

**FINANCIAL ASSISTANCE
FUNDING OPPORTUNITY ANNOUNCEMENT**



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

**Advanced Heat Transfer Fluids and Novel Thermal Storage
Concepts for Concentrating Solar Power Generation
Funding Opportunity Announcement Number: DE-PS36-08GO98032
Announcement Type: Modification 001
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Issue Date: 04/30/2008

Application Due Date: 07/14/2008, 11:59 PM Eastern Time

DE-PS36-08GO98032

Modification No. 001

DATE: June 23, 2008

FROM: Andrea K. Lucero, Contracting Officer

TO: All Prospective Applicants

SUBJECT: Modification No. 001 to Announcement No. DE-PS36-08GO98032,
“Advanced Heat Transfer Fluids and Novel Thermal Storage Concepts for
Concentrating Solar Power Generation”

The Announcement is amended as follows:

- a. The due date for this Announcement is changed to July 14, 2008, not later than 11:59 PM Eastern Time. Therefore, the cover page Due Date is changed from July 10, 2008 to July 14, 2008.
- b. Under **Part IV. Application and Submission Information, E. Submission Dates and Times, Application Due Date**, is deleted and replaced with:

E. SUBMISSION DATES AND TIMES

Application Due Date

- Applications must be received by July 14, 2008, 11:59 PM Eastern Time. You are encouraged to transmit your application well before the deadline. The grants.gov Helpdesk is NOT available after 9:00 PM Eastern Time. **APPLICATIONS RECEIVED AFTER THE DEADLINE WILL NOT BE REVIEWED OR CONSIDERED FOR AWARD.**

All other parts of the Announcement remain unchanged.

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PART I – FUNDING OPPORTUNITY DESCRIPTION

Background

The mission of the Department of Energy's (DOE) Solar Energy Technologies Program (SETP) is to conduct research, development, demonstration, and deployment activities to accelerate widespread commercialization of clean solar energy technologies across America, diversifying the Nation's electricity supply options, while increasing national security and improving the environment.

As part of this mission, concentrating solar power (CSP) technologies are seen as the Solar Program's most attractive option for meeting utility-scale needs in the U.S. Southwest. Currently, 350 megawatts of generating capacity are located in California's Mojave Desert.¹ Portions of this capacity have been generating electricity for more than twenty years. One CSP technology, the parabolic trough, is currently in various stages of development or deployment in Nevada, Arizona, Spain and Israel.

In addition to these existing projects, more generating capacity is planned for implementation by 2015 to satisfy mandates for the utilities of California, Nevada, Arizona, Colorado, and New Mexico. These mandates require the utilities to generate a fraction of their grid electricity using renewable energy.¹ Because concentrating solar power plants are most cost effective at sizes greater than 100 MW, they are strong candidates for the centralized power capacities to be installed by these utilities.

Other CSP systems include three (3) related technologies: power towers, linear Fresnel, and concentrating dishes. These systems offer alternative optical geometries and each has the potential to operate with lower costs. Parabolic trough and linear Fresnel technologies use line focus geometry while power tower and concentrating dish technologies use point focus geometry.

DOE is conducting research and development activities that will reduce the cost of CSP plants and facilitate their implementation. The current real levelized cost of energy (LCOE) for concentrating solar power plants is 13-17¢/kWh. With scale-up of existing technology, these costs are expected to drop to 12-14¢/kWh. The goal is to achieve cost-competitive power in intermediate power markets by 2015 (estimated at 7¢/kWh with up to 6 hours of storage) and in baseload power markets by 2020 (estimated at 5¢/kWh with up to 16 hours of storage). These cost targets will be adjusted based on the real cost of conventional fuels.

Two key opportunities for cost reduction are the development of improved heat transfer fluids (HTF) and improved methods for thermal energy storage (TES). Development and use of an HTF that is thermally stable and remains liquid at temperatures up to 500°C will reduce certain parabolic trough power plant equipment costs, improve plant efficiency and reduce the plant LCOE by several cents per kilowatt-hour.² An improved HTF will also enhance TES because the thermal energy can be stored at a higher temperature.^{3,4} The

¹ "Assessment of potential impact of concentrating solar power for electricity generation," DOE/GO-102007-2400, February 2007

² "Current and future economics of parabolic trough technology," Proceedings of ES2007, ES2007-36171, June 2007

³ "Survey of thermal energy storage for parabolic trough power plants," J. Solar Energy Engineering, 124 (2) 145-152, May 2002

⁴ "Development of a molten-salt thermocline thermal storage system for parabolic trough plants," J. Solar Energy Engineering, 124 (2) 153-159, May 2002

second opportunity for cost reduction is the use of improved methods for TES. TES allows the power plant (parabolic trough, power tower, linear Fresnel or concentrating dish) to operate continuously during periods of intermittent sun and will provide the plant with the capability to produce electricity for extended periods without sun, allowing it to better match its electricity production with demand. Unlike other renewable energy technologies such as wind and photovoltaics, CSP technologies have the unique ability to incorporate relatively inexpensive TES into power plant designs.

Parabolic trough power plants are the most commercially mature of the four CSP technologies. Trough power plants use curved mirrors to reflect and concentrate sunlight onto steel receiver tubes, which function as solar collectors.⁵ The adsorbed solar energy is transferred to the HTF as it flows through the tubes. The high-temperature HTF flows from the receiver tubes to a heat exchanger where its thermal energy generates steam for Rankine cycle electricity generation. The high-temperature HTF may also transfer its thermal energy to a secondary storage fluid or solid for electricity generation at a later time.

The role of the HTF in parabolic trough power plants is critical because it captures the solar thermal energy adsorbed by the receiver tubes and makes it available for steam generation. As the temperature of the HTF increases, the thermodynamic efficiency of the Rankine power generation cycle increases as well. At some temperature, energy loss from the receiver tubes becomes excessive and impacts the overall plant efficiency. Analysis has shown that the optimal temperature for the HTF is 450-500°C. Current parabolic trough plants use a synthetic oil; a eutectic mixture of biphenyl and diphenyl oxide.⁶ The mixture has a freezing point of 12°C and a maximum operating temperature of 390°C, which is the limit of its thermal stability. At 390°C, its vapor pressure is 10 atmospheres so the receiver tubes must operate under pressure to prevent vapor formation in the tubes. Operating the Rankine cycle at 390°C instead of 500°C decreases the turbine efficiency from 40% to 37%. This efficiency loss significantly affects the overall plant efficiency and LCOE.

A vapor pressure of 10 atmospheres precludes the use of the HTF directly in a thermal storage system because the storage vessels would need to be pressure rated. Thus, current thermal storage systems must use a heat exchanger between the HTF in the solar field and the storage medium in the thermal storage system. This approach adds complexity and cost to the plant.

Alternative HTFs that allow operation of the Rankine cycle at 400-500°C have been considered. Molten salts have been used as HTFs for CSP technologies.⁷ Their compositions consist of binary or ternary mixtures of sodium and potassium nitrates and nitrites. Most of these mixtures are stable at 600°C, but they all have freezing points above 200°C. Their relatively high freezing points create the operational hazard of fluid freezing in the receiver tubes when they are off sun. These mixtures are also strong oxidizers due to their nitrate content. The graphite seals of rotating ball joints within the fluid loop are susceptible to oxidation and create a maintenance and reliability issue. Recent work has demonstrated potential for lowering the freezing point of these types of mixtures.

A key advantage of thermal energy storage (TES) is the reduction in the cost of energy delivered from a CSP plant. Low-cost TES systems result in a decreased levelized energy

⁵ "Brighter than a hundred suns: solar power for the southwest," NREL/SR-550-33233, January 2003

⁶ Internet address: <http://www.therminol.com/pages/products/vp-1.asp>

⁷ "Evaluation of a molten salt heat transfer fluid in a parabolic trough solar field," SED2002-1065, 2002 International Solar Energy Conference, June 2002

cost because the cost of TES is less expensive than incremental turbine costs. As the cost of TES is reduced, the overall plant capacity factor⁸ can be economically increased from about 25% in current plants without TES to greater than 60% for future plants with significant TES.

Current near-term TES, which uses a molten salt storage medium in combination with separate hot and cold tanks, has a unit cost of \$30 to \$40/kWh_{thermal} depending on storage capacity. The year 2020 goal for TES is to achieve costs below \$15/kWh_{thermal}. While the cost of TES is a key metric, an additional important metric is the round trip efficiency. For a solar plant using TES, the round trip efficiency is the amount of net electricity produced after charging and discharging the storage system relative to the amount of electricity that would have been generated from the thermal energy had it been directly converted to electricity. Current TES systems for CSP plants have a round trip efficiency of 93%. Higher round trip efficiencies would improve the economics of storage systems.

Objectives

This Funding Opportunity Announcement (FOA) will identify and support long-term research activities and near-term demonstration in two areas: (1) improved heat transfer fluids (advanced HTF) and (2) novel thermal energy storage concepts (novel TES systems) that may increase the efficiency and reduce the cost of this promising, renewable technology. Work that includes a consortium of solar technology providers is encouraged.

The specific objective for the HTF area is to identify and characterize novel fluids or fluid types that possess the physical and chemical properties required for an improved HTF and thermal storage fluid for CSP technologies. The specific objective for the TES areas is to generate and evaluate novel concepts for thermal energy storage (TES) that have the potential to reduce the cost of TES to less than \$15/kWh_{thermal} and achieve round trip efficiencies greater than 93%. Work in TES may be applicable to any or all CSP technologies (parabolic trough, power tower, linear Fresnel, or concentrating dish). Both objectives work toward the 2015 and 2020 goals of making CSP technologies cost competitive.

Scope

This FOA will consider two options for proposed work by Applicants. Both options must include a justification for the proposed work with respect to meeting the program's 2015 and 2020 goals.

The first option is long-term research and development (R&D). This work shall be performed in three (3) phases with each phase being twelve (12) months in duration. Goals must be set for each phase. This option is applicable for both areas of interest, Advanced HTF and Novel TES Systems.

The second option is the near-term demonstration of an advanced HTF or TES system that is currently under development or can otherwise be ready for demonstration following a minimal development effort. This option will also be performed as three (3) phases (design, prototype and demonstration). The design phase will be nine (9) to twelve (12) months in

⁸ The capacity factor for a solar power plant is defined as the time-averaged power delivered divided by the power plants rated or design power

duration. The prototype phase will be twelve (12) to fifteen (15) months in duration and the demonstration phase will be fifteen (15) to eighteen (18) months in duration. Depending on the state of development of the proposed work, Applicants may propose work that includes all three phases (design, prototype and demonstration) or two phases (prototype and demonstration) or only one phase (demonstration). **After selection and award, it is anticipated that not all follow-on prototype and/or follow-on demonstration phases will be funded. Funding of follow-on prototype and/or follow-on demonstration phases may be limited by the design phase performance and funding availability.**

Advanced Heat Transfer Fluids (HTF)

Applications are sought covering a broad range of investigation into new fluids for high-temperature heat transfer applications. In doing so, the scope of interest is not limited to pure substances or solutions that meet the strict definition of a fluid. Candidate fluids may include homogeneous eutectic mixtures or heterogeneous two-phase mixtures such as sol suspensions and colloidal dispersions. For line-focus applications including parabolic troughs and linear Fresnel, the required upper limit for thermal stability for the HTF is about 500°C. For point focus applications (power towers, concentrating dishes), the required upper limit for thermal stability is 600°C or greater.

Many fluids have been considered as candidates for parabolic trough HTFs including many classes of organic compounds.⁹ These substances generally have a thermal stability limit of less than 400°C. At and above 400°C, the substances become susceptible to degradation via free radical chain reactions. This process releases hydrogen gas, which can degrade the thermal insulating performance of the receiver tubes. Substitution of hydrogen with common heteroatoms such as chlorine or fluorine does not significantly increase the maximum thermal stability limit.

Ionic liquids have also been investigated as candidate HTFs for parabolic trough technology. Subsets of ionic liquids, salts of the imidazolium cation family, were selected for study because they have been reported to be stable at high temperatures. After much investigation, these fluids were eliminated from consideration because they exhibited limited lifetimes and unacceptable vapor pressures at temperatures above 200°C due to thermal degradation.¹⁰

Any potential fluid should possess the desired physical and chemical properties that enable it to meet the requirements of a high-temperature HTF for parabolic trough (line focus) applications. These properties are:

- thermal stability as a liquid to about 500°C,
- vapor pressure of about 5 atmosphere to about 500°C,
- freezing point less than 80°C,
- specific gravity in the range of 0.7 - 1.7 to about 500°C,
- heat capacity in the range of 2–5 J/g/K to about 500°C,
- viscosity of about 1 centipoise to about 500°C,
- chemical compatibility with common stainless steels.

⁹ "Thermal stability of some organic compounds," J. Chemical & Engineering Data, 7(2) 277-281, April 1962

¹⁰ "Lifetime of imidazolium salts at elevated temperatures," J. Solar Engineering 128(1) 54-57, February 2006

For point-focus applications (power towers, concentrating dishes), candidate fluids need to possess these properties at temperatures to or above 600°C. In addition to the desired chemical and physical properties, candidate fluids should meet environmental safety and health standards for toxicity.

As mentioned earlier, applications for advanced HTF work will be accepted for either long-term research (Topic 1) or a near-term demonstration of an advanced HTF (Topic 2).

Applicants must indicate the Topic to which they are applying in their application narrative.

Topic 1 – Advanced HTF Research and Development

Applications are sought for research and development (R&D) of advanced heat transfer fluids. This work shall be performed in three (3) phases with each phase being twelve (12) months in duration. Goals must be set for each phase.

This work is meant to be exploratory in nature with the intent of identifying promising new fluids or fluid types that meet the HTF needs of the parabolic trough technology. Promising fluid candidates that partially meet the listed requirements still offer value in identifying promising new research directions. Specific work to be performed may consist of a combination of experimental and modeling activities.

Modeling activities may include investigations into chemical bond strengths, molecular size, molecular configurations, geometries, interactions, or other properties and behaviors that may affect the thermo physical properties of the candidate compounds or their thermal stability. Experimental work includes synthesis of candidate compounds, measurement of fluid thermo physical properties, measurement and characterization of long-term thermal stability within the desired operating temperature range using thermo gravimetric analysis (TGA) or other experimental methods, and determination of the chemical compatibility with common stainless steels.

Topic 2 – Advanced HTF Near-Term Demonstration

Applications are sought for near-term demonstration of an advanced HTF system that is currently under development or can otherwise be ready for demonstration following a minimal development effort. This option will also be performed as three (3) phases (design, prototype and demonstration). The design phase will be nine (9) to twelve (12) months in duration. The prototype phase will be twelve (12) to fifteen (15) months in duration and the demonstration phase will be up to eighteen (18) months in duration. Depending on the state of development of the proposed work, Applicants may propose work that includes all three phases (design, prototype and demonstration) or two phases (prototype and demonstration) or only one phase (demonstration). After selection and award, it is anticipated that not all follow-on prototype and/or follow-on demonstration phases will be funded. Funding of follow-on prototype and/or follow-on demonstration phases may be limited by the design phase performance and funding availability.

Novel TES Systems

Applications are sought covering the development of novel concepts for thermal energy storage (TES) systems that are applicable to any of the CSP systems. The thermal energy storage system may utilize a high temperature working fluid proposed or it may be entirely separate. However, the coupling of the high temperature storage medium to the collection of solar energy (through some type of heat exchange) must be included as part of the proposed work. The year 2020 objective for TES is to achieve costs below \$15/kWh_{thermal}

with a round trip efficiency of greater than 93%. Several possible TES configurations exist for achieving this objective. TES systems are classified according to the storage mechanism and storage concept.¹¹ Mechanisms include sensible, latent, and chemical. Sensible storage relies on changes in the medium's temperature to capture and release thermal energy. Latent storage uses a phase change of the medium to capture and release thermal energy. Chemical storage is based on a reversible thermochemical reaction to capture and release thermal energy. Past efforts have considered primarily sensible and latent energy storage. Storage concepts may involve a single storage medium or dual storage media. In the single medium concept, the storage medium itself (typically a liquid) circulates through a heat exchanger or the solar collectors to acquire thermal energy. The liquid medium is stored in two tanks, one for cold and one for hot liquid. In the dual media concept (liquid and solid), the primary storage medium (solid) is stationary while the secondary medium (liquid) circulates. Both concepts have been investigated in past work for application to parabolic trough power plants.

One option for lowering the cost of thermal storage is to move from an indirect storage system to a direct system. An indirect system requires heat exchangers to transfer energy from the heat transfer fluid returning from the solar field to the storage medium in the storage tanks. In a direct system the heat transfer fluid (HTF) in the solar field is the storage medium, negating the need for expensive heat exchangers. Both of these indirect and direct concepts are examples of single medium storage.

The most common example of dual media storage is the thermocline storage system.¹² In a thermocline storage system, a stationary porous solid material fills a storage tank and acts as the primary storage medium. This material is typically readily available and inexpensive, i.e., silica sand. A liquid functions as the secondary storage medium and transfers thermal energy to and from the primary medium as it flows vertically (upward or downward) through it. A vertical temperature gradient within the primary and secondary media creates a vertical liquid density gradient, which tends to stabilize the temperature gradient by inhibiting natural convection. The solid material also inhibits liquid convection by preventing bulk mixing of the liquid. The zone between the cold liquid on the bottom and the hot liquid on top contains essentially all of the temperature gradient and is referred to as the thermocline. Preventing mixing of the hot and cold portions of the liquid in the tank is a significant challenge for maintaining the round trip efficiency of the thermocline storage approach. Thermocline storage systems may be direct or indirect depending on whether the secondary storage liquid also circulates through the solar collectors.

Another example of dual media thermal storage is being studied by the German Aerospace Center (DLR). DLR is examining the performance, durability and cost of using a solid, thermal energy storage medium (high-temperature concrete or castable ceramic materials) in parabolic trough power plants. This system uses a standard heat transfer fluid (HTF) in the solar field. However, the HTF passes through an array of pipes imbedded in a solid medium to transfer the thermal energy to and from the medium during plant operation. The primary advantage of this approach is the low cost of the solid medium. Primary issues include avoiding separation of the concrete and piping due to thermal stresses and the limited heat transfer rates into and out of the solid medium.

¹¹ "Survey of thermal energy storage for parabolic trough power plants," J. Solar Energy Engineering, 124, 145-152, May 2002

¹² "Development of a molten-salt thermocline thermal storage system for parabolic trough plants," J. Solar Energy Engineering, 124, 153-159, May 2002

Any novel concept or approach that is based on a sensible, latent or chemical storage mechanism will be considered. Significant modifications to existing TES systems will also be considered. As mentioned earlier, applications for TES concept work will be accepted for either long-term research (Topic 3) or a near-term demonstration of a TES system (Topic 4). ***Applicants must indicate the Topic to which they are applying in their application narrative.***

Topic 3 – TES Research and Development

Applications are sought for research and development (R&D) of a thermal energy storage concept. This work shall be performed in three (3) phases with each phase being twelve (12) months in duration. Goals must be set for each phase.

This work is meant to be exploratory in nature with the intent of identifying promising new TES concepts that meet the 2020 goals for CSP technologies. Promising concepts that potentially or partially meet the 2020 goals still offer value in identifying new research and development opportunities. These opportunities may eventually lead to a TES system that meets all of the 2020 requirements. Proposed work will preferably include fluid dynamic and heat transfer modeling in combination with a planned experimental effort.

Modeling activities may aid in understanding the basic heat transfer mechanisms of the TES system, predict thermal performance of the TES system and guide the design of experimental work and field tests. Experimental work could include laboratory scale testing that verifies modeling predictions and confirms thermal performance of the system.

Topic 4 – TES Near-Term Demonstration

Applications are sought for near-term demonstration of a TES system that is currently under development or can otherwise be ready for demonstration following a minimal development effort. This option will also be performed as three (3) phases (design, prototype and demonstration). The design phase will be nine (9) to twelve (12) months in duration. The prototype phase will be twelve (12) to fifteen (15) months in duration and the demonstration phase will be up to eighteen (18) months in duration. Depending on the state of development of the proposed work, Applicants may propose work that includes all three phases (design, prototype and demonstration) or two phases (prototype and demonstration) or only one phase (demonstration).

Special Instructions

Applicants must indicate the Topic to which they are applying in their application narrative. Applicants may submit applications to multiple Topics; however, separate applications must be submitted for each Topic.

Applicants should include costs for decommissioning of equipment and facilities, as appropriate, in their budgets. Applicants should also include costs of completing any necessary environmental assessments.

Regulations for the acquisition and disposition of equipment: <https://www.eere-pmc.energy.gov/procurenet/FinancialAssistance/Regulations/10CFR600Printable.doc#>
(See 10 CFR 600.134, 600.232, or 600.321)

PART II – AWARD INFORMATION

A. TYPE OF AWARD INSTRUMENT

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

B. ESTIMATED FUNDING

Approximately \$ 60,000,000 is expected to be available for new awards under this announcement.

C. MAXIMUM AND MINIMUM AWARD SIZE

Ceiling (i.e., the maximum amount of federal funds for an individual award, by phase, made under this announcement):

	Maximum Federal Funding for Phase 1	Maximum Federal Funding for Phase 2	Maximum Federal Funding for Phase 3	Maximum Federal Funding for Total
Topic 1 – Advanced Heat Transfer Fluids (HTF) R&D	\$500,000	\$500,000	\$500,000	\$1,500,000
Topic 2 – Advanced HTF Demonstration	\$500,000	\$1,000,000	\$3,000,000	\$4,500,000
Topic 3 – Thermal Energy Storage (TES) R&D	\$500,000	\$500,000	\$500,000	\$1,500,000
Topic 4 – TES Demonstration	\$500,000	\$1,500,000	\$5,000,000	\$7,000,000

Floor (i.e., the minimum amount for an individual award made under this announcement):
None

D. EXPECTED NUMBER OF AWARDS

DOE anticipates making 10-25 awards under this announcement depending on the size of the awards.

E. ANTICIPATED AWARD SIZE

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

	Anticipated Federal Funding for Phase 1	Anticipated Federal Funding for Phase 2	Anticipated Federal Funding for Phase 3	Anticipated Federal Funding for Total
Topic 1 – Advanced Heat Transfer Fluids (HTF) R&D	\$300,000-500,000	\$300,000-500,000	\$300,000-500,000	\$900,000-1,500,000
Topic 2 – Advanced HTF Demonstration	\$300,000-500,000	\$750,000-1,000,000	\$2,000,000-3,000,000	\$3,050,000-4,500,000
Topic 3 – Thermal Energy Storage (TES) R&D	\$300,000-500,000	\$300,000-500,000	\$300,000-500,000	\$900,000-1,500,000
Topic 4 – TES Demonstration	\$300,000-500,000	\$1,000,000-1,500,000	\$3,000,000-5,000,000	\$4,300,000-7,000,000

F. PERIOD OF PERFORMANCE

DOE anticipates making awards that will run for 3-4 years. It is the intent of the FOA that each project be comprised of three Phases. The duration and nature of these phases will vary depending on whether it is an R&D project or a Demonstration project. **At the end of each of the first two Phases, DOE will conduct a project review concluding with a go/no-go decision that will determine whether the award will continue to the next Phase.**

PART III - ELIGIBILITY INFORMATION

A. ELIGIBLE APPLICANTS.

All types of entities are eligible to apply, except other Federal agencies, Federally Funded Research and Development Center (FFRDC) Contractors, and nonprofit organizations described in section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995.

DOE FFRDCs are directly supported by the SETP. The intent of this Announcement is to considerably enhance the support to non-federal entities pursuing innovative CSP technologies. In order to support the goals of this FOA, the DOE FFRDCs are permitted as sub-recipients to provide materials and/or testing support to the prime applicants only, and not as applicants themselves. Therefore, with the exception of the National Renewable Energy Laboratory (NREL) and Sandia National Laboratory (SNL), all other DOE Federally Funded Research and Development Centers (FFRDCs) will be allowed as sub-recipients limited to 15% of the total project cost. NREL and SNL will not be allowed as sub-recipients on applications.

The exclusion of the National Renewable Energy Laboratory and Sandia National Laboratories (hereinafter referred to as “the Laboratories”) as subrecipients on

applications is due to their unique role relative to this procurement action. These Laboratories will serve as the evaluation and validation arm of the Department of Energy (DOE) for this action. They will perform technical evaluations of applications to determine their potential to meet the goals of this procurement action. In addition, once applications are selected for negotiation of awards, and awarded, the Laboratories will provide technical monitoring and evaluation of the progress of projects relative to their stated objectives. **Because of the importance of these roles to the DOE, e.g., the independent evaluation of applications submitted under this FOA, and the unbiased involvement in the project management of awarded projects, the above Laboratories are also precluded from being partners, subrecipients, or parties to any application under this FOA.**

However, DOE also recognizes that the Laboratories have unique capabilities that may be useful for the testing of specific components that are part of a proposed project under this FOA. These capabilities are briefly listed below, with more details found at the two listed URLs, by Laboratory.

- Laboratory and On-Sun testing of Thermal Receivers
- On-Sun Trough, Dish, and Heliostat Test and Evaluation
- Molten-Salt Testing of Receivers, Valves, Pumps etc.
- Laboratory and On-Sun Testing of Solar Materials
- Thermal Storage Test and Evaluation

NREL: http://www.nrel.gov/csp/lab_capabilities.html

SNL: http://www.sandia.gov/Renewable_Energy/solarthermal/NSTTF/index2.htm

Therefore, applicants who wish to make use of existing testing capabilities at the Laboratories, as defined above, should identify in their project narrative the scope of testing that will be required. This should include a detailed description of the type of testing that they would like to do and should include: information regarding the size of the component to be tested; details regarding the types of tests to be performed (single-point performance testing or longer-term testing, etc.); a statement of each test's specific objectives; and any other information pertinent to the proposed testing program.

Resources for the testing identified in the application to be performed at one of the Laboratories will be provided through the SETP CSP Program, and **should not be included in the Budget for the project.** However, as part of the Merit Review, the review team will balance the scope of the proposed testing and its relative costs against their importance in verifying the progress of the project. This means that an application that includes an overly aggressive testing program could be penalized the same as one that does not include a sufficient level of test and evaluation. The key for a successful proposal is to strike the appropriate balance between R&D and the testing required validating progress toward the project objectives.

B. COST SHARING

The Applicant's required cost share of the total allowable costs of the project will vary based on the statutory cost share required for each Phase of the project (see Appendix C). Applicants must meet and may exceed the statutory cost share. All research and development activities require a minimum of 20% Applicant cost share based on the total project cost (Example - If the total estimated cost of the proposed project is \$1,250,000 and the required cost share is 20%, the maximum Federal share would be \$1,000,000 and the Applicant's team will be required to provide a minimum of \$250,000

cost share). All demonstration or deployment activities require 50% cost share based on the total project cost of that phase (Example – If the total cost for the proposed demonstration phase is \$10,000,000 and the required cost share is 50%, the maximum Federal share would be \$5,000,000 and The Applicant’s team will be required to provide \$5,000,000 cost share). The table below shows the required cost share by Topic and Phase; phases requiring 50% cost share are highlighted.

Topic	Phase 1	Phase 2	Phase 3
Topic 1 – HTF R&D	20%	20%	20%
Topic 2 – HTF Demonstration	20%	20%	50%
Topic 3 – TES R&D	20%	20%	20%
Topic 4 – TES Demonstration	20%	20%	50%

Applications should clearly identify the sources and amounts of cost share proposed by Phase, as indicated in the Cost Share section of the Budget Justification for SF 424A Budget (PMC 123.1). This will facilitate DOE evaluations of the applications and will expedite final negotiations prior to a financial assistance award for projects selected for funding.

Total project cost includes the DOE share plus all non-Federal cost share. The cost share must come from non-Federal sources. (See 10 CFR part 600 for applicable cost sharing requirements.) Cost share contributions may be divided among the Applicant and partners under any arrangement determined by the Applicant, but the total proposed cost share contribution from all members of the team (Applicant + partners) must equal or exceed the statutory requirement. Funds from other DOE or Federally-funded entities cannot be used as cost share. Additionally, existing patents or other existing intellectual property may not be proposed as cost share (see Appendix C).

While ALL DOE funds must be spent in the U.S., up to 15% of cost share funds may be spent outside of the U.S.

C. OTHER ELIGIBILITY REQUIREMENTS

- **Federally Funded Research and Development Center (FFRDC) Contractors**

FFRDC contractors are not eligible for an award under this announcement, but they may be proposed as a team member on another entity’s application subject to the following guidelines (the National Renewable Energy Laboratory and Sandia National Laboratory will not be allowed as team members as discussed in Part III, Section A, Eligible Applicants):

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. Save the authorization in a single file named “**FFRDC_Auth.pdf**,” and click on “Add Optional Other Attachment” to attach.

Authorization for DOE FFRDCs. The cognizant contracting officer for the FFRDC must authorize in writing the use of a DOE FFRDC contractor on the proposed project and this

authorization must be submitted with the application. The following wording is acceptable for this authorization.

“Authorization is granted for the _____ Laboratory to participate in the proposed project. The work proposed for the laboratory is consistent with or complementary to the missions of the laboratory, and 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 FFRDC contractor effort, in aggregate, shall not exceed 15% of the total estimated cost of the project, including the applicant’s and the FFRDC contractor’s portions of the effort.

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. MULTIPLE PRINCIPAL INVESTIGATORS

The assignment and use of multiple Principal Investigators (PIs) in projects awarded under this FOA is allowed. The applicant, whether a single organization or team/partnership/consortium, must however indicate in the application if the project will include multiple PI’s. (See Part IV, Section c. Other Attachments, c. Resume File) The decision to use multiple PIs for a project is the sole responsibility of the applicant. If multiple PI’s will be designated, the applicant must identify in the application 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 PI’s. 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
- PI’s roles and administrative, technical and scientific responsibilities for the project

PART IV – APPLICATION AND SUBMISSION INFORMATION

A. ADDRESS TO REQUEST APPLICATION PACKAGE

Application forms and instructions are available at Grants.gov. To access these materials, go to <http://www.grants.gov>, select “Apply for Grants,” and then select “Download Application Package.” Enter the CFDA and/or the funding opportunity number located on the cover of this announcement and then follow the prompts to download the application package. **(Also see Section H of this Part below.)**

B. LETTER OF INTENT AND PRE-APPLICATION

1. Letter of Intent

Letters of Intent are not required.

2. Pre-application

A pre-application is not required.

C. CONTENT AND FORM OF APPLICATION

You must complete the mandatory forms and any applicable optional forms, in accordance with the instructions on the forms and the additional instructions below, as required by this FOA. **Files that are attached to the forms must be in Adobe Portable Document Format (PDF) unless otherwise specified in this announcement.**

SF 424 - Application for Federal Assistance

Complete this form first to populate data in other forms. Complete all required fields in accordance with the pop-up instructions on the form. **To activate the instructions, turn on the “Help Mode” (Icon with the pointer and question mark at the top of the form.)** The list of certifications and assurances referenced in Field 21 can be found at http://management.energy.gov/business_doe/business_forms.htm, under Certifications and Assurances.

Other Attachments Form

Submit the following files with your application and attach them to the Other Attachments Form. Click on “Add Mandatory Other Attachment” to attach the Project Narrative. Click on “Add Optional Other Attachment,” to attach the other files.

a. Project Summary/Abstract File

The project summary/abstract must contain a summary of the proposed activity suitable for dissemination to the public. It should be a self-contained document that identifies the name of the applicant, the project director/principal investigator(s), the project title, the objectives of the project, a description of the project, including methods to be employed, the potential impact of the project (i.e., benefits, outcomes), and major participants (for collaborative projects). Applicants are cautioned that this document should not include any proprietary information, trade secrets, or other confidential business, financial or sensitive information, since this summary may be subject to public disclosure under the Freedom of Information Act (FOIA). The project summary must not exceed 1 page when printed using standard 8.5” by 11” paper with 1” margins (top, bottom,

left and right) with font not smaller than 11 point. Save this information in a file named “**Summary.pdf**,” and click on “Add Optional Other Attachment” to attach.

b. Project Narrative File - Mandatory Other Attachment

The project narrative must not exceed 20 pages, including cover page, table of contents, charts, graphs, maps, photographs, and other pictorial presentations, when printed using standard 8.5” by 11” paper with 1 inch margins (top, bottom, left, and right). EVALUATORS WILL REVIEW ONLY THE NUMBER OF PAGES SPECIFIED IN THE PRECEDING SENTENCE. 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 Part VIII.D for instructions on how to mark proprietary application information. Save the information in a single file named “**Project.pdf**,” and click on “Add Mandatory Other Attachment” to attach.

The project narrative must include:

- Topic Area for which you are applying.
- Project Objectives.
This section should provide a clear, concise statement of the specific objectives/aims of the proposed project.
- Merit Review Criterion Discussion.
The section should be formatted to address each of the merit review criterion and sub-criterion listed in Part V. A. below. Provide sufficient information so that reviewers will be able to evaluate the application in accordance with these merit review criteria. DOE WILL EVALUATE AND CONSIDER ONLY THOSE APPLICATIONS THAT ADDRESS SEPARATELY EACH OF THE MERIT REVIEW CRITERION AND SUB-CRITERION. It is recommended that the Project Narrative have sections labeled as:
 - Project Description and Technical Approach
 - Project Management and Statement of Objectives
 - Qualifications, Roles, Responsibilities and Capabilities

Criterion 1: Project Description and Technical Approach
Weight: [40%]

- Explain how your technical approach will achieve the FOA objectives, including the ability to meet the 2015 and 2020 goals.
- Describe your proposed technical innovation as compared to the current state of the art. Include a description of the current state of the art.
- Describe the potential impact your proposed technical innovation will have on the levelized cost of energy (LCOE).
- Discuss the potential of your proposed project to positively impact domestic manufacturing. For Topics 2 and 4, this should include a discussion of the partnerships or alignments arranged between the Applicant and at least one industry systems provider.
- Discuss the rationale for the technical approach of each Phase; provide a clear justification if applying directly to Phase 2 or Phase 3.

Criterion 2: Project Management and Statement of Objectives
Weight: [35%]

- In a clear and organized way, describe your proposed project plan and performance schedule. Describe each activity necessary to complete the project and identify the potential risks and barriers to success as well as plans for mitigation.
- Discuss your project management concept with respect to proposed tasks and organizational structure to achieve the project objectives. Describe the likelihood of achieving the project objectives through realistic milestones and logical task structure including clear and reasonable identification of key targets or milestones for go/no-go decision points.
- Explain how your proposed tasks and resources will allow you to successfully address all elements of the technical plan; including proposed testing at Sandia National Laboratory or the National Renewable Energy Laboratory if applicable.
- Clearly describe your Statement of Objectives and technical implementation plan, including the schedule of deliverables and total proposed budget, and explain how this will ensure a successful completion to your proposed project.
- Discuss environmental considerations of the proposed technology, as well as plans for mitigating environmental impacts.

Criterion 3: Qualifications, Roles, Responsibilities and Capabilities
Weight: [25%]

- Describe the capabilities, experience, qualifications, and credentials of key personnel to support the proposed project.
 - Provide and discuss the letters of commitment for each team member's participation and/or cost share and their impact on the proposed work.
 - Describe your infrastructure and resources proposed to support the achievement of the proposed project objectives including the capabilities of the Applicant and Participants to comprehensively address all aspects of the proposed project.
- Project Timetable:
 This section should outline as a function of time, year by year, all the important activities or phases of the project, including any activities planned beyond the project period. Successful applicants must use this project timetable to report progress.
 - Project Performance Site:
 Indicate the primary site where the work will be performed. If a portion of the work will be performed at any other sites, identify those sites, also.

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

c. Resume File

Provide a resume for each key person proposed, including subawardees and consultants if they meet the definition of key person. A key person is any individual who contributes in a substantive, measurable way to the execution of the project. Save all resumes in a single file named “**resume.pdf**” and click on “Add Optional Other Attachment” to attach. Each resume must not exceed 2 pages when printed on 8.5” by 11” paper with 1 inch margins (top, bottom, left, and right) with font not smaller than 11 point and should include the following information, if applicable:

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). If multiple PI’s are proposed, the applicant must provide the information indicated in Part III, Section D. as part of this file.

The resume file does not have a page limitation.

d. Budget File

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

You must provide a separate budget for each year of support requested and a cumulative budget for the total project period. Use the SF 424 A Excel, “Budget Information – Non Construction Programs” form on the Applicant and Recipient Page at http://management.energy.gov/business_doe/business_forms.htm. 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 PART IV, G). Save the information in a single file named “**SF424A.xls**,” and click on “Add Optional Other Attachment” to attach.

e. Budget Justification File

A Budget Justification for SF 424A must be provided for 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 you have one, and the name and phone number of the individual responsible for negotiating your indirect rates as part of the budget justification or under the comments under the Indirect tab of the Budget Justification form

The Excel format provided as PMC 123.1, Budget Justification for SF 424A, at <https://www.eere-pmc.energy.gov/forms.aspx>, is recommended but not required for use in providing this budget justification.

f. Letters of Commitment

You must have a letter from each third party contributing cost share (i.e., a party other than the organization submitting the application) that proposes to provide all or part of the required cost sharing. **All Letters of Commitment must be attached to the Project Narrative File.** The letter must state that the third party is committed to providing a specific minimum dollar amount of cost sharing and must identify the phase in which the cost share is being provided. In the budget justification, identify the following information for each third party contributing cost sharing: (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 cost sharing – 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.

g. Subaward Budget File(s)

You must provide a separate budget (i.e., budget for each budget year and a cumulative budget) for each subawardee that is expected to perform work estimated to be more than \$100,000 or 50 percent of the total work effort (which ever is less). Use the SF 424 A Excel for Non Construction Programs or the SF 424 C Excel for Construction Programs. These forms are found on the Applicant and Recipient Page at http://management.energy.gov/business_doe/business_forms.htm. Save each Subaward budget in a separate file. Use up to 10 letters of the subawardee's name (plus .xls) as the file name (e.g., **ucla.xls or energyres.xls**), and click on "Add Optional Other Attachment" to attach.

A budget justification for the subaward budget is also required. If the SF 424A budget format is used for the application, the format provided as PMC 123.1, Budget Justification for SF 424A, on the Applicant and Recipient Page at <https://www.eere-pmc.energy.gov/forms.aspx> is recommended but not required for use in providing this budget justification.

h. Budget for Federally Funded Research and Development Center (FFRDC) Contractor File, if applicable

If a FFRDC contractor is to perform a portion of the work, you must provide a DOE Field Work Proposal in accordance with the requirements in DOE Order 412.1 Work Authorization System. This order and the DOE Field Work Proposal form are available at the following link:

<http://www.management.energy.gov/documents/o4121.pdf>. Use up to 10 letters of the FFRDC name (plus .pdf) as the file name (e.g., **lanl.pdf** or **anl.pdf**), and click on “Add Optional Other Attachment” to attach.

i. Authorization for non-DOE or DOE FFRDCs

Save the Authorization for non-DOE or DOE FFRDCs, as specified in Part III.C. Other Eligibility Requirements, in a single file named “**FFRDC_Auth.pdf**” and click on “Add Optional Other Attachment”

j. Project Management Plan

This plan should identify the activities/tasks to be performed, a time schedule for the accomplishment of the activities/tasks, the spending plan associated with the activities/tasks, and the expected dates for the release of outcomes. Applicants may use their own project management system to provide this information. This plan should identify any decision points and go/no-go decision criteria.

Successful applicants must use this plan to report schedule and budget variances. Save this plan in a single file named “**pmp.pdf**” and click on “Add Attachments” in Field 11 to attach.

k. SF-LLL Disclosure of Lobbying Activities

If applicable, complete 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 this document in a single file named “**SF-LLL.pdf**” and click on “Add Attachments” in Field 11 to attach.

Summary of Required Forms/Files

Your application must include the following documents:

Name of Document	Format	File Name
SF 424 - Application for Federal Assistance	PDF	See Instructions
Other Attachments Form: Attach the following files to this form:	PDF	See Instructions
Project Summary/Abstract File	PDF	Summary.pdf

Project Narrative File, including Letters of Commitment	PDF	Project.pdf
Resume File	PDF	Resume.pdf
SF 424A Excel - Budget Information for Non-Construction Programs File	Excel	SF424A.xls
Budget Justification File (see instructions for format)	PDF	BudgetJustification.pdf
Subaward Budget File(s), if applicable	Excel	See Instructions
Budget for Federally Funded Research and Development Center (FFRDC) Contractor File, if applicable.	PDF	See instructions
Authorization from cognizant Contracting Officer for FFRDC, if applicable.	PDF	FFRDC_Auth.pdf
Project Management Plan	PDF	PMP.pdf
SF-LLL Disclosure of Lobbying Activities, if applicable.	PDF	SF-LLL.pdf

D. SUBMISSIONS FROM SUCCESSFUL APPLICANTS

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

- Indirect cost information
- Other budget information
- Name and phone number of the Designated Responsible Employee for complying with national policies prohibiting discrimination (See 10 CFR 1040.5)
- Environmental Questionnaire

E. SUBMISSION DATES AND TIMES

Pre-application Due Date

Pre-applications are not required.

Application Due Date

Applications must be received by July 10, 2008, 11:59 PM Eastern Time. You are encouraged to transmit your application well before the deadline. The grants.gov Helpdesk is NOT available after 9:00 PM Eastern Time. **APPLICATIONS RECEIVED AFTER THE DEADLINE WILL NOT BE REVIEWED OR CONSIDERED FOR AWARD.**

F. INTERGOVERNMENTAL REVIEW

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

G. FUNDING RESTRICTIONS

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

Pre-award Costs. Recipients may charge to an award resulting from this announcement pre-award costs that were incurred within the ninety (90) calendar day period immediately preceding the effective date of the award, if the costs are allowable in accordance with the applicable Federal cost principles referenced in 10 CFR part 600. Recipients must obtain the prior approval of the contracting officer for any pre-award costs that are for periods greater than this 90 day calendar period.

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

H. SUBMISSION AND REGISTRATION REQUIREMENTS

1. Where to Submit

APPLICATIONS MUST BE SUBMITTED THROUGH GRANTS.GOV, AGAINST THIS ANNOUNCEMENT, TO BE CONSIDERED FOR AWARD. You cannot submit an application through Grants.gov unless you are registered. Please read the registration requirements below carefully and start the process immediately.

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

2. Registration Process Requirements

There are several one-time actions you must complete in order to submit an application through Grants.gov (e.g., obtain a Dun and Bradstreet Data Universal Numbering System (DUNS) number, register with the Central Contract Registry (CCR), register with the credential provider, register with Grants.gov, and register with FedConnect). See http://www.grants.gov/applicants/get_registered.jsp. Use the Grants.gov Organization Registration Checklist at <http://www.grants.gov/section3/OrganizationRegCheck.pdf> to guide you through the process. **IMPORTANT:** During the CCR registration process, you will be asked to designate an E-Business Point of Contact (EBIZ POC). The EBIZ POC must obtain a special password called “Marketing Partner identification Number” (MPIN). Applicants, who are not registered with CCR and Grants.gov, should allow at least 21 days to complete these requirements, as you must COMPLETE ALL STEPS of the one-time registration process before you can submit your first application through Grants.gov.

To register in FedConnect, go to <https://www.FedConnect.net/FedConnect/> or contact the FedConnect Helpdesk at support@fedconnect.net

Please note that the system functionality of FedConnect requires organizations to be registered with the CCR before registering with FedConnect.

FedConnect 'Quick Start Guide';

https://www.fedconnect.net/FedConnect/PublicPages/FedConnect_Ready_Set_Go.pdf

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

Microsoft Vista and Office 2007 Compatibility

Grants.gov is currently incompatible with both the new Microsoft (MS) Vista Operating System and the new Microsoft (MS) Office 2007 versions of Word, Excel, and Power Point. In order to create and submit your application to Grants.gov, you must find a computer with a previous version Microsoft Operating System, such as Windows XP.

If you attach a file created using MS Office 2007, you will not get an error message when you submit the application, HOWEVER, your entire application will not be able to be processed or accepted at Grants.gov and will not reach DOE. Grants.gov can accept applications with attachments created in MS Office 2007 if the attachments are saved in the prior format. See the http://www.grants.gov/assets/Vista_and_office_07_Compatibility.pdf for detailed instructions on how to do this. A file created in MS Office 2007 can be identified by the "x" at the end of the file extension, for example "sample.docx" for a Word file. Contact Grants.gov at 1-800-518-4726 with any questions.

3. Questions

ALL Questions relating to the registration process, system requirements, how an application form works, or the submittal process must be directed to Grants.gov at 1-800-518-4726 or support@grants.gov. Part VII, Section A. of this announcement explains how to submit other questions to the Department of Energy (DOE), relative to the content and requirements of this announcement.

4. Application Receipt Notices

After an application is submitted, the Authorized Organization Representative (AOR) will receive a series of five e-mails. It is extremely important that the AOR watch for and save each of the emails. It may take up to 2 business days from application submission to receipt of email Number 2. You will know that your application has reached DOE when the AOR receives email Number 5. You will need the Submission Receipt Number (email Number 1) to track a submission. The titles of the five e-mails are:

Number 1 - Grants.gov Submission Receipt Number

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

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

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

Number 5 - DOE e-Center Grant Application Received

The last email will contain instructions for the AOR to register with the DOE e-Center. If the AOR is already registered with the DOE e-Center, the title of the last email changes to: Number 5 – DOE e-Center Grant Application Received and Matched

This email will contain the direct link to the application in IIPS. The AOR will need to enter their DOE e-Center user id and password to access the application.

Part V - APPLICATION REVIEW INFORMATION

A. REVIEW CRITERIA

1. Initial Review Criteria

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

2. Merit Review Criteria

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

Criterion 1: Project Description and Technical Approach

Weight: [40%]

- Suitability of the Applicant's proposed work towards meeting the 2015 and 2020 goals
- Degree of technical innovation as compared to the current state of the art
- Potential impact of the technical innovation on the levelized cost of energy (LCOE)
- Likelihood of positively impacting domestic manufacturing and deployment of concentrating solar technology
- Appropriateness of the technical approach of each Phase, including the completeness of the justification provided if applying directly to Phase 2 or 3 for demonstration projects

Criterion 2: Project Management and Statement of Objectives

Weight: [35%]

- Adequacy, value and reasonableness of the performance schedule and quality of the plan in addressing barriers and risks, and approaches to overcoming identified barriers and risks. Failure to identify specific barriers and risks is considered a greater deficit than an uncertain plan for overcoming them.
- Degree to which the proposed plan is clearly stated, organized, achievable and technically feasible. Adequacy of proposed deliverables, performance metrics, decision points, etc.
- Adequacy and completeness of the proposed tasks and the resources identified to successfully address all elements of the technical plan; including proposed testing at Sandia National Laboratory and National Renewable Energy Laboratory, if applicable.
- Soundness and completeness of the Statement of Objectives and the technical implementation plan, including the reasonableness of the scheduled deliverables and total proposed budget.

- Appropriateness of environmental plan, including degree to which environmental impacts have been considered and mitigation strategies have been identified.

Criterion 3: Qualifications, Roles, Responsibilities and Capabilities

Weight: [25%]

- Capabilities, experience, qualifications and credentials of key personnel to support the proposed project
- Adequacy of the letters of commitment for each team member's participation and/or cost share
- Adequacy of infrastructure and resources proposed to support achievement of the proposed project objectives, including the capabilities of the Applicant and Participants to comprehensively address all aspects of the proposed project

3. Other Selection Factors

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

- Geographic diversity of projects
- Technological diversity of projects
- Cost share offered above the minimum amount required

B. REVIEW AND SELECTION PROCESS

a. Merit Review

Applications that pass the initial review will be subjected to a merit review in accordance with the guidance provided in the "Department of Energy Merit Review Guide for Financial Assistance and Unsolicited Proposals." This guide is at <http://www.management.energy.gov/documents/meritrev.pdf>.

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

b. Selection

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

c. Discussions and Award

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 September 2008.

Part VI - AWARD ADMINISTRATION INFORMATION

A. AWARD NOTICES

1. Notice of Selection

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

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 Notice of Financial Assistance Award 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, or, for Federal Demonstration Partnership (FDP) institutions, the FDP terms and conditions; 5. National Policy Assurances To Be Incorporated As Award Terms; 6. Budget Summary; and 7. Federal Assistance Reporting Checklist, which identifies the reporting requirements.

B. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS

1. Administrative Requirements

The administrative requirements for DOE grants and cooperative agreements are contained in 10 CFR part 600 (See: <http://ecfr.gpoaccess.gov>), except for grants made to Federal Demonstration Partnership (FDP) institutions. The FDP terms and conditions and DOE FDP agency specific terms and conditions are located on the National Science Foundation web site at http://www.nsf.gov/awards/managing/fed_dem_part.jsp.

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://management.energy.gov/documents/specialtermsandcondition308.pdf>. The National Policy Assurances To Be Incorporated As Award Terms are located at http://management.energy.gov/business_doe/1374.htm.

3. Intellectual Property Provisions

The standard DOE financial assistance intellectual property provisions applicable to the various types of recipients are located at http://www.gc.doe.gov/financial_assistance_awards.htm.

4. Statement of Substantial Involvement

Either a grant or cooperative agreement may be awarded under this program 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, attached to the award agreement. The proposed Checklist for this program can be found at https://www.eere-pmc.energy.gov/procurenet/FinancialAssistance/Forms/DOE_Forms/DOEF4600_2.doc.

PART VII - QUESTIONS

A. QUESTIONS

Questions regarding the content of the announcement must be submitted through the “Submit Question” feature of the DOE Industry Interactive Procurement System (IIPS) at <http://e-center.doe.gov>. Locate the program announcement on IIPS and then click on the “Submit Question” button. Enter required information. You will receive an electronic notification that your question has been answered. DOE will try to respond to a question within 3 business days, unless a similar question and answer have already been posted on the website. Potential applicants are encouraged to read all posted Q&A prior to posting a new question.

Questions relating to the registration process, system requirements, how an application form works, or the submittal process are not answered via the DOE IIPS “submit question” feature, and must be directed to Grants.gov at 1-800-518-4726 or support@grants.gov. DOE cannot answer these questions. (See Part IV, Section H.)

PART VIII - OTHER INFORMATION

A. MODIFICATIONS

Notices of any modifications to this announcement will be posted on Grants.gov and the DOE Industry Interactive Procurement System (IIPS). You can receive an email when a modification or an announcement message is posted by joining the mailing list for this announcement through the link in IIPS. When you download the application at Grants.gov, you can also register to receive notifications of changes through Grants.gov.

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

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

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

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

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

E. EVALUATION AND ADMINISTRATION BY NON-FEDERAL PERSONNEL

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

F. INTELLECTUAL PROPERTY DEVELOPED UNDER THIS PROGRAM

Patent Rights. The government will have certain statutory rights in an invention that is conceived or first actually reduced to practice under a DOE award. 42 U.S.C. 5908 provides that title to such inventions vests in the United States, except where 35 U.S.C. 202 provides otherwise for nonprofit organizations or small business firms. However, the Secretary of Energy may waive all or any part of the rights of the United States subject to certain conditions. (See “Notice of Right to Request Patent Waiver” in paragraph G below.)

Rights in Technical Data. Normally, the government has unlimited rights in technical data created under a DOE agreement. Delivery or third party licensing of proprietary software or data developed solely at private expense will not normally be required

except as specifically negotiated in a particular agreement to satisfy DOE's own needs or to insure the commercialization of technology developed under a DOE agreement.

Special Protected Data Statutes. This program is covered by a special protected data statute. The provisions of the statute provide for the protection from public disclosure, for a period of up to five (5) years from the development of the information, of data that would be trade secret, or commercial or financial information that is privileged or confidential, if the information had been obtained from a non-Federal party. Generally, the provision entitled, Rights in Data – Programs Covered Under Special Protected Data Statutes, (10 CFR 600 Appendix A to Subpart D), would apply 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 will also identify data that will be recognized by the parties as protected data.

G. NOTICE OF RIGHT TO REQUEST PATENT WAIVER

Applicants may request a waiver of all or any part of the rights of the United States in inventions conceived or first actually reduced to practice in performance of an agreement as a result of this announcement, in advance of or within 30 days after the effective date of the award. Even if such advance waiver is not requested or the request is denied, the recipient will have a continuing right under the award to request a waiver of the rights of the United States in identified inventions, i.e., individual inventions conceived or first actually reduced to practice in performance of the award. Any patent waiver that may be granted is subject to certain terms and conditions in 10 CFR 784.

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

H. NOTICE REGARDING ELIGIBLE/INELIGIBLE ACTIVITIES

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

I. NOTICE OF RIGHT TO CONDUCT A REVIEW OF FINANCIAL CAPABILITY

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

J. NOTICE OF POTENTIAL DISCLOSURE UNDER FREEDOM OF INFORMATION ACT

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

REFERENCE MATERIAL

Appendix A – Definitions

“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. NOTE: Application is referred to as Proposal in IIPS.

“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.

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

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

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

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

“Central Contractor Registry (CCR)” is the primary database which collects, validates, stores and disseminates data in support of agency missions. Funding Opportunity Announcements which require application submission through Grants.gov require that the organization first be registered in the CCR at <http://www.ccr.gov/Start.aspx>.

“Credential Provider” is an organization that validates the electronic identity of an individual through electronic credentials, PINS, and passwords for Grants.gov. Funding Opportunity Announcements which require application submission through Grants.gov

require that the individual applying on behalf of an organization first be registered with the Credential Provider at <https://apply.grants.gov/OrcRegister>.

“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. http://www.grants.gov/applicants/request_duns_number.jsp

“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 submit grant applications on behalf of their organization through Grants.gov.

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

“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.

“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 and apply for competitive grant opportunities from all Federal grant-making agencies. Grants.gov is THE single access point for over 900 grant programs offered by the 26 Federal grant-making agencies. <http://www.grants.gov>

“Industry Interactive Procurement System (IIPS)” is DOE’s Internet-based procurement system which allows access to DOE’s business opportunities database, allows user registration and submittal of Applications: <http://e-center.doe.gov/>.

“Key Personnel” means 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 login to Grants.gov to assign privileges to the individual(s) authorized

to submit applications 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 in IIPS meaning 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.

"Technology Investment Agreement (TIA)" is a new type of assistance instrument for DOE, but they have been used by the Department of Defense for many years to support or stimulate research projects involving for-profit firms, especially commercial firms that do business primarily in the commercial marketplace. TIAs are different from grants and cooperative agreements in that the award terms may vary from the Government-wide standard terms (See DOE TIA regulations at 10 CFR Part 603). The primary purposes for including a TIA in the type of available award instruments are to encourage non-traditional Government contractors to participate in an R&D program and to facilitate new relationships and business practices. A TIA can be particularly useful for awards to consortia (See 10 CFR 603.225(b) and 603.515, Qualification of a consortium).

"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 – Personally Identifiable Information

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

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

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

1. **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.
2. **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
- Birthday cards
- Birthday emails
- Medical information pertaining to work status (i.e. individual A is out sick today)
- 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 DOE Financial Assistance Awards

Statutory cost sharing requirements are typically applicable to DOE Projects awarded under financial assistance instruments (grants and cooperative agreements under EPCA 2005, §988). The amount of required cost sharing depends on the scope and technological maturity of the project:

Categories

- Research and development projects - minimum 20% cost share
- Demonstration or commercial projects - minimum 50% cost share
- Outreach and educational projects - no minimum cost share
- Fundamental science projects - no minimum cost share

Some projects may contain elements of more than one of the categories shown above. Therefore, some projects may have a blended cost share.

Cost Sharing or Cost Matching

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

How Cost Sharing Is Calculated

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

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

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

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

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

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

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

Attached is a sample cost share calculation for a blended cost share percentage.

What Qualifies For Cost Sharing

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

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

- Institutions of Higher Education, Hospitals, and Other Nonprofit Organizations are found at 10 CFR600.123;
- State and Local Governments are found at 10 CFR600.224;
- For-profit Organizations are found at 10 CFR600.313.

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

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

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

DOE Financial Assistance Regulations:

<http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=8da8aa55635c5778440ed03d1ac8329a&rgn=div5&view=text&node=10:4.0.1.3.9&idno=10#10:4.0.1.3.9.3.20.14>

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

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

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

(A) *For-profit organizations.* Allowability of costs incurred by for-profit organizations and those nonprofit organizations listed in Attachment C to OMB Circular A-122 is determined in accordance with the for-profit costs principles in 48 CFR Part 31 in the Federal Acquisition Regulation, except

that patent prosecution costs are not allowable unless specifically authorized in the award document.

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

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

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

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

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

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

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

(b) *Valuing and documenting contributions*

(1) *Valuing recipient's property or services of recipient's employees.* Values are established in accordance with the applicable cost principles, which means 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. Fringe and overhead expenses on others' employee services are treated differently depending on the type of organization. No fringe or overhead is allowed for State and Local Governments, fringe and overhead are allowed for For-profit Organizations, and fringe but no overhead is allowed for Universities, Non-profits, and Hospitals.

- (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

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	Federal Share %	Required 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)	<u>100,000</u>	100%	0%
	\$2,000,000		

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

Each task must be calculated individually as follows:

Task 1

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

Task 1 Cost minus federal share = Non-federal share

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

Task 2

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

Task 2 Cost minus federal share = Non-federal share

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

Task 3

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

Task 3 Cost minus federal share = Non-federal share

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

Task 4

Federal share = \$100,000

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

The calculation may then be completed as follows:

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

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)