Statement of Project Objectives

[Insert Prime Recipient Name]

[Insert Award Title]

**The instructional blue text should be removed in the final version of the SOPO**

This Statement of Project Objectives (SOPO) establishes Go/No Go decision points between Budget Periods. For each Go/No Go decision point, EERE must determine whether the Recipient has fully and satisfactorily completed the work described in this SOPO. As a result of a Go/No Go review, in its discretion, EERE may take one of the following actions:

* Authorize Federal funding for the next budget period for the Project;
* Recommend redirection of work under the Project;
* Place a hold on the Federal funding for the Project, pending further supporting data; or
* Discontinue providing Federal funding for the Project beyond the current budget period as the result of insufficient progress, change in strategic direction, or lack of available funding.

During the Go/No Go review, EERE will consider whether the recipient has achieved the Milestones associated with the Budget Period under review, listed in Section E. Multiple Milestones are usually associated with a Go/No Go decision point and are described in the Milestone Summary Table in Section E. In general, projects that successfully meet all their Milestones will have a high probability of meeting their “Go/No Go” decision points and receiving a “Go” decision following the continuation review, with exceptions for lack of appropriations and/or changes in market conditions that make the work no longer relevant. Continuation decisions for those projects that do not meet all their Milestones will be based upon DOE’s assessment of the quality of the work, the ability of the technology to meet market relevant performance metrics, the importance of the proposed work in enabling the achievement of DOE’s targets, and the ability of the team to complete the future proposed work, amongst other criteria. DOE in its sole discretion, will determine whether the recipient has met any Milestone. Please refer to the Award Special Terms and Conditions, specifically the Federal Involvement and the Continuation Application and Funding Terms, for information on Go/No Go decision points and Continuations.

All of the information to be included in the SOPO must be consistent with the Application and any Negotiation Strategies upon which the award was selected. Specifically, the SOPO must be consistent with the Work Plan portion of the Technical Volume submitted by the Applicant. The SOPO should accurately define **what** work is to be done and the expected progress to be achieved. The following items should **not** be included in the SOPO:

* Dollar amounts.
* Specific dates.
* Subcontractors, vendors or individuals by name. The award is with the prime and, as such, the SOPO should not generally reference the subcontractors.

The SOPO should not include trade secrets, commercial, or financial information that is privileged or confidential unless such information is necessary to convey an understanding of the project or to comply with a specific DOE requirement. DOE will protect such information developed outside the award at private expense. If it is necessary to include such information, the SOPO must include the following paragraph:

Notice of Restriction on Disclosure and Use of Data:

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

The header and footer of every page that contains such information must be marked as follows: “Contains Confidential, Proprietary, or Privileged Information Exempt from Public Disclosure.” In addition, every line and paragraph containing proprietary, privileged, or trade secret information must be clearly marked with double brackets or highlighting.

If the document **does not** contain confidential, proprietary, or privileged information, the SOPO must include the following alternate paragraph:

Notice of Restriction on Disclosure and Use of Data:

This document does not contain confidential, proprietary, or privileged information that is exempt from public disclosure.

Notwithstanding any restrictive notice on the SOPO, the intellectual property provisions of the financial assistance agreement govern the rights and protection of data that are used or generated as part of the project.

# Project Objectives

Provide a clear and concise (high-level) statement of the goals and objectives of the project as well as the expected outcomes. If the award is to be structured in Budget Periods, include the objective(s) for each Budget Period.

# Technical Scope Summary

Provide a summary description of the overall work scope and approach to achieve the objective(s). The work scope description needs to be divided by Budget Period that are separated by discrete go/no-go decision points. It should describe all activities of each budget period as well as identifying common threads spanning all budget periods, such as uncertainty reduction, cost/value analysis, and stakeholder engagement.

# Tasks to Be Performed

The section should describe the specific 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.

The task descriptions should be structured with a hierarchy of performance period separated by at least one project-wide go/no-go decision point at the end of each budget period. In other words, tasks should be organized in a logical sequence and should be divided into the budget periods of the project, as appropriate. Each task and subtask is to have a unique number and title. Each task and subtask is to have a task summary that describes the objectives, and what work is to be accomplished. An example of a typical task structure is provided below. While the example illustrates two Budget Periods and three tasks, the specific project work scope and award structure will dictate the appropriate number of budget periods, tasks and subtasks*:*

**Budget Period 1**

**Task 1.0:** Distinctive Title

**Task Summary:** Task summaries shall explicitly describe the work that is to be accomplished. They should also identify the project objectives/outcomes being addressed and provide a concise statement of the objectives of that particular task.

**Subtask 1.1:** Title

**Subtask Summary:** Add subtask summary

**Subtask 1.2:** Title

**Subtask Summary:** Add subtask summary

(Continue until all Task 1 subtasks are listed)

**Task 2.0:** (Continue in the format above until all tasks and subtasks are listed)

**Budget Period 1 Go/No-Go (GNG) Decision Point(s):** See Section E below for the GNG criteria.

**Budget Period 2**

**Task 3.0:** (Continue in the format above until all tasks and subtasks are listed)

**End of Project (EOP) Goal:** (For the last budget period.) See Section E below for the EOP criteria.

# Project Management and Reporting

Recipient will be responsible for programmatic, technical, and financial program management. Reports and other milestones will be provided in accordance with the Federal Assistance Reporting Checklist following the instructions included therein. Project update teleconferences will be held approximately monthly (or on an alternate schedule if requested by DOE), except where replaced by in-person status meetings or demonstrations. Recipient travel will be carried out as budgeted and necessary to complete the project goals.

# Milestone Table

**Milestones:** The Awardee should identify appropriate SMART (Specific, Measurable, Achievable, Relevant, Timely) milestones in order to demonstrate actual achievement rather than simply completing a task. Recommended numbering convention: [Budget Period #].[Task #].[Milestone #]. *For example - 1.3.2 means Milestone 2 within Task 3 of Budget Period 1.*

**Go/No-Go (GNG) Decision Points:** The Awardee should include project-wide Go/No-Go decision points (each comprised by multiple Milestones) at the end of each budget period. A Go/No-Go decision point is a risk management tool and a project management best practice to ensure that, for the current budget period or period of performance, success is definitively achieved and potential for success in future budget periods is evaluated, prior to actually beginning the execution of future budget periods.

The Awardee must include at least 1 Go/No-Go Milestone in each of the following areas for each budget period of the project:

* Technical and analytical: for example - efficiency, lifetime, degradation rates, availability, reliability
* Cost and/or value evaluations: for example - techno-economic analyses for material usage, manufacturing and/or operations, value propositions for technology or service
* Stakeholder engagement: for example - identification of possible user/off-taker base, memoranda of understanding/letters of intent for testing/purchase, journal articles, convening working groups

The Awardee should also include the specific criteria that will be used to evaluate the progress and make the Go/No-Go decision. Go/No‐Go decision points are considered “SMART”. Recommended numbering convention: GNG-[Budget Period #][Milestone Letter], for example GNG-1C means Go/No-Go Milestone C of Budget Period 1.

**End of Project (EOP) Goals:**  The Awardee should include SMART end of project goals. The Applicant should also provide the means by which the end of project goals will be verified. Recommended numbering convention: EOP-[Milestone Letter]. For example - EOP-B means End of Project Goal B.

*Examples of different types of Milestones from different technology areas are included in the table below. Please remove the examples and build your own Milestone table with the same level of detail, depending on the specific goals and schedule of your award.*

| **Milestone #** | **Anticipated Month of completion** | **Performance Metric** | **Success Value** | **Assessment Tool / Method of Measuring Success Value** | **Verification Process** | **Metric Justification, Additional Notes** |
| --- | --- | --- | --- | --- | --- | --- |
| 1.1.1 | 4 | Cell efficiency | > 25% efficiency | Average, standard deviation. At least 10 cells measured under standard conditions. Standard deviation < 1% (absolute efficiency) | Raw data and report sent to DOE for verification | The success value was chosen based on initial cost modeling: efficiency lower than 25% makes this material not competitive with current state of the art |
| 1.1.2 | 5 | Receiver efficiency | 90% (optical energy into aperture divided by thermal energy in heat transfer fluid at outlet) | Student’s test with 95% confidence interval, minimum 5 repeat experiments | Plot of modeled efficiency vs measured efficiency, for given solar concentration, wind condition, temperature, and flow rate | 1) 90% efficiency is the minimum needed for the integrated system to achieve cost targets  2) Model indicates that a 90% efficiency in 10 mph windy conditions translates into a 92% annual efficiency |
| 1.1.3 | 6 | Circuit model curation | > 30 models, of which at least 20 suitable for testing | Count. 30 realistic and anonymized candidate distribution circuit models identified, of which at least 20 are suitable for detailed testing | Report sent to DOE with description of circuit models including load models, impedances, and connectivity characteristics | Load models, impedances, and connectivity characteristics have to be included in the report to assess the feasibility of the proposed circuits |
| 1.2.1 | 10 | Webinar | > 100 participants, of which at least 20 installers and at least 40 developers | Count. A minimum of 100 people should attend for at least 50% of the webinar. The audience should include at least 20 installers operating in the states object of this award, and at least 40 developers. The webinar should include effective ways to engage with the audience, including but not limited to interactive polls*a* and live Q&A sessions | Link to the webinar sent to DOE before the event. Report sent to DOE including slides presented, list of attendees and their affiliation after the conclusion of the event. | Specific audience groups identified to make sure that the relevant stakeholders will receive the content developed during this award. |
| 1.3.1 | 11 | Feedback | > 10 potential users | Count. A minimum of 10 potential users of the tool will undergo a demo of the software (in-person or webinar) and provide their feedback. Users must provide specific feedback as to the minimum availability and response time they require for their specific use case. | Documentation of feedback, written approval/signature from feedback providers, and a justified plan to implement or reject recommendations submitted to DOE. Documentation should also include the proposal for availability and response time metrics with justification from the feedback providers. | User feedback is a critical part of an iterative development cycle to ensure the solution is useful to potential off-takers. |
| GNG-1A | 12 | Module lifetime | > 30 years | Accelerated testing conducted according to testing procedures listed in IEC 1234 | Measured at testing facility approved by DOE. Data and report sent to DOE for verification | IEC 1234 is the industry-used module degradation test |
| GNG-1B | 12 | Heliostat installed cost | ≤ $50/m2 | Class 3 cost estimate conforming to DOE G 413.3-21 Cost Estimating Guide. Average expected accuracy range +20%/-15% | Cost model sent to DOE, including assumptions used for input parameters, methodology for the sensitivity analysis, supporting documents used to determine the bill of materials. | Success metrics defined in the FOA |
| GNG-1C | 12 | Letters of Support | 5 letters | Count. A minimum of 5 letters of support from domestic manufacturers. Includes one module producer with capacity over 200MW annually. | Letters delivered to DOE | Engaging with a large domestic module manufacturers is essential to show there are interested technology off-takers |
| GNG-1D | 12 | Availability and response time of API addressable database | Availability  and response time metrics determined and agreed to in Milestone 1.4 | Ingest data, including time-series, containing a minimum of 1 year of historical data representing a fleet of 10 GW or solar to an API-addressable database. Conduct at least 50 randomized queries over a period of 7 days and track results. | Live demonstration of subset of queries and supporting documentation including operations report and logs collected during randomized testing. | To be commercially relevant, the database software under development must meet metrics identified by potential users at a scale that is relevant to their use cases. |
| 2.1.1 | 14 | Simulation validation | Single feeder simulation | Power flows validated on a single realistic distribution feeder in simulation. Phasor tracking shows agreement with expected power flows at every circuit node to better than 5% | Quantitative simulation results from basic tools sent to DOE | 5% agreement is required to assess the quality of the simulation tools. |
| 2.2.1 | 19 | Figure of merit | > 0.92 | Figure of merit for t = 100h and T = 750 C calculated. Student’s t-test; 95% C. I. | Data and report sent to DOE | The temperature is appropriate for the FOA goals; 100h is still fairly short but much better than 1h or 10h; the FOM respects the competing interplay of absorptivity and emissivity, it also reflects the importance of concentration factor. |
| 2.4.2 | 21 | Independent expert review of security architecture | Third party review | Report by independent third-party cybersecurity expert reviewing the architecture and providing feedback on potential weaknesses. | Security review report sent to DOE | Implications of new platform architecture in the context of new concerns around cybersecurity must be investigated and mitigated if necessary. |
| EOP-A | 24 | Module efficiency | > 25% efficiency | Average, standard deviation. At least 10 modules measured under standard conditions. Standard deviation < 1% (absolute efficiency) | Measured at testing facility approved by DOE. Data and report sent to DOE for verification | The success value was chosen based on initial cost modeling: efficiency lower than 25% makes this technology not competitive with current state of the art |
| EOP-B | 24 | Binding letters of intent | 2 letters | Count. A minimum of 2 letters of intent from relevant stakeholders committing to fabricate and test a large scale prototype of this technology | Letters delivered to DOE | Success of the award will be measured by successful technology transfer to private entities. |
| EOP-C | 24 | Contract | > 1 | Count. At least one agreement with a non-team-member to share data and beta test the solution. | Agreement delivered to DOE | Success of the award will be measured by successful technology transfer to private entities. |