's CCR MPIN is required. For more information about the CCR MPIN or other registration requirements, review the FedConnect Ready, Set, Go! Guide at: [https://www.fedconnect.net/FedConnect/PublicPages/FedConnect\\_Ready\\_Set\\_Go.pdf](https://www.fedconnect.net/FedConnect/PublicPages/FedConnect_Ready_Set_Go.pdf)

## 7. Electronic Authorization of Applications and Award Documents

Submission of an application and supplemental information under this announcement through electronic systems used by the Department of Energy, including EERE Exchange, constitutes the authorized representative's approval and electronic signature.

Submission of award documents, including modifications, through electronic systems used by the Department of Energy, including FedConnect, constitutes the authorized representative's approval and acceptance of the terms and conditions of the award. Award acknowledgement via FedConnect constitutes the authorized representative's electronic signature.

## **SECTION V - APPLICATION REVIEW INFORMATION**

### **A. Criteria**

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

##### **Application Award Eligibility**

Prior to a comprehensive merit review evaluation, DOE will perform an initial review to determine that (1) the applicant is eligible for an award; (2) the information required by the announcement has been submitted; (3) all mandatory requirements are satisfied; and (4) the proposed project is responsive to the objectives of the funding opportunity announcement. If an application fails to meet these requirements, it may be deemed non-responsive and eliminated from full Merit Review.

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

Applications will be evaluated against the merit review criteria shown below.

##### **Topic Area 1:**

##### ***Technical Merit & Feasibility: (50%)***

- Validity of the proposed approach and likelihood of success based on previous and current work (including demonstrated ability to cultivate algae in outdoor environments) and the scientific principles underpinning the proposed approach.
- Degree to which the preliminary data and baseline provided supports and justifies project objectives and individual Phase targets.
- Adequacy of the proposal in clearly identifying the processes for which R&D will be employed and where improvements will occur, including the ability to demonstrate the relative value of the proposed work. Degree to which key technical risk areas are identified.
- Extent to which presented information supports the conclusion that the proposed cultivation/recycle system can be scaled-up and replicated to produce algal biofuels to significantly contribute to the advanced biofuel volumetric targets of the Renewable Fuel Standard 2 <http://www.epa.gov/otaq/fuels/renewablefuels/index.htm>

##### ***Implementation/Project Management Plan: (25%)***

- Degree to which the presented plan will contribute to accomplishment of the FOA objectives, including key elements such as a work breakdown structure, a viable and achievable resource-loaded schedule, appropriately defined objectives, well defined tasks and appropriate resources (technical, facilities, equipment and labor).
- Adequacy and value of proposed milestones, go/no-go decision points, and performance metrics to meet Phase I and Phase II targets.
- Degree to which reasonable and effective strategies are presented to mitigate key technical and management risks.

##### ***Qualifications and Resources: (25%)***

- Adequacy of each participating organizations' capabilities, experience, and

- qualifications to successfully perform the proposed project, including technical and management qualifications, education, credentials, capabilities and performance records of key personnel with respect to their ability to carry out the proposed project.
- Adequacy of the existing infrastructure and resources proposed to support achievement of the project objectives, including those of subcontractors and/or other partners.
  - Reasonableness of any request for changes or modifications to existing facilities and the perceived value-added to the achievement of the objectives in this FOA.

## **Topic Area 2:**

### ***Qualifications and Resources: (40%)***

- Adequacy of the capabilities, experience, qualifications, and credentials of key personnel. This includes the adequacy of the participating organizations' and key personnel's technical and management qualifications, education, credentials, capabilities and performance records with respect to their ability to carry out the proposed project.
- Extent to which a collaborative partnership has sufficient capability to perform both required functions of Topic Area 2.
- Adequacy of the existing infrastructure and resources proposed to support achievement of the project objectives including the reasonableness of any request for modifications to existing facilities and the perceived value-added to the achievement of the objectives in this FOA.
- Adequacy of applicant's site access plan and intellectual property framework.

### ***Technical Merit & Feasibility: (30%)***

- Validity of the proposed approach and likelihood of success based on previous and current work (including demonstrated ability to cultivate algae in outdoor environments) and the scientific principles underpinning the proposed approach.
- Adequacy of the proposed research plan to generate longer term feedstock trial data that will enable comparisons of promising production strains, at meaningful scale, across different regional, seasonal, environmental, and operational conditions.
- Degree to which key technical and programmatic risk areas are identified.
- Degree to which the proposed Phase targets are reasonable and achievable within the project time frame.

### ***Implementation/Project Management Plan: (30%)***

- Degree to which the presented plan is likely to contribute to achievement of the FOA objectives, including key elements such as a work breakdown structure, a viable and achievable resource-loaded schedule, appropriately defined objectives, well defined tasks and appropriate resources (technical, facilities, equipment and labor). Reasonableness and completeness of the schedule and the technical quality of critical-path planning, including the adequacy and value of proposed milestones, go/no-go decision points, and performance metrics.
- Effectiveness in showing how proposed management controls are adequate to mitigate potential project issues and risks.



- Degree to which the proposal comprehensively addresses key project implementation issues, such as implementing a tiered fee structure or a communication plan to ensure that the partnering testbeds are adequately meeting the needs of the algal biofuels community.

### **3. Program Policy Factors**

The selection official may consider the following program policy factors in the selection process:

- Technological diversity, including cultivation technology, strains, scale of cultivation, intermediate biomass products, and target finished products.
- Geographic diversity.
- Extent to which proposed cost share exceeds the minimum required and is appropriate for the maturity of the technology under development.
- Contribution to DOE portfolio balance.

## **B. Review and Selection Process**

### **1. Applications Subject to Merit Review**

Applications that pass the initial review will be subjected to a merit review in accordance with the guidance provided in the “Department of Energy Merit Review Guide for Financial Assistance”. This guide is available at:  
<http://energy.gov/sites/prod/files/meritrev.pdf>.

**It is very important that those documents (e.x. Project Abstract and Project Narrative file) that will be used during the Merit Review Process do not contain any Personally Identifiable Information as described in Appendix B.**

### **2. Selection Official Consideration**

The Selection Official may consider the merit review recommendation, program policy factors, and the amount of funds available.

### **3. Government Discussions with Applicant**

The Government may enter into discussions with a selected applicant for any reason deemed necessary, including, but not limited to: (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 part 600; 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**

DOE anticipates notifying applicants selected for award by **end of June 2012** and making awards by **end of August 2012**.

## SECTION VI - AWARD ADMINISTRATION INFORMATION

### A. Notice of Selection and Award

#### 1. Notice of Selection

##### **Selected Applicants Notification**

DOE will notify applicants selected for negotiation for award. This notice of selection is not an authorization to begin performance. (See Section IV.G with respect to the allowability of pre-award costs.)

##### **Non-selected Notification**

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

#### 2. Notice of Award

A Financial Assistance Award, or 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, if any; (3) Application as approved by DOE; (4) DOE assistance regulations at 10 CFR Part 600; (5) National Policy Assurances To Be Incorporated As Award Terms; (6) Budget Summary; and (7) Federal Assistance Reporting Checklist, which identifies the reporting requirements.

For grants and cooperative agreements made to universities, non-profits and other entities subject to OMB Circular A-110, the Award also includes the Research Terms and Conditions and the DOE Agency Specific Requirements located at:

<http://www.nsf.gov/bfa/dias/policy/rtc/index.jsp>.

### B. Administrative and National Policy Requirements

#### 1. Administrative Requirements

The administrative requirements for DOE grants and cooperative agreements are contained in Title 2 CFR (See: <http://ecfr.gpoaccess.gov>). Grants and cooperative agreements made to universities, non-profits and other entities subject to Title 2 CFR are subject to the Research Terms and Conditions located on the National Science Foundation web site at: <http://www.nsf.gov/bfa/dias/policy/rtc/index.jsp>.

##### **DUNS and CCR Requirements**

Additional administrative requirements for DOE grants and cooperative agreements are contained in 2 CFR, Part 25 (See: <http://ecfr.gpoaccess.gov>). Prime awardees must keep their data at CCR current. 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, Part 170. (See: <http://ecfr.gpoaccess.gov>). Prime awardees must register with the new 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 CCR.

## 2. **Special Terms and Conditions and National Policy Requirements**

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>.

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

By submitting an application in response to this FOA the Applicant certifies that:

- (1) It is **not** a corporation that has been convicted (or had an officer or agent of such corporation acting on behalf of the corporation convicted) of a felony criminal violation under any Federal law within the preceding 24 months,
- (2) 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,
- (3) If the Applicant's financial assistance application is chosen for award and the award is in excess of \$1,000,000, the applicant will, by the end of the fiscal year, upgrade the efficiency of their facilities by replacing any lighting that does not meet or exceed the energy efficiency standard for incandescent light bulbs set forth in Section 325 of the Energy Policy and Conservation Act (42 U.S.C. 6295).

## 3. **Intellectual Property Provisions**

The standard DOE financial assistance intellectual property provisions applicable to the various types of recipients are located at <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms>

## 4. **Statement of Substantial Involvement**

The DOE Specialist and DOE Project Officer will negotiate a Statement of Substantial Involvement prior to award. Anticipated areas of involvement may include but are not limited to review and approval of site access plan.

DOE has the right to intervene in the conduct or performance of project activities for programmatic reasons. Intervention includes the interruption or modification of the conduct or performance of project activities.

### **C. Reporting**

Reporting requirements are identified on the Federal Assistance Reporting Checklist, DOE F 4600.2, attached to the award agreement.

## **SECTION VII - QUESTIONS/AGENCY CONTACTS**

### **Questions**

Questions regarding the content of this announcement must be submitted to: [Algae@go.doe.gov](mailto:Algae@go.doe.gov) no later than five (5) business days prior to the application due date.

All questions and answers related to this FOA will be posted on EERE Exchange at: <https://eere-exchange.energy.gov/>. **Please note that you must first select this specific FOA Number in order to view the questions and answers specific to this FOA.** DOE will attempt to respond to a question within 3 business days, unless a similar question and answer has already been posted on the website.

Questions related to the registration process and use of the EERE Exchange website should be submitted to: [EERE-ExchangeSupport@hq.doe.gov](mailto:EERE-ExchangeSupport@hq.doe.gov)

## **SECTION VIII - OTHER INFORMATION**

### **A. Amendments**

Notices of any amendments to this announcement will be posted on the EERE Exchange web site. When you create an application record you are then registered to receive notifications of changes. This notice will be delivered by e-mail to the address listed in your application record.

### **B. Government Right to Reject or Negotiate**

DOE reserves the right, without qualification, to reject any or all applications received in response to this announcement 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**

DOE will use data and other information contained in applications strictly for evaluation purposes. Applicants should not include confidential, proprietary, or privileged information in their applications unless such information is necessary to convey an understanding of the proposed project.

Applications containing confidential, proprietary, or privileged information must be marked as described below. Failure to comply with these marking requirements may result in the disclosure of the unmarked information under the Freedom of Information Act or otherwise. The U.S. Government is not liable for the disclosure or use of unmarked information, and may use or disclose such information for any purpose.

The cover sheet of the application must be marked as follows and identify the specific pages containing confidential, proprietary, or privileged information:

**Notice of Restriction on Disclosure and Use of Data:**

Pages [*list applicable pages*] of this document may contain confidential, proprietary, or privileged information that is exempt from public disclosure. Such information shall be used or disclosed only for evaluation purposes or in accordance with a financial assistance or loan agreement between the submitter and the Government. The Government may use or disclose any information that is not appropriately marked or otherwise restricted, regardless of source.

The header and footer of every page that contains confidential, proprietary, or privileged information must be marked as follows: “Contains Confidential, Proprietary, or Privileged Information Exempt from Public Disclosure.”

In addition, every line and paragraph containing proprietary, privileged, or trade secret information must be clearly marked with double brackets or highlighting.

#### **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 U.S.C. 5908 provides that title to such inventions vests in the United States, except where 35 U.S.C. 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.)

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

Special Protected Data Statutes. 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 date of its development, of first-produced 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), will apply to an award made under this announcement. This provision will 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. For National Laboratories and FFRDCs, the data rights clause in Applicant’s Management and Operating (M&O) Contract will apply.

#### **G. Notice of Right to Request Patent Waiver**

Applicants may request a waiver of all or any part of the rights of the United States in inventions conceived or first actually reduced to practice in performance of an agreement as a result of this announcement, 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.

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. Notice of Right to Conduct a Review of Financial Capability**

DOE reserves the right to conduct an independent third party review of financial capability for applicants that are selected for negotiation of award (including personal credit information of principal(s) of a small business if there is insufficient information to determine financial capability of the organization).

**J. Notice of Potential Disclosure under Freedom of Information Act**

Applicants should be advised that identifying information regarding all applicants, including applicant names and/or points of contact, may be subject to public disclosure under the Freedom of Information Act, whether or not such applicants are selected for negotiation of award.

## REFERENCE MATERIAL

### Appendix A – Definitions

“**afd**” means ash-free dry weight algal biomass

“**Amendment**” means a revision to a Funding Opportunity Announcement.

"**Applicant**" means the legal entity or individual signing the Application. This entity or individual may be one organization or a single entity representing a group of organizations (such as a Consortium) that has chosen to submit a single Application in response to a Funding Opportunity Announcement.

"**Application**" means the documentation submitted in response to a Funding Opportunity Announcement.

“**Authorized Organization Representative (AOR)**” is the person with assigned privileges who is authorized to submit grant applications through Grants.gov on behalf of an organization. The privileges are assigned by the organization’s E-Business Point of Contact designated in the CCR.

"**Award**" means the written documentation executed by a DOE Contracting Officer, after an Applicant is selected, which contains the negotiated terms and conditions for providing Financial Assistance to the Applicant. A Financial Assistance Award may be either a Grant or a Cooperative Agreement.

"**Budget**" means the cost expenditure plan submitted in the Application, including both the DOE contribution and the Applicant Cost Share.

“**Central Contractor Registration (CCR)**” is the primary database which collects, validates, stores and disseminates data in support of agency missions.

"**Consortium (plural consortia)**" means the group of organizations or individuals that have chosen to submit a single Application in response to a Funding Opportunity Announcement.

"**Contracting Officer**" means the DOE official authorized to execute Awards on behalf of DOE and who is responsible for the business management and non-program aspects of the Financial Assistance process.

"**Cooperative Agreement**" means a Financial Assistance instrument used by DOE to transfer money or property when the principal purpose of the transaction is to accomplish a public purpose of support or stimulation authorized by Federal statute, and Substantial Involvement (see definition below) is anticipated between DOE and the Applicant during the performance of the contemplated activity.



"**Cost Sharing**" means the respective share of Total Project Costs to be contributed by the Applicant and by DOE. The percentage of Applicant Cost Share is to be applied to the Total Project Cost (i.e., the sum of Applicant plus DOE Cost Shares) rather than to the DOE contribution alone.

"**Data Universal Numbering System (DUNS) Number**" is a unique nine-character identification number issued by Dun and Bradstreet (D&B). Organizations must have a DUNS number prior to registering in the CCR. Call 1-866-705-5711 to receive one free of charge.

"**E-Business Point of Contact (POC)**" is the individual who is designated as the Electronic Business Point of Contact in the CCR registration. This person is the sole authority of the organization with the capability of designating or revoking an individual's ability to conduct CCR transactions.

"**E-Find**" is a Grants.gov webpage where you can search for Federal Funding Opportunities in FedGrants. <http://www.grants.gov/search/searchHome.do>

"**EERE Exchange**" is the Department of Energy, Energy Efficiency and Renewable Energy's web system for posting Federal Funding Opportunity Announcements and receiving applications.

<https://eere-exchange.energy.gov/FileContent.aspx?FileID=e10b8886-1826-447d-b1bf-8d9f0bf06f8e>

"**Financial Assistance**" means the transfer of money or property to an Applicant or Participant to accomplish a public purpose of support authorized by Federal statute through Grants or Cooperative Agreements and sub-awards. For DOE, it does not include direct loans, loan guarantees, price guarantees, purchase agreements, Cooperative Research and Development Agreements (CRADAs), or any other type of financial incentive instrument.

"**FedConnect**" is where Federal agencies make awards via the web.

<https://www.fedconnect.net/FedConnect/>

"**Federally Funded Research and Development Center (FFRDC)**" means a research laboratory as defined by Federal Acquisition Regulation 35.017.

"**Funding Opportunity Announcement (FOA)**" is a publicly available document by which a Federal agency makes known its intentions to award discretionary grants or cooperative agreements, usually as a result of competition for funds. Funding opportunity announcements may be known as program announcements, notices of funding availability, solicitations, or other names depending on the agency and type of program.

"**Grant**" means a Financial Assistance instrument used by DOE to transfer money or property when the principal purpose of the transaction is to accomplish a public purpose of support or stimulation authorized by Federal statute, and no Substantial Involvement is anticipated between DOE and the Applicant during the performance of the contemplated activity.

**“Grants.gov”** is the “storefront” web portal which allows organizations to electronically find grant opportunities from all Federal grant-making agencies. Grants.gov is THE single access point for over 900 grant programs offered by the 26 Federal grant-making agencies.

<http://www.grants.gov>

**“Heterotrophically”** is defined as the growth of algae that occurs with plant-derived carbon sources (i.e. carbohydrates) without undergoing photosynthesis.

**“Indian Tribe”** means any Indian tribe, band, nation, or other organized group or community, including Alaska Native village or regional or village corporation, as defined in or established pursuant to the Alaska Native Claims Settlement Act (85 Stat. 688)[43 U.S.C. § 1601 et seq.], which are recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.

**"Key Personnel"** mean the individuals who will have significant roles in planning and implementing the proposed Project on the part of the Applicant and Participants, including FFRDCs.

**“Marketing Partner Identification Number (MPIN)”** is a very important password designated by your organization when registering in CCR. The E-Business Point of Contact will need the MPIN to assign privileges to the individual(s) authorized to perform CCR transactions on behalf of your organization. The MPIN must have 9 digits containing at least one alpha character (must be in capital letters) and one number (no spaces or special characters permitted).

**"Participant"** for purposes of this Funding Opportunity Announcement only, means any entity, except the Applicant substantially involved in a Consortium, or other business arrangement (including all parties to the Application at any tier), responding to the Funding Opportunity Announcement.

**“Phase”** for purposes of this FOA means a discrete project period, identifying all tasks needed to accomplish phase goals. Work is planned in a logical and efficient progression so that successful completion of each phase is a prerequisite for beginning the next project phase.

**“Principal Investigator”** refers to the technical point of contact/Project Manager for a specific project award.

**"Project"** means the set of activities described in an Application, State plan, or other document that is approved by DOE for Financial Assistance (whether such Financial Assistance represents all or only a portion of the support necessary to carry out those activities).

**“Proposal”** is the term used to describe the documentation submitted in response to a Funding Opportunity Announcement. Also see Application.

**“Recipient”** means the organization, individual, or other entity that receives a Financial Assistance Award from DOE, is financially accountable for the use of any DOE funds or

property provided for the performance of the Project, and is legally responsible for carrying out the terms and condition of the award.

**"Selection"** means the determination by the DOE Selection Official that negotiations take place for certain Projects with the intent of awarding a Financial Assistance instrument.

**"Selection Official"** means the DOE official designated to select Applications for negotiation toward Award under a subject Funding Opportunity Announcement.

**"Substantial Involvement"** means involvement on the part of the Government. DOE's involvement may include shared responsibility for the performance of the Project; providing technical assistance or guidance which the Applicant is to follow; and the right to intervene in the conduct or performance of the Project. Such involvement will be negotiated with each Applicant prior to signing any agreement.

**"Testbed Facility"** is defined as a single geographical location within the United States equipped with instruments and expertise for testing a variety of algal biomass processes. The Testbed Facility must have a total production capacity equal to or exceeding 2 kg ash-free dry weight algal biomass per month and have the flexibility to accommodate the testing of innovative algal process configurations.

**"Total Project Cost"** means all the funds to complete the effort proposed by the Applicant, including DOE funds (including direct funding of any FFRDC) plus all other funds that will be committed by the Applicant as Cost Sharing.

**"Tribal Energy Resource Development Organization or Group"** means an "organization" of two or more entities, at least one of which is an Indian Tribe (see "Indian Tribe" above) that has the written consent of the governing bodies of all Indian Tribes participating in the organization to apply for a grant or loan, or other assistance under 25 U.S.C. § 3503.

## Appendix B – Personally Identifiable Information

In responding to this Announcement, Applicants must ensure that Protected Personally Identifiable Information (PII) is not included in the following documents: Project Abstract, Project Narrative, Biographical Sketches, Budget or Budget Justification. These documents will be used by the Merit Review Committee in the review process to evaluate each application. PII is defined by the Office of Management and Budget (OMB) and DOE as:

Any information about an individual maintained by an agency, including but not limited to, education, financial transactions, medical history, and criminal or employment history and information that can be used to distinguish or trace an individual's identity, such as their name, social security number, date and place of birth, mother's maiden name, biometric records, etc., including any other personal information that is linked or linkable to an individual.

This definition of PII can be further defined as: (1) Public PII and (2) Protected PII.

- a. **Public PII:** PII found in public sources such as telephone books, public websites, business cards, university listing, etc. Public PII includes first and last name, address, work telephone number, email address, home telephone number, and general education credentials.
- b. **Protected PII:** PII that requires enhanced protection. This information includes data that if compromised could cause harm to an individual such as identity theft.

Listed below are examples of Protected PII that Applicants must not include in the files listed above to be evaluated by the Merit Review Committee.

- Social Security Numbers in any form
- Place of Birth associated with an individual
- Date of Birth associated with an individual
- Mother's maiden name associated with an individual
- Biometric record associated with an individual
- Fingerprint
- Iris scan
- DNA
- Medical history information associated with an individual
- Medical conditions, including history of disease
- Metric information, e.g. weight, height, blood pressure
- Criminal history associated with an individual
- Employment history and other employment information associated with an individual
- Ratings
- Disciplinary actions

- Performance elements and standards (or work expectations) are PII when they are so intertwined with performance appraisals that their disclosure would reveal an individual's performance appraisal
- Financial information associated with an individual
- Credit card numbers
- Bank account numbers
- Security clearance history or related information (not including actual clearances held)

Listed below are examples of Public PII that Applicants may include in the files listed above to be evaluated by the Merit Review Committee:

- Phone numbers (work, home, cell)
- Street addresses (work and personal)
- Email addresses (work and personal)
- Digital pictures
- Medical information included in a health or safety report
- Employment information that is not PII even when associated with a name
- Resumes, unless they include a Social Security Number
- Present and past position titles and occupational series
- Present and past grades
- Present and past annual salary rates (including performance awards or bonuses, incentive awards, merit pay amount, Meritorious or Distinguished Executive Ranks, and allowances and differentials)
- Present and past duty stations and organization of assignment (includes room and phone numbers, organization designations, work email address, or other identifying information regarding buildings, room numbers, or places of employment)
- Position descriptions, identification of job elements, and those performance standards (but not actual performance appraisals) that the release of which would not interfere with law enforcement programs or severely inhibit agency effectiveness
- Security clearances held
- Written biographies (e.g. to be used in a program describing a speaker)
- Academic credentials
- Schools attended
- Major or area of study
- Personal information stored by individuals about themselves on their assigned workstation or laptop unless it contains a Social Security Number

## Appendix C – Cost Share Information

### Cost Sharing or Cost Matching

The terms “cost sharing” and “cost matching” are often used synonymously. Even the DOE Financial Assistance Regulations, 10 CFR Part 600, use both of the terms in the titles specific to regulations applicable to cost sharing. DOE almost always uses the term “cost sharing,” as it conveys the concept that **non-Federal share is calculated as a percentage of the Total Project Cost**. An exception is the State Energy Program Regulation, 10 CFR Part 420.12, State Matching Contribution. Here “cost matching” for the non-Federal share is calculated as a percentage of the Federal funds only, rather than the Total Project Cost.

### How Cost Sharing Is Calculated

As stated above, cost sharing is calculated as a percentage of the Total Project Cost. Following is an example of how to calculate cost sharing amounts for a project with \$1,000,000 in Federal funds with a minimum 20% non-Federal cost sharing requirement:

Formula: Federal share (\$) divided by Federal share (%) = Total Project Cost

Example: \$1,000,000 divided by 80% = \$1,250,000

Formula: Total Project Cost (\$) minus Federal share (\$) = Non-Federal share (\$)

Example: \$1,250,000 minus \$1,000,000 = \$250,000

Formula: Non-Federal share (\$) divided by Total Project Cost (\$) = Non-Federal share (%)

Example: \$250,000 divided by \$1,250,000 = 20%

See the sample cost share calculation for a blended cost share percentage below. **Keep in mind that FFRDC funding is DOE funding.**

### What Qualifies For Cost Sharing

While it is not possible to explain what specifically qualifies for cost sharing in one or even a couple of sentences, in general, if a cost is allowable under the cost principles applicable to the organization incurring the cost and is eligible for reimbursement under a DOE grant or cooperative agreement, then it is allowable as cost share. Conversely, if the cost is not allowable under the cost principles and not eligible for reimbursement, then it is not allowable as cost share. In addition, costs may not be counted as cost share if they are paid by the Federal Government under another award unless authorized by Federal statute to be used for cost sharing.

The rules associated with what is allowable as cost share are specific to the type of organization that is receiving funds under the grant or cooperative agreement, though are generally the same for all types of entities. The specific rules applicable to:

- Institutions of Higher Education, Hospitals, and Other Nonprofit Organizations are found

at 10 CFR600.123;

- State and Local Governments are found at 10 CFR600.224; and
- For-profit Organizations are found at 10 CFR600.313.

In addition to the regulations referenced above, other factors may also come into play such as timing of donations and length of the project period. For example, the value of ten years of donated maintenance on a project that has a project period of five years would not be fully allowable as cost share. Only the value for the five years of donated maintenance that corresponds to the project period is allowable and may be counted as cost share.

Additionally, DOE generally does not allow pre-award costs for either cost share or reimbursement when these costs precede the signing of the appropriation bill that funds the award. In the case of a competitive award, DOE generally does not allow pre-award costs prior to the signing of the Selection Statement by the DOE Selection Official.

Following is a link to the DOE Financial Assistance Regulations. You can click on the specific section for each Code of Federal Regulations reference mentioned above.

DOE Financial Assistance Regulations:

<http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=98a996164312e8dcf0df9c22912852b0&rgn=div5&view=text&node=10:4.0.1.3.9&idno=10>

As stated above, the rules associated with what is allowable cost share are generally the same for all types of organizations. Following are the rules found to be common, but again, the specifics are contained in the regulations and cost principles specific to the type of entity:

(A) *Acceptable contributions.* All contributions, including cash contributions and third party in-kind contributions, must be accepted as part of the recipient's cost sharing if such contributions meet all of the following criteria:

- (1) They are verifiable from the recipient's records.
- (2) They are not included as contributions for any other Federally-assisted project or program.
- (3) They are necessary and reasonable for proper and efficient accomplishment of project or program objectives.
- (4) They are allowable under the cost principles applicable to the type of entity incurring the cost as follows:

(a) *For-profit organizations.* Allowability of costs incurred by for-profit organizations and those nonprofit organizations listed in Attachment C to OMB Circular A-122 is determined in accordance with the for-profit costs principles in 48 CFR Part 31 in the Federal Acquisition Regulation, except that patent prosecution costs are not allowable unless specifically authorized in the award

document.

(b) *Other types of organizations.* Allowability of costs incurred by other types of organizations that may be subrecipients under a prime award is determined as follows:

(i) *Institutions of higher education.* Allowability is determined in accordance with OMB Circular No. A-21 -- Cost Principles for Educational Institutions

(ii) *Other nonprofit organizations.* Allowability is determined in accordance with OMB Circular A-122, Cost Principles for Non-Profit Organizations

(iii) *Hospitals.* Allowability is determined in accordance with the provisions of 45 CFR Part 74, Appendix E, Principles for Determining Costs Applicable to Research and Development Under Grants and Contracts with Hospitals

(iv) *Governmental organizations.* Allowability for State, local, or federally recognized Indian tribal government is determined in accordance with OMB Circular No. A-87, Cost Principles for State, Local, and Indian Tribal Governments

(5) They are not paid by the Federal Government under another award unless authorized by Federal statute to be used for cost sharing or matching.

(6) They are provided for in the approved budget.

(B) *Valuing and documenting contributions*

(1) *Valuing recipient's property or services of recipient's employees.* Values are established in accordance with the applicable cost principles, which mean that amounts chargeable to the project are determined on the basis of costs incurred. For real property or equipment used on the project, the cost principles authorize depreciation or use charges. The full value of the item may be applied when the item will be consumed in the performance of the award or fully depreciated by the end of the award. In cases where the full value of a donated capital asset is to be applied as cost sharing or matching, that full value must be the lesser or the following:

(a) The certified value of the remaining life of the property recorded in the recipient's accounting records at the time of donation; or

(b) The current fair market value. If there is sufficient justification, the Contracting Officer may approve the use of the current fair market value of the donated property, even if it exceeds the certified value at the time of donation to the project. The Contracting Officer may accept the use of any reasonable basis for determining the fair market value of the property.

(2) *Valuing services of others' employees.* If an employer other than the recipient furnishes the services of an employee, those services are valued at the employee's regular rate of



pay, provided these services are for the same skill level for which the employee is normally paid.

(3) *Valuing volunteer services.* Volunteer services furnished by professional and technical personnel, consultants, and other skilled and unskilled labor may be counted as cost sharing or matching if the service is an integral and necessary part of an approved project or program. Rates for volunteer services must be consistent with those paid for similar work in the recipient's organization. In those markets in which the required skills are not found in the recipient organization, rates must be consistent with those paid for similar work in the labor market in which the recipient competes for the kind of services involved. In either case, paid fringe benefits that are reasonable, allowable, and allocable may be included in the valuation.

(4) *Valuing property donated by third parties.*

(a) Donated supplies may include such items as office supplies or laboratory supplies. Value assessed to donated supplies included in the cost sharing or matching share must be reasonable and must not exceed the fair market value of the property at the time of the donation.

(b) Normally only depreciation or use charges for equipment and buildings may be applied. However, the fair rental charges for land and the full value of equipment or other capital assets may be allowed, when they will be consumed in the performance of the award or fully depreciated by the end of the award, provided that the Contracting Officer has approved the charges. When use charges are applied, values must be determined in accordance with the usual accounting policies of the recipient, with the following qualifications:

(i) The value of donated space must not exceed the fair rental value of comparable space as established by an independent appraisal of comparable space and facilities in a privately-owned building in the same locality.

(ii) The value of loaned equipment must not exceed its fair rental value.

(5) *Documentation.* The following requirements pertain to the recipient's supporting records for in-kind contributions from third parties:

(a) Volunteer services must be documented and, to the extent feasible, supported by the same methods used by the recipient for its own employees.

(b) The basis for determining the valuation for personal services and property must be documented.

**SAMPLE COST SHARE CALCULATION  
FOR BLENDED COST SHARE PERCENTAGE**

*The following example shows the math for calculating required cost share for a project with \$2,000,000 in Federal funds with four tasks requiring different Non-Federal cost share percentages:*

<u>Task</u>	<u>Proposed Federal Share</u>	<u>Required Federal Share %</u>	<u>Non-Federal Cost Share %</u>
Task 1 (R&D)	\$1,000,000	80%	20%
Task 2 (R&D)	500,000	80%	20%
Task 3 (Demonstration)	400,000	50%	50%
Task 4 (Outreach)	<u>100,000</u>	100%	0%
	\$2,000,000		

Federal share (\$) divided by Federal share (%) = Task Cost

*Each task must be calculated individually as follows:*

Task 1

\$1,000,000 divided by 80% = \$1,250,000 (Task 1 Cost)

Task 1 Cost minus Federal share = Non-Federal share

\$1,250,000 - \$1,000,000 = **\$250,000 (Non-Federal share)**

Task 2

\$500,000 divided 80% = \$625,000 (Task 2 Cost)

Task 2 Cost minus Federal share = Non-Federal share

\$625,000 - \$500,000 = **\$125,000 (Non-Federal share)**

Task 3

\$400,000 / 50% = \$800,000 (Task 3 Cost)

Task 3 Cost minus Federal share = Non-Federal share

\$800,000 - \$400,000 = **\$400,000 (Non-Federal share)**

Task 4

Federal share = \$100,000

Non-Federal cost share is not mandated for outreach = **\$0 (Non-Federal share)**

The calculation may then be completed as follows:

<u>Task</u>	<u>Proposed Federal Share</u>	<u>Federal Share %</u>	<u>Required Non-Federal Cost Share \$</u>	<u>Required Non-Federal Cost Share %</u>	<u>Total Project Cost</u>
Task 1	\$1,000,000	80%	\$250,000	20%	\$1,250,000
Task 2	500,000	80%	125,000	20%	625,000
Task 3	400,000	50%	400,000	50%	800,000
Task 4	<u>100,000</u>	100%	<u>0</u>	0%	<u>100,000</u>
	<u>\$2,000,000</u>		<u>\$775,000</u>		<u>\$2,775,000</u>

Blended Cost Share %

Non-Federal share (\$775,000) divided by Total Project Cost (\$2,775,000) = 27.9% (Non-Federal)

Federal share (\$2,000,000) divided by Total Project Cost (\$2,775,000) = 72.1% (Federal)

## Appendix D – Budget Justification

Using the “Object Class Categories” in the SF-424A Budget form, justify the costs in each category **for each budget period of the project.**

The SF424A Budget form and the 123.1 Budget Justification must include both Federal (DOE), and Non-Federal (cost share) funds, thereby reflecting TOTAL PROJECT COSTS proposed. Both forms can be found at <https://www.eere-pmc.energy.gov/forms.aspx>.

For each sub-recipient that is expected to perform work estimated to be more than \$100,000 or 50 percent of the total work effort (whichever is less), a separate SF-424A budget and budget justification form must be submitted. For sub-recipients with estimated costs \$100,000 or less, provide what Statement of Project Objectives task(s) are being performed, the purpose/need for the effort, and a basis of the estimated costs that is considered sufficient for DOE evaluation.

All costs incurred by the Applicant’s sub-recipients, vendors, contractors, consultants and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the Applicant only.

### Personnel

List costs solely for employees of the Applicant. Identify positions to be supported. Key personnel should be identified by title. All other personnel should be identified either by title or a group category. State the amounts of time (e.g., hours or % of time) to be expended, the composite base pay rate, total direct personnel compensation and identify the rate basis (e.g., actual salary, labor distribution report, technical estimate, state civil service rates, etc.). Identify the number of employees (on a Full Time Equivalent) that will be employed in each position or group category. Note the prevailing wage requirements in the ARRA (P.L. 111-5). See example below.

Task # and Title	Position Title	Budget Period 1			Budget Period 2			Budget Period 3			Project Total Hours	Project Total Dollars	Rate Basis
		Time (Hours)	Pay Rate (\$/Hr)	Total Budget Period 1	Time (Hours)	Pay Rate (\$/Hr)	Total Budget Period 2	Time (Hours)	Pay Rate (\$/Hr)	Total Budget Period 3			
Task 1. – Task Name	Sr. Engineer (1)	2000	\$85.00	\$170,000	200	\$50.00	\$10,000	200	\$50.00	\$10,000	2400	\$190,000	Actual Salary
Task 2 – Task Name	Process Engineers (3)	6200	\$35.00	\$217,000	400	\$35.00	\$14,000	600	\$35.00	\$21,000	7200	\$252,000	Actual Salary
Task 3 – Task Name	Technician (1)	1800	\$20.00	\$36,000	0	\$0.00	\$0	0	\$0.00	\$0	1800	\$36,000	Actual Salary

### Fringe

A Federally approved fringe benefit rate agreement, or a proposed rate supported and agreed upon by DOE for estimating purposes is required if reimbursement for fringe benefits is requested. If a fringe benefit rate has been negotiated with, or approved by, a Federal government agency, a copy of the latest rate agreement must be included with this application. If there is not a current, federally approved rate agreement negotiated and available, provide a copy of the proposal with the application. If selected, the rate agreement will be finalized during

award negotiations. Calculate the fringe rate and enter the total amount in Section B, line 6.b. (“Fringe Benefits”) of form SF-424A.

**IMPORTANT:** Provide all fringe rates, along with a complete explanation and the full calculations used to derive the total fringe costs. If the total fringe costs are a cumulative amount of more than one calculation or rate application, the explanation and calculations should identify all rates used, along with the base they were applied to (and how the base was derived), and a total for each (along with grand total). The rates and how they are applied should not be averaged to get one fringe rate. **NOTE:** The fringe rate should be applied to both the Federal Share and Recipient Cost Share.

### Travel

See example of travel detail below. Identify total Foreign and Domestic Travel as separate items. Purpose of travel are items such as professional conferences, DOE sponsored meetings, project management meetings, etc. Identify number of travelers, estimated cost per traveler, and duration of trip. The Basis for Estimating Costs could be items such as past trips, current quotations, Federal Travel Regulations, etc. All listed travel must be necessary for performance of the Statement of Project Objectives. **NOTE:** All projects should include travel for 1-2 travelers to a DOE project review during each year of the project. Each review will take approximately 2-3 days.

Purpose of travel	No. of Travelers	Depart From	Destination	No. of Days	Cost per Traveler	Cost per Trip	Basis for Estimating Costs
<b>Budget Period 1</b>							
<b>Domestic Travel</b>							
Visit to reactor mfr. to set up vendor agreement	2	Denver CO	Dallas TX	2	\$650	\$1,300	Internet prices
Domestic Travel subtotal						\$1,300	
<b>International Travel</b>							
Visit to technology provider to discuss IP agreement	2	Denver CO	Berlin Germany	5	\$4,000	\$8,000	Previous experience
International Travel subtotal						\$8,000	
<b>Budget Period 1 Total</b>						<b>\$9,300</b>	
(Repeat as necessary for each Budget Period)							

### Equipment

Equipment is generally defined as an item with an acquisition cost greater than \$5,000 and a useful life expectancy of more than one year. All proposed equipment should be identified, providing a basis of cost such as vendor quotes, catalog prices, prior invoices, etc., and briefly justifying its need as it applies to the Statement of Project Objectives. If it is existing equipment, and the value of its contribution to the project budget is being shown as cost share, provide logical support for the estimated value shown. If it is new equipment which will retain a useful life upon completion of the project, provide logical support for the estimated value shown. For equipment over \$50,000 in price, also include a copy of the associated vendor quote or catalog price list. See example below.

Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
<b>Budget Period 1</b>					
EXAMPLE ONLY!!! Thermal shock chamber	2	\$20,000	\$40,000	Vendor Quote	Reliability testing of PV modules- Task 4.3

Budget Period 1 Total			\$40,000		
(Repeat as necessary for each Budget Period)					

### Supplies

Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Further definitions can be found in 10 CFR 600.

Proposed supplies should be identified, providing a basis of cost such as vendor quotes, catalog prices, prior invoices, etc., and briefly justifying the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.

General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1					
EXAMPLE ONLY!!! Wireless DAS components	10	\$360.00	\$3,600	Catalog price	For Alpha prototype - Task 2.4
Budget Period 1 Total			\$3,600		
(repeat as necessary for each Budget Period)					

### Contractual

The applicant must provide and justify all costs related to sub-recipients, vendors, contractors, consultants and FFRDC partners. See example below.

#### Sub-recipients (partners, sub-awardees):

For each sub-recipient that is expected to perform work estimated to be more than \$100,000 or 50 percent of the total work effort (whichever is less), a separate SF-424A budget and budget justification form must be submitted. For sub-recipients with estimated costs \$100,000 or less, provide what Statement of Project Objectives task(s) are being performed, the purpose/need for the effort, and a basis of the estimated costs that is considered sufficient for DOE evaluation.

#### Vendors (includes contractors and consultants):

Identify all vendors, contractors and consultants supplying commercial supplies or services used to support the project. The support to justify vendor costs (in any amount) should provide the purpose for the products or services and a basis of the estimated costs that is considered sufficient for DOE evaluation.

#### Federal Research and Development Centers (FFRDCs):

For FFRDC partners, the applicant should provide a Field Work Proposal (if not already provided with the original application), along with the FFRDC labor mix and hours, by category and FFRDC major purchases greater than \$25,000, including Quantity, Unit Cost, Basis of Cost, and Justification.

Sub-Recipient Name/Organization	Purpose/Tasks in SOPO	Budget Period 1 Costs	Budget Period 2 Costs	Budget Period 3 Costs	Project Total
EXAMPLE ONLY!!! XYZ Corp.	Partner to develop optimal fresnel lens for Gen 2 product - Task 2.4	\$48,000	\$32,000	\$16,000	\$96,000
Sub-total		\$48,000	\$32,000	\$16,000	\$96,000
Vendor Name/Organization	Product or Service, Purpose/Need and Basis of Cost (Provide additional support at bottom of page as needed)	Budget Period 1	Budget Period 2	Budget Period 3	Project Total

		Costs	Costs	Costs	
EXAMPLE ONLY!!! ABC Corp.	Vendor for developing custom robotics to perform lens inspection, alignment, and placement (Task 4 ). Required for expanding CPV module mfg. capacity. Cost is from competitive quotes.	\$32,900	\$86,500		\$119,400
	Sub-total	\$32,900	\$86,500	\$0	\$119,400
FFRDC Name/Organization	Purpose	Budget Period 1 Costs	Budget Period 2 Costs	Budget Period 3 Costs	Project Total
					\$0
	Sub-total	\$0	\$0	\$0	\$0
Total Contractual		\$80,900	\$118,500	\$16,000	\$215,400

### Construction

Construction, for the purpose of budgeting, is defined as all types of work done on a particular facility, including erecting, altering, or remodeling. Construction conducted by the award recipient should be justified in this category. Any construction work that is performed by a vendor or subrecipient to the award recipient should be entered under “Contractual.”

Identify all proposed construction, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives. For major endeavors, a copy of the engineering estimate or quote should also be provided. See example below.

Overall description of construction activities: Example Only!!! - Build wind turbine platform			
General Description	Cost	Basis of Cost	Justification of need
Budget Period 1			
Three days of excavation for platform site EXAMPLE ONLY!!!	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
Budget Period 1 Total	\$28,000		
(Repeat as necessary for each Budget Period)			

### Other Direct Costs

Other direct costs are direct cost items required for the project which do not fit clearly into other categories, and are not included in the indirect pool for which the indirect rate is being applied to this project. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.

General description	Cost	Basis of Cost	Justification of need
Budget Period 1			
EXAMPLE ONLY!!! Grad student tuition	\$16,000	Established UCD costs	Support of graduate students working on project
Budget Period 1 Total	\$16,000		
(Repeat as necessary for each Budget Period)			

### Indirect Costs

A Federally approved indirect rate agreement, or rate proposed supported and agreed upon by

DOE for estimating purposes is required if reimbursement of indirect benefits is requested. If there is a federally approved indirect rate agreement, a copy must be provided with this application and if selected, must be provided electronically to the Contracting Officer for this project. If there is no current, federally approved indirect rate agreement or if the federally approved indirect rate agreement has been changed or updated, a rate proposal must be included with the application. If selected, the rate agreement will be finalized during award negotiations. Calculate the indirect rate dollars and enter the total in the Section B., line 6.j. (Indirect Charges) of form SF 424A.

**IMPORTANT:** Provide a complete explanation and the full calculations used to derive the total indirect costs. If the total indirect costs are a cumulative amount of more than one calculation or rate application, the explanation and calculations should identify all rates used, along with the base they were applied to (and how the base was derived), and a total for each (along with grand total). The rates and how they are applied should not be averaged to get one indirect cost percentage. **NOTE:** The indirect rate should be applied to both the Federal Share and Recipient Cost Share.

**Cost Share**

A detailed presentation of the cash or cash value of all cost share proposed for the project must be provided. Identify the source and amount of each item of cost share proposed by the Applicant and each sub-recipient. Letters of commitment must be submitted for all third party cost share (other than award recipient).

Note that “cost-share” is not limited to cash investment. Other items that may be assigned value in a budget as incurred as part of the project budget and necessary to performance of the project, may be considered as cost share, such as: contribution of services or property; donated, purchased or existing equipment; buildings or land; donated, purchased or existing supplies; and/or unrecovered personnel, fringe benefits and indirect costs, etc. For each cost share contribution identified as other than cash, identify the item and describe how the value of the cost share contribution was calculated.

**Funds from other Federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC sub-recipients.** Non-Federal sources include private, state or local Government, or any source not originally derived from Federal funds.

**Fee or profit will not be paid to the award recipients or subrecipients of financial assistance awards. Additionally, foregone fee or profit by the applicant shall not be considered cost sharing under any resulting award.** Reimbursement of actual costs will only include those costs that are allowable and allocable to the project as determined in accordance with the applicable cost principles prescribed in 10 CFR 600.127, 10 CFR 600.222 or 10 CFR 600.317. Also see 10 CFR 600.318 relative to profit or fee. See example below.

Organization/Source	Type (cash or other)	Cost Share Item	Budget Period 1 Cost Share	Budget Period 2 Cost Share	Budget Period 3 Cost Share	Total Project Cost Share
ABC Company EXAMPLE ONLY!!!	Cash	Project partner ABC Company will provide 40 PV modules for product development at 50% off the of the retail price of \$680	\$13,600			\$13,600
		Totals	\$0	\$0	\$0	\$0



Total Project Cost:	\$312,300	Cost Share Percent of Award:	0.0%
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## Appendix E – Statement of Project Objectives

### STATEMENT OF PROJECT OBJECTIVES

[Recipient Name]

[Project Title]

*All of the information to be included in the SOPO should be consistent with the Application upon which the award is based. The SOPO should be written for public disclosure, and, generally, the total length should not exceed 4-5 pages.*

*The following items should not be included in the SOPO:*

- *Dollar amounts.*
- *Specific dates.*
- *Subcontractors by name. The award is with the prime and, as such, the SOPO should not reference the subcontractors.*
- *Intellectual property information or data.*

#### **A. PROJECT OBJECTIVES**

[Enter a clear and concise statement of the goals and objectives of the project as well as the expected outcomes.]

#### **B. PROJECT SCOPE**

[Include a general overview description of the project. Refer to the DOE Program or Division (for example: Hydrogen, Fuel Cells, and Infrastructure Technologies Program; Buildings and Industrial Technologies Division; etc.) objectives that the project is addressing. This section should be only 1-2 paragraphs long.]

#### **C. TASKS TO BE PERFORMED**

[For each Task and Subtask, enter 1-2 paragraphs describing the purpose, approach, and expected outcomes. Include project milestones (do not include dates), where appropriate. If applicable, the Tasks should be organized by project phases/budget periods which correspond to major project milestones or go/no-go decision points.]

*Below is an example of the type of Task structure desired:*

PHASE 1 [TITLE OPTIONAL]

##### **Task 1.0 [Insert Title]**

[Insert Description]

##### **Task 2.0 [Insert Title]**

[Insert Description]

##### **Subtask 2.1 [Insert Title]**

[Insert Description]

**Subtask 2.2 [Insert Title]**  
[Insert Description]

**PHASE 2 [TITLE OPTIONAL]**

**Task 3.0 [Insert Title]**  
[Insert Description]

**Task X.0 Project Management and Reporting** (Optional paragraph, per discussion with the DOE Project Officer)

[Include this as the last Task and number it consecutively with the other Tasks. As part or all of the Task Description, include language along the lines of: “Reports and other deliverables will be provided in accordance with the Federal Assistance Reporting Checklist following the instructions included therein.” Additional deliverables (for example, hardware delivered for testing or Peer Review Meetings / Project Review Meetings) not specified in the Reporting Checklist should be included in this Task Description.]