

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



**U.S. Department of Energy (DOE)  
Fossil Energy and Carbon Management  
Bipartisan Infrastructure Law (BIL) Accelerating CO<sub>2</sub>  
Conversion Technology Development and Deployment –  
Biological, Catalytic, and Mineralization Pathways  
Notice of Funding Opportunity Number: DE-FOA-0003495**

**Application due: April 11, 2025, 11:59 PM EST**

Modifications to this NOFO will be posted on Grants.gov and the FedConnect portal. Grants.gov and FedConnect will automatically notify applicants when a NOFO modification is processed. Applicants must be registered to this NOFO in Grants.gov to receive email notifications. Register in FedConnect as an interested party to this NOFO for announcement messages. It is recommended that you register as soon after release of the NOFO as possible to ensure you receive timely notice of any modifications or other announcements. See Registration Requirements in Part 2 of this NOFO.



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# Before You Begin

## Navigating the Notice of Funding Opportunity

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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 *Version 1.0*.

# I. Basic Information

## A. Key Facts

<b>Issuing Agency</b>	Department of Energy, Fossil Energy and Carbon Management, Infrastructure Investment and Jobs Act Carbon Utilization	<b>KEY DATES</b>  <b>Notice of Funding Opportunity Issue Date:</b> January 15, 2025  <b>Application Deadline:</b> April 11, 2025  <b>Anticipated Selection Notification Date:</b> August 1, 2025  <b>Anticipated Award Date:</b> December 5, 2025  <b>Estimated Period of Performance:</b> December 5, 2025 – December 4, 2027
<b>Funding Opportunity Title</b>	<b>Bipartisan Infrastructure Law (BIL) Accelerating CO<sub>2</sub> Conversion Technology Development and Deployment – Biological, Catalytic, and Mineralization Pathways</b>	
<b>Announcement Type</b>	Initial	
<b>Funding Opportunity Number</b>	DE-FOA-0003495	
<b>Funding Instrument</b>	Cooperative Agreements	
<b>Assistance Listing Number</b>	81.089 - Fossil Energy Research and Development	
<b>Funding Opportunity Description</b>	The Notice of Funding Opportunity (NOFO) competitively solicits cost-shared research and development (R&D) proposals to advance the pilot scale testing of carbon conversion technologies with high technology readiness level (TRL ≥ 5) capable of achieving significant carbon mitigation via biological, catalytic, or mineralization pathways. This NOFO also supports testing of carbon conversion product performance and characterization needed for market or consumer adoption. This may include lifecycle analysis (LCA) development for novel carbon conversion technologies and LCA development for pilot facilities using these technologies.	
<b>Program Goals &amp; Objective(s)</b>	The Carbon Conversion Program supports R&D to advance the conversion of anthropogenic carbon oxides through biological, catalytic, and mineralization pathways. These technologies will benefit producers and consumers by enabling the manufacture of more sustainable products with the long-term potential for lower costs and superior performance.	
<b>Topic Areas</b>	<ul style="list-style-type: none"> <li>• Topic Area 1: Pilot Scale Biological Conversion</li> <li>• Topic Area 2: Pilot Scale Catalytic Conversion</li> <li>• Topic Area 3: Pilot Scale Mineralization</li> <li>• Topic Area 4: Other Testing and LCA Development Required for Commercialization</li> </ul>	

<b>Eligible Applicants</b>	<p><i>Domestic Entities (Institutes of higher education; for-profit entities; non-profit entities; state and local government entities and Indian Tribes</i></p> <ul style="list-style-type: none"> <li>• <i>DOE federally funded research and development centers (FFRDCs) and non-DOE FFRDCs and Federal Research Agencies can participate as a sub-recipient. FFRDC scope of work may not be more significant than the Prime Applicant's.</i></li> </ul>
<b>FedConnect URL and Helpdesk</b>	<p><a href="#">FedConnect NOFO URL</a>  <a href="#">FedConnect Helpdesk</a>  <a href="https://www.fedconnect.net/FedConnect/Default.htm">https://www.fedconnect.net/FedConnect/Default.htm</a></p>
<b>Grants.gov URL and Helpdesk</b>	<p><a href="#">Grants.gov URL</a>  <a href="#">Grants.gov Support</a></p>

## 1. Funding Details

### Multiple Topic Areas

Approximate total available funding including all topic areas: \$100,000,000 in FY 2025

Topic Area (TA)	Approx. Total Funding (\$)	Approx # awards	Approx Indiv. Awards Funding	Cost Share (min)	Project Period/Budget Period
TA1: Pilot Scale Biological Conversion	\$30,000,000 / FY 25	2-4	\$8,000,000	20 %	24 months/ 24 months
TA2: Pilot Scale Catalytic Conversion	\$30,000,000 / FY 25	2-4	\$8,000,000	20 %	24 months/ 24 months
TA3: Pilot Scale Mineralization	\$30,000,000 / FY 25	2-4	\$8,000,000	20 %	24 months/ 24 months
TA4: Other Testing and LCA Development Required for Commercialization	\$10,000,000 / FY 25	5	\$2,000,000	20 %	24 months/ 24 months

#### Topic Area 1: Pilot Scale Biological Conversion

- Approximate total available funding: \$30,000,000 in FY 2025
- Approximate number of awards: 2-4
- Approximate dollar amount of individual awards: \$8,000,000
- Minimum cost share required: 20% of the total project costs
- Approximate award project period: 24 months
- Anticipated length of budget periods: 24 months, consisting of one budget period

#### Topic Area 2: Pilot Scale Catalytic Conversion

- Approximate total available funding: \$30,000,000 in FY 2025
- Approximate number of awards: 2-4
- Approximate dollar amount of individual awards: \$8,000,000
- Minimum cost share required: 20 % of total project costs

- Approximate award project period: 24 months
- Anticipated length of budget periods: 24 months

### Topic Area 3: Pilot Scale Mineralization

- Approximate total available funding: \$30,000,000 in FY 2025
- Approximate number of awards: 2-4
- Approximate dollar amount of individual awards: \$8,000,000
- Minimum cost share required: 20 % of total project costs
- Approximate award project period: 24 months
- Anticipated length of budget periods: 24 months

### Topic Area 4: Other Testing and LCA Development Required for Commercialization

- Approximate total available funding: \$10,000,000 in FY 2025
- Approximate number of awards: 5
- Approximate dollar amount of individual awards: \$2,000,000
- Minimum cost share required: 20 % of total project costs
- Approximate award project period: 24 months
- Anticipated length of budget periods: 24 months

## 2. Period of Performance

DOE anticipates making awards comprised of one budget period. Project continuation will be contingent upon several elements, including satisfactory performance and 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](#).

## B. Executive Summary

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The Office of Fossil Energy and Carbon Management (FECM) in collaboration with the National Energy Technology Laboratory (NETL) is issuing this NOFO. Awards made under this NOFO will be funded, in whole or in part, with funds appropriated by the Infrastructure Investment and Jobs Act<sup>1</sup>, more commonly known as the Bipartisan Infrastructure Law (BIL). DOE's BIL investments will support efforts to build a clean and equitable energy economy that achieves a carbon pollution-free electricity sector by 2035, and to put the United States on a path to achieve net-zero emissions economy-wide by no later than 2050<sup>2</sup> to benefit all Americans.

The Department of Energy's Office of Fossil Energy and Carbon Management (DOE-FECM) has been at the forefront of carbon management research, development, and demonstration (RD&D) for decades, working with partners in industry and academia to solve challenges posed by climate change. The Carbon Conversion Program supports various conversion technologies within biological, catalytic, and mineralization pathways. These technologies will benefit manufacturers, technology providers, and the general public by advancing commercial viability of and consumer access to more environmentally

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<sup>1</sup> Infrastructure Investment and Jobs Act, Public Law 117-58 (November 15, 2021). <https://www.congress.gov/bill/117th-congress/house-bill/3684> This NOFO uses the more common name Bipartisan Infrastructure Law.

<sup>2</sup> [Executive Order \(EO\) 14008E.O. 14008](#), "Tackling the Climate Crisis at Home and Abroad," January 27, 2021.

sustainable products. Significant advancements have been made in carbon conversion technologies through research and development supported by the U.S. Department of Energy. Further research and development is needed to support scaling challenges, including issues affecting the economics of commercial projects, the durability of novel unit operations at scale, and barriers to adoption of these products by consumers.

This NOFO competitively solicits cost-shared R&D proposals to support pilot scale carbon conversion technologies with high technology readiness level (TRL > 5)<sup>3</sup> capable of achieving significant carbon mitigation via biological, catalytic, or mineralization pathways. DOE also seeks to support testing of product performance and characterization needed for market or consumer adoption. This may include LCA development for novel carbon conversion technologies and LCA development for pilot facilities using those technologies.

BIL will invest appropriations up to \$100 million for the two (2) year period encompassing fiscal years (FYs) 2026 through 2028 for R&D of carbon conversion technologies in four topic areas: 1) Pilot Scale Biological Conversion; 2) Pilot Scale Catalytic Conversion; 3) Pilot Scale Mineralization; and 4) Other Testing and LCA Development Required for Commercialization.

Domestic Entities (Institutes of higher education; for-profit entities; non-profit entities; state and local government entities and Indian Tribes are eligible to apply to this NOFO. DOE Federally Funded Research and Development Centers (FFRDC) and non-DOE FFRDCs and Federal Research Agencies can participate as a sub-recipient.

## C. Agency Contact Information

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Office of Fossil Energy and Carbon Management  
U.S. Department of Energy  
1000 Independence Ave SW  
Washington, D.C. 20585

For questions relating to this specific NOFO, please send emails to [DE-FOA-0003495@NETL.DOE.GOV](mailto:DE-FOA-0003495@NETL.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.

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<sup>3</sup> [Technology Readiness Levels \(TRLs\)](#)

## II. Eligibility

To be considered for 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

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To be considered for 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. 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 organizations;
- Nonprofit organizations;
- 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<sup>4</sup>

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.

#### 2. 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.

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<sup>4</sup> "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](https://www.whitehouse.gov/wp-content/uploads/2023/01/M-23-09_Signed_CEQ_CPO.pdf).

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.

Prime recipients and subrecipients must be legally formed in the United States, have majority domestic ownership and control, 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**

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.

## **3. Participant Limitations**

Participation of the following entities are limited as follows.

- DOE FFRDCs<sup>5</sup> are eligible to apply for funding as a sub-recipient 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.
- NETL is not eligible for award under this announcement and may not be proposed as a subrecipient on another entity's application. An application that includes NETL as a recipient or subrecipient will be considered non-responsive.

### **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

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<sup>5</sup> 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/>.

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

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

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An entity may submit more than one application to this NOFO, provided that each application describes a unique, scientifically distinct project.

## C. Cost Sharing

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Applicants are expected to follow through on estimated cost share commitments proposed in their applications if selected for award negotiations.

### 1. Cost Share Requirements

The cost share must be at least 20% of the total project costs<sup>6</sup> for research and development.<sup>7</sup>

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

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<sup>6</sup> Total project costs are the sum of the government share, including FFRDC costs if applicable, and the recipient share of project costs.

<sup>7</sup> 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.

cost share information sheet and sample cost share calculation in the [NOFO Part 2, Eligibility—Cost Sharing, Cost Share Calculation Examples](#). Please refer to the [NOFO Part 2, Eligibility](#) for more information on Cost Sharing.

## D. FFRDC Eligibility Criteria

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### 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.*

The recipient and FFRDC are responsible for entering into an appropriate subaward that will govern, among other things, the funding of the FFRDC portion of the work from the recipient under its DOE award. Such an agreement must be fully executed prior to the FFRDC starting work directly allocable to the Financial Assistance award. The DOE funding office will provide funding for the DOE FFRDC or non-DOE FFRDC, participating as a sub awardee under the DOE financial assistance award to the recipient.

The applicant should prepare the budgets using rates appropriate for funding the FFRDCs through subawards. 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.

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.

#### **Limit on FFRDC Effort**

The scope of work to be performed by the FFRDC should not be more significant than the scope of work to be performed by the applicant.

## III. Program Description

### A. Background and Context

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The Office of Fossil Energy and Carbon Management Office (FECM) is issuing this Notice of Funding Opportunity (NOFO). Awards made under this NOFO will be funded, in whole or in part, with funds appropriated by the Infrastructure Investment and Jobs Act, more commonly known as the Bipartisan Infrastructure Law (BIL).<sup>8</sup>

BIL is a once-in-a-generation investment in modernizing and upgrading American infrastructure to enhance U.S. competitiveness, drive the creation of good-paying jobs with a free and fair chance to form or join a union, tackle the climate crisis, and ensure strong access to economic, environmental, and other benefits for disadvantaged communities.<sup>9</sup> BIL appropriated more than \$62 billion to the U.S. Department of Energy (DOE)<sup>10</sup> to invest in American manufacturing and workers; expand access to energy efficiency and clean energy; deliver reliable, clean, and affordable power to more Americans; and demonstrate and deploy the technologies of tomorrow through clean energy demonstrations.

DOE's BIL investments will support efforts to build a clean and equitable energy economy that achieves a zero-carbon electricity system by 2035, and to put the United States on a path to achieve net-zero emissions economy-wide by no later than 2050<sup>11</sup> to benefit all Americans.

BIL will invest appropriations up to \$100 million for the two (2) year period encompassing fiscal years (FYs) 2026 through 2028 for R&D to advance the piloting of carbon conversion technologies with high technology readiness level (TRL  $\geq$  5) capable of achieving significant carbon mitigation via biological, catalytic, or mineralization pathways, along with testing of product performance and characterization needed for market or consumer adoption.

The activities to be funded under this NOFO support BIL sections 40302 "Carbon Utilization Program" (which amended Section 969A of the Energy Policy Act of 2005) and the broader government-wide approach to strengthen critical adoption, domestic manufacturing, and supply chains for carbon conversion<sup>12</sup> products to maximize the benefits of the clean energy transition as the nation works to curb the climate crisis, empower workers, and advance environmental justice.

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<sup>8</sup> Infrastructure Investment and Jobs Act, Public Law 117-58 (November 15, 2021). <https://www.congress.gov/bill/117th-congress/house-bill/3684>. This NOFO uses the more common name Bipartisan Infrastructure Law (BIL).

<sup>9</sup> Pursuant to [Executive Order \(EO\) 14008](#), "Tackling the Climate Crisis at Home and Abroad," January 27, 2021, and the Office of Management and Budget's [Interim Justice40 Implementation Guidance M-21-28](#) and [Addendum M-23-09](#), DOE recognizes disadvantaged communities as the census tracts identified as disadvantaged by the White House Council on Environmental Quality's Climate and Economic Justice Screening Tool (CEJST), located at <https://screeningtool.geoplatform.gov/>, as well as all Federally Recognized Tribes (whether or not they have land). See [https://www.whitehouse.gov/wp-content/uploads/2023/01/M-23-09\\_Signed\\_CEQ\\_CPO.pdf](https://www.whitehouse.gov/wp-content/uploads/2023/01/M-23-09_Signed_CEQ_CPO.pdf). DOE's Justice40 Implementation Guidance is located at <https://www.energy.gov/sites/default/files/2022-07/Final%20DOE%20Justice40%20General%20Guidance%20072522.pdf>.

<sup>10</sup> U.S. Department of Energy. November 2021. "DOE Fact Sheet: The Bipartisan Infrastructure Deal Will Deliver for American Workers, Families and Usher in the Clean Energy Future." <https://www.energy.gov/articles/doe-fact-sheet-bipartisan-infrastructure-deal-will-deliver-american-workers-families-and-0>

<sup>11</sup> [EO 14008](#), "Tackling the Climate Crisis at Home and Abroad," January 27, 2021.

<sup>12</sup> This NOFO uses carbon utilization and carbon conversion interchangeably

## B. Program Purpose

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Carbon conversion is an essential element in the strategy to combat climate change. It enables carbon recycling by using anthropogenic carbon captured from the atmosphere or sourced from utility and industrial point sources. Anthropogenic carbon dioxide here is defined as that which is created or concentrated through human activity (e.g., DAC sources are acceptable). Carbon conversion products will play a critical role in the transition to a net zero economy by providing carbon management solutions for hard-to-abate industries or durably storing carbon in long-lived products like building materials. DOE-FECM's Carbon Conversion Program is developing technologies for converting carbon dioxide (CO<sub>2</sub>) into environmentally responsible, equitable, and economically valuable products. The Carbon Conversion Program supports research, development, and demonstration (RD&D) across three broad conversion approaches: catalytic pathways, mineralization, and biological uptake. These technologies will benefit manufacturers, technology providers, and the general public by advancing commercial viability of and consumer access to more environmentally sustainable products.

Significant advancements have been made in carbon conversion technologies through R&D supported by DOE. However, there are still critical knowledge gaps and technical barriers to be addressed. Further R&D is needed to support scaling challenges, including issues affecting the economics of commercial projects, the durability of novel unit operations at scale, and barriers to adoption of these products by consumers. The NOFO competitively solicits cost-shared R&D proposals to advance the pilot scale testing of carbon conversion technologies with high technology readiness level (TRL > 5) capable of achieving significant carbon mitigation via biological, catalytic, or mineralization pathways. DOE also seeks to support testing of product performance and characterization needed for market or consumer adoption. This may include lifecycle analysis (LCA) development for novel carbon conversion technologies and LCA development for pilot facilities using those technologies.

This NOFO supports the administration goals laid out in Executive Order 14008 (dated January 27, 2021), "Tackling the Climate Crisis at Home and Abroad," which includes "... ensur[ing] America and the world can meet the urgent demands of the climate crisis, while empowering American workers and businesses to lead a clean energy revolution that achieves a carbon pollution-free power sector by 2035 and puts the United States on an irreversible path to a net-zero economy by 2050."

This NOFO is not supporting or collaborating with any other agency or DOE Office. Topic Areas are described in more detail below. Generally excluded from the NOFO is the photosynthetic conversion of carbon with fuel as the primary product and the conversion of non-anthropogenic sources of CO<sub>2</sub> (e.g. enhanced weathering, biological uptake of non-concentrated atmospheric CO<sub>2</sub> whether in the atmosphere or ocean), and CO<sub>2</sub> utilization for enhanced oil recovery.

As part of the whole-of-government approach to advance equity and encourage worker organizing and collective bargaining,<sup>13,14,15</sup> and in alignment with BIL section 40302 "Carbon Utilization Program" (which amended Section 969A of the Energy Policy Act of 2005), this NOFO and any related activities will seek to encourage meaningful labor, Tribal, and community engagement and participation of labor

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<sup>13</sup> [EO 13985](#), "Advancing Racial Equity and Support for Underserved Communities Through the Federal Government," January 20, 2021. [EO 14091](#), "Further Advancing Racial Equity and Support for Underserved Communities Through the Federal Government," February 16, 2023.

<sup>14</sup> [EO 14025](#), "Worker Organizing and Empowerment," April 26, 2021.

<sup>15</sup> [EO 14052](#), "Implementation of the Infrastructure Investment and Jobs Act," November 18, 2021.

unions, as well as underrepresented persons and groups of persons and disadvantaged communities, including Federally Recognized Indian Tribes. Consistent with Executive Order (EO) 14008,<sup>16</sup> this NOFO is designed to help meet the goal that 40% of the overall benefits of certain federal investments flow to disadvantaged communities,<sup>17</sup> and to drive creation of accessible, good-paying jobs with the free and fair chance for workers to join or form a union.

## C. Program Goals and Objectives

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The Carbon Conversion Program supports ambitious decarbonization targets by enabling technologies that convert anthropogenic CO<sub>2</sub> into products such as chemicals, fuels, building materials, plastics, and bioproducts. Although significant advancements have been made in carbon conversion technologies through R&D supported by DOE, further research and development is needed to overcome the challenges and barriers to commercialization such as economics and durability at scale and adoption of these products by consumers. FECM is focused on overcoming key barriers that affect technology pathways and the ability to economically scale-up these pathways to industrially-relevant volumes. These technologies will benefit manufacturers, technology providers, and the general public by advancing commercial viability of and consumer access to more environmentally sustainable products.

The Topic Areas (TAs) in this NOFO directly seek to address the following R&D needs:

- a) Development of CO<sub>2</sub> conversion processes integrated with anthropogenic CO<sub>2</sub> capture or removal technologies, tested and verified at pilot scale, to reduce technological uncertainties and enable advancement in TRL levels.
- b) R&D on CO<sub>2</sub> conversion technologies able to utilize diverse waste streams as co-feed to produce value added products.
- c) R&D on innovative methods to reduce the carbon intensity and improve durability of conversion processes with integrated balance of plant (BOP).

Successful awards will contribute to achieving the program's goals to advance the piloting of carbon conversion technologies capable of achieving significant carbon mitigation to TRLs greater than 5 via any of the program supported pathways -biological, catalytic, or mineralization. The successful awards will also develop protocols for testing of product performance and characterization needed for market or consumer adoption along with LCA development for novel carbon conversion technologies and LCA development for pilot facilities using those technologies.

This NOFO will invest appropriations for R&D of carbon conversion technologies in four topic areas, namely:

- 1) Pilot Scale Biological Conversion;
  - 1a) Algae production, separation and conversion technologies
  - 1b) Non-photosynthetic biological CO<sub>2</sub> conversion technologies
- 2) Pilot Scale Catalytic Conversion;

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<sup>16</sup> [EO 14008](#), "Tackling the Climate Crisis at Home and Abroad," January 27, 2021.

<sup>17</sup> Pursuant to [EO 14008](#), "Tackling the Climate Crisis at Home and Abroad," January 27, 2021, and the Office of Management and Budget's [Interim Justice40 Implementation Guidance M-21-28](#) and [Addendum M-23-09](#), DOE recognizes disadvantaged communities as the census tracts identified as disadvantaged by the White House Council on Environmental Quality's Climate and Economic Justice Screening Tool (CEJST), located at <https://screeningtool.geoplatform.gov/>, as well as all Federally Recognized Tribes (whether or not they have land). See [https://www.whitehouse.gov/wp-content/uploads/2023/01/M-23-09\\_Signed\\_CEQ\\_CPO.pdf](https://www.whitehouse.gov/wp-content/uploads/2023/01/M-23-09_Signed_CEQ_CPO.pdf). DOE's Justice40 Implementation Guidance is located at <https://www.energy.gov/sites/default/files/2022-07/Final%20DOE%20Justice40%20General%20Guidance%20072522.pdf>.

- 2a) Thermochemical conversion technologies
- 2b) Electrochemical conversion technologies
- 3) Pilot Scale Mineralization; and
  - 3a Synthetic Aggregates
  - 3b Alternative Binders
  - 3c Injection, Curing, and Carbonation
- 4) Other Testing and LCA Development Required for Commercialization.
  - 4a) Performance testing and Performance Validation
  - 4b) Technical Support for carbon utilization LCA development

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

## D. Expected Performance Goals

For TA 1-3, the following performance goals, indicators, targets, baseline data, data collection, and other outcomes are expected to be achieved by all performers.

1. Increase the TRL by an increment of at least 1 from a beginning TRL of at least 5.
2. Optimization and demonstration of stable pilot scale operations at significant runtimes under real world conditions.
3. Quantification of CO<sub>2</sub> supplied to the system and optimization of the carbon efficiency of the process.
4. Integration of CO<sub>2</sub> delivery, production and separation of products.
5. Product characterization and performance testing to meet commercial standards.
6. LCA discussion, following NETL Guidance as applicable.<sup>18</sup>
7. TEA discussion, following NETL Quality Guidelines as applicable.<sup>19</sup>

The following table provides additional details on the expected targets for the performers.

Topic Areas	Beginning TRL	Ending TRL	Carbon Emission Reduction	CO <sub>2</sub> converted	Scale of Operation	Length of Operation
1	1A	5	≥50 %	N/A- meet scale needs	pilot scale – pond system area/illuminated reactor area ≥100 m <sup>2</sup> under field conditions	Minimum two- 30-day campaigns
	1B	5	≥50 %	N/A- meet scale needs	pilot scale (fermentation ≥500L) at industrial conditions	
2	2A	5	≥50 %	>1 tonne of CO <sub>2</sub> converted per day	Pilot scale production and separation of products	Minimum one test for ≥3,000 hrs under real world conditions

<sup>18</sup> NETL CO<sub>2</sub>U LCA Guidance Toolkit (<https://netl.doe.gov/LCA/CO2U>). June 17, 2022.

<sup>19</sup> NETL Quality Guidelines for Energy System Studies: Performing a Techno-Economic Analysis for Carbon Conversion Technologies (<https://netl.doe.gov/energy-analysis/details?id=5dcdf750-0620-4dde-8dba-fa42b79e333b>). June 8, 2023.

	2B	5	6	≥50 %	N/A- meet scale needs	20 kilowatts-electric (kWe) system using cells (>500 cm <sup>2</sup> active area) and stacks which are representative of what would be used commercially	Minimum one test for ≥2,000 hrs under real world conditions
3	3A	5	6	10 % (preferably >25 %)	>10 tonne per day of CO <sub>2</sub> conversion	pilot scale operation	Minimum two- 15-day test campaigns
	3B	5	6	10 % (preferably >25 %)	>10 tonne per day of CO <sub>2</sub> conversion	pilot scale operation	Minimum two- 15-day test campaigns
	3C	5	6	10 % (preferably >25 %) -	>10 tonne per day of CO <sub>2</sub> conversion	pilot scale operation	Minimum two- 15-day test campaigns

In the case of TA 4a, the performers must achieve some of the following performance outcomes, as applicable.

- 1) Identify specific testing regimes, outcomes, or scenarios needed for market or customer adoption
- 2) Show progress towards achieving performance standards prescribed by the chosen use case
- 3) Produce or scale production of products to meet minimum product quantities needed for product testing or performance testing.
- 4) Articulate the impact on commercialization or consumer adoption as a result of the proposed activities.
- 5) LCA discussion, following NETL Guidance as applicable.
- 6) TEA discussion, following NETL Quality Guidelines as applicable.

In the case of TA 4b, the performers must develop LCA tools that address some of the following, as applicable.

- 1) LCA pathways for novel carbon conversion processes
- 2) LCA comparison products systems
- 3) LCA for specific pilot or demonstration facility
- 4) LCA for novel carbon conversion technology applications for Environmental Product Declarations (EPDs) under the EPA’s labeling program

The specific performance metrics for each topic area are also provided in the relevant sections under Section E. Topic Areas

The success criteria for the 4 Topic Areas are summarized in the table below.

Success Criteria			
TA-1	TA-2	TA-3	TA-4
Demonstrate that TRL has advanced by at least one increment.	Demonstrating that the technology has achieved TRL 6.	Demonstrate that the TRL of the technology has advanced by at least one increment.	<b>TA 4a-</b> Testing completed in fulfillment of customer, project or industry requirements.
TEA and LCA commensurate with the TRL	TEA and LCA commensurate with the TRL	TEA and LCA commensurate with the TRL	<b>TA 4b</b> -LCAs completed in compliance with NETL best practices
>70% GHG reduction compared to an incumbent	Determine the environmental sustainability and economic viability of the technology and the market penetration possibilities.	>10% (preferably > 25%) GHG reduction compared to incumbent products and final product achieving economic viability.	<b>TA-4b</b> Successfully determine the expected GHG reductions of novel carbon conversion technologies.
Identify metrics such as the required CO <sub>2</sub> purchase price and determine the carbon intensity and cost of the end-product.	Metrics such as the required CO <sub>2</sub> purchase price and the avoided CO <sub>2</sub> equivalent emissions will be determined.	Metrics such as the required CO <sub>2</sub> purchase price and the carbon intensity and cost of the end-product (and comparing it to the incumbent) will be determined.	<b>TA-4b</b> Report new product baselines and comparison systems using non-proprietary sources.

## E. Topic Areas

### Topic Area 1 – “Pilot Scale Biological Conversion”

#### a. *Research Sought*

The Carbon Conversion Program supports ambitious decarbonization targets by enabling technologies that convert captured carbon dioxide (CO<sub>2</sub>) into products such as chemicals, fuels, building materials, plastics, and bioproducts. The Program explores three general categories of Carbon Conversion: 1) biological conversion 2) catalytic conversion and 3) mineralization. The goal of Topic Area 1 is to specifically focus on R&D to enable biological CO<sub>2</sub> conversion routes.

Photosynthesis relies on the sun to provide the reducing power needed to convert CO<sub>2</sub> into the organic compounds needed to sustain life. The fixation of atmospheric CO<sub>2</sub> via photosynthesis drives the process for generating most renewable carbon on the planet. This reaction can be leveraged to provide low carbon solutions for fuels, chemicals, and products through either the direct use of biomass, or by converting CO<sub>2</sub> via algal systems. The objective of Topic Area 1a (TA-1a) is to explore photosynthetic CO<sub>2</sub> conversion via algae systems at pilot scale.

The objective of TA-1a is to support projects that seek to perform pilot scale algae production, separation and conversion technologies. The algae biomass can be grown in various ways, including open raceway ponds, photobioreactors, or hybrid systems. For this Topic Area, **entities must have a pond system of at least 100 m<sup>2</sup> or a reactor system of similar illuminated area and must undertake at least two thirty-day campaigns of algae production under relevant environmental conditions.** Applicants must detail the planned isolation and conversion of algae into products and this conversion technology must be demonstrated during the project.

Alternatively, carbon fixation can also occur via chemosynthesis, where organisms get the reducing energy for carbon reduction from sources other than light. Such autotrophic organisms have the potential to act as microbial factories for converting CO<sub>2</sub> to fuels and products when supplied with hydrogen or electricity as an energy source. If the electricity or hydrogen that is supplied to such an autotrophic conversion process is clean, the resulting fuel, chemical or product can achieve a significantly reduced carbon intensity compared to an incumbent baseline. Topic Area 1b (TA-1b) is focused on piloting such non-photosynthetic routes of CO<sub>2</sub> conversion.

The objective of TA- 1b is to support pilot-scale non-photosynthetic biological CO<sub>2</sub> conversion projects for products that have a reduced carbon intensity ( $\geq 50\%$ ) relative to an incumbent. The energy required for CO<sub>2</sub> fixation can come from clean hydrogen or electricity and **applicants must conduct their fermentation work at least at 500L scale.** This topic area is targeting efforts that go beyond early-stage R&D and seeks projects aimed at improving pilot-scale microbial CO<sub>2</sub> fermentation and overcoming challenges to commercializing non-photosynthetic bioconversion.

### ***b. Technical Requirements of the Application***

For TA-1a, applications should highlight the pros and cons of their system and must clearly identify the important technoeconomic and carbon efficiency metrics they intend to achieve, including (but not limited to) water usage, harvesting efficiency, CO<sub>2</sub> delivery requirements, and carbon efficiency to algal biomass. Pilot projects that target high pH or temperature tolerant algae production, the use of wastewater to provide nutrients, and other advancements to lower cost of algae harvesting/dewatering are of interest. Applicants that leverage existing testing centers or purpose-built carbon capture pilots to provide CO<sub>2</sub> for their project are encouraged. No projects that use a carbon source other than CO<sub>2</sub> are of interest.

For TA-1a; the following technical elements must be included within the Technical Volume section of submitted Applications:

1. A process flow diagram of the subject process. This should include details such as inoculum, cultivation, harvest, and recycle loops.
2. A completed state point data table.
3. Discussion of the percentage decrease in greenhouse gas emissions of the proposed process as compared to incumbent processes.
4. Discussion of the global carbon mitigation potential if the proposed process were to be deployed at scale.

5. Discussion of process economics including (1) market size, (2) required selling price of the product, (3) gross revenue, and (4) predicted compound annual growth rate (CAGR).
6. Identification and characterization of the intended CO<sub>2</sub> source for the project, including concentration, purity, and likely contaminants.
7. Applicants must describe the rate of CO<sub>2</sub> supply (kg CO<sub>2</sub>/hr) and the carbon efficiency of the system (% of delivered CO<sub>2</sub>), in terms of both current capabilities and end-of-project targets.
8. Detailed discussion of knowledge gaps and the experiments to address these gaps.
9. Applicants must clearly define their cultivation system and discuss the current state of their technology, how the project will improve upon that state of technology, and how this improvement will enable commercialization.
10. Applicants must include their baseline biomass productivity and how their efforts will result in increasing that productivity and/or maintaining that productivity at a larger scale.
11. Applicants must clearly state the size (m<sup>2</sup> or volume) of the pond or reactor system that they are currently operating and/or the eventual scale they aim to achieve.
12. Applicants must include techno-economic analysis (TEA) and life cycle assessment (LCA) as a part of their project scope.

For TA-1b applications should highlight the pros and cons of their system and must clearly identify the important goals they intend to achieve, such as scale or reactor volume, titer/rate/yield to a targeted product, improved reactor design for optimal production, downstream processing integration (e.g., separations), and CO<sub>2</sub> efficiency or gas recycling. Projects that target a wide range of products, including fuels, chemicals or protein are of interest, as well as microbial power-to-gas approaches that leverage clean hydrogen to make synthetic natural gas. Applicants that leverage existing testing centers or purpose-built carbon capture pilots to provide CO<sub>2</sub> for their project are encouraged. No projects that use a carbon source other than CO<sub>2</sub> are of interest.

For TA-1b; the following technical elements must be included within the Technical Volume section of submitted Applications:

1. A process flow diagram of the subject process.
2. A completed state point data table.
3. Discussion of the percentage decrease in greenhouse gas emissions of the proposed process as compared to incumbent processes.
4. Discussion of the global carbon mitigation potential if the proposed process were to be deployed at scale.
5. Discussion of process economics including (1) market size, (2) required selling price of the product, (3) gross revenue, and (4) predicted compound annual growth rate (CAGR).
6. Identification and characterization of the intended CO<sub>2</sub> source for the project, including concentration, purity, and likely contaminants.
7. Applicants must describe the rate of CO<sub>2</sub> supply (kg CO<sub>2</sub>/hr) and the carbon efficiency of the system (% of delivered CO<sub>2</sub>), in terms of both current capabilities and end-of-project targets.

8. Detailed discussion of knowledge gaps and the experiments to address these gaps
9. Applicants must clearly state their target product and existing capabilities in relation to microbial host and the titer/rate/yield of the targeted products. Acceptable products include fuels, chemicals, plastics, or protein.
10. Applicants must clearly describe the metrics targeted for improvement and the targeted final scale and duration of their fermentation. Applicants are encouraged toward fermentation campaigns that are long enough to inform eventual commercialization of their technology.
11. This Topic Area is specifically targeting CO<sub>2</sub> as the sole carbon source. However, applicants that propose to use a CO<sub>2</sub>-derived C1 intermediate (i.e., carbon monoxide or formic acid) as the feedstock for their microbial fermentation are acceptable; such efforts would require the front-end generation of the C1 intermediate (e.g., via thermochemical or electrochemical CO<sub>2</sub> conversion) to be performed in this effort at the necessary scale and carbon intensity to feed the microbial conversion in an integrated manner.
12. Applicants must include technoeconomic analysis (TEA) and life cycle assessment (LCA) as a part of their project scope.

**c. *Anticipated Technology Readiness Level***

Beginning of project: TRL 5

End of project: TRL 6

**d. *Project Activities***

Projects selected under TA-1a will perform activities such as, but not limited to, those listed below:

- Algae pond cultivation in real-world conditions using anthropogenic CO<sub>2</sub> as the sole carbon source for at least two, 30-day campaigns under relevant seasonal conditions.
- Quantification and optimization of CO<sub>2</sub> supplied to the system and the carbon efficiency of the process
- Integrated algae production, harvesting and dewatering at field-scale.
- Product production, including algae biomass conversion and final product characterization.
- Preliminary Techno-economic Analysis (TEA)
- Preliminary Life Cycle Analysis (LCA)

Projects selected under TA-1b will perform activities such as, but not limited to, those listed below:

- Gas fermentation design to maximize the titer/rate/yield of a specific product during prolonged campaigns of industrial relevance
- Reactor design improvements and integration for optimal production at pilot-scale
- Extended fermentation campaigns at pilot-scale to understand and overcome the challenges of commercial CO<sub>2</sub> fermentation.
- Microbial engineering to improve carbon or energy efficiency or enhance organism robustness during commercial fermentation.

- Optimizing CO<sub>2</sub> and H<sub>2</sub> delivery into the bioreactor.
- Preliminary Techno-economic Analysis (TEA)
- Preliminary Life Cycle Analysis (LCA)

#### **e. Success Metrics**

At the end of the project, success will be measured by several outcomes. The R&D should demonstrate that TRL has advanced by at least one increment. Success will also be qualified by conducting techno-economic and life cycle analyses commensurate to the technology readiness of the proposed technology, with the objective being a >70% GHG reduction compared to an incumbent and economic viability of the proposed technology. Metrics such as the required CO<sub>2</sub> purchase price and the carbon intensity and cost of the end-product (and comparing it to the incumbent) will be determined. The results of these studies will be submitted at the end of the project.

## **Topic Area 2 – “Pilot Scale Catalytic Conversion”**

#### **a. Research Sought**

The Carbon Conversion Program supports ambitious decarbonization targets by enabling technologies that convert captured carbon dioxide (CO<sub>2</sub>) into products that such as chemicals, fuels, and plastics. This funding opportunity is focused on elevating mid-TRL CO<sub>2</sub> catalytic conversion technologies and will move the needle toward commercialization for industrially relevant catalytic processes. The goal of Topic Area 2 is to specifically focus on R&D for two subgroups: thermochemical and electrochemical CO<sub>2</sub> conversion routes.

For **Topic Area 2a** (TA-2a) (Thermochemical Conversion), research should focus on technologies and scale at TRL 5 or higher. Research should support thermochemical routes that use innovative methods to generate products from carbon dioxide at a significantly lower carbon intensity and efficiency than established pathways. Proposed research that targets catalysts/reactor performance **at pilot scale** with respect to downstream operation, separation processes and overall plant efficiency, electrical energy efficiency, and long-term stability and long-term operation will be of interest. Achieving significant run times (>3,000 hours) under real world conditions such as on/off cycling, real-world feedstocks including CO<sub>2</sub> and clean H<sub>2</sub>, and integration into existing processes will be of interest. Entities seeking to leverage innovative electric heating systems to facilitate endothermic processes are welcome.

The thermochemical conversion topic area is targeting single stage processes. This may include multifunctional or tandem catalysts restricted to a single reactor. Additionally, processes that target generating C1 intermediates via innovative thermochemical methods and then upgrading the C1 intermediates through more established routes are welcome. However, technologies that use more than one stage where the first stage produces a smaller, multi-carbon intermediate, and the next stage upgrades the intermediates to a heavier molecule will not be considered. The proposed research must compare the innovative technology with current processes and address the impact of scaleup issues related to heat and mass transfer, fluid dynamics, and pressure drop on catalyst performance to demonstrate the matching of reactors

and systems with catalyst's properties. Applicants that leverage existing testing centers or purpose-built carbon capture pilots to provide CO<sub>2</sub> for their project are encouraged. No projects that use a carbon source other than CO<sub>2</sub> are of interest.

**Topic Area 2b** (TA-2b) (Electrochemical Conversion) will support engineering-scale TRL 5 or higher of LTE (Low Temperature Electrolysis) or HTE (High Temperature Electrolysis). R&D for electrochemical conversion of Carbon Dioxide into value-added products [ideally a minimum value of \$1 per kilogram of product (\$1/kg)] with a specific focus on electrolyzer materials durability. Research should support electrochemical conversion for carbon reduction to (C1 or C2) products on complete stacks with integrated BOP (Balance of Plant). Research should address materials durability, long term performance, and selectivity while conducting medium-term tests at a nominal scale of 20kWe or greater (with individual cells having a size of 500 cm<sup>2</sup> or greater). Achieving significant run times (>2,000 hours) under real world conditions including on/off cycling, real-world feedstocks, and integration into existing processes are of interest. Proposed concepts should demonstrate lifecycle greenhouse gas emissions that are at least 10% (and preferably 25%) lower than equivalent incumbent processes.

In addition to identifying the electrochemical conversion product, applications should identify the proposed source of CO<sub>2</sub>. Acceptable CO<sub>2</sub> sources are point sources such as power plants, industrial facilities, and concentrated CO<sub>2</sub> from capture technologies (including direct air capture). Synthetic gasses that are representative of the aforementioned proposed CO<sub>2</sub> sources (e.g., temperature, pressure, composition, impurities/contaminants) are acceptable; however, actual sources are preferred. Applicants that leverage existing testing centers or purpose-built carbon capture pilots to provide CO<sub>2</sub> for their project are encouraged. No projects that use a carbon source other than CO<sub>2</sub> are of interest.

Applications should identify and discuss challenges around integration with the CO<sub>2</sub> source, and how these integration challenges would be addressed. The discussion of integration challenges should include: (1) the optimal CO<sub>2</sub> concentration; (2) practical limits on how much CO<sub>2</sub> can be utilized from any single source; (3) overall CO<sub>2</sub> mitigation potential; (4) and the ultimate fate of heavy metals and other possible flue gas impurities.

### ***b. Technical Requirements of the Application***

For TA-2a, the following technical elements must be included within the Technical Volume section of submitted Applications:

1. A block flow diagram illustrating the process flows and highlighting the elements discussed in the technical narrative, including how the system integrates with a proposed carbon source.
2. A completed state point data table.
3. Discussion of the percentage decrease in greenhouse gas emissions of the proposed process as compared to incumbent processes.
4. Discussion of the global carbon mitigation potential if the proposed process were to be deployed at scale.

5. Discussion of process economics including (1) market size, (2) required selling price of the product, (3) gross revenue, and (4) predicted compound annual growth rate (CAGR)
6. Identification and characterization of the intended CO<sub>2</sub> source for the project, including concentration, purity, and likely contaminants.
7. Applicants must describe the rate of CO<sub>2</sub> supply (kg CO<sub>2</sub>/hour) and the carbon efficiency of the system (% of delivered CO<sub>2</sub>), in terms of both current capabilities and end-of-project targets.
8. Detailed discussion of knowledge gaps and the experiments to address these gaps
9. Detailed discussion of reactor system process operations.
10. Detailed discussion of how R&D will address catalyst material and reactor system co-scale up including heat dissipation.
11. A justification of the range of gas compositions and conditions tested, including concentrations of impurities such as nitrogen, water, sulfur, and oxygen.
12. A description of the reactor system, including:
  - Reactor design and size
  - Separations unit
  - Heating system
  - Identify all process streams in a process flow diagram (P&ID not required)
  - General description of the Balance of Plant (BOP): e.g., gas pre-treatment, enclosure, and heat exchanger
13. Applicants must include techno-economic analysis (TEA) and life cycle assessment (LCA) as a part of their project scope.

For TA-2b, the following technical elements must be included within the Technical Volume section of submitted Applications:

1. A block flow diagram illustrating all of the process flows and highlighting the elements discussed in the technical narrative, including how the system integrates with a proposed carbon source.
2. A completed state point data table.
3. Discussion of the percentage decrease in greenhouse gas emissions of the proposed process as compared to incumbent processes.
4. Discussion of the global carbon mitigation potential if the proposed process were to be deployed at scale.
5. Discussion of process economics including (1) market size, (2) required selling price of the product, (3) gross revenue, and (4) predicted compound annual growth rate (CAGR)
6. Identification and characterization of the intended CO<sub>2</sub> source for the project, including concentration, purity, and likely contaminants.
7. Applicants must describe the rate of CO<sub>2</sub> supply (kg CO<sub>2</sub>/hr) and the carbon efficiency of the system (% of delivered CO<sub>2</sub>), in terms of both current capabilities and end-of-project targets.
8. Detailed discussion of knowledge gaps and the experiments to address these gaps
9. Detailed discussion of electrolyzer and stack material set durability concerns.
10. Detailed discussion of how R&D will address electrolyzer and stack material set durability.
11. A justification of the range of gas compositions and conditions tested, including concentrations of impurities such as nitrogen, water, sulfur, and oxygen.

12. A description of the  $\geq 20$  kWe medium-term stack test, including:
  - Cell size (500 cm<sup>2</sup> minimum active surface area)
  - Number of cells per stack
  - Number of stacks
  - General description of the Balance of Plant (BOP): e.g., gas pre-treatment, enclosure, inverter, separations unit, and heat exchanger
13. Applicants must include techno-economic analysis (TEA) and life cycle assessment (LCA) as a part of their project scope.

**c. *Anticipated Technology Readiness Level***

Beginning of project = TRL 5:

End of project = TRL 6:

**d. *Project Activities***

Projects selected under TA-2a will perform activities such as, but not limited to, those listed below:

- Develop a working model of the system utilizing initial laboratory-scale testing results.
- Achieving significant run times (>3,000 hours) under real world conditions such as on/off cycling, real-world feedstocks including CO<sub>2</sub> and clean H<sub>2</sub>, and integration into existing processes will be of interest.
- Applications should aim at pilot scale production and separation of products. A minimum nominal scale of one tonne of CO<sub>2</sub> conversion per day is preferred.
- Product production, characterization, and discussion of the product's value to both manufacturers and consumers.
- Detailed process description of the resulting technology, including reactor design, heat integration, material set durability, carbon source integration, process flow diagram, balance of plant.
- Identification of a commercialization pathway highlighting technical hurdles, potential permitting steps, and known external factors.
- Reporting of potential co-benefits or negative impacts the proposed pathway could have on local communities, including communities with environmental justice concerns.
- LCA discussion, following NETL Guidance as applicable.
- TEA discussion, following NETL Quality Guidelines as applicable.

Projects selected under TA-2b will perform activities such as, but not limited to, those listed below:

- Laboratory-scale testing at the cell and stack level utilizing synthetic gasses that are representative of the proposed carbon source (e.g., temperature, pressure, composition, impurities/contaminants).
- Develop a working model of the system utilizing initial laboratory-scale testing results.
- Medium-term testing (at least one test with a minimum of 2000 cumulative hours) at the scale of a  $\geq 20$  kilowatts-electric (kWe) system using cells and stacks which are

- representative of what would be used commercially (i.e., the 20 kWe system should represent a smaller building block of a larger system).
- Product production, characterization, and discussion of the product’s value to both manufacturers and consumers.
  - Detailed process description of the resulting technology, including electrolyzer and stack material set durability, carbon source integration, process flow diagram, balance of plant.
  - Identification of a commercialization pathway highlighting technical hurdles, potential permitting steps, and known external factors.
  - LCA discussion, following NETL Guidance as applicable.
  - TEA discussion, following NETL Quality Guidelines as applicable.

#### **e. Success Metrics**

At the end of the project, success will be quantified by a test demonstrating that the technology has achieved TRL 6. Success will also be qualified by conducting life cycle and techno-economic analyses commensurate to the technology readiness of the proposed technology, as informed by the results of testing. The objective of the analyses is to determine the environmental sustainability and economic viability of the proposed technology and the market penetration possibilities. Metrics such as the required CO<sub>2</sub> purchase price and the avoided CO<sub>2</sub> equivalent emissions will be determined. The results of these studies will be submitted at the end of the projects in the project deliverables.

### **Topic Area 3 – “Pilot Scale Mineralization”**

#### **a. Research Sought**

The Carbon Conversion Program supports ambitious decarbonization targets by enabling technologies that convert anthropogenic carbon dioxide (CO<sub>2</sub>) into products such as chemicals, fuels, building materials, plastics, and bioproducts. Anthropogenic carbon dioxide is defined as that which is created or concentrated through human activity (e.g., DAC sources are acceptable). Mineralization enables sectors of the economy to lower their carbon intensity by leveraging CO<sub>2</sub> as a feedstock<sup>20</sup>. The goal of Topic Area 3 is to support R&D of pilot scale (nominally 10 tonne CO<sub>2</sub> per day) of mineralization-based CO<sub>2</sub> conversion routes.

Mineralization is appealing as a carbon conversion pathway because it can apply at the gigatonne scale, while requiring relatively modest energy input. In support of this pathway, Topic Area 3 will support R&D of pilot-scale mineralization technologies to convert anthropogenic carbon dioxide to durable building products. This NOFO will support R&D under three areas; Topic Area 3a (Synthetic Aggregates), Topic Area 3b (Alternative Binders), and Topic Area 3c (Injection, Curing, and Carbonation). Under Topic Area 3a, 3b, and 3c, applicants that

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<sup>20</sup> NAS Report, Table 2-1 (p34) global scale of CO<sub>2</sub> conversion for concrete (32Gt) and aggregates (119Gt) in 2050.

leverage existing testing centers or purpose-built carbon capture pilots to provide CO<sub>2</sub> for their project are encouraged.

For Topic Area 3a (Synthetic Aggregates), research should focus on technologies at TRL 5 or higher. Research should support the production of synthetic aggregates with at least 10% (preferably > 25%) reduction in GHGs compared to incumbents. Proposed research should identify specific end-uses, performance specifications, and relevant performance testing for the synthetic aggregate. Approaches of interest include, but are not limited to, increasing the carbonation efficiency, using alkaline industrial wastes to produce synthetic aggregates, validating aggregates via performance testing, and reducing the costs of production. A minimum nominal scale of 10 tonne/day of CO<sub>2</sub> conversion is preferred.

For Topic Area 3b (Alternative Binders), research should focus on technologies at TRL 5 or higher. Research should support the development of alternative, environmentally friendly, and economically sustainable binders which incorporate carbon for concrete or masonry production. Proposed research should yield performance equivalent to incumbent concretes (e.g., strength development and durability) produced with Ordinary Portland Cement. Research should support the production of alternative binders with at least 10% (preferably > 25%) reduction in GHGs compared to incumbents. Approaches of interest include but are not limited to, carbonation of industrial wastes or minerals and carbonation of alkaline streams from concrete recycling (e.g. cement paste). A minimum nominal scale of 10 tonne/day of CO<sub>2</sub> conversion is preferred.

For Topic Area 3c (Injection, Curing, and Carbonation), research should focus on technologies at TRL 5 or higher. Research should address systems integration to optimize the mineralization process with different sources of carbon dioxide. Research should investigate reaction conditions that lead to optimized process parameters (e.g. CO<sub>2</sub> concentration, temperature/humidity, microstructure, etc.), ensuring the product's performance meets end-use requirements from scaled-up operations. Research should support the production of concrete with at least 10% (preferably > 25%) reduction in GHGs compared to incumbents. Approaches of interest include but are not limited to, fast diffusion of CO<sub>2</sub> into the bulk material, curing pre-cast pieces from the green state, and approaches that minimize pH changes and volumetric shrinkage. A minimum nominal scale of 10 tonne/day of CO<sub>2</sub> conversion is preferred.

Research Scope/Attributes that are Not of Interest:

- Conversion of non-anthropogenic sources of CO<sub>2</sub> (e.g. uptake of non-concentrated atmospheric CO<sub>2</sub> whether in the atmosphere or ocean)
- Support for R&D of technologies with a TRL lower than five
- CO<sub>2</sub> transport and geological storage
- Enhanced Oil Recovery (EOR)
- Solid carbonate products for clean fill and back fill applications
- Approaches where mineralization occurs after the product is placed into service

### ***b. Technical Requirements of the Application***

For Topic Areas 3a, 3b, and 3c; the following technical elements must be included within the Technical Volume section of submitted Applications:

1. A process flow diagram of the subject process.
2. A completed state point data table.
3. Discussion of the percentage decrease in greenhouse gas emissions of the proposed process as compared to incumbent processes.
4. Discussion of the global carbon mitigation potential if the proposed process were to be deployed at scale.
5. Discussion of process economics including (1) market size, (2) required selling price of the product, (3) gross revenue, and (4) predicted compound annual growth rate (CAGR)
6. Identification and characterization of the intended CO<sub>2</sub> source for the project, including concentration, purity, and likely contaminants.
7. Applicants must describe the rate of CO<sub>2</sub> supply (kg CO<sub>2</sub>/hour) and the carbon efficiency of the system (% of delivered CO<sub>2</sub>), in terms of both current capabilities and end-of-project targets.
8. Detailed discussion of knowledge gaps and the experiments to address these gaps.
9. Specify the R&D tasks that will advance the technology to a TRL of 5 or 6.
10. Identify the technical performance targets for the product and discuss how these targets will be quantified and how they compare to incumbent products.
11. Identify technical integration challenges with the commercial scale CO<sub>2</sub> source.
12. Description of the source of alkalinity if proposing a synthetic aggregate (3a) or alternative binder (3b).
13. Description of techniques to address pH changes or volumetric shrinkage if proposing CO<sub>2</sub> injection, curing, or carbonation (3c).
14. Applicants must plan to perform ongoing TEA and LCA during the project, using NETL guidance documents and tools.

**c. *Anticipated Technology Readiness Level***

Beginning of project: TRL 5

End of project: TRL 6

**d. *Project Activities***

Projects selected under TA-3a will perform activities such as, but not limited to, those listed below:

- Research should focus on technologies at TRL 5 or higher.
- Research should support the production of synthetic aggregates with at least 10% (preferably > 25%) reduction in GHGs compared to incumbents.
- Proposed research should identify specific end-uses, performance specifications, and relevant performance testing for the synthetic aggregate.
- Approaches of interest include, but are not limited to, increasing the carbonation efficiency, using alkaline industrial wastes to produce synthetic aggregates, validating aggregates via performance testing, and reducing the costs of production.
- A minimum nominal scale of 10 tonne/day of CO<sub>2</sub> conversion is preferred.
- LCA and TEA discussion, following NETL Guidance as applicable.

Projects selected under TA-3b will perform activities such as, but not limited to, those listed below:

- Research should focus on technologies at TRL 5 or higher.
- Research should support the development of alternative, environmentally friendly, and economically sustainable binders which incorporate carbon for concrete or masonry production.
- Proposed research should yield performance equivalent to incumbent concretes (e.g., strength development and durability) produced with Ordinary Portland Cement.
- Research should support the production of alternative binders with at least 10% (preferably > 25%) reduction in GHGs compared to incumbents.
- Approaches of interest include but are not limited to, carbonation of industrial wastes or minerals and carbonation of alkaline streams from concrete recycling (e.g. cement paste).
- A minimum nominal scale of 10 tonne/day of CO<sub>2</sub> conversion is preferred.
- LCA and TEA discussion, following NETL Guidance as applicable.

Projects selected under TA-3c will perform activities such as, but not limited to, those listed below:

- Research should focus on technologies at TRL 5 or higher.
- Research should address systems integration to optimize the mineralization process with different sources of carbon dioxide.
- Research should investigate reaction conditions that lead to optimized process parameters (e.g. CO<sub>2</sub> concentration, temperature/humidity, microstructure, etc.), ensuring the product's performance meets end-use requirements from scaled-up operations.
- Research should support the production of concrete with at least 10% (preferably > 25%) reduction in GHGs compared to incumbents.
- Approaches of interest include but are not limited to, fast diffusion of CO<sub>2</sub> into the bulk material, curing pre-cast pieces from the green state, and approaches that minimize pH changes and shrinkage.
- A minimum nominal scale of 10 tonne/day of CO<sub>2</sub> conversion is preferred.
- LCA and TEA discussion, following NETL Guidance as applicable.

#### **e. Success Metrics**

The R&D should demonstrate that the TRL of the technology has advanced by at least one increment. Success will also be qualified by conducting techno-economic and life cycle analyses commensurate to the technology readiness of the proposed technology, with the objective being a greater than 10% (preferably greater than 25%) GHG reduction compared to incumbent products and final product achieving economic viability. Metrics such as the required CO<sub>2</sub> purchase price and the carbon intensity and cost of the end-product (and comparing it to the incumbent) will be determined. The results of these studies will be submitted at the end of the project.

## Topic Area 4 – “Other Testing and LCA Development Required for Commercialization”

### *a. Research Sought*

In addition to critical technological challenges, many emerging carbon conversion and utilization products require additional testing and product characterization to enable widespread market adoption. Such performance testing and the resulting data is often required by prospective customers and during competitive purchasing and procurement processes, however the facilities, time and materials cost to perform the testing may be cost prohibitive for small businesses or emerging companies.

Topic Area 4a will provide support to applicants for performance testing in specific environments, production of sufficient quantities of material required for testing, performance validation support, and specific tests required as a prerequisite for participation in competitive purchasing and procurement processes. Anthropogenic carbon oxide sources are acceptable under Topic Area 4a. Anthropogenic carbon oxides are defined as carbon dioxide and carbon monoxide emissions concentrated through human activity, such as power and industrial operations, as well as legacy emissions already present within the atmosphere that have been concentrated through capture technologies (e.g., direct air capture).

Applications with specific consumer or offtaker testing requirements that provide a letter of intent to purchase the product being tested are of interest. Projects demonstrating technologies at TRL >6 that are in early-stage development and testing in support of specific industry standards (e.g., ACI, ASTM, AASHTO) are also of interest. Applicants should clearly articulate the impact on commercialization or consumer adoption as a result of the proposed activities. Applicants that leverage existing testing centers or purpose-built carbon capture pilots to provide CO<sub>2</sub> for their project are encouraged.

Topic Area 4b will provide support to applicants seeking to develop novel carbon utilization LCA pathways, develop LCAs for a specific pilot of demonstration facility producing carbon utilization products, and support work such as data collection and analysis needed for LCA inputs or baseline product comparisons.

Robust LCA development for new and emerging carbon utilization and conversion pathways is critical for resulting products to unlock additional market incentives which may include various tax incentives such as 45Q and 45Y, and transparency and disclosure tools such as environmental product declarations (EPDs). Improving data availability and comparison product systems for emerging conversion pathways and products is also an important tool for advancing and expediting LCA processes. Anthropogenic carbon oxide sources are also acceptable under Topic Area 4b.

Research should address LCA pathways for novel technologies at TRL greater than 5, specific LCA development for pilot facilities (TRL greater than 6) exhibiting carbon conversion technologies; and LCA work to aid in novel carbon conversion technology applications for EPDs under the EPA’s

Label Program for Low Embodied Carbon Construction Materials.<sup>21</sup> Proposed non-fuel products and pathways should be able to reduce carbon emissions compared to an existing product by at least 10%, and preferably by at least 25%. Proposed fuel products and pathways should be able to reduce carbon emissions compared to an existing product by at least 50%.

All work should conform to NETL's CO<sub>2</sub>U LCA toolkit best practices.<sup>22</sup> Where existing Product Category Rules (PCRs) apply, differences between the PCR, the EPA labeling program PCR guidance, and the NETL CO<sub>2</sub>U LCA toolkit should be noted and discussed. Guidelines for transparency and model submission must follow the CO<sub>2</sub>U LCA toolkit.<sup>23</sup>

Applications not of interest include:

- R&D on lab-based research, technical or technological challenges;
- LCA on early-stage or theoretical carbon conversion processes; technologies or processes earlier than TRL 5;
- Additional permitting or regulatory analysis required for pilot or demonstration project approvals;
- Materials screening (computational or experimental) of novel catalysts, membrane or electrochemical materials;
- Early-stage testing and performance characterization of products with TRLs earlier than 5.

### ***b. Technical Requirements of the Application***

For TA-4a, the following technical elements must be included within the Technical Volume section of submitted Applications:

1. Description of the proposed testing, why it is required, and a discussion of the direct impact expected on commercialization for the proposed product or technology
2. Description of the carbon emissions source and how it meets the applicable definition of "anthropogenic carbon oxides."
3. Preliminary LCA discussion, following NETL Guidance as applicable, with discussion of the below elements:
  - Environmental sustainability of the proposed technology, including potential impacts on public health
  - Potential reductions in greenhouse gas emission with comparison to incumbent processes
  - Calculated metrics for the required CO<sub>2</sub> purchase price and the avoided CO<sub>2</sub> equivalent emissions
4. Preliminary TEA discussion, following NETL Quality Guidelines as applicable, with discussion of the below elements:
  - Market size
  - Required selling price of the product
  - Gross revenue

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<sup>21</sup> [C-MORE Grant Program: Reducing Embodied Greenhouse Gas Emissions for Construction Materials and Products | US EPA](#)

<sup>22</sup>

<sup>23</sup> [Carbon Dioxide Utilization | netl.doe.gov](#)

- Predicted compound annual growth rate (CAGR) of the market
  - Potential CO<sub>2</sub> mitigation potential
5. Discussion of the percentage decrease in greenhouse gas emissions of the proposed product as compared to incumbent products.
  6. Discussion of the global carbon mitigation potential if the proposed product were to be available at scale.
  7. Discussion of process economics including (1) market size, (2) required selling price of the product, (3) gross revenue, and (4) predicted compound annual growth rate (CAGR)
  8. Identification and characterization of the intended CO<sub>2</sub> source for the product, including concentration, purity, and likely contaminants.

For TA 4b, the following technical elements must be included within the Technical Volume section of submitted Applications:

1. Preliminary LCA discussion, following NETL Guidance as applicable, with discussion of the below elements:
  - Environmental sustainability of the proposed technology, including potential impacts on public health
  - Potential reductions in greenhouse gas emission with comparison to incumbent processes
  - Calculated metrics for the required CO<sub>2</sub> purchase price and the avoided CO<sub>2</sub> equivalent emissions
2. Preliminary TEA discussion, following NETL Quality Guidelines as applicable, with discussion of the below elements:
  - Market size
  - Required selling price of the product
  - Gross revenue
  - Predicted compound annual growth rate (CAGR) of the market
  - Potential CO<sub>2</sub> mitigation potential
3. Discussion of data gaps or challenges for completing product baselines, and how they will be addressed via the project.
4. Discussion of the percentage decrease in greenhouse gas emissions of the proposed product as compared to incumbent products.
5. Discussion of the global carbon mitigation potential if the proposed product or process was adopted at scale.
6. Discussion of process economics including (1) market size, (2) required selling price of the product, (3) gross revenue, and (4) predicted compound annual growth rate (CAGR)
7. Identification and characterization of the intended CO<sub>2</sub> source for the product, including concentration, purity, and likely contaminants.

**c. *Anticipated Technology Readiness Level***

Beginning of project: 5 or higher  
End of project: 5 or higher

#### **d. Project Activities**

Projects selected under TA-4a will perform activities such as, but not limited to, those listed below:

- Specific testing regimes, outcomes, or scenarios needed for market or customer adoption
- Conducting performance testing to show progress toward performance standards such as strength, durability, elasticity, etc.
- Conducting testing to meet performance standards prescribed by a particular use case, project, or customer (for example, ACI, ASTM, AASHTO),
- Conducting performance testing which requires specialized equipment, location, relevant environment, or technical expertise unique to the product being tested or a project's proposed use
- Producing or scaling production of products to meet minimum product quantities needed for product testing or performance testing, including for specific piloting projects.
- LCA and TEA discussion, following NETL Guidance as applicable.

Projects selected under TA-4b will perform activities such as, but not limited to, those listed below:

- Development of LCA pathways for novel carbon conversion and utilization technologies or processes, including integration with real-world carbon point source capture or direct air capture facilities
- Development of LCA comparison product systems using non-proprietary data. Development of comparison systems should also follow NETL guidelines as outlined for applicants to the 45Q tax credit for carbon utilization.<sup>24</sup>
- LCA development for specific pilot or demonstration facilities demonstrating carbon conversion technologies outlined in Topic Areas 1-3
- Life cycle analysis work to aid in novel carbon conversion technology applications for EPDs under the EPA's labeling program. Applicants which have previously received support under the EPA's "Grant Program for Reducing Embodied Greenhouse Gas Emissions for Construction Materials and Products" are not eligible under this Topic Area.
- TEA discussion, following NETL Guidance as applicable.

#### **e. Success Metrics**

At the end of the project, success will be measured in several ways for each topic area. Under Topic Area 4a, success metrics will include whether testing was completed in fulfillment of customer, project or industry requirements. The results of those tests will be submitted at the end of the project. Topic Area 4b success metrics will include if LCAs were completed in compliance with NETL best practices and successfully determined the expected GHG reductions

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<sup>24</sup> See, 26 CFR § 1.45Q-4 Utilization of Qualified Carbon Oxide.

of novel carbon conversion technologies. New product baselines and comparison systems using non-proprietary sources may also be developed, with that data reported at the conclusion of the project.

## F. Applications Specifically Not of Interest

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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 for proposed technologies that are not based on sound scientific principles (e.g., violates the laws of thermodynamics).
- CO<sub>2</sub> utilization technologies that target enhanced oil recovery (EOR) and algae to fuel synthesis.
- Conversion of non-anthropogenic sources of CO<sub>2</sub>.
- Pre-combustion CO<sub>2</sub> capture technologies.
- Post combustion CO<sub>2</sub> capture or direct air capture technology development.
- CO<sub>2</sub> compressor development.
- CO<sub>2</sub> geologic storage.
- Biological sequestration.
- Applications primarily addressing optimization of balance of plant components.
- Applications primarily addressing long term operation issues caused by availability issues of balance of plant components.

## G. Statement of Substantial Involvement

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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

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DOE Organization Act, 42 U.S.C. § 7101, et seq. (Public Law 95-91), as amended.  
Section 40302 "Carbon Utilization Program" (which amended Section 969A of the Energy Policy Act of 2005) of the BIL (codified at 42 U.S.C. § 16298a ).

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**

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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 BIL NOFO are expected to (1) advance diversity, equity, inclusion, and accessibility (DEIA); (2) contribute to the Justice40 Initiative<sup>25</sup> and other considerations linked with 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.

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<sup>25</sup> The Justice40 initiative, established by [EO 14008](#), sets a goal that 40% of the overall benefits of certain federal investments flow to disadvantaged communities. Consistent with Justice40 guidance, DOE recognizes disadvantaged communities as the census tracts defined and identified as disadvantaged by the White House Council on Environmental Quality's Climate and Economic Justice Screening Tool (CEJST), located at <https://screeningtool.geoplatform.gov/>, as well as all Federally Recognized Tribes (whether or not they have land). See [https://www.whitehouse.gov/wp-content/uploads/2023/01/M-23-09\\_Signed\\_CEQ\\_CPO.pdf](https://www.whitehouse.gov/wp-content/uploads/2023/01/M-23-09_Signed_CEQ_CPO.pdf).

## 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 a single submission phase: application.

Application Submission Phase	Eligibility for Submission
Application	Must be submitted by the specified due date and time to be eligible for comprehensive merit review.

### B. 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.

## Summary of Application Requirements

Component	File Format	Page Limit	File Name
Application for Federal Assistance (SF-424)	Form	N/A	N/A
Technical Volume	PDF	[25]	TechnicalVolume.pdf
Letters of Commitment	PDF	1 page each	LOC.pdf
Impacted Indian Tribes Documentation, if applicable	PDF	N/A	ImpactedTribes.pdf
Statement of Project Objectives	MS Word	[10]	SOPO.doc or .docx
Project Management Plan	PDF	[10]	PMP.pdf
Budget Information Non-Construction Programs (SF-424A)	MS Excel	N/A	SF-424A.xls or .xlsx
Budget Justification Workbook	MS Excel	N/A	Budget_Justification.xls or .xlsx
Subrecipient Budget Justification	MS Excel	N/A	Subrecipient_Budget_Justification.xls or .xlsx
Work Proposal for FFRDC, as applicable (see <a href="#">DOE O 412.1A</a> )	PDF	N/A	WP.pdf
Authorization for Non-DOE or DOE FFRDCs	PDF	N/A	FFRDCAuth.pdf
Waiver for Foreign Entity Participation , as applicable	PDF	N/A	FEW.pdf
Performance of Work in the United States (Foreign Work Waiver)	PDF	N/A	FWW.pdf
Community Benefits Plan for Research and Development (R&D)	PDF	[5]	CBP.pdf
Resumes (Research and Development (R&D))	PDF	3 pages each	Resumes.pdf
Current and Pending Support (for each covered individual)	PDF	N/A	CPS.pdf
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_TFC.pdf
Potentially Duplicative Funding Notice	PDF	N/A	PDFN.pdf
Data Management Plan	PDF	N/A	DMP.pdf
Project/Performance Site Location(s)	Form	N/A	N/A

<b>Environmental Questionnaire</b>	PDF	N/A	ENV.pdf
<b>Disclosure of Lobbying Activities, if applicable (SF-LLL)</b>	PDF	N/A	SF-LLL.pdf
<b>Certification Regarding Lobbying (OMB 4040-0013)</b>	PDF	N/A	Cert Lobbying.pdf
<b>Summary for Public Release</b>	PDF	1	Summary.pdf
<b>Summary Slide</b>	MS Power Point	1	Slide.pdf
<b>State Point Data Table</b>	PDF	N/A	SPDT.pdf

## 2. 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 25 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.

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
- Technical and business POCs (e-mail addresses and telephone numbers)
- Senior/key personnel and other covered individuals
- The project team, including recipient name, entity type and names of all team member organizations, and names of project managers
- The project location(s)
- The proposed total federal funding level, cost share and period of performance
- The proposed federal funding level and cost share for each project participant

- Statements regarding confidentiality

**Table of Contents:** Applicant to capture, at a minimum, all of the required sections identified in this table.

#### **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:** This section should provide a clear, concise statement of the specific objectives/aims of the proposed project. 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 section should be formatted to address all the subcriteria under Merit Review Criterion 1 (Scientific and Technological Merit). 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. The Applicant should also identify and discuss knowledge gaps and key technical challenges for the proposed technology
- **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, the carbon uptake and carbon efficiency of the proposed technology, and the overall impact on advancing the state-of-the-art/technical baseline if the project is successful. The justification for the proposed project should include a clear statement of the importance of the project in terms of the utility of the outcomes and the target community of beneficiaries.
- For TA 1, 2 and 3, Preliminary Life Cycle and Techno-economic Analyses (LCA & TEA): The applicant should present a high-level LCA and TEA discussion. The LCA should include a discussion of the environmental sustainability of the proposed technology and the potential reductions in greenhouse gas emissions, with a comparison to incumbent processes, and calculated metrics for the required CO<sub>2</sub> purchase price and the avoided CO<sub>2</sub> equivalent emissions. The TEA should include (1) market size, (2) required selling price of the product, (3)

gross revenue, (4) predicted compound annual growth rate (CAGR) of the market, and (5) potential CO<sub>2</sub> mitigation potential.

### **Workplan (Approximately 40% of the Technical Volume)**

The Workplan should be formatted to address all subcriteria under Merit Review Criterion 2 (Technical Approach and Understanding), when those criteria are not already addressed in other required documents, i.e., documents that are required to be submitted under unique file names and have stated page limits. Additionally, 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) and Project Management Plan (PMP) are 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. 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 PMP
- **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.
- **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 summarize 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.

## C. 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
<b>Allowable Costs</b>	NOFO Part 2	Applicable to awards made under this NOFO
<b>Pre-Award Costs</b>	NOFO Part 2	Applicable to awards made under this NOFO
<b>Performance of Work in the United States (Foreign Work Waiver Requirement)</b>	NOFO Part 2	Applicable to awards made under this NOFO
<b>Foreign Travel</b>	NOFO Part 2	Foreign Travel is not allowed for awards made under this NOFO
<b>Lobbying</b>	NOFO Part 2	Applicable to awards made under this NOFO
<b>Equipment and Supplies</b>	NOFO Part 2	Purchasing American-made equipment and supplies is applicable to this award.
<b>Davis-Bacon Act Requirements</b>	NOFO Part 2	Applicable to awards made under this NOFO
<b>Construction Signage</b>	NOFO Part 2	Applicable to awards with construction activities made under this NOFO
<b>Build America Buy America Requirements for Infrastructure Projects</b>	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

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#### 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. FedConnect

Register in FedConnect at <https://fedconnect.net>. For more information about the registration requirements, review the FedConnect Ready, Set, Go! Guide at [https://www.fedconnect.net/FedConnect/Marketing/Documents/FedConnect\\_Ready\\_Set\\_Go.pdf](https://www.fedconnect.net/FedConnect/Marketing/Documents/FedConnect_Ready_Set_Go.pdf). The SAM and UEI must be obtained before this registration can be initiated.

#### 3. Grants.gov

Register in Grants.gov at <https://www.grants.gov/register> to set up your Workspace and to receive automatic updates when amendments to the NOFO are posted. Doing so requires a Login.gov registration as well. An applicant cannot submit an application through Grants.gov unless registered. See step-by-step instructions for applicants at How to Apply for Grants website at <https://www.grants.gov/applicants/grant-applications/how-to-apply-for-grants>.

## B. Application Package

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### 1. Grants.gov

The application package requirements are outlined in the [Application Content and Form](#) section above. The application package forms for application requirements are included in Grants.gov. The application forms and instructions are available on Grants.gov at <https://www.grants.gov/> under the NOFO number identified on the NOFO Cover Page.

Note: The maximum file size that can be uploaded to the Grants.gov 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.

#### **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 Grants.gov, constitutes the authorized representative's approval and electronic signature.

## C. Submission Date and Times

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All required submissions must be submitted to the Grants.gov 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 Grants.gov 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

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

# VI. Application Review Information

## A. Standards for Application Evaluation

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Applications that are determined to be eligible will be evaluated in accordance with this NOFO, 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

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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

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### 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 Grants.gov 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 Grants.gov site indicated in [Key Facts](#), submissions submitted after the applicable deadline, or incomplete submissions.

**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 Grants.gov 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

#### ***Applications***

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

The following evaluation criteria will be utilized by the Technical Evaluation Committee and Federal Merit Review Panel members in conducting their evaluations of applications subjected to comprehensive merit review.

Review Criterion Overview	
Criterion	Weight
Criterion 1: Scientific and Technological Merit	40%
Criterion 2: Technical Approach and Understanding	25%
Criterion 3: Technical and Management Capabilities	20%
Criterion 4: R&D Community Benefits Plan	15%

**Criterion 1: Scientific and Technological Merit (40%)**

- Thoroughness of the description of the proposed technology and degree to which the proposed technology or methodology meets the stated objectives of the Topic Area.
- Degree to which the Applicant comprehensively advances arguments and provides details that clearly distinguishes the proposed R&D and why it is needed now relative to prior work.
- Feasibility of the proposed concept; the degree to which the proposed work is based on sound scientific and engineering principles.
- Quality and completeness of preliminary life cycle analysis discussing environmental sustainability of the proposed technology.
- Quality and completeness of the preliminary techno-economic analysis of the product in its intended end use application, including (1) market size, (2) required selling price of the product, (3) gross revenue, (4) predicted compound annual growth rate (CAGR) of the market, and (5) potential CO<sub>2</sub> mitigation potential.
- Degree to which the applicant conveys its understanding of the requirements to interface/integrate the proposed technology with the proposed CO<sub>2</sub> source.
- Degree to which the proposed technology utilizes CO<sub>2</sub> in the product, including carbon uptake and carbon efficiency.
- Degree to which the block flow diagram illustrates how the CO<sub>2</sub> is converted into the final product, including a quantification of process inputs and outputs for both material and energy of the process.
- Degree to which non-fuel products offer at least a 10% (preferably 25%) reduction in GHG emissions as compared to incumbent products.
- Degree to which fuel products offer at least a 50% reduction in GHG emissions as compared to incumbent products.

**Criterion 2: Technical Approach and Understanding (25%)**

- Adequacy and feasibility of the Applicant’s approach to achieving the objectives of the Topic Area.
- Feasibility, appropriateness, rationale, and completeness of the proposed Statement of Project Objectives, such that there is a logical progression of work.
- The adequacy and completeness of the Project Management Plan (PMP) in establishing baselines (technical scope, budget, schedule) and in managing project performance relative to those baselines; defining the actions that will be taken when these baselines must be revised; and identification of project risks and strategies for mitigation.

Adequacy of linkage between technical risks and tasks included in the SOPO.

**Criterion 3: Technical and Management Capabilities (20%)**

- Demonstrated experience of the applicant and partnering organizations in the technology areas addressed in the application and in managing projects of similar size, scope, and complexity.
- Credentials, capabilities, and experience of key personnel and partnering organizations, including experience in biological conversion (Topic Area 1), catalytic conversion (Topic Area 2), Mineralization (Topic Area 3), and Testing and LCA development (Topic Area 4).
- Clarity and likely effectiveness of the project organization, including sub-recipients or partners, to successfully complete the project.
- Adequacy and availability of proposed personnel, facilities, and equipment to perform project tasks.

**Criterion 4: R&D Community Benefits Plan (15%)****Diversity, Equity, Inclusion, and Accessibility (DEIA)**

1. Clear articulation of the project's goal 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 applicant's commitment and ability to track progress towards meeting each of the diversity, equity, inclusion, and accessibility goals; and
4. Extent of engagement of organizations that represent underserved communities as a core element of their mission, including MSIs, Minority Business Entities, and non-profit or community-based organizations.

**Energy Equity**

1. Clear workplan tasks, staffing, research, and timeline for engaging energy equity 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 the public health and public prosperity benefits;
2. Approach, methodology, and expertise articulated in the plan for addressing energy equality and justice issues 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.

**Workforce Implications**

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 United States 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.

## D. Other Selection Factors

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In addition to the above criteria, the program 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.

## 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

Notice of Bipartisan Infrastructure Law OR Inflation Reduction Act Specific Requirements	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
Program Down-Select	NOFO Part 1
Cybersecurity Plan	NOFO Part 1
Rights in Technical Data	NOFO Part 1
Energy Data eXCHANGE	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. In addition, pursuant to the FY23 Consolidated Appropriations Act (Pub. L. No. 117-328), Division D, Title III, Section 309, at the end of the award period the Secretary or a designee of the Secretary, at their discretion, may vest unconditional title or other property interests acquired under this project regardless of the fair market value of the property.

## 2. Cybersecurity Plan

In accordance with BIL section 40126, applicants selected for award negotiations must submit a cybersecurity plan to DOE prior to receiving funding.<sup>26</sup> These plans are intended to foster a cybersecurity-by-design approach for BIL efforts. The Department will use these plans to ensure effective integration and coordination across its research, development, and demonstration programs. A cybersecurity plan is **not** required as part of the application submission for this NOFO, but all projects

<sup>26</sup> 42 U.S.C. § 18725

selected under this NOFO will be required to submit a cybersecurity plan during the award negotiation phase.

DOE recommends using open guidance and standards, such as the National Institute of Standards and Technology's (NIST) Cybersecurity Framework (CSF) and the DOE Cybersecurity Capability Maturity Model (C2M2).<sup>27</sup> The cybersecurity plan created pursuant to BIL section 40126 should document any deviation from open standards, as well as the utilization of proprietary standards where the awardee determines that such deviation is necessary.

Please note:

- Cybersecurity plans should be commensurate to the threats and vulnerabilities associated with the proposed efforts and demonstrate the cybersecurity maturity of the project.
- Cybersecurity plans may cover a range of topics relevant to the proposed project—e.g., software development lifecycle, third-party risks, and incident reporting.
- At a minimum, cybersecurity plans should address questions noted in BIL section 40126 (b), Contents of Cybersecurity Plan.<sup>28</sup>

Supplementary guidance on the cybersecurity plan requirement is available at <https://www.energy.gov/ceser/bipartisan-infrastructure-law-implementation>.

### 3. 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

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<sup>27</sup> NERC critical infrastructure protection (CIP) standards for entities responsible for the availability and reliability of the bulk electric system. NIST IR 7628: 2 Smart grid cyber security strategy and requirements. NIST SP800-53, Recommended Security Controls for Federal Information Systems and Organizations: Catalog of security controls in 18 categories, along with profiles for low-, moderate-, and high-impact systems. NIST SP800-82, Guide to Industrial Control Systems (ICS) Security. NIST SP800-39, Integrated Enterprise-Wide Risk Management: Organization, mission, and information system view. AMI System Security Requirements: Security requirements for advanced metering infrastructure. ISO (International Organization for Standardization) 27001, Information Security Management Systems: Guidance on establishing governance and control over security activities (this document must be purchased). IEEE (Institute of Electrical and Electronics Engineers) 1686-2007, Standard for Substation Intelligent Electronic Devices (IEDs) Cyber Security Capabilities (this document must be purchased). DOE Cybersecurity Capability Maturity Model (C2M2).

<sup>28</sup> 42 U.S.C. § 18725

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.

#### 4. 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).

#### 5. Energy Data eXchange (EDX) Requirements

The DOE is required to improve access to federally funded research results, proper archiving of digital data, and expanded discovery and reuse of research datasets per DOE and Executive Orders. The Energy Data eXchange (EDX) is a data laboratory developed and maintained by NETL to find, connect, curate, use, and re-use data to advance fossil energy and environmental research and development (R&D).

Data products generated under the resulting award will be required to be submitted in the EDX at <https://edx.netl.doe.gov/>. Data products include but are not limited to software code, tools, applications, webpages, portfolios, images, videos, and datasets.

EDX uses federation and web services to elevate visibility for publicly approved assets in the system, including connections with DOE's Office of Scientific and Technical Information (OSTI) systems, Data.gov, and Re3Data. This ensures compliance with federal requirements, while raising visibility for researcher's published data products to promote discoverability and reuse.

EDX supports a wide variety of file types and formats including: 1) data, 2) metadata, 3) software/tools, and 4) articles (provided that there is an accompanying Government use license). A partial list of file formats accepted by EDX is provided below, however, EDX is designed for flexibility and accepts all types of file formats.

- Common Data Product Submission Formats: ASC, AmiraMesh, AVI, CAD, CSV, DAT, DBF, DOC, DSV, DWG, GIF, HDF, HTML, JPEG2000, JPG, MOV, MPEG4, MSH/CAS/DAT, NetCDF, PDF, PNG, PostScript, PPT, RTF, Surface, TAB, TIFF, TIFF Stacks, TXT, XLS, SML, Xradio, ZIP, and others.
- Geographic Formats: APR, DBF, DEM, DLG, DRG, DXF, E00, ECW, GDB, GeoPDF, GeoTIFF, GML, GPX, GRID, IMG, KML, KMZ, MOB, MrSID, SHP, and others.

Information provided to EDX will be made publicly available, unless authorized under the resulting award. Additional information on EDX is available at <https://edx.netl.doe.gov/about>.

When data products are submitted to EDX, the data product will need to be registered with a digital object identifier (DOI) through OSTI to ensure more visibility in other search repositories (i.e., osti.gov, data.gov, Google Scholar, etc.). The OSTI DOI can be established through an application programming interface (API) by completing just a few additional fields.

The recipient or subrecipient should coordinate with the Project Manager on an annual basis to assess if there is data that should be submitted to EDX and identify the proper file formats prior to submission. All final data products shall be submitted to EDX by the recipient prior to the completion of the project.

## B. Helpful Websites

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

## C. Questions and Support

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### 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 through the FedConnect portal. The applicant must register with FedConnect to respond as an interested party to submit questions, and to view responses to questions. It is recommended that the applicant registers as soon as possible after release of the NOFO to have the benefit of all responses. Applicants are encouraged to review previously issued Questions and Answers prior to the submission of questions. Questions or comments concerning this NOFO shall be submitted not 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 FedConnect portal, listed in the [Key Facts](#) section above. 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, system requirements, how an application form works, or the submittal process must be directed to the Support contacts identified below.

### Support

#### **Grants.gov**

Grants.gov provides 24/7 support. You can call 1-800-518-4726 or email [support@grants.gov](mailto: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](#).

#### **FedConnect**

If you need help, you can call 800-899-665, Option 2 or submit a ticket at [Unison FedConnect Support](#).

## **IX. Other Information**

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

# Financial Assistance Notice of Funding Opportunity Part 2



This is Part 2 of the Notice of Funding Opportunity (NOFO). The NOFO Part 2 is intended as a companion document to the NOFO Part 1. The NOFO Part 1 describes the specific DOE programmatic goals and evaluation criteria, eligibility, and other components that are specific to each funding opportunity.

Part 2 includes fixed DOE requirements that generally do not change from NOFO to NOFO. This document includes standard information for the application phase and describes expectations for award negotiations and post-award requirements for selected applications.

Applicants should review both the NOFO Part 1 and the NOFO Part 2 prior to applying.

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# I. Get Registered

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 are already registered, project make sure your registration is active and up to date. All registrations are free.

[See Step 3: Submit Your Application](#)

## SAM.gov Registration

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You must have an active account with [SAM.gov](https://sam.gov), the System for Award Management (SAM). This includes having a Unique Entity Identifier (UEI).

- **What is it?** SAM is a federal procurement database. All entities that want to do business with the federal government MUST be registered in SAM.
- Existing SAM registrations must be updated annually.
- **Duration** to complete: can take several weeks.
- **Registration Link:** <https://sam.gov/content/home>
  - **NOTE:** Subrecipients are not required to obtain an active SAM registration but must obtain a Unique Entity Identifier.
- **HELP:** <https://sam.gov/content/help> Applicants must allow several weeks for the SAM process to complete. All registrations rely on completion of the SAM registration. (START Early)

## Unique Entity Identifier (UEI)

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- **What is it?** UEI is a non-proprietary identifier that has replaced the Federal Government use of Data Universal Numbering System (DUNS) number effective April 4, 2022.
- Applicants must obtain an UEI from the SAM to uniquely identify the entity. The UEI is available in the SAM entity registration record.
  - **Note:** Subawardees/subrecipients at all tiers must also obtain an UEI from the SAM and provide the UEI to the recipient before the subaward can be issued.
- **Duration** to complete: can take several weeks.
- **Registration Link:** <https://sam.gov/content/entity-registration>
- **HELP:** [https://www.fsd.gov/gsafsd\\_sp](https://www.fsd.gov/gsafsd_sp)

## Grants.gov Registration

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You must have an active [Grants.gov](https://www.grants.gov) registration in order to receive automatic updates when modifications to this NOFO are posted and to submit an application. Doing so requires a Login.gov registration as well.

- **What is it?** Website used to enable federal grant-making agencies to notify potential applicants of funding opportunities and to submit an application in response to a funding opportunity. Please note that letters of intent and concept papers will not be accepted through Grants.gov.
- Step-by step instructions for applicants at [How to Apply for Grants](https://www.grants.gov/applicants/grant-applications/how-to-apply-for-grants) website <https://www.grants.gov/applicants/grant-applications/how-to-apply-for-grants>

- **Duration** to complete: can take several days.
- **Registration Link:** <https://grants.gov>
- **HELP:** <https://apply07.grants.gov/help/html/help/index.htm#t=GetStarted%2FGetStarted.htm>

**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 should be identified as specified in the application instructions. When such information is included in the application, it is furnished to the federal government in confidence, 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. Information included in the applicant's Community Benefits Plan, or the entire Community Benefits Plan, may be shared with the public at selection at the discretion of DOE, and Applicants should specifically mark any information in the Community Benefits considered trade secrets, commercial, financial or privileged or confidential as per application instructions.

## II. Eligibility

Please refer to the [NOFO Part 1, Eligibility](#) for the eligibility criteria specific to your application. This section includes additional information to help applicants understand the standard eligibility requirements across all DOE NOFOs.

### A. Cost Sharing

---

This section contains additional information to help applicants understand federal cost sharing requirements. Please refer to the [NOFO Part 1, Eligibility—Cost Sharing](#) for the cost sharing criteria specific to your application.

#### 1. Legal Responsibility

Although the cost share requirement applies to the entire project, including work performed by members of the project team other than the recipient, the recipient is legally responsible for paying the entire cost share. The recipient's cost share obligation is expressed in the Assistance Agreement as a static amount in U.S. dollars (cost share amount) and as a percentage of the Total Project Cost (cost share percentage). If the funding agreement is terminated prior to the end of the project period, the recipient is required to contribute at least the cost share percentage of total expenditures incurred through the date of termination.

The recipient is solely responsible for managing cost share contributions by the project team and enforcing cost share obligation assumed by project team members in subawards or related agreements.

#### 2. Cost Share Allocation

Each project team is free to determine how best to allocate the cost share requirement among the team members. The amount contributed by individual project team members may vary, as long as the cost share requirement for the entire project is met.

#### 3. Cost Share Types and Allowability

Cost share must meet requirements set forth in [2 C.F.R. §§ 200.306](#) and [910.130](#), and cost principles set forth in [2 C.F.R. §§ 200.400-476](#) and [2 C.F.R. §§ 910.352](#). In addition, cost share must be verifiable upon submission of the full application. Cost share may be provided in the form of cash or cash equivalents, or in-kind contributions. Cost share must come from non-federal sources (unless otherwise allowed by law), such as project participants, state or local governments, or other third-party financing. DOE Loan Guarantees cannot be leveraged by applicants to provide the required cost share or otherwise support the same scope that is proposed under a project.

Cost share may be provided by the recipient, subrecipients, or third parties (entities that do not have a role in performing the scope of work). Vendors/contractors may not provide cost share. Any partial donation of goods or services is considered a discount and is not allowable.

Cash contributions include but are not limited to personnel costs, fringe costs, supply and equipment costs, indirect costs, and other direct costs.

In-kind contributions are those where a value of the contribution can be readily determined, verified, and justified but where no actual cash is transacted in securing the good or service comprising the contribution. Allowable in-kind contributions include but are not limited to the donation of volunteer time or the donation of space or use of equipment.

Project teams may use funding or property received from state or local governments to meet the cost share requirement, so long as the federal government did not provide the funding to the state or local government.

Funding or property received from state or local governments may be used to meet the cost share requirement, so long as the federal government did not provide the funding to the state or local government.

Cost share contributions must be specified in the project budget, verifiable from the recipient's records, and necessary and reasonable for proper and efficient accomplishment of the project. As all sources of cost share are considered part of total project cost, DOE will review the cost share dollars according to the same federal regulations as federal dollars to the project. Every cost share contribution must be reviewed and approved in advance by the Grants Officer and incorporated into the project budget before the expenditures are incurred.

#### 4. Unallowable Cost Share Sources

The recipient and subrecipient(s) may not use the following sources to meet cost share obligations:

- Cost share derived from federal sources (unless otherwise authorized by law).
- Cost share that does not meet:
  - Requirements set forth in 2 C.F.R. §§ 200.306 and 910.130;
  - Cost principles set forth in 2 C.F.R. §§ 200.400-476 and 2 C.F.R. §§ 910.352;
  - For State Energy Programs, refer to 10 C.F.R. §§ 420.
- Cost share derived from the DOE loan program.
- Revenues or royalties from the prospective operation of an activity beyond the project period;
- Proceeds from the prospective sale of an asset of an activity;
- Federal funding or property (e.g., federal grants, equipment owned by the federal government);
- Expenditures that were reimbursed under a separate federal program.
- Cash or in-kind contributions used to meet cost share requirements for another federal project or program;
- Existing data as an in-kind contribution (e.g., data owned by an entity, that is not routinely sold commercially but is instead donated to the project and assigned a value);
- In general, deferred or avoided costs such as unrealized tax credits; or
- If applicable, other items as identified by DOE Programs and as specified in the applicable **NOFO Part 1, Eligibility—Cost Sharing**.

Cost share contributions must be specified in the project budget, verifiable from the recipient's records, and necessary and reasonable for proper and efficient accomplishment of the project. As all sources of cost share are considered part of total project cost, the cost share dollars will be scrutinized under the same federal regulations as federal dollars to the project. Every cost share contribution must be reviewed and approved in advance by the Grants Officer and incorporated into the project budget before the expenditures are incurred.

## 5. Cost Share Contributions by FFRDCs

Because FFRDCs are funded by the federal government, costs incurred by FFRDCs generally may not be used to meet the cost share requirement. FFRDCs may contribute cost share only if the contributions are paid directly from the contractor’s Management Fee or another non-federal source.

## 6. Cost Share Verification

Applicants are required to provide written assurance of their proposed cost share contributions in their applications. If selected for award negotiations, applicants are required to provide additional information and documentation regarding their cost share contributions. Please refer to the [NOFO Part 1, Eligibility—Cost Sharing](#) for specific requirements.

## 7. Cost Share Calculation Examples

Cost sharing is calculated as a percentage of the Total Project Cost. FFRDC costs must be included in Total Project Costs.

### Example 1, Standard Cost Share Calculation

The following is an example of how to calculate cost sharing amounts for a project with \$1 million in federal funds with a minimum 20% non-federal cost sharing requirement:

- Formula: Federal share (\$) divided by federal share (%) = Total Project Cost  
Example: \$1,000,000 divided by 80% = \$1,250,000
- Formula: Total Project Cost (\$) minus federal share (\$) = Non-federal share (\$)  
Example: \$1,250,000 minus \$1,000,000 = \$250,000
- Formula: Non-federal share (\$) divided by Total Project Cost (\$) = Non-federal share (%)  
Example: \$250,000 divided by \$1,250,000 = 20%

### Example 2, Blended Cost Share Calculation

The following example shows the math for calculating required cost share for a project with \$2 million in federal funds, with four tasks requiring different non-federal cost share percentages:

Task	Proposed Federal Share	Federal Share %	Recipient Share %
Task 1 (R&D)	\$1,000,000	80%	20%
Task 2 (R&D)	\$500,000	80%	20%
Task 3 (Demonstration)	\$400,000	50%	50%
Task 4 (Outreach)	\$100,000	100%	0%

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

Each task must be calculated individually as follows:

#### Task 1

- \$1,000,000 divided by 80% = \$1,250,000 (Task 1 Cost)
- Task 1 Cost minus federal share = non-federal share
- \$1,250,000 - \$1,000,000 = \$250,000 (non-federal share)

Task 2

- \$500,000 divided 80% = \$625,000 (Task 2 Cost)
- Task 2 Cost minus federal share = non-federal share
- \$625,000 - \$500,000 = \$125,000 (non-federal share)

Task 3

- \$400,000 / 50% = \$800,000 (Task 3 Cost)
- Task 3 Cost minus federal share = non-federal share
- \$800,000 - \$400,000 = \$400,000 (non-federal share)

Task 4

- Federal share = \$100,000
- Non-federal cost share is not mandated for outreach = \$0 (non-federal share)

The calculation may then be completed as follows:

Tasks	\$ Federal Share	% Federal Share	\$ Non-Federal Share	% Non-Federal Share	Total Project Cost
Task 1	\$1,000,000	80%	\$250,000	20%	\$1,250,000
Task 2	\$500,000	80%	\$125,000	20%	\$625,000
Task 3	\$400,000	50%	\$400,000	50%	\$800,000
Task 4	\$100,000	100%	\$0	0%	\$100,000
Totals	\$2,000,000		\$775,000		\$2,775,000

Blended Cost Share %

- Non-federal share (\$775,000) divided by Total Project Cost (\$2,775,000) = 27.9% (non-federal)
- Federal share (\$2,000,000) divided by Total Project Cost (\$2,775,000) = 72.1% (federal)

## B. Other Eligibility Information

Refer to [NOFO Part 1, Eligibility—Eligible Applicants](#) for NOFO-specific eligibility information. The information below is standard for DOE NOFOs.

### 1. Questions Regarding Eligibility

DOE will not make eligibility determinations for potential applicants prior to the date on which applications to the NOFO Part 1 must be submitted. The decision to apply in response to the NOFO Part 1 lies solely with the applicant.

### 2. Entity of Concern Prohibition

**Prohibition**

DOE is prohibited by law from funding any grant, contract, cooperative agreement, or loan of \$10 million or more in DOE funds to Entities of Concern. In addition, such entities (including an individual that owns or controls, is owned or controlled by, or is under common ownership or control with an Entity of Concern) are prohibited from receiving any funds or performing work under any award involving Department activities authorized under Division A or B of Public Law 117-167, subject to

certain penalties. See section 10114 of Public Law 117-167 (42 USC 18912) and section 310 of Public Law 118-42 and other applicable law for additional information.

By submitting an application to this NOFO, the applicant is certifying that neither the applicant nor any of the project participants qualify as Entities of Concern.

### **Definitions**

Entity of Concern is defined as in section 10114 of Public Law 117-167 (42 USC 18912), also known as the CHIPS and Science Act, as any entity, including a national, that is—

(A) identified under section 1237(b) of the Strom Thurmond National Defense Authorization Act for Fiscal Year 1999 (50 U.S.C. 1701 note; Public Law 105–261);

(B) identified under section 1260H of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (10 U.S.C. 113 note; Public Law 116– 283);

(C) on the Entity List maintained by the Bureau of Industry and Security of the Department of Commerce and set forth in Supplement No. 4 to part 744 of title 15, Code of Federal Regulations;

(D) included in the list required by section 9(b)(3) of the Uyghur Human Rights Policy Act of 2020 (Public Law 116–145; 134 Stat. 656); or

(E) identified by the Secretary, in coordination with the Director of the Office of Intelligence and Counterintelligence and the applicable office that would provide, or is providing, covered support, as posing an unmanageable threat—

(i) to the national security of the United States; or

(ii) of theft or loss of United States intellectual property.

### **3. Artificial Intelligence (AI) Application Use**

Any use of artificial intelligence in the creation of any part of an application for this NOFO must be appropriately attributed. Even with the use of artificial intelligence, each applicant is responsible for and is representing to the U.S. Government that the information in its application documents is accurate, that the applicant is fully capable of performing the work described in the application, and that the submission of the application does not and will not infringe or violate any rights of any third party or entity.

## III. Program Description

Refer to *NOFO Part 1, Program Description* for all information related to the specific NOFO goals, objectives, and topic areas, if any.

### A. Informational Webinar

---

Refer to the *NOFO Part 1, Basic Information—Key Dates* to determine if DOE plans to conduct an informational webinar while the NOFO is open.

If applicable, DOE will conduct an informational webinar during the NOFO process. It will be held after the initial NOFO release but before the due date for concept papers or the application if concept papers are not required.

Attendance is not mandatory and will not positively or negatively impact the overall review of any applicant submissions. The webinar will be open to all potential applicants who wish to participate. Applicants should refrain from asking questions or communicating information that would reveal confidential and/or proprietary information specific to their project.

*The rest of this page is intentionally left blank.*

## IV. Application Content and Form

This section contains supplemental information to help applicants understand the application content and form requirements outlined in the NOFO including detailed information on the content and naming conventions of the application content. Please refer to the [NOFO Part 1, Application Content and Form](#) section for the application contents and form specific to your application.

Note that some of the required application elements below have separate requirements for Research and Development (R&D) versus non-R&D NOFOs. Refer to the [NOFO Part 1, Application Content Requirements](#) section for specific instructions.

### A. Application Format Summary

All submissions must conform to the form and content requirements described below. Refer to the [NOFO Part 1, Application Content and Form](#) for the page limits.

Format Requirements	
Parameter	Requirement
File Format	Portable Document Format (PDF) unless stated otherwise
Language	English
Paper Size	8.5" x 11"
Margins	Not less than 1" (>= 1") on every side
Font	Calibri typeface, a black font color, and a font size of 12-point or larger (except in figures or tables, which may be 10-point font). A symbol font may be used to insert Greek letters or special characters, but the font size requirement still applies.
References	References must be included as footnotes or endnotes in a font size of 10 or larger. Footnotes and endnotes are counted toward the maximum page requirement.
Page Numbers	Page numbers must be included in the footer of every page. Each submission must not exceed the specified maximum page limit, including cover page, charts, graphs, maps, and photographs when printed using the formatting requirements set forth above and single spaced.
Page Count Limitations	If applicants exceed the maximum page limitations, DOE will review only the authorized number of pages and disregard any additional pages.

The following information is intended to address Grants.gov issues typically encountered during the application process. Refer to [NOFO Part 1, Submission Requirements and Deadlines—Application Package](#) for the Grants.gov site location and support for technical assistance information.

Additional Grants.gov Information	
<b>Deadlines for Submission</b>	Grants.gov is designed to enforce the deadlines specified in this NOFO. Applications will not be accepted after the due date and time specified on the NOFO Cover Page.
<b>Submission Difficulties</b>	Applicants who experience technical difficulties with submission PRIOR to the NOFO deadline should contact the Grants.gov helpdesk for assistance.
<b>Application Forms</b>	Grants.gov forms are available at <a href="https://www.grants.gov/forms/forms-repository/">https://www.grants.gov/forms/forms-repository/</a> .
<b>Size Limitations</b>	<p>The maximum file size that can be uploaded to the Grants.gov website is 10MB. Files larger than 10MB cannot be uploaded and hence cannot be submitted for review. If a file is larger than 10MB 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".</p> <p>DOE will not accept late submissions that resulted from technical difficulties due to uploading files that exceed 10MB.</p>

## B. Application Content Requirements

The *NOFO Part 1, Application Content Requirements* identifies which of the following application documents are required including the program-specific requirements such as the technical volume and specified page limits. Each application must be limited to a single concept and must not exceed the stated page limits.

### 1. Application for Federal Assistance (SF-424)

Applicants must complete the SF-424: Application for Federal Assistance first to populate data in other forms. Complete all required fields in accordance with the instructions on the form. The list of certifications and assurances is available on [Financial Assistance Forms and Information For Applicants and Recipients | Department of Energy](#).

Please ensure that the dates (Block 17) and dollar amounts (Block 18) on the SF-424 are for the complete project period and not just the first project year, first phase, or another subset of the project period.

### 2. Letters of Commitment

Submit letters of commitment from all subrecipients. In addition, submit letters of commitment from all third-party cost share providers. If applicable, the letter must state that the third party is committed to providing a specific minimum dollar amount or value of in-kind contributions allocated to cost sharing. Letters of support or endorsement for the project from entities that do not have a substantive role in the project will not be accepted. The following information for each third party contributing to cost

sharing should be identified:

Letters of Commitment Content	
<b>Organization Name</b>	Phone, email, and address
<b>Proposed Dollar Amount to be Provided</b>	Value of the contribution
<b>Cost Sharing Type</b>	Cash or In-Kind contribution (or both)

Each letter must not exceed one page. Save the information in a single PDF file named “LOC” and click on “Add Optional Other Attachment” to attach.

### 3. Impacted Indian Tribes Documentation

For any application that potentially impacts Indian Tribes or is on Tribal land<sup>1</sup> including when the potentially impacted Indian Tribe is the applicant, applicants are required to submit additional documentation at the time of application, and possibly during negotiation and prior to award. For any project that potentially impacts Indian Tribes, applicants are required to submit documentation demonstrating that an authorized representative of each potentially impacted Indian Tribe is, at a minimum, aware of the nature of the application and its potential impacts to the relevant Indian Tribes. The notified authorized representative<sup>2</sup> must be holding their position while the award is open for applications, and documentation must demonstrate affirmative awareness of the application (e.g. a delivery record from certified mail, a reply by the authorized representative).

For any project intended to be sited on Tribal land(s) or intersecting with Tribal subsurface rights, applicants are required to submit documentation demonstrating support from the relevant Indian Tribes at the time of application. Documentation of support submitted at the time of application will also be considered.

Helpful Resources	
Item	Criteria
Letter of Support from Tribal Leadership	The letter must be signed by an authorized representative of the Indian Tribe. The signer(s) must be holding their position while the award is open for applications or negotiations.

<sup>1</sup> Tribal land is as defined in 25 U.S.C. §§ 3501(2), (3), (4)(A) and (13).

<sup>2</sup> An authorized representative must be an elected official or designated leader according to the traditions, constitution, or charter of the Indian Tribe, or someone with relevant delegated authority within the Tribal government. Examples include: Chief, Chairman, Chairwoman, Governor, Nation Representative, President, Chief Executive Officer, Chief Financial Officer, Speaker of the Council, Speaker of the Congress, Tribal administrator.

Tribal Council Resolution, Board resolution (including the Board of Directors of an Alaska Native Corporation (ANC)), or similar act passed by the legislative body of the Tribal government or Board of Directors of an ANC	Must express support for the project.
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Applicants are encouraged to reference or include any applicable community benefits agreements in the Tribal support documentation, and to integrate any Tribal support documentation in the community benefits plan as appropriate, For projects not intended to be sited on Tribal land(s) or intersecting with Tribal subsurface rights, but that may have other potential impacts on Tribal resources or reserved rights, letters of support or resolutions of support are strongly encouraged and, depending on the nature of the impact, may be required if selected for negotiation of an agreement. Applicants are encouraged to reach out to Indian Tribes as early as possible in the application process to give Indian Tribes ample time to evaluate and respond.

The following resources may be useful to help determine if a project may impact an Indian Tribe(s) resources or reserved rights and the appropriate contacts. These resources are not exhaustive, and many Indian Tribes have resources or reserved rights which extend beyond their Tribal lands, or are covered within treaties, statutes, or case-law. Applicants are encouraged to do additional research:

Helpful Resources	
Item	Location
Map of Indian Lands	<a href="https://bia-geospatial-internal.geoplatform.gov/indianlands/">https://bia-geospatial-internal.geoplatform.gov/indianlands/</a>
Tribal Treaties Database	<a href="https://treaties.okstate.edu/">https://treaties.okstate.edu/</a>
Directory of federally recognized Tribes and Tribal leaders	<a href="https://www.bia.gov/service/tribal-leaders-directory">https://www.bia.gov/service/tribal-leaders-directory</a>
Best Practices for Identifying and Protecting Tribal Treaty Rights, Reserved Rights, and other similar rights in federal regulatory actions	<a href="https://www.bia.gov/sites/default/files/dup/inline-files/best_practices_guide.pdf">https://www.bia.gov/sites/default/files/dup/inline-files/best_practices_guide.pdf</a>

To help determine if an Indian Tribe’s resources or reserved rights may be impacted by the project, applicants must address the following elements, as applicable to the application. If the applicant is an Indian Tribe, these elements should be addressed to ascertain impacts to Indian Tribes other than the applicant. Applicants do not need to reveal specific details about sacred sites such as specific location or specific ceremonies:

Indian Tribe Resource or Reserved Rights Impact Assessment		
Type of Action	Assessment	Mitigation
<b>If Research and Development (R&amp;D)</b>	Identify any [specific resources] which will be [quantified/modeled] on or near Tribal land, traditional homelands, Tribal historic sites, sacred sites, or in areas where an Indian Tribe maintains rights to [specific resources]. Identify which Indian Tribe(s) may be impacted? Explain any instances of uncertainty or confidentiality.”	Explain any actions taken by the applicant to mitigate or address any potential impacts identified, including engaging with the potentially impacted Indian Tribe(s), in the application.
<b>If Demonstration and Deployment (D&amp;D)</b>	Identify any elements of the project that will occur on or near Indian land, Tribal historic sites, or sacred sites and describe its potential impacts to Indian Tribes. Identify the potentially impacted Indian Tribe(s).	
<b>Subsurface Resource Activities (carbon sequestration, oil &amp; gas, geothermal, critical minerals, groundwater, etc.)</b>	Identify any Tribal mineral rights, subsurface, or water rights at or near the proposed project location. Explain any relevant studies already performed, such as groundwater studies? Identify which Indian Tribe(s) might be impacted. Explain any instances of uncertainty and any potential for subsurface resource migration which has been considered.	
<b>If Hydropower, Offshore Wind, or other Water Related Projects</b>	Identify any Tribal resources or reserved rights (e.g., water, fishing, or other treaty rights) which could be impacted by the proposed project. Identify any Tribal historic sites, sacred sites, or relevant vistas, which could be impacted by the project. Identify the potentially impacted Indian Tribe(s) and explain any sources of uncertainty or confidentiality.	
<b>If Infrastructure (e.g., Transmission and Pipeline) Projects</b>	Identify any Indian Land (as defined in 25 U.S.C. § 3501), traditional homelands, or Tribal historic and sacred sites which will be crossed, or adjacent to the proposed infrastructure. Identify which Indian Tribe(s) might be impacted and explain any instances of uncertainty or confidentiality.	
<b>Other Actions Not Categorized Above</b>	Identify any [other] proposed actions which may impact an Indian Tribe(s) resources or reserved rights. Tribal resources and reserved rights include, and are not limited to, an Indian Reservation or Land (as defined in 25 U.S.C. § 3501) [or intersecting Tribal sub-surface rights], historic homelands from which they were removed, cultural sites, sacred sites, water rights, mineral and other subsurface rights, fishing rights, and hunting rights. Identify the Tribe(s) potentially impacted and any sources of uncertainty or confidentiality.	

Applicants are required to document any efforts taken to identify any potential impacts to Indian Tribes, Indian lands, Alaska Native regional and village land, traditional homelands, Tribal rights, or Tribal historic sites, or sacred sites. This includes any correspondence with Indian Tribes. These documents should be available on request to DOE. An applicant's failure to submit documentation of an Indian Tribe's awareness, or a letter of support, when required as described above, may constitute grounds for determining an application ineligible, non-responsive to the NOFO, not subject to further review, and/or not otherwise subject to selection or award.

Any application that may potentially impact Indian Tribe(s) may be shared with the potentially impacted Indian Tribe(s). Applicants should include a Notice of Restriction on Disclosure and Use of Data identifying any business sensitive, trade secrets, proprietary, or otherwise confidential information.

Such information shall be used or disclosed only for evaluation of the application or to determine whether the proposed project affects an Indian Tribe(s). If an applicant determines an Indian Tribe(s) will be impacted, the applicant must provide information on the project location, potential impacts and how the applicant will engage with Indian Tribe(s), during the period of performance of the agreement, and, if necessary, after the end of the agreement. If the applicant proposes any activities that could impact Tribal resources or reserved rights, including but not limited to lands, cultural sites, sacred sites, water rights, mineral rights, fishing rights, and hunting rights, they must notify DOE as outlined below in the application submission requirements. DOE will determine if formal government-to-government consultation is needed, and DOE will conduct that consultation accordingly, in addition to any engagement by applicant.

Save the information in a single PDF file named "ImpactedTribes" and click on "Add Optional Other Attachment" to attach.

#### **4. Statement of Project Objectives (SOPO)**

Refer to the [NOFO Part 1, Technical Volume](#) for specific requirements. Applicants must submit a SOPO. The SOPO template is available as an attachment to this NOFO in FedConnect, which is provided for the administrative convenience of the applicant. Applicants are strongly encouraged to use the template to complete their SOPO. If the template is not used, the SOPO must address all the elements described in [NOFO Part 1, Technical Volume](#), and as outlined in the template.

Save the information in a single Microsoft Word file named "SOPO.doc or .docx" and click on "Add Optional Other Attachment" to attach.

#### **5. Project Management Plan**

Refer to the [NOFO Part 1, Technical Volume](#) for specific requirements. Applicants must submit a PMP. The PMP template is available as an attachment to this NOFO in FedConnect, which is provided for the administrative convenience of the applicant. Applicants are strongly encouraged to use the template to complete their PMP. If the template is not used, the PMP must address all of the elements described in [NOFO Part 1, Technical Volume](#), and as outlined in the template.

Save the information in a single Microsoft Word file named "PMP.doc or .docx" and click on "Add Optional Other Attachment" to attach.

## 6. Budget Information-Non-Construction Programs (SF-424A)

If applicants elect to use the budget justification workbook, provided as an attachment to this NOFO in FedConnect, they do not need to submit a separate SF-424A. Applicants must provide a separate budget for each year of support requested and a cumulative budget for the total project period of performance. Use the SF-424A Excel, "Budget Information - Non-Construction Programs" form on the DOE Financial Assistance Forms Page at [Financial Assistance Forms and Information For Applicants and Recipients | Department of Energy](#).

You may request funds under any of the Object Class Categories as long as the item and amount are necessary to perform the proposed work, meet all the criteria for allowability under the applicable federal cost principles, and are not prohibited by the [standard Funding Restrictions](#) described below or any program-specific restrictions in the *NOFO Part 1, Application Content and Form—Funding Restrictions*.

Save the information in a single Microsoft Excel file named "SF-424A.xls or .xlsx" and click on "Add Optional Other Attachment" to attach.

## 7. Budget Justification Workbook

Please refer to the Budget Justification Workbook template, provided as an attachment to this NOFO in FedConnect. Applicants are strongly encouraged to use the suggested template. If applicants choose not to use the suggested template, you must also submit an SF-424A Budget Information form (available on [grants.gov](#)) and include a breakdown of all costs by Budget Category as outlined in the SF-424A and the Budget Justification suggested template, including all work to be performed by the recipient and its subrecipients and contractors.

In addition to project-specific costs, applicants should include costs associated with the following activities, as applicable:

- Oversight;
- Required annual audits and incurred cost proposals (such costs may be reimbursed as a direct or indirect cost).
- Implementing award-specific requirements such as Buy America requirements, Davis-Bacon Act requirements, and Community Benefits Plans;
- Reporting;
- Construction signage; and

The "Instructions and Summary" and "SF-424A" tabs included with the Budget Justification Workbook will auto-populate as the applicant enters information into the Workbook. Applicants must carefully read the "Instructions and Summary" tab provided within the Budget Justification Workbook.

Save the information in a single Microsoft Excel file named "Budget\_Justification.xls or .xlsx" and click on "Add Optional Other Attachment" to attach.

## 8. Subrecipient Budget Justification

Applicants must provide a separate budget justification for each subrecipient that is expected to perform work estimated to be more than \$500,000 or 25% of the total work effort, whichever is

less. The budget justification must include the same justification information described in the [Budget Justification Workbook](#) section above.

Save the information in a single Microsoft Excel file named “Subrecipient\_Budget\_Justification.xls or .xlsx” and click on “Add Optional Other Attachment” to attach.

## 9. Work Proposal for DOE FFRDC

If a DOE FFRDC is to perform a portion of the work, the applicant must provide a DOE work proposal (WP) in accordance with the requirements in DOE Order 412.1A, Work Authorization System, available at: <https://www.directives.doe.gov/directives-documents/400-series/0412.1-Border-a-chg1-AdmChg>.

Save the information in a single file named “WP.pdf” and click on “Add Optional Other Attachment” to attach.

## 10. Authorization for Non-DOE or DOE FFRDCs (if applicable)

If an FFRDC is to perform a portion of the work, the federal agency sponsoring the FFRDC must authorize in writing the use of the FFRDC on the proposed project. This authorization must be submitted with the application. The use of a FFRDC must be consistent with the contractor’s authority under its award.

Save the information in a single PDF file named “FFRDCAuth.pdf” and click on “Add Optional Other Attachment” to attach.

## 11. Waiver for Foreign Entity Participation

All recipients receiving funding under the applicable NOFO Part 1 must be incorporated (or otherwise formed) under the laws of a state or territory of the United States and have a physical location for business operations in the United States. To request a waiver of this requirement, an applicant must submit an explicit waiver request in the application.

### Waiver Criteria

Foreign entities seeking to participate in a project funded under this NOFO must demonstrate to the satisfaction of DOE that:

1. Its participation is in the best interest of the United States industry and United States economic development;
2. The project team has appropriate measures in place to control sensitive information and protect against unauthorized transfer of scientific and technical information;
3. Adequate protocols exist between the United States subsidiary and its foreign parent organization to comply with export control laws and any obligations to protect proprietary information from the foreign parent organization;
4. The work is conducted within the United States, and the entity acknowledges and demonstrates that it has the intent and ability to comply with the U.S. Competitiveness Provision (see [Post-Award Requirements--U.S. Manufacturing Commitments](#) below); and
5. The foreign entity will satisfy other conditions that DOE may deem necessary to protect U.S. government interests.

### Content for Waiver Request

A Foreign Entity waiver request must include all of the following:

1. Information about the entity(ies) involved in the proposed work to be conducted outside the United States (i.e., the entity seeking a waiver and the entity(ies) that will conduct the work): name, point of contact, and proposed type of involvement in the project;
2. Country of incorporation, the extent of the ownership/level control by foreign entities, whether the entity is state owned or controlled, a summary of the ownership breakdown of the foreign entity, and the percentage of ownership/control by foreign entities, foreign shareholders, foreign state, or foreign individuals;
3. The rationale for proposing a foreign entity participate (must address criteria above);
4. A description of the project's anticipated contributions to the United States economy;
  - a. How the project will benefit United States R&D and manufacturing, including contributions to employment in the United States and growth in new markets and jobs in the United States;
  - b. How the project will promote domestic American manufacturing of products and/or services;
5. A description of how the foreign entity's participation is essential to the project;
6. A description of the likelihood of IP being created from the work and the treatment of any such IP; and
7. Countries where the work will be performed. (Note: If any work is proposed to be conducted outside the United States, the applicant must also complete a separate request foreign work waiver.)

DOE may also require:

1. A risk assessment with respect to IP and data protection protocols that includes the export control risk based on the data protection protocols, the technology being developed, and the foreign entity and country. These submissions could be prepared by the project lead (if not the recipient), but the recipient must make a representation to DOE as to whether it believes the data protection protocols are adequate and make a representation of the risk assessment – high, medium, or low risk of data leakage to a foreign entity.
2. Additional language be added to any agreement or subagreement to protect IP, mitigate risk, or other related purposes.

DOE may require additional information before considering the waiver request. DOE's decision concerning a waiver request is not appealable.

Save the information in a single PDF file named "FEW.pdf" and click on "Add Optional Other Attachment" to attach.

## **12. Performance of Work in the United States (Foreign Work Waiver)**

All work for the projects selected 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. A separate waiver request must be submitted for each entity proposing performance of work outside of the United States.

Overall, a waiver request must demonstrate to the satisfaction of DOE that it would further the purposes of this NOFO and is otherwise in the economic interests of the United States to perform work outside of the United States. A request for a foreign work waiver must include the following:

1. The rationale for performing the work outside the United States (“foreign work”);
2. A description of the work proposed to be performed outside the United States;
3. An explanation as to how the foreign work is essential to the project;
4. A description of the anticipated benefits to be realized by the proposed foreign work and the anticipated contributions to the U.S. economy;
5. The associated benefits to be realized and the contribution to the project from the foreign work;
6. How the foreign work will benefit the United States, including manufacturing, contributions to employment in the United States and growth in new markets and jobs in the United States;
7. How the foreign work will promote manufacturing of products and/or services in the United States;
8. A description of the likelihood of IP being created from the foreign work and the treatment of any such IP;
9. The total estimated cost (DOE and recipient cost share) of the proposed foreign work;
10. The countries in which the foreign work is proposed to be performed; and
11. The name of the entity that would perform the foreign work.

DOE may require additional information before considering the waiver request. DOE’s decision concerning a waiver request is not appealable.

Save the information in a single PDF file named “FWW.pdf” and click on “Add Optional Other Attachment” to attach.

### 13. Community Benefits Plan for Research & Development (R&D) Projects

Refer to the [NOFO Part 1, Application Content and Form—Application Content Requirements](#) table for specific requirements.

The information below is **sample** content for the R&D Community Benefits Plan (CBP). Please refer to the CBP template attached to this NOFO [in FedConnect](#), for specific CBP requirements.

The R&D Community Benefits Plan must set forth the applicant’s approach to ensuring the federal investments advance the following three objectives: (1) advancing DEIA; (2) contributing to the Justice40 Initiative and other considerations linked with energy and/or environmental justice; and (3) investing in quality jobs. Applicants must address all three sections. CBP related activities must be attributable to the project and contribute to project success. In addition to advancing policy objectives, CBPs de-risk projects, for example, through actions that build long-term Tribal or community support, secure a stable workforce or ensure supplier diversity. If the applicant describes an activity or policy covering any of the stated objectives attributed to the parent-level organization, for example, then the applicant must show how the applicant organization is implementing the policy or activity at the project level.

Applicants are strongly encouraged to use the template to complete their specific Plan. If the template is not used, the Plan must address all of the elements described below, and as outlined in the template. For the purposes of formulating the CBP budget justification, any overlapping or duplicative activities described in the CBP need only be accounted for in the budget once.

The applicant’s R&D Community Benefits Plan should include at least one Specific, Measurable,

Achievable, Relevant, and Timely (SMART) milestone per budget period to measure progress on the proposed actions.

The R&D Community Benefits Plan will be evaluated as part of the technical review process. If a project is selected, the selectee may be responsible for developing a Community Benefits Outcomes and Objectives (CBOO) document. Community benefits commitments are included in the terms of the federal award via the CBOO, as terms and conditions or otherwise into the award as part of the go/no-go determination, and/or as elements in other award documentation. The recipient must implement the community benefits commitments within the CBOO and/or other community benefits elements in the award documentation when carrying out its project. Public transparency around the plan and SMART commitments ensure accountability. As such, DOE plans to make the content of each CBOO available publicly. DOE will evaluate the recipient's progress throughout the life of the award, including as part of the Go/No-Go or continuation review process.

The plan must be specific to the proposed project and not a restatement of an organization's policies. Applicants must describe the future implications or a milestone-based plan for identifying future implications of their research on energy and/or environmental justice, including, but not limited to, benefits for the U.S. workforce. These impacts may be uncertain, occur over a long period of time, and/or have many factors within and outside the specific proposed research. Applicants are encouraged to describe the influencing factors and the most likely workforce and community implications of the proposed research if the research is successful, as well as energy and/or environmental justice implications.

This Plan must address the CBP R&D technical review criterion in the [NOFO Part 1, Application Review Information—Technical Review Criteria](#).

The R&D Community Benefits Plan typically addresses the following three sections:

**1. Diversity, Equity, Inclusion, and Accessibility:**

To building a clean and equitable energy economy, it is important that there are opportunities for people of all racial, ethnic, socioeconomic, and geographic backgrounds, sexual orientation, gender identity, persons with disabilities, and those re-entering the workforce from incarceration. This section of the plan must demonstrate how DEIA is incorporated in the technical project objectives. The plan must identify the specific action the applicant would take that integrates into the research goals and project teams. Submitting an institutional DEIA plan without specific integration into the project will be deemed insufficient.

**2. The Justice 40 Initiative and other considerations linked with energy and/or environmental justice:**

This section should include information on how the project will advance the Justice40 Initiative's goal<sup>3</sup>. In addition, this section must articulate the applicant's consideration of long-term equity

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<sup>3</sup> The Justice40 Initiative, established by [EO 14008](#), sets a goal that 40% of the overall benefits of certain federal investments flow to disadvantaged communities. Consistent with Justice40 guidance, DOE recognizes disadvantaged communities as the census tracts defined and identified as disadvantaged by the White House Council on Environmental Quality's Climate and Economic Justice Screening Tool (CEJST), located at <https://screeningtool.geoplatform.gov/>, as well as all Federally Recognized Tribes (whether or not they have land). See [https://www.whitehouse.gov/wp-content/uploads/2023/01/M-23-09\\_Signed\\_CEQ\\_CPO.pdf](https://www.whitehouse.gov/wp-content/uploads/2023/01/M-23-09_Signed_CEQ_CPO.pdf).

implications of the research and any implications for environmental justice. It must identify how the specific project integrates equity and environmental justice considerations into the project design to support equitable outcomes for affected communities if the innovation is successful. Like cost reductions and commercialization plans, the R&D Community Benefits Plan requires description of the implications of the innovation for local affected communities.

### **3. Quality Jobs:**

This section must articulate the applicant's consideration of long-term workforce impacts and opportunities of the research. It must identify how the project is designed and executed to include an understanding of the future workforce needs if the innovation is successful.

See the Community Benefits Plan Template and <https://www.energy.gov/bil/community-benefits-plan-frequently-asked-questions-faqs> [About Community Benefits Plans | Department of Energy](#) for more guidance.

Save the information in a single PDF file named "CBP.pdf" and click on "Add Optional Other Attachment" to attach.

## **14. Community Partnership Documentation**

In support of the Community Benefits Plan, applicants are encouraged to submit documentation to demonstrate existing or planned partnerships with community entities, such as organizations that work with local stakeholders most vulnerable to or affected by the project. Examples of such entities include organizations that carry out workforce development programs, labor unions, Indian Tribes, Tribal organizations, and community-based organizations that work with disadvantaged communities. The partnership documentation can be a letter on a partner's letterhead outlining the planned partnership and signed by an officer of the entity, a Memorandum of Understanding, or another similar agreement. Such letters must state the specific nature of the partnership and must not be general letters of support. If the applicant intends to enter into Workforce and Community Agreements as part of the Community Benefits Plan, they should include letters from proposed partners. Each letter must not exceed one page. In total, the partnership documentation must not exceed 10 pages.

Save the information in a single PDF file named "PartnerDocs.pdf" and click on "Add Optional Other Attachment" to attach.

## **15. Resumes for Research and Development (R&D) NOFOs**

A resume provides information reviewers can use to evaluate an individual's skills, experience, and potential for leadership within the scientific community. Applicants must submit a resume or biographical sketch (see description below the table) for each Principal Investigator or Lead Project Manager, Senior/Key Personnel, and all covered individuals as defined in the *NOFO Part 1, Application Content and Form—Application Content Requirements, Covered Individual Definition, Designation and Responsibility*.

DOE reserves the right to not proceed with merit reviews for incomplete applications. Applicants must screen resumes to ensure that they do not contain PII such as personal addresses, personal landline/cell phone numbers, and personal emails.

Resumes must include the following information, at a minimum:

Resume Requirements (Research & Development Activities)	
<b>Contact Information</b>	Phone, email, and address
<b>Education &amp; Training</b>	Provide name of institution, major/area, degree, and year for undergraduate, graduate, and postdoctoral training
<b>Research &amp; Professional Experience</b>	Beginning with the current position, list professional/academic positions in chronological order with a brief description. List all current academic, professional, or institutional appointments, foreign or domestic, at the applicant institution or elsewhere, whether remuneration is received, and, whether full-time, part-time, or voluntary
<b>Awards &amp; Honors</b>	List any notable awards and honors received
<b>Publications</b>	List of up to 10 publications most closely related to the proposed project. For each publication, identify the names of all authors (in the same sequence in which they appear in the publication), the article title, book or journal title, volume number, page numbers, year of publication, and website address if available electronically. Patents, copyrights, and software systems developed may be provided in addition to or substituted for publications. An abbreviated style such as the Physical Review Letters (PRL) convention for citations (list only the first author) may be used for publications with more than 10 authors
<b>Synergistic Activities</b>	List up to five professional and scholarly activities related to the proposed effort;
<b>Additional Criteria</b>	There should be no lapses in time over the past 10 years or since age 18, whichever period is shorter.

As an alternative to a resume, it is acceptable to use the biographical sketch format approved by the National Science Foundation (NSF). The biographical sketch format may be generated by the Science Experts Network Curriculum Vita (SciENCv), a cooperative venture maintained at [SciENCv: Science Experts Network Curriculum Vitae \(nih.gov\)](http://SciENCv: Science Experts Network Curriculum Vitae (nih.gov)) also available at [Common Form for Biographical Sketch \(nsf.gov\)](http://Common Form for Biographical Sketch (nsf.gov)). The use of a format required by another agency is intended to reduce the administrative burden to researchers by promoting the use of common formats.

Save the information in a single PDF file named “Resumes.pdf” and click on “Add Optional Other Attachment” to attach.

## 16. Current and Pending Support

Current and pending support is intended to allow the identification of potential duplication, overcommitment, potential conflicts of interest or commitment, and all other sources of support. As part of the application, the Principal Investigator or Lead Project Manager and all covered individuals as defined in the [NOFO Part 1, Application Content Requirements–Covered Individual Definition, Designation, and Responsibility](#) at the applicant and subrecipient level must provide a list of all sponsored activities, awards, and appointments, whether paid or unpaid; provided as a gift with terms or conditions or provided as a gift without terms or conditions; full-time, part-time, or voluntary; faculty, visiting, adjunct, or honorary; cash or in-kind; foreign or domestic; governmental or private-sector; directly supporting the individual’s research or indirectly supporting the individual by supporting students, research staff, space, equipment, or other research expenses. All connections with [malign foreign talent recruitment programs](#) must be identified in current and pending support.

Information Required for Each Activity	
<b>Sponsor of the Activity</b>	The sponsor of the activity or the source of funding.
<b>Award Number</b>	The federal award number or any other identifying number.
<b>Award Title</b>	If the title of the award or activity is not descriptive, add a brief description of the research being performed that would identify any overlaps or synergies with the proposed research
<b>Total Cost or Value</b>	The total cost or value of the award or activity, including direct and indirect costs and cost share. For pending proposals, provide the total amount of requested funding
<b>Award Period</b>	The "Start Date" through "End Date".
<b>Person-months</b>	The person-months of effort per year dedicated to the award or activity
<b>Description</b>	To identify overlap, duplication of effort, or synergistic efforts, append a description of the other award or activity to the current and pending support.
<b>Digital Persistent Identifier (e.g., ORCID iD)</b>	For R&D NOFOs only, provide an <a href="#">ORCID iD</a> (optional until May 2025, and required thereafter).
<b>Certification Statement</b>	<p>Covered individuals must provide a separate certification statement listing the required information above regarding current and pending support. Each individual must sign and date their respective certification statement:</p> <p><i>I, [Full Name and Title], understand that I have been designated as a covered individual by the Federal funding agency.</i></p> <p><i>I certify to the best of my knowledge and belief that the information contained in this Current and Pending Support Disclosure Statement is true, complete, and accurate. I understand that any false, fictitious, or fraudulent information,</i></p>

	<p><i>misrepresentations, half-truths, or omissions of any material fact, may subject me to criminal, civil, or administrative penalties for fraud, false statements, false claims, or otherwise. (18 U.S.C. §§ 1001 and 287, and 31 U.S.C. §§ 3729-3733 and 3801-3812). I further understand and agree that (1) the statements and representations made herein are material to DOE's funding decision, and (2) I have a responsibility to update the disclosures during the period of performance of the award should circumstances change which impact the responses provided above.</i></p> <p><i>I also certify that, at the time of submission, I am not a party in a <a href="#">malign foreign talent recruitment program</a>.</i></p> <p><b>The following CPS certification is optional until May 1, 2025, and mandatory thereafter:</b></p> <p><i>I further certify that within the past 12 months I have completed one of the following: (1) research security training meeting the guidelines in SEC. 10634(b) of 42 USC 19234, or (2) all of the NSF training modules located <a href="https://new.nsf.gov/research-security/training">https://new.nsf.gov/research-security/training</a>.</i></p>
<p><b>Foreign Government Sponsorship</b></p>	<p>Details of any obligations, contractual or otherwise, to any program, entity, or organization sponsored by a foreign government must be provided on request to either the applicant institution or DOE. Supporting documents of any identified source of support must be provided to DOE on request, including certified translations of any document.</p>

The information may be provided in the approved common disclosure format available at [Common Form for Current and Pending \(Other\) Support \(nsf.gov\)](#). Regardless of the format used, the individual must include a signature, date, and a certification statement using the language included in the table above.

Current and Pending Support Disclosures must be submitted for all covered individuals, include the exact certification statement provided above, and must be signed and dated in order to be considered. DOE reserves the right to not proceed with application merit reviews for incomplete applications.

**Definitions:**

**Current and pending support –**

- A) All resources made available, or expected to be made available, to an individual in support of the individual's RD&D efforts, regardless of
  - i. whether the source is foreign or domestic;
  - ii. whether the resource is made available through the entity applying for an award or directly to the individual; or
  - iii. whether the resource has monetary value; and

- B) includes in-kind contributions requiring a commitment of time and directly supporting the individual's RD&D efforts, such as the provision of office or laboratory space, equipment, supplies, employees, or students.

This term has the same meaning as the term "Other Support" as applied to researchers in NSPM-33: For researchers, Other Support includes all resources made available to a researcher in support of and/or related to all of their professional RD&D efforts, including resources provided directly to the individual or through the organization, and regardless of whether or not they have monetary value (e.g., even if the support received is only in-kind, such as office/laboratory space, equipment, supplies, or employees). This includes resource and/or financial support from all foreign and domestic entities, including but not limited to gifts provided with terms or conditions, financial support for laboratory personnel, and participation of student and visiting researchers supported by other sources of funding.

**Malign Foreign Talent Recruitment Program as defined in P.L. 117-167, Section 10638(4):**

- A) any program, position, or activity that includes compensation in the form of cash, in-kind compensation, including research funding, promised future compensation, complimentary foreign travel, things of non de minimis value, honorific titles, career advancement opportunities, or other types of remuneration or consideration directly provided by a foreign country at any level (national, provincial, or local) or their designee, or an entity based in, funded by, or affiliated with a foreign country, whether or not directly sponsored by the foreign country, to the targeted individual, whether directly or indirectly stated in the arrangement, contract, or other documentation at issue, in exchange for the individual—
- i. engaging in the unauthorized transfer of intellectual property, materials, data products, or other nonpublic information owned by a United States entity or developed with a federal research and development award to the government of a foreign country or an entity based in, funded by, or affiliated with a foreign country regardless of whether that government or entity provided support for the development of the intellectual property, materials, or data products;
  - ii. being required to recruit trainees or researchers to enroll in such program, position, or activity;
  - iii. establishing a laboratory or company, accepting a faculty position, or undertaking any other employment or appointment in a foreign country or with an entity based in, funded by, or affiliated with a foreign country if such activities are in violation of the standard terms and conditions of a federal research and development award;
  - iv. being unable to terminate the foreign talent recruitment program contract or agreement except in extraordinary circumstances;
  - v. through funding or effort related to the foreign talent recruitment program, being limited in the capacity to carry out a research and development award or required to engage in work that would result in substantial overlap or duplication with a federal research and development award;
  - vi. being required to apply for and successfully receive funding from the sponsoring foreign government's funding agencies with the sponsoring foreign organization as the recipient;
  - vii. being required to omit acknowledgment of the recipient institution with which the individual is affiliated, or the federal research agency sponsoring the research and development award, contrary to the institutional policies or standard terms and conditions of the federal research and development award;

- viii. being required to not disclose to the federal research agency or employing institution the participation of such individual in such program, position, or activity; or
- ix. having a conflict of interest or conflict of commitment contrary to the standard terms and conditions of the federal research and development award; and

(B) a program that is sponsored by—

- i. a foreign country of concern or an entity based in a foreign country of concern, whether or not directly sponsored by the foreign country of concern;
- ii. an academic institution on the list developed under section 1286(c)(8) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (10 U.S.C. 2358 note; 1 Public Law 115–232); or
- iii. a foreign talent recruitment program on the list developed under section 1286(c)(9) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (10 U.S.C. 2358 note; 1 Public Law 115–232).

More information can be found at [OSTP-Foreign-Talent-Recruitment-Program-Guidelines.pdf \(whitehouse.gov\)](https://www.whitehouse.gov/ostp-foreign-talent-recruitment-program-guidelines.pdf).

Save the information in a single PDF file named “CPS.pdf” and click on “Add Optional Other Attachment” to attach.

## 17. Digital Persistent Identifier (PID)

For all Research and Development (R&D) NOFOs, individuals that are required to submit Biographical Sketch and/or Current and Pending (Other) Support disclosures must provide a digital persistent identifier (PID) in such disclosures as part of the application. Included PIDs must meet the common/core standards specified in the [NSPM-33 Implementation Guidance](#) or successor guidance (e.g., an [ORCID iD](#)). The inclusion of an individual’s PID will be optional until May 1, 2025, and mandatory thereafter.

Include this information for each covered individual with the [Current and Pending Support](#) submission as described above and in the [NOFO Part 1, Application Content Requirements–Covered Individual Definition, Designation, and Responsibility](#) section.

## 18. Research Security Training Requirement

The research security training requirement described here is optional until May 1, 2025, and mandatory thereafter for R&D awards. Covered individuals listed on applications under the NOFO Part 1 are required to certify that they have taken research security training consistent with Section 10634 of the CHIPS and Science Act of 2022. In addition, applicants who receive an award must maintain sufficient records (records must be retained for the time period noted in [2 CFR 200.334](#) and made available to DOE upon request) of their compliance with this requirement for covered individuals at the applicant/recipient organization and they must extend this requirement to any and all subrecipients. To fulfill this requirement, an applicant may utilize the four one-hour training modules developed by the National Science Foundation at <https://new.nsf.gov/research-security/training> or develop and implement their own research security training program aligned with the requirements in Section 10634(b) of the CHIPS and Science Act of 2022. The submission of an application to this NOFO constitutes the applicant’s acceptance of this requirement.

Include this information for each covered individual with the [Current and Pending Support](#) submission as described above and in the [NOFO Part 1, Application Content Requirements–Covered Individual Definition, Designation, and Responsibility](#).

## 19. Transparency of Foreign Connections

Applicants must provide the following information as it relates to the proposed recipient and subrecipient(s). Include a separate disclosure for the applicant and each proposed subrecipient.

Disclosure exceptions by entity type:

- U.S. National Laboratories and domestic government entities are not required to respond to the Transparency of Foreign Connections disclosure.
- Institutions of higher education are only required to respond to items with an asterisk symbol (\*).

Applicants, regardless of entity type, must provide complete responses for project team members that are not U.S. National Laboratories, domestic government entities, or institutions of higher education.

Disclosure Information	
<b>*Entity Name</b>	Complete legal name of the lead organization.
<b>*Website Address</b>	Link to the entity's website address.
<b>*Mailing Address</b>	Complete mailing address for the entity to include zip code.
<b>*Project Participants Party to ANY Malign Foreign Talent Recruitment Program</b>	The identity of all owners, principal investigators, project managers, and covered individuals who are a party to any <a href="#">Malign Foreign Talent Recruitment Program</a> . As part of this requirement, the entity must also certify that each covered individual has been made aware of the Malign Foreign Talent Recruitment Program prohibition and complied with the certification requirement via the Current and Pending Support disclosure;
<b>Country of Risk Joint Venture or Subsidiary</b>	The existence of any joint venture or subsidiary that is based in, funded by, or has a foreign affiliation with any foreign country of risk (i.e., the People's Republic of China, Iran, North Korea, and Russia);
<b>Current or Pending Foreign Contractual or Financial Obligation</b>	Any current or pending contractual or financial obligation or other agreement specific to a business arrangement, or joint venture-like arrangement with an enterprise owned by a foreign state or any foreign entity;
<b>Percentage Foreign Ownership or Control</b>	Percentage, if any, that the proposed recipient or subrecipient has foreign ownership or control;
<b>Percentage Country of Risk Ownership</b>	Percentage, if any, that the proposed recipient or subrecipient is wholly or partially owned, directly or indirectly, by an entity incorporated or otherwise formed in a foreign country of risk or foreign state-owned entity;
<b>Percentage Country of Risk Investment</b>	Percentage, if any, of venture capital or institutional investment by an entity that has a general partner or individual holding a leadership role in such entity who has a foreign affiliation with any foreign country of risk;

Disclosure Information	
<b>*Country of Risk Technology Licensing of Intellectual Property Sales</b>	Any technology licensing, transfer, or intellectual property sales to a foreign country of risk, in effect during the 5-year period preceding submission of the proposal within the same technology area as the application (e.g., batteries, biotechnology, grid, energy generation and storage, advanced computing);
<b>*Foreign Equipment</b>	Any of the following foreign equipment proposed for use on the project: <ul style="list-style-type: none"> <li>i. Unmanned aircraft, control, and communications components originally made or manufactured in a foreign country of risk (including relabeled or rebranded equipment).</li> <li>ii. Coded equipment where the source code is written in a foreign country of risk.</li> <li>iii. Equipment from a foreign country of risk that will be connected to the internet or other remote communication system.</li> <li>iv. Any entity from a foreign country of risk that will have physical or remote access to any part of the equipment used on the project after delivery.</li> </ul>
<b>Foreign Entity Relationships</b>	Any foreign business entity, offshore entity, or entity outside the United States related to the proposed recipient or subrecipient;
<b>List of Company Directors (and Board Observers)</b>	Complete list of all directors (and board observers), including their full name, citizenship and shareholder affiliation, date of appointment, duration of term, as well as a description of observer rights as applicable;
<b>Complete Capitalization Table</b>	Complete capitalization table for your entity, including all equity interests (including LLC and partnership interests, as well as derivative securities). Include both the number of shares issued to each equity holder, as well as the percentage of that series and all equity on a fully diluted basis. Identify the principal place of incorporation (or organization) for each equity holder. If the equity holder is a natural person, identify the citizenship(s). If the recipient or subrecipient is a publicly traded company, provide the above information for shareholders with an interest greater than 5%;
<b>Principal Place of Incorporation</b>	Identify the principal place of incorporation (or organization) for each equity holder. If the equity holder is a natural person, identify the citizenship(s). If the recipient or subrecipient is a publicly traded company, provide the above information for shareholders with an interest greater than 5%;
<b>Rounds of Financing Table</b>	A summary table identifying all rounds of financing, the purchase dates, the investors for each round, and all the associated governance and information rights obtained by investors during each round of financing; and
<b>Organization Chart</b>	An organization chart to illustrate the relationship between your entity and the immediate parent, ultimate parent, and any intermediate parent, as well as any subsidiary or affiliates. Identify where each entity is incorporated.

DOE reserves the right to request additional or clarifying information based on the information submitted.

Save the information in a single file PDF named “BusinessSensitive\_TFC.pdf” and click on “Add Optional Other Attachment” to attach.

## 20. Potentially Duplicative Funding Notice

If the applicant or project team member has other active awards of federal funds, the applicant must determine whether the activities of those awards potentially overlap with the activities set forth in its application to this NOFO. If there is a potential overlap, the applicant must notify DOE in writing of the potential overlap and state how it will ensure any project funds (i.e., recipient cost share and federal funds) will not be used for identical cost items under multiple awards.

Likewise, for projects that receive funding under this NOFO, if a recipient or project team member receives any other award of federal funds for activities that potentially overlap with the activities funded under the DOE award, the recipient must promptly notify DOE in writing of the potential overlap and state whether project funds from any of those other federal awards have been, are being, or are to be used (in whole or in part) for one or more of the identical cost items under the DOE award. If there are identical cost items, the recipient must promptly notify the DOE Grants Officer in writing of the potential duplication and eliminate any inappropriate duplication of funding.

Save the information in a single PDF file named “PDFN.pdf” and click on “Add Optional Other Attachment” to attach.

## 21. Data Management Plan

A Data Management Plan (DMP) is required for all Research and Development projects. Please refer to the [NOFO Part 1, Application Content Requirements—Application Content Requirements](#) section to determine if a DMP is required. The DMP must provide a plan for making all research data displayed in publications resulting from the proposed work digitally accessible at the time of publications. A DMP explains how, when appropriate, data generated in the course of the work performed under a DOE award will be shared and preserved to validate the results of the proposed work or how the results could be validated if the data is not shared or preserved.

An applicant may select one of the template Data Management Plans (DMPs) listed below.

DMP Options		
Option Number	Category	DMP Template Language
1	Protected Data Permitted	For the deliverables under the award, the recipient does not plan on making the underlying research data supporting the findings in the deliverables publicly available for up to five (5) years after the data were first produced because such data will be considered protected under the award. The results from the DOE deliverables can be validated by DOE who will have access, upon request, to the research data. Other than providing deliverables as specified in the award, the recipient does not intend to publish the results from the project. However, in an instance where a publication includes results of the project, the underlying research data will be made available according to the policies of the publishing media. Where no such policy exists, the recipient must indicate on the publication a means for requesting and digitally obtaining the underlying research data. This includes the research data necessary to validate any results, conclusions, charts, figures, images in the publications.
2	Protected Data NOT Permitted	For any publication that includes results of the project, the underlying research data will be made available according to the policies of the publishing media. Where no such policy exists, the recipient must indicate on the publication a means for requesting and digitally obtaining the underlying research data. This includes the research data necessary to validate any results, conclusions, charts, figures, images in the publications.

Alternatively, instead of selecting one of the template DMPs, an applicant may submit another DMP provided that the DMP, at a minimum,

- 1) describes how data sharing and preservation will enable validation of the results from the proposed work, how the results could be validated if data are not shared or preserved and
- 2) has a plan for making all research data, if applicable, displayed in publications resulting from the proposed work digitally accessible at the time of publications.

A DMP template is also available as an attachment to this NOFO in FedConnect, which is provided for the administrative convenience of the applicant.

The DOE Public Access Plan located at [https://www.energy.gov/sites/prod/files/2014/08/f18/DOE\\_Public\\_Access%20Plan\\_FINAL.pdf](https://www.energy.gov/sites/prod/files/2014/08/f18/DOE_Public_Access%20Plan_FINAL.pdf) provides additional guidance.

The DMP submitted with the application must be consistent with the planned intellectual property (IP) approach for the award.

If selected for negotiation of an award, the IP provisions included in the award will govern rights provided to the Government regarding IP such as the Government-purpose license, march-in rights, and certain U.S. manufacturing requirements that may be implemented.

Save the information in a single PDF file named “DMP.pdf” and click on “Add Optional Other Attachment” to attach.

## 22. Project/Performance Site Location(s)

The applicant must provide a list of locations where project work will be performed by the recipient or subrecipient(s), including the information identified in the Project/Performance Site Locations. Note that the Project/Performance Site Congressional District is entered in the format of the 2-digit state code followed by a dash and a 3-digit Congressional district code, for example VA-001. Hover over this field for additional instructions.

Use the Next Site button to expand the form to add additional Project/Performance Site Locations.

## 23. Environmental Questionnaire

Refer to the *NOFO Part 1, Application Content and Form--Application Content Requirements* section to determine if the Environmental Questionnaire is required. If required, the template will be included as an attachment to this NOFO in FedConnect.

If required, the Environmental Questionnaire must include the scope of work for the entire project. The Applicant is also responsible for submitting a separate Environmental Questionnaire for each proposed subrecipient performing work at a different location. If selected for award and if a subrecipient’s location is not known at the time of application, a subsequent Environmental Questionnaire will be needed prior to any work being performed at an alternate location.

When the Environmental Questionnaire is required with the application, DOE’s decision whether and how to distribute federal funds under this NOFO is subject to the National Environmental Policy Act (42 USC 4321, et seq.).

If required, save the information in a single PDF file named “ENV.pdf” and click on “Add Optional Other Attachment” to attach.

## 24. Lobbying Activities

Recipients and subrecipients may not use any federal funds to influence or attempt to influence, directly or indirectly, congressional action on any legislative or appropriation matters. See also [Lobbying](#) in the Funding Restrictions section below.

### a. All recipients and subrecipients that have lobbying activities to disclose:

Complete and submit the Disclosure of Lobbying Activities (SF-LLL) available at: [https://apply07.grants.gov/apply/forms/sample/SFLLL\\_2\\_0-V2.0.pdf](https://apply07.grants.gov/apply/forms/sample/SFLLL_2_0-V2.0.pdf) to ensure that non-federal funds have not been paid and will not be paid to any person for influencing or attempting to influence any of the following in connection with the application:

- An officer or employee of any federal agency;
- A Member of Congress;
- An officer or employee of Congress; or
- An employee of a Member of Congress.

**b. Recipients and subrecipients that have no lobbying activities to disclose:**

Complete and submit, Certification Regarding Lobbying form (OMB 4040-0013) available at: [https://apply07.grants.gov/apply/forms/sample/GG\\_LobbyingForm-V1.1.pdf](https://apply07.grants.gov/apply/forms/sample/GG_LobbyingForm-V1.1.pdf). Save the information in a single file PDF named “Cert Lobbying.pdf” and click on “Add Optional Other Attachment” to attach.

Save the information in a single file PDF named “SF-LLL.pdf” and click on “Add Optional Other Attachment” to attach.

**25. Summary for Public Release**

Applicants must submit a one-page summary of their project that is suitable for dissemination to the public.

Summary of Public Release Content	
<b>Applicant Name</b>	Provide the legal name of the applicant.
<b>Major Participant Names</b>	List all significant project participants and their roles.
<b>Lead Project Manager / Principal Investigator(s)</b>	Provide names and titles.
<b>Project Title</b>	Provide the title for the planned project.
<b>Project Location(s)</b>	Provide the location(s) of work for the proposed project.
<b>Project Objectives</b>	Identify the overarching project objectives aligned with requirements set forth in the NOFO.
<b>Project Description</b>	The description must include methods to be employed, the potential impact of the project (e.g., benefits, outcomes), and the project’s commitments and goals described in the Community Benefits Plan
<b>Publicly Releasable (Unlimited Rights)</b>	This document must not include any proprietary or business-sensitive information, as DOE may make it available to the public after selections are made.
<b>Page Limit Clarification</b>	The summary must not exceed the stated page limit when printed, using standard 8.5” x 11” paper with 1” margins (top, bottom, left, and right) with font not smaller than 12-point.

Save the information in a single file named “Summary.pdf” and click on “Add Optional Other Attachment” to attach.

## 26. Summary Slide

Applicants must provide a single slide summarizing the proposed project. The Summary Slide should include the following information:

Summary Slide Content	
<b>Project Title</b>	Provide the title for the planned project.
<b>Applicant</b>	Provide the legal name of the applicant.
<b>Project Location(s)</b>	Provide the location(s) of work for the proposed project.
<b>PI/LPM and Key Personnel Information</b>	Provide names and titles.
<b>Requested DOE Funds</b>	Identify federal funds requested for the project.
<b>Proposed Cost Share</b>	Provide the amount of cost share contribution.
<b>Technology Summary</b>	Describe the technology to be developed.
<b>Technology Impact</b>	Describe the impact of the proposed technology if the project is successful.
<b>Project Goals</b>	Identify the overarching project goals.
<b>Key Graphics</b>	Illustrations, charts and/or tables
<b>Key Idea / Takeaway</b>	Describe the key takeaway that you would like to provide to the DOE.
<b>Topline Community Benefits</b>	Describe the key community benefits to be derived from the project.

Save the information in a single Microsoft PowerPoint file named "Slide.pdf" and click on "Add Optional Other Attachment" to attach.

## C. Additional Requirements

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None

## D. Funding Restrictions

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### 1. Allowable Costs

All expenditures must be allowable, allocable, and reasonable in accordance with the applicable federal cost principles. Pursuant to 2 CFR 910.352, the cost principles in the Federal Acquisition Regulations (48 CFR 31.2) apply to for-profit entities. The cost principles contained in 2 CFR Part 200, Subpart E apply to all entities other than for-profits.

### 2. Pre-Award Costs

Applicants selected for award negotiations (selectees) must request prior written approval to charge pre-award costs. Pre-award costs are those incurred prior to the effective date of the federal award directly pursuant to the negotiation and in anticipation of the federal award where such costs are

necessary for efficient and timely performance of the scope of work.

Such costs are allowable only to the extent that they would have been allowable if incurred after the date of the federal award and only with the written approval of the federal awarding agency, through the DOE Grants Officer.

Pre-award costs cannot be incurred prior to the Selection Official signing the Selection Statement and Analysis.

Pre-award expenditures are made at the selectee's risk. DOE is not obligated to reimburse costs: (1) in the absence of appropriations; (2) if an award is not made; or (3) if an award is made for a lesser amount than the selectee anticipated.

### **National Environmental Policy Act (NEPA) Requirements Related to Pre-Award Costs**

DOE's decision whether and how to distribute federal funds under this NOFO is subject to NEPA. Applicants should carefully consider and should seek legal counsel or other expert advice before taking any action related to the proposed project that would have an adverse effect on the environment or limit the choice of reasonable alternatives prior to DOE completing the NEPA review process.

DOE does not guarantee or assume any obligation to reimburse pre-award costs incurred prior to receiving written authorization from the Grants Officer. If the applicant elects to undertake activities that DOE determines may have an adverse effect on the environment or limit the choice of reasonable alternatives prior to receiving such written authorization from the Grants Officer, the applicant is doing so at risk of not receiving federal funding for its project and such costs may not be recognized as allowable cost share. Nothing contained in the pre-award cost reimbursement regulations or any pre-award costs approval letter from the Grants Officer overrides the requirement to obtain the written authorization from the Grants Officer prior to taking any action that may have an adverse effect on the environment or limit the choice of reasonable alternatives. Likewise, if an application is selected for negotiation of award, and the recipient elects to undertake activities that are not authorized for federal funding by the Grants Officer in advance of DOE completing a NEPA review, the recipient is doing so at risk of not receiving federal funding and such costs may not be recognized as allowable cost share.

## **3. Performance of Work in the United States (Foreign Work Waiver) Requirement**

All work performed under awards issued under this NOFO must be performed in the United States. The recipient must flow down this requirement to its subrecipients.

### **Failure to Comply**

If the recipient fails to comply with the Performance of Work in the United States requirement, DOE may deny reimbursement for the work conducted outside the United States and such costs may not be recognized as allowable recipient cost share. The recipient is responsible should any work under this award be performed outside the United States, absent a waiver, regardless of whether the work is performed by the recipient, subrecipients, contractors or other project partners.

### **Foreign Work Waiver**

To seek a foreign work waiver, the applicant must submit a written waiver request to DOE. Refer to [Performance of Work in the United States \(Foreign Work Waiver\)](#) which lists the information that must

be included in a request for a foreign work waiver.

#### 4. Foreign Travel

Please refer to *NOFO Part 1, Application Content and Form—Funding Restrictions* to see if foreign travel costs are allowable or not.

If allowable per NOFO Part 1 and if international travel is proposed for your project:

- Your organization must submit a foreign work waiver. See *Performance of Work in the United States (Foreign Work Waiver)* above for details.
- Your organization must comply with the International Air Transportation Fair Competitive Practices Act of 1974 (49 U.S.C. § 40118), commonly referred to as the “Fly America Act,” and implementing regulations at 41 CFR 301-10.131 through 301-10.143. The law and regulations require air transport of people or property to, from, between, or within a country other than the United States, the cost of which is supported under this award, to be performed by or under a cost-sharing arrangement with a United States flag carrier, if service is available.
- **Foreign travel costs are allowable only with the written approval of the Grants Officer assigned to the award prior to any incurred costs.**

#### 5. Lobbying

Recipients and subrecipients may not use any federal funds to influence or attempt to influence, directly or indirectly, congressional action on any legislative or appropriation matters.

Recipients and subrecipients are required to complete and submit SF-LLL, “Disclosure of Lobbying Activities” ([grants.gov/forms/forms-repository/sf-424-individual-family](https://grants.gov/forms/forms-repository/sf-424-individual-family)) to ensure that non-federal funds have not been paid and will not be paid to any person for influencing or attempting to influence any of the following in connection with the application:

- An officer or employee of any federal agency;
- A Member of Congress;
- An officer or employee of Congress; or
- An employee of a Member of Congress.

#### 6. Equipment and Supplies

All equipment and products purchased with funds made available under this NOFO should be American-made, to the greatest extent practicable. This requirement does not apply to used or leased equipment. This requirement does not supersede any other statutory requirement in the NOFO (e.g., [Buy America Requirements for Infrastructure Projects](#)).

#### 7. Davis-Bacon Act Requirements

Refer to *NOFO Part 1, Application Content and Form—Funding Restrictions* to determine if the Davis-Bacon Act requirements are applicable (if “Davis-Bacon Act Requirements” is not listed in the *Applicable Funding Restrictions* table, it is not required).

For projects awarded under NOFOs that will be funded under Division D of BIL, per Section 41101 of that law, all laborers and mechanics employed by the recipient, subrecipients, contractors, or subcontractors in the performance of construction, alteration, or repair work funded in whole or in part under the applicable NOFO Part 1 shall be paid wages at rates not less than those prevailing on similar projects in

the locality, as determined by the Secretary of Labor in accordance with Subchapter IV of Chapter 31 of Title 40, United States Code commonly referred to as the Davis-Bacon Act (DBA).

Applicants shall provide written assurance acknowledging the DBA requirements above, confirming that the laborers and mechanics performing construction, alteration, or repair work on projects funded in whole or in part by awards made as a result of this NOFO are paid or will be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by Subchapter IV of Chapter 31 of Title 40, United States Code (Davis-Bacon Act).

Applicants acknowledge that they will comply with all the Davis-Bacon Act requirements, including but not limited to:

- Ensuring that the wage determination(s) and appropriate Davis-Bacon clauses and requirements are flowed down to and incorporated into any applicable subrecipient or contract awards;
- Ensuring that if wage determination(s) and appropriate Davis-Bacon clauses and requirements are improperly omitted from subrecipient or contract awards, the applicable wage determination(s) and clauses are retroactively incorporated to the start of performance;
- Being responsible for compliance by any subrecipient or contractor with the Davis-Bacon labor standards;
- Receiving and reviewing certified weekly payrolls submitted by all subrecipients or contractors for accuracy and to identify potential compliance issues;
- Maintaining original certified weekly payrolls for three years after the completion of the project and making those payrolls available to DOE or the U.S. Department of Labor (DOL) upon request, as required by 29 CFR 5.6(a)(2);
- Conducting payroll and job-site reviews for construction work, including interviews with employees, with such frequency as may be necessary to assure compliance by its subrecipients or contractors and as requested or directed by DOE;
- Cooperating with any authorized representative of DOL in its inspection of records, interviews with employees, and other actions undertaken as part of a DOL investigation;
- Posting in a prominent and accessible place the wage determination(s) and DOL Publication: WH-1321, Notice to Employees Working on Federal or Federally Assisted Construction Projects;
- Notifying the Grants Officer of all labor standards issues, including all complaints regarding incorrect payment of prevailing wages and/or fringe benefits, received from recipient, subrecipient, contractor, or subcontractor employees; significant labor standards violations, as defined in 29 CFR 5.7; disputes concerning labor standards pursuant to 29 CFR Parts 4, 6, and 8 and as defined in FAR 52.222-14; disputed labor standards determinations; DOL investigations; or legal or judicial proceedings related to the labor standards under this award, subrecipient award, contract or subcontract; and
- Preparing and submitting to the Grants Officer, the Office of Management and Budget Control Number 1910-5165, Davis Bacon Semi-Annual Labor Compliance Report, by April 21 and October 21 of each year.

Recipients will also be required to undergo Davis-Bacon Act compliance training and maintain competency in Davis-Bacon Act compliance. The Grants Officer will notify the recipient of any DOE-sponsored Davis-Bacon Act compliance trainings. DOL offers free Prevailing Wage Seminars several times a year that meet this requirement, at <https://www.dol.gov/agencies/whd/government-contracts/construction/seminars/events>.

For additional guidance on how to comply with the Davis-Bacon provisions and clauses, see <https://www.dol.gov/agencies/whd/government-contracts/construction> and <https://www.dol.gov/agencies/whd/government-contracts/protections-for-workers-in-construction>.

Recipients must ensure the timely submission of weekly certified payrolls as part of its compliance with the Davis-Bacon Act.

DOE has contracted with [LCPtracker](#), a third-party DBA electronic payroll compliance software application, and recipients use of LCPtracker is mandatory absent a grant of a waiver. A waiver for the use of LCPtracker may be granted to a particular recipient if they are unable or limited in their ability to use or access the system. LCPtracker allows for certified payroll reports and workforce data to be uploaded electronically, 24 hours a day, 7 days per week and currently partners with several commercially available payroll systems. If a recipient uses a different payroll system, LCPtracker provides a free, spreadsheet template they can use to map out their payroll file, which would allow them to upload their employee and payroll data into the system. LCPtracker validation system checks payrolls for federal Davis-Bacon prevailing wage requirements by flagging mathematical errors or omission discrepancies for the recipient to review on a report. Examples include base hourly rate, total hourly rate, overtime, doubletime, apprentice approval, and fringe benefit contributions.

Additionally, LCPtracker utilizes industry standard eSignature technology, thus allowing recipients to electronically sign payroll reports versus using a wet signature. Individual program offices will coordinate with recipients on access and training.

For more information, visit [Davis-Bacon Act Requirements for Recipients of Bipartisan Infrastructure Law Funding](#).

## 8. Construction Signage

If your project involves construction, recipients are encouraged to display DOE Investing in America signage during and after construction. Guidance can be found at: (<https://www.energy.gov/design>). Proposed construction signage costs that meet these specifications are an allowable cost and should be included in the proposed project budget.

## V. Submission Requirements and Deadlines

Please refer to the [NOFO Part 1, Application Content and Form—Application Content Requirements](#) for all submission requirements and instructions including the content and form for each submission and deadlines.

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# VI. Application Review Information

Please refer to the [NOFO Part 1, Application Review Information—Review Criteria](#) for specific compliance and technical criteria. The following describes the DOE evaluation and selection process that is applicable to all NOFOs.

## A. Standard Evaluation and Selection Processes

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### 1. Overview

The evaluation process consists of multiple phases; each includes an initial eligibility review and a thorough technical review. Rigorous technical reviews of eligible submissions are conducted by reviewers that are experts in the subject matter of the NOFO. Ultimately, the Selection Official considers the recommendations of the reviewers, along with other considerations such as program policy factors and risk reviews, in determining which applications to select.

### 2. Pre-Selection Interviews

As part of the evaluation and selection process, DOE may invite one or more applicants to participate in pre-selection interviews. Pre-selection interviews are distinct from and more formal than pre-selection clarifications described below. The invited applicant(s) will meet with DOE representatives to provide clarification on the contents of the applications and to provide DOE an opportunity to ask questions regarding the proposed project. The information provided by applicants to DOE through pre-selection interviews contributes to DOE's selection decisions.

DOE will arrange to meet with the invited applicants in person at DOE's offices or a mutually agreed upon location. DOE may also arrange site visits at certain applicants' facilities. In the alternative, DOE may invite certain applicants to participate in a one-on-one conference with DOE via webinar, videoconference, or conference call.

DOE will not reimburse applicants for travel and other expenses relating to the pre-selection interviews, nor will these costs be eligible for reimbursement as pre-award costs.

Participation in pre-selection interviews with DOE does not signify that applicants have been selected for award negotiations.

### 3. Pre-Selection Clarification

DOE may determine that pre-selection clarifications are necessary from one or more applicants. Pre-selection clarifications are distinct from and less formal than pre-selection interviews described above. These pre-selection clarifications will solely be for the purposes of clarifying the application. The pre-selection clarifications may occur before, during or after the merit review evaluation process. Information provided by an applicant that is not necessary to address the pre-selection clarification question will not be reviewed or considered. Typically, a pre-selection clarification will be carried out through either written responses to DOE's written clarification questions or video or conference calls with DOE representatives.

The information provided by applicants to DOE through pre-selection clarifications is incorporated in their applications and contributes to the merit review evaluation and DOE's selection decisions. If DOE contacts an applicant for pre-selection clarification purposes, it does not signify that the applicant has been selected for negotiation of award or that the applicant is among the top ranked applications.

DOE will not reimburse applicants for expenses relating to the pre-selection clarifications, nor will these costs be eligible for reimbursement as pre-award costs.

#### **4. Recipient Responsibility and Qualifications**

Prior to making a federal award with a total amount of federal share greater than the simplified acquisition threshold, DOE is required to review and consider any responsibility and qualification information about the applicant that is in the entity information domain in [SAM.gov](https://sam.gov) (see 41 U.S.C. § 2313).

The applicant, at its option, may review information in the entity information domain in [SAM.gov](https://sam.gov) and comment on any information about itself that a federal awarding agency previously entered and is currently in the entity information domain in [SAM.gov](https://sam.gov).

DOE will consider any written comments by the applicant, in addition to the other information in the entity information domain in [SAM.gov](https://sam.gov), in making a judgment about the applicant's integrity, business ethics, and record of performance under federal awards when completing the review of risk posed by applicants as described in 2 CFR 200.206.

#### **5. Due Diligence Review for Research, Technology and Economic Security**

All applications submitted to DOE are subject to a due diligence review.

As DOE invests in critical infrastructure and funds critical and emerging technology areas,<sup>4</sup> DOE considers possible threats to United States research, technology, and economic security from undue foreign government influence when evaluating risk. If high risks are identified and cannot be sufficiently mitigated, DOE may elect to not fund the applicant. As part of the research, technology, and economic security risk review, DOE may contact the applicant and/or proposed project team members for additional information to inform the review. This risk review is conducted separately from the technical merit review.

The due diligence review of covered individuals includes but is not limited to the review of resumes and disclosures, as required in the NOFO. DOE reserves the right to ask for disclosures on project participants not defined as covered individuals. The Applicant need not submit any additional information on non-covered individuals, unless requested by DOE. The volume and type of information collected may depend on various factors associated with the award.

Note this review is separate and distinct from DOE Order 142.3B "Unclassified Foreign National Access Program".

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<sup>4</sup> See [Critical and Emerging Technologies List Update \(whitehouse.gov\)](https://www.whitehouse.gov).

## **6. Evaluation and Administration by Non-Federal Personnel**

In conducting the merit review evaluation, the Go/No-Go Reviews, and Peer Reviews, the government may seek the advice of qualified non-federal personnel as reviewers. The government may also use non-federal personnel to conduct routine, nondiscretionary administrative activities, including DOE contractors. The applicant, by submitting its application, consents to the use of non-federal reviewers/administrators. Non-federal reviewers must sign conflict of interest (COI) and non-disclosure acknowledgements (NDA) prior to reviewing an application. Non-federal personnel conducting administrative activities must sign an NDA.

## **7. Selection**

The Selection Official may consider the technical merit, the Federal Consensus Board's recommendations, program policy factors, risk reviews, and the amount of funds available in arriving at selections for this NOFO.

# VII. Selection and Award Notices

DOE anticipates notifying applicants selected for negotiation of award and negotiating awards by the dates provided on the [NOFO Part 1, Basic Information—Key Dates](#).

## A. Selection Notices

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### 1. Ineligible Submissions

Ineligible concept papers, if required, and applications will not be further reviewed or considered for award. The Grants Officer will send a notification letter by email to the technical and administrative points of contact designated by the applicant. The notification letter will state the basis upon which the concept paper or the application is ineligible and not considered for further review.

### 2. Concept Paper Notifications

Please refer to the [NOFO Part 1, Application Content and Form](#) section to determine if Concept Papers are required.

If Concept Papers are required, DOE will notify applicants of its determination to encourage or discourage the submission of an application. DOE will send a notification by email to the technical and administrative points of contact designated by the applicant on the Concept Paper Cover page. DOE may include general comments provided from reviewers on an applicant's concept paper in the encourage/discourage notifications.

Applicants may submit an application even if they receive a notification discouraging them from doing so. By discouraging the submission of an application, DOE intends to convey its lack of programmatic interest in the proposed project. Such assessments do not necessarily reflect judgments on the merits of the proposed project. The purpose of the concept paper phase is to save applicants the considerable time and expense of preparing an application that is unlikely to be selected for award negotiations.

A notification encouraging the submission of an application does not authorize the applicant to commence performance of the project.

### 3. Application Notifications

DOE will notify applicants of its determination via a notification letter by email to the technical and administrative points of contact designated by the applicant in the full application. The notification letter will inform the applicant whether its application was selected for award negotiations.

Alternatively, DOE may notify one or more applicants that a final selection determination on particular applications will be made at a later date, subject to the availability of funds or other factors.

### 4. Applicants Selected for Award Negotiations

DOE may stagger its selection determinations. As a result, some applicants may receive their notification letter in advance of other applicants. Successful applicants will receive written notification that they have been selected for award negotiations including estimated award negotiation dates. Receipt of a notification letter selecting an application for award negotiations does not authorize the applicant to commence performance of the project. If an application is selected for award negotiations, it is not a commitment by DOE to issue an award nor is it a guarantee of federal government funding. Applicants

do not receive an award until award negotiations are complete and the Grants Officer executes the funding agreement, accessible by the recipient in FedConnect.

The award negotiation process can take a minimum of 60 days up to 180 days depending on the complexity of the project and responsiveness of the selectee among other factors.

The applicant must be responsive during award negotiations by providing requested documentation, including post-selection documentation, and meet the negotiation deadlines. If the applicant fails to do so or if award negotiations are otherwise unsuccessful, DOE will cancel the award negotiations and rescind the Selection. DOE reserves the right to terminate award negotiations at any time for any reason.

Please refer to the [Pre-Award Costs](#) section above for guidance on pre-award costs.

## 5. Alternate Selections

In some instances, an applicant may receive a notification that its application was not selected for award and DOE designated the application to be an alternate. As an alternate, DOE may consider the application for federal funding in the future. A notification letter stating the application is designated as an alternate does not authorize the applicant to commence performance of the project. DOE may ultimately determine to select or not select the application for award negotiations.

## 6. Applicants Not Selected for Award Negotiations

DOE shall promptly notify in writing each applicant whose application has not been selected for award negotiation or whose application cannot be funded because of the unavailability of appropriated funds.

# B. Post-Selection Information Requests

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To reduce burden in the application process required under [Memorandum M-24-11 Reducing Burden in the Administration of Federal Financial Assistance](#), DOE has instituted Post-Selection Information Requests and Submissions procedures. These procedures allow certain elements of an application to be submitted later in the application process, either prior to merit review or after merit review when the application is under consideration for funding.

Applicants will be notified (primarily by e-mail) when Post-Selection Information is needed. This notification is not a Notice of Award, nor should it be construed to be an indicator of possible funding. Applicants should only submit this information when requested. The applicant will be notified on what documents and materials to submit, the format required and where and when to submit.

## 1. Example Information Requests

The following is a list of examples of information that may be required to complete award negotiations:

- Personnel proposed to work on the project and collaborating organizations
- Participants and Collaborating Organizations;
- Current and Pending Support;
- Community Benefits Outcomes and Objectives;
- Other budget information;
- Indirect cost information;
- Letters of Commitment from third parties contributing to cost share, if applicable;

- Name and phone number of the Designated Responsible Employee for complying with national policies prohibiting discrimination (See 10 CFR 1040.5);
- Information for the DOE Office of Civil Rights to process assurance reviews under 10 CFR 1040;
- Environmental Questionnaire;
- Lobbying disclosure;
- Representation of Limited Rights Data and Restricted Software, if applicable;
- Cybersecurity Plan (specific to certain BIL-funded projects)
- For construction projects: information related to Davis-Bacon Act requirements; any proposed Workforce and Community Agreement, as defined above in “Community Benefits Plan: Job Quality and Equity,” that applicants may have made with the relevant community; any proposed or required Project Labor Agreements; Collective Bargaining Agreements; Construction Workforce Continuity Plan; Operations Workforce Continuity Plan; and

## 2. Entity Risk Assessment

Pursuant to 2 CFR 200.206, DOE may conduct an additional review of the risk posed by applications submitted under the applicable NOFO Part 1. This risk assessment may consider:

- Financial stability;
- Quality of management systems and ability to meet the management standards prescribed in 2 CFR Part 200 as adopted and supplemented by 2 CFR Part 910;
- History of performance;
- Audit reports and findings; and
- The applicant's ability to effectively implement statutory, regulatory, or other requirements imposed on recipients or subrecipients.

DOE may make use of other publicly available information and the history of an applicant’s performance under DOE or other federal agency awards.

Depending on the severity of the findings and whether the findings were resolved, DOE may elect not to fund the applicant.

In addition to this review, DOE must comply with the guidelines on government-wide suspension and debarment in 2 CFR Part 180 and must require recipients or subrecipients to comply with these provisions. These provisions restrict federal awards, subawards and contracts with certain parties that are debarred, suspended, or otherwise excluded from or ineligible for participation in federal programs or activities.

## 3. Environmental Review in Accordance with National Environmental Policy Act (NEPA)

DOE’s decision whether and how to distribute federal funds under this NOFO is subject to NEPA (42 U.S.C. § 4321, *et seq.*). NEPA requires federal agencies to integrate environmental values into their decision-making processes by considering the potential environmental impacts of their proposed actions. For additional background on NEPA, please see DOE’s NEPA website at <https://www.energy.gov/nepa>.

While NEPA compliance is a federal agency responsibility and the ultimate decisions remain with the federal agency, all applicants selected for award negotiations and recipients of an award will be required to assist in the timely and effective completion of the NEPA process in the manner most pertinent to

their proposed project. If DOE determines certain documents must be prepared to complete the NEPA review process, the recipient may be required to prepare the documents and the costs to prepare the necessary documents may be included as part of the project costs. DOE will independently evaluate the environmental document and will take responsibility for the contents, including ensuring the professional integrity of the discussion and analysis, as required by NEPA.

#### **National Historic Preservation Act (NHPA)**

DOE must comply with the requirements of Section 106 of the National Historic Preservation Act (NHPA) prior to deciding whether or how to distribute federal funds. Section 106 requires DOE to identify and consider adverse effects to historic properties that are listed in or eligible for listing in the National Register of Historic Places. DOE may perform a NHPA review under the umbrella of its NEPA review and will require applicants to assist in this review and consider impacts to historic, Tribal, and cultural resources.

### **4. Flood Resilience**

Executive Order 11988, Floodplain Management, requires agencies engage in a decision-making process to evaluate the potential effects of any action it may take in a floodplain and to avoid development in a floodplain to the extent possible. DOE procedures for implementing the Executive Order are in 10 CFR part 1022. Executive Order 13690, Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input (reinstated by EO 14030, Climate-Related Financial Risk), directs federal agencies to “expand management from the current base flood level to a higher vertical elevation and corresponding horizontal floodplain to address current and future flood risk and ensure that projects funded with taxpayer dollars last as long as intended.” The higher flood elevation is based on one of three approaches: climate-informed science (preferred), freeboard value, or 0.2% annual flood change (500-year floodplain). Selectees will be required to indicate whether the proposed project location(s) is within a floodplain, how the floodplain was defined, and how the project’s design has been modified to reduce the risk of flood loss and minimize the impact of floods on human safety, health, and welfare. Information to assist in the implementation of these requirements is available at:

- <https://www.energy.gov/nepa/articles/eo-13690-establishing-federal-flood-risk-management-standard-and-process-further>
- <https://www.fema.gov/floodplain-management/intergovernmental/white-house-flood-resilience-interagency-working-group>
- <http://floodstandard.climate.gov>

### **5. Trafficking in Persons**

Awards under this NOFO will be subject to the requirements at [2 CFR Part 175, Award Term for Trafficking in Persons](#), including the compliance plan and certification requirements applicable if the estimated value of services required to be performed under the grant or cooperative agreement outside the United States exceeds \$500,000.

### **6. Construction Workforce Continuity Plan**

Required for awards inclusive of any construction project with total construction costs greater than \$35M and where DOE is contributing 10 percent or more of the project amount, or as otherwise selected by DOE.

If selected for award negotiations, within 30 days of the notification of selection for award negotiations, the selectee must submit a Construction Workforce Continuity Plan. A Workforce Continuity Plan template is provided at <https://www.energy.gov/infrastructure/reporting-checklists> with the intent to reduce the administrative burden by promoting the use of common formats.

Selectees that have a qualifying Project Labor Agreement (PLA) or have a qualifying Collective-Bargaining Agreement that will cover the construction work as described in the Special Terms and Conditions of the award are not required to submit a Workforce Continuity Plan or the associated Workforce Continuity report on a quarterly frequency post-award.

## 7. Operations Workforce Continuity Plan

Required for awards inclusive of any project that will have more than 100 employees in operation, including contract workers who are not W2 employees, and where DOE is contributing 10 percent or more of the project amount, or as otherwise selected by DOE.

If selected for award negotiations, within 30 days of the notification of selection for award negotiations, the selectee must submit an Operations Workforce Continuity Plan. A Workforce Continuity Plan template is provided at <https://www.energy.gov/infrastructure/reporting-checklists> with the intent to reduce the administrative burden by promoting the use of common formats.

Selectees that have a qualifying Collective-Bargaining Agreement that will cover operations activities under this award are not required to submit a separate Operations Workforce Continuity Plan or the associated Workforce Continuity report on a quarterly frequency post-award.

## C. Award Notices

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Upon successful completion of award negotiations, the DOE Grants Officer will approve the award, and the recipient will then receive notification of award and can access it in the FedConnect system. Selectees must be registered in FedConnect to receive the final award package after successful completion of award negotiations.

Registering with [FedConnect](#)<sup>®</sup> is fast, easy, and free. Only individuals who are designated as Points of Contact in SAM.gov can create a new company account.

- **What is it?** It's how recipient receive their legally executed award package.
- The SAM Unique Entity Identifier Number (UEI) must be obtained before this registration can be initiated.
- Review the FedConnect Ready, Set, Go! Guide at [https://www.fedconnect.net/FedConnect/Marketing/Documents/FedConnect\\_Ready\\_Set\\_Go.pdf](https://www.fedconnect.net/FedConnect/Marketing/Documents/FedConnect_Ready_Set_Go.pdf)
- **Duration** to complete: can take two to three days.
- **Registration Link:** FedConnect website: <https://www.fedconnect.net/FedConnect/Default.htm>
- **HELP:** <https://www.fedconnect.net/FedConnect/TechSupport.aspx>

### Electronic Authorization of Applications and Award Documents

Submission of an application and supplemental information under the NOFO Part 1 through electronic systems used by the DOE, including Grants.gov and FedConnect, constitutes the authorized representative's approval and electronic signature.

# VIII. Award Administration Information

## A. Post-Award Requirements and Administration

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Note: Please review this document prior to applying.

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; Risk-Based Review of Project Participants; Performance of Work in the United States (Foreign Work Waiver); 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.

Recipients of an award made under DOE NOFOs must comply with requirements of all applicable federal, state, and local laws, regulations, DOE policy and guidance, instructions in this NOFO, and the award terms and conditions. Recipients must require subrecipients' compliance with all applicable requirements. Reporting requirements are identified on the Federal Assistance Reporting Checklist, attached to the award agreement.

All DOE award recipients must adhere to the following:

### 1. Award Administrative Requirements

The administrative requirements for DOE grants and cooperative agreements are contained in 2 CFR Part 200 as adopted and supplemented by 2 CFR Part 910.

### 2. Subaward and Executive Reporting

Additional administrative requirements necessary for DOE grants and cooperative agreements to comply with the Federal Funding and Transparency Act of 2006 (FFATA) are contained in 2 CFR Part 170. Recipients must register with the FFATA Subaward Reporting System database and report the required data on their first tier subrecipients. Recipients must report the executive compensation for their own executives as part of their registration profile in SAM.

### 3. National Policy Requirements

The National Policy Assurances that are incorporated as a term and condition of award are located at: <http://www.nsf.gov/awards/managing/rtc.jsp>.

### 4. Applicant Representations and Certifications

#### Lobbying Restrictions

By accepting funds under this award, the recipient agrees that none of the funds obligated on the award shall be expended, directly or indirectly, to influence Congressional action on any legislation or appropriation matters pending before Congress, other than to communicate to Members of Congress as described in 18 U.S.C. § 1913. This restriction is in addition to those prescribed elsewhere in statute and regulation.

### Corporate Felony Conviction and Federal Tax Liability Representations

In submitting an application to a NOFO, the applicant represents that:

- a. It is **not** a corporation that has been convicted of a felony criminal violation under any federal law within the preceding 24 months; and
- b. It is **not** a corporation that has any unpaid federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

For purposes of these representations, a corporation is any for-profit or nonprofit entity that has filed articles of incorporation in any of the 50 states, the District of Columbia, or the various territories of the United States [but not foreign corporations].

### Nondisclosure and Confidentiality Agreements Representations

In submitting an application to a NOFO the applicant represents that:

- a. It **does not and will not** require its employees or contractors to sign internal nondisclosure or confidentiality agreements or statements prohibiting or otherwise restricting its employees or contractors from lawfully reporting waste, fraud, or abuse to a designated investigative or law enforcement representative of a federal department or agency authorized to receive such information.
- b. It **does not and will not** use any federal funds to implement or enforce any nondisclosure and/or confidentiality policy, form, or agreement it uses unless it contains the following provisions:

*“These provisions are consistent with and do not supersede, conflict with, or otherwise alter the employee obligations, rights, or liabilities created by existing statute or Executive Order relating to (1) classified information, (2) communications to Congress, (3) the reporting to an Inspector General of a violation of any law, rule, or regulation, or mismanagement, a gross waste of funds, an abuse of authority, or a substantial and specific danger to public health or safety, or (4) any other whistleblower protection. The definitions, requirements, obligations, rights, sanctions, and liabilities created by controlling Executive Orders and statutory provisions are incorporated into this agreement and are controlling.”*

- (1) The limitation above shall not contravene requirements applicable to Standard Form 312 Classified Information Nondisclosure Agreement (<https://fas.org/sgp/othergov/sf312.pdf>), Form 4414 Sensitive Compartmented Information Disclosure Agreement (<https://fas.org/sgp/othergov/intel/sf4414.pdf>), or any other form issued by a federal department or agency governing the nondisclosure of classified information.
- (2) Notwithstanding the provision listed in paragraph (a), a nondisclosure or confidentiality policy form or agreement that is to be executed by a person connected with the conduct of an intelligence or intelligence-related activity, other

than an employee or officer of the U.S. government, may contain provisions appropriate to the activity for which such document is to be used. Such form or agreement shall, at a minimum, require that the person will not disclose any classified information received during such activity unless specifically authorized to do so by the U.S. government. Such nondisclosure or confidentiality forms shall also make it clear that they do not bar disclosures to Congress, or to an authorized official of an executive agency or the U.S. Department of Justice, that are essential to reporting a substantial violation of law.

## 5. Statement of Federal Stewardship

DOE will exercise normal federal stewardship in overseeing the project activities performed under DOE awards. Stewardship activities include but are not limited to conducting site visits; reviewing performance and financial reports; providing assistance and/or temporary intervention in unusual circumstances to correct deficiencies that develop during the project; assuring compliance with terms and conditions; and reviewing technical performance after project completion to ensure that the project objectives have been accomplished.

## 6. Uniform Commercial Code (UCC) Financing Statements

Per 2 CFR 910.360 (Real Property and Equipment) when a piece of equipment is purchased by a for-profit recipient or subrecipient with federal funds, and when the federal share of the financial assistance agreement is more than \$1 million the recipient or subrecipient must:

Properly record, and consent to the Department's ability to properly record if the recipient fails to do so, UCC financing statement(s) for all equipment in excess of \$10,000 purchased with project funds. These financing statement(s) must be approved in writing by the Grants Officer prior to the recording, and they shall provide notice that the recipient's title to all equipment (not real property) purchased with federal funds under the financial assistance agreement is conditional pursuant to the terms of this section, and that the government retains an undivided reversionary interest in the equipment. The UCC financing statement(s) must be filed before the Grants Officer may reimburse the recipient for the federal share of the equipment unless otherwise provided for in the relevant financial assistance agreement. The recipient shall further make any amendments to the financing statements or additional recordings, including appropriate continuation statements, as necessary or as the Grants Officer may direct.

## 7. Interim Conflict of Interest Policy for Financial Assistance

The DOE interim Conflict of Interest Policy for Financial Assistance (COI Policy)<sup>5</sup> is applicable to all recipients or subrecipients applying for, or that receive, DOE funding by means of a financial assistance award (e.g., a grant or cooperative agreement) and, through the implementation of this policy by the entity, to each Investigator who is planning to participate in, or is participating in, the project funded wholly or in part under the DOE financial assistance award. The term "Investigator" means the PI and any other person, regardless of title or position, who is responsible for the purpose, design, conduct, or reporting of a project funded by DOE or proposed for funding by DOE. Recipients must flow down the requirements of the interim COI Policy to any subrecipient. Further, for DOE funded projects, the

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<sup>5</sup> DOE's interim COI Policy can be found at <https://www.energy.gov/management/department-energy-interim-conflict-interest-policy-requirements-financial-assistance>.

recipient must include all financial conflicts of interest (FCOI) (i.e., managed and unmanaged/unmanageable) in its initial and ongoing FCOI reports.

It is understood that recipients or subrecipients receiving DOE financial assistance awards will need sufficient time to come into full compliance with DOE's interim COI Policy. To provide some flexibility, DOE allows for a staggered implementation. Specifically, prior to award, applicants selected for award negotiations must: ensure all Investigators complete their significant financial disclosures; review the disclosures; determine whether a FCOI exists; develop and implement a management plan for FCOIs; and provide DOE with an initial FCOI report that includes all FCOIs (i.e., managed and unmanaged/unmanageable). Recipients will have 180 days from the date of the award to come into full compliance with the other requirements set forth in DOE's interim COI Policy. Prior to award, the applicant must certify that it is, or will be within 180 days of the award, compliant with all requirements in the COI Policy.

## 8. Whistleblower Protections

As provided in 2 CFR 200.217, an employee of a recipient or subrecipient must not be discharged, demoted, or otherwise discriminated against as a reprisal for disclosing information that the employee reasonably believes is evidence of gross mismanagement of a federal contract or grant, a gross waste of federal funds, an abuse of authority relating to a federal contract or grant, a substantial and specific danger to public health or safety, or a violation of law, rule, or regulation related to a federal contract (including the competition for or negotiation of a contract) or grant. The recipient and subrecipient must inform their employees in writing of employee whistleblower rights and protections.

## 9. Fraud, Waste, and Abuse

The mission of the DOE Office of Inspector General (OIG) is to strengthen the integrity, economy, and efficiency of the Department's programs and operations, including deterring and detecting fraud, waste, abuse, and mismanagement. The OIG accomplishes this mission primarily through investigations, audits, and inspections of DOE activities to include grants, cooperative agreements, loans, and contracts.

The OIG maintains a hotline for reporting allegations of fraud, waste, abuse, or mismanagement. To report such allegations, please visit <https://www.energy.gov/ig/ig-hotline>.

Additionally, recipients of DOE awards must be cognizant of the requirements of [2 CFR 200.113 Mandatory disclosures](#), which states:

An Applicant, Recipient, or Subrecipient of a federal award must promptly disclose whenever, in connection with the federal award (including any activities or subawards thereunder), it has credible evidence of the commission of a violation of federal criminal law involving fraud, conflict of interest, bribery, or gratuity violations found in Title 18 of the United States Code or a violation of the civil False Claims Act (31 U.S.C. 3729–3733). The disclosure must be made in writing to the federal agency, the agency's Office of Inspector General, and pass-through entity (if applicable). Recipients and subrecipients are also required to report matters related to recipient integrity and performance in accordance with Appendix XII of this part. Failure to make required disclosures can result in any of the remedies described in [2 CFR 200.339](#). (See also [2 CFR part 180](#), [31 U.S.C. § 3321](#), and [41 U.S.C. § 2313](#).) [[85 FR 49539](#), Aug. 13, 2020]

Applicants/recipients and subrecipients (if applicable) are encouraged to allocate sufficient costs in the project budget to cover the costs associated for personnel and data infrastructure needs to support performance management and program evaluation needs, including but not limited to independent program and project audits to mitigate risks for fraud, waste, and abuse.

## 10. Participants and Collaborating Organizations

If selected for award negotiations, the selected applicant must submit a list of personnel who are proposed to work on the project, both at the recipient and subrecipient level and a list of proposed collaborating organizations prior to award. Recipients will have an ongoing responsibility to notify DOE of changes to the personnel and collaborating organizations and submit updated information during the life of the award.

## 11. Current and Pending Support

Throughout the life of the award, the recipient has an ongoing responsibility to submit: 1) current and pending support disclosure statements and resumes for any new covered individuals, and 2) updated disclosures if there are changes to the current and pending support previously submitted to DOE. Also see the [Current and Pending Support](#) information in the Application Contents Requirements section above.

## 12. Prohibition Related to Malign Foreign Talent Recruitment Programs

### Prohibition

As required by law,<sup>6</sup> *Covered Individuals* participating in a *Malign Foreign Talent Recruitment Program* are prohibited from participating in projects selected for federal funding under this NOFO. Should an award result from this NOFO, the recipient must exercise ongoing due diligence to reasonably ensure that no such individuals participating on the DOE-funded project are participating in a *Malign Foreign Talent Recruitment Program*. Consequences for violations of this prohibition will be determined according to applicable law, regulations, and policy.

Further, the recipient must notify DOE within five (5) business days upon learning that an individual on the project team is or is believed to be participating in a malign foreign talent recruitment program. DOE may modify and add requirements related to this prohibition to the extent required by law.

*Covered Individuals* and the applicant must provide certifications regarding no participation in *Malign Foreign Talent Recruitment Programs* (see the Current and Pending Support section and Transparency of Foreign Connections section).

### Non-Discrimination

DOE will ensure that the Malign Foreign Talent Recruitment Program Prohibition is carried out in a manner that does not target, stigmatize, or discriminate against individuals on the basis of race, ethnicity, or national origin, consistent with title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d

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<sup>6</sup> See sections 10631-10632 of [P.L. 117-167 \(42 USC 19231-19232\)](#); [OSTP-Foreign-Talent-Recruitment-Program-Guidelines.pdf \(whitehouse.gov\)](#).

et seq.).

## Definitions

### **Malign Foreign Talent Recruitment Program. as defined in P.L. 117-167, Section 10638(4):**

- A) any program, position, or activity that includes compensation in the form of cash, in-kind compensation, including research funding, promised future compensation, complimentary foreign travel, things of non de minimis value, honorific titles, career advancement opportunities, or other types of remuneration or consideration directly provided by a foreign country at any level (national, provincial, or local) or their designee, or an entity based in, funded by, or affiliated with a foreign country, whether or not directly sponsored by the foreign country, to the targeted individual, whether directly or indirectly stated in the arrangement, contract, or other documentation at issue, in exchange for the individual—
- i. engaging in the unauthorized transfer of intellectual property, materials, data products, or other nonpublic information owned by a United States entity or developed with a federal research and development award to the government of a foreign country or an entity based in, funded by, or affiliated with a foreign country regardless of whether that government or entity provided support for the development of the intellectual property, materials, or data products;
  - ii. being required to recruit trainees or researchers to enroll in such program, position, or activity;
  - iii. establishing a laboratory or company, accepting a faculty position, or undertaking any other employment or appointment in a foreign country or with an entity based in, funded by, or affiliated with a foreign country if such activities are in violation of the standard terms and conditions of a federal research and development award;
  - iv. being unable to terminate the foreign talent recruitment program contract or agreement except in extraordinary circumstances;
  - v. through funding or effort related to the foreign talent recruitment program, being limited in the capacity to carry out a research and development award or required to engage in work that would result in substantial overlap or duplication with a federal research and development award;
  - vi. being required to apply for and successfully receive funding from the sponsoring foreign government's funding agencies with the sponsoring foreign organization as the recipient;
  - vii. being required to omit acknowledgment of the recipient institution with which the individual is affiliated, or the federal research agency sponsoring the research and development award, contrary to the institutional policies or standard terms and conditions of the federal research and development award;
  - viii. being required to not disclose to the federal research agency or employing institution the participation of such individual in such program, position, or activity; or
  - ix. having a conflict of interest or conflict of commitment contrary to the standard terms and conditions of the federal research and development award; and
- B) a program that is sponsored by—
- i. a foreign country of concern or an entity based in a foreign country of concern, whether or not directly sponsored by the foreign country of concern;
  - ii. an academic institution on the list developed under section 1286(c)(8) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (10 U.S.C. 2358 note; <sup>1</sup> Public Law 115–232); or

- iii. a foreign talent recruitment program on the list developed under section 1286(c)(9) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (10 U.S.C. 2358 note; <sup>1</sup> Public Law 115–232).

Consistent with applicable law (42 U.S.C. 19232), this provision does not prohibit, unless such activities are funded, organized, or managed by an academic institution or a foreign talent recruitment program on the lists developed under paragraphs (8) and (9) of section 1286(c) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (10 U.S.C. 4001 note; Public Law 115–232)—

- A) making scholarly presentations and publishing written materials regarding scientific information not otherwise controlled under current law;
- B) participation in international conferences or other international exchanges, research projects or programs that involve open and reciprocal exchange of scientific information, and which are aimed at advancing international scientific understanding and not otherwise controlled under current law;
- C) advising a foreign student enrolled at an institution of higher education or writing a recommendation for such a student, at such student's request; and
- D) other international activities determined appropriate by the federal research agency head or designee.

### 13. Foreign Collaboration Considerations

For **new** collaborations with foreign entities, organizations, and governments, the recipient will be required to provide DOE with advanced written notification of any potential collaboration with foreign entities, organizations, or governments in connection with its DOE-funded award scope. The recipient will then be required to await further guidance from DOE prior to contacting the proposed foreign entity, organization, or government regarding the potential collaboration or negotiating the terms of any potential agreement.

For **existing** collaborations with foreign entities, organizations, and governments, the recipient will be required to provide DOE with a written list of all existing foreign collaborations in which it has entered in connection with its DOE-funded award scope.

Description of collaborations that should be reported:

- In general, a collaboration will involve some provision of a thing of value to, or from, the recipient.
- A thing of value includes but may not be limited to all resources made available to, or from, the recipient in support of and/or related to the DOE award, regardless of whether they have monetary value.
- Things of value also may include in-kind contributions (such as office/laboratory space, data, equipment, supplies, employees, students).
- In-kind contributions not intended for direct use on the DOE award but resulting in provision of a thing of value from or to the DOE award must also be reported.

Collaborations do not include routine workshops, conferences, use of the recipient's services and facilities by foreign investigators resulting from its standard published process for evaluating requests for

access, or the routine use of foreign facilities by awardee staff in accordance with the recipient's standard policies and procedures.

## 14. U.S. Manufacturing Commitments

Refer to *NOFO Part 1, Award Administration Information—Post-Award Requirements* to determine if U.S. Manufacturing Commitments are applicable (if “U.S. Manufacturing Commitments” is not listed in the *Applicable Post-Award Requirements and Administration* table, it is not required). If applicable, the following applies:

A primary objective of DOE's multi-billion-dollar research, development, and demonstration investments is to cultivate new research and development ecosystems, manufacturing capabilities, and supply chains for and by United States industry and labor. Therefore, in exchange for receiving taxpayer dollars to support an applicant's project, the applicant/recipient and any subrecipient and contractor must agree to a U.S. Competitiveness provision requiring that any products embodying any subject invention or produced through the use of any subject invention will be manufactured substantially in the United States unless the applicant/recipient can show to the satisfaction of DOE that it is not commercially feasible. Award terms, including the specific U.S. Competitiveness Provision applicable to the various types of recipients and projects, are available at <https://www.energy.gov/gc/standard-intellectual-property-ip-provisions-financial-assistance-awards>.

Please note that a subject invention is any invention conceived or first actually reduced to practice in performance of work under an award. An invention is any invention or discovery which is or may be patentable. The recipient includes any awardee, recipient, subawardee, or subrecipient.

As noted in the U.S. Competitiveness Provision, if an entity cannot meet the requirements of the U.S. Competitiveness Provision, the entity may request a modification or waiver of the U.S. Competitiveness Provision. For example, the entity may propose modifying the language of the U.S. Competitiveness Provision in order to change the scope of the requirements or to provide more specifics on the application of the requirements for a particular technology. As another example, the entity may request that the U.S. Competitiveness Provision be waived in lieu of a net benefits statement or United States manufacturing plan. The statement or plan would contain specific and enforceable commitments that would be beneficial to the United States economy and competitiveness. Examples of such commitments could include manufacturing specific products in the United States, making a specific investment in a new or existing United States manufacturing facility, keeping certain activities based in the United States or supporting a certain number of jobs in the United States related to the technology. DOE may, in its sole discretion, determine that the proposed modification or waiver promotes commercialization and provides substantial United States economic benefits, and grant the request. If granted, DOE will modify the award terms and conditions for the requesting entity accordingly.

More information and guidance on the waiver and modification request process can be found in the DOE Financial Assistance Letter on this topic, available at <https://www.energy.gov/management/pf-2022-09-fal-2022-01-implementation-doe-determination-exceptional-circumstances-under>. Additional information on DOE's Commitment to Domestic Manufacturing for DOE-funded R&D is available at <https://www.energy.gov/gc/us-manufacturing>.

The U.S. Competitiveness Provision is implemented by DOE pursuant to a Determination of Exceptional Circumstances (DEC) under the Bayh-Dole Act and DOE Patent Waivers. Please refer to the [Title to Subject Inventions](#) section below for more information on the DEC and DOE Patent Waivers.

## 15. Subject Invention Utilization Reporting

To ensure that recipients, subrecipients, and contractors holding title to subject inventions are taking the appropriate steps to commercialize subject inventions, DOE requires that each recipient, subrecipient, and contractor holding title to a subject invention submit annual reports for 10 years from the date the subject invention was disclosed to DOE on the utilization of the subject invention and efforts made by recipient or its licensees or assignees to stimulate such utilization. The reports must include information regarding the status of development, date of first commercial sale or use, gross royalties received by the recipient, and such other data and information as DOE may specify.

## 16. Intellectual Property Provisions

The standard DOE financial assistance intellectual property provisions applicable to the various types of recipients are located at <http://energy.gov/gc/standard-intellectual-property-ip-provisions-financial-assistance-awards>.

## 17. Go/No-Go Review

Please refer to the *NOFO Part 1, Award Administration Information--Post-Award Requirements* to determine if a Go/No-go review for each DOE-funded project will be applicable (if “Go/No-Go Review” is not listed in the *Applicable Post-Award Requirements and Administration* table, it is not required).

If applicable, each project selected under the applicable NOFO Part 1 will be subject to a periodic project evaluation referred to as a Go/No-Go Review.

A Go/No-Go Review is a risk management tool and a project management best practice to ensure that, for the current phase or period of performance, technical success is definitively achieved and potential for success in future phases or periods of performance is evaluated, prior to beginning the execution of future phases. At the Go/No-Go decision points, DOE will evaluate project performance, project schedule adherence, the extent milestone objectives are met, compliance with reporting requirements, and overall contribution to the program goals and objectives. Federal funding beyond the Go/No-Go decision point (continuation funding) is contingent upon (1) availability of federal funds appropriated by Congress for the purpose of this program; (2) the availability of future-year budget authority; (3) recipient’s technical progress compared to the Milestone Summary Table stated in Attachment 1 of the award; (4) recipient’s submittal of required reports; (5) recipient’s compliance with the terms and conditions of the award; (6) DOE’s Go/No-Go decision; (7) the recipient’s submission of a continuation application<sup>7</sup>; and (8) written approval of the continuation application by the Grants Officer.

As a result of the Go/No-Go Review, DOE may, at its discretion, authorize the following actions: (1) continue to fund the project, contingent upon the availability of funds appropriated by Congress for the purpose of this program and the availability of future-year budget authority; (2) recommend redirection of work under the project; (3) place a hold on federal funding for the project, pending further supporting data or funding; or (4) discontinue funding the project because of insufficient progress, change in strategic direction, or lack of funding.

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<sup>7</sup> A continuation application is a non-competitive application for an additional budget period within a previously approved project period. At least ninety (90) days before the end of each budget period, the recipient must submit its continuation application per the instructions in the award terms and conditions.

The Go/No-Go decision is distinct from a non-compliance determination. In the event a recipient fails to comply with the requirements of an award, DOE may take appropriate action, including but not limited to, redirecting, suspending, or terminating the award.

## 18. Conference Spending

The recipient shall not expend any funds on a conference not directly and programmatically related to the purpose for which the grant or cooperative agreement was awarded that would defray the cost to the U.S. government of a conference held by any Executive branch department, agency, board, commission, or office for which the cost to the U.S. government would otherwise exceed \$20,000, thereby circumventing the required notification by the head of any such Executive Branch department, agency, board, commission, or office to the Inspector General (or senior ethics official for any entity without an Inspector General), of the date, location, and number of employees attending such conference.

## 19. Invoice Review and Approval

DOE employs a risk-based approach to determine the level of supporting documentation required for approving invoice payments. Recipients may be required to provide some or all of the following items with their requests for reimbursement:

- Summary of costs by cost categories;
- Timesheets or personnel hours report;
- If applicable, proof of compliance with the Davis-Bacon Act and electronic submittals of certified payroll reports;
- Invoices/receipts for all travel, equipment, supplies, contractual, and other costs;
- UCC filing proof for equipment acquired with project funds by for-profit recipients and subrecipients;
- Explanation of cost share for invoicing period;
- Analogous information for some subrecipients; and
- Other items as required by DOE.

## 20. Cost Share Payment

DOE requires recipients to contribute the cost share amount incrementally over the life of the award. The terms and conditions of the award will specify the recipient's cost share interval, such as by billing period or on a budget period basis. The recipient's cost share for each interval must always reflect the overall cost share ratio negotiated by the parties (e.g., 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). When FFRDC funding will be provided directly to the FFRDC(s) by DOE, recipients will be required to provide project cost share at a percentage commensurate with the FFRDC costs, on a budget period basis, resulting in a higher interim invoicing cost share ratio than the total award ratio.

In limited circumstances, and where it is in the government's interest, the DOE Grants Officer may approve a request by the recipient to meet its cost share requirements on a less frequent basis than required by the terms and conditions of the award. Regardless of the interval requested, the recipient must be up to date on cost share at each interval. Such requests must be sent to the Grants Officer during award negotiations and include the following information: (1) a detailed justification for the request; (2) a proposed schedule of payments, including amounts and dates; (3) a written commitment to meet that schedule; and (4) such evidence as necessary to demonstrate that the recipient has

complied with its cost share obligations to date. The Grants Officer must approve all such requests before they go into effect.

## **21. Notice of Bipartisan Infrastructure Law OR Inflation Reduction Act Specific Requirements**

Be advised that special terms and conditions apply to projects funded by the BIL or IRA relating to:

- Reporting, tracking, and segregation of incurred costs;
- Reporting on job creation and preservation;
- Publication of information on the internet;
- Access to records by Inspectors General and the Government Accountability Office;
- Requiring all of the iron, steel, manufactured goods, and construction materials used in the infrastructure activities of applicable projects are produced in the United States;
- Protecting whistleblowers and requiring prompt referral of evidence of a false claim to an appropriate inspector general;
- Certification and registration;
- Cybersecurity Plan (BIL only);
- Davis-Bacon Act (BIL only); and
- Ensuring laborers and mechanics employed by contractors or subcontractors are paid wages equivalent to prevailing wages on similar projects in the area (IRA only).

## **22. Implementation of Executive Order 13798, Promoting Free Speech and Religious Liberty**

States, local governments, and other public entities may not condition subawards in a manner that would discriminate against or otherwise disadvantage subrecipients based on their religious character.

## **23. Affirmative Action and Pay Transparency Requirements**

All recipients must comply with all applicable federal labor and employment laws, including but not limited to Title VII of the Civil Rights Act of 1964, the Fair Labor Standards Act, the Occupational Safety and Health Act, and the National Labor Relations Act, which protects employees' right to bargain collectively and engage in other concerted activities for the purpose of mutual aid or protection.

All federally assisted construction contracts exceeding \$10,000 annually will be subject to the requirements of Executive Order 11246, as amended—Equal Employment Opportunity:

- Recipients, subrecipients, contractors, and subcontractors are prohibited from discriminating in employment decisions on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin.
- Recipients and contractors are required to take affirmative action to ensure that equal opportunity is provided in all aspects of their employment. This includes flowing down the appropriate language to all subrecipients, contractors, and subcontractors.
- Recipients, subrecipients, contractors, and subcontractors are prohibited from taking adverse employment actions against applicants and employees for asking about, discussing, or sharing information about their pay or, under certain circumstances, the pay of their co-workers.

DOL's Office of Federal Contractor Compliance Programs (OFCCP) uses a neutral process to schedule compliance evaluations related to Executive Order 11246, as amended. Consult OFCCP's Technical

Assistance Guide<sup>8</sup> to gain an understanding of the requirements and possible actions the recipients, subrecipients, contractors, and subcontractors must take. Additional guidance may also be found in the National Policy Assurances, produced by DOE.

Additionally, for construction projects valued at \$35 million or more and lasting more than one year, the recipients, subrecipients, contractors, and subcontractors may be selected by the OFCCP to participate in the *Mega Construction Project Program*. DOE, under relevant legal authorities including Sections 205 and 303(a) of Executive Order 11246, as amended, will require participation as a term of the award. This program offers extensive compliance assistance with Executive Order 11246. For more information regarding this program, see <https://www.dol.gov/agencies/ofccp/construction/mega-program>.

## 24. Construction Signage (if applicable)

For BIL-funded construction projects, recipients are encouraged to display DOE Investing in America signage during and after construction. Guidance can be found at: (<https://www.energy.gov/design>). Proposed signage costs that meet these specifications are an allowable cost and should be included in the proposed project budget.

## 25. Human Subjects Research

Research involving human subjects, biospecimens, or identifiable private information conducted with DOE funding is subject to the requirements of DOE Order 443.1C, Protection of Human Research Subjects, 45 CFR Part 46, Protection of Human Subjects (subpart A which is referred to as the “Common Rule”), and 10 CFR Part 745, Protection of Human Subjects. Additional information on the DOE Human Subjects Research Program can be found at: [HUMAN SUBJECTS Human Subjects Pr... | U.S. DOE Office of Science \(SC\) \(osti.gov\)](#).

## B. Reporting

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Reporting requirements are identified on the Federal Assistance Reporting Checklist, attached to the award agreement.

DOE must measure the performance to show achievement of program goals and objectives, share lessons learned, improve program outcomes, and foster the adoption of promising practices. DOE will establish program goals and objectives during negotiations and incorporate it into the award terms. To clearly communicate the specific reporting requirements to meet the program goals and objectives in the federal award, DOE combined all reporting into one document, the Federal Assistance Reporting Checklist. This document, attached to the award agreement, provides any expected outcomes (such as outputs, service performance, or public impacts of any of these), indicators, targets, baseline data, or data collections that the applicant will be responsible for measuring and reporting

Additional reporting requirements apply to BIL and IRA-funded projects. DOE may require specific data collection to track progress toward key departmental goals: ensuring justice and equity, investing in quality jobs, boosting domestic manufacturing, reducing greenhouse gas emissions, and advancing a pathway to private sector deployment. Examples of data that may be collected include:

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<sup>8</sup> See OFCCP’s Technical Assistance Guide at: <https://www.dol.gov/sites/dolgov/files/ofccp/Construction/files/ConstructionTAG.pdf?msclkid=9e397d68c4b111ec9d8e6fecb6c710ec> Also see the National Policy Assurances <http://www.nsf.gov/awards/managing/rtc.jsp>

- a. New manufacturing production or recycling capacity
- b. Jobs data, including:
  - Number and types of jobs provided, wages and benefits paid
  - Workforce demographics, including local hires
  - Efforts to minimize risks of labor disputes and disruptions
  - Dollar value of contributions to worker training; number of new employee certificates and training credentials; ratio of apprentice- to journey-level workers employed
  - Number of individuals trained, number of trainees placed in new full-time employment, number of trainings partnering with community-based organizations or labor unions
- c. Justice and Equity data, including:
  - Underrepresented businesses acting as vendors and subcontractors for bids on supplies, services, and equipment
  - Value, number, and type of partnerships with MSIs
  - Stakeholder engagement events, community engagement process
  - Other relevant indicators from the Community Benefits Plan
- d. Number and type of energy efficient and clean energy equipment installed
- e. Funding leveraged, follow-on-funding, intellectual property generation and utilization

Refer to the Federal Assistance Reporting Checklist (DOE F 4600.2), attached to the award package, for award-specific reporting requirements

## IX. Other Information

### A. Government Right to Reject or Negotiate

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DOE reserves the right, without qualification, to reject any or all applications received in response to this NOFO and to select any application, in whole or in part, as a basis for negotiation and/or award.

### B. Commitment of Public Funds

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The Grants Officer is the only individual who can make awards or commit the government to the expenditure of public funds. A commitment by anyone other than the Grants Officer, either express or implied, is invalid.

### C. Treatment of Application Information

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Applicants should not include trade secrets or business-sensitive, proprietary, or otherwise confidential information in their application unless such information is necessary to convey an understanding of the proposed project or to comply with a requirement in the NOFO. Applicants are advised to not include any critically sensitive proprietary detail.

The Freedom of Information Act, 5 U.S.C. 552, requires DOE to release certain federal financial assistance documents and records requested by members of the public regardless of the intended use of the information. DOE will release funded applications and funded progress reports, including award data, as legally releasable at the conclusion of the competitive funding process. However, DOE will generally withhold this information during the pendency of competitive stages of the funding process.

If an application includes trade secrets or business-sensitive, proprietary, or otherwise confidential information, it is furnished to the federal government in confidence with the understanding that the information shall be used or disclosed only for evaluation of the application. Such information will be withheld from public disclosure to the extent permitted by law, including the Freedom of Information Act. Without assuming any liability for inadvertent disclosure, DOE will seek to limit disclosure of such information to its employees and to outside reviewers when necessary for merit review of the application or as otherwise authorized by law. This restriction does not limit the federal government's right to use the information if it is obtained from another source.

Applications and other submissions containing trade secrets or business-sensitive, proprietary, or otherwise confidential information must be marked as described below. Failure to comply with these marking requirements may result in the disclosure of the unmarked information under the Freedom of Information Act or otherwise. The federal government is not liable for the disclosure or use of unmarked information and may use or disclose such information for any purpose as authorized by law.

The cover sheet of the application, and other applicant submission must be marked as follows and identify the specific pages containing trade secrets or business-sensitive, proprietary, or otherwise confidential information:

#### **Notice of Restriction on Disclosure and Use of Data:**

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

In addition, (1) the header and footer of every page that contains trade secrets or business-sensitive, proprietary, or otherwise confidential information must be marked as follows: “Contains Trade Secrets, Business-Sensitive, Proprietary, or Otherwise Confidential Information Exempt from Public Disclosure,” and (2) every line or paragraph containing such information must be clearly marked with double brackets or highlighting. DOE will make its own determination about the confidential status of the information and treat it according to its determination.

## **D. Notice Regarding Eligible/Ineligible Activities**

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

## **E. Notice of Right to Conduct a Review of Financial Capability**

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

## **F. Requirement for Full and Complete Disclosure**

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Applicants are required to make a full and complete disclosure of all information requested. Any failure to make a full and complete disclosure of the requested information may result in:

- The cancellation of award negotiations;
- The modification, suspension, and/or cancellation of a funding agreement;
- The initiation of debarment proceedings, debarment, and/or a declaration of ineligibility for receipt of federal contracts, subcontracts, and financial assistance and benefits; and
- Civil and/or criminal penalties.

## **G. Retention of Submissions**

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DOE expects to retain copies of all applications and other submissions. By applying to DOE for funding, applicants consent to DOE’s retention of their submissions.

## **H. Title to Subject Inventions**

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Ownership of subject inventions is governed pursuant to the authorities listed below:

- a. Domestic Small Businesses, Educational Institutions, and Nonprofits: Under the Bayh-Dole Act (35 U.S.C. § 200 et seq.), domestic small businesses, educational institutions, and nonprofits may elect to retain title to their subject inventions.
- b. Domestic Large Businesses: DOE has issued a class patent waiver that applies to this NOFO. Under this class waiver, domestic large businesses may elect title to their subject inventions similar to the right provided to the domestic small businesses, educational institutions, and nonprofits by law. To avail itself of the class waiver, a domestic large business must agree that any products embodying or produced through the use of a subject invention first conceived or first actually reduced to practice under this program will be substantially manufactured in the United States.
- c. All other parties: The Federal Non-Nuclear Energy Act of 1974, 42 U.S.C. § 5908, provides that the government obtains title to new inventions unless a patent waiver is granted. Applicants not covered by a Class Patent Waiver or the Bayh-Dole Act may request a patent waiver that will cover subject inventions that may be invented under the award, in advance of or within 30 days after the effective date of the award. Even if an advance waiver is not requested or the request is denied, the recipient will have a continuing right under the award to request a waiver for identified inventions, i.e., individual subject inventions that are disclosed to DOE within the timeframes set forth in the award's intellectual property terms and conditions. Any patent waiver that may be granted is subject to certain terms and conditions in 10 CFR 784.
- d. DEC: On June 07, 2021, DOE approved a Determination of Exceptional Circumstances (DEC) under the Bayh-Dole Act to further promote domestic manufacture of DOE science and energy technologies. In accordance with this DEC, all awards, including subawards, under the applicable NOFO Part 1 shall include the U.S. Competitiveness Provision in accordance with the U.S. Manufacturing Commitments. A copy of the DEC can be found at <https://www.energy.gov/gc/determination-exceptional-circumstances-decs>. Pursuant to 37 CFR 401.4, any nonprofit organization or small business firm as defined by 35 U.S.C. § 201 affected by any DEC has the right to appeal it by providing written notice to DOE within 30 working days from the time it receives a copy of the determination.
- e. DOE may issue and publish further DEC's on the website above prior to the issuance of awards under the applicable NOFO Part 1. DOE may require additional submissions or requirements as authorized by any applicable DEC.

## I. Government Rights in Subject Inventions

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Where recipients, subrecipients, and contractors retain title to subject inventions, the U.S. government retains certain rights.

### Government Use License

The U.S. government retains a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States any subject invention throughout the world. This license extends to government contractors.

### March-In Rights

The U.S. government retains march-in rights with respect to all subject inventions. Through “march-in rights,” the government may require a recipient or subrecipient who has elected to retain title to a subject invention (or their assignees or exclusive licensees), to grant a license for use of the invention to a third party. In addition, the government may grant licenses for use of the subject invention when a recipient, subrecipient, or their assignees and exclusive licensees refuse to do so.

DOE may exercise its march-in rights only if it determines that such action is necessary under any of the four following conditions:

- The owner or licensee has not taken or is not expected to take effective steps to achieve practical application of the invention within a reasonable time;
- The owner or licensee has not taken action to alleviate health or safety needs in a reasonably satisfied manner;
- The owner has not met public use requirements specified by federal statutes in a reasonably satisfied manner; or
- The United States manufacturing requirement has not been met.

Any determination that march-in rights are warranted must follow a fact-finding process in which the recipient has certain rights to present evidence and witnesses, confront witnesses and appeal with counsel and appeal any adverse decision. To date, DOE has never exercised its march-in rights to any subject inventions.

## J. Copyright

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The recipient and subrecipient(s) may assert copyright in copyrightable works, such as software, first produced under the award without DOE approval. When copyright is asserted, the government retains a paid-up nonexclusive, irrevocable worldwide license to reproduce, prepare derivative works, distribute copies to the public, and to perform publicly and display publicly the copyrighted work. This license extends to contractors and others doing work on behalf of the government.

## K. Export Control

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The United States government regulates the transfer of information, commodities, technology, and software considered to be strategically important to the United States to protect national security, foreign policy, and economic interests without imposing undue regulatory burdens on legitimate international trade. There is a network of federal agencies and regulations that govern exports that are collectively referred to as “Export Controls.” All recipients and subrecipients are responsible for ensuring compliance with all applicable United States Export Control laws and regulations relating to any work performed under a resulting award.

The recipient must immediately report to DOE any export control investigations, indictments, charges, convictions, and violations upon occurrence, at the recipient or subrecipient level, and provide the corrective action(s) to prevent future violations.

## L. Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment

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As set forth in 2 CFR 200.216, recipients and subrecipients are prohibited from obligating or expending project funds (federal funds and recipient cost share) to procure or obtain covered telecommunications equipment or services; extend or renew a contract to procure or obtain covered telecommunications equipment or services; or enter into a contract (or extend or renew a contract) to procure or obtain *covered telecommunications equipment or services*. As described in Section 889 of Public Law 115-232, covered telecommunications equipment or services is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).

See Section 889 of Public Law 115-232, 2 CFR 200.216, and 2 CFR 200.471 for additional information.

## M. Personally Identifiable Information (PII)

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All information provided by the applicant must to the greatest extent possible exclude PII. "PII" refers to information that can be used to distinguish or trace an individual's identity, such as their name, Social Security number, or biometric records, alone or combined with other personal or identifying information linked or linkable to a specific individual, such as date and place of birth or mother's maiden name. (See [OMB Memorandum M-17-12](#) dated January 3, 2017.)

By way of example, applicants must screen resumes to ensure that they do not contain PII such as personal addresses, personal landline/cell phone numbers, and personal emails. **Under no circumstances should Social Security numbers (SSNs) be included in the application.** Federal agencies are prohibited from the collecting, using, and displaying unnecessary SSNs. (See the Federal Information Security Modernization Act of 2014 (Pub. L. No. 113-283, Dec 18, 2014; 44 U.S.C. § 3551).

## N. Annual Independent Audits

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If a for-profit entity is a recipient and has expended \$1,000,000 or more of DOE awards during the entity's fiscal year, an annual compliance audit performed by an independent auditor is required. For additional information, please refer to 2 CFR 910.501 and Subpart F.

If an educational institution, nonprofit organization, or state/local government is a recipient or subrecipient and has expended \$1,000,000 or more of federal awards during the non-federal entity's fiscal year, a Single or Program-Specific Audit is required. For additional information, please refer to 2 CFR 200.501 and Subpart F.

Applicants and subrecipients (if applicable) should propose sufficient costs in the project budget to cover the costs associated with the audit. DOE will share in the cost of the audit at its applicable cost share ratio.

## O. Buy America Requirements for Infrastructure Projects; Required Use of American Iron, Steel, Manufactured Products, and Construction Materials Produced in the United States

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### A. Definitions

For purposes of the Buy America Requirement, the following definitions apply:

- **Components** -See 2 CFR 184.3 Definitions.
- **Construction Materials** -See 2 CFR 184.3 Definitions.
- **Domestic Content Procurement Preference Requirement** – means a requirement that no amount of funds made available through a program for federal financial assistance may be obligated for an infrastructure project unless—
  - all iron and steel used in the project are produced in the United States;
  - the manufactured products used in the project are produced in the United States; or
  - the construction materials used in the project are produced in the United States.
- Also referred to as the **Buy America Requirement**.
- **Infrastructure** -See 2 CFR 184.4(c) and (d).
- **Infrastructure Project** – See 2 CFR 184.3 Definitions.
- **Manufactured Products** – See 2 CFR 184.3 Definitions
- **Predominantly of iron or steel or a combination of both** -See 2 CFR 184.3 Definitions.
- **Produced in the United States** – See 2 CFR 184.3 Definitions.
- **Project** – means the construction, alteration, maintenance, or repair of infrastructure in the United States.
- **Public** – The Buy America Requirement does not apply to non-public (private) infrastructure. For purposes of this guidance, infrastructure should be considered “public” if it is: (1) publicly owned (owned, operated, funded and managed, in whole or in part, by any unit or authority of a Federal, State, or Local government-including U.S. Territories and Indian Tribes); or (2) privately owned but utilized primarily for a public purpose. Infrastructure should be considered to be “utilized primarily for a public purpose”, and therefore “public”, if it is privately owned but operated on behalf of the public or is a place of public accommodation.
- **Section 70917(c) Materials** – See 2 CFR 184.3 Definitions.

### B. Buy America Requirement for Infrastructure Projects (Buy America Requirement)

None of the award funds (includes federal share and recipient cost share) may be used for a project for infrastructure unless:

(1) all iron and steel used in the project is produced in the United States—this means all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States;

(2) all manufactured products used in the project are produced in the United States—this means the manufactured product was manufactured in the United States; and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured

product, unless another standard for determining the minimum amount of domestic content of the manufactured product has been established under applicable law or regulation. See 2 CFR 184.5 for determining the cost of components for manufactured products; and

(3) all construction materials<sup>9</sup> are manufactured in the United States—this means that all manufacturing processes for the construction material occurred in the United States. See 2 CFR 184.6 for construction material standards.

The Buy America Requirement only applies to those articles, materials, and supplies that are consumed in, incorporated into, or affixed to the infrastructure in the project. As such, it does not apply to tools, equipment, and supplies, such as temporary scaffolding, brought to the construction site and removed at or before the completion of the infrastructure project. Nor does the Buy America Requirement apply to equipment and furnishings, such as movable chairs, desks, and portable computer equipment, that are used at or within the finished infrastructure project but are not an integral part of the structure or permanently affixed to the infrastructure project.

The Buy America Requirement only applies to an article, material, or supply classified into one of the following categories\* based on its status at the time it is brought to the work site for incorporation into an infrastructure project:

- (i) Iron or steel products;
- (ii) Manufactured products; or
- (iii) Construction materials;

The Buy America Requirement only applies to the iron or steel products, manufactured products, and construction materials used for the construction, alteration, maintenance, or repair of public infrastructure in the United States when those items are consumed in, incorporated into, or permanently affixed to the infrastructure. An article, material, or supply incorporated into an infrastructure project should not be considered to fall into multiple categories, but rather must meet the Buy America Preference Requirement for only the single category in which it is classified.

All iron and steel, manufactured products, and construction materials used in the infrastructure project must be produced in the United States.

\* *Section 70917(c) Materials* are cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives as provided in section 70917(c) of BABA. Section 70917(c) materials are excluded from Construction materials. Asphalt concrete pavement mixes are typically composed of asphalt cement (a binding agent) and aggregates such as stone, sand, and gravel. Accordingly, asphalt is also excluded from the definition of Construction materials.

Section 70917 (c) materials, on their own, are not manufactured products. Further, Section 70917(c) materials should not be considered manufactured products when they are used at or combined proximate to the work site—such as is the case with wet concrete or hot mix asphalt brought to the work site for incorporation. However, certain Section 70917(c) materials (such as stone, sand, and gravel) may be used to produce a manufactured product, such as is precast concrete. Precast concrete is made of components, is processed into a specific shape or form, and is in such state when brought to

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<sup>9</sup> Excludes cement and cementitious materials, aggregates such as stone, sand, or gravel, or aggregate binding agents or additives.

the work site. Furthermore, wet concrete should not be considered a manufactured product if not dried or set prior to reaching the work site.

Further clarification is provided in 2 CFR 184 on the circumstances under which a determination is made that Section 70917(c) materials should be treated as components of a manufactured product. That determination is based on consideration of: (i) the revised definition of the “manufactured products” at 2 CFR 184.3; (ii) a new definition of “section 70917(c) materials” at 2 CFR 184.3; (iii) new instructions at 2 CFR 184.4(e) on how and when to categorize articles, materials, and supplies; and (iv) new instructions at 2 CFR 184.4(f) on how to apply the Buy America preference by category.

The Buy America Requirement does not statutorily apply to Prime Recipients that are For-Profit Entities. However, the Buy America Requirement is applicable to a For-Profit Entity if: (1) it is a sub-recipient or sub-awardee under an award that contains the Buy America Requirement term and condition, or (2) it is the Prime Recipient that voluntarily chooses to use domestically sourced iron, steel, manufactured products, and construction materials by stating so in its proposed application containing an infrastructure project. If the For-Profit Entity specifically states that it will comply with the Buy America Requirements in its application and it is selected for award, its award will contain a *Buy America Requirement for Infrastructure Projects* term and condition.

The Prime Recipient is responsible for flowing the Buy America Requirement down to all sub-awards, all contracts, subcontracts, and purchase orders for work performed under the proposed infrastructure project, including to For-Profit Entities when the For-Profit Entity is a sub-recipient or sub-awardee.

Recipients must certify or provide equivalent documentation for proof of compliance that a good faith effort was made to solicit bids for domestic products used in the infrastructure project under this award.

Recipients must also maintain certifications or equivalent documentation for proof of compliance that those articles, materials, and supplies that are consumed in, incorporated into, affixed to, or otherwise used in the infrastructure project, not covered by an approved waiver or an exemption provided in 2 CFR 184.8, are produced in the United States. The certification or proof of compliance must be provided by the suppliers or manufacturers of the iron, steel, manufactured products and construction materials and flow up from all subawardees, contractors and vendors to the recipient. Recipients must keep these certifications with the award/project files and be able to produce them upon request from DOE, auditors or Office of Inspector General.

### **C. DOE Submission Requirements for Full Application**

Within the first two pages of the workplan or project description, applicants must provide a short statement on whether the project will involve the construction, alteration, maintenance and/or repair of infrastructure in the United States. The ultimate determination about whether a project includes infrastructure remains with DOE, but the applicant’s statement will assist project planning and integration of the Buy America Requirement, which may impact the project’s proposed budget and/or schedule.

### **D. Waivers**

In limited circumstances, DOE may waive the application of the Buy America Requirement in an award where DOE determines that:

- (1) applying the Buy America requirements would be inconsistent with the public interest (Public Interest);
- (2) the types of iron, steel, manufactured products, or construction materials are not produced in the United States in sufficient and reasonably available quantities or of a satisfactory quality (Non-Availability); or
- (3) the inclusion of iron, steel, manufactured products, or construction materials produced in the United States will increase the cost of the overall project by more than 25 percent (Unreasonable Cost).

DOE will only process waiver requests after an award has been made and for which the requests have been submitted in accordance with the term and conditions of the award. Waiver requests must be reviewed by DOE and the Office of Management and Budget's (OMB) Made in America Office and are subject to a public comment period of no less than 15 calendar days.

Waiver Requests may be submitted utilizing Optional Form 2211 (OF2211) or any other format to provide the required information below. DOE or OMB may request additional information for consideration of the waiver. DOE may reject or grant waivers in whole or in part depending on its review, analysis, and/or feedback from OMB or the public. DOE's final determination regarding approval or rejection of the waiver request may not be appealed by a Recipient. The waiver request review and public comment process required for a waiver determination can take up to 65 calendar days.

Requests to waive the Buy America Requirement must include the following:

- Waiver type (Public Interest, Non-Availability, or Unreasonable Cost);
- Recipient name and Unique Entity Identifier (UEI);
- Award information (Federal Award Identification Number, Assistance Listing number);
- A brief description of the award- project objectives, location, and the specific infrastructure project involved;
- Total estimated Financial Assistance award value, inclusive of recipient cost share;
- Total estimated infrastructure costs (estimated costs of the Iron, Steel, Manufactured Products and Construction Materials being purchased under the award and utilized in the infrastructure project);
- List and description of iron or steel item(s), manufactured goods, and/or construction material(s) the recipient seeks to waive from the Buy America Requirement, including name, cost, quantity(ies), country(ies) of origin, and relevant Product Service Codes (PSC) and North American Industry Classification System (NAICS) codes for each;
- A detailed justification as to how the non-domestic item(s) is/are essential to the project;
- A certification that the recipient made a good faith effort to solicit bids for domestic products supported by terms included in requests for proposals, contracts, and non-proprietary communications with potential suppliers;
- A justification statement—based on one of the applicable justifications outlined above—as to why the listed items cannot be procured domestically, including the due diligence performed (e.g., market research, industry outreach, cost analysis, cost-benefit analysis) by the recipient to attempt to avoid the need for a waiver. This justification may cite, if applicable, the absence of any Buy America-compliant bids received for domestic products in response to a solicitation; A description of the market research conducted that includes

who conducted the market research, when it was conducted, sources that were used, and the methods used to conduct the research; and

- Anticipated impact to the project if no waiver is issued.

The following principles should be incorporated as minimum requirements in waiver request:

- **Time-limited:** Consider a waiver constrained principally by a length of time, or phased-out over time, rather than by the specific project/award to which it applies. Waivers of this type may be appropriate, for example, when an item that is “non-available” is widely used in the project. When requesting such a waiver, the recipient should identify a reasonable, definite time frame (e.g., no more than one to two years) designed so that the waiver is reviewed to ensure the condition for the waiver (“non-availability”) has not changed (e.g., domestic supplies have become more available).
- **Targeted:** Waiver requests should apply only to the item(s), product(s), or material(s) or category(ies) of item(s), product(s), or material(s) as necessary and justified. Waivers should not be overly broad as this will undermine domestic preference policies.
- **Conditional:** The recipient may request a waiver with specific conditions that support the policies of IIJA/BABA and Executive Order 14017.

## P. Acronyms

Acronym Spelled Out		Acronym Spelled Out	
<b>ANC</b>	Alaska Native Corporation	<b>NNSA</b>	National Nuclear Security Administration
<b>BABA</b>	Build America, Buy America Act	<b>NOFO</b>	Notice of Funding Opportunity
<b>BIL</b>	Bipartisan Infrastructure Law	<b>NSF</b>	National Science Foundation
<b>CBP</b>	Community Benefits Plan	<b>OFCCP</b>	Office of Federal Contractor Compliance Programs
<b>CEJST</b>	Climate and Economic Justice Screening Tool	<b>OIG</b>	Office of Inspector General
<b>CEQ</b>	Council on Environmental Quality	<b>OMB</b>	Office of Management and Budget
<b>COI</b>	Conflict of Interest	<b>OSHA</b>	Occupational Safety and Health Administration
<b>CRADA</b>	Cooperative Research and Development Agreement	<b>OSTI</b>	Office of Scientific and Technical Information
<b>DBA</b>	Davis-Bacon Act	<b>OTA</b>	Other Transactions Authority
<b>DEC</b>	Determination of Exceptional Circumstances	<b>PII</b>	Personally Identifiable Information
<b>DEIA</b>	Diversity, Equity, Inclusion, and Accessibility	<b>PLA</b>	Project Labor Agreement
<b>DMP</b>	Data Management Plan	<b>RD&amp;D</b>	Research, Development, and Demonstration
<b>DOE</b>	United States Department of Energy	<b>RMP</b>	Risk Management Plan

<b>DOI</b>	Digital Object Identifier	<b>RTES</b>	Research, Technology, and Economic Security
<b>DOL</b>	United States Department of Labor	<b>SAM</b>	System for Award Management
<b>EO</b>	Executive Order	<b>SciENCv</b>	Science Experts Network Curriculum Vita
<b>FCOI</b>	Financial Conflicts of Interest	<b>SMART</b>	Specific, Measurable, Achievable, Relevant, and Timely
<b>FFATA</b>	Federal Funding and Transparency Act of 2006	<b>SOPO</b>	Statement of Project Objectives
<b>FFRDC</b>	Federally Funded Research and Development Center	<b>SPOC</b>	Single Point of Contact
<b>IRA</b>	Inflation Reduction Act	<b>STEM</b>	Science, Technology, Engineering, and Mathematics
<b>M&amp;O</b>	Management and Operations	<b>TA</b>	Technical Assistance
<b>MFA</b>	Multi-Factor Authentication	<b>TRL</b>	Technology Readiness Level
<b>MSI</b>	Minority-Serving institution	<b>UCC</b>	Uniform Commercial Code
<b>NDA</b>	Non-Disclosure Acknowledgement	<b>UEI</b>	Unique Entity Identifier
<b>NEPA</b>	National Environmental Policy Act	<b>WBS</b>	Work Breakdown Structure
<b>NHPA</b>	National Historic Preservation Act	<b>WP</b>	Work Proposal