**<Full Application Title Here>**

**Topic Area <Enter topic area number here>: <Enter title of chosen Topic Area>**

**Proposed Budget:** $<XX>

**Proposed Non-Federal Cost Share:** <XX>%

**Proposed Award Duration:** <XX> months

|  |  |
| --- | --- |
| **Technical Point of Contact:** | <First and last name here, in that order>  <Job Title>  <Organization Name>  <Location of Organization (i.e. Cleveland, OH)>  <Email address > |

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| --- | --- |
| **Business Point of Contact:** | <First and last name here, in that order>  <Job Title>  <Organization Name>  <Location of Organization (i.e. Cleveland, OH)>  <Email address > |

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| **Team Members:** | <First and last name of member #1>  <Insert Organization Name here>  <First and last name of member #2>  <Organization Name>  <Etc.> |

**Confidentiality Statement:** <Enter “Not Applicable” here if that is the case>

**Project Overview**

***[(Delete this information before submitting your completed application)The Project Overview should contain the following information:***

* Background: The applicant should discuss the background of their organization, including the history, successes, and current research and development status (i.e., the technical baseline) relevant to the technical topic being addressed in the Full Application.
* Project Goal: The applicant should explicitly identify the targeted improvements to the baseline technology and the critical success factors in achieving that goal.
* DOE Impact: The applicant should discuss the impact that DOE funding would have on the proposed project.  Applicants should specifically explain how DOE funding, relative to prior, current, or anticipated funding from other public and private sources, is necessary to achieve the project objectives.

**Technical Description, Innovation, and Impact**

***[(Delete this information before submitting your completed application)The Technical Description should contain the following:***

* Relevance and Outcomes: The applicant should provide a detailed description of the technology, including the scientific and other principles and objectives that will be pursued during the project. This section should describe the relevance of the proposed project to the goals and objectives of the FOA, including the potential to meet specific DOE technical targets or other relevant performance targets. The applicant should clearly specify the expected outcomes of the project.
* Feasibility: The applicant should demonstrate the technical feasibility of the proposed technology and capability of achieving the anticipated performance targets, including a description of previous work done and prior results.
* Innovation and Impacts: The applicant should describe the current state of the art in the applicable field, the specific innovation of the proposed technology, the advantages of proposed technology over current and emerging technologies, and the overall impact on advancing the state of the art/technical baseline if the project is successful.

**Workplan and Market Transformation Plan**

***[(Delete this information before submitting your completed application)***

***The Workplan should contain the following:***

* Project Objectives: The applicant should provide a clear and concise (high-level) statement of the goals and objectives of the project as well as the expected outcomes.
* Technical Scope Summary: The applicant should provide a summary description of the overall work scope and approach to achieve the objective(s). The overall work scope is to be divided by performance periods that are separated by discrete, approximately annual decision points (see below for more information on go/no-go decision points). The applicant should describe the specific expected end result of each performance period.
* Work Breakdown Structure (WBS) and Task Description Summary: The Workplan should describe the work to be accomplished and how the applicant will achieve the milestones, will accomplish the final project goal(s), and will produce all deliverables. The Workplan is to be structured with a hierarchy of performance period (approximately annual), task and subtasks, which is typical of a standard work breakdown structure (WBS) for any project. The Workplan shall contain a concise description of the specific activities to be conducted over the life of the project. The description shall be a full explanation and disclosure of the project being proposed (i.e., a statement such as “we will then complete a proprietary process” is unacceptable). It is the applicant’s responsibility to prepare an adequately detailed task plan to describe the proposed project and the plan for addressing the objectives of this FOA. The summary provided should be consistent with the SOPO. The SOPO will contain a more detailed description of the WBS and tasks.
* Milestone Summary: The applicant should provide a summary of appropriate milestones throughout the project to demonstrate success. A milestone may be either a progress measure (which can be activity based) or a SMART technical milestone. SMART milestones should be **S**pecific, **M**easurable, **A**chievable, **R**elevant, and **T**imely, and must demonstrate a technical achievement rather than simply completing a task. Unless otherwise specified in the FOA, the minimum requirement is that each project must have at least one milestone per quarter for the duration of the project with at least one SMART technical milestone per year (depending on the project, more milestones may be necessary to comprehensively demonstrate progress). The applicant should also provide the means by which the milestone will be verified. The summary provided should be consistent with the Milestone Summary Table in the SOPO.
* Go/No-Go Decision Points: The applicant should provide a summary of project-wide go/no-go decision points at appropriate points in the Workplan. A go/no-go decision point is a risk management tool and a project management best practice to ensure that, for the current phase or period of performance, technical success is definitively achieved and potential for success in future phases or periods of performance is evaluated, prior to actually beginning the execution of future phases. Unless otherwise specified in the FOA, the minimum requirement is that each project must have at least one project-wide go/no-go decision point for each budget period (12 to 18-month period) of the project. The Applicant should also provide the specific technical criteria to be used to make the go/no-go decision. The summary provided should be consistent with the SOPO. Go/no‐go decision points are considered “SMART” and can fulfill the requirement for an annual SMART milestone.
* End of Project Goal: The applicant should provide a summary of the end of project goal(s). Unless otherwise specified in the FOA, the minimum requirement is that each project must have one SMART end of project goal. The summary provided should be consistent with the SOPO.
* Project Schedule (Gantt Chart or similar): The applicant should provide a schedule for the entire project, including task and subtask durations, milestones, and go/no-go decision points.
* Project Management: The applicant should discuss the team’s proposed management plan, including the following:
  + The overall approach to and organization for managing the work
  + The roles of each Project Team member
  + Any critical handoffs/interdependencies among Project Team members
  + The technical and management aspects of the management plan, including systems and practices, such as financial and project management practices
  + The approach to project risk management
  + A description of how project changes will be handled
  + If applicable, the approach to Quality Assurance/Control
  + How communications will be maintained among Project Team members
* Market Transformation Plan: The applicant should provide a market transformation plan, including the following:
  + Identification of target market, competitors, and distribution channels for proposed technology along with known or perceived barriers to market penetration, including a mitigation plan
  + Identification of a product development and/or service plan, commercialization timeline, financing, product marketing, legal/regulatory considerations including intellectual property, infrastructure requirements, data dissemination, U.S. manufacturing plan etc., and product distribution.

**Work Breakdown Structure**

Blue text is intended for instructional purposes only, please remove it before submitting this document.

1. **Project Objective**

< Provide a high-level overview of the goals, impact and final result of this project. Explain the final objective, outcome, milestone and/or deliverable that are to be produced and the rationale for why the applicant has organized the tasks in the way they have. >

1. **Technical Scope Summary**

< Provide a summary description of the overall work scope and approach to achieve the objective(s). The applicant should describe the specific expected end result of each performance period. >

**Current Baseline Performance of the proposed technology:** Applicants should state the current performance of the proposed technology within their own facilities.

1. **Tasks to be Performed**

< The section should describe the anticipated activities to be conducted over the life of the project. This section provides a summary of the planned approach to this project and should clearly articulate what work must be accomplished to execute the project scope and thus meet the established project objectives. Each task should a task summary that describes the objectives, what work is to be accomplished, and relationship to project deliverables or expected results.

End of Project Goal: The SOPO should include one SMART end of project goal that embodies the greatest possible success and level of impact for the project. >

**Year 1:**

**Task 1.1:** Distinctive Title, Date range of the task in months (i.e. M1-M4)

**Task Summary:** Task summaries shall explicitly describe what work is to be accomplished, identify the project objectives/outcomes being addressed and provide a concise statement of the objectives of that task. In addition, the description should indicate the project milestones that this task will help achieve (M1.1, M2.1…).

**Subtask 1.1.1** Date range (i.e. M1-M2): Describe the specific and detailed work efforts that go into achieving the higher-level tasks.

**Subtask 1.1.2**: (Continue until all Task 1 subtasks are listed)

**Task 1.2:** Title, Date range (continue in the format above until all tasks and subtasks are listed)

**Task Summary:** (continue in the format above until all tasks and subtasks are listed)

**Subtask 1.2.1:** Description and Discussion

**Subtask 1.2.2:** Description and Discussion

**Milestone 1.1 (Quarter 1):** Quarterly milestones should be SMART in that it is Specific, Measurable, Achievable, Relevant, and Timely, and must demonstrate a technical achievement rather than simply completing a task. Each project must have at least one milestone per quarter for the duration of the project. The Applicant should also provide the means by which the milestone will be verified.

**Milestone 1.2 (Quarter 2):**

**Milestone 1.3 (Quarter 3):**

**Year end Go/No-Go Milestone:** Year-end milestones should capture the impact of the project and, if they are met, should clearly demonstrate project impact. As with quarterly milestones, year-end milestones should not be based only on the completion of tasks or activities, but should measure how successful those tasks and/or activities have been at creating impact within the targeted area of work.

**Year 2:** (continue until all project years are listed)

**Task 2.1:**

**Subtask 2.2.1:** Description and Discussion

**Subtask 2.2.2:** Description and Discussion

**Etc.**

**Technical Qualifications and Resources**

***[(Delete this information before submitting your completed application):***

***The Technical Qualifications and Resources should contain the following information***

* Describe the Project Team’s unique qualifications and expertise, including those of key Subrecipients.
* Describe the Project Team’s existing equipment and facilities that will facilitate the successful completion of the proposed project; include a justification of any new equipment or facilities requested as part of the project.
* This section should also include relevant, previous work efforts, demonstrated innovations, and how these enable the applicant to achieve the project objectives.
* Describe the time commitment of the key team members to support the project.
* Attach one-page resumes for key participating team members as an appendix.  Resumes do not count towards the page limit.  Multi-page resumes are not allowed.
* Describe the technical services to be provided by DOE/NNSA FFRDCs, if applicable.
* Attach letters of commitment from all Subrecipient/third party cost share providers as an appendix. Letters of commitment do not count towards the page limit.
* Attach any letters of support from partners/end users as an appendix (1 page maximum per letter).  Letters of support do not count towards the page limit.
* For multi-organizational or multi-investigator projects, describe succinctly:
  + The roles and the work to be performed by each PI and Key Participant;
  + Business agreements between the applicant and each PI and Key Participant;
  + How the various efforts will be integrated and managed;
  + Process for making decisions on scientific/technical direction;
  + Publication arrangements;
  + Intellectual Property issues; and
  + Communication plans

**LCOE Impact Estimate Analysis**

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| Quantity | Units | Enter Your Values  in These Columns | |
| Commercially available Reference Technology (Module and System type) | N/A | \*\*\* | |
| All values entered below should be changes with respect to the above-listed Reference Technology. | | | |
|  |  | **Low** | **High** |
| Decrease in module cost | $/m2 | \*\*\* | \*\*\* |
| Decrease in area-related Balance of System (BOS) hardware costs | $/m2 | \*\*\* | \*\*\* |
| Decrease in area-related  non-hardware cost | $/m2 | \*\*\* | \*\*\* |
| Increase in rated module power | W/m2 | \*\*\* | \*\*\* |
| Decrease in degradation rate  (absolute %/yr) | %/yr | \*\*\* | \*\*\* |
| Increase in annual energy yield (relative) | % | \*\*\* | \*\*\* |
| Decrease in Installation and Commissioning Time | Weeks | \*\*\* | \*\*\* |

Estimate the impact this project would have on the cost and performance parameters shown in the above table if the project were to meet its milestones and was subsequently scaled-up for high-volume deployment. Report values relative to a currently established reference technology. **Supply both a High estimate (only 10% chance of a higher value) and a Low estimate (only 10% chance of lower value).**

If the proposed project impacts power-related BOS cost (hardware or non-hardware), convert that impact ($/W) into an equivalent area-related impact ($/m2) for inclusion in the above table.

These estimates must be sufficiently supported by the content of the Application to convince the reviewers of their validity. “N/A” or zero are appropriate answers for cost and performance categories that will not be directly affected by the proposed project work.

*Be careful with the signs (+/-). For example, a proposal to develop a novel n-type silicon cell might have the following high values for the cost and performance estimates:*

* *Reference Technology:* ***Al-BSF p-type mono-Si***
* *Decrease in Module Cost ($/m2):* ***-$12/m2*** *(wafer cost up, extra steps)*
* *Decrease in Area-Related BOS Hardware Cost ($/m2):* ***$0/m2*** *(no change)*
* *Decrease in Area-Related Non-Hardware Cost ($/m2):* ***$0/m2*** *(no change)*
* *Increase in Module Power (W/m2):* ***+18W/m2*** *(higher efficiency)*
* *Decrease in Degradation (absolute %/yr):* ***+0.2%/yr*** *(more stable)*
* *Increase in Annual Energy Yield (kWh/kW) as %:* ***+1%*** *(temp coeff)*
* *Decrease in Installation and Commissioning Time:* ***0 weeks*** *(no change)*

**After filling out the LCOE impact table at the top of the previous page, you may use the rest of the 2 page section length to discuss or otherwise explain the values that you have provided.**