FINANCIAL ASSISTANCE
FUNDING OPPORTUNITY ANNOUNCEMENT

U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy (EERE)
Golden Field Office

SOLAR ENERGY EVOLUTION AND DIFFUSION STUDIES (SEEDS)

Funding Opportunity Announcement (FOA) Number:	DE-FOA-0000740
Announcement Type:	Amendment Number 001
CFDA Number:	81.087
Issue Date:	06/13/2012
Concept Paper Deadline:	07/13/2012, 5:00 PM Eastern Time
Full Application Deadline:	10/5/2012, 5:00 PM Eastern Time

Applicants must submit a Concept Paper by the due date
to be eligible to submit a Full Application.

Department of Energy
Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

DE-FOA-0000740
Amendment No. 001

DATE: August 31, 2012
FROM: Jeannette Singsen, Contracting Officer
TO: All Prospective Applicants

SUBJECT: Amendment No. 001 to Announcement DE-FOA-0000740,
"Solar Energy Evolution and Diffusion Studies (SEEDS)"

I. The purpose of this amendment is to extend the full application deadline to 10/5/2012.

II. The areas which have changed are highlighted within the Funding Opportunity Announcement in yellow.

III. 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, 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 Concept Paper or Full 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 Concept Paper or Full 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 EERE Exchange registration process and used of the EERE Exchange website should be submitted to: EERE-ExchangeSupport@hq.doe.gov

- Obtain a Dun & Bradstreet Data Universal Numbering System (DUNS) number (including a 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 (MPIN) are steps in the CCR registration. Update your CCR registration annually. As of July 2012 the Central Contractor Registry (CCR) along with several other Federal procurement systems is being incorporated into a single website called the System for Award Management (SAM). The SAM site is located at https://www.sam.gov/sam/. As the migration of CCR into the SAM website is currently in process, should you be unable to find the CCR website (https://www.ccr.gov/) at its previous location, please use the SAM website in this paragraph.

- Register with 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
- Register in Grants.gov to receive automatic updates when Amendments to this FOA are posted. However, please note that applications and Concept Papers will not be accepted through Grants.gov. http://www.grants.gov/

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EXECUTIVE SUMMARY

Solar Energy Evolution and Diffusion Studies (SEEDS) is a new program administered by the SunShot Initiative to support use-inspired research on solar energy innovation dynamics and technology adoption patterns. SEEDS supports the development of a diversity of analytical, numerical, and computational tools and methods for quantitative evaluation; implementation of pilot test strategies for modifying current practices; and assessment of pilot tests outcomes for impact and scalability. Through SEEDS, DOE seeks to launch a series of systematic investigations that will result in viable methods for dramatically transforming the operations of solar researchers, manufacturers, developers, installers, and policymakers. Selected research efforts will be performed in tandem with industry practitioners to ensure that results can be applied, tested, and modified in real time.

The two SEEDS research focus areas are:

(A.) **Solar Technology Evolution**: Technology evolution is the complex process by which a technology increases in performance and functionality and decreases in cost over time. Over the last 40 years, solar energy technologies have followed a particularly simple trend of cost reductions as production has ramped up. The simplicity of this trend conceals the rich set of coupled dynamics behind human learning, effort, and experience. A more rigorous understanding of solar technology evolution can reveal key levers for accelerating progress.

(B.) **Solar Technology Diffusion**: Innovation diffusion theory seeks to explain how, why, and at what rate new ideas, products, and technologies spread through society. Key results from innovation diffusion theory are often generalizations of empirically-observed qualitative trends. Within the past decade, the availability of large data sets and computational tools allows for quantitative analysis of diffusion trends with unprecedented precision and scale. Numerical modeling can reveal the complex processes underlying a technology's spread. A more rigorous understanding of solar technology diffusion can reveal key mechanisms for accelerating solar adoption.

The four SEEDS team structures are:

(1.) **Scholar-In-Residence / Visiting Scholar**: A partnership between a researcher and a private company, a nonprofit organization, or an electricity provider, or an affiliation with a governmental entity. The scholar will have access to datasets to aid in the development of novel research tools that advance the general understanding of technology evolution or diffusion.

(2.) **Research Team**: An interdisciplinary team of researchers will formulate an analytical, a numerical, and a conceptual framework for studying solar technological progress or adoption patterns. The team should involve public or private sector solar energy practitioners who can implement and sponsor applied research activities.

(3.) **Researcher**: Targeted studies performed by a researcher with interdisciplinary expertise with focus on applying data analysis and computational tools to examine solar technology evolution or diffusion challenges.

(4.) **Use-Inspired Data Collection**: A researcher will identify a specific non-redundant dataset that can be used to study a focused series of pertinent SEEDS research questions; identify a method for gathering data; suggest potential methods for data analysis; and submit the data to a centralized repository for open distribution.

Approximately $9 million of DOE funding over three years is expected to be available for awards under

this announcement, subject to the availability of annual appropriations.

SECTION I – FUNDING OPPORTUNITY DESCRIPTION

A. Program Context

The U.S. Department of Energy's (DOE) SunShot Initiative[1] is a collaborative national initiative to make solar energy cost competitive with other forms of energy by the end of the decade. Anticipated consequences of achieving the SunShot goals are illustrated in Fig. 1, where results from a 'business-as-usual' context are contrasted with other scenarios in which price declines are more dramatic. Under the SunShot scenario (a 75 % price decline), a significant portion of the total electricity needs within the United States are estimated to be sourced from solar energy. In order to realize the SunShot goals, however, the rate of innovation for all aspects of solar technology must deviate substantially from the historical trends.

The primary assumptions leading to the results in Fig. 1 are: (a) alignment of the efforts of the individual actors within an innovation system toward an aggressive cost-reduction target will accelerate overall technological progress; and (b) deep price reductions in solar energy technologies will spur wide-scale deployment. The SunShot assumptions embed the basic principles of technological evolution theory[2] and innovation diffusion theory[3]. A growing body

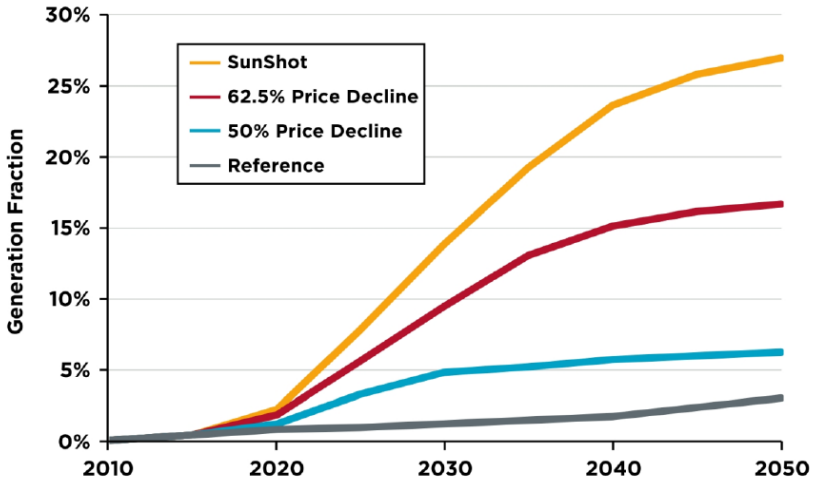

Fig. 1: Projected solar market diffusion (including photovoltaic and concentrated solar power).

[1] For more information on the SunShot Initiative, see www.energy.gov/sunshot and the SunShot Vision Study.

[2] K. Kelly, *What Technology Wants*, Viking Penguin, New York (2010); W. B. Arthur, *The Nature of Technology: What It Is and How It Evolves*, Free Press, New York (2009).

[3] M. Gladwell, *The Tipping Point: How Little Things Can Make a Big Difference*, Little Brown, Boston (2000); E. M. Rogers, *Diffusion of Innovations*, Free Press, New York (2003).

of literature suggests that a remarkably complex set of interactions underlie innovation dynamics. Hence, the identification of specific causal relationships within an innovation system may be tenuous. For example, the concept of technological determinism – the presumption that apparently advantageous technologies will necessarily find wide-spread use – is not born out historically[4]. Instead, a technology's development and adoption is constrained by its capacity to fit into social, political, and economic conditions. The simplicity exhibited by the often-used experience curve framework conceals a richer ecosystem in which science, engineering, production, deployment, adoption, and use are implicitly coupled through multiple feedback processes. A more rigorous understanding of the innovation landscape can accelerate technology evolution and diffusion.

Availability of population-size datasets and powerful computational tools[5] is revolutionizing the study of technology evolution and diffusion. A multidisciplinary approach founded on data-driven analyses can result in predictive capability that is systematically absent from *post hoc* qualitative descriptions. The technology-energy-society nexus is multifaceted, and future advancements will stem at the interface of disciplines. By integrating recent insights from the social sciences, network science, and economics, new analytic tools can be tested and validated.

The timescale for modifying the national energy landscape is decades. Yet, advancements during the next two to five years will be critical for the global solar industry as evolutionary and revolutionary transformations are fostered in science, engineering, production, and deployment. Over the past year alone, dramatic price declines for solar hardware have spawned significant restructuring of the solar industry. By 2020, the solar industry may be dramatically different than it is today. As the industry matures, today's challenges may seem quaint. Now is an especially exciting time for researchers to develop, test, and validate theories describing solar technology evolution and diffusion in real time. Furthermore, providing insights and sound recommendations will improve decision making for all stakeholders. The pathway for energy technologies is tumultuous – due to a strict regulatory framework and intense competition from

[4] Examples include: non-diffusion of the Dvorak keyboard and the gas absorption refrigerator (see Ref. 3); diminishing utilization of nuclear energy (see "Nuclear energy: The dream that failed," *The Economist*: Mar 10, 2012)

[5] D. Lazer et al., "Computational Social Science," *Science* **6**: 721-723 (2009).

incumbent technologies; yet to achieve wide-scale deployment, strategies for transcending such unique challenges must be established. Researchers have an important opportunity to help steer an industry closely tied to national imperatives – energy independence, economic stability, and environmental health – to maturity.

DOE recently articulated its efforts to integrate technical, economic, and policy analysis into its technology programs in its Quadrennial Technology Review[6]. In particular, a key finding was a need to establish applied social science as a core component. The recommendation states:

> The aggregated actions of individuals and organizations determine many aspects of the energy system, with demands on the system and the balance of supply and demand affected as much by individual choice, preference, and behavior, as by technical performance. Domestic and international organizations alike have recognized the importance of social barriers in deploying technologies, but much remains unknown.
>
> To fully assess potential impact of technology research and development, the Department must be versed in all the issues that affect market adoption of new technologies and capabilities. DOE will integrate applied social science into its technology programs in order to better understand how technologies diffuse through a sector and are used in the real world.

B. Program Description and Focus Areas

Solar Energy Evolution and Diffusion Studies (SEEDS) is a new program administered by the SunShot Initiative to support use-inspired research[7] on solar energy innovation dynamics and technology adoption patterns. SEEDS supports the development of a diversity of analytical, numerical, and computational tools and methods for quantitative evaluation; implementation of pilot test strategies for modifying current practices; and assessment of pilot tests outcomes for impact and scalability. Through SEEDS, DOE seeks to launch a series of systematic investigations that will result in viable methods for dramatically transforming the operations of solar researchers, manufacturers, developers, installers, and policymakers. Selected research

[6] For more information on the DOE Quadrennial Technology Review, see www.energy.gov/qtr.

[7] D. E. Stokes, *Pastuer's Quandrant: Basic Science and Technological Innovation*, The Brookings Institution, Washington, DC (1997).

efforts will be performed in tandem with industry partners to ensure that results can be applied, tested, and modified in real time. The rapidly changing solar industry presents an unparalleled testbed for studying technology evolution and technology diffusion, and new results provide the ability to judiciously and swiftly transform the industry.

Researchers, in partnership with solar industry decision-makers, will focus their investigations on addressing solar specific obstacles by proposing, developing, and applying methodologies that are best matched to realizing research objectives. Applicants are to select appropriate methods, drawn from the interface of the social sciences and natural sciences, that precisely reflect the questions at hand. Methods and results should provide generalizable lessons on technology evolution and diffusion that can be applied as new technologies are advanced and deployed.

The two major SEEDS focus areas are designed to examine the efficacy of the main assumptions regarding technological progress and adoption underlying the SunShot Initiative:

Focus A: Solar Technology Evolution

Technology evolution is the complex process by which a technology increases in performance and functionality and decreases in cost over time. Over the last 40 years, solar energy technologies have followed a particularly simple trend of cost reductions as production has ramped up. The simplicity of this trend conceals the rich set of coupled dynamics behind human learning, effort, and experience. A more rigorous understanding of solar technology evolution can reveal key levers for accelerating progress.

The main objective of studies under this focus area is to move beyond a phenomenological model of innovation dynamics to a science-based description with explanatory and predictive potential via a series of data-driven case studies of the solar energy technologies research, development, demonstration, and deployment processes. Analysis of records of journal publications, patents, movement of human capital (via business- and academic-related online social networks such as LinkedIn or ResearchGate), Federal research funding, and circulating capital within a supply chain can reveal new insights. New analytical models of technological evolution and the innovation process can provide guidance for how to accelerate the rate of improvement of solar energy technologies.

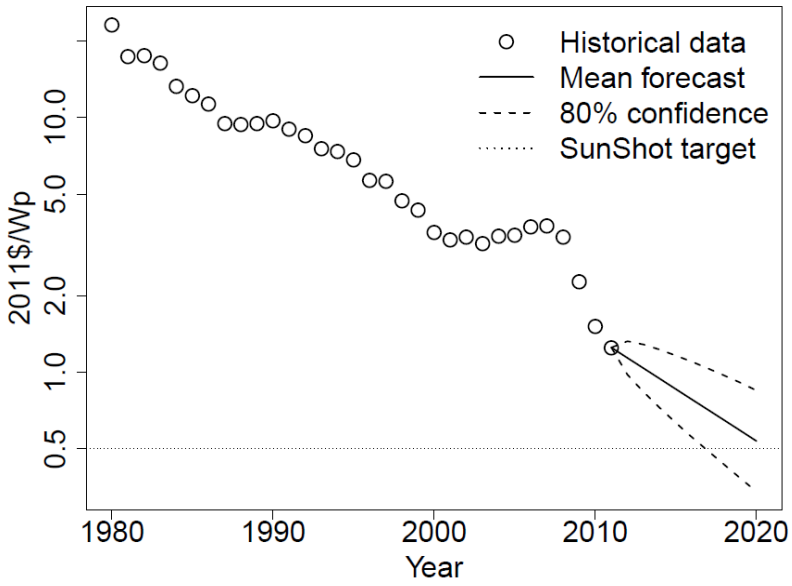

Fig. 2: Historical (symbols) and forecasted (solid line) unit price of photovoltaic (PV) modules. The SunShot target for 2020 ($0.5/W) is indicated.

Research should aim to inform relevant stakeholders of:

- advancements in production techniques,
- the design of public and private research funding structures such as the optimal allocation of funds among competing clean energy technologies and among technology readiness levels
- understanding the significance of manufacturing in an innovation economy,
- methods for strengthening feedback between innovators and end-users, and
- the general understanding of the role of inter-organizational and inter-industry dynamics in technology evolution.

A deeper understanding of the process of technological evolution has substantial practical implications specifically for the SunShot Initiative. As shown in Fig. 2, an unprecedented rate of cost reductions has occurred for photovoltaic modules. To achieve the SunShot targets for fully installed solar energy systems, the rate of innovation for all solar hardware and non-hardware components must be accelerated. A fundamental understanding of the process of technological evolution will serve to effectively guide investments to achieve the SunShot goals.

Focus B: Solar Technology Diffusion

Innovation diffusion theory seeks to explain how, why, and at what rate new ideas, products, and technologies spread through society. Key results from innovation diffusion theory

are often generalizations of empirically-observed qualitative trends. Within the past decade, the availability of large data sets and computational tools allows for quantitative analysis of diffusion trends with unprecedented precision and scale. Numerical modeling can reveal the complex processes underlying a technology's spread. A more rigorous understanding of solar technology diffusion can reveal key mechanisms for accelerating solar adoption.

The main objective of studies under this focus area is to advance the foundations of innovation diffusion theory from empirical generalizations to a formal predictive science based on hypothesis-testing and falsifiable experiments using data-driven case studies and modeling exercises of solar energy technologies market dynamics (e.g., residential, commercial, and utility scale adoption patterns; manufacturing supply chains; spillover effects such as the transfer of methods and technologies between disparate industries). Identifying the complex relationships between market patterns and decisions requires expertise from a broad array of disciplines including the traditional and computational social sciences. Applicants should discuss how they will take advantage of the availability of population-size datasets and powerful computational tools to study the human dimension of technology adoption with higher precision. Analysis of social interaction records (via online social networks such as Facebook), solar adoption patterns (via, for example, publicly available datasets), and solar installer data can reveal new insights and set initial conditions and parameters for realistic market simulations under test scenarios.

Research should aim to inform relevant stakeholders of:

- business practices for accelerated deployment of distributed solar energy;
- the design of innovative financing structures;
- customer acquisition approaches; and
- forecasts of market evolution after incentives expire.

Research may consider holistic methods for discerning market predictability in a rapidly changing business and policy landscape. Quantitative results from predictive tools should include uncertainty analysis, and researchers should identify real-world methods for mitigating risks based on this analysis.

Market transformation research has become increasingly important for the solar landscape. As the price of photovoltaics and power electronics hardware has dropped, the costs associated with non-hardware balance of systems (BOS) – including permitting, inspection,

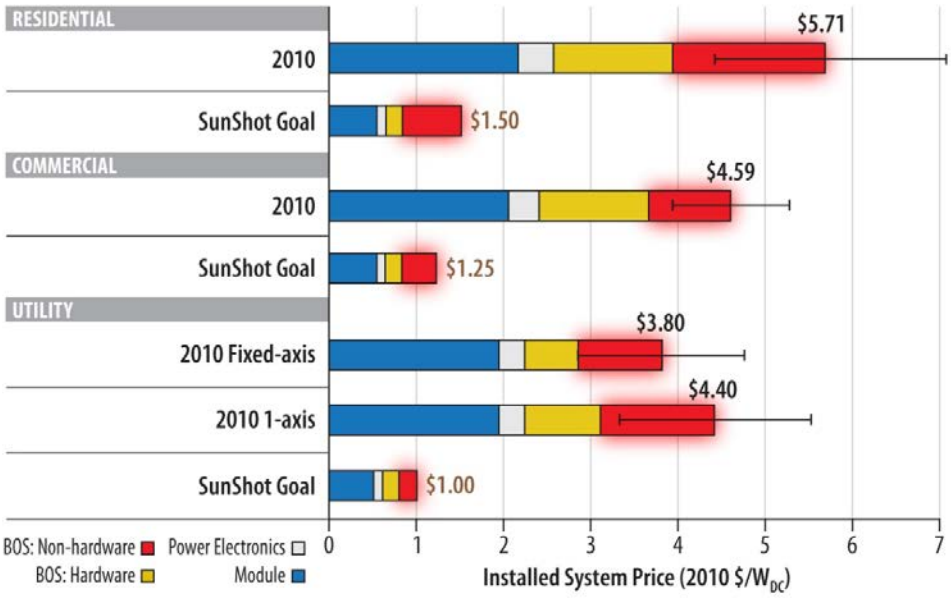

Fig. 3: Non-hardware balance of system (BOS) costs are represented by red bars. Prices are based on national average U.S. labor rates and exclude system operation, maintenance, and financing costs[8].

labor, customer acquisition overhead, financing, sales tax, and system design – have begun to account for a larger share of the installed system price. These non-hardware BOS costs can account for about one third of the installed system price for an average installation as of 2010 (Fig. 3), accounting for a large and growing share of installed price, and are a key barrier to widespread adoption of solar energy technologies. Innovations – such as third-party ownership models, group buys, and community solar projects – could reduce the BOS costs by modifying the ways in which solar systems are bought, sold, operated, and maintained. SEEDS seeks to support the design and implementation of such market structure innovations, and parallel efforts to systematically uncover the underlying mechanisms responsible for their market outcomes.

[8] A. Goodrich, T. James, and M. Woodhouse, "Residential, Commercial, and Utility-Scale Photovoltaic (PV) System Prices in the United States: Current Drivers and Cost-Reduction Opportunities," NREL Technical Report NREL/TP-6A20-53347 (Feb. 2012).

C. Program Development

To further investigate the relevance of technology evolution and diffusion studies to achieving the SunShot goals, DOE held a workshop on February 17, 2012, to identify key potential research areas. The workshop was open to any interested parties, and participants included university researchers, experts from national laboratories, and residential solar energy technology installers. The workshop covered a range of topics including: modeling market dynamics, modeling technology evolution dynamics, and understanding consumer decision-making. The key results of the workshop were:

- Systematic, data-driven studies of solar energy technology evolution and diffusion can advance the general understanding of the technology-energy-society nexus and can be practically applied to transform research, development, demonstration and deployment processes.
- Availability of historical and current economic records pertaining to the solar industry is critical for technology evolution and diffusion research.
- The primary challenges in performing systematic, data-driven studies are identifying and acquiring access to relevant datasets.
- Qualitative descriptions of the social processes underlying technology evolution and diffusion can now be validated with analysis of large datasets.
- In particular, the availability of California Solar Initiative[9] datasets has enabled researchers to study solar energy technology diffusion with unprecedented precision and granularity.
- Interdisciplinary analysis, including both traditional and computation social sciences, is required to propose strategies for overcoming market barriers related to large-scale solar deployment.

Subsequently, a request for information (RFI) was issued by DOE in March 2012. Responses were received from academic researchers, solar industry experts, nonprofit organizations, and project developers. Feedback obtained from the workshop discussions and RFI responses have aided in the design of the SEEDS program.

[9] California Solar Statistics is the official public reporting site of the California Solar Initiative. See www.californiasolarstatistics.org.

D. Program Scope and Team Structures

To advance the public purpose of expanding the systematic study of these subjects, DOE is issuing the SEEDS FOA. The team structures for this FOA are listed below. The team of researchers will direct efforts towards at least one focus area: a.) solar technology evolution; or b) solar technology diffusion. To ensure that information is shared effectively among recipients and participating organizations, recipients must, when necessary, negotiate and execute non-disclosure agreements with participating organizations.

Team Structure 1: SunShot SEEDS Scholar-In-Residence / Visiting Scholar

Through Team Structure 1, DOE supports a partnership between a researcher and a private company (such as a solar installer or manufacturer), a nonprofit organization (such as a Rooftop Solar Challenge[10] awardee or other organization), or an electricity provider, or an affiliation between a researcher and a domestic or foreign governmental entity[11]. The researcher should identify a partner institution and apply with a letter of support and agreement from the proposed host. The scholar may act as an informal advisor to the host but will maintain an independent status. The primary project will be to tackle an issue that is impeding progress by the host organization.

The scholar should have access to datasets to aid in the development of novel research tools that advance the general understanding of technology evolution or diffusion. Aggregated results, general insights, and methodology will be published in peer-reviewed journals with open access. For shorter-term projects, the researcher will make specific strategy recommendations targeted at transforming the host institution's practices. For longer-term projects, the scholar will in addition apply research results to develop and implement a pilot experiment for accelerating solar technology evolution or diffusion.

Example projects include: a scholar working with a solar installer to develop novel customer acquisition strategies; a scholar working with a solar manufacturer to study novel organizational structures or inter-organizational partnership that accelerate technological

[10] See Rooftop Solar Challenge website at eere.energy.gov/solarchallenge.

[11] The Applicant is responsible for initiating, negotiating, and coordinating the partnership or affiliation. The involved parties are responsible for determining requirements such as non-disclosure agreements.

progress; or a scholar working with a state public utility commission to determine more effective solar market transformation instruments.

Team Structure 2: SunShot SEEDS Research Team

With Team Structure 2, an interdisciplinary team of researchers will formulate an analytical, a numerical, and a conceptual framework for studying solar technological progress or adoption patterns. The team could include, for example, physical scientists, computer scientists, social scientists, and policy experts. The team should involve public or private sector solar energy practitioners who can implement and sponsor applied research activities. During the first stage, the emphasis will be on framing questions and defining practical solution pathways pertaining to social, behavioral, and economic barriers to achieving the SunShot goals based on tractable, explanatory, and data-driven investigations. The research results may be specific recommendations for pilot experiments based on sound quantitative evidence. During the second stage, the project will transition to the design of pilot programs for accelerating solar technology evolution or diffusion (working with the partner organization which is involved throughout the initial planning stage). During the third stage, the pilot program will be executed and analyzed by the Research Team for its efficacy.

Team Structure 3: SunShot SEEDS Researcher

Team Structure 3 targets researchers with interdisciplinary expertise whose research focuses on applying data analysis and computational tools to examine technology evolution or diffusion challenges. Research awards under Team Structure 3 must emphasize development of strategies specifically pertaining to solar energy technologies. Potential research directions include, but are not limited to, advancements in applications of complexity science and behavioral economics. Unlike for Team Structure 1, Researchers under this Team Structure need not have a formal partnership, affiliation, or relationship with a solar-related institution.

Team Structure 4: SunShot SEEDS Use-Inspired Data Collection

With Team Structure 4, a data collection effort will be undertaken. The researcher will identify a specific non-redundant dataset that can be used to study a focused series of pertinent research questions for solar energy technology evolution and diffusion studies; identify a method for gathering data (from a consortium of private companies, public organizations, or

governments); suggest potential methods for data analysis; and submit the data to a centralized repository for open distribution.

E. Areas of Programmatic Interest

- Applied, data-driven studies in technology evolution or diffusion that can result in specific, sound recommendations on solar energy technologies research, development, demonstration, and deployment
- Research aimed at results with clear and practicable business or policy implications
- Multidisciplinary approaches to studying technology evolution or diffusion that incorporates a strong quantitative component
- Partnerships with researchers and practitioners who can inform research and directly apply results
- Development of pilot programs related to the solar energy technologies industry or market that can provide generalizable lessons on technology evolution and diffusion
- Collection of non-redundant, targeted datasets that can be utilized to significantly advance understanding of solar energy technologies evolution and diffusion

F. Areas Specifically Not of Interest

- Comparative or qualitative studies that do not incorporate data-driven approaches
- Research without clear and practicable business or policy implications

SECTION II – AWARD INFORMATION

A. Type of Award Instruments

DOE anticipates awarding grants and/or cooperative agreements under this funding opportunity announcement.

B. Estimated Funding

An estimated $9 million of DOE funding over 3 years is expected to be available for new awards under this announcement, subject to the availability of annual appropriations.

C. Maximum and Minimum Award Amount

The estimated maximum award size is $2.5 million. There is no minimum award size.

D. Expected Number of Awards

DOE anticipates making ten awards.

E. Anticipated Award Amount

While the estimated maximum award amount (i.e., the ceiling) is $2.5 million, DOE anticipates that awards will be in the $500,000 range for the total project period for Team Structures 1, 3, and 4, and in the $2 million range for the total project period for Team Structure 2.

F. Period of Performance

The anticipated period of performance for projects in this announcement is 1, 2, or 3 years.

Each project will be divided into multiple budget periods of approximately 1 year duration, with go/no-go decision points between budget periods. At each go/no-go decision point, DOE will evaluate project performance, project schedule adherence, meeting milestone objectives, and compliance with reporting requirements. As a result of these evaluations, DOE will make a determination to continue the project, re-direct the project, or discontinue funding the project. Only those projects demonstrating satisfactory progress towards meeting the project objectives and a high probability of successfully supporting progress towards the SunShot Initiative targets will be continued.

G. Type of Application

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

The following domestic entities are eligible to apply as prime recipients for this announcement: (1) institutions of higher education; (2) nonprofit and for-profit entities; (3) State and local governments; (4) DOE/NNSA National Laboratory Contractors and non-DOE Federally Funded Research and Development Center (FFRDC) Contractors, and (5) consortia of entities (1) through (4). Foreign entities may participate as sub-recipients. There is no limit on the level of foreign participation in projects funded by this FOA. Nonprofit organizations described in section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995 are not eligible to apply either as a prime or sub-recipient. The term "domestic entity" is defined as a legal entity established pursuant to the United States Federal or State laws.

B. Cost Sharing

Cost Share 20%
The cost share must be at least 20% of the total allowable costs (i.e., the sum of the Government share, including FFRDC contractor 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.)

Recipients and sub-recipients that are Institutions of Higher Education, non-profit organizations, national laboratories, or DOE Federally Funded Research and Development Centers (FFRDC) funded under this FOA are eligible for a waiver of the 20% cost share requirement.

Recipients and sub-recipients not eligible for the cost share waiver as defined above must provide at least 20% of that recipient or sub-recipient's allowable project costs (i.e., the sum of the Government share and the recipient share of allowable costs equals the allowable cost of the project) which must come from non-Federal sources unless otherwise allowed by law (see also Appendix C titled "Cost Share Information").

By accepting Federal funds under this award, the Prime Recipient agrees to be responsible for any sub-recipient cost share if the sub-recipient does not meet its cost share requirements.

C. Other Eligibility Requirements

Information for 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.

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 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 FFRDC: 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."

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: The scope of work to be performed by the FFRDC contractor may not be more significant than the scope of work to be performed by the applicant.

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.

D. Questions Regarding Eligibility

DOE will not make eligibility determinations for potential applicants prior to the Full Application due date. The decision whether to submit an application in response to this FOA lies solely with the applicant.

SECTION IV – APPLICATION AND SUBMISSION INFORMATION

A. Application Forms
Required forms are available at EERE Exchange. To access these materials, go to https://eere-exchange.energy.gov and select the appropriate funding opportunity number.

B. Letter of Intent
A letter of intent is not required.

C. Concept Paper
A Concept Paper includes a concise description of the motivation and scope of a potential proposal. The Concept Paper is mandatory. The purpose of the Concept Paper is to avoid the considerable effort in preparing Full Applications for proposed projects that are unlikely to be selected for award negotiations. Concept Papers will be reviewed according to the merit criteria described in Section V.A.1 and Section V.A.2. Applicants will be notified of DOE's determination to encourage or discourage the submission of a Full Application.

The Concept Paper must conform to the following requirements:

- The Concept Paper must be submitted as a single document in Adobe PDF format.
- The Concept Paper must be written in English.
- All pages must be formatted to fit on 8-1/2" by 11" paper with margins not less than 1" on every side. The font must not be smaller than 11 point.
- The control number must be prominently displayed on the upper right corner of the header of every page. Page numbers must be included in the footer of every page. Applicants will receive a control number using EERE Exchange, upon creating an application for SEEDS.
- Each Concept Paper should be limited to a single unified concept or problem solution. Unrelated concepts should not be consolidated into a single Concept Paper.

Concept Papers must conform to the following content, form, and length requirements. If applicant exceeds the page limits, DOE will review only the authorized number of pages and disregard additional pages.

Content requirements for Concept Paper
Project Concept (3 page maximum) ▪ A concise description of the overall concept for the proposed project that concentrates on a focus area with a specific team structure ▪ Describe an overview of the project concept, including: o project objectives and scope o related projects and results including the current state-of-the-art o project development and phases o potential impact on the relevant field (continued)

▪ How the proposed project is unique and innovative ▪ How the target outcomes support the SunShot goals ▪ Key shortcomings, limitations, and challenges and how the proposed project will overcome these
Qualifications and Resources (2 page maximum) ▪ Describe the elements, background, and skills that make the applicant(s) uniquely suited to successfully execute the proposed research and development plan ▪ Describe multidisciplinary and synergistic approaches that integrate concepts from the traditional and computational social sciences
Letter(s) of Support (1 page maximum per Letter) ▪ Attach any letters of support from external entities such as host or partner institutions

D. Content and Form of Full 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 Number once they "Apply to this FOA" on the EERE Exchange website and should include the Control Number in the file name, as indicated below. (This Control Number was issued when the Concept Paper was previously submitted.)

1. 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 one-page 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 DOE 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.

Save the information in a single file named **Control#_Institution_Summary.pdf**

2. Project Narrative File

The project narrative must not exceed 20 pages, including title page, table of contents, charts, graphs, maps, photographs, and other pictorial presentations, when printed using standard 8.5" by 11" paper with 1 inch margins (top, bottom, left, and right) and single spaced. If an applicant exceeds the page limits, DOE will review only the authorized number of pages and disregard additional pages. 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.

Save the information in a single file named **Control#_Institution_Project.pdf**

The project narrative must include:

Content requirements for project narrative file
Title Page (1 page maximum) ▪ state the application control number ▪ the project title ▪ team structure ▪ name of the Applicant ▪ name of Principal Investigator ▪ contact information for Principal Investigator (postal address, telephone and fax numbers, and email address)
Project Objectives (4 page maximum) This section should provide a clear statement of the specific objectives of the proposed project. A sample structure is: *Background* ▪ discussion of the history, successes, and current status of the state-of-the-art for the relevant subject ▪ Note: this section (or any other section) is not for discussing the merits of solar energy in general *Objectives* ▪ a summary of the proposed project and how it attempts to meet the SunShot Initiative objectives ▪ a high-level narrative discussion introducing the project objectives that will be pursued under this effort over its 1, 2, or 3 year duration. *Approach* ▪ description of methodology and expected results *Conclusion*
Merit Review Criterion Discussion (6 page maximum) ▪ addresses each merit review criterion and sub-criterion listed in Part V.A ▪ provide sufficient information so that reviewers will be able to evaluate the application in accordance with the merit review criteria (continued)

- DOE will evaluate and consider only applications that separately address each merit review criterion and sub-criterion

Project Timetable (2 page maximum)

- on a yearly basis, outline all important activities or phases of the project, including any activities planned beyond the project period
- successful applicants will use this project timetable to report progress

Relevance and Outcomes/Impacts (3 page maximum)

- explain the relevance of the effort to the objectives in the program announcement and the expected outcomes and/or impacts
- 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 (2 page maximum)

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.

Bibliography and References (2 page maximum)

If applicable, provide a bibliography for any references cited in the Project Narrative section. This section must include only bibliographic citations.

Letters of Commitment, if applicable (not included in page limitation)

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. All Letters of Commitment must be attached as an Appendix to the Project Narrative File. 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. Letters of Commitment will not count towards the Project Narrative page limit.

Current and Pending Support Information, if applicable

(not included in page limitation)

List all currently active awards and pending proposals for financial support from Federal sources. Include work as either a primary recipient or sub-recipient. For each award/proposal, provide the following information: (continued)

- status of support (e.g. current, pending, planned, etc.)
- title of project/proposal
- name of PI
- primary recipient
- sub-recipients
- source of support
- total award amount
- project period (mm/dd/yyyy to mm/dd/yyyy)
- relationship with currently proposed work

3. Statement of Project Objectives (SOPO)

The SOPO should be provided in a similar format as the SOPO template provided on EERE Exchange. The SOPO must address how the project objectives will be met.

- Provide a concise detailed description of the specific activities to be conducted over the proposed period of performance. "Detailed" is defined as a full explanation and disclosure of the project being proposed (i.e., statements such as "we will then complete a proprietary process" are unacceptable). It is the applicant's responsibility to prepare an adequately detailed task plan to convince reviewers that the proposed project can meet the SunShot Initiative goals.
- The overall project objective should be divided into separate tasks that are clearly linked to, and combine to result in, the project objective.
- Each task should be divided into component subtasks that specify the activities that will be conducted to accomplish the task.
- Specific milestones, that are intermediary steps toward the project objectives, should be identified in each subtask. The milestones should demonstrate that a detailed plan has been constructed. Milestones are DOE's way of tracking progress and the applicant's way of showing reviewers that a detailed plan has been constructed.
- The SOPO should reflect the tasks that will be completed within each budget period and identify criteria for each Go/No-Go decision.

Save the information in a single file named **Control#_Institution_SOPO.pdf**

4. 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, single spaced, with font not smaller than 11 point and should include the information below, if applicable.

Resume (2 page maximum per key person)

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 PIs: 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.

Save the information in a file named **Control#_Institution_Resume.pdf**

5. Summary Slide

A Project Summary in PowerPoint format should be provided using the template provided on EERE Exchange. All information must fit on a single slide. The Summary Slide 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. The PowerPoint slide template can be found under the "View Required Application Documents" link on the EERE Exchange website.

Save the Summary Slide as **Control#_ Institution_Summary.ppt**

6. 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.

Save the information in a single file named **Control#_Institution_App424.pdf**

7. Budget 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 SF-424-A provides columns for each indiviual budget-year as well as the cumulative project budget. The completed SF-424-A should reflect the multiple budget periods and the amount of funding proposed for each budget period.

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.H).

Save the information in a single file named **Control#_Institution_SF424A.xls**

8. PMC 123.1, Budget Justification File

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.

The PMC 123.1 Budget Justification template can be found under the "View Required Application Documents" link on the EERE Exchange website.

Save the information in a single file named **Control#_Institution_Budget.xls**

9. (If applicable) Subaward Budget and Budget Justification Files

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 File for Non Construction Programs. This form is found on the DOE Financial Assistance Forms Page at http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms.

Save each subaward budget in a single file named **Control#_Subawardee_SF424A.xls**

A budget justification for the subaward budget is also required. The budget justification must include the same justification information described in Paragraph 8 above. Use PMC 123.1 Budget Justification template, which can be found under the "View Required Application Documents" link on the EERE Exchange website.

Save each justification in a single file named **Control#_Subawardee_Budget.xls**

10. (If applicable) Budget for DOE Federally Funded Research and Development Center (FFRDC) Contractor File

If a DOE FFRDC contractor is to perform a portion of the work, a DOE Field Work Proposal (FWP) in accordance with the requirements in DOE Order 412.1 Work Authorization System must be provided. 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.

Save the Field Work Proposal in a single file named **Control#_FFRDC_FWP.pdf**

11. (If applicable) Authorization for DOE FFRDCs

Save the Authorization for non-DOE or DOE FFRDCs, as specified in Section III.A, in a single file named **Control#_FFRDC_Auth.pdf**

12. (If applicable) 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."

Save the SF-LLL in a single file named **Control#_SF-LLL.pdf**

SUMMARY OF REQUIRED FORMS/FILES

A complete Full Application includes the following documents:

Document	Format	File Name
Project Summary/Abstract	PDF	Control#_Institution_Summary.pdf
Project Narrative	PDF	Control#_Institution_Project.pdf
Statement of Project Objectives	PDF	Control#_Institution_SOPO.pdf
Resume(s)	PDF	Control#_Institution_Resume.pdf
Summary Slide	PPT	Control#_ Institution_Summary.ppt
SF-424 - Application for Federal Assistance	PDF	Control#_Institution_App424.pdf
SF-424A – Budget Information for Non-Construction Programs	XLS	Control#_Institution_SF424A.xls
PMC 123.1 – Budget Justification	XLS	Control#_Institution_Budget.xls
(If applicable) Subaward Budget(s)	XLS	Control#_Subawardee_SF424A.xls
(If applicable) Subaward Budget Justification(s)	XLS	Control#_Subawardee_Budget.xls
(If applicable) Budget for Federally Funded Research and Development Center (FFRDC) Contractor	PDF	Control#_FFRDC_FWP.pdf
(If applicable) Authorization from cognizant Contracting Officer for FFRDC	PDF	Control#_Institution_FFRDC_Auth.pdf
(If applicable) SF-LLL Disclosure of Lobbying Activities	PDF	Control#_Institution_SF-LLL.pdf

E. Submissions from Successful Applicants

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

- Indirect cost information
- Other budget information
- Commitment Letter from Third Parties Contributing to Cost Share
- 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
- Environmental Questionnaire

F. Submission Dates and Times

1. Concept Paper Due Date

Concept Papers must be received by **July 13, 2012** not later than **5:00 PM Eastern Time**. You are encouraged to transmit the Concept Paper well before the deadline.

CONCEPT PAPERS MUST BE SUBMITTED VIA EERE EXCHANGE AT https://eere-exchange.energy.gov. Applicants must submit a Concept Paper by the due date to be eligible to submit a Full Application.

2. Full Application Due Date

Full Applications must be received by **October 5, 2012**, not later than **5:00 PM Eastern Time**. You are encouraged to transmit your Full Application well before the deadline.

APPLICATIONS RECEIVED AFTER THE DEADLINE WILL NOT BE REVIEWED OR CONSIDERED FOR AWARD

G. Intergovernmental Review

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

H. Funding Restrictions

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

Cost Principles

Costs must be allowable in accordance with the applicable Federal cost principles referenced in: 2 CFR 220 for Educational Institutions; 2 CFR 225 for State, Local, and Indian Tribal Governments; 2 CFR 230 for Non Profit Organizations and FAR Part 31 for commercial organizations.

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.

If recipients are State or Local Governments, they may not incur pre-award costs prior to

award, without prior approval of the DOE Contracting Officer.

I. Submission and Registration Requirements

1. Where to Submit

APPLICATIONS MUST BE SUBMITTED THROUGH EERE EXCHANGE 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.

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

2. 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. 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 Concept Paper or Full 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 Concept Paper or Full 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 FOAs 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 EERE Exchange, 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 EERE Exchange registration process and use of the EERE Exchange website should be submitted to: EERE-ExchangeSupport@hq.doe.gov

(1.) Obtain a Dun and Bradstreet Data Universal Numbering System (DUNS) number (including plus 4 extension, if applicable) at http://fedgov.dnb.com/webform

(2.) 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 (MPIN) are steps in CCR registration. Update your CCR registration annually. As of July 2012 the Central Contractor Registry (CCR) along with several other Federal procurement systems is being incorporated into a single website called the System for Award Management (SAM). The SAM site is located at https://www.sam.gov/sam. As the migration of CCR into the SAM website is currently in progress, should you be unable to find the CCR website (https://www.ccr.gov) at its previous location, please use the SAM website in this paragraph.

(3.) 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

(4.) Register in Grants.gov to receive automatic updates when Amendments to this FOA are posted. However, please note that applications will not be accepted through Grants.gov. http://www.grants.gov

3. Electronic Authorization of Applications and Award Documents

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

Submission of award documents, including modifications, through electronic systems used by DOE, 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

Prior to the Concept Paper evaluation and the comprehensive merit evaluation, DOE will perform an initial review to determine that

(1) the primary 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 FOA.

If an application fails to meet these requirements, it may be deemed non-responsive and eliminated from further review.

2. Concept Paper Review Criteria

Concept Papers are evaluated based on the following criteria. Each reviewer will assign a score of −1, 0, or +1 for each criterion, as described below.

Criterion and Description	Weight
Relevance and efficacy of proposed project to identify, investigate, quantify, and execute methods for accelerating the evolution or diffusion of solar energy technologies • Incorporation of data-driven analysis or numerical methods in design and implementation of the proposed project • Degree to which the proposed project supports reaching the SunShot cost goals	50 %
Ability of applicant(s) to accomplish proposed project activities • Capabilities, experience, and qualifications of team members • Incorporation of solar industry or market expertise	50 %

Scoring for Concept Papers	
+1	Applicant has strong potential to meet the requirement(s)
0	Applicant has the potential to meet the requirement(s)
–1	Applicant does not have the potential to meet the requirement(s)

DOE will conduct an evaluation of each Concept Paper based on the criteria above. Each Concept Paper will be reviewed by at least two reviewers. A Concept Paper that receives an average final score of less than 0 will be discouraged from submitting a Full Application. A Concept Paper that receives an average final score of greater than or equal to 0 will be encouraged to submit a Full Application.

3. Full Application Merit Review Criteria

Applications will be evaluated based on the following merit review criteria:

Criterion and Description	Weight
Technical Objectives and Approach • Extent to which the proposed project postulates testable hypotheses for viable methods for accelerating solar technology evolution or diffusion. • Overall potential of research results in the form of policy or business recommendations to be successfully applied • Likelihood that the proposed approach can be expected to scale and impact the broader solar industry • Degree to which the proposed project supports reaching the SunShot cost goals • The perceived value of incorporating data-driven analysis or numerical methods in designing and implementing of the proposed project • Adequacy of the schedule and quality of the proposed plan in advancing project outcomes (review of Statement of Project Objectives) • Soundness of strategies that will be used to mitigate identified critical risks and challenges • Degree to which proposed resources support achievement of objectives	60 %
Strength of Applicant Team • Capabilities, experience, and qualifications of team members • Ability of applicant(s) to accomplish project objectives • Incorporation of solar industry and market expertise • Adequacy of information sharing among applicant team and other participants, including, if warranted, the negotiation and execution of non-disclosure agreements	20 %
Broader Impact • Extent to which proposed methods and results provide generalizable lessons on technology evolution and diffusion that can be applied as new technologies are developed and deployed	20 %

4. Other Selection Factors

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

- Diversity and complementary expertise, nature, approaches, and methods (Contribution to portfolio diversity)
- Diversity and geographic distribution of institutions and organizations
- Leveraging of resources, including, but not limited to other Federally funded efforts
- Impact of DOE funds on the project measured by project's increased likelihood of achieving programmatic objectives

B. Review and Selection Process

1. Merit Review

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

2. Pre-Selection Clarification

Based upon the results of the merit review of written applications, DOE may determine that pre-selection clarifications are necessary from certain Applicants. These pre-selection clarifications will be for the purposes of clarifying the application and may take the form of one or more of the following procedures: written responses to DOE's written clarification questions, video or conference calls with DOE representatives, in person-meetings or presentations at DOE or applicant site. DOE, based upon the results of the merit review of written applications and in its sole discretion, may decide not to hold any pre-selection clarifications. The information provided by Applicants to DOE through pre-selection clarifications is incorporated in their application and contributes to, merit review evaluation and selection decision. Selection for participation in pre-selection clarifications does not signify that Applicants have been selected for negotiation of award. Applicant costs incurred to participate in pre-selection clarifications (such as travel or other presentation costs) are application costs and are allowable as indirect expenses to Federally sponsored projects to the extent that those costs are allocable and reasonable.

3. Selection

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

4. Discussions and Award

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 the end of December 2012 and making awards by the end of January 2013.

SECTION VI - AWARD ADMINISTRATION INFORMATION

A. Notice of Selection

1. Notice of Selection

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

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

2. Notice of Award

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) Intellectual Property Provisions; (7) Statement of Project Objectives; (8) Federal Assistance Reporting Checklist, which identifies the reporting requirements; and (9) Budget Summary.

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.

As of July 2012 the Central Contractor Registry (CCR) along with several other Federal procurement systems is being incorporated into a single website called the System for Award Management (SAM). The SAM site is located at https://www.sam.gov/sam. As the migration of CCR into the SAM website is currently in process, should you be unable to find the CCR website (https://www.ccr.gov) at its previous location, please use the SAM website in this paragraph.

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

Applicant Representations and Certifications

Corporate Felony Conviction and Federal Tax Liability Representations (March 2012)

By submitting an application in response to this FOA the Applicant represents 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) **No** officer or agent of the corporation have been convicted of a felony criminal violation for an offence arising out of actions for or on behalf of the corporation under Federal law in the past 24 months,

(3) It is **not** a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

For purposes of these representations the following definitions apply:

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

Applicant Lighting Efficiency Certification (April 2012)

In submitting an application in response to this FOA the Applicant certifies that if chosen for a **grant** award and the award is in excess of $1,000,000 it will, by the end of the Federal Government's fiscal year, upgrade the efficiency of its facilities by replacing any incandescent lighting of the type for which section 325 of the Energy Policy and Conservation Act (42 USC 6295) establishes a standard that does not meet or exceed the energy efficiency standard for incandescent light bulbs set forth in that section with a lamp that meets or exceeds the standards for lamps established in or pursuant to that section.

Incandescent reflector lamps shall meet or exceed the lamp efficacy standards shown in the table:

Rated lamp wattage	Lamp spectrum	Lamp diameter (inches)	Rated voltage	Minimum average lamp efficacy (lm/W)
40–205	Standard Spectrum	>2.5	≥125V	$6.8*P^{0.27}$
			<125V	$5.9*P^{0.27}$
		≤2.5	≥125V	$5.7*P^{0.27}$
			<125V	$5.0*P^{0.27}$
40–205	Modified Spectrum	>2.5	≤125V	$5.8*P^{0.27}$
			<125V	$5.0*P^{0.27}$
		≤2.5	≥125V	$4.9*P^{0.27}$
			<125V	$4.2*P^{0.27}$

Note 1: P is equal to the rated lamp wattage, in watts.

Note 2: Standard Spectrum means any incandescent reflector lamp that does not meet the definition of modified spectrum in 10 CFR 430.2.

Subject to the exemption below, the standards specified in this section shall apply to ER incandescent reflector lamps, BR incandescent reflector lamps, BPAR incandescent reflector lamps, and similar bulb shapes.

Subject to the exemption below, the standards specified in this section shall apply to incandescent reflector lamps with a diameter of more than 2.25 inches, but not more than 2.75 inches.

Exemption: The standards specified in this section shall not apply to the following types of incandescent reflector lamps:

(A) Lamps rated at 50 watts or less that are ER30, BR30, BR40, or ER40 lamps;

(B) Lamps rated at 65 watts that are BR30, BR40, or ER40 lamps; or

(C) R20 incandescent reflector lamps rated 45 watts or less.

For purposes of this Certification, the following definitions apply:

(A) Facilities mean the room(s), area(s), or building(s) that are used to complete a majority of
the work under the project.

(B) In excess of $1,000,000 means the total value of the grant including all budget periods
funded with Federal funds and recipient cost share is greater than $1,000,000.

(C) Federal Government's fiscal year begins October 1st and ends September 30th.

(D) Except as provided in subparagraph (4) below, the term "incandescent lamp" means a lamp in which light is produced by a filament heated to incandescence by an electric current, including only the following:

(1) Any lamp (commonly referred to as lower wattage nonreflector general service lamps, including any tungsten-halogen lamp) that has a rated wattage between 30 and 199 watts, has an E26 medium screw base, has a rated voltage or voltage range that lies at least partially within 115 and 130 volts, and is not a reflector lamp.

(2) Any lamp (commonly referred to as a reflector lamp) which is not colored or designed for rough or vibration service applications, that contains an inner reflective coating on the outer bulb to direct the light, an R, PAR, ER, BR, BPAR, or similar bulb shapes with E26 medium screw bases, a rated voltage or voltage range that lies at least partially within 115 and 130 volts, a diameter which exceeds 2.25 inches, and has a rated wattage that is 40 watts or higher.

(3) Any general service incandescent lamp (commonly referred to as a high- or higher-wattage lamp) that has a rated wattage above 199 watts (above 205 watts for a high wattage reflector lamp).

(4) The term “incandescent lamp” does not include any lamp excluded by the Secretary, by rule, as a result of a determination that standards for such lamp would not result in significant energy savings because such lamp is designed for special applications or has special characteristics not available in reasonably substitutable lamp types.

(E) The term ‘‘base’’ means the portion of the lamp which connects with the socket as described in ANSI C81.61–1990.

(F) The term ‘‘bulb shape’’ means the shape of lamp, especially the glass bulb with designations for bulb shapes found in ANSI C79.1–1980 (R1984).

(G) The term ‘‘lamp efficacy’’ means the lumen output of a lamp divided by its wattage, expressed in lumens per watt (LPW).

(H) The term “lamp wattage” means the total electrical power consumed by a lamp in watts, after the initial seasoning period referenced in the appropriate IES standard test procedure and including, for fluorescent, arc watts plus cathode.

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

Either a grant or cooperative agreement may be awarded under this announcement. If the award is a cooperative agreement, the DOE Specialist and DOE Project Officer will negotiate a Statement of Substantial Involvement prior to award.

C. Reporting

Reporting requirements are identified on the Federal Assistance Reporting Checklist, DOE F 4600.2. The DOE F 4600.2 is available at http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms.

SECTION VII - QUESTIONS/AGENCY CONTACTS

Questions regarding the content of this announcement must be submitted to: SunShotSEEDS-FOA@go.doe.gov not later than 3 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.

SECTION VIII - OTHER INFORMATION

A. Amendments

Amendments to this announcement will be posted on the EERE Exchange website and the Grants.gov system. However, you will only receive an email when an amendment or an announcement is posted on these sites if you register for email notifications for this FOA in Grants.gov. DOE recommends that you register as soon after the release of the FOA as possible to ensure you receive timely notice of any amendments or other announcements.

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 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 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).

I. 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.

K. Lobbying Restrictions

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

APPENDIX A – DEFINITIONS

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.

C**ontracting 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.

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/

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/

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, http://www.grants.gov

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.

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.

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.

APPENDIX B – PERSONNALLY 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.

Cost Share Waiver
Section 988 of the Energy Policy Act of 2005 establishes Department-wide cost sharing requirements for most research, development, demonstration, and commercial application activities. The cost sharing requirements generally require a 20 percent cost share for research and development and a 50 percent cost share for demonstration and commercial application activities. Recipients and Sub-Recipients that are Non-profit organizations (as defined in 10 CFR 600.3), Institutions of Higher Education, U.S. National Laboratories, or U.S. Federally Funded Research and Development Centers (FFRDCs) funded under this FOA are eligible for a waiver of cost share requirements.

Recipients and Sub-Recipients not eligible for the cost share waiver as defined above must provide at least 20% of that Recipient's or Sub-Recipient's allowable project costs (i.e. the sum of the Government share and the Recipient or Sub-Recipient's share of allowable costs equals the allowable project cost) which must come from non-Federal sources unless otherwise allowed by law. Each Non-Eligible Sub-Recipient is responsible for their respective cost share requirement regardless of tier or level.

Cost sharing above the minimum level required and cost sharing at least commensurate with the maturity of the technology is strongly encouraged and may be considered by the Selection Official in making his/her selection (see Section V.B.3).

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 CFR 600.123;
- State and Local Governments are found at 10 CFR 600.224;
- For-profit Organizations are found at 10 CFR 600.313.

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 Rules (10 CFR 600)

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. (v) Commercial Organizations. FAR Subpart 31.2—Contracts with Commercial Organizations

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

(i) *Institutions of higher education*: Allowability is determined in accordance with: 2 CFR 220 Cost Principles for Educational Institutions

(ii) *Other nonprofit organizations*: Allowability is determined in accordance with: 2 CFR 230 Cost Principles for Nonprofit Organizations

(iii) *Hospitals*: Allowability is determined in accordance with the provisions of: Title 45 Appendix E to Part 74—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:

PART 225—Cost Principles for State, Local, and Indian Tribal Governments (OMB Circular A–87)

(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:

Task	Proposed Federal Share	Required Federal Share %	Non-federal Cost Share %
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)	100,000	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:

Task	Proposed Federal Share	Federal Share %	Required Non-federal Cost Share $	Required Non-federal Cost Share %	Total Project Cost
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	100,000	100%	0	0%	100,000
	$2,000,000		$775,000		$2,775,000

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)