

**Financial Assistance
Notice of Funding Opportunity
Part 1**



**U.S. Department of Energy (DOE)
Bioenergy Technologies Office (BETO)
Maximizing Algal System Yield (MASY)
Notice of Funding Opportunity Number: DE-FOA-0003520**

Application due: May 15, 2025

Modifications to this NOFO will be posted on eXCHANGE and Grants.gov. Grants.gov will automatically notify applicants when a NOFO modification is processed. Applicants must be registered to this NOFO in Grants.gov to receive email notifications. See Registration Requirements in Part 2 of this NOFO.

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Before You Begin

Navigating the Notice of Funding Opportunity

The [OMB Memorandum M-24-11](#) directs federal agencies to reduce the burden on applicants in the Notice of Funding Opportunity (NOFO) process and limit the length of the NOFO information requests. With Fiscal Year (FY) 2025 NOFOs, DOE has separated the NOFO into two parts.

The NOFO Part 1 describes the specific DOE programmatic goals and evaluation criteria, eligibility, and other components that are specific to each funding opportunity. The NOFO Part 2 includes the fixed DOE requirements that generally do not change from NOFO to NOFO, including standard information for the application phase, expectations for award negotiations, and post-award requirements. Applicants must review both the NOFO Part 1 and the NOFO Part 2 prior to applying. To facilitate navigation, you will find links throughout this document to additional information found in Part 2.

There are several required one-time actions applicants must take before applying to this NOFO. Some of these actions may take several weeks, so it is vital applicants build in enough time to complete them. Failure to complete these actions could interfere with application or negotiation deadlines or the ability to receive an award if selected. If you have previously completed the necessary registrations, make sure your registration is active and up to date. All registrations are free. Please refer to [NOFO Part 2, Get Registered](#), for additional information.

This announcement is published in conjunction with NOFO Part 2.

I. Basic Information

A. Key Facts

Issuing Agency	Department of Energy, Office of Energy Efficiency and Renewable Energy, Bioenergy Technologies Office	KEY DATES Notice of Funding Opportunity Issue Date: January 16, 2025 Concept Paper Deadline: February 21, 2025, 5 p.m. ET Application Deadline: May 15, 2025, 5 p.m. ET Anticipated Selection Notification Date: September 9, 2025 Anticipated Award Date: January 2026 Estimated Period of Performance: January 2026 – December 2029
Funding Opportunity Title	Maximizing Algal System Yield (MASY)	
Announcement Type	Initial	
Funding Opportunity Number	DE-FOA-0003520	
Funding Instrument	Cooperative Agreement	
Assistance Listing Number	81.087	
Funding Opportunity Description	This Notice of Funding Opportunity (NOFO) seeks applications to address technical challenges in algal systems that currently limit expansion of algae as a domestic bioenergy resource. The MASY NOFO will support high-impact, applied R&D focused on relieving ‘pinch points’ in algal system cultivation and preprocessing, with the goal of improving process economics for biofuels and/or bioproducts.	
Program Goals & Objective(s)	This NOFO advances EERE and national goals to deliver a clean energy future, through maximizing the use of domestic resources, and supporting the growth of the bioeconomy to provide good paying jobs for all Americans. This funding opportunity will continue the EERE Bioenergy Technology Office (BETO) Renewable Carbon Resources (RCR) subprogram’s strategy for advanced algal systems.	
Topic Areas	Topic Area 1: Maximizing Algal System Yield	
Eligible Applicants	<ul style="list-style-type: none"> • Domestic Entities (Institutes of higher education; for-profit entities; non-profit entities; state and local government entities and Indian Tribes). • DOE/NNSA FFRDCs are eligible to participate as a subrecipient but are not eligible to apply as a recipient. • Non-DOE/NNSA FFRDCs are eligible to participate as a subrecipient but are not eligible to apply as a recipient. 	

	<ul style="list-style-type: none"> • Federal agencies and instrumentalities (other than DOE) are eligible to participate as a subrecipient but are not eligible to apply as a recipient. • A foreign entity may submit an application to this NOFO, but the application must be accompanied by an explicit written waiver request. Likewise, if the applicant seeks to include a foreign entity as a subrecipient, the applicant must submit a separate explicit written waiver request in the application for each proposed foreign subrecipient.
eXCHANGE URL and Helpdesk	<p>https://eere-eXCHANGE.energy.gov EERE-ExchangeSupport@hq.doe.gov – include NOFO name and number in the subject line.</p>

1. Funding Details

Single Topic Area

- Approximate total available funding: up to \$10,000,000 in FY 2025
- Approximate number of awards: 3 to 6
- Approximate dollar amount of individual awards: up to \$3,500,000
- Minimum cost share required: 20 % of the total project costs (10% for Tribes and Tribal Nations)
- Approximate award project period: 18 to 36 months
- Anticipated length of budget periods: 3 to 18 months

2. Period of Performance

DOE anticipates making awards, comprised of multiple budget periods. If applicable, project continuation will be contingent upon DOE’s Go/No-Go decision. For a complete list and more information on the Go/No-Go review, see the [NOFO Part 2, Award Administration Information](#). Funding for all budget periods, including the initial budget period, is not guaranteed.

B. Executive Summary

The EERE Bioenergy Technology Office (BETO) Renewable Carbon Resources (RCR) subprogram develops science and engineering-based strategies and technologies to cost-effectively transform renewable carbon resources into high-quality, environmentally sustainable, conversion-ready feedstocks for biofuels and bioproducts. The overall strategic goal of the algae research portfolio within the RCR subprogram is to develop technologies that enable production of sustainable algal supply chains that perform reliably in conversion processes.

This NOFO will support high-impact, applied R&D focused on relieving ‘pinch points’ in algal system cultivation and preprocessing, with the goal of improving process economics for biofuels and/or bioproducts. The target audience for this NOFO is algae stakeholders with an interest in commercialization, and the eligible applicants include institutions of higher education, for-profit and nonprofit organizations, state and local governmental entities, and Indian Tribes.

C. Agency Contact Information

Office of Energy Efficiency and Renewable Energy
Bioenergy Technologies Office (BETO)
U.S. Department of Energy
1000 Independence Ave SW
Washington, D.C. 20585

For questions relating to this specific NOFO, please send emails to FY25BETOMASYNOFO@ee.doe.gov.

DISCLAIMER: Applicants are discouraged from submitting information considered proprietary unless it is deemed essential for proper evaluation of the application. If the application contains information that the applicant organization considers to be trade secrets, information that is commercial or financial, or information that is privileged or confidential, the pages containing that information must be identified as specified in the application instructions. When such information is included in the application, it will be withheld from public disclosure to the extent permitted by law, including the Freedom of Information Act, with the understanding that the information will be used or disclosed only for evaluation of the application. The information contained in the application will be protected by DOE from unauthorized disclosure, consistent with the need for merit review of applications of financial assistance awards to assure the integrity of the competitive process and the accuracy and completeness of the information. If a federal financial assistance award is made as a result of or in connection with an application, the federal government has the right to use or disclose the information to the extent authorized by law. This restriction does not limit the federal government's right to use the information if it is obtained without restriction from another source.

II. Eligibility

To be considered for substantive evaluation, an applicant's submission must meet the criteria set forth below. If the application does not meet these eligibility requirements, it will be considered ineligible and removed from further evaluation and ineligible for any award. DOE will not make eligibility determinations for potential applicants prior to the date on which applications to this NOFO must be submitted. The decision whether to apply in response to this NOFO lies solely with the applicant. The information included here is specific to eligibility requirements for this NOFO. For eligibility requirements applicable to all NOFOs, please consult the [NOFO Part 2, Eligibility](#).

A. Eligible Applicants

To be considered for substantive evaluation, an applicant's submission must meet the criteria set forth below. If the application does not meet these eligibility requirements, it will be considered ineligible and removed from further evaluation.

1. Restricted Eligibility

In accordance with 2 CFR 910.126, Competition, eligibility for this NOFO is restricted because BETO provides substantial appropriations for ongoing research and development (R&D) at national laboratories. To ensure there are funding opportunities for the private sector, consistent with Congressional and DOE priorities, this NOFO is restricted to exclude DOE/NNSA FFRDCs/National

Laboratories from applying for funding as a prime recipient, although those entities are eligible to participate as subrecipients. DOE is restricting eligibility to the entities identified below.

2. Domestic Entities

Domestic entities are eligible to apply as recipients or subrecipients. The following types of domestic entities are eligible to participate as a recipient or subrecipient of this NOFO:

- Institutions of higher education;
- For-profit organization;
- Nonprofit organization;
- State and local governmental entities; and
- Indian Tribes, as defined in section 4 of the Indian Self-Determination and Education Assistance Act, 25 U.S.C. § 5304.¹

To qualify as a domestic entity, the entity must be organized, chartered, or incorporated (or otherwise formed) under the laws of a particular state or territory of the United States or under the laws of the United States; have majority domestic ownership and control; and have a physical place of business in the United States.

3. Foreign Entity Participation

In general, foreign entities are not eligible to apply as either a recipient or subrecipient. In limited circumstances, DOE may approve a waiver to allow a foreign entity to participate as a recipient or subrecipient.

A foreign entity may submit an application to this NOFO, but the application must be accompanied by an explicit written waiver request. Likewise, if the applicant seeks to include a foreign entity as a subrecipient, the applicant must submit a separate explicit written waiver request in the application for each proposed foreign subrecipient. Please see *NOFO Part 2, Application Content Requirements* for the requirements for submission of a foreign entity waiver request. The applicant does not have the right to appeal DOE's decision concerning a waiver request.

Recipients must only be legally formed in the United States and have a physical location for business operations in the United States.

Entities that are organized, chartered, or incorporated (or otherwise formed) under the laws of the United States or a particular state or territory of the United States and have a physical location for business operations in the United States are eligible to apply for funding as a recipient or subrecipient.

Foreign Entity Participation

¹ "Indian Tribe," for the purposes of this NOFO and as defined in section 4 of the Indian Self-Determination and Education Assistance Act ([25 U.S.C. § 5304](#)), means any Indian tribe, band, nation, or other organized group or community, including any Alaska Native village or regional or village corporation as defined in or established pursuant to the Alaska Native Claims Settlement Act ([85 Stat. 688](#)) [[43 U.S.C. § 1601, et seq.](#)], which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians. Federally Recognized Indian Tribes are also considered disadvantaged communities for the purposes of Justice40 requirements in this NOFO per https://www.whitehouse.gov/wp-content/uploads/2023/01/M-23-09_Signed_CEQ_CPO.pdf.

A foreign entity is eligible to apply for funding as a recipient if it designates in the application a subsidiary or affiliate incorporated (or otherwise formed) under the laws of a state or territory of the United States to be the recipient. The application must state the nature of the corporate relationship between the foreign entity and domestic subsidiary or affiliate.

Foreign entities may request a waiver of the requirement to designate a subsidiary in the United States as the recipient in the application (i.e., a foreign entity may request that it be the recipient). To do so, the applicant must submit an explicit written waiver request in the application.

NOFO Part 2, *Application Content Requirements* lists the information that must be included in a request to waive this requirement. The applicant does not have the right to appeal DOE's decision concerning a waiver request.

Participant Limitations

Participation of the following entities are limited as follows.

- DOE FFRDCs² are eligible to participate as a subrecipient but are not eligible to apply as a recipient.
- Non-DOE FFRDCs are eligible to participate as a subrecipient but are not eligible to apply as a recipient.
- Federal agencies and instrumentalities (other than DOE) are eligible to participate as a subrecipient but are typically not eligible to apply as a recipient.

Performance of Work in the United States

All work for the awards under this NOFO must be performed in the United States. To request a waiver of this requirement, the applicant must submit an explicit waiver request in the application. Absent an approved waiver, such costs will not be allowable under the award. The **NOFO Part 2, *Application Content Requirements*** lists the requirements for submission of a foreign work waiver request.

Ineligible Participants

The following entities are ineligible for participation in this NOFO as a recipient, subrecipient, or subcontractor.

- In accordance with 2 CFR 200.214, entities banned from doing business with the U.S. government such as entities debarred, suspended, or otherwise excluded from or ineligible for participating in federal programs.
- Entities identified on Department of the Treasury Office of Foreign Assets Control Treasury's Sanctions Program Specially Designated Nationals list are prohibited from doing business with the United States government and are not eligible. See [OFAC - Sanctions List Service \(treas.gov\)](https://www.treas.gov/sanctions).
- Nonprofit organizations described in Section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995, are not eligible to apply for funding.

Entity of Concern Prohibition

² FFRDCs are public-private partnerships that conduct research for the U.S. government. A listing of FFRDCs can be found at <http://www.nsf.gov/statistics/ffrdclist/>.

Entities of Concern are prohibited from participating in projects selected under this NOFO (see [NOFO Part 2, Eligibility, Other Eligibility Information, Entity of Concern Prohibition](#) section for details and definitions).

B. Limitation on Number of Concept Papers and Applications Eligible for Review

An entity may submit more than one concept paper and associated application to this NOFO provided that each describes a unique, scientifically distinct project concept and an eligible concept paper was submitted for each Full Application.

C. Cost Sharing

Applicants are expected to follow through on estimated cost share commitments proposed in their applications if selected for award negotiations. Please refer to the [NOFO Part 2, Eligibility](#) for more information on Cost Sharing.

1. Cost Share Requirements

Applicant cost share must be at least 20% of the total project costs³ for research and development.⁴

Tribes and Tribal Nation applicants are required to provide only a minimum 10% cost share pursuant to EERE's blanket cost share reduction applicable to NOFOs issued after October 3, 2024, entitled **Determination to Reduce Non-Federal Cost Share Requirements for Tribes and Tribal Nations Applying for Funding from the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy**.

Applications that do not meet the minimum required cost share will be deemed ineligible during the initial compliance review and will not be further reviewed. The cost share must come from non-federal sources unless otherwise allowed by law.

The cost share percentage is calculated by dividing the cost share by the total allowable project costs for the award where the total allowable project costs include government share (including FFRDC costs if applicable) and cost share. To help applicants calculate proper cost share amounts, DOE has included a cost share information sheet and sample cost share calculation in the [NOFO Part 2, Eligibility—Cost Sharing, Cost Share Calculation Examples](#).

2. Unallowable Cost Share Sources, NOFO Specific

Refer to [NOFO Part 2, Eligibility--Cost Sharing, Unallowable Cost Share Sources](#) for unallowable cost share sources applicable to all NOFOs.

³ Total project costs are the sum of the government share, including FFRDC costs if applicable, and the recipient share of project costs.

⁴ Energy Policy Act of 2005, Pub. L. 109-58, sec. 988. Also see 2 CFR 200.306 and 2 CFR 910.130 for additional cost sharing requirements.

D. FFRDC Eligibility Criteria

1. DOE and Non-DOE FFRDCs as a Subrecipient

As long as they have no conflict, DOE and non-DOE FFRDCs may be proposed as a subrecipient on another entity's application subject to the following guidelines:

Authorization for non-DOE FFRDCs

The federal agency sponsoring the FFRDC must authorize in writing the use of the FFRDC on the proposed project and this authorization must be submitted with the application. The use of a FFRDC must be consistent with its authority under its award.

Authorization for DOE FFRDCs

The cognizant Contracting Officer for the FFRDC must authorize in writing the use of the FFRDC 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.

Funding, Cost Share, and Subaward with FFRDCs

The value of and funding for the FFRDC portion of the work will not normally be included in the award. DOE FFRDCs participating as a subrecipient on a project will be funded directly through the DOE Work Authorization process in accordance with DOE O 412.1A. Non-DOE FFRDCs participating as a subrecipient will be funded through an interagency agreement with the sponsoring agency.

Although the FFRDC portion of the work is excluded from the award, the applicant's cost share requirement will be based on the total cost of the project, including the applicant's, the subrecipient's, and the FFRDC's portions of the project.

All DOE FFRDCs are required to enter into a Cooperative Research and Development Agreement⁵ (CRADA) or, if the role of the DOE FFRDC is limited to technical assistance and intellectual property is not anticipated to be generated from the DOE FFRDC's work, a Technical Assistance Agreement (TAA), with at least the recipient. A fully executed CRADA or TAA must be in place or be compliant with a Master Scope of Work process prior to the FFRDC starting work directly allocable to the FA award.

A CRADA is used to ensure accountability for project work and provide the appropriate management of IP, e.g., data protection and background IP. A Data Management Plan is not suited for this purpose.

C. Responsibility

The recipient 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 recipient and the FFRDC.

⁵ A cooperative research and development agreement is a contractual agreement between a national laboratory contractor and a private company or university to work together on research and development. For more information, see <https://www.energy.gov/gc/downloads/doe-cooperative-research-and-development-agreements>

Limit on FFRDC Effort

The FFRDC effort, in aggregate, shall not exceed 50% of the total project cost.⁶

III. Program Description

A. Program Purpose

BETO's Renewable Carbon Resources (RCR) subprogram develops science and engineering-based strategies and technologies to cost-effectively transform renewable carbon resources into high-quality, environmentally sustainable, conversion-ready feedstocks for biofuels and bioproducts. These strategies and technologies are designed to improve the efficiency, sustainability, and reliability of feedstock production, harvesting or collection, storage, preprocessing, and transportation, and identify the key feedstock quality and operational variables for efficient conversion performance.

Algae, as described in BETO's [2023 Multi-Year Program Plan](#), are a renewable carbon resource that have the potential to greatly expand the domestic biomass resource capacity of the Nation while minimizing water consumption, maximizing carbon dioxide utilization, and generating value from non-arable land. The overall strategic goal of the algae research portfolio within the RCR subprogram is to develop technologies that enable production of sustainable algal supply chains that perform reliably in conversion processes to yield clean fuel blend stocks, as well as bioproducts and chemical intermediates. Algae are a critical component of several government initiatives such as the [Energy Earthshots™ Initiative](#) and the [Sustainable Aviation Fuel \(SAF\) Grand Challenge](#), a government-wide approach to reduce the cost, enhance the sustainability, and expand the production of domestic SAF to meet 100% of the aviation fuel demand by 2050.

For purposes of this Maximizing Algal System Yield (MASYS) NOFO, "algae" includes microalgae, cyanobacteria, and macroalgae (also referred to as seaweed). Algae have the potential to provide abundant, renewable feedstock sources for affordable, reliable biofuels, bioproducts, and bioenergy that do not compete with existing feedstocks. Algae can provide cost-effective bio-based services to treat wastewaters. Algae can be grown on non-arable land or in marine environments using non-potable water, waste carbon dioxide captured from point-source emissions or the ambient air, and in some cases, waste nutrients, all while achieving high yields of valuable product precursors. Fuels and products made from algae can be infrastructure-compatible, high-performance blend stocks, direct replacements, and additives to existing products. In addition, algae cultivation can deliver the benefits of the bioeconomy to new areas of the nation outside traditional agricultural and forestry areas. Using the carbon dioxide recycled in algae biomass to make affordable fuels and products can displace GHG emissions from petroleum-based products, enhancing the sustainability of the overall energy supply.

This funding opportunity continues BETO's RCR subprogram's strategy for algal systems. Previous funding opportunities have emphasized increased yield, enhanced value, system efficiency, crop protection, regional large-scale growth, and conversion. This opportunity emphasizes relieving 'pinch points' in algal cultivation and preprocessing systems. For purposes of this opportunity, a 'pinch point' is

⁶ Total project cost is the sum of the government share, including FFRDC costs if applicable, and the recipient share of project costs.

defined as a challenge area within a proposed system that, if relieved, would enable scaling towards commercialization.

B. Program Goals and Objectives

While algal systems can be highly productive, technical challenges exist in translating research results to systems that reliably and economically produce biofuels and/or bioproducts at scale. By addressing these challenges now with targeted, applied R&D, BETO will accelerate the development of innovative technologies that can enable algae developers to bring new bioproducts to market, thus growing domestic supply chains, expanding access to renewable feedstocks, and improving energy security. Consistent, reliable, and predictable operation of processing systems, including algae cultivation and preprocessing, allows for ease of operation, cost reductions, optimization, and the ability to pinpoint issues and challenges as they arise more quickly. To maximize algal systems' yields, the systems – from strain characterization through harvesting and preprocessing – require continual, consistent, and cost-effective strategies for achieving reproducible results at increasing scales.

This Maximizing Algal System Yield (MASYS) NOFO will support high-impact, applied R&D to address 'pinch points' in algal system cultivation and preprocessing, with the goal of improving modeled process economics for biofuels and/or bioproducts. Successful projects funded under this program will deliver novel tools, sensors, analytical methods, cultivars, etc. that will accelerate the development of algae-based supply chains.

Detailed technical descriptions of the specific Topic Areas are provided in the sections that follow.

C. Expected Performance Goals

This NOFO focuses on applicant-identified 'pinch points' within their specific system. Therefore, the expected performance goals will be customized to fit the individual projects. Because 'pinch points' within their system must be justified by Techno-Economic Analysis and/or Life Cycle Analysis (TEA/LCA), they are also required to define their performance improvement goals, which should be substantial, yet achievable, improvements to the overall performance and/or economics of their system. How improvements are substantial and achievable must be clearly described within the application.

D. Teaming Partner List

DOE is compiling a Teaming Partner List to facilitate the formation of project teams for this NOFO. The Teaming Partner List allows organizations that may wish to participate on a project to express their interest to other applicants and explore potential partnerships.

The [Teaming Partner List](#) is available on eXCHANGE (under [Notice of Intent No. DE-FOA-0003517](#)) and will be regularly updated to reflect new teaming partners who provide their organization's information.

SUBMISSION INSTRUCTIONS: View the Teaming Partner List by visiting the eXCHANGE homepage and clicking on "Teaming Partners" within the left-hand navigation pane. This page allows users to view published Teaming Partner Lists. To join the Teaming Partner List, submit a request within eXCHANGE. Select the appropriate Teaming Partner List from the drop-down menu, and fill in the following

information: Investigator Name, Organization Name, Organization Type, Topic Area, Background and Capabilities, Website, Contact Address, Contact Email, and Contact Phone.

DISCLAIMER: By submitting a request to be included on the Teaming Partner List, the requesting organization consents to the publication of the above-referenced information. By facilitating the Teaming Partner List, DOE is not endorsing, sponsoring, or otherwise evaluating the qualifications of the individuals and organizations that are identifying themselves for placement on this Teaming Partner List. DOE will not pay for the provision of any information, nor will it compensate any applicants or requesting organizations for the development of such information.

E. Topic Areas

This NOFO contains a single Topic Area addressing algal system improvements:

Maximizing Algal System Yield (MASY)

The purpose of this funding opportunity is to address ‘pinch points’ in algal systems that currently limit expansion of algae as a domestic bioenergy feedstock. The RCR subprogram seeks applications that propose a specific cultivation/preprocessing system and product regime, identify its ‘pinch point’ for focused research, and support it with previous data and analysis showing how the proposed research will overcome that ‘pinch point’. Applicants are required to provide initial, interim, and final target values for the key performance parameters of their system. Applicants are required to justify their ‘pinch point’ through Techno-Economic Analysis and/or Life Cycle Analysis (TEA/LCA). The improvement in the key performance parameter metrics must show how overcoming their ‘pinch point’ will improve the overall system economics.

In addition, applicants are required to run multiple cultivation and/or preprocessing campaigns (experiments) in their research-scale algal system under conditions that represent the future intended commercial application (e.g., outdoors, farm, greenhouse, tumble culture). Because this NOFO requires applicants to define a ‘pinch point’ in their own process, applicants must also define what constitutes an experimental campaign in their intended commercial setting. Campaigns must be designed to test whether improvements to their ‘pinch point’ are replicable, stable, and deployable in their intended commercial setting. A minimum of three campaigns with proper replicates must be proposed over the course of the project (representing initial, interim, and final status of improvements made). The campaigns must use an algal system that represents a scalable cultivation environment. For example, if the proposed cultivation system is an outdoor, open pond system, proposing campaigns that are indoor, at lab scale, in flasks, would not be acceptable. In this example scenario, the proposed campaigns should be outdoors in open ponds closely representing how those ponds would be operated through scaling to commercialization. Applicants must clearly discuss and define their campaigns, clearly indicating how the campaigns represent the intended commercial application (environment, scale, operation, etc.), how research results from the proposed system can be translated to envisioned scaled-up systems, and why the results are suitable for translation.

BETO recognizes that ‘pinch points’ may vary in different systems and that applicants must propose the most impactful ‘pinch point’ for their system. Therefore, applications may include focused research on, but not limited to, the following: specific unit operations (from cultivation through preprocessing only) within the proposed system such as CO₂ utilization, harvesting, dewatering; system engineering such as optimizing the cultivation/operation strategy, nutrient addition and uptake, media recycling; strain

development and optimization such as optimizing a strain for contamination resistance or increased lipid, protein, or other intracellular component; increasing the value of algal biomass generated from waste water treatment processes, e.g., by reducing ash content or utilizing purpose grown algae; or proactively addressing contamination and/or decreased productivity.

Specific Requirements:

- Applicants must provide a description and details of their algae cultivation/preprocessing system and the proposed ‘pinch point’ for their research focus. The ‘pinch point’ selection must be supported by previous data and rationale for why it is the ‘pinch point’, how the proposed research will overcome it, key performance parameters to track research progress from initial metrics towards final targets, and what the impact will be to the system economics when the ‘pinch point’ no longer exists.
- Applicants must include a TEA with their application that includes a baseline and highlights the economic impact of their proposed ‘pinch point’. Awarded projects will be required to utilize the TEA to help direct their research to a cost-effective solution and provide a final TEA that uses performance data generated in the proposed system during the award at the conclusion of the project showing the economic impact of overcoming the ‘pinch point’.
- While the focus of this opportunity is on cultivation through preprocessing, applicants must define and discuss their proposed product regime, including key feedstock quality requirements for the product processes, and include their entire envisioned commercial process with product development and production in their TEAs.
- Applicants must propose running at least three separate cultivation/preprocessing campaigns in their research-scale algae system under conditions that represent the intended commercial application (e.g., outdoors, greenhouse, tumble culture, farm, etc.). The multiple campaigns will be a data driven method to show progress towards overcoming the proposed ‘pinch point’ and identify deployment issues early in the project with time in the project schedule to incorporate lessons learned between campaigns. A minimum of three campaigns must be proposed representing initial, interim, and final improvements made to overcome the proposed ‘pinch point’. Applicants must discuss and define their campaigns, clearly indicating how the proposed campaigns represent the intended commercial application (environment, scale, operation, etc.) and how and why the results can be translated to characterizing the performance of the envisioned scaled-up system.
- Projects must factor in time and costs of any necessary regulatory approvals (APHIS permits, TSCA permits, etc.) associated with running multiple cultivation/preprocessing campaigns under conditions that represent the intended commercial application (e.g., outdoors, greenhouse, tumble culture, farm, etc.).
- Applicants must discuss how they will meet their proposed key performance parameters and other metrics associated with overcoming their ‘pinch point’.
- Participation in initial and interim verifications as described in Appendix A is required. Participation must be included in applicants’ scopes, schedules, and budgets.
- Participation in BETO’s Biennial Peer Review is required. Attendance and participation must be included in applicants’ scopes, schedules, and budgets.
- A Technical Datasheet (see Section IV. C. 2.) is required with the application. Selected projects will be required to update the datasheet throughout and at the conclusion of the project.

NOFO Required Metrics:

1. Applicants must propose a reasonable improvement over the baseline for their proposed ‘pinch point’ research focus. For example, if CO₂ utilization efficiency is the proposed ‘pinch point’ and the baseline for the system is 50% utilization efficiency, some percentage increase in utilization efficiency would be a reasonable metric for successfully addressing this ‘pinch point’.
2. Applicants must indicate how overcoming the proposed ‘pinch point’ will advance their system toward scaling and commercialization and support that rationale at the conclusion of the project with the respective data and analysis.

F. Applications Specifically Not of Interest

The following types of applications will be deemed nonresponsive and will not be reviewed or considered (Please also refer to the [Responsiveness Review](#) section below):

- Applications that fall outside the technical parameters specified in [Background and Context](#) above and the [Topic Areas](#) section above.
- Applications proposing utilization of natural algal blooms or the harvest of wild offshore algae such as seaweed.
- Applications proposing research and development utilizing biomass/feedstocks other than algae (micro-, macro-, and cyanobacteria).
- Applications proposing research and development on downstream conversion of the cultivated algal biomass. This NOFO is limited to activities associated with cultivation through pre-processing (harvesting, dewatering, preparation for conversion).
- Applications proposing cultivation utilizing freshwater resources. Cultivation must utilize non-potable water for cultivation.
- Applications proposing heterotrophic and mixotrophic cultivation using organic carbon other than renewable biomass-derived sugars such as lignocellulosic sugars or carbon-containing waste effluent.
- Applications for proposed technologies that are not based on sound scientific principles (e.g., violates the laws of thermodynamics).
- Applications proposing biostimulants or nutraceuticals with benefits that have not been certified by the Food and Drug Administration.
- Applications that propose major construction on new cultivation facilities. While equipment installation at project sites is allowable, construction and groundbreaking activities are not.

G. Statement of Substantial Involvement

DOE anticipates awarding cooperative agreements under this NOFO, which include a statement of DOE’s “substantial involvement” in the work performed under the resulting awards. For cooperative agreements, DOE does not limit its involvement to the administrative requirements of the award. Instead, DOE has substantial involvement in the direction and redirection of the technical aspects of the project. DOE’s substantial involvement in resulting awards may include the following:

- A. DOE shares responsibility with the recipient for the management, control, direction, and performance of the project.

- B. DOE may intervene in the conduct or performance of work under this award for programmatic reasons. Intervention includes the interruption or modification of the conduct or performance of project activities.
- C. DOE may redirect or discontinue funding the project based on the outcome of DOE’s evaluation of the project at the Go/No-Go decision point(s).
- D. DOE participates in major project decision-making processes.

H. Statutory Authority

The programmatic authorizing statute is Energy Policy Act (EPAcT) 2005, Pub. L. 109-58, § 931 as codified at 42 U.S.C. § 16231; EPAcT 2005 § 932, as codified at 42 U.S.C § 16232.

Awards made under this announcement will fall under the purview of 2 CFR Part 200 as adopted and supplemented by 2 CFR Part 910.

I. Research & Development (R&D) Community Benefits Plan

DOE is committed to investing in research and development (R&D) of innovations that deliver benefits to the American public and lead to commercialization of technologies and products that foster sustainable, resilient, and equitable access to clean energy. Further, DOE is committed to supporting the development of more diverse, equitable, inclusive, and accessible workplaces to help maintain the nation’s leadership in science and technology.

To support the goal of building a clean and equitable energy economy, projects funded under this NOFO are expected to (1) advance diversity, equity, inclusion, and accessibility (DEIA); (2) contribute to energy and/or environmental justice; and (3) invest in quality jobs. To ensure these objectives are met, applications must include a Research and Development Community Benefits Plan (R&D Community Benefits Plan) that addresses the three objectives stated above. See [NOFO Part 2, Application Content and Form—Application Content Requirements](#) for more information on the R&D Community Benefits Plan content requirements.

IV. Application Content and Form

This section includes application information specific to this NOFO Part 1. Refer to the [NOFO Part 2, Application Content and Form](#) for standard information that applies to all DOE NOFOs such as formatting and content requirements, and funding restrictions.

A. Summary

The application process includes three submission phases: concept paper, application, and replies to reviewer comments.

Application Submission Phase	Eligibility for Submission
Concept Paper	Required to be submitted by the specified due date and time to be eligible to submit an application.

Application	Must be submitted by the specified due date and time to be eligible for comprehensive merit review.
Replies to Reviewer Comments	Required to be submitted by the specified due date and time.

B. Concept Paper

Each concept paper must be limited to a single concept, technology, or project. The concept paper must conform to the requirements listed below, including the stated page limits.

Section	Page Limit	Description
Cover Page	1 page maximum	The cover page should include the project title, the specific announcement Topic Area being addressed (if applicable), both the technical and business points of contact (including the Administrative Officer, if applicable), names of all team member organizations, the project location(s), and any statements regarding confidentiality.
Technology Description	3 pages maximum	Applicants are required to succinctly describe: <ul style="list-style-type: none"> • The proposed technology, including its basic operating principles and how it is unique and innovative; • The proposed technology’s target level of performance (applicants should provide technical data or other support to show how the proposed target could be met); • The current state of the art in the relevant field and application, including key shortcomings, limitations, and challenges; • How the proposed technology will overcome the shortcomings, limitations, and challenges in the relevant field and application; • The potential impact that the proposed project would have on the relevant field and application; • How the proposed location of the proposed project will support technology development and long-term success; • The key technical risks/issues associated with the proposed technology development plan; • The impact that DOE funding would have on the proposed project; and • Any potential impacts on Indian Tribes and describe how the applicant would engage with a potentially impacted Indian Tribe(s).
R&D Community Benefits Plan	1 page maximum	Applicants are required to succinctly describe their approach to the Community Benefits Plan, addressing the three core elements: <ul style="list-style-type: none"> • Advance diversity, equity, inclusion, and accessibility (DEIA);

		<ul style="list-style-type: none"> • Considerations linked with energy and/or environmental justice; and • Quality jobs
Addendum	1 page maximum	<p>Applicants are required to succinctly describe the qualifications, experience, and capabilities of the proposed project team, including:</p> <ul style="list-style-type: none"> • Whether the Principal Investigator (PI) or Lead Project Manager (LPM) and project team have the skill and expertise needed to successfully execute the project plan; • Whether the applicant has prior experience which demonstrates an ability to perform tasks of similar risk and complexity; • Whether the applicant has worked together with its teaming partners on prior projects or programs; • Whether the applicant has adequate access to equipment and facilities necessary to accomplish the effort and/or clearly explain how it intends to obtain access to the necessary equipment and facilities; and • Applicants may provide graphs, charts, or other data to supplement their Technology Description.

Total concept paper Maximum Page Limit: 6 pages

DOE makes an independent assessment of each concept paper based on the technical review criteria for [Concept Papers](#) described below. DOE will encourage a subset of applicants to submit applications. Other applicants will be discouraged from submitting an application. Please see [NOFO Part 2, Selection and Award Notices—Concept Paper Notifications](#).

C. Application Content Requirements

Each application must be limited to a single concept. Applications must conform to the following requirements and must not exceed the stated page limits. Please refer to the [NOFO Part 2, Application Content and Form](#) for a complete list of application requirements. Detailed guidance on the content and form of NOFO-specific requirements is provided following the [Summary of Application Requirements](#) table below.

1. Covered Individual Definition, Designation, and Responsibility

Several of the Application Content Requirements listed below and in the NOFO Part 2 are required of covered individuals.

For the purposes of this NOFO, a Covered Individual means an individual who (a) contributes in a substantive, meaningful way to the development or execution of the scope of work of a project proposed for funding by DOE, and (b) is designated as a covered individual by DOE.

DOE designates as covered individuals any principal investigator (PI); project director (PD); co-principal investigator (Co-PI); co-project director (Co-PD); project manager; and any individual regardless of title

that is functionally performing as a PI, PD, Co-PI, Co-PD, or project manager. Status as a consultant, graduate (master’s or PhD) student, or postdoctoral associate does not automatically disqualify a person from being designated as a “covered individual” if they meet the definition in (a) above.

The applicant is responsible for assessing the applicability of (a) above, against each person listed on the application. Further, the applicant is responsible for identifying any such individual to DOE for designation as a covered individual, if not already designated by DOE as described above.

The applicant’s submission of a current and pending support disclosure and/or biosketch/resume for a particular person serves as an acknowledgement that DOE designates that person as a covered individual.

DOE may further designate covered individuals during award negotiations or the award period of performance.

2. Summary of Application Requirements

Component	File Format	Page Limit	File Name
Application for Federal Assistance (SF-424)	PDF	n/a	ControlNumber_LeadOrganization_App424
Technical Volume	PDF	15 pages	ControlNumber_LeadOrganization_TechnicalVolume
Letters of Commitment	PDF	1 page each	ControlNumber_LeadOrganization_LOCs
Impacted Indian Tribes Documentation	PDF	n/a	ControlNumber_LeadOrganization_ImpactedTribes
Statement of Project Objectives	MS Word	10 pages	ControlNumber_LeadOrganization_SOPO
Budget Justification Workbook	MS Excel	n/a	ControlNumber_LeadOrganization_Budget_Justification
Subrecipient Budget Justification	MS Excel	n/a	ControlNumber_LeadOrganization_Subrecipient_Budget_Justification
Work Proposal for FFRDC, (see DOE O 412.1A)	PDF	n/a	ControlNumber_LeadOrganization_WP
Authorization for Non-DOE or DOE FFRDCs	PDF	n/a	ControlNumber_LeadOrganization_FFRDCAuth
Waiver for Foreign Entity Participation	PDF	n/a	ControlNumber_LeadOrganization_FEW
Performance of Work in the United States (Foreign Work Waiver)	PDF	n/a	ControlNumber_LeadOrganization_FWW
Community Benefits Plan for Research and Development (R&D)	PDF	[5]	ControlNumber_LeadOrganization_CBP
Resumes (Research and Development (R&D))	PDF	3 pages each	ControlNumber_LeadOrganization_Resumes

Resumes (Non-Research and Development (R&D))	PDF	3 pages each	ControlNumber_LeadOrganization_Resumes
Current and Pending Support (for each covered individual)	PDF	n/a	ControlNumber_LeadOrganization_CPS
Digital Persistent Identifier (for each covered individual)	N/A	N/A	Include in Current & Pending Support
Research Security Training Requirement (for each covered individual)	N/A	N/A	Include in Current & Pending Support
Transparency of Foreign Connections	PDF	n/a	BusinessSensitive_ControlNumber_LeadOrganization_TFC
Potentially Duplicative Funding Notice	PDF	n/a	ControlNumber_LeadOrganization_PDFN
Data Management Plan	PDF	n/a	ControlNumber_LeadOrganization_DMP
Location(s) of Work	Excel	n/a	ControlNumber_LeadOrganization_LOW
Disclosure of Lobbying Activities, if applicable (SF-LLL)	PDF	n/a	ControlNumber_LeadOrganization_SF-LLL
Certification Regarding Lobbying (OMB 4040-0013)	PDF	n/a	ControlNumber_LeadOrganization_Cert Lobbying
Summary for Public Release	PDF	1	ControlNumber_LeadOrganization_Summary
Summary Slide	MS Power Point	1	ControlNumber_LeadOrganization_Slide
Technical Datasheet	MS-Excel	n/a	ControlNumber_LeadOrganization_Topic_TechDataSht

3. Technical Volume

The Technical Volume must conform to the following content and form requirements. This volume must address the technical review criteria as discussed in [Technical Review Criteria](#).

Applicants must provide sufficient citations and references to the primary research literature to justify the claims and approaches made in the Technical Volume. However, DOE and reviewers are under no obligation to review cited sources.

The Technical Volume to the application may not be more than 15 pages, including the cover page, table of contents, and all citations, charts, graphs, maps, photos, or other graphics, and must include all information below. The applicant should consider the weighting of each of the technical review criteria (see [Technical Review Criteria](#)) when preparing the Technical Volume.

The Technical Volume should clearly describe and expand upon information provided in the concept paper.

Technical Volume Content Requirements Overview

Section	Approximate Percent Content of the Technical Volume
Cover Page	N/A
Project Overview	10%
Technical Description, Innovation, and Impact	30%
Workplan in Statement of Project Objectives	40%
Technical Qualifications and Resources	20%

Cover Page:

The cover page must include all of the following:

- The project title
- Specific NOFO topic areas (if applicable)
- Technical and business POCs
- The project team, including recipient name, entity type and names of all team member organizations
- The project location(s)
- The proposed federal funding level, cost share and period of performance
- Senior/key personnel and other covered individuals
- Statements regarding confidentiality

Project Overview (Approximately 10% of the Technical Volume)

The Project Overview should contain the following information:

- **Background:** The applicant should discuss the background of its 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 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 (Approximately 30% of the Technical Volume)

The Technical Description should contain the following information:

- **Relevance and Outcomes:** The applicant should provide a detailed description of the technology or focus area, 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 NOFO, 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. This section should also address the project’s access to necessary infrastructure (e.g., transportation, water, electricity transmission), including any use of existing infrastructure, as well as to a skilled workforce.

- **Innovation and Impacts:** The applicant should describe the current state-of-the-art in the applicable field, the specific innovation of the proposed technology or focus area, 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 (Approximately 40% of the Technical Volume)

The Workplan should include a summary of the Project Objectives, Technical Scope, Work Breakdown Structure (WBS), Project Tasks, Milestones, Go/No-Go decision points, and project schedule. A detailed statement of project objectives (SOPO) is separately requested as part of the application. The Workplan should contain the following information:

- **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, including milestones in the Community Benefits Plan.
- **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 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 NOFO. 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 SOPO should provide a summary of appropriate milestones throughout the project to demonstrate progress and success. A milestone may be either a progress measure (which can be activity based) or a SMART technical milestone. SMART milestones should be Specific, Measurable, Achievable, Relevant, and Timely, and must demonstrate a technical achievement rather than simply completing a task. Unless otherwise specified in the NOFO, 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. At a minimum, 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. See the [Key Facts](#) section above for Go/No-Go and budget period information. The applicant should also provide the specific technical and community benefits plan criteria to be used to evaluate the project at the Go/No-Go decision point. 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 Workplan should include a summary of the end of project goal(s). At a minimum, 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, any milestones, and any Go/No-Go decision points.
- **Build America Buy America (BABA) Requirements for Infrastructure Projects:** Within the first two pages of the Workplan, include a short statement on whether the project will involve the construction, alteration, maintenance and/or repair of public infrastructure in the United States. See [Build America, Buy America | Department of Energy and 2 CFR 184](#) for applicable definitions and other information regarding Infrastructure Projects and the Buy America Requirement.
- **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, including a plan for securing a qualified workforce and mitigating risks to project performance including but not limited to community or labor disputes or conflicts related to siting;
 - Approach to addressing permits and tory approvals, including compliance with any current permits, and any permits and natural or cultural resource issues that could require discretionary permits or approvals;
 - 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, and product distribution.
 - Identification of current industry interest, commitments for adoption if the project is successful, and impact of those commitments across the industry.

Technical Qualifications and Resources (Approximately 20% of the Technical Volume)

The Technical Qualifications and Resources should contain the following information:

- A description of the project team’s unique qualifications and expertise, including those of key subrecipients;
- A description of the project team’s existing equipment and facilities, or equipment or facilities already in place on the proposed project site, 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;
- Relevant, previous work efforts, demonstrated innovations, and how these enable the applicant to achieve the project objectives;
 - The time commitment of the key team members to support the project;
 - A description of the technical services to be provided by DOE FFRDCs, if applicable;
 - The skills, certifications, or other credentials of the construction and ongoing operations workforce;
 - For multi-organizational projects, describe succinctly:
 - The roles and the work to be performed by the project manager and Senior/Key Personnel at the recipient and sub levels;
 - Business agreements between the applicant and sub;
 - How the various efforts will be integrated and managed;
 - Process for making decisions on technical direction;
 - Publication arrangements;
 - Strategy to address known resource, including intellectual property and real property, constraints or challenges; and
 - Communication plans.

D. Funding Restrictions

Program-specific funding restrictions applicable to awards funded under this NOFO are identified below. Standard funding restrictions are described in the [NOFO Part 2, Funding Restrictions](#) section.

Applicable Funding Restrictions		
Title	Location	Additional Information
Allowable Costs	NOFO Part 2	Applicable to awards made under this NOFO
Pre-Award Costs	NOFO Part 2	Applicable to awards made under this NOFO
Performance of Work in the United States (Foreign Work Waiver Requirement)	NOFO Part 2	Applicable to awards made under this NOFO
Foreign Travel	NOFO Part 2	Foreign Travel is allowed for awards made under this NOFO
Lobbying	NOFO Part 2	Applicable to awards made under this NOFO
Equipment and Supplies	NOFO Part 2	Purchasing American-made equipment and supplies is applicable to this award.
Construction Signage	NOFO Part 2	Applicable to awards with construction activities made under this NOFO
Build America Buy America Requirements for Infrastructure Projects	NOFO Part 1	Applicable to awards made under this NOFO

1. Build America Requirement for Infrastructure Projects

Awards funded through this NOFO that are for, or contain, construction, alteration, maintenance, or repair of public infrastructure in the United States undertaken by applicable recipient types, require that:

- All iron, steel, and manufactured products used in the infrastructure project are produced in the United States; and
- All construction materials used in the infrastructure project are manufactured in the United States.

Please refer to the [NOFO Part 2, Buy America Requirements for Infrastructure Projects; Required Use of American Iron, Steel, Manufactured Products, and Construction Materials](#) and [2 CFR Part 184](#) to determine whether the Buy America Requirement applies and if they should consider the application of the Buy America Requirement in the proposed project's budget and/or schedule. (Note that the Buy America Requirement does not apply to prime recipients that are For-Profit Entities.)

V. Submission Requirements and Deadlines

There are several one-time actions applicants must take before applying to this NOFO. Some of these may take several weeks, so it is vital applicants build in enough time to complete them. Failure to complete these actions could interfere with application or negotiation deadlines or the ability to receive an award if selected. These requirements are outlined in detail in the [NOFO Part 2, Get Registered](#).

A. Required Registrations

1. Unique Entity Identifier (UEI) and System for Award Management (SAM)

You must have an active account with SAM.gov. This includes having a Unique Entity Identifier (UEI). SAM.gov registration can take several weeks. To register, go to SAM.gov Entity Registration and click Get Started. From the same page, you can also click on the Entity Registration Checklist for the information you will need to register.

Each applicant must:

1. Be registered in SAM.gov before submitting an application;
2. Provide a valid Unique Entity Identifier in the application; and
3. Continue to maintain an active registration in SAM.gov with current information at all times during which you have an active federal award or an application or plan under consideration by a federal agency.

DOE may not make a federal award to an applicant until the applicant has complied with all applicable UEI and SAM requirements and, if an applicant has not fully complied with the requirements by the time DOE is ready to make a federal award, the DOE will determine that the applicant is not qualified to receive a federal award and use that determination as a basis for making a federal award to another applicant.

2. eXCHANGE

Register and create an account in the eXCHANGE site identified in the [Key Facts](#) section of the NOFO Part 1. This account can be used to apply to open NOFOs in eXCHANGE. To view and submit applications to open opportunities under a specific DOE office(s), you must access the applicable instance of the system. You may need to be registered in more than one instance to submit applications for opportunities managed by different DOE offices.

Each organization or business unit, whether acting as a team or a single entity, should use only one account as the contact point for each submission. Applicants must also designate backup points of contact. **This step is required to apply to this NOFO.**

B. Application Package

1. eXCHANGE

The application package requirements are outlined in the [Application Content and Form](#) section above. Several templates for application requirements are included in eXCHANGE. To access these materials, select the appropriate NOFO on the Funding Opportunity page of eXCHANGE.

Note: The maximum file size that can be uploaded to the eXCHANGE website is 50MB. Files larger than 50MB cannot be uploaded and hence cannot be submitted for review. If a file is larger than 50MB but is still within the maximum page limit specified in the NOFO, it must be broken into parts and denoted to that effect. For example:

- TechnicalVolume_Part_1
- TechnicalVolume_Part_2

DOE will not accept late submissions that resulted from technical difficulties due to uploading files that exceed 50MB.

In addition to eXCHANGE, the application forms and instructions are available at [EERE Funding Application and Management Forms | Department of Energy](#).

Electronic Authorization of Applications and Award Documents

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

C. Submission Date and Times

All required submissions must be submitted to the eXCHANGE site identified in the [Key Facts](#) section of NOFO Part 1 no later than 5 p.m. ET on the dates provided on [Key Facts](#) section.

There may be more than one deadline, depending on whether a letter of intent and a concept paper is required.

Applicants are strongly encouraged to submit all required application documents at least 48 hours in advance of the submission deadline. Under normal conditions (i.e., at least 48 hours before the submission deadline), applicants should allow at least one hour to submit application documents. Once

the application documents are submitted in the eXCHANGE site identified in the NOFO Part 1, applicants may revise or update that submission until the expiration of the applicable deadline. If changes are made to any of these documents, the applicant must resubmit them before the applicable deadline. DOE will not extend the submission deadline for applicants that fail to submit required information by the applicable deadline due to server/connection congestion.

D. Intergovernmental Review

This NOFO is not subject to Executive Order 12372, Intergovernmental Review of Federal Programs.

VI. Application Review Information

A. Standards for Application Evaluation

Applications that are determined to be eligible will be evaluated in accordance with this NOFO, by the standards set forth in EERE's Notice of Objective Merit Review Procedure (76 Fed. Reg. 17846, March 31, 2011 and the guidance provided in the "DOE Merit Review Guide for Financial Assistance," effective October 1, 2020, which is available at: <https://energy.gov/management/downloads/merit-review-guide-financial-assistance-and-unsolicited-proposals-current>.

B. Responsiveness Review

The following concept papers and applications will be deemed nonresponsive and will not be reviewed or considered:

- Project concepts or approaches not based on established scientific principles.
- Project concepts or approaches identified specifically as NOT of interest (see the [Applications Specifically Not of Interest](#) section above).

C. Review Criteria

1. Compliance Criteria

All applicant submissions for concept papers and applications must:

- Comply with the applicable content and form requirements listed in Application Content Requirements and Submission Requirements and Deadlines of the NOFO Part 1 and 2;
- Include all required documents;
- Be uploaded successfully in eXCHANGE site indicated in the [Key Facts](#) section above including clicking the "Submit" button; and
- Comply with the submission deadline stated in [Key Facts](#).

DOE will not review or consider submissions submitted through means other than the eXCHANGE site indicated in [Key Facts](#), submissions submitted after the applicable deadline, or incomplete submissions.

If required in the [Key Facts](#) section, applicants must submit a concept paper by 5:00 p.m. ET on the due date listed on the [Key Facts](#) section to be eligible to submit an application. If required, applicants who do not submit a concept paper are not eligible to submit an application.

Applicants are strongly encouraged to submit all required application documents at least 48 hours in advance of the submission deadline. Under normal conditions (i.e., at least 48 hours before the submission deadline), applicants should allow at least one hour to submit application documents. Once the application documents are submitted in the eXCHANGE site identified in the [Key Facts](#) section, applicants may revise or update that submission until the expiration of the applicable deadline. If changes are made to any of these documents, the applicant must resubmit them before the applicable deadline. DOE will not extend the submission deadline for applicants that fail to submit required information by the applicable deadline due to server/connection congestion.

2. Technical Review Criteria

Concept Papers

Concept papers are evaluated based on consideration of the following factors. All sub-criteria are of equal weight.

Concept paper Criterion: Overall NOFO Responsiveness and Viability of the Project (Weight: 100%)

This criterion involves consideration of the following factors:

- The applicant clearly describes the proposed technology, how the technology is unique and innovative, and how the technology will advance the current state of the art;
- The applicant has identified risks and challenges of the technology, regulatory and financial aspects of the proposal including possible mitigation strategies, and has shown the impact that DOE funding and the proposed project would have on the relevant field and application;
- The applicant has succinctly described their approach to the Community Benefits Plan;
- The applicant has the qualifications, experience, capabilities, and other resources necessary to complete the proposed project; and
- The proposed work, if successfully accomplished, would clearly meet the objectives as stated in the NOFO.

Applications

Applications will be evaluated against the technical review criteria shown below. All sub-criteria are of equal weight.

Review Criterion Overview	
Criterion	Weight
Technical Merit, Innovation, and Impact	50%
Project Workplan, Risks, Metrics, and Market Transformation Plan	25%
Team and Resources	10%
Community Benefits Plan: R&D	15%

Criterion 1: Technical Merit, Innovation, and Impact (50%)

This criterion involves consideration of the following factors:

Technical Merit and Innovation

1. Extent to which the proposed technology, process, or project is innovative or replicable;
2. Degree to which the current state of the technology and the proposed advancement are clearly described;
3. Extent to which the application specifically and convincingly demonstrates how the applicant will move the state of the art to the proposed advancement;
4. Sufficiency of technical detail in the application to assess whether the proposed work is scientifically meritorious and revolutionary, including relevant data, calculations, and discussion of prior work with analyses that support the viability of the proposed work;
5. Extent to which project has buy-in from needed stakeholders to ensure success;
6. Degree to which key manufacturing and supply chain challenges are considered, as applicable, for viable scale-up in this and future demonstrations;
7. Degree to which siting and environmental constraints are considered for deployment;
8. Extent to which project has the potential to reduce emissions and provide clean energy acceleration benefits for a community or region; and
9. Sufficiency of existing infrastructure to support addition of proposed demonstration.

Impact of Technology Advancement

1. Ability of the project to advance industry adoption;
2. Extent to which the project supports the topic area objectives and target specifications and metrics;
3. Potential impact of the project on advancing the state of the art;
4. Extent to which demonstration/deployment is replicable and may lead to future demonstrations; and
5. Extent to which the project facilitates stakeholder relationships across new or existing stakeholders to gain technical buy-in and increase potential for future deployments.

Project Management

1. Adequacy of proposed project management systems including the ability to track scope, cost, and schedule progress and changes;
2. Reasonableness of budget and spend plan as detailed in the budget justification workbook for proposed project and objectives;
3. Adequacy of contingency funding based on quality of cost estimate and identified risks;
4. Adequacy, reasonableness, and soundness of the project schedule, as well as periodic Go/No-Go decisions prior to further funds disbursement, interim milestones, and metrics to track process;
5. Adequacy, reasonableness, and soundness of the project schedule, as well as annual Go/No-Go decisions prior to a budget period continuation application, interim milestones, and metrics to track process;
6. Adequacy of the identification of risks, including labor and community opposition or disputes, and “timely” and appropriate strategies for mitigation and resolution;
7. Soundness of a plan to expeditiously address environmental, siting, and other regulatory requirements for the project, including evaluation of resilience to climate change; and
8. Completeness, comprehensiveness, accuracy, and strength of the application deliverables, such that DOE and independent experts will be able to identify project risk.

Criterion 2: Project Workplan, Risks, Metrics, and Market Transformation Plan (25%)

This criterion involves consideration of the following factors:

Research and Development Approach, Workplan, and SOPO

1. Degree to which the approach and critical path have been clearly described and thoughtfully considered; and
2. Degree to which the task descriptions are clear, detailed, timely, and reasonable, resulting in a high likelihood that the proposed Workplan and SOPO will succeed in meeting the project goals.

Identification of Technical Risks

1. Discussion and demonstrated understanding of the key technical risk areas involved in the proposed work and the quality of the mitigation strategies to address them. This includes risks associated with scheduling, cost increases, and supply chain challenges.

Baseline, Metrics, and Deliverables

1. Level of clarity in the definition of the baseline, metrics, and milestones; and
2. Relative to a clearly defined project baseline, the strength of the quantifiable metrics, milestones, and mid-point deliverables defined in the application, such that meaningful interim progress will be made.

Market Transformation Plan

1. Identification of target market, competitors, and distribution channels for proposed technology along with known or perceived barriers to market penetration, including mitigation plan; and
2. Comprehensiveness of market transformation plan including but not limited to product development and/or service plan, commercialization timeline, financing, product marketing, legal/regulatory considerations including intellectual property, infrastructure requirements, Open-Source Software Distribution Plan, etc., and product distribution.
3. Extent of industry adoption, commitments, and interest of the technology/processes.

Criterion 3: Team and Resources (10%)

This criterion involves consideration of the following factors:

1. Capability of the project manager(s) and the proposed team to address all aspects of the proposed work with a high probability of success. The qualifications, relevant expertise, and time commitment of the individuals on the team;
2. Diversity of expertise and perspectives of the team and the inclusion of industry partners that will amplify impact;
3. Sufficiency of the facilities to support the work;
4. Degree to which the proposed consortia/team demonstrates the ability to facilitate and expedite further demonstration, development, and commercial deployment of the proposed technologies;
5. Level of participation by project participants as evidenced by letter(s) of commitment and how well they are integrated into the Workplan; and
6. Reasonableness of the budget and spend plan for the proposed project and objectives.
7. Clarity, adequacy, and completeness of roles and contributions of each team member in development of the project, including financial support of partners, and subrecipients.
8. Extent of team's (including key personnel) experience and success in industry and/or in similar projects.
9. Extent to which the proposed site (or sites) are suited for the proposed project.
10. Extent to which the facilities and equipment (existing and proposed) will be suited to ensure project success.

Criterion 4: Community Benefits Plan (R&D) (15%)

This criterion involves consideration of the following factors:

Diversity, Equity, Inclusion, and Accessibility

1. Clear articulation of the project's goals related to diversity, equity, inclusion, and accessibility;
2. Quality of the project's DEIA goals, as measured by the goals' depth, breadth, likelihood of success, inclusion of appropriate and relevant SMART milestones, and overall project integration;
3. Degree of commitment and ability to track progress toward meeting each of the DEIA goals; and
4. Extent of engagement of organizations that represent disadvantaged communities or underrepresented populations as a core element of their mission, including Minority Serving Institutions (MSIs), underrepresented businesses, and Tribal, nonprofit, or community-based organizations.

Considerations linked with energy and/or environmental justice

1. Clear workplan tasks, staffing, research, and timeline for engaging energy equity and community and/or environmental justice stakeholders and/or evaluating the possible near- and long-term implications of the project for the benefit of the American public, including but not limited to public health and public prosperity benefits;
2. Approach, methodology, and expertise articulated in the plan for addressing energy and/or environmental justice questions or concerns associated with the technology innovation; and
3. Likelihood that the plan will result in improved understanding of distributional public benefits and costs related to the innovation if successful.

Quality Jobs

1. Clear and comprehensive workplan tasks, staffing, research, and timeline for engaging workforce stakeholders and/or evaluating the possible near- and long-term implications of the project for the U.S. workforce;
2. Approach to document the knowledge, skills, and abilities of the workforce required for successful commercial deployment of innovations resulting from this research; and
3. Likelihood that the plan will result in improved understanding of the workforce implications related to the innovation if successful.

3. Criteria for Replies to Reviewer Comments

DOE has not established separate criteria to evaluate Replies to Reviewer Comments. Instead, Replies to Reviewer Comments are attached to the original applications and evaluated as an extension of the application.

D. Other Selection Factors

In addition to the above criteria, the Selection Official may consider the following program policy factors in determining which applications to select for award negotiations:

1. The degree to which the proposed project exhibits technological diversity when compared to the existing DOE project portfolio and other projects selected from the subject NOFO;
2. The degree to which the proposed project, including proposed cost share, optimizes the use of available DOE funding to achieve programmatic objectives;

3. The level of industry involvement and demonstrated ability to accelerate demonstration and commercialization and overcome key market barriers;
4. The degree to which the proposed project is likely to lead to increased high-quality employment and manufacturing in the United States;
5. The degree to which the proposed project will accelerate transformational technological advances in areas that industry by itself is not likely to undertake because of technical and financial uncertainty;
6. The degree to which the proposed project, or group of projects, represent a desired geographic distribution (considering past awards and current applications);
7. The degree to which the proposed project incorporates applicant or team members from Minority Serving Institutions; and partnerships with businesses majority owned or controlled by underrepresented persons or groups of underrepresented persons or Indian Tribes;
8. The degree to which the proposed project, when compared to the existing DOE project portfolio and other projects to be selected from the subject NOFO, contributes to the total portfolio meeting the goals reflected in the Community Benefits Plan criteria; and
9. The degree to which the proposed project will employ procurement of U.S. iron, steel, manufactured products, and construction materials.
10. The degree to which the proposed project contributes to the diversity of organizations and organization types and sizes selected from the subject NOFO when compared to the existing DOE project portfolio.
11. The degree to which the proposed project has broad public support from the communities most directly impacted by the project.
12. The degree to which the proposed project avoids duplication/overlap with other publicly or privately funded work.
13. The degree to which the proposed project supports complementary efforts or projects, which, when taken together, will best achieve the research goals and objectives.
14. The degree to which the proposed project enables new and expanding market segments.
15. The degree to which the project's solution or strategy will maximize deployment or replication.
16. The degree to which the project promotes increased coordination with nongovernmental entities for demonstration of technologies and research applications to facilitate technology transfer.

VII. Selection and Award Notices

Please see the [NOFO Part 2, Selection and Award Notices](#) for information on notifications for Concept Papers (if applicable), Applications, Award Negotiations, and Post-Selection Information Requests.

VIII. Award Administration Information

A. Post-Award Requirements and Administration

DOE requires all award recipients to follow and accept requirements governed by laws and policies – both federal government-wide and DOE or program specific. These post-award requirements include all National and Administrative Policy Requirements; financial assistance general Certifications and Representations; Build America, Buy America requirements; Davis-Bacon Act requirements; Bipartisan

Infrastructure Law-Specific Requirements; Fraud, Waste and Abuse requirements; Safety, Security, and Regulatory requirements; and Environmental Review in Accordance with National Environmental Policy Act requirements.

Post-Award requirements and administration applicable to awards funded under this NOFO are identified below. Detailed descriptions of standard funding restrictions are provided in the [NOFO Part 2, Post-Award Requirements and Administration](#) section. Detailed descriptions of program specific funding restrictions are provided below the table.

Applicable Post-Award Requirements and Administration	
Title	Location
Award Administrative Requirements	NOFO Part 2
Subaward and Executive Reporting	NOFO Part 2
National Policy Requirements	NOFO Part 2
Applicant Representations and Certifications	NOFO Part 2
Statement of Federal Stewardship	NOFO Part 2
Uniform Commercial Code (UCC) Financing Statements	NOFO Part 2
Interim Conflict of Interest Policy for Financial Assistance	NOFO Part 2
Whistleblower Protections	NOFO Part 2
Fraud, Waste, and Abuse	NOFO Part 2
Participants and Collaborating Organizations	NOFO Part 2
Current and Pending Support	NOFO Part 2
Prohibition Related to Malign Foreign Talent Recruitment Programs	NOFO Part 2
Foreign Collaboration Considerations	NOFO Part 2
U.S. Manufacturing Commitments	NOFO Part 2
Subject Invention Utilization Reporting	NOFO Part 2
Intellectual Property Provisions	NOFO Part 2
Go/No-Go Review	NOFO Part 2
Conference Spending	NOFO Part 2
Invoice Review and Approval	NOFO Part 2
Cost-Share Payment	NOFO Part 2
Implementation of Executive Order 13798, Promoting Free Speech and Religious Liberty	NOFO Part 2
Affirmative Action and Pay Transparency Requirements	NOFO Part 2
Construction Signage	NOFO Part 2
Human Subjects Research	NOFO Part 2
Real Property and Equipment	NOFO Part 1
Rights in Technical Data	NOFO Part 1
Intellectual Property Management Plan	NOFO Part 1

1. Real Property and Equipment

Real property and equipment purchased with project funds (federal share and recipient cost share) are subject to the requirements at 2 CFR 200.310, 200.311, 200.313, and 200.316 (non-federal entities, except for-profit entities) and 2 CFR 910.360 (for-profit entities).

For resulting awards under this NOFO, the recipients may (1) take disposition action on the real property and equipment; or (2) continue to use the real property and equipment after the conclusion of the award period of performance with Grants Officer approval. The recipient's written request for Continued Use must identify the property and include: a summary of how the property will be used (must align with the authorized project purposes); a proposed use period, (e.g., perpetuity, until fully depreciated, or a calendar date when the recipient expects to submit disposition instructions); acknowledgement that the recipient shall not sell or encumber the property or permit any encumbrance without prior written DOE approval; current fair market value of the property; and an estimated useful life or depreciation schedule for equipment.

When the property is no longer needed for authorized project purposes, the recipient must request disposition instructions from DOE. For-profit entity disposition requirements are set forth in 2 CFR 910.360. Property disposition requirements for other non-federal entities are set forth in 2 CFR 200.310 – 200.316.

2. Rights in Technical Data

Data rights differ based on whether data is first produced under an award or instead was developed at private expense outside the award.

“Limited Rights Data”: The U.S. government will not normally require delivery of confidential or trade-secret-type technical data developed solely at private expense prior to issuance of an award, except as necessary to monitor technical progress and evaluate the potential of proposed technologies to reach specific technical and cost metrics.

Government Rights in Technical Data Produced Under Awards: The U.S. government normally retains unlimited rights in technical data produced under government financial assistance awards, including the right to distribute to the public. However, pursuant to special statutory authority, certain categories of data generated under DOE awards under this NOFO may be protected from public disclosure for up to five years after the data is generated (“Protected Data”). For awards permitting Protected Data, the protected data must be marked as set forth in the award's intellectual property terms and conditions and a listing of unlimited rights data (i.e., non-protected data) must be inserted into the data clause in the award. In addition, invention disclosures may be protected from public disclosure for a reasonable time in order to allow for filing a patent application.

3. Intellectual Property Management Plan

An Intellectual Property Management Plan (if applicable) describing how the project team/consortia members will handle intellectual property rights and issues between themselves while ensuring compliance with federal intellectual property laws, regulations, and policies.

1. Cost Share Payment

DOE requires recipients to contribute the cost share amount incrementally over the life of the award. Specifically, the recipient's cost share for each **billing period** must always reflect the overall cost share ratio negotiated by the parties (i.e., the total amount of cost sharing on each invoice when considered cumulatively with previous invoices must reflect, at a minimum, the cost sharing percentage negotiated).

B. Helpful Websites

[Office of Energy Efficiency & Renewable Energy | Department of Energy EERE Application Process](#)

C. Questions and Support

1. Questions

Upon the issuance of a NOFO, DOE personnel are prohibited from communicating (in writing or otherwise) with applicants regarding the NOFO except through the established question and answer process described below. Questions regarding this NOFO must be submitted to FY25BETOMASYNOFO@ee.doe.gov no later than three (3) business days prior to the application due date and time. Please note, feedback on individual concepts will not be provided through Q&A.

All questions and answers related to this NOFO will be posted on the eXCHANGE site listed in the [Key Facts](#) section above. **You must first select the NOFO Number to view the questions and answers specific to this NOFO.** DOE will attempt to respond to a question within three (3) business days unless a similar question and answer has already been posted on the website.

Questions related to the registration process and use of the eXCHANGE site listed in the [Key Facts](#), should be submitted to EERE-ExchangeSupport@hq.doe.gov.

2. Support

Grants.gov

Grants.gov provides 24/7 support. You can call 1-800-518-4726 or email support@grants.gov. Hold on to your ticket number.

SAM.gov

If you need help, you can call 866-606-8220 or live chat with the [Federal Service Desk](#).

IX. Other Information

Please see the [NOFO Part 2, Other Information](#) for additional information and requirements that apply to all DOE NOFOs.

Appendix A – Verification

All applications selected for award negotiations under this NOFO are required to participate in a verification process led by DOE’s identified external third-party non-conflicted verification team. This team may be led by the National Renewable Energy Laboratory’s Systems Integration team, DOE BETO’s independent engineering contractor, or another non-conflicted BETO contractor. Personnel involved in verifications sign project specific non-disclosure agreements and conflict of interest statements. This verification process provides technical assistance to both DOE BETO and the project team by providing an in-depth analysis of key technical and economic metrics to ensure transparency and increase the likelihood of project success.

The objectives of the verification effort are to:

- Verify the applicant’s technical data/performance metrics/targets as described in the original application.
- Establish a framework to evaluate and track progress over time so that the milestones and go/no go decision points separating budget periods may be tracked and evaluated.
- Establish benchmark, baseline, and associated target values.
- Identify potential major showstoppers and discuss risk mitigation strategies.
- Align project goals with BETO’s expectations and NOFO-specific requirements.

There are two types of verification periods throughout the lifetime of the project: the “initial verification,” conducted at the beginning of the project (months 0-3), and the “interim verification(s),” conducted as a part of go/no go decisions separating budget periods. Verifications can take place virtually or in-person at the recipient's facility.

The specific objectives of these verifications are set forth below:

- The Initial Verification is to confirm the benchmark data and assumptions provided in the application, which will establish the project baseline against which future performance and cost improvements will be evaluated. During the initial verification, the verification team will work closely with the project team to discuss the project effort in detail; initiate the review of application data, metrics, and procedures as provided in the original application; and set the date for the initial verification meeting. This is an iterative process between the two teams and establishes the agenda for the on-site (or virtual) meeting. The project baseline will be set in this period, either through revision of the application data or by submission of additional/new data. The verification results, including the initial verification report, are used by DOE at its sole discretion, among other factors, in making the go/no go decision to proceed with Budget Period 2 (BP2). See Sections II.A.ii. and VI.B.xiv. for information on period of performance and go/no go decisions.
- An interim verification will be conducted toward the end of BP2. The interim verification assesses progress towards the project’s BP2 go/no go decision point and the achievement of the Statement of Project Objectives (SOPO) milestones in support of the go/no go decision point. Current project performance and progress towards project objectives will be compared against any targets established in the application, SOPO, or the initial verification. The verification results are used by DOE at its sole discretion, among other factors, in making the go/no go

decision to proceed with the next budget period. In projects with more than 3 budget periods, additional interim verifications will be conducted toward the end of each budget period.

Technical Datasheets:

Projects selected from this NOFO will be required to complete a Technical Datasheet, which will be used throughout the verification process. The data and claims provided in the full application will be used as the basis for review and discussion during the initial verification and will be considered the project's baseline. The Technical Datasheet will also be used to assess progress towards interim and final targets during later verifications. It is expected the data will have been experimentally produced by the applicant in the applicant's facilities. However, if literature data needs to be used for parts of the process, those metrics based on literature data should be marked appropriately.

Verification Timeline:

The initial verification period, including on-site meeting (if applicable) and report creation, can take up to three months. Applicants must include this time in their schedule. Selected projects that receive a 'go' decision at the conclusion of the initial verification effort will be subject to an interim verification. The applicant must also consider that time should be allocated for these verifications.

Verification Task:

All applicants must include the initial verification task within their scope as Task 1. It must be separated from the rest of the scope of work by a go/no go decision point, and applicants should estimate, at minimum, a three-month duration for the verification effort. This task, Task 1, will also be within a separate budget period, Budget Period 1 (BP1), from the remainder of the project. By way of example, the inclusion of the verification in the scope could include something like the following:

Task 1. Initial Verification. At the beginning of the project, the baseline data and project targets provided in the technical datasheet will be verified. Process information and data will be provided to DOE and the verification team (when applicable) to support the process claims within the original application. Technical metrics for project progress will be tailored to the project as needed. These metrics may include additional go/no go decision points or other modifications that will be incorporated into the overall project and Statement of Project Objectives (SOPO). Demonstration of equipment or processes may be requested as part of the verification process at the discretion of the DOE or verification team.

There will be a go/no go associated with Task 1 as follows: Process information and data supports the technology readiness level of the overall process, the unit operations within the process, and the original application. Technical metrics are based on preliminary data and represent a meaningful baseline and set of targets.

Upon successful completion of the initial verification effort and go/no go decision point, the project will commence with the remaining scope of work after the necessary steps to approve the remaining scope and associated funding for the project have been completed. Similar provisions must be included for the interim verification(s) as a task(s) that will occur prior to the end of each budget period and/or go/no go decision point.

Verification Conflict of Interest/Proprietary Information:

All of the technical and economic information requested will be disclosed to non-conflicted DOE National Renewable Energy Laboratory Systems Integration (NREL-SI) personnel and/or external third-party non-conflicted reviewers or DOE contractors performing the verifications (BETO's verification

team), participating in the go/no go review process, and/or interim review meetings. It is expected that developments and advancements in technical performance made during the course of the project will be shared with the public via technical publications in journals or conference proceedings. It is also anticipated the initial verification may, if necessary, involve pre-existing intellectual property of which DOE will not require publication. Data access, deliverables and dissemination requirements will be negotiated and set forth in the Statement of Project Objectives and will be consistent with Section VIII.L. of this NOFO. DOE and those working on DOE's behalf, such as support service contractors, NREL personnel, Independent Engineers, and reviewers, must be able to have sufficient access to these data, including but not limited to raw technical and financial data, to assess the baseline performance of the technology – subject to appropriate non-disclosure agreements or other protections.

Verification Process:

The verification effort generally includes three steps: pre-verification, on-site verification meeting (if applicable), and post-verification. The verification effort will be adapted to be appropriate for the technology readiness level and funding available to the project. However, the details provided below establish the framework for the process.

All steps are performed in concert with BETO's verification team and the project management team. During the pre-verification step, the verification team will work closely with the project team to discuss the effort in detail, initiate the review of the data from the Technical Datasheet and metrics as provided in the original application, and provide a list of requirements for the verification process. This is an iterative process between the two teams and establishes the agenda for the verification meeting. During the verification meeting, the two teams will work together to discuss the goals and performance metrics, ideas for tracking project progress, and alignment with BETO's goals. The post-verification step includes the verification team reporting to DOE, and the DOE personnel proceeding with any necessary notifications, negotiations, and modifications to the award based on the go/no go decision.

If a provisional 'go' decision is reached, the project team and DOE Technology Manager will proceed with the necessary steps to release the remaining scope and associated funding for the project. At the conclusion of the verification effort and if an affirmative "go" decision has been made, the Contracting Officer will notify the recipient regarding the go/no go decision via a formal modification approving continuation of the project. A 'no go' decision may result in termination of the project or re-direction of scope.

Key Verification Requirements:

- During the initial verification effort (i.e., BP1), no additional experimental or project work, beyond that associated with the verification, may commence within the proposed scope. Only work associated with the verification – typically project management and data gathering activities – is allowed during the verification. The budget associated with the verification effort should correspond to these types of activities only and is typically minimal compared to the remaining project scope and budget.
- It is anticipated that the interim verification(s) will include the recipient presenting the project progress toward the targets established during the initial verification. Interim verification(s) must be noted and accounted for within the scope, schedule, and budget, so that if a project is selected and receives a 'go' decision at the conclusion of the initial verification effort, the schedule and budget will already account for the interim verification(s).