

RESEARCH CALL TO DOE/FEDERAL LABORATORIES



**SOLID-STATE LIGHTING CORE TECHNOLOGIES
DE-PS26-09NT013775**

**CONTACT: Brian Dotson, Project Manager
TELEPHONE NUMBER: (304) 285-4545
FAX NUMBER: (304) 285-4403
E-MAIL: SSL@netl.doe.gov**

**ISSUING OFFICE: U.S. DEPARTMENT OF ENERGY
National Energy Technology Laboratory
3610 Collins Ferry Road, P. O. Box 880
Morgantown, WV 26507-0880**

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This Research Call uses funding from “The American Recovery and Reinvestment Act of 2009” and will be subject to special reporting requirements. The reporting requirements and other details will be provided later.

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1.0 GENERAL INFORMATION

1.1 SUMMARY

The Department of Energy (DOE), National Energy Technology Laboratory (NETL), on behalf of the Office of Energy Efficiency and Renewable Energy's (EERE) Building Technologies (BT) Program, is seeking applications for applied research in the Solid-State Lighting (SSL) Core Technologies Program.

DOE has set aggressive and ambitious goals for SSL Research and Development (R&D):

By 2025, develop advanced solid-state lighting technologies that, compared to conventional lighting technologies, are much more energy efficient, longer lasting, and cost-competitive by targeting a product system efficiency of 50 percent with lighting that accurately reproduces sunlight spectrum.

Significant progress has been made in the performance of solid-state lighting. Products are just now reaching the lighting market. However, these products have yet to reach the full potential of solid-state lighting. Significant technical challenges remain to the adoption of viable SSL. The technical challenges that impede penetration into mainstream general illumination markets are complex and require the combined resources of many researchers and perhaps, the unique research tools found only at a limited number of universities, National Laboratories and research institutions. It may be difficult to overcome these critical technical challenges without a focused Government initiative. This is partly because the research may be judged too risky for industry to undertake alone. Thus, the collaborations sought under this Research Call will help mitigate or reduce the level of technical risk by providing significant financial resources.

Core Technology Research involves applied research efforts to advance solid-state lighting technology. A subsequent funding opportunity announcement will solicit applications from interested entities for product development. Product applications will systematically use the knowledge gained from basic or applied research to develop or improve commercially viable materials, devices, or systems.

1.2 BACKGROUND INFORMATION

The DOE's BT Program selected lighting as one of the principle target markets for the development of more efficient technologies since it represents one-fifth of the national electrical consumption. The DOE has provided assistance over the past several years with significant effort invested by industry, academia and Government. The prevailing theme that has surfaced repeatedly is the promise of solid-state lighting will only be produced through a focused and concentrated effort between the stakeholders.

To address these issues and to advance energy conservation in lighting in US buildings, the DOE's BT Program maintains a Lighting Research and Development (LR&D) program.

To insure that its research portfolio meets critical and evolving needs in a timely fashion, the LR&D program hosts industry-led efforts to develop and maintain a series of technology road maps for the various technologies that comprise the lighting business. While SSL is not the only lighting technology of interest within the BT Program portfolio, SSL is the singular focus of this Research Call.

This Research Call is the sixth in a series of Research Calls that may span the next decade. As the relevant SSL technology base matures, it is anticipated that the present level, applied research, will advance to market conditioning once the targets for efficiency, cost, longevity, stability, and control are demonstrated in a product environment.

The DOE envisions a LR&D Program that works together with the SSL industry to meet the program's goal by the year 2025. Critical to this LR&D Program are seven important aspects:

- Emphasizing Competition
- Cost (and Risk) Sharing
- Partners Involved in Planning and Funding
- Targeted Research for Focused Need
- Innovative Intellectual Property Provisions
- Open Information and Process
- Success Determined by Milestones Met and Ultimately Energy Efficient, Long-life and Cost Competitive Products Developed

In order to achieve these goals, a partnership was awarded via Memorandum of Agreement (MOA) with the Next Generation Lighting Industry Alliance (NGLIA). The NGLIA, as directed by EPACT Section 912(d), is broadly representative of U.S. solid-state lighting research, development, infrastructure, and manufacturing expertise as a whole. The purpose of the NGLIA is to provide input and prioritization of the core technology needs, provide administrative expertise and staffing to organize and conduct technical meetings and workshops, and support demonstrations of SSL technologies, among others. More detailed information about the MOA with the NGLIA can be found at: <http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/moa.pdf>

Additionally, the SSL program has implemented innovative Intellectual Property provisions. This program has been granted an Exceptional Circumstances Determination under the Bayh-Dole Act. The Exceptional Circumstances Determination applies to awards under the Core Technologies Program and is expected to stimulate commercial utilization of new technology developed by Core participants. The Core Technologies Program participants will also have the potential benefit of partnering with licensees to license their invention(s). Moreover, if these SSL Partnership members are successful in commercializing lighting systems developed under the Core Technologies Program, participants may reap income in the form of royalties. The determination also requires

substantial product manufacturing in the US. More detailed information about the Exceptional Circumstances Determination can be found at:

http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/ssl_determination_signed_june_2005_1.pdf

1.3 RESEARCH CALL OBJECTIVES

The focus of this Research Call is to insure that the LR&D portfolio of SSL technology sufficiently addresses the Core Technologies that can be applied to existing and future lighting products, which in turn will be energy efficient and cost competitive. Applications are sought that are truly innovative and groundbreaking, fill prioritized technology gaps, and will represent a significant advancement in the SSL technology base.

Core Technology Research will provide the focused applied research needed to advance SSL technology research that is typically not the focus of sustained industry investment. Through this Research Call, the DOE will fund research efforts at DOE National Laboratories, Nanoscale Science Research Centers (NSRC), Department of Defense (DOD) Laboratories and/or any other Federal Laboratory.

Of specific interest to this Research Call is the application of specialized tools and equipment to the field of solid-state lighting. These Research Laboratories, by nature of their history and funding mechanisms, have facilities and equipment that do not exist anywhere else. This equipment may provide critical research or capability to the DOE SSL program. The applicants to this Research Call should highlight their unique capabilities for research in the following Areas of Interest.

1.4 PROGRAM AREAS OF INTEREST

The Program Areas of Interest for this Research Call were chosen by the DOE based on the prioritization of research subtasks in the DOE SSL Multi-Year Program Plan (MYPP) through collaboration with the NGLIA, the status of projects in the DOE SSL Project Portfolio, and stakeholder input from the DOE SSL Workshops. The Areas of Interest target innovations in both Light Emitting Diodes (LED) and Organic Light Emitting Diodes (OLED). Each proposal shall feature a single approach to achieve the desired performance improvements. Multiple approaches shall be submitted in separate applications. Descriptive information on each of these Areas of Interest is provided in the following paragraphs:

Light Emitting Diodes:

Applicants shall relate their technical progress and milestones to the SSL Program milestones and device performance projections contained in the DOE SSL MYPP.

*Area of Interest 1: Internal Quantum Efficiency
(DE-PS26-09NT013775-01)*

In order to meet the DOE luminous efficacy goals by 2015, more research is required in the area of internal quantum efficiency (IQE) of LED devices. The DOE goal for LEDs across the visible spectrum is 90% IQE by 2015. Research in IQE benefits both color mixing and phosphor converted LED white-light system approaches. Applications are sought that specifically address the improvement of IQE through the epitaxial process. This includes, but is not limited to, bandgap engineering of the active region, novel growth structures, quaternary materials, novel alloys, the use of nanostructures within the active region, epitaxial growth of alternative crystal orientations, and study/control of the role of indium in the active region. Successful applicants must address IQE improvements beyond the current levels in solid-state lighting, which are listed in the MYPP. Applicants may also address improving the degradation of IQE in LEDs operating at high current density and high operating temperatures. Preference will be given to projects that demonstrate the highest potential for improvement from current levels in combination with the highest likelihood of adoption into the highest number of SSL products. Quantifiable improvements in the IQE, measured using electroluminescence when applicable, are suggested milestones for proposals to this approach and milestones must demonstrate advancement to the state of the art. Substrate research is identified in the MYPP as a separate subtask which is not prioritized for funding in this research call.

***Area of Interest 2: Phosphors and Conversion Materials
(DE-PS26-09NT013775-02)***

Current high efficiency LEDs use a phosphor converted approach employing a high efficiency blue emitter with an efficient, broad emission yellow-green phosphor to create white light. Research is sought in improvements to quantum yield of blue or near UV pumped phosphors (wavelength conversion materials) emitting across the visible spectrum. Research is also sought in improvement of the optical efficiency of the phosphor system. Improvements in these areas will allow for higher efficiency and improved color rendering from phosphor converted LEDs. Phosphor stability and device color stability should also be addressed in the proposed research. Quantifiable improvements in the phosphor system efficiency (quantum yield and scattering losses) should be the primary objective of this research, but spectral power distribution, CRI, thermal stability, package efficiency and color stability are also suggested milestones for this research. Phosphor improvements shall be demonstrated through integration with existing high efficiency, high brightness LEDs. Research in this area should be working toward the 2015 goal of 90% QY across the visible spectrum.

***Area of Interest 3: Thermal Components Research
(DE-PS26-09NT013775-03)***

Elevated LED junction temperatures can cause reduced light output and shorter lifetimes for an SSL system. Therefore, good thermal management in an SSL lighting system is critical. Research is sought to develop novel thermal components that can be applied to

solid-state lighting products. This includes, but is not limited to improved LED packaging materials, more thermally efficient heat sinks, thermal improvements in circuit boards, and improved thermal efficiency of bonding materials. The applicant must demonstrate a sound understanding of current SSL lighting technology. Thermal improvements shall be demonstrated through integration with existing high efficiency, high brightness LEDs. Quantifiable improvements to thermal resistance are suggested milestones in this research.

***Area of Interest 4: System Reliability Methods
(DE-PS26-09NT013775-04)***

One of the advantages of SSL is its potential for long lifetimes. However, the long LED lifetimes create a challenge in determining the overall system reliability and lifetime. The DOE is seeking research in models, accelerated testing methodology, and experimentation to determine the lifetime and reliability of integrated SSL luminaires, and individual components. Modeling and simulation results should be verified with actual SSL luminaire and component testing. Modeling software and methodologies are the expected outcomes of this research and model accuracy with respect to experimental results is the suggested milestone for this research.

***Area of Interest 5: Optical Component Materials
(DE-PS26-09NT013775-05)***

Due to the long life of SSL systems, it is challenging to find optical components that maintain their integrity throughout the life of the SSL luminaire. The DOE is seeking research and development of optical component materials that last as long as an LED system (~50,000 hours). The optical materials should be able to handle elevated operating temperature, prolonged UV and blue light exposure, and wet or humid operating environments. Applicants should emphasize how their materials would be an improvement over existing materials used in current SSL systems. The proposed materials should maintain high optical transparency, have an appropriate index of refraction, and efficiently perform the stated optical function (i.e. lens material, diffusion, etc.). Applicants should discuss the merits of their material system such as cost and ease of use in a SSL system.

Organic Light Emitting Diodes:

Applicants shall relate their technical progress and milestones to the SSL Program milestones and device performance projections contained in the DOE SSL MYPP.

***Area of Interest 6: Novel Device Architectures
(DE-PS26-09NT013775-06)***

Research is solicited in the development of novel white OLED architectures that demonstrate improvements in EQE, reduction in operating voltage, and/or improvement in the device lifetime. These improvements should not come at the expense of other performance metrics. Applications to this area should also consider manufacturability and cost of fabrication in their application. The applications in this area should build upon prior research, which will now be applied to the field of OLEDs for solid-state lighting. Applications should contain milestones with measurable improvements in device efficiency, increased luminance and improved device lifetimes.

***Area of Interest 7: High Efficiency OLED Materials
(DE-PS26-09NT013775-07)***

This Research Call is seeking research in the development of materials that will efficiently emit light, operate at a low voltage, show improvements in operating lifetime, and operate at increased brightness levels. This research includes, but is not limited to improved carrier transport materials, carrier blocking materials, integrated nanostructures, inorganic-organic hybrid materials, doping, improved anode and cathode designs, and charge balancing techniques. Improvements made in device efficacy should not come at the expense of other performance attributes. Applications to this area should also consider manufacturability and cost of fabrication in their application. The applications in this area should build upon prior research, which will now be applied to the field of OLEDs for solid-state lighting. Applications should contain milestones with measurable improvements in device efficiency, increased luminance and improved device lifetimes.

***Area of Interest 8: OLED Electrodes
(DE-PS26-09NT013775-08)***

Research is sought on transparent or reflective electrodes, light extraction at the substrate or electrode level, and/or charge injection. Research shall demonstrate an OLED device that shows improvement to one or more of these areas while maintaining other performance aspects suitable for lighting applications. All proposed work shall be compatible with state of the art OLED materials and benchmarked against state of the art OLED performance. The proposed electrodes shall be demonstrated on a consistently reproducible OLED of moderate performance. The recommended milestones must relate to measurable improvements in extraction efficiency, overall device efficiency, device stability and/or electrode resistance and transparency.

***Area of Interest 9: OLED and Encapsulation Fabrication
(DE-PS26-09NT013775-09)***

Research is sought on improved low-cost fabrication or encapsulation techniques compatible with high efficiency OLEDs for SSL. Applications to this area shall take into

account all aspects of device fabrication, and show compatibility with state of the art OLED materials and device structures. Cost justification and device performance limitations shall be considered in the proposal and compared with state of the art OLED fabrication techniques. The recommended milestones must relate to measurable improvements in deposition speed, material utilization, lifetime, shelf life, and cost per area for this area of interest.

2.0 REQUIREMENTS AND ELIGIBILITY

2.1 ELIGIBLE APPLICANTS

All DOE National Laboratories, NSRCs, Department of Defense (DOD) Laboratories or any other Federal Laboratories are encouraged to submit proposals in response to this Laboratory Call. For-profit, non-profit, state and local governments, Indian Tribes, and institutions of higher education are not eligible for this Laboratory Call. All proposed team members must accept the Exceptional Circumstances language found in section 2.7. Teaming with other DOE National Laboratories, NSRCs, DOD Laboratories or any other Federal Laboratories is acceptable if this teaming leads to a greater likelihood of achieving the goals of the SSL program in a timely fashion. In teaming applications, the applicant shall designate a prime recipient and principal investigator that is responsible for conduct of the award. Industry and Universities are excluded from participating as subcontractors unless they are providing a general service as opposed to research. These services will be limited to 20% of the total estimated value of the project.

2.2 TYPE OF AWARD INSTRUMENT

Any project awarded as a result of the Research Call will be processed through NETL as a Field Work Proposal, an Interoffice Work Order, Interagency Agreement or any other allowable method deemed appropriate by the Government.

2.3 ESTIMATED FUNDING

Approximately \$2 million dollars per year are expected to be available for new awards under this Research Call, funded over multiple government fiscal years.

2.4 EXPECTED NUMBER OF AWARDS

DOE anticipates making approximately 2-6 awards this fiscal year under this Research Call. However, the Government reserves the right to fund, in whole or in part, any, all, or none of the proposals submitted in response to this Research Call and will award that number of instruments which serves the public purpose and is in the best interest of the Government. In addition, the Government reserves the right to make “conditional selections” in the event that future funding should become available.

2.5 ESTIMATED AWARD SIZE

DOE anticipates that awards will not exceed the amount set forth below. However, applicants are not encouraged to try to equal these estimates but should offer logical work plans and appropriate costs:

Project Period Length	Maximum Federal Share
12 months	\$ 600,000
12 - 24 months	\$1,200,000
24 – 36 months	\$1,800,000

This information is for estimating purposes only and in no way commits the Government.

2.6 PERIOD OF PERFORMANCE

DOE anticipates making awards that will range from twelve (12) months to thirty-six (36) months. Awards will have project and budget periods that are specific to the project and funding.

2.7 EXCEPTIONAL CIRCUMSTANCES

Regarding any award made to a Research Laboratory under this Research Call, the Department of Energy has approved a determination titled “Exceptional Circumstances Determination for Inventions Arising Under the Solid-State Lighting Core Technologies Program.” This Determination is based on the Department’s belief that circumstances surrounding the Solid-State Lighting Core Technologies Program are exceptional and justify modified intellectual property arrangements as allowed by the Bayh-Dole Act (35 U.S.C. 202(a)(ii)). More detailed information about the Exceptional Circumstances Determination can be found at:

http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/ssl_determination_signed_june_2005_1.pdf

The Department of Energy intends that disposition of rights to subject inventions made by a Research Laboratory under awards resulting from this Research Call will be subject to the terms of this Determination. The restriction of patent rights under the Determination will be basically as described in the following paragraph. The Department is requiring minimum licensing rights that the Core Technology Program recipients will have to agree to. Under 35 U.S.C. § 203(2), an awardee adversely affected by this exceptional circumstance determination has a right to appeal the determination to the Department of Energy or to the United States Court of Federal Claims.

All recipients under this Research Call shall be required to offer to each member of the Solid-state Lighting Partnership (i.e., the Next Generation Lighting Industry Alliance (NGLIA)) the option to enter into a non-exclusive license in the field of solid-state lighting applications for subject inventions developed under the Core Technologies Program. Such licenses shall be granted upon terms that are reasonable under the circumstances, including royalties. This option shall only be available to NGLIA members and must be kept available for one year after the U.S. patent issues. After this one-year period, the Core recipient will be free from the licensing restrictions. The Core recipient must agree to negotiate in good faith with any and all NGLIA members that

indicate a desire to obtain at least a non-exclusive license. Exclusive licensing may be considered if only one NGLIA member expresses an interest in licensing the invention. Partially exclusive licenses in a defined field of use may be granted to a NGLIA member, provided such license would not preclude any other NGLIA member that indicates a desire to license the invention from being granted at least a non-exclusive license. In the event the Core Recipient and a NGLIA member cannot reach agreement after nine months from the start of diligent and responsible negotiations between them, the NGLIA member shall have the right of a third party beneficiary to maintain an action in a court of competent jurisdiction to force licensing of the subject invention on reasonable terms and conditions. The licensing of any background patents owned by the Core recipient is not required.

3.0 SUBMISSION INSTRUCTIONS

3.1 SUBMISSION DUE DATE

Proposals shall be submitted electronically to the following email address no later than April 17, 2009 at 5:00 PM Eastern Standard Time:

Brian Dotson, Project Manager
US Department of Energy
National Energy Technology Laboratory
SSL@netl.doe.gov

When submitting your application, please specify your Area of Interest. The applicant is encouraged to request a return notification to verify receipt of proposal.

3.2 LATE APPLICATIONS, AMENDMENTS AND WITHDRAWALS OF PROPOSALS

A proposal or amendment of a proposal shall be considered timely if it is received on or before the closing date indicated above. Proposals or amendments of proposals may be withdrawn by written notice from an authorized representative to the above address via e-mail or in writing.

A second proposal or amendment may then be submitted. The second or subsequent proposal must be submitted before the closing date to be considered. In the event that two or more proposals are received for the same project with the same title, the proposal with the latest postmark will be considered for review. Therefore, it is important that you not merely make page changes and re-submit portions of the proposal that are amended. A complete amended proposal must be sent.

Proposals or amendments received after the closing date will not be reviewed or considered.

4.0 APPLICATION PREPARATION

4.1 PREPARATION

It is requested that the entire proposal not exceed thirty-five (35) pages, single spaced, 1" margins (top, bottom, left, right), and when printed will fit on size 8 1/2" by 11" paper. The type must be legible and not smaller than 11 point. The Technical Content (see Section IV Part 2.3) shall not exceed thirty (30) pages of the total page limit. Evaluators will review only the number of pages specified. Any proposals exceeding these limitations may result in a weakness to their overall scored based on technical evaluation Criterion 3 – Applicant and Team Member Roles & Capabilities. In order to produce a comprehensive application for this Research Call, the offeror shall address, at a minimum, the areas listed in the Table of Contents, below. The offeror shall use the following Table of Contents:

Section	Page
Field Work Proposal Cover Sheet	i
Public Abstract	ii
Table of Contents	iii
List of Tables	iv
List of Figures	v
List of Acronyms	vi
Detailed Cost Analysis	vii
Technical Content	#
Technical Approach	#
Technology Value	#
Applicant and Team Members Roles and Capabilities	#
Corporate Commitment and Technology Transfer Abilities	#
Appendices	#
Statement of Work (SOW)	A
Resumes of Key/Critical Personnel	B
Qualifications and Experience of Participating Organization(s)	C

4.2 FIELD WORK PROPOSAL COVER SHEET

This section is applicable to DOE National Laboratories and NSRCs only. The form must be completed and signed by an official who is authorized to act for the applicant and project team members (other National Laboratories) and who can commit the applicant to comply with the terms and conditions of award, if one is issued.

4.3 PUBLIC ABSTRACT

This section shall contain a public abstract of not more than one (1) typewritten page. The offeror shall provide a point of contact for coordination, preparation and distribution of

press releases. The public abstract shall not contain confidential, proprietary, or otherwise sensitive information as it may be released by the DOE to the public at any time.

4.4 DETAILED COST ANALYSIS

The applicant shall provide detailed cost information pertaining to their proposal. At a minimum, the cost analysis shall provide information regarding personnel costs, overheads, travel, equipment, and supplies. Include a supplemental schedule that identifies the labor hours, labor rates, and cost by labor classification for each budget year. Also, indicate the basis of the labor classification, number of hours, and labor rates.

4.5 TECHNICAL CONTENT

Begin this section by stating the project objectives and provide a clear description of the work to be done. To facilitate the review process and insure maximum consideration, the applicant should address each of the criterion below and provide all of the requested information. These elements are consistent with the technical evaluation criteria in part 5.0 of this Research Call. Sufficient information should be provided to enable the reviewers to evaluate the application in accordance with these elements.

4.5.1 TECHNICAL APPROACH

- Provide a clear and concise statement of the scientific merits and likelihood of success of the proposed approach. Explain any areas of technical uncertainty and the basis for the approach selected.
- Discuss the foundation, previous work or theories, on which you base your research. Include relevant finding, tables, and figures to support your application.
- Provide an innovative and novel technical approach to achieving the stated objectives. Do not duplicate or elaborate on previous or ongoing research unless a significant new or enabling development has occurred. For a list of previous and ongoing work, please refer to the SSL Portfolio at: <http://www1.eere.energy.gov/buildings/ssl/projects.html>.
- Include a table of milestones for each interval of the proposed effort. Be quantitative and descriptive. Milestones should be challenging yet achievable and relevant to the MYPP.

4.5.2 TECHNOLOGY VALUE

- Provide a discussion of how the proposed subject and approach will impact the eventual achievement of the DOE SSL mission/goal as contained in the MYPP.

- Compare and quantify the performance of the proposed approach to current SSL device technology in terms of efficiency and discuss the likelihood of exceeding current SSL performance levels.
- Explain how the proposed approach may apply to multiple SSL technologies or may impact other DOE energy efficiency objectives (crosscutting).
- Provide calculations of estimated efficiency benefits compared to current SSL technology and conventional lighting technology, if applicable. Provide baseline information upon which efficiency calculations are based.
- Explain how the proposed research will allow the DOE to achieve their SSL goals earlier than planned. Be quantitative and estimate the impact this achievement might have on cumulative lighting energy conservation.

4.5.3 APPLICANT AND TEAM MEMBERS ROLES AND CAPABILITIES

- Discuss the ability of the team to perform and achieve the goals stated in the SOW. This should include current corporate experience and success in similar projects resulting in successful technology development and commercialization or technology transfer to commercial product(s). Detail the roles and responsibilities of key personnel and all team organizations with respect to the technical approach.
- Discuss the role of the Principal Investigator (PI) as project manager enabling the successful completion of the stated goals of the project. The PI is expected to be the project manager, technical lead, and technical point of contact for the project.
- Provide a breakdown of key personnel to SOW tasks (manpower matrix). The matrix should illustrate estimated labor hours and labor categories (e.g., project manager, principal investigator, etc.) required for each task and shall provide rolled-up total for each period. The same should also be included for any proposed subcontracting or consulting efforts. Discuss the rationale used to develop estimates for labor hours and categories, and subcontracting/consulting efforts. Cost information is not to be included in the technical proposal volume.
- Discuss the availability of facilities and equipment. Identify any major equipment needed for the proposed project, which will need to be acquired during the course of the project.

4.5.4 CORPORATE COMMITMENT AND TECHNOLOGY TRANSFER ABILITIES

- Discuss details of corporate commitments and leverage of existing relationships, collaborations or partnerships with the SSL industry or relevant federal programs.
- Discuss successful technology transfer efforts to US industry for commercialization with particular emphasis on SSL.

4.6 STATEMENT OF WORK (APPENDIX A) INSTRUCTIONS

A Statement of Work shall be developed that addresses how the project objectives will be met. The Statement of Work must contain a clear, concise description of all activities to be completed during project performance and follow the structure discussed below. This section shall be restricted to 1-3 pages in length. This section is not to contain a technical discussion of how or why but rather what research will be conducted. The Statement of Work may be released to the public by DOE in whole or in part at any time. It is therefore required that it shall not contain proprietary or confidential business information.

TITLE OF WORK TO BE PERFORMED

(Insert the title of work to be performed. Be concise and descriptive. Avoid non-descriptive terms, such as ‘novel’ or ‘innovative’)

A. OBJECTIVES

Include one paragraph on the overall objective(s) of the work. The objective should contain the main goals and metrics of the research effort. Also, include objective(s) for each phase of the work.

B. TASKS TO BE PERFORMED

Tasks, concisely written, should be provided in a logical sequence and should be divided into the phases of the project. This section provides a brief summary of the planned approach to this project.

PHASE I

Task 1.0 - (Title)

(Description)

Subtask 1.1 (Optional)

(Description)

Task 2.0 - (Title)

PHASE II (Optional)

Task 3.0 - (Title)

C. MILESTONES AND SUCCESS CRITERIA

As a part of the approved SOW, the Recipient shall propose Milestones that will serve as the baseline for tracking performance of the project and will identify success criteria associated with the milestones. Milestones are incremental achievements that need to occur to accomplish a goal. Success Criteria are meant to define project goals for each interval of the proposed effort. Success Criteria are intended to objectively determine whether a project has been successful. These success criteria and milestones shall relate to the determination of technical “value” as described in Criterion 2 and shall be relevant to the MYPP goals. The success criteria will be taken into consideration when making a continuation determination at each decision point.

During project performance, the Recipient will report the Milestone Status as relates to the Success Criteria. The Milestone and Success Criteria Status shall include:

- (1) the actual status and progress of the project,
- (2) specific progress made toward achieving the project’s Success Criteria, and,
- (3) any proposed changes in the projects schedule required to complete critical path milestones.

E. DELIVERABLES

The Recipient shall provide a list of deliverables. These reports shall be identified within the text of the Statement of Work. See the following examples:

1. Task 1.1 - (Report Description)
2. Task 2.2 - (Report Description)

The Recipient shall submit to the DOE Project Manager annual technical progress reports. The reports are due thirty (30) days after the calendar year. In addition, the Recipient shall submit the following:

Monthly Highlight Communications: This update shall be submitted via e-mail no later than the 15th day of each month and shall cover the activities of the previous month. Recipients shall use this highlight opportunity to communicate developments, achievements, changes and problems. The information shall be submitted in accordance with the following format:

Award Number

Performing Organization

PI

Title

Reporting Period – Identify month and year of the reporting period.

Task Update – Provide an update on work performed for each task during the reporting period. Identify tasks by both the descriptive name and number.

Discussion Topics – Identify issues that require SSL Project Manager attention or action.

Milestone and Success Criteria Status – In a short paragraph per milestone or success criteria, identify achievement of key project milestones. Your milestones and success criteria are very important, address all milestones that you worked toward during the month in which you are reporting.

Significant Accomplishments - Identify noteworthy advancements in research, design, manufacture or commercialization activities of the project, patent-related developments, and important breakthroughs that resolve critical science and technology risks or development barriers.

Presentations & Publications – Identify and include briefing packages, press releases, articles, and papers planned, developed and/or given that discuss the project. [Note: Copies of these presentations and publications provided as attachments in the Monthly Highlight Communication shall not include proprietary information.]

Site Visits – Identify site visits planned and given with high level corporate or government officials.

Travel – Identify travel planned or completed to accomplish/manage project tasks.

It is recommended that the communication be approximately 1-2 pages in length. Images and graphics should be provided when beneficial to the overall understanding of progress. The report may be submitted as Microsoft Word document, Adobe Portable Document Format (*.pdf), or as the body of an email message. The communication is intended for use that may include individuals outside the SSL Program Management Team and therefore should contain no proprietary information.

F. BRIEFINGS/TECHNICAL PRESENTATIONS (If applicable)

The Recipient shall prepare detailed briefings for presentation to the DOE Project Officer at the NETL facility located in Pittsburgh, PA or Morgantown, WV. Briefings shall be given by the Recipient to explain the plans, progress, and results of the technical effort.

The Recipient shall provide and present a technical paper(s) at the DOE/NETL Annual SSL R&D Workshop.

The Recipient shall provide and present a technical paper(s) at the DOE/NETL Peer Review Meeting to be held at DOE Headquarters in Washington D.C.; or other location specified by the DOE Project Officer.

5.0 EVALUATION AND SELECTION

5.1 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 Research Call has been submitted; (3) all mandatory requirements are satisfied; and (4) the proposed project is responsive to the objectives of the Research Call.

5.2 MERIT REVIEW CRITERIA

Proposals submitted in response to this Research Call and which the initial review detailed above, will be evaluated and scored in accordance with the criteria and weights listed below:

Criterion 1: Technical Approach Weight: [40%]

- Validity, basis, and thoroughness of the proposed approach, the likelihood of success, and the scientific merit of the key technology issues addressed.
- Clarity, reasonableness and applicability of proposed milestones and success criteria as related to relevant MYPP goals for each interval of the proposed effort with special emphasis on the descriptive, qualitative and especially quantitative milestone aspects.
- Thoroughness and adequacy of the proposed Statement of Work (SOW), anticipated outcomes and results to achieve the objectives of the SSL Program.
- The proposed technical innovation and its relevance to the stated objectives.

Criterion 2: Technology Value Weight: [30%]

- The extent to which the proposed project meets or exceeds yearly projections as defined in the MYPP, and contributes to the DOE's SSL mission and/or goal.
- Potential improvements over current state of the art for relevant approaches and their relation to overall device performance.
- The extent to which the proposed approach will contribute to multiple SSL technologies or how it may positively impact other DOE energy efficiency objectives (crosscutting).
- The relevance of the proposed work and its potential impact on eventual SSL products.
- The degree to which the proposed work meets the published statement of needs.
- Degree of possibility that the proposed work will achieve the SSL goals earlier than planned.

Criterion 3: Applicant and Team Members Roles and Capabilities Weight: [20%]

- Ability of the proposed team to achieve the goals stated in the SOW; the level of professional and academic credentials.

- Demonstrated abilities based on relevant prior Federal and non-Federal performance.
- Reasonableness of time allocations and mix of personnel proposed in the manpower matrix to meet project objectives.
- The adequacy (quality, availability, and appropriateness) of facilities and equipment for the proposed project.

Criterion 4: Corporate Commitment and Technology Transfer Abilities

Weight: [10%]

- The degree to which the applicant leverages existing relationships, collaborations or partnerships with the SSL industry or relevant Federal Programs, and evidence of corporate commitment.
- Evidence of successfully transferring technologies to US industry for commercialization, with particular emphasis on SSL.

5.3 OTHER SELECTION FACTORS

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

These factors, while not indicators of the Application's merit, e.g., technical excellence, cost, Applicant's ability, etc., may be essential to the process of selecting the application(s) that, individually or collectively, will best achieve the program objectives. Such factors are often beyond the control of the Applicant. Applicants should recognize that some very good applications may not receive an award because they do not fit within a mix of projects which maximizes the probability of achieving the DOE's overall R&D objectives. Therefore, the following Program Policy Factors may be used by the Selection Official to assist in determining which of the ranked application(s) shall receive DOE funding support.

1. It may be desirable to select for a project which represents a diversity of technical approaches and methods;
2. It may be desirable to support complementary and/or duplicative efforts or projects, which, when taken together, will best achieve the research goals and objectives;
3. It may be desirable to select project(s) of less technical merit than other project(s) if such a selection will optimize use of available funds by allowing more projects to be supported and not be detrimental to the overall objectives of the program.

The above factors will be independently considered by the Selection Official in determining the optimum mix of applications that will be selected for support. These policy factors will provide the Selection Official with the capability of developing, from the competitive Research Call, a broad involvement of organizations and organizational ideas, which will both enhance the overall technology research effort and upgrade the program content to meet the goals of the DOE.