

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



**U.S. Department of Energy (DOE)
Office of Energy Efficiency and Renewable Energy (EERE)
Fiscal Year 2025 Vehicle Technology Office Program Wide
Notice of Funding Opportunity Number: DE-FOA-0003514**

**Concept Paper Due: April 1, 2025
Application Due: June 18, 2025**

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Before You Begin

Navigating the Notice of Funding Opportunity

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

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

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

This announcement is published in conjunction with NOFO Part 2 Version 1.

I. Basic Information

A. Key Facts

Issuing Agency	Department of Energy, Vehicle Technologies Office	KEY DATES Notice of Funding Opportunity Issue Date: January 17, 2025 Concept Paper Deadline: April 1, 2025 Application Deadline: June 18, 2025 Anticipated Selection Notification Date: November 5, 2025 Anticipated Award Date: February 13, 2026
Funding Opportunity Title	Fiscal Year 2025 Vehicle Technologies Office Program Wide Funding Opportunity	
Announcement Type	Initial	
Funding Opportunity Number	DE-FOA-0003514	
Funding Instrument	Cooperative Agreements	
Assistance Listing Number	81.086	
Funding Opportunity Description	The research, development, demonstration, and deployment (RDD&D) activities to be funded under this NOFO will improve transportation by driving the innovation that can lead to the accelerated deployment of advanced technologies while also significantly improving U.S. competitiveness. This will lead to benefits including increased safety and reliability of batteries, more convenient travel options, decreased cost of driving, increased vehicle and system efficiency, and a more secure supply chain. Specifically, this NOFO is seeking innovative solutions for on-road and off-road vehicles in the areas of improved battery technology for both light- and heavy-duty applications, smart charging infrastructure, sustainable farming, workforce development, and demonstration and deployment of these new technologies.	
Program Goals & Objective(s)	This NOFO seeks applications to address improved battery technology for both light- and heavy-duty applications, smart charging infrastructure, sustainable farming, workforce development, and demonstration and deployment of these new innovative technologies. The research and development work performed under this program will lead to economic and environmental benefits including extended battery reliability, improved battery packaging, decreased cost of driving, increased vehicle and system efficiency, and a competent workforce serving the	

	transportation sector. Detailed technical descriptions of the specific Topic Areas are provided in the sections that follow.
Topic Areas	<ul style="list-style-type: none"> • Topic Area 1: Technologies for Enhanced Lithium-ion Cell Safety • Topic Area 2a: Low-Cost Production of Lithium • Topic Area 2b: Lithium Metal Surface Protection • Topic Area 3a: Ultra-Long-Cycle Life Li-Ion Batteries for Heavy-Duty Electric Trucks • Topic Area 3b: Standardized Battery Module Design for Heavy-Duty Electric Trucks • Topic Area 4: Thermal Technologies for Zero Emission Vehicles • Topic Area 5: Optimized Grid Planning for Electric Vehicles Using Advanced Metering Infrastructure • Topic Area 6: CROP - Co-located Renewable-Fuel and Off-road Vehicle Pilots • Topic Area 7: Vehicle Life Cycle Analysis Baseline • Topic Area 8: Quality Improvements of Battery Busbar Joining • Topic Area 9: Electric Vehicle Workforce Development • Topic Area 10: Vehicle Technology Integration – Open Topic
Eligible Applicants	<p>Domestic Entities:</p> <ol style="list-style-type: none"> 1. Institutes of higher education; 2. For-profit entities; 3. Non-profit entities; 4. State and local government entities and Indian tribes; and 5. Consortia of entities as described above in 1 through 4. <p>DOE Federally Funded Research & Development Center's (FFRDC's) and non-DOE FFRDCs and Federal Research Agencies are eligible to apply for funding as a subrecipient but are not eligible to apply as a prime recipient. Refer to eligibility section.</p>
eXCHANGE URL and Helpdesk	<p>https://eere-exchange.energy.gov ExchangeSupport@hq.doe.gov</p>

1. Funding Details

Multiple Topic Areas

Approximate total available funding including all topic areas: \$88,000,000

Topic Area 1: Technologies for Enhanced Lithium-ion Cell Safety

- Approximate total available funding: \$12,000,000
- Approximate number of awards: 3-5
- Approximate dollar amount of individual awards: \$2M-\$4M
- Minimum cost share required: 20% of the total project costs
- Approximate award project period: up to 36 months
- Anticipated length of budget periods: 12 months

Topic Area 2a: Low-Cost Production of Lithium

- Approximate total available funding: \$7,000,000
- Approximate number of awards: 2-3
- Approximate dollar amount of individual awards: \$2M-\$4M
- Minimum cost share required: 20% of the total project costs
- Approximate award project period: up to 36 months
- Anticipated length of budget periods: 12 months

Topic Area 2b: Lithium Metal Surface Protection

- Approximate total available funding: \$8,000,000
- Approximate number of awards: 2-3
- Approximate dollar amount of individual awards: \$3M-\$6M
- Minimum cost share required: 20% of the total project costs
- Approximate award project period: up to 36 months
- Anticipated length of budget periods: 12 months

Topic Area 3a: Ultra-Long-Cycle Life Li-Ion Batteries for Heavy-Duty Electric Trucks

- Approximate total available funding: \$12,000,000
- Approximate number of awards: up to 4
- Approximate dollar amount of individual awards: Up to \$3M
- Minimum cost share required: 20% of the total project costs
- Approximate award project period: up to 36 months
- Anticipated length of budget periods: 12 months

Topic Area 3b: Standardized Battery Module Design for Heavy-Duty Electric Trucks

- Approximate total available funding: \$8,000,000
- Approximate number of awards: up to 2
- Approximate dollar amount of individual awards: Up to \$4M
- Minimum cost share required: 50% of the total project costs
- Approximate award project period: up to 36 months
- Anticipated length of budget periods: 12 months

Topic Area 4: Thermal Technologies for Zero Emission Vehicles

- Approximate total available funding: \$4,000,000
- Approximate number of awards: 1-2
- Approximate dollar amount of individual awards: \$2M-\$4M
- Minimum cost share required: 20% of the total project costs for the first two years; 50% of the total project costs in the final year for the demonstration
- Approximate award project period: up to 36 months
- Anticipated length of budget periods: 12 months

Topic Area 5: Optimized Grid Planning for Electric Vehicles Using Advanced Metering Infrastructure

- Approximate total available funding: \$2,000,000
- Approximate number of awards: 1-2
- Approximate dollar amount of individual awards: \$1M-\$2M
- Minimum cost share required: 20% of the total project costs
- Approximate award project period: 24 to 36 months
- Anticipated length of budget periods: 12 months

Topic Area 6: CROP – Co-located Renewable Fuel and Off-road Vehicle Pilots

- Approximate total available funding: \$6,000,000
- Approximate number of awards: 3-4
- Approximate dollar amount of individual awards: \$1.5M-\$2M
- Minimum cost share required: 20% of the total project costs
- Approximate award project period: 12 to 18 months
- Anticipated length of budget periods: 12 months

Topic Area 7: Vehicle Life Cycle Analysis Baseline

- Approximate total available funding: \$3,000,000
- Approximate number of awards: 2
- Approximate dollar amount of individual awards: \$1M-\$3M
- Minimum cost share required: 20% of the total project costs
- Approximate award project period: up to 24 months
- Anticipated length of budget periods: 12 months

Topic Area 8: Quality Improvements of Battery Busbar Joining

- Approximate total available funding: \$6,000,000
- Approximate number of awards: 2-4
- Approximate dollar amount of individual awards: \$1.5M-\$3M
- Minimum cost share required: 20% of the total project costs for the R&D phase; 50% of the total project costs for the demonstration phase
- Approximate award project period: 12 to 36 months
- Anticipated length of budget periods: 12 months

Topic Area 9: Electric Vehicle Workforce Development

- Approximate total available funding: \$10,000,000
- Approximate number of awards: 4-6
- Approximate dollar amount of individual awards: \$1.6M-\$2.5M
- Minimum cost share required: 0% cost share required
- Approximate award project period: 24 to 36 months
- Anticipated length of budget periods: 1-comprehensive budget period

Topic Area 10: Vehicle Technology Integration – Open Topic

- Approximate total available funding: \$10,000,000
- Approximate number of awards: 5-10
- Approximate dollar amount of individual awards: \$1M-\$2M
- Minimum cost share required: 50% of the total project costs
- Approximate award project period: up to 36 months
- Anticipated length of budget periods: 1-comprehensive budget period

2. Period of Performance

For Topic Areas 1-8: DOE anticipates making awards, comprised of multiple budget periods. If applicable, project continuation will be contingent upon DOE's Go/No-Go decision. For a complete list and more information on the Go/No-Go review, see the [NOFO Part 2, Award Administration Information](#). Funding for all budget periods, including the initial budget period, is not guaranteed.

For Topic Areas 9-10: 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

The Office of Energy Efficiency and Renewable Energy (EERE) is issuing on behalf of the Vehicle Technologies Office (VTO), a Notice of Funding Opportunity (NOFO) entitled "Fiscal Year 2025 Vehicle Technologies Office Program Wide Funding Opportunity Announcement."

This NOFO supports a bold approach to increase American economic competitiveness, upgrade, and modernize infrastructure, and build a clean energy economy to the benefit of all Americans through improved battery technology for both light- and heavy-duty applications, smart charging infrastructure, sustainable farming, workforce development, and demonstration and deployment of these new technologies. The Department of Energy is committed to pushing the frontiers of science and engineering, catalyzing domestic jobs through research, development, demonstration, and deployment (RDD&D), and ensuring affordable and low emission energy is available to all communities in America.

The RDD&D activities to be funded under this NOFO will support innovation to reduce the energy and cost needed to move goods and people across the US, providing more options for consumers and businesses that can lead to the accelerated deployment of advanced technologies while also significantly improving US competitiveness. This will lead to benefits including increased safety and

reliability of batteries, more convenient travel options, decreased cost of driving, increased vehicle and system efficiency, and a more secure supply chain. Specifically, this NOFO is seeking innovative solutions for on- and off-road vehicles in the areas of improved battery technology for both light- and heavy-duty applications, smart charging infrastructure, sustainable farming, workforce development, and demonstration and deployment of these new technologies.

C. Agency Contact Information

Office of Vehicle Technologies
U.S. Department of Energy
1000 Independence Ave SW
Washington, D.C. 20585

NOFO Contact Information

For questions relating to this specific NOFO, please send emails to DE-FOA-0003514@NETL.DOE.GOV.

Please be clear and concise when asking a question under the NOFO and be as specific as possible to which Topic Area you are asking the question. If it is not clear, DOE will be required to ask for additional information and clarity on the question to provide an accurate response, which will take additional time.

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

II. Eligibility

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

A. Eligible Applicants

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

3. Domestic Entities

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

- Institutions of higher education;
- For-profit organization;
- Nonprofit organization;
- State and local governmental entities;
- Indian Tribes, as defined in section 4 of the Indian Self-Determination and Education Assistance Act, 25 U.S.C. § 5304¹; and
- Consortia of entities as described in the bullets above.

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.

4. 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.

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

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

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

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

Foreign Entity Participation

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

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

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

Participant Limitations

Participation of the following entities are limited as follows.

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

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

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

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

C. Cost Sharing

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

1. Cost Share Requirements

Cost Share 20%

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

Cost Share 50%

The cost share must be at least 50% of the total project costs⁵ for demonstration projects.⁶

Cost Share 20% - R&D Phase and 50% - Demonstration Phase

The cost share must be at least 20% of the total project cost during the R&D phase and at least 50% of total project costs for the Demonstration Phase.

Cost Sharing Not Required

Cost sharing is not required for education projects under this NOFO.

Tribes and Tribal Nations

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

Please reference the table below for cost shares associated with each Topic Area.

Topic Area Number	Topic Area Name	Required Cost Share ⁷ (%)
1	Technologies for Enhanced Lithium-ion Cell Safety	20% R&D
2a	Low-Cost Production of Lithium	20% R&D
2b	Lithium Metal Surface Protection	20% R&D
3a	Ultra-Long-Cycle Life Li-Ion Batteries for Heavy-Duty Electric Trucks	20% R&D
3b	Standardized Battery Module Design for Heavy-Duty Electric Trucks	50% Demonstration
4	Thermal Technologies for Zero-Emission Vehicles (ZEVs)	20% - R&D Phase 50% - Demonstration Phase

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

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

⁵ Total project costs are the sum of the government share, including FFRDC costs if applicable, and the recipient share of project costs.

⁶ 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.

⁷ For estimating purposes, use the percentage selected in Section II.A.5 below. Do not factor in any cost share above the minimum unless it is required for applicants to this NOFO.

5	Optimized Grid Planning for Electric Vehicles (EVs) Using Advanced Metering Infrastructure	20% R&D
6	CROP - Co-located Renewable-Fuel and Off-road Vehicle Pilots	20% R&D
7	Vehicle Life Cycle Analysis Baseline	20% R&D
8	Quality Improvements of Battery Busbar Joining	20% - R&D Phase 50% - Demonstration Phase
9	Electric Vehicle Workforce Development	0% Education
10	Vehicle Technology Integration – Open Topic	50% Demonstration

D. Federal Funded Research and Development Centers (FFRDCs) Eligibility Criteria

1. DOE and Non-DOE FFRDCs Eligibility Criteria as a Subrecipient

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

Authorization for non-DOE FFRDCs

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

Authorization for DOE FFRDCs

The cognizant Contracting Officer for the FFRDC must authorize in writing the use of the FFRDC on the proposed project and this authorization must be submitted with the application. The following wording is acceptable for this authorization:

Authorization is granted for the Laboratory to participate in the proposed project. The work proposed for the Laboratory is consistent with or complementary to the missions of the Laboratory and will not adversely impact execution of the DOE assigned programs at the Laboratory.

Funding, Cost Share, and Subaward with FFRDCs

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

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

All DOE FFRDCs are required to enter into a Cooperative Research and Development Agreement⁸ (CRADA) or, if the role of the DOE FFRDC is limited to technical assistance and intellectual property is not anticipated to be generated from the DOE FFRDC's work, a Technical Assistance Agreement (TAA), with at least the recipient. A fully executed CRADA or TAA must be in place or be compliant with a Master Scope of Work process prior to the FFRDC starting work directly allocable to the FA award.

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

Responsibility

The recipient will be the responsible authority regarding the settlement and satisfaction of all contractual and administrative issues, including but not limited to disputes and claims arising out of any agreement between the recipient and the FFRDC.

Limit on FFRDC Effort

The FFRDC effort, in aggregate, shall not exceed the total project cost threshold identified in the table below.⁹

Topic Area Number	Topic Area Name	Aggregate Project Cost Threshold for FFRDC (%)
1	Technologies for Enhanced Lithium-ion Cell Safety	25%
2a	Low-Cost Production of Lithium	25%
2b	Lithium Metal Surface Protection	25%
3a	Ultra-Long-Cycle Life Li-Ion Batteries for Heavy-Duty Electric Trucks	25%
3b	Standardized Battery Module Design for Heavy-Duty Electric Trucks	25%
4	Thermal Technologies for Zero-Emission Vehicles	25%
5	Optimized Grid Planning for Electric Vehicles (EVs) Using Advanced Metering Infrastructure	25%
6	CROP - Co-located Renewable-Fuel and Off-road Vehicle Pilots	20%
7	Vehicle Life Cycle Analysis Baseline	25%
8	Quality Improvements of Battery Busbar Joining	20%
9	Electric Vehicle Workforce Development	20%

⁸ A cooperative research and development agreement is a contractual agreement between a national laboratory contractor and a private company or university to work together on research and development. For more information, see <https://www.energy.gov/gc/downloads/doe-cooperative-research-and-development-agreements>

⁹ Total project cost is the sum of the government share, including FFRDC costs if applicable, and the recipient share of project costs.

10	Vehicle Technology Integration – Open Topic	25%
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III. Program Description

A. Program Purpose

This NOFO improves transportation sector innovation competitiveness and reduces pollution from the transportation sector. Transportation is critical to the nation's economy, carrying people and freight as well as providing access to jobs, education, and healthcare. The transportation sector accounts for approximately 30% of total U.S. energy needs and is the largest source of greenhouse gas (GHG) emissions in the energy sector. The average U.S. household spends over 15% of its total family expenditures on transportation, making it the most expensive spending category after housing. Low-income people spend more on transportation, as high as 30% of their household income.

Providing better and cleaner transportation options that are affordable for all Americans is the core objective of the Vehicle Technologies Office (VTO). The RDD&D activities to be funded under this NOFO will support the government-wide approach to improving transportation by driving innovation that can lead to the deployment of clean energy technologies, which are critical for national competitiveness and reducing pollution. Specifically, this funding opportunity is seeking innovative solutions for on-road and off-road vehicles to improve battery technology, develop and accelerate charging infrastructure, and demonstrate innovative technologies.

As part of the whole-of-government approach to advance equity across the Federal Government, we create opportunities for the improvement of communities that have been historically underserved, which benefits everyone. As part of this approach, these anticipated funding opportunities will encourage the participation of underserved communities and underrepresented groups. Applicants are highly encouraged to include individuals from groups historically underrepresented in STEM on their project teams.

B. Program Goals and Objectives

This NOFO seeks applications to address improved battery technology for both light- and heavy-duty applications, smart charging infrastructure, sustainable farming, workforce development, and demonstration and deployment of these and other new innovative technologies. The research and development work performed under this program will lead to economic and environmental benefits including extended battery reliability, improved battery packaging, decreased cost of driving, increased vehicle and system efficiency, and a competent workforce serving transportation sector. Detailed technical descriptions of the specific Topic Areas are provided in the sections that follow.

C. Expected Performance Goals

Performance goals and targets will be determined by the applicant in alignment with target requirements or quantitative metrics of interest outlined in this NOFO on a per-topic basis. Baseline data will be provided by the applicant to serve as a reference point for project progress. Data collection to occur by monitoring completion of project milestones relevant to the specified performance goals and targets.

D. Teaming Partner List

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

The Teaming Partner List will be available on eXCHANGE and will be regularly updated to reflect new teaming partners who provide their organization's information.

SUBMISSION INSTRUCTIONS: View the Teaming Partner List by visiting the eXCHANGE homepage and clicking on "Teaming Partners" within the left-hand navigation pane. This page allows users to view published Teaming Partner Lists. To join the Teaming Partner List, submit a request within eXCHANGE. Select the appropriate Teaming Partner List from the drop-down menu, and fill in the following information: Investigator Name, Organization Name, Organization Type, Topic Area, Background and Capabilities, Website, Contact Address, Contact Email, and Contact Phone.

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

E. Topic Areas

Topic Area Number	Topic Title
1	Technologies for Enhanced Lithium-ion Cell Safety
2a	Low-Cost Production of Lithium
2b	Lithium Metal Surface Protection
3a	Ultra-Long-Cycle Life Li-Ion Batteries for Heavy-Duty Electric Trucks
3b	Standardized Battery Module Design for Heavy-Duty Electric Trucks
4	Thermal Technologies for Zero-Emission Vehicles
5	Optimized Grid Planning for Electric Vehicles Using Advanced Metering Infrastructure
6	CROP - Co-located Renewable-Fuel and Off-road Vehicle Pilots
7	Vehicle Life Cycle Analysis Baseline
8	Quality Improvements of Battery Busbar Joining
9	Electric Vehicle Workforce Development
10	Vehicle Technology Integration – Open Topic

Topic Area 1: Technologies for Enhanced Lithium-ion Cell Safety

Introduction

As more and more electric vehicles (EVs) enter the roadways, concerns over vehicle safety remain a top priority. While EVs report fewer fire incidents per mile driven compared to internal combustion engine (ICE) vehicles, challenges in containing and putting out these fires pose a major challenge. One of the primary factors leading to EV fires is the risk of thermal runaway in EV batteries. Thermal runaway

events pose a challenge due to several factors including: lack of training for emergency responders, repair shops, and storage facilities for battery related fires; risk of idle EVs catching fire during storage/charging inside of homes and parking structures; and significant financial burden to battery and EV manufacturers related to recalls caused by battery fires. Therefore, to increase EV safety perception and derisk the EV transition, enhanced battery safety is a top priority for advanced battery chemistry and cell designs.

This topic area addresses the development of technologies to improve the abuse tolerance of Li-ion cells used in plug-in electric vehicles, specifically cells with graphite anodes and mass-produced cathodes.

Objective

Technologies of interest should offer improvements on abuse tolerance parameters at the cell level, such as, but not limited to: total heat release, rate of heat release, reduction in cell-to-cell propagation and/or the flammability of ejected cell materials. Successful applications will improve the abuse tolerance of individual cells, ultimately reducing the likelihood of cascading effects of EV fires.

The cells used to demonstrate improved abuse tolerance should be at least 5Ah and should have energy densities and performances appropriate to plug-in electric vehicle requirements.

The technology will have to meet life performance equivalent to commercial cells. Moreover, the proposed technology must have the potential to achieve cell performance and abuse testing results identified in the table below:

Performance Targets for Next-Generation Li-Ion Batteries

Beginning of Life Characteristics at 30°C	Cell Level
Useable Specific Energy @ C/3	250Wh/kg
Overcharge Testing	European Council for Automotive R&D (EUCAR) 2
Overheat Testing	EUCAR 2
External Short Circuit Testing	No event
Cost	<\$80/kWh*

*\$100/kWh at the pack level

Anticipated technology approaches include, but are not limited to:

- Nonactive components of the cell
- Cathode materials. Commercially relevant cathode materials, Technology Readiness Level (TRL) 5 and above. A TRL of 5 is defined as a technology at laboratory scale, similar system validation in relevant environment
- Active material coatings
- Electrode coatings

- Electrolytes. Electrolyte ionic conductivity must be similar to conventional carbonate-based electrolyte conductivity at 30°C
- Cell mechanical design
- Any combination of the above

General Requirements

Applications must:

- Include plans to demonstrate baseline cells abuse tolerance results and life performance results.
- Include plans to demonstrate improvements of abuse tolerance parameters using abuse tests such as the following:
 - Overheat
 - Accelerating Rate Calorimetry (ARC)
 - Fractional Thermal Runaway Calorimeter (FTRC)
 - Overcharge
 - External Short Circuit
 - Nail Penetration
- Identify the cell components' composition/construction of the entire cell including, mechanical design (if innovative), active and non-active components with a focus on the developed technology.
- Describe the materials and component optimization pathway that achieves cell abuse performance requirements.
- Demonstrate an understanding of the major issues and barriers impeding the use of the proposed cell design, and how the particular barrier(s) will be overcome during the proposed project.
- Identify performance targets that represent the highest risk for achievement during the project and the strategies to mitigate these risks.
- Model cell to cell propagation in a battery pack.
- Describe the testing and diagnostics to be performed to understand performance and life issues for the targeted technology:
 - Indicate if data is from half-cells or paired with a graphite material.
 - Full cell data is preferred, however in the event only half-cell data is available coulombic efficiency must be included.
 - Include the electrode loading (mAh/cm²), electrolyte amount and N/P ratio of all cell performance data.
 - Indicate what temperature the experiments were performed at as well as the upper and lower voltage used for cycling the cell.
 - Include detailed procedures for abuse testing.
- Include plans to annually participate in the VTO Annual Merit Review in Washington, DC and an annual U.S. DRIVE Electrochemical Energy Storage Technical Team Meeting in Southfield, MI.
- For both the Project Progress Cells (PPCs) and Project Completion Cells (PCCs), the cells delivered to DOE will be tested according to the protocol provided below:

Cell Testing Protocol

Number of Cells	Test Type	Test Protocol
3	Cycle Life	C/3 cycle life at 30°C
3	Calendar Life	100% SOC at 45°C

3	Overcharge*	Overcharge Testing at 30°C
3	Overheat**	Overheat Testing
3	External Short Circuit***	External Short Circuit Testing at 30°C

*The Overcharge protocol will be specified by the applicant in consultation with DOE.

** The Overheat protocol will be specified by the applicant in consultation with DOE.

*** The External Short Circuit protocol will be specified by the applicant in consultation with DOE.

USABC testing is recommended. Please use the following link to review USABC testing procedures: <https://uscar.org/usabc/>. If the developer has their own established testing procedures a discussion can happen between DOE and Awardee upon negotiations.

Teaming Arrangements

None specified.

Special Deliverables

In addition to the deliverables required in the Federal Assistance Reporting Requirements Checklist, the following deliverables are required for awards made under this topic:

- Eighteen (18) PPCs of ≥ 5 Ah delivered to a to-be-designated DOE testing laboratory for performance testing at midpoint of the project length. Anode material is limited to graphite.
- Eighteen (18) PCCs of ≥ 5 Ah delivered to a to-be-designated DOE testing laboratory for performance testing at the end of the project. Anode material is limited to graphite.
- Report and associated data resulting from at least thirty (30) days of PPC retained cell testing following test protocols approved by the DOE. This data will be shared with the testing lab.
- Include plans to obtain at least 30 days of cycle life and calendar life test data from the retained cells prior to shipment of the deliverable cells to DOE.
- Report and associated data resulting from at least thirty (30) days of PCC retained cell testing following test protocols approved by the DOE. This data will be shared with the testing lab.

Note: All final cell deliverables must be equal or greater than 5Ah; larger than 5Ah cells are preferred but not required. It is acceptable to deliver cells that do not meet performance targets, as long as the cell components (electrodes with similar active material content, porosity, thickness, loading, etc. and separator thickness) in the delivered cells, when scaled to automotive size (40Ah or greater) are capable of meeting the targets: i.e., an applicant will not be penalized for packaging inefficiencies of small cells, but needs to deliver cells with automotive relevant electrodes, separators, and electrolyte volume. If the deliverable cells do not meet performance targets, a model validating the proposed scaling factors will also be required for interim, and final cells.

All deliverable cells shall be provided to DOE for validation testing at a designated DOE National Laboratory. Non-Destructive Performance Validation testing will be conducted on the cells to validate performance. This testing will be conducted outside the Statement of Project Objectives (SOPO) for the cooperative agreement and therefore should not be addressed in the SOPO nor included in the total estimated project costs associated with the application. Test procedures for the delivered cells will be agreed to between the Applicant, the test lab, and the government. Participation by a DOE National Laboratory in test planning and execution will be addressed by a Nondisclosure Agreement (NDA) between the national laboratory and the end item manufacturer. Test procedures will be provided by

the Applicant and shall incorporate specifications and limits supplied by the manufacturer for the specific technology such as voltage and current limits, state of charge, charging, temperature recommendations, number of test sequences, and/or other relevant test conditions as appropriate. The results of the DOE national laboratory testing may be documented in a publicly releasable Summary Test Report (approved by both DOE and the Applicant prior to release) that validates performance of the deliverables relative to the end item performance targets as well as the technology deployment impact relative to DOE strategic goals. The Summary Test Report will be approved by, and delivered to, DOE (Vehicle Technologies Office) and end item manufacturer. Test cells or special test equipment supplied by the end item manufacturer for the purposes of the test will be returned at the conclusion of testing at no cost to the Applicant or the project.

Applications Not of Interest

Applications that propose:

- electrolyte with lower ionic conductivity than conventional carbonate-based electrolytes (5mS/cm) at 30°C
- an anode material other than graphite
- a sodium-ion chemistry
- oxide- and sulphide-based electrolytes

Topic Area 2a: Low-Cost Production of Lithium**Introduction**

As lithium-metal-based batteries continue to evolve, there are concerns about the supply and cost of lithium metal. The United States depends heavily on lithium imports since there are no domestic production facilities currently operating. Imported lithium ingots are typically extruded into thick foil (>40 micron) to manufacture anodes for lithium batteries. For applications that require much thinner lithium foil, lithium can be vapor deposited directly on the current collector or on a plastic substrate for later use.

Currently, lithium is produced by the electrolysis of a lithium chloride and potassium chloride ($\text{LiCl} + \text{KCl}$) eutectic mixture at temperatures between 420°C and 550°C. Not only is this process highly energy-intensive due to the high-temperature requirements for the molten salts, but it also has a low production yield due to the low coulombic efficiency of the chemical reaction ($2\text{LiCl} \rightleftharpoons 2\text{Li} + \text{Cl}_2$). In addition, the reaction releases toxic chlorine gas, which requires treatment to address environmental concerns. The lithium produced through this method is of technical grade (98% purity) and must undergo further refining to achieve battery-grade purity (99.9%), adding to overall production costs.

Objective

This topic seeks innovative approaches for producing battery-grade lithium at a lower cost, with reduced energy consumption, improved production yield, and minimal environmental impact compared to the current process. These new methods should harness U.S. lithium resources to bolster supply chain resilience for next-generation batteries that rely on metallic lithium as the anode material. Projects should clearly describe the R&D innovations in the proposed application, including the process cost, energy use, purity, and final lithium cost.

General Requirements

Compared to the current process (described in the introduction), the new process should demonstrate:

- A lower cost (at least 25% savings),

- An improved coulombic efficiency (>70%),
- A lower operating temperature (< 500°C), and
- The product should be free from other metal impurities, surface should be free of any oxide layer and salt precipitation, with no cracks in the ingot, and no visually observable contamination.

Teaming Arrangements

None specified.

Special Deliverables

A working lab-scale prototype that demonstrates lithium production (100 grams per batch) and meets the requirements listed above.

Applications Not of Interest

Applications that propose direct lithium extraction (that extracts lithium salt from brine on an adsorbed material) are not of interest and will not be reviewed.

Topic Area 2b: Lithium Metal Surface Protection**Introduction**

Scientists have long sought to harness the benefits of a lithium metal anode. With its high theoretical capacity and low redox potential, lithium metal is highly suitable for pairing with next-generation, high-capacity cathode materials, such as sulfur or air. However, challenges with uncontrolled dendritic lithium growth, low coulombic efficiency during lithium deposition and stripping, and the formation of "dead" lithium have limited the cycle life and raised safety concerns in rechargeable lithium batteries. Recent studies have highlighted the importance of lithium foil surface treatment in addressing these problems and confirmed that surface modifications could significantly improve the performance of lithium metal electrode. If successful, engineering a protected lithium surface with a well-designed passivation layer could:

- Enable safe handling during battery assembly and transportation,
- Enhance lithium stripping and plating dynamics, thereby extending cycle life, and
- Relieve the need for externally applied cell stack pressure.

Objective

This topic seeks to develop novel materials that can form a beneficial passivation layer on the surface of the lithium foil for use in rechargeable lithium batteries containing liquid or solid-state electrolytes. The materials must exhibit excellent stability against lithium, a high ionic conductivity and low electronic conductivity, and compatibility with a high-speed, high-volume roll-to-roll manufacturing process. The applied film should be ultra-thin (nanoscale order), uniformly thick, and exhibit strong adhesion to both lithium and solid-state electrolytes.

Requirements

- Perform testing on symmetrical cells to validate the performance of the passivation layer. (See Appendix A on "Standard Polymer Electrolyte Formulation for Studying the Stability of Lithium Metal Anodes.")
- Repeat the test with a current density of 0.5 mA/cm².

Teaming Arrangements

Applications are restricted to U.S. based companies, and the project team may include Universities and National Labs.

Special Deliverables

- **Comprehensive Data Report:** Provide a detailed report substantiating that the newly developed protection layer extends the viable storage lifetime of the lithium foil by a factor of five compared to unprotected (bare) lithium when stored in a dry room environment. The report should include all relevant data, methodologies, and analysis to support those findings.
- **Symmetrical Cells:** Deliver six two-electrode cells designed with lithium as both the counter (approximately 15 microns of lithium) and working (approximately 5 microns of lithium) electrodes, utilizing a polymer electrolyte (as specified in Appendix A). These cells should be sent to a designated DOE laboratory for testing to confirm the significantly improved Coulombic efficiency over cells with unprotected lithium.
- **Full-Cell Samples:** Supply six full-cells (≥ 2 Ah capacity) incorporating the newly developed protected lithium, paired with an NMC622 cathode and a liquid electrolyte (1.54M LiFSI in DME/TTE 1:6.44 by weight). These cells must be delivered to a designated DOE laboratory for independent testing and evaluation. The cells will be tested at C/3 charge and discharge rates under ambient conditions and should demonstrate the ability to complete 600 cycles with less than 20% capacity loss (applied external stack pressure if needed should be less than 75 psi).

Applications Not of Interest

Applications that propose R&D for solid-state electrolytes are not of interest and will not be reviewed.

Topic Area 3 – Optimized Li-Ion Battery Solutions for Heavy-Duty Electric Vehicles

Medium- and heavy-duty vehicles (MHDVs) make up 5% of the on-road fleet but consume over 51 billion gallons gasoline equivalent (GGE) annually and contribute 21% of transportation emissions¹⁰, ¹¹ Heavy-duty Class 8 trucks account for 67% of fuel use in the MHDV sector¹², averaging >10,700 GGE annually¹³, representing a significant fraction of operation cost and total cost of ownership. Electrification of heavy-duty trucks would eliminate nitrogen oxides and particulate matter emissions, a significant public health benefit, and substantially reduce carbon emissions from the on-road transportation sector.

The subtopics below aim to stimulate U.S.-made innovations that accelerate a domestic battery industry that can support lower cost options for long haul U.S. Trucks.

Among MHDVs, Class 8 long-haul trucks are uniquely challenging due to energy density requirements implied by significant onboard capacity to handle disparate routes with full cargo loads (i.e., no offset of cargo due to mass, volume of batteries, 500-mi range). Although this topic targets ultra-high-cycle life

¹⁰ The U.S. National Blueprint for Transportation Decarbonization (2022) p. 61-63.

<https://www.energy.gov/sites/default/files/2023-01/the-us-national-blueprint-for-transportation-decarbonization.pdf>

¹¹ “Energy Use by Transportation Mode and Fuel Type.” Alternative Fuels Data Center. (<https://afdc.energy.gov/data/10661>)

¹² 21st Century Truck Partnership Electrification Technical Sector Team Roadmap (2023) https://www.energy.gov/sites/default/files/2023-12/21CTP-ETT-Roadmap_Final_Sep2023_compliant_corrected_08Dec23.pdf

¹³ “Average Annual Fuel Use by Vehicle Type.” Alternative Fuels Data Center. (<https://afdc.energy.gov/data/10308>)

and modular batteries for the especially challenging Class 8 long-haul truck vocation, the benefits in performance and cost will extend to many other MHDV applications. Cost reduction through improved battery cell and pack design is particularly important for competitiveness in the MHDV sector due to the low production volume relative to other battery end uses. Optimizing chemistry and modularity for MHDV applications for cross-sector use helps alleviate the economies of scale challenge.

Subtopic Area 3a: Ultra-Long-Cycle Life Li-Ion Batteries for Heavy-Duty Electric Trucks

Introduction

The challenge of battery design to meet or exceed the million-mile lifetime expected over the useful life of most Class 8 trucks¹⁴ requires further innovation in lithium-ion batteries to increase cycle life without significant trade-offs on energy density. Lithium-ion batteries (e.g., but not exclusively, graphite anode, liquid electrolyte and cathode such as lithium iron phosphate [LFP] or nickel-manganese-cobalt oxides [NMC]) are currently manufactured at relevant scales for significant deployment of BETs, and thus are the battery primed to make the greatest impact over the next decade or more. Innovations increasing lithium-ion batteries cycle life without substantial loss in energy density are highly advantageous for near-term BETs.

Objective

This subtopic seeks lithium-ion battery chemistry innovations and design solutions that are readily adapted to multilayer pouch cells or cylindrical or prismatic cells to demonstrate cycle life.

Table: Performance Targets for MHDV Cell Deliverables

Initial cell capacity	≥3 Ah (cylindrical only), ≥10 Ah (pouch or prismatic)
Cell energy density	≥120 Wh/kg
Cell cycle life	≥4,000 cycles with 80% initial energy and power
Cell calendar life	≥10 years
Cell applied pressure	≤1 MPa
Temperature	Ambient (25 °C)

Consideration will be given for improved energy density that can also meet the cycle life requirement; however, any innovative cathode chemistry must have been rigorously tested through at least 500 cycles and the data included in the proposal.

General Requirements

Applications must:

- Identify the cell components' composition/construction focused on the innovations to significantly improve cycle life. Describe and justify the choice of active materials, electrolyte composition, etc. compared to current state of the art lithium-ion cell performance.
- Identify major issues impeding the proposed cell chemistry and the specific barriers to be overcome during the research effort to reach the deliverable targets for energy density and cycle life.
- Describe how the proposed effort is different than past and current research efforts.

¹⁴ 21st Century Truck Partnership Electrification Technical Sector Team Roadmap (2023)
https://www.energy.gov/sites/default/files/2023-12/21CTP-ETT-Roadmap_Final_Sep2023_compliant_corrected_08Dec23.pdf

- Include supporting theoretical predictions and/or relevant experimental data supporting performance claims.
 - Cell/material baseline performance should be included to justify prediction of at least 1,000 cycle life, including demonstration of 500 cycles on any novel cathode chemistry.
 - Include the electrode loading (mAh/cm²) and composition (weight %), and electrolyte composition of all cell performance data.
 - Indicate what temperature the experiments were performed at as well as the upper and lower voltage and applied pressure used for cycling the cell.
- Identify performance targets that represent the highest risk for achievement during the project and the strategies to mitigate these risks.
- Describe the testing and diagnostics planned to characterize, investigate, and mitigate issues.

Teaming Arrangements

None specified.

Special Deliverables

- Interim deliverable: Go/no-go decision point based on full cell (at least 2 Ah capacity) test results demonstrating progress towards final targets. Must include at least three cells and report cell characteristics (chemistry, format, energy density, etc.) and testing parameters.
- Final deliverable: Five cells at least 3 Ah for cylindrical, 10 Ah for prismatic/pouch for third-party testing will be tested by accelerated test protocols developed by the 21st Century Truck Partnership.
- At least one month of testing data for all deliverable cell builds will be carried out by the Applicant following test protocols approved by the DOE. This data will be shared with DOE and the testing lab prior to deliverable shipment to the testing laboratory.

Note: All cells shall be provided to the DOE for validation testing at a to-be-designated DOE National Laboratory. Non-Destructive Performance Validation testing will be conducted on the cells to validate performance. This testing will be conducted outside the scope of the proposed project and should not be included in the total estimated project costs included with the application. Participation by a DOE National Laboratory in test planning and execution will be addressed by a Non-Disclosure Agreement (NDA) between the National Laboratory and the Applicant. Test procedures will be provided by the Applicant and shall incorporate specifications and limits supplied by the manufacturer for the specific technology such as voltage and current limits, state of charge, charging, and temperature recommendations, number of test sequences, and/or other relevant test conditions as appropriate. The results of the DOE national laboratory testing may be documented in a publicly releasable Summary Test Report (approved by both DOE and the Applicant prior to release) that validates performance of the deliverables relative to the end item performance targets as well as the technology deployment impact relative to DOE strategic goals. The Summary Test Report will be approved by the DOE (Vehicle Technologies Office) and the Applicant. Test cells or special test equipment supplied by the end item manufacturer for the purposes of the test will be returned at the conclusion of testing at no cost to the project.

Applications Not of Interest

- Batteries for Hybrid Electric Vehicles (HEVs) and/or Plug-in Hybrid Electric Vehicles (PHEVs)

- Non-lithium-ion batteries
- Innovations outside cell chemistry and design, e.g., to the battery management system, thermal management, on-board monitoring, or other capabilities beyond the battery cell itself

Topic Area 3 – Optimized Li-Ion Battery Solutions for Heavy-Duty Electric Vehicles

Medium- and heavy-duty vehicles (MHDVs) make up 5% of the on-road fleet but consume over 51 billion gallons gasoline equivalent (GGE) annually and contribute 21% of transportation emissions [1,2]. Heavy-duty Class 8 trucks account for 67% of fuel use in the MHDV sector [3], averaging >10,700 GGE annually [4], representing a significant fraction of operation cost and total cost of ownership. Electrification of heavy-duty trucks would eliminate nitrogen oxides and particulate matter emissions, a significant public health benefit, and substantially reduce carbon emissions from the on-road transportation sector. The subtopics below aim to stimulate U.S.-made innovations that accelerate a domestic battery industry that can support lower cost options for long haul U.S. trucks.

Among MHDVs, Class 8 long-haul trucks are uniquely challenging due to energy density requirements implied by significant onboard capacity to handle disparate routes with full cargo loads (i.e., no offset of cargo due to mass, volume of batteries, 500-mi range). Although this topic targets ultra-high-cycle life and modular batteries for the especially challenging Class 8 long-haul truck vocation, the benefits in performance and cost will extend to many other MHDV applications. Cost reduction through improved battery cell and pack design is particularly important for competitiveness in the MHDV sector due to the low production volume relative to other battery end uses. Optimizing chemistry and modularity for MHDV applications for cross-sector use helps alleviate the economies of scale challenge.

Subtopic Area 3b: Standardized Battery Module Design for Heavy-Duty Electric Trucks

Introduction

For Li-ion-based Battery Electric Trucks (BETs) to achieve cost parity faster and unlock larger fractions of HD truck routes, energy density must be increased, and costs must be reduced. Class 8 BETs capable of traveling 500 miles on a single charge require a 1 MWh onboard capacity¹⁵. This battery pack must also fit within the weight and volume restrictions without offsetting cargo, emphasizing the importance of maximizing battery packing efficiency while maintaining robust safety and ruggedness, and minimizing the weight and volume of support systems, including thermal management. Reduced battery cost is a key enabler for decarbonization of this fleet through electrification¹⁶, and the use of a standard battery solution across multiple platforms can alleviate the challenge of economy of scale that MHDVs face compared to LDVs due to lower production volume.

Objective

This subtopic seeks innovative standardized modules or scaled packs (for cell-to-pack design) suitable for Class 8 long-haul trucks. The pack should be based on commercial-relevant Li-ion battery cells (i.e., no

¹⁵ 21st Century Truck Partnership Electrification Technical Sector Team Roadmap (2023).

https://www.energy.gov/sites/default/files/2023-12/21CTP-ETT-Roadmap_Final_Sep2023_compliant_corrected_08Dec23.pdf

¹⁶ “Energy Use by Transportation Mode and Fuel Type.” Alternative Fuels Data Center.

(<https://afdc.energy.gov/data/10661>)

chemistry/cell development in this topic), target at least a 60% cell-to-pack weight and volume ratio, minimum projected life of 2,000 cycles and 10-year calendar life, and be rugged, resilient, and safe.

Requirements

Module design should include specification of components, cell testing, modeling of thermal management and pack performance and lifetime, and culminate in a ≥ 10 -kWh module or scaled pack deliverable. Increased consideration will be given for solutions that can be scaled across platforms (e.g., scaled modules or packs for multiple medium- and heavy-duty vehicle models).

Applications must:

- Specify intended module components, including cells, packaging materials, and thermal management system design. Include modeling of module/pack performance and lifetime based on cell testing and thermal management. Describe and justify the choice of these cells and components as compared to the state of the art.
- Consider and justify trade-offs between expected charge rate, thermal management, pack energy density, and battery cycle life.
- Justify choice of cells, materials, and operations that satisfies needs for long-haul trucks in terms of performance, ruggedness to vibration and other hazards, and safety to crash and cell thermal events compared to relevant industry criteria.
- Identify major issues impeding the proposed module design and the specific barriers to be overcome during the research effort to reach the deliverable targets for energy density, cycle life, and safety.
- Describe how the proposed effort is different than past and current research efforts.
- Include supporting theoretical predictions and/or relevant experimental data supporting performance claims, including baseline cell performance specifications for chosen chemistry at relevant conditions and representative duty cycles.
- Identify performance targets that represent the highest risk for achievement during the project and the strategies to mitigate these risks.
- Describe the testing and diagnostics planned to characterize, investigate, and mitigate issues.

Teaming Arrangements

Teams should be industry-led.

Special Deliverables

Interim deliverable: Go/no-go decision point based on full specification of module including performance modeling including thermal management, lifetime modeling, simulated duty cycle performance.

Final deliverable: Module or scaled pack, ≥ 10 kWh. At least one month of testing data for all deliverable module builds will be carried out by the Applicant following test protocols approved by the DOE. This data will be shared with DOE and the testing lab prior to deliverable shipment to the testing laboratory.

Note: All modules shall be provided to the DOE for validation testing at a to-be-designated DOE National Laboratory. Non-Destructive Performance Validation testing will be conducted on the cells to validate performance. This testing will be conducted outside the scope of the proposed project and should not

be included in the total estimated project costs included with the application. Participation by a DOE National Laboratory in test planning and execution will be addressed by a Non-Disclosure Agreement (NDA) between the National Laboratory and the Applicant. Test procedures will be provided by the Applicant and shall incorporate specifications and limits supplied by the manufacturer for the specific technology such as voltage and current limits, state of charge, charging, and temperature recommendations, number of test sequences, and/or other relevant test conditions as appropriate. The results of the DOE national laboratory testing may be documented in a publicly releasable Summary Test Report (approved by both DOE and the Applicant prior to release) that validates performance of the deliverables relative to the end item performance targets as well as the technology deployment impact relative to DOE strategic goals. The Summary Test Report will be approved by the DOE (Vehicle Technologies Office) and the Applicant. Test cells or special test equipment supplied by the end item manufacturer for the purposes of the test will be returned at the conclusion of testing at no cost to the project.

Applications Not of Interest

- Batteries for HEVs, PHEVs
- Non-lithium-ion batteries

Topic Area 4: Thermal Technologies for Zero-Emission Vehicles**Background**

Medium and heavy-duty zero-emission vehicles (ZEV) must operate in all climate conditions which may require thermal regulation for the driver, passengers, cargo, and key powertrain components such as batteries, inverters, and motors. In very cold and very hot temperature conditions, the vehicle expends significant energy on thermal regulation. This energy cost often comes at the expense of range and potentially a reduction in daily utilization. This topic addresses thermal needs for batteries, powertrain components, as well as vehicle occupants.

Objective

The objective of this topic area is to research, develop, and demonstrate innovative technologies capable of significantly decreasing the on-board energy use of vehicle thermal systems, including but not limited to heating, ventilation, and air conditioning (HVAC) systems, for medium- and heavy-duty on-highway zero-emission vehicles. Proposed technologies could include, but are not limited to, phase change materials, heat pumps, electric compressors, advanced controls, novel thermal system designs, energy capture, high-efficiency components, load reduction technologies, load thermal management, and novel applications of existing technologies. Awarded projects must demonstrate resulting improvements in overall vehicle energy efficiency on duty/drive cycles appropriate for the chosen vehicle type(s) and environmental conditions and appropriate for the proposed technology improvements.

Potential areas of innovation for integration include, but are not limited to:

- Novel technologies which co-optimize vehicle thermal system management and demonstrate reductions in vehicle energy use
- Novel integration of advanced components
- Thermal system management innovations
- Innovative use of advanced materials to improve or benefit a vehicle thermal system

General Requirements

Applications ***must***:

- Identify the approach for vehicle thermal management improvement and the proposed advancements to the state of the art through development of a novel prototype and/or novel method of integration and system optimization.
- Identify how the research will lead to a demonstration of a minimum 20% reduction in the energy use of the thermal management system over a drive cycle typical to the proposed application/vocation in the appropriate operating conditions.
- Identify the baseline system, specifications, and the associated cost, mass, volume, and efficiency over a standardized or typical drive cycle.
- Describe the existing challenges that necessitate the proposed thermal system technology, using specific metrics such as energy used, range, or impacts to usability.
- Describe the improvements to the thermal system packaging, capabilities, performance, and lifetime/reliability and potential for reductions in lifetime total cost of operation (TCO).
- Describe how the resulting energy use/range and TCO improvements could potentially enable expanded vehicle usage and reduced downtime, and result in more mainstream adoption of MHD ZEVs in the class/vocation proposed.
- Describe the plan to demonstrate a measurable reduction of the overall vehicle energy use over a drive cycle typical to the proposed vehicle application/vocation and appropriate operating conditions. The extent of feasible and demonstrable vehicle operational energy savings is a factor for selection.
- Provide schematics and diagrams of the proposed thermal system topology and key system specifications, including but not limited to proposed component specifications, power, voltage, thermodynamic efficiency, and integration methods that enable novel thermal system design.
- Identify the planned vehicle application, typical usage/duty cycle of the vehicle, the thermal system requirements, and the potential impact of the technology to the market.
- Identify and describe the flexibility and scalability of the integrated system design to different vehicle applications (vehicle classes and vocations).
- Describe the proposed R&D to be performed and describe the advancements of the technology designed to overcome current challenges.
- Describe the benefits of the technology on class/vocation-specific ZEV adoption and the market penetration of the technology.
- Identify the potential technological and market risks and a plan to mitigate these risks.
- Describe the proposed demonstration vehicle(s) to be used and the plan for validation of the system in real world environments.
- Describe the approach to comply with applicable vehicle and safety standards.
- Identify all team members and their role in the project.

Teaming Arrangements

Teams are encouraged to include:

- A vehicle Original Equipment Manufacturer (OEM)
- Thermal system technology developer/manufacturer
- Tier 1 supplier.

Special Deliverables

None specified.

Applications Not of Interest

The following types of applications will be deemed nonresponsive and will not be reviewed or considered:

- Applications that propose commercially available products, unless integrated into a vehicle system in a novel manner.
- Applications with proposed solutions that utilize non-electric energy sources (e.g. fuel-fired heaters).
- Applications with technical solutions focused on cargo handling thermal controls.

Topic Area 5: Optimized Grid Planning for Electric Vehicles Using Advanced Metering Infrastructure**Background**

The number of Electric Vehicle (EV) charging installation projects has risen year-over-year, making it increasingly difficult for utilities to process load-service requests and interconnection agreement applications at a rate that keeps pace with construction timelines. Concurrently, advancements in Smart Charge Management (SCM) technology have introduced opportunities for EVs to provide a wide range of grid services, such as load shifting, demand response, voltage regulation, frequency regulation, and other functions. Utilities across the US have introduced and deployed Advanced Metering Infrastructure (AMI) to optimize grid planning and develop a responsive smart grid. However, most utilities currently do not have the tools to integrate with their backend system to make use of the advanced capabilities of AMI to both support the EV charging energization process, and efficiently optimize EV load management post-energization.

Objective

The objective of this topic area is to research, develop, and validate novel and innovative tools leveraging Advanced Metering Infrastructure (AMI) and smart metering as a sensory network to improve the EV charging infrastructure energization process, accelerate EV charging infrastructure deployment, and provide an efficient and secure EV load management platform. Projects in this topic area should look to use advanced metering hardware and backend software to leverage the wide range of front-of-the-meter granular electricity usage data, as well as provide a bi-directional communication stream between the service provider and the connection node smart meter to optimize load profiles and support vehicle-grid integration (VGI). Projects awarded must show how the proposed technology will utilize deployed AMI to accelerate EV charging infrastructure deployment timelines and improve grid transparency and resiliency. Awardees must also detail how the resulting improvements to infrastructure will provide quantitative and qualitative impacts for both EV charging infrastructure and the utility distribution grid.

Potential areas of innovation include, but are not limited to:

- Co-optimization of advanced metering infrastructure (AMI) with smart charge management (SCM) systems.
- Automation of real-time hosting capacity map analysis
- Distributed Energy Resource Management System (DERMS) integration
- Innovative Customer-facing and utility-facing distribution grid hosting capacity tools
- Innovative cybersecure control and monitoring architectures

General Requirements

Applications **must**:

- Identify the baseline system, specifications, and the associated cost.
- Describe the proposed technology, the R&D to be performed, and describe the advancements of the technology to overcome current challenges.
- Describe the research workplan and validation strategy to demonstrate feasibility of the proposed technology.
- Describe how the tool(s) will be implemented to provide stakeholders with the ability to identify and assess grid conditions and/or support energy aggregation.
- Describe the planned tool application and use cases, and the potential impact of the technology to the market.
- Describe how the proposed technology or tool will be integrated with utility's existing software.
- Describe how the proposed technology will provide improvements to EV charging infrastructure, grid service capabilities, smart energy management, grid resiliency, and reductions in system cost through deferment of grid upgrades.
- Provide details of the proposed AMI sensory network (number of smart meters, communication protocol, feeder details, etc.) and data stream workflow.
- Identify and describe the replicability and scalability of the system design and architecture to account for variations in utility service territory size and AMI deployment.
- If the application is addressing EV charging infrastructure deployment, describe the benefits of the technology on electric vehicle supply equipment (EVSE) energization timelines and the market penetration of the technology.
- If the application is addressing smart charge management and/or distributed energy resource management, describe the benefits of the technology on utility load energy management and the market penetration of the technology.
- Identify the potential technological and market risks and a plan to mitigate these risks.
- Describe the proposed demonstration metering infrastructure and software to be used.
- Describe the proposed validation plan of the full-scale system with a distribution service territory in a real-world environment.
- Describe the supporting distribution grid specifications and smart metering requirements (voltage, current, etc.) for the technology.
- Identify all team members and their role in the project.

Teaming Arrangements

Applying teams **must** include:

- One or more electric utilities (investor-owned utility, municipality, and/or electric cooperative)

Teams are encouraged to include:

- One or more energy management or distribution management software developers
- State public utilities commissions (PUCs)
- Advanced metering infrastructure product OEMs
- Charging network operators
- DOE national laboratories

Special Deliverables

None specified.

Applications Not of Interest

The following types of applications will be deemed nonresponsive and will not be reviewed or considered:

- Applications for proposed technologies that are not based on sound scientific principles (e.g., violates the laws of thermodynamics).
- Applications proposing only the installation of smart metering infrastructure.

Topic Area 6: CROP - Co-located Renewable-Fuel and Off-road Vehicle Pilots

Introduction

Farms and agricultural communities rely on a wide range of off-road vehicles to till, plant, irrigate, harvest and transport crops. These vehicles have unique requirements for durability, power/torque density, and daily run times. Today, these requirements are typically met by using compression-ignition engines running on diesel fuel and fluid-power systems (hydraulics) for the work and/or drive circuits. Some vehicles (such as agricultural tractors) also provide power to implements via an engine/transmission power take off unit. Daily operations vary greatly across the fleet and depend heavily on the machine's purpose. In total, off-road vehicles consume more than 21 billion gallons of fuel and are a significant portion of a farm's operating budget. The use of diesel contributes to poor air quality, including nitrogen oxides and fine particulate matter, as well as CO₂ emissions.

Farms also possess a unique advantage as producers of fuel feedstocks, such as agricultural waste and animal manure, as well as ideal siting for local clean electricity production. This topic area seeks to catalyze research beyond individual pieces of equipment to include the ecosystems in which they operate. Farms and agricultural communities offer an opportunity to both create fuel feedstocks (through crops, land use, waste management, etc.) and consume those fuels for vehicle operation.

Objective

Through a two-phased approach, demonstrate locally produced, renewable fuels for agricultural use. The initial phase focuses on feasibility, engineering design and lab-scale testing; as funds are available in the future, a second phase will build and test the complete design. The projects selected will reduce costs, advance novel powertrains in a real-world environment, and decrease emissions. Phase 1 is the focus of this current Notice of Funding Opportunity (NOFO), while Phase 2 is intended to be released in a future, separate NOFO.

Requirements

Applicants are required to select pathways from the following list (applicants may combine as necessary), but in general applicants should strive to demonstrate products or co-products as fuel or energy stocks for typical agricultural vehicle tasks:

- Ethanol/biodiesel/methanol/renewable natural gas/sustainable aviation fuel production from crops grown on the farm or wastes produced on the farm which provide local, renewable fuels
- Local solar/wind/hydro/geothermal clean electric production that is used for the farm, not exclusively sold to grid
- Clean hydrogen or ammonia production for fuel that is used on the farm; fertilizer co-production may be part of the vehicle demonstration
- Bio intermediates or bio crudes production to reduce total transportation costs with final production offsite, so long as a product is used on the farm
- Agroforestry if the forest crops are used for energy production in the cycle

- Bio-char or pyrolysis products which provide fuel feed stocks for vehicle use; carbon sequestration farming practices may be part of the vehicle demonstration
- Community shared resources for the above so long as the end products are used within the community and primarily for farming needs (e.g. cooperatives or collectives)

All applicants must describe in their applications their plans for communicating how the proposed project could make positive advancements towards economic, environmental, and social sustainability goals in their community. Applicants may want to consider the use of publicly available tools such as EJScreen, GREET, CalEnviroScreen, COMET Farm, or FASOM-GHG to help address these and other sustainability indicators. Additionally, applicants must plan for the fuel stock to be demonstrated in a vehicle in some representative farming application or task.

Recipients are allowed a limited (up to 50% of the budget) amount of experimental work. The intent of this experimental work is to generate the data needed to refine the engineering design and/or data needed for permitting or air quality analysis. The experimental work can either take place on-site or be done remotely, provided that the production streams being used are sourced from the recipient community. **Model streams are not permitted.** The use of real streams will increase the likelihood of technical success by ensuring the process is sufficiently robust to the contaminants, impurities, and other factors causing variability.

At a minimum, applicants must describe how the proposed project solution or process addresses the following indicators. Applicants are not required to have baseline levels for each of these required indicators at the time of the application, but the Feasibility Development components of the projects must include the following required indicators during the duration of the projects, if awarded. Applications should include baseline values for as many of these indicators as possible at the time of application.

Required Economic Indicators:

- Total energy produced and consumed within the stream
- Any byproducts or excess energy which is part of the process
- Total cost of energy consumed if it were produced from conventional sources (e.g. 100 gals of biodiesel is offsetting 100 gals of diesel at \$4.25/gal)

Required Environmental Indicators:

- Criteria emissions (NOx, PM, VOC, HC, etc.)
- Greenhouse gas emissions (CO₂, at a minimum)
- Tonnage of waste sent to landfill (if applicable)
- Malodorous compounds (sulfur species and ammonia, at a minimum)
- Compliance with current or pending disposal regulations (if applicable)
- Water quality

Required Social Indicators:

- Project siting (especially proximity of infrastructure to farming communities)
- Degree of farming community ownership/engagement in the project
- Localized health impacts (e.g., respiratory impacts)

In addition to these required indicators, applicants may self-select other appropriate economic, environmental, and social indicators that are relevant to their farming community. Examples include but are not limited to those listed below:

Economic Indicators:

- Impacts on total costs of farm operations
- Sales of newly produced energy
- Impacts on relevant rates for municipal services charged to communities

Environmental Indicators:

- Localized water quality or runoff (nitrate/nitrite or phosphorus as examples)
- Localized air quality (volatile organic compounds as examples)
- Soil contamination or reduced compaction
- Impact on fluorinated species
- Particulate emissions
- Heavy duty vehicle traffic
- Accidental waste discharges

Social Indicators:

- Localized energy and economic resilience
- Local workforce impacts
- Community-wide recycling rates
- Community aesthetics
- Local property values

Phase 1: Design Phase Requirements (this topic area):

- Quantification of the business-as-usual (baseline) environmental and economic sustainability indicators (e.g., emissions, disposal costs, waste sent to landfill, etc.) from the current practices (as listed above)
- Completion of a feasibility study and/or basic engineering design for a system/process that can quantify the impacts of increasing resource and energy circularity and the impacts on economic and environmental sustainability indicators. This must also include information on the transportation use case(s) for the energy produced or consumed offsite
- Life Cycle Analysis (LCA) showing that the selected pathway(s) meet or exceed the 50% emissions reduction requirement and describe how the proposed project presents a significant LCA improvement over baseline technologies
 - Applicants may use any standardized approach to calculating life cycle emissions e.g. Argonne National Laboratory GREET model¹⁷ or provide schemes developed through the CORSIA methodology¹⁸ for calculating life cycle emissions
- Small-scale testing as necessary to support the engineering design package
- Laboratory-scale demonstration of vehicle operation on chosen pathway
 - Applicants may use commercially available fuels/feedstocks as needed
- Front-End Loaded – 3 (FEL-3) Basic Engineering Design Package (details below in Special Deliverables section)

¹⁷ <https://greet.es.anl.gov/>

¹⁸ <https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-Eligible-Fuels.aspx>

- Initiation of siting analysis and final design

Phase 2: Potential Future, Construction/Demonstration Phase Requirements (to be issued in a separate, future, Notice of Funding Opportunity).

- Finalized design plans and siting analysis
- Pilot-scale demonstration of selected stream for fuel production
- Farming application demonstration with locally produced, renewable fuel powered vehicle
- Sufficient contingency funding

Phasing process

Given the high cost and complexity of pilot scale projects, recipients will undergo a phased approach where the initial phase focuses on design and (as funds are available) a second phase focuses on construction and full-scale demonstration.

Phase 1: Phase 1 will consist of a 12–18-month design work and experimental validation phase to verify prior scale data and readiness to proceed. Up to \$2,000,000 of federal funds will be made available for each project. A minimum of 20% cost share is required.

Phase 2: Only projects which have completed Phase 1 may be eligible to apply for potential future, Phase 2 funding, subject to the availability of future year federal appropriations. Selected recipients will be permitted to proceed into the 24–36-month design/construction/operation phase (Phase 2). Phase 2 activities are expected to be limited to a maximum of \$5,000,000 in federal share and recipients will be required to provide a minimum of 20-50% non-federal cost share for all Phase 2 activities.

Teaming Arrangements

Given the breadth of work required in both Phase 1 and 2, a diverse team partnered with OEMS, Universities, National Laboratories, and component suppliers is strongly encouraged.

Special Deliverables

Phase 1:

By the completion of this phase of the project, recipients must have completed a Front-End Loaded – 3 (FEL-3) Basic Engineering Design Package that includes, but is not limited to, the following:

- -5%/+15% cost estimate accuracy
- Process design basis
- Refined mass and energy balances
- Equipment specifications and lists
- Pre-design process hazard analysis
- Utility flow diagrams
- Instrument specifications and lists
- General arrangement drawings
- Detailed piping and instrumentation diagrams
- Electrical single line diagrams
- Site plans and plot plans
- Detailed project schedule

Recipients will also be required to initiate a detailed siting analysis that considers a variety of factors, including localized air quality (VOCs, particulate matter, and NOx, at a minimum), net impact on traffic, noise, odors, and other sustainability indicators identified through the prior feasibility analysis. The

siting analysis should also engage community and neighborhood associations to identify other areas of concern associated with the project.

Phase 2: (As Funds Are Available in a separate, future NOFO):

Recipients should expect to demonstrate their financial and technical readiness to proceed into Phase 2. This includes demonstrating the ability to provide all required cost share and contingency reserve (25%) prior to beginning construction of the project. Throughout the award life cycle, DOE will review and monitor the financial capability of the Recipient and other key organizations within the project team, such as partnering companies/parent organizations or other cost share providers. DOE may also conduct pre-award accounting system audits, financial capability reviews, or reviews of financial or compliance audits. By completing Phase 1, recipients are expected to have most of the technical documentation necessary for a future Phase 2 application.

Applications Not of Interest

- Applications which focus on carbon sequestration through crop rotation or land-use activities are discouraged if there is no renewable pathway used to derive fuel.
- Applications proposing the development of model streams.
- Applications which do not produce and consume the fuel or energy stock for farming activities are likewise discouraged.

Topic Area 7: Vehicle Life Cycle Analysis Baseline

Introduction

Life cycle analysis (LCA) is a valuable tool used to understand the overall impact of a product on the environment, energy usage, and critical resource utilization, allowing better decisions to be made on sustainability, strategic planning, and supply chain optimization. Argonne National Laboratory released the GREET (Greenhouse Gases, Regulated Emissions, and Energy use in Technologies) tool in 1995, and it has been continuously updated to provide a consistent Lifecycle Analysis (LCA) platform with reliable, widely accepted methods/protocols. GREET fully evaluates energy and emission impacts of advanced and new transportation fuels, the fuel cycle from well to wheel and the vehicle cycle through material recovery and vehicle disposal. It allows researchers and analysts to evaluate various vehicle and fuel combinations on a full fuel-cycle/vehicle-cycle basis.

In order to benchmark current lifecycle performance of vehicles and plan for future research activities, analysis of representative vehicles is needed. The EPA has identified 4 powertrain configurations that are likely to dominate in the near future, Internal Combustion Engine vehicles, Battery Electric vehicles, Plug-in Electric Hybrid vehicles, and hybrid vehicles. Two platforms have already been chosen as baseline vehicles: model year 2022 (MY2022) Ford Mach-E and Chevrolet Suburban. LCA for the baseline vehicles and two additional vehicles are needed to establish baseline performance. The LCA for all vehicles should be compatible with the R&D GREET model.

Objective

The objective of this topic area is to conduct LCA including energy usage, critical materials requirements, sustainability, and Greenhouse Gas (GHG) Emissions on up to four vehicles. The LCA must include two baseline vehicles: MY2022 Ford Mach-E and Chevrolet Suburban. Two additional vehicles selected by applicants should also be 2022 models. A passenger car or small SUV utilizing either a plug-in electric hybrid drivetrain or the strong hybrid drivetrain is preferred for these additional baseline vehicles. A cost analysis must also be included. The LCAs should include break downs to sub-assemblies as identified in

the R&D GREET model, including body structure, powertrain, transmission, chassis, traction motor, generator, electronic controller, and onboard energy storage.

General Requirements

Applications must:

- Include a plan to conduct LCA on MY2022 Ford Mach-E and Chevrolet Suburban.
- Include a minimum of one additional 2022 model production light-duty vehicle.
- Include a plan to conduct complete cradle-to-grave analysis, including material production, recycled content, critical materials usage, manufacturing processes, lifetime in use fuel/energy consumption, and end-of-life disposition.
- Describe planned data sources for vehicle material composition.
- Describe a plan to report on in-depth methodologies, assumptions, and underlying data resources.
- Include a plan to conduct a sensitivity analysis consisting of material sourcing, manufacturing methods, energy sourcing, recycling pathways, and potential cost implications.
- Include a plan to coordinate with the DOE to ensure results are in sufficient detail and format for inclusion in Argonne National Laboratory's R&D GREET Life Cycle Analysis Model.
- Include a technical cost analysis sufficient to provide a baseline for use in future cost benefit analysis of emerging technologies.

Teaming Arrangements

Applicant teams **must** include team members proficient in conducting complex LCA, and either an OEM or Tier 1 supplier to provide material production manufacturing process data, critical materials content, recycled content, and embedded energy in material and component production. For the purposes of this topic area, an OEM is defined as a commercial manufacturer that sells at least 500 vehicles annually.

Special Deliverables

- In addition to the deliverables required in the Federal Assistance Reporting Requirements Checklist, VTO will require recipients to participate in the EERE Annual Merit Review (AMR) in Washington, D.C.
- Projects selected under this Topic Area must provide LCA results in a format compatible with the R&D GREET model. Awardees must work on an ongoing basis with the DOE to ensure the format is compatible.

Applications Not of Interest

Applications which do not meet the General Requirements.

Topic Area 8: Quality Improvements of Battery Busbar Joining

Introduction

A modern electric vehicle battery pack consists of a large number of individual battery cells that are structurally held and electrically interconnected. Typical large format cells use copper for the anode foil (current collector) and aluminum for the cathode foil. A 'foil-to-tab' weld is needed to gather all the current collector plates (electrode foils) inside the cell and join them to a tab. These tabs serve as the primary connection points between the battery cell and external circuits. Manufacturing the required 'foil-to-tab' joints represents several challenges, including joining of multiple and thin highly

conductive/reflective materials of varying thicknesses, potential damage (thermal, mechanical, or vibrational) during joining, a high joint durability requirement, and so on. As there are numerous foil-to-tab joining methods currently implemented, the focus will be on Resistive Spot Welding, Laser Beam Welding and Ultrasonic Metal welding as the three listed joining technologies are what are currently employed to produce the three main battery cell types currently employed in all Electric and Plug in Electric Hybrid vehicles: Cylindrical, Pouch and Prismatic Cells.

Objective

The topic area will focus on joining methods implemented for ‘foil-to-tab’ manufacturing for use in electric vehicles and the ability to monitor joining performance in real time. The quality of foil-to-tabs manufacturing has seen an improvement over the years, including minimizing the heat-affected zone and achieving precision welding, challenges have also arisen in the case of joining dissimilar materials within battery cells themselves leading to issues ranging from the low absorptivity of non-ferrous materials such as Copper (Cu) and Aluminum (Al) when welded using lasers, to the formation of brittle intermetallic connections. These challenges increase the probability of a joint being defective in terms of low electrical conductivity and/or pure mechanical strength and the inability to monitor such defects in real time comes at a financial cost for battery cell manufacturers.

The development of scientific quality guidelines for implementing ‘foil-to-tab’ real time monitoring and feedback loop during manufacturing in medium to high volume production is of critical importance. In addition, the ability to develop non-destructive evaluation methods to monitor joint quality in real time is also a key objective.

General Requirements

Applications must:

- Identify in real time, weld type and key parameters associated with implemented joining method (applicants must focus on at-least one joining technology).
 - Ultrasonic Metal Welding (UMW): Oscillation amplitude, welding force and transferred welding energy. As for material parameters besides the materials chemical-, mechanical-, and physical properties, the geometry of the upper welding part bears great significance
 - Laser Beam Welding (LBW): Laser power, welding speed and pulse rate
 - Resistance Spot Welding (RSW): Welding time, welding current and electrode force
- Identify and actively monitor in real time ‘foil-to-tab’ joint quality to include bond density, post weld thickness, weld nugget size, and Thermo-mechanically affected zone.
- Identify and monitor in real time, joint depth up to 0.1mm.
- Identify the defect formation mechanism during foil-to-tab welding and attributes associated defected joint.
- Develop an In Line Quality Monitoring and close feedback loop methodology to employed joining technology with the ability to adjust identified joining technology parameters during tab-to-foil manufacturing.
- Identify deployment strategy in current battery cell manufacturing.
- Describe the plan to demonstrate In Line Quality Monitoring and close feedback loop during the manufacturing of battery cells utilizing one or all the three joining methods (RSW, UMW, LBW).
- Describe the existing challenges that necessitate the use of the proposed real time image analysis tool/method for the selected joining method.

- Describe the improvements to be made to cell manufacturing, battery system packaging and assembly, performance, and lifetime/reliability and potential for reductions in lifetime total cost due to the implementation of real time joint quality monitoring.
- Identify the potential technological and market risks and a plan to mitigate these risks.

Teaming Arrangements

Applying teams must include National Lab partnership(s).

Applications are strongly encouraged to form teams with Industry (Battery manufacturing) and Vehicle Manufacturers.

Special Deliverables

A working lab-scale prototype that demonstrates the ability to actively monitor joint quality, a proper closed loop feedback strategy, and a system that meets the requirements listed above.

Applications Not of Interest

None specified.

Topic Area 9: Electric Vehicle Workforce Development**Introduction**

Battery electric vehicle and infrastructure technologies have become more commonplace in both the residential and commercial sectors throughout the U.S. However, many professionals who work with vehicles and transportation infrastructure may lack the expertise needed to install, repair, maintain, and respond to emergencies related to these technologies. Addressing these workforce training needs can reduce cost and wait times for vehicle infrastructure installation, maintenance, and repair; lead to improved safety outcomes; and create employment and career development opportunities for those employed or seeking employment in the vehicle and transportation sector.

Considerable past work has been done to develop training materials and curricula to educate vehicle technicians, electric vehicle infrastructure installers and maintenance workers, code permitting officials, local first responders, and other professionals on zero emission vehicles and infrastructure. However, the reach and scope of these materials is limited and often localized at a time when the need for trained technicians and responders is increasing. Opportunities exist for leveraging new opportunities for virtual and in-person training sessions to reach critical audiences with valuable interactive training material.

Objective

This topic area addresses the development of local, state, regional, or national outreach, awareness, and partnership building efforts. Efforts should include training and education of professionals who work with vehicles and/or transportation infrastructure to address situations involving zero emission vehicles and infrastructure technologies. Existing training materials, curricula, websites, online tools, and other relevant information resources previously developed in cooperation with EERE or accepted by EERE should be leveraged to the maximum extent possible. Projects can develop training in areas where gaps exist in current training curricula. Projects are encouraged to provide in-person training workshops or build partnerships to incorporate existing online training materials into training programs and

encourage widespread reach of these training sessions. Projects addressing communities that are among the top zero emission vehicle markets in the United States are highly encouraged.

General Requirements

- A description of the specific audiences (e.g., mechanics, electricians, permitting officials, firefighters, etc.), topics (e.g. ZEV repair and maintenance, infrastructure installation, ZEV permitting, emergency response, etc.) regions (e.g., regional, national, corridors, etc.), and technologies (e.g., light-duty, medium-duty, or heavy-duty ZEV; Level 2 or DC fast charging stations, etc.) to be addressed by the project. This includes how stakeholder groups will be enabled to comment on and inform the project.
- A description of need for the proposed training project (i.e. description of current training landscape, capacity of professionals to meet current or anticipated needs).
- A description of project partners with defined roles in the project, including critical partners such as Clean Cities and Communities coalitions and educational/training organizations.
- Intended training outcomes, including specifics on the number and type of audiences to be reached and level of expertise to be achieved through training.
- A description of existing information resources to be used in the project.
- A description of any training materials to be developed to address gaps, with specific information on why new materials are being developed.
- A plan for project activities that establishes the steps to be undertaken to complete project objectives and identifies resources to be used to achieve objectives (e.g., training facilities, subject matter expertise, etc.).
- A plan for replicability and continuation of the training and education activities upon the completion of the project, including what information will be publicly available at the conclusion of the project.
- Projects should develop a website to host public resources, recommendations, curricula, and other products that are free for the public.

Teaming Arrangements

Project teams that include one or more of the following partners are strongly encouraged:

- Educational/training institutions with specific expertise in developing and delivering online and/or in-person training curricula
- Government Offices responsible for zoning, codes, permitting, and/or emergency response preparedness
- Fleet owners and/or operators
- Electric vehicle charging infrastructure installers, owners, and/or operators
- Community-based organizations that focus on the needs and perspectives of underserved communities
- Entities responsible for disaster and emergency response and/or planning
- One or more Clean Cities and Communities coalitions
(<https://cleancities.energy.gov/coalitions/locations/>)

Special Deliverables

Recipients must provide supplemental quarterly reporting data needed to calculate Justice40 Initiative metrics measuring the benefits that flow to disadvantaged communities. DOE will provide a reporting template to project awardees. Please see [NOFO Part 1, Diversity, Equity, Inclusion and Accessibility Plan](#) for a list of examples Justice40 metrics related to the Topic Area described in this announcement.

Applications Not of Interest

Applications that include the following are highly discouraged:

- Training that promotes one specific brand or product
- Only academic studies of curricula gaps and plans for future training
- Curricula that will be solely proprietary at the conclusion of the project

Topic Area 10: Vehicle Technology Integration - Open Topic

Introduction

The Technology Integration Program and its Clean Cities and Communities coalition partners have a broad portfolio of potential technology options with the opportunity to address pressing transportation efficiency and availability issues. Of particular interest are projects that address the needs of communities with respect to vehicles and associated infrastructure that can substantially reduce emissions, improve affordable options and that are not otherwise addressed by topics within this NOFO.

Deployment of low emission, affordable and highly efficient transportation is a complex activity requiring many unique technologies and approaches. In particular, medium-duty and heavy-duty (MDHD) ZEVs have numerous nuances based on specific use cases that can make deployment of ZEVs more challenging. These vehicles are part of a broader system of moving freight across the U.S. that is critical to the economy and U.S. growth. As every user and fleet is unique, many solutions are required to demonstrate replicable best practices in the deployment of low emission freight technologies. Infrastructure for these vehicles is also complex, and although many advances have been made in recent years, more technology solutions may be required.

Objective

The objective of this topic area is to explore novel solutions to transportation and related clean energy and infrastructure challenges through demonstration and deployment projects that will spur market development. This would include projects to address challenges unique to their geographic areas and solutions with potential for replication in other areas across the country. Projects of interest focus on the advancement of medium and heavy-duty on-road vehicles and can include, but are not limited to:

- Extended vehicle demonstration projects of medium and heavy-duty vehicles (some examples include vocational trucks and regional and long-haul tractors)
- Projects that accelerate the transition of high-impact heavy duty fleets to zero emission vehicle technologies
- Projects that develop planning models for fleet transition to zero emission vehicles
- Projects that develop actionable plans for medium and heavy-duty vehicles or associated freight corridor infrastructure
- Projects that help leverage innovations developed by the VTO portfolio to expand their adoption
- Innovative charging solutions to address out-of-home charging needs
- Projects that demonstrate unique workplace charging solutions
- Projects that reduce the cost of at-home charging

Requirements

- Identify the specific challenge to be addressed and the target audience for the technical solution to be implemented.
- Identify specific technologies, approaches, or activities that align with the Topic Area objectives described above.
- Define project team roles and responsibilities as well as funding for specific tasks that Clean Cities and Communities coalitions and partners will undertake.
- Address replicability through a project structure that produces results and insights useful to others across the country; project teams must provide for public release a final technical report that documents project information, analyses, and insights.
- All work under EERE funding agreements must be performed in the United States.

Teaming Arrangements

The project team must include at least one active and DOE designated Clean Cities and Communities coalitions with a significant role (at least 10% of the Federal portion of the project budget). A list of active coalitions can be found at: <https://cleancities.energy.gov/coalitions/locations/>.

VTO highly encourages project teams and strategic partners such as the following:

- Clean Cities and Communities coalitions
- Consortia comprised of multiple Clean Cities and Communities coalitions
- Local/regional/state governments
- Metropolitan planning organizations
- Community-based organizations that focus on the needs and perspectives of underserved communities
- Transit
- Transportation network providers
- Vehicle, fuel, energy, and infrastructure providers
- Utility companies
- Fleets and other end-user groups

Special Deliverables

Recipients must provide supplemental quarterly reporting data needed to calculate Justice40 Initiative metrics measuring the benefits that flow to disadvantaged communities. DOE will provide a reporting template to project awardees. Please see *NOFO Part 1, Diversity, Equity, Inclusion and Accessibility Plan* for a list of examples Justice40 metrics related to the Topic Areas described in this announcement.

Applications Not of Interest

Applications that include the following are highly discouraged:

- Promotion of a specific brand, product, or invention
- Inclusion of novelty vehicles and recreational or sport vehicles
- Subsidies for fuel cost
- Rebates or tax incentives
- Purchase of land

F. Applications Specifically Not of Interest

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

- Applications that fall outside the technical parameters specified in [Background and Context](#) above and the [Topic Areas](#) section above.
- Applications for proposed technologies that are not based on sound scientific principles (e.g., violates the laws of thermodynamics).
- Proposals deemed to be duplicative of research that is already in progress.
- Applications discouraged/not of interest as described in each topic area.

G. Statement of Substantial Involvement

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

- A. DOE shares responsibility with the recipient for the management, control, direction, and performance of the project.
- B. DOE may intervene in the conduct or performance of work under this award for programmatic reasons. Intervention includes the interruption or modification of the conduct or performance of project activities.
- C. DOE may redirect or discontinue funding the project based on the outcome of DOE's evaluation of the project at the Go/No-Go decision point(s).
- D. DOE participates in major project decision-making processes.

H. Statutory Authority

The programmatic authorizing statutes are Public Law (P.L.) 109-58, the Energy Policy Act of 2005 (EPAct 2005), as amended, Section 911 (codified at 42 U.S.C. § 16191).

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. Diversity, Equity, Inclusion, and Accessibility Plan

The Federal Government should pursue a comprehensive approach to advancing equity¹⁹ for all, including people of color and others who have been historically underserved, marginalized, and

¹⁹ The term "equity" means the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities that have been denied such treatment, such as Black, Latino, and Indigenous and Native American persons, Asian Americans and Pacific Islanders and other persons of color; members of religious minorities; lesbian, gay, bisexual, transgender, and queer (LGBTQ+)

adversely affected by persistent poverty and inequality. Affirmatively advancing equity, civil rights, racial justice, and equal opportunity is the responsibility of the whole of our government. Because advancing equity requires a systematic approach to embedding fairness in decision-making processes, executive departments, and agencies (agencies) must recognize and work to redress inequities in their policies and programs that serve as barriers to equal opportunity.

By advancing equity across the Federal Government, we can create opportunities for the improvement of communities that have been historically underserved, which benefits everyone²⁰.

As part of this whole of government approach, this NOFO seeks to encourage the participation of underserved communities²¹ and underrepresented groups. Applicants are highly encouraged to include individuals from groups historically underrepresented^{22, 23} in STEM on their project teams. As part of the application, applicants are required to describe how diversity, equity, and inclusion objectives will be incorporated in the project. Specifically, applicants are required to submit a Diversity, Equity, Inclusion, and Accessibility Plan that describes the actions the applicant will take to foster a welcoming and inclusive environment, support people from underrepresented groups in STEM, advance equity, and encourage the inclusion of individuals from these groups in the project; and the extent the project activities will be located in, or benefit underserved communities. The plan should include at least one

persons; persons with disabilities; persons who live in rural areas; and persons otherwise adversely affected by persistent poverty or inequality.

²⁰ Executive Order 13985, “Advancing Racial Equity and Support for Underserved Communities Through the Federal Government” (Jan. 20, 2021).

²¹ The term “underserved communities” refers to populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life, as exemplified by the list of in the definition of “equity.” E.O. 13985. For purposes of this NOFO, as applicable to geographic communities, applicants can refer to economically distressed communities identified by the Internal Revenue Service as Qualified Opportunity Zones; communities identified as disadvantaged or underserved communities by their respective States; communities identified on the Index of Deep Disadvantage referenced at <https://news.umich.edu/new-index-ranks-americas-100-most-disadvantaged-communities/>, and communities that otherwise meet the definition of “underserved communities” stated above.

²² According to the National Science Foundation’s 2019 report titled, “Women, Minorities and Persons with Disabilities in Science and Engineering”, women, persons with disabilities, and underrepresented minority groups—blacks or African Americans, Hispanics or Latinos, and American Indians or Alaska Natives—are vastly underrepresented in the STEM (science, technology, engineering, and math) fields that drive the energy sector. That is, their representation in STEM education and STEM employment is smaller than their representation in the U.S. population. <https://nces.nsf.gov/pubs/nsf19304/digest/about-this-report> For example, in the U.S., Hispanics, African Americans and American Indians or Alaska Natives make up 24 percent of the overall workforce, yet only account for 9 percent of the country’s science and engineering workforce. DOE seeks to inspire underrepresented Americans to pursue careers in energy and support their advancement into leadership positions.

<https://www.energy.gov/articles/introducing-minorities-energy-initiative>

²³ See also. Note that Congress recognized in section 305 of the American Innovation and Competitiveness Act of 2017, Public Law 114-329:

(1) [I]t is critical to our Nation’s economic leadership and global competitiveness that the United States educate, train, and retain more scientists, engineers, and computer scientists; (2) there is currently a disconnect between the availability of and growing demand for STEM-skilled workers; (3) historically, underrepresented populations are the largest untapped STEM talent pools in the United States; and (4) given the shifting demographic landscape, the United States should encourage full participation of individuals from underrepresented populations in STEM fields.

SMART (Specific, Measurable, Assignable, Realistic and Time-Related) milestone per budget period supported by metrics to measure the success of the proposed actions. This plan will be evaluated as part of the technical review process and incorporated into the award if selected.

Topic Areas 9 and 10 (only)

The following represents a list of example metrics that VTO may use to measure projects' Justice40 benefits to underserved communities. Some metrics may be more specific to certain Topic Areas or projects than others, and VTO will work with successful applicants to determine which Justice40 metrics are most relevant to their project.

Metric Category	Metric Description
Energy Democracy	Number of organizations with a funded role in the project who represent a DAC
	Project dollars budgeted [\$] for organizations who represent a DAC
	Total number of outreach/education events
	Number of outreach/education events designed to benefit members of DACs
	Total number of people reached through outreach/education events
	Number of stakeholder engagement events designed to benefit members of DACs
	Total number of people reached through stakeholder engagement events
Technical Assistance	Number of fleets who were provided technical assistance
	Number of fleets who were provided technical assistance which represent a DAC
	Number of non-fleet organizations who were provided technical assistance
	Number of non-fleet organizations receiving technical assistance which represent a DAC
Workforce Training	Number of workforce development events provided
	Number of workforce development events primarily serving DACs
	Number of attendees receiving workforce development training
	Project \$ allocated for training events for people who work or live in DACs
Energy Burden	Net gasoline gallon equivalent (GGE) reduced annually for an underserved community
	Reduced transportation energy burden for an underserved community

Metric Category	Metric Description
Environmental: Vehicle Emissions Reductions	Reduction in PM 2.5 in an underserved community
	Reduction in NOx annually in an underserved community
	Reduction in GHG annually in an underserved community

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 two submission phases: 1. concept paper and 2. application.

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

B. Concept Paper

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

Section	Page Limit	Description
Cover Page	1 page maximum	The cover page should include the project title, the specific announcement Topic Area being addressed (if applicable), both the technical and business points of contact (including the Administrative Officer, if applicable), names of all team member organizations, the project location(s), and any statements regarding confidentiality.
Technology Description	3 pages maximum	Applicants are required to succinctly describe: <ul style="list-style-type: none">• The proposed technology, including its basic operating principles and how it is unique and innovative;• The proposed technology's target level of performance (applicants should provide technical data or other support to show how the proposed target could be met);• The current state of the art in the relevant field and application, including key shortcomings, limitations, and challenges;• How the proposed technology will overcome the shortcomings, limitations, and challenges in the relevant field and application;

		<ul style="list-style-type: none"> • The potential impact that the proposed project would have on the relevant field and application; • How the proposed location of the proposed project will support technology development and long-term success; • The key technical risks/issues associated with the proposed technology development plan; • The impact that DOE funding would have on the proposed project; and • Any potential impacts on Indian Tribes and describe how the applicant would engage with a potentially impacted Indian Tribe(s).
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Total concept paper Maximum Page Limit: 4 pages

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

C. Application Content Requirements

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

1. Covered Individual Definition, Designation, and Responsibility

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

For the purposes of this NOFO, a Covered Individual means:

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

DOE designates as covered individuals any principal investigator (PI); project director (PD); co-principal investigator (Co-PI); co-project director (Co-PD); project manager; and any individual regardless of title that is functionally performing as a PI, PD, Co-PI, Co-PD, or project manager. Status as a consultant, graduate (master's or PhD) student, or postdoctoral associate does not automatically disqualify a person from being designated as a "covered individual" if they meet the definition in (a) above.

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

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

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

2. Summary of Application Requirements

Component	File Format	Page Limit	File Name
Application for Federal Assistance (SF-424)	PDF	n/a	ControlNumber_LeadOrganization_424
Technical Volume	PDF	30	ControlNumber_LeadOrganization_TechnicalVolume
Letters of Commitment	PDF	1 page each	ControlNumber_LeadOrganization_LOCs
Impacted Indian Tribes Documentation, as applicable	PDF	n/a	ControlNumber_LeadOrganization_ImpactedTribes
Statement of Project Objectives	MS Word	7	ControlNumber_LeadOrganization_SOPO
Budget Justification Workbook	MS Excel	n/a	ControlNumber_LeadOrganization_Budget_Justification
Subrecipient Budget Justification	MS Excel	n/a	ControlNumber_LeadOrganization_Subrecipient_Budget_Justification
Work Proposal for FFRDC, as applicable (see DOE O 412.1A)	PDF	n/a	ControlNumber_LeadOrganization_WP
Authorization for Non-DOE or DOE FFRDCs	PDF	n/a	ControlNumber_LeadOrganization_FFRDCAuth
Waiver for Foreign Entity Participation	PDF	n/a	ControlNumber_LeadOrganization_FEW
Performance of Work in the United States (Foreign Work Waiver)	PDF	n/a	ControlNumber_LeadOrganization_FWW
Diversity, Equity, Inclusion & Accessibility Plan (DEIA)	PDF	5	ControlNumber_LeadOrganization_[DEI(A)]
Resumes (for each covered individual)	PDF	3 pages each	ControlNumber_LeadOrganization_Resumes
Current and Pending Support (for each covered individual)	PDF	n/a	ControlNumber_LeadOrganization_CPS
Digital Persistent Identifier (for each covered individual)	N/A	N/A	Include in Current & Pending Support
Research Security Training Requirement (for each covered individual)	N/A	N/A	Include in Current & Pending Support

Transparency of Foreign Connections	PDF	n/a	BusinessSensitive_ControlNumber_LeadOrganization_TFC
Potentially Duplicative Funding Notice	PDF	n/a	ControlNumber_LeadOrganization_PDFN
Data Management Plan (Required for R&D Projects - Topic Areas 1-8)	PDF	n/a	ControlNumber_LeadOrganization_DMP
Location(s) of Work	Excel	n/a	ControlNumber_LeadOrganization_LOW
Disclosure of Lobbying Activities, if applicable (SF-LLL)	PDF	n/a	ControlNumber_LeadOrganization_SF-LLL
Certification Regarding Lobbying (OMB 4040-0013)	PDF	n/a	ControlNumber_LeadOrganization_Cert Lobbying
Summary for Public Release	PDF	1	ControlNumber_LeadOrganization_Summary
Summary Slide	MS Power Point	1	ControlNumber_LeadOrganization_Slide

3. Technical Volume

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

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

The Technical Volume to the application may not be more than 30 pages, including the cover page, table of contents, and all citations, charts, graphs, maps, photos, or other graphics, and must include all information below. The applicant should consider the weighting of each of the technical review criteria (see [Technical Review Criteria](#)) when preparing the Technical Volume.

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

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

Cover Page:

The cover page must include all of the following:

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

Project Overview (Approximately 10% of the Technical Volume)

The Project Overview should contain the following information:

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

Technical Description, Innovation, and Impact (Approximately 30% of the Technical Volume)

The Technical Description should contain the following information:

- **Relevance and Outcomes:** The applicant should provide a detailed description of the technology or focus area, including the scientific and other principles and objectives that will be pursued during the project. This section should describe the relevance of the proposed project to the goals and objectives of the NOFO, including the potential to meet specific DOE technical targets or other relevant performance targets. The applicant should clearly specify the expected outcomes of the project.
- **Feasibility:** The applicant should demonstrate the technical feasibility of the proposed technology and capability of achieving the anticipated performance targets, including a description of previous work done and prior results. This section should also address the project's access to necessary infrastructure (e.g., transportation, water, electricity transmission), including any use of existing infrastructure, as well as to a skilled workforce.
- **Innovation and Impacts:** The applicant should describe the current state-of-the-art in the applicable field, the specific innovation of the proposed technology or focus area, the advantages of proposed technology over current and emerging technologies, and the overall impact on advancing the state-of-the-art/technical baseline if the project is successful.

Workplan (Approximately 40% of the Technical Volume)

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

- **Project Objectives:** The applicant should provide a clear and concise (high-level) statement of the goals and objectives of the project as well as the expected outcomes.
- **Technical Scope Summary:** The applicant should provide a summary description of the overall work scope and approach to achieve the objective(s). The overall work scope is to be divided by performance periods that are separated by discrete, approximately annual decision points (see below for more information on Go/No-Go decision points). The applicant should describe the specific expected end result of each performance period, including milestones in the Diversity, Equity, Inclusion and Accessibility Plan.
- **WBS and Task Description Summary:** The Workplan should describe the work to be accomplished and how the applicant will achieve the milestones, will accomplish the final project goal(s), and will produce all deliverables. The Workplan is to be structured with a hierarchy of performance period (approximately annual), task and subtasks, which is typical of a standard WBS for any project. The Workplan shall contain a concise description of the specific activities to be conducted over the life of the project. The description shall be a full explanation and disclosure of the project being proposed (i.e., a statement such as “we will then complete a proprietary process” is unacceptable). It is the applicant’s responsibility to prepare an adequately detailed task plan to describe the proposed project and the plan for addressing the objectives of this NOFO. The summary provided should be consistent with the SOPO. The SOPO will contain a more detailed description of the WBS and tasks.
- **Milestone Summary:** The SOPO should provide a summary of appropriate milestones throughout the project to demonstrate progress and success. A milestone may be either a progress measure (which can be activity based) or a SMART technical milestone. SMART milestones should be Specific, Measurable, Achievable, Relevant, and Timely, and must demonstrate a technical achievement rather than simply completing a task. Unless otherwise specified in the NOFO, the minimum requirement is that each project must have at least one milestone per quarter for the duration of the project with at least one SMART technical milestone per year (depending on the project, more milestones may be necessary to comprehensively demonstrate progress). The applicant should also provide the means by which the milestone will be verified. The summary provided should be consistent with the Milestone Summary Table in the SOPO.
- **Go/No-Go Decision Points:** The applicant should provide a summary of project-wide Go/No-Go decision points at appropriate points in the Workplan. At a minimum, each project must have at least one project-wide Go/No-Go decision point for each budget period (12 to 18-month period) of the project. See the [Key Facts](#) section above for Go/No-Go and budget period information. The applicant should also provide the specific technical and Diversity, Equity, Inclusion and Accessibility plan criteria to be used to evaluate the project at the Go/No-Go decision point. The summary provided should be consistent with the SOPO. Go/No-Go decision points are considered “SMART” and can fulfill the requirement for an annual SMART milestone.
- **End of Project Goal:** The Workplan should include a summary of the end of project goal(s). At a minimum, each project must have one SMART end of project goal. The summary provided should be consistent with the SOPO.
- **Project Schedule (Gantt Chart or similar):** The applicant should provide a schedule for the entire project, including task and subtask durations, any milestones, and any Go/No-Go decision points.
- **Build America Buy America (BABA) Requirements for Infrastructure Projects:** Within the first two pages of the Workplan, include a short statement on whether the project will involve the construction, alteration, maintenance and/or repair of public infrastructure in the United States.

See [Build America, Buy America | Department of Energy](#) and [2 CFR 184](#) for applicable definitions and other information regarding Infrastructure Projects and the Buy America Requirement.

- **Project Management:** The applicant should discuss the team’s proposed management plan, including the following:
 - The overall approach to and organization for managing the work;
 - The roles of each project team member;
 - Any critical handoffs/interdependencies among project team members;
 - The technical and management aspects of the management plan, including systems and practices, such as financial and project management practices;
 - The approach to project risk management, including a plan for securing a qualified workforce and mitigating risks to project performance including but not limited to community or labor disputes or conflicts related to siting;
 - Approach to addressing permits and tory approvals, including compliance with any current permits, and any permits and natural or cultural resource issues that could require discretionary permits or approvals;
 - A description of how project changes will be handled;
 - If applicable, the approach to Quality Assurance/Control;
 - How communications will be maintained among project team members.
- **Market Transformation Plan:** The applicant should provide a market transformation plan, including the following:
 - Identification of target market, competitors, and distribution channels for proposed technology along with known or perceived barriers to market penetration, including a mitigation plan.
 - Identification of a product development and/or service plan, commercialization timeline, financing, product marketing, legal/regulatory considerations including intellectual property, infrastructure requirements, data dissemination, and product distribution.
 - Identification of current industry interest, commitments for adoption if the project is successful, and impact of those commitments across the industry.

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

The Technical Qualifications and Resources should contain the following information:

- A description of the project team’s unique qualifications and expertise, including those of key subrecipients;
- A description of the project team’s existing equipment and facilities, or equipment or facilities already in place on the proposed project site, that will facilitate the successful completion of the proposed project; include a justification of any new equipment or facilities requested as part of the project;
- Relevant, previous work efforts, demonstrated innovations, and how these enable the applicant to achieve the project objectives;
- The time commitment of the key team members to support the project;
- A description of the technical services to be provided by DOE FFRDCs, if applicable;
- The skills, certifications, or other credentials of the construction and ongoing operations workforce;
- For multi-organizational projects, describe succinctly:
 - The roles and the work to be performed by the project manager and Senior/Key Personnel at the recipient and sub levels;

- Business agreements between the applicant and sub;
- How the various efforts will be integrated and managed;
- Process for making decisions on technical direction;
- Publication arrangements;
- Strategy to address known resource, including intellectual property and real property, constraints, or challenges; and
- Communication plans.

D. Funding Restrictions

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

Applicable Funding Restrictions		
Title	Location	Additional Information
Allowable Costs	NOFO Part 2	Applicable to awards made under this NOFO
Pre-Award Costs	NOFO Part 2	Applicable to awards made under this NOFO
Performance of Work in the United States (Foreign Work Waiver Requirement)	NOFO Part 2	Applicable to awards made under this NOFO
Foreign Travel	NOFO Part 2	Foreign Travel is not allowed for awards made under this NOFO without an approved waiver
Lobbying	NOFO Part 2	Applicable to awards made under this NOFO
Equipment and Supplies	NOFO Part 2	Purchasing American-made equipment and supplies is applicable to this award.
Build America Buy America Requirements for Infrastructure Projects	NOFO Part 1	When 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

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.

1. eXCHANGE

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

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

B. Application Package

1. eXCHANGE

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

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

- TechnicalVolume_Part_1
- TechnicalVolume_Part_2

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

In addition to eXCHANGE, the application forms and instructions are available at [EERE Funding Application and Management Forms](#) and on EERE eXCHANGE. To access these materials on EERE eXCHANGE, go to <https://eere-eXCHANGE.energy.gov> and select the appropriate funding opportunity number.

Electronic Authorization of Applications and Award Documents

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

C. Submission Date and Times

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

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

Applicants are strongly encouraged to submit all required application documents at least 48 hours in advance of the submission deadline. Under normal conditions (i.e. submit application documents. Once the application documents are submitted in the eXCHANGE site identified in the NOFO Part 1, applicants may revise or update that submission until the expiration of the applicable deadline. If changes are made to any of these documents, the applicant must resubmit them before the applicable deadline. DOE will not extend the submission deadline, at least 48 hours before the submission deadline), applicants should allow at least one hour to s for applicants that fail to submit required information by the applicable deadline due to server/connection congestion.

D. Intergovernmental Review

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

VI. Application Review Information

A. Standards for Application Evaluation

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

B. Responsiveness Review

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

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

C. Review Criteria

1. Compliance Criteria

All applicant submissions for concept papers and applications must:

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

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

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

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

2. Technical Review Criteria

Concept Papers

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

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

This criterion involves consideration of the following factors:

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

Applications

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

Topic Areas 1-8 (only)

Review Criterion Overview	
Criterion	Weight
Technical Merit, Innovation, and Impact	50%
Project Research and Market Transformation Plan	25%
Team and Resources	15%
Diversity, Equity, Inclusion, and Accessibility Plan	10%

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

This criterion involves consideration of the following factors:

Technical Merit and Innovation

- Extent to which the proposed technology, process, or project is innovative or replicable;
- Degree to which the current state of the technology and the proposed advancement are clearly described;
- Extent to which the application specifically and convincingly demonstrates how the applicant will move the state-of-the-art to the proposed advancement;
- Sufficiency of technical detail in the application to assess whether the proposed work is scientifically meritorious and revolutionary, including relevant data, calculations, and discussion of prior work, with analyses that support the viability of the proposed work;

- Extent to which project has buy-in from needed stakeholders to ensure success;
- Degree to which key manufacturing and supply chain challenges are considered; and
- Extent to which project has the potential to reduce emissions and provide clean energy acceleration benefits for a community or region.

Impact of Technology Advancement

- Ability of the project to advance industry adoption;
- Extent to which the project supports the topic area objectives and target specifications and metrics; and
- Potential impact of the project on advancing the state-of-the-art

Project Management

- Adequacy of proposed project management systems including the ability to track scope, cost, and schedule progress and changes;
- Reasonableness of budget and spend plan as detailed in the budget justification workbook for proposed project and objectives;
- Adequacy, reasonableness, and soundness of the project schedule, as well as periodic Go/No-Go decisions prior to further funds disbursement, interim milestones, and metrics to track process;
- Adequacy, reasonableness, and soundness of the project schedule, as well as annual Go/No-Go decisions prior to a budget period continuation application, interim milestones, and metrics to track process

Criterion 2: Project Research and Market Transformation Plan (25%)

This criterion involves consideration of the following factors:

Research Approach, Workplan, and SOPO

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

Identification of Technical Risks

- Discussion and demonstrated understanding of the key technical risk areas involved in the proposed work and the quality of the mitigation strategies to address them.

Baseline, Metrics, and Deliverables

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

Market Transformation Plan

- Identification of target market, competitors, and distribution channels for proposed technology along with known or perceived barriers to market penetration, including mitigation plan; and
- Comprehensiveness of market transformation plan including but not limited to product development and/or service plan, commercialization timeline, financing, product marketing,

legal/regulatory considerations including intellectual property, infrastructure requirements, and product distribution.

Criterion 3: Team and Resources (15%)

This criterion involves consideration of the following factors:

- Capability of the Principal Investigator(s) and the proposed team to address all aspects of the proposed work with a high probability of success. The qualifications, relevant expertise, and time commitment of the individuals on the team;
- Diversity of expertise and perspectives of the team and the inclusion of industry partners that will amplify impact;
- Sufficiency of the facilities to support the work;
- Level of participation by project participants as evidenced by letter(s) of commitment and how well they are integrated into the Workplan; and
- Reasonableness of the budget and spend plan for the proposed project and objectives.

Criterion 4: Diversity, Equity, Inclusion, and Accessibility Plan (10%)

This criterion involves consideration of the following factors:

- The quality and manner in which the measures incorporate diversity, equity, inclusion, and accessibility goals in the project; and
- Extent to which the project benefits underserved communities.

Topic Areas 9-10 (only)

Review Criterion Overview	
Criterion	Weight
Project Approach and Impact	30%
Project Plan	30%
Project Team and Qualifications	25%
Diversity, Equity, Inclusion, and Accessibility Plan	15%

Criterion 1: Project Approach and Impact (30%)

This criterion involves consideration of the following factors:

- Extent to which the proposed approach is relevant to the Topic Area objectives, demonstrates how DOE funding will impact the problem that is being addressed, and is innovative;
- Extent to which the application objectively describes the current state of the market sector using quantifiable metrics and how the project outcomes will measurably advance the state of the market sector;
- Extent to which the community which will be affected by the project is involved in the design and implementation of the project activities; and
- Extent to which the project includes activities to produce and share valuable insights and best practices that will effectively enable others to replicate the project successes.

Criterion 2: Project Plan (30%)

This criterion involves consideration of the following factors:

- Extent to which the workplan clearly defines the scope, tasks, milestones, and schedule of the project such that the parameters of the project are appropriately defined, the tasks are logically ordered, the task durations are reasonable, and that the overall plan will result in successful achievement of project outcomes and goals;
- Reasonableness of the approach to managing the work, including the extent to which the involvement of project team organizations/individuals are defined in relation to specific work tasks, milestones, and deliverables, and of the structure of the plan for communication among team members;
- Reasonableness of the proposed plan for collecting, utilizing, analyzing, and publicly sharing project data; and
- Reasonableness of the allocation of project resources, including project budget and key personnel time commitment, to ensure the successful completion of the proposed work.

Criterion 3: Project Team and Qualifications (25%)

This criterion involves consideration of the following factors:

- Extent of key personnel qualifications, expertise, and experience, in relation to project and topic area objectives;
- Extent of the alignment between the team organizations' missions/strategic goals with the objectives of the topic area and with the teaming arrangement proposed by the topic area; and
- Appropriateness of the resource commitments proposed by project partners or other key participants as validated by letters of commitment.

Criterion 4: Diversity, Equity, Inclusion, and Accessibility Plan (15%)

This criterion involves consideration of the following factors:

- The quality and manner in which the measures incorporate diversity, equity, inclusion, and accessibility goals in the project; and
- Extent to which the project benefits underserved communities.

D. Other Selection Factors

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

1. The degree to which the proposed project exhibits technological diversity when compared to the existing DOE project portfolio and other projects selected from the subject NOFO;
2. The degree to which the proposed project, including proposed cost share, optimizes the use of available DOE funding to achieve programmatic objectives;
3. The level of industry involvement and demonstrated ability to accelerate demonstration and commercialization and overcome key market barriers;
4. The degree to which the proposed project is likely to lead to increased high-quality employment and manufacturing in the United States;

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

VII. Selection and Award Notices

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

VIII. Award Administration Information

A. Post-Award Requirements and Administration

DOE requires all award recipients to follow and accept requirements governed by laws and policies – both federal government-wide and DOE or program specific. These post-award requirements include all National and Administrative Policy Requirements; financial assistance general Certifications and Representations; Build America, Buy America requirements; Davis-Bacon Act requirements; Bipartisan Infrastructure Law-Specific Requirements; Fraud, Waste and Abuse requirements; Safety, Security, and Regulatory requirements; and Environmental Review in Accordance with National Environmental Policy Act requirements.

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

Applicable Post-Award Requirements and Administration	
Title	Location
Award Administrative Requirements	NOFO Part 2
Subaward and Executive Reporting	NOFO Part 2
National Policy Requirements	NOFO Part 2
Applicant Representations and Certifications	NOFO Part 2
Statement of Federal Stewardship	NOFO Part 2
Uniform Commercial Code (UCC) Financing Statements	NOFO Part 2
Interim Conflict of Interest Policy for Financial Assistance	NOFO Part 2
Whistleblower Protections	NOFO Part 2
Fraud, Waste, and Abuse	NOFO Part 2
Participants and Collaborating Organizations	NOFO Part 2
Current and Pending Support	NOFO Part 2
Prohibition Related to Malign Foreign Talent Recruitment Programs	NOFO Part 2
Foreign Collaboration Considerations	NOFO Part 2
U.S. Manufacturing Commitments	NOFO Part 2
Subject Invention Utilization Reporting	NOFO Part 2
Intellectual Property Provisions	NOFO Part 2
Go/No-Go Review	NOFO Part 2
Conference Spending	NOFO Part 2
Invoice Review and Approval	NOFO Part 2
Cost-Share Payment	NOFO Part 2

Implementation of Executive Order 13798, Promoting Free Speech, and Religious Liberty	NOFO Part 2
Affirmative Action and Pay Transparency Requirements	NOFO Part 2
Human Subjects Research	NOFO Part 2
Real Property and Equipment	NOFO Part 1
Rights in Technical Data	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. Rights in Technical Data

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

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

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

the award. In addition, invention disclosures may be protected from public disclosure for a reasonable time in order to allow for filing a patent application.

Data protection is not available to non-R&D projects in Topic Areas 9 and 10.

3. Cost Share Payment

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

B. Helpful Websites

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

[EERE Application Process](#)

[Financial Assistance Forms | netl.doe.gov](#)

C. Questions and Support

1. Questions

Upon the issuance of a NOFO, DOE personnel are prohibited from communicating (in writing or otherwise) with applicants regarding the NOFO except through the established question and answer process described below. Questions regarding this NOFO must be submitted to DE-FOA-0003514@NETL.DOE.GOV no later than three (3) business days prior to the application due date and time. Please note, feedback on individual concepts will not be provided through Q&A.

All questions and answers related to this NOFO will be posted on the eXCHANGE site listed in the [Key Facts](#) section above. **You must first select the NOFO Number to view the questions and answers specific to this NOFO.** DOE will attempt to respond to a question within five (5) business days unless a similar question and answer has already been posted on the website.

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

2. Support

Grants.gov

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

SAM.gov

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

IX. Other Information

Please see the **NOFO Part 2, *Other Information*** for additional information and requirements that apply to all DOE NOFOs.

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

You must have an active account with [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)

- **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

Grants.gov Registration

You must have an active [Grants.gov](#) registration to receive automatic updates when modifications to this NOFO are posted. 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. Please note that letters of intent, concept papers, and applications will not be accepted through Grants.gov (see eXCHANGE information below).
- 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>

eXCHANGE

Register with eXCHANGE, with Login.gov or ID.me.

- **What is it?** The Department of Energy (DOE) has several eXCHANGE databases that are useful in searching for funding opportunities.
- As part of the eXCHANGE registration process, new users will be directed to create an account in Login.gov. Please note that the email address associated with Login.gov must match the email address associated with the eXCHANGE account.
- Submission of application documents in any DOE eXCHANGE system constitutes the authorized representative's approval and electronic signature.
- **Duration** to complete: can take two to three days.
- **Registration Links:**
 - Energy Efficiency and Renewable Energy eXCHANGE: [EERE eXCHANGE: Funding Opportunity \(energy.gov\)](#)
 - Indian Energy eXCHANGE: [IE-Exchange: Funding Opportunity \(energy.gov\)](#)
 - Infrastructure eXCHANGE: [Infrastructure eXCHANGE: Funding Opportunity \(energy.gov\)](#) [supporting the following DOE Offices:](#)
 - Office of Cybersecurity, Energy Security, & Emergency Response (CESER)
 - Office of Federal Energy Management Programs (FEMP)
 - Grid Deployment Office (GDO)
 - Office of Manufacturing and Energy Supply Chains (MESC)
 - Office of State and Community Energy Programs (SCEP)

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.

1. Legal Responsibility

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.

2. 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.

3. 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.

4. 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.

5. 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.

6. 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.

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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.
Control Number	A control number will be issued when an applicant begins the eXCHANGE application process. The control number must be included with all application documents. Specifically, the control number must be prominently displayed on the upper right corner of the header of every page and included in the file name (i.e., <i>Control Number_Applicant Name_Application</i>).
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.
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The following information is intended to address eXCHANGE issues typically encountered during the application process. Refer to **NOFO Part 1, *Submission Requirements and Deadlines—Application Package*** for the eXCHANGE site location and support for technical assistance information.

Additional eXCHANGE Information	
Deadlines for Submission	eXCHANGE is designed to enforce the deadlines specified in this NOFO. The “Apply” and “Submit” buttons will automatically disable at the defined submission deadlines.
Submission Difficulties	Applicants who experience technical difficulties with submission PRIOR to the NOFO deadline should contact the eXCHANGE helpdesk for assistance using the information provided above.
Application Forms	To access application forms and instructions available on eXCHANGE, select the appropriate funding opportunity number on the Funding Opportunity page.
Size Limitations	<p>The maximum file size that can be uploaded to the eXCHANGE website is 50MB. Files larger than 50MB cannot be uploaded and hence cannot be submitted for review. If a file is larger than 50MB but is still within the maximum page limit specified in the NOFO, it must be broken into parts and denoted to that effect. For example: "TechnicalVolume_Part_1", "TechnicalVolume_Part_2".</p> <p>DOE will not accept late submissions that resulted from technical difficulties due to uploading files that exceed 50MB.</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, which is available on [Financial Assistance Forms and Information For Applicants and Recipients | Department of Energy](#). The list of certifications and assurances can also be found on the site noted above. Complete all required fields in accordance with the instructions on the form.

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

Each letter must not exceed one page.

3. Impacted Indian Tribes Documentation

For any application that potentially impacts Indian Tribes or is on Tribal land¹ 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 representative² 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

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

² 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.

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.
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.

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	https://bia-geospatial-internal.geoplatform.gov/indianlands/
Tribal Treaties Database	https://treaties.okstate.edu/
Directory of federally recognized Tribes and Tribal leaders	https://www.bia.gov/service/tribal-leaders-directory
Best Practices for Identifying and Protecting Tribal Treaty Rights, Reserved Rights, and other similar rights in federal regulatory actions	https://www.bia.gov/sites/default/files/dup/inline-files/best_practices_guide.pdf

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
If Research and Development (R&D)	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.
If Demonstration and Deployment (D&D)	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).	
Subsurface Resource Activities (carbon sequestration, oil & gas, geothermal, critical minerals, groundwater, etc.)	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.	
If Hydropower, Offshore Wind, or other Water Related Projects	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.	
If Infrastructure (e.g., Transmission and Pipeline) Projects	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.	

<p>Other Actions Not Categorized Above</p>	<p>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.</p>	
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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.

4. Statement of Project Objectives (SOPO)

Refer to the **NOFO Part 1, Technical Volume** for specific requirements. If required, applicants must submit a SOPO. The SOPO template is available in eXCHANGE, 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 of the elements described in NOFO Part 1, *Technical Volume*, and as outlined in the template.

5. Project Management Plan

Refer to the **NOFO Part 1, Technical Volume** for specific requirements. If required, applicants must submit a PMP. The PMP template is available in eXCHANGE, 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.

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

If applicants elect to use the budget justification workbook in eXCHANGE, 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*.

7. Budget Justification Workbook

Please refer to the Budget Justification Workbook template in [eXCHANGE](#). Applicants are strongly encouraged to use the suggested template. If applicants choose not 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. The SF-424A budget justification form must be saved as PDF file using the following convention for the title, "Control Number_LeadOrganization_424A_Budget.

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.

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.

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>.

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.

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.

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.

13. Community Benefits Plan: Job Quality and Equity (non-R&D)

The information below is **sample** non-R&D CBP content. Please refer to the CBP template in [eXCHANGE](#) for specific CBP requirements.

The Community Benefits Plan: Job Quality and Equity (Community Benefits Plan or Plan) must set forth the applicant's approach to ensuring that federal investments advance four goals: 1) community and labor engagement; 2) investing in quality jobs; 3) advancing DEIA; and 4) contributing to the Justice40 Initiative. The Community Benefits Plan should indicate the applicant's intention to engage meaningfully with labor and community stakeholders on these goals, including the potential of entering into formal Workforce and Community Agreements. Given project complexity and sensitivities, applicants should consider pursuing multiple agreements.

All CBP related activities or policies, including internal policies related to labor unions and DEIA, must be attributed to the entity performing the project and have a direct nexus to the success of the specific project, including actions to de-risk projects, for example, to build long-term Tribal or community support, or secure a stable workforce. If 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 and sample commitments 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 Community Benefits Plan should include at least one Specific, Measurable, Achievable, Relevant, and Timely (SMART) milestone per section per budget period to measure progress on the proposed actions. The Plan will be evaluated as part of the technical review process. If DOE selects a project, the selectee may be responsible for developing a Community Benefits Outcomes and Objectives (CBOO) document. DOE will incorporate the CBOO and other community benefits terms and conditions into the award and the recipient must implement its CBOO and community benefits terms and conditions 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. In addition, DOE will evaluate the recipient's progress during the award period of performance, including as part of the continuation and/or Go/No-Go review process.

This Plan must address the technical review criterion titled "Community Benefits Plan: Job Quality & Equity." See the [NOFO Part 1, Application Review Information—Review Criteria](#) section.

For additional information, see [About Community Benefits Plans](#).

The Community Benefits Plan must address the following four components:

1. Community and Labor Engagement:

The Community Benefits Plan must describe the applicant's actions to date and plans to engage with community partners, such as state and local governments, Indian Tribes, labor unions, and community-based organizations that support or work with underserved populations, as well as disadvantaged communities as defined for purposes of the Justice40 Initiative³. By facilitating community input, social buy-in, and accountability, such engagement has the potential to substantially reduce or eliminate delays, litigation, and other risks associated with project implementation.

Although Tribal governments are included in this section on community and labor stakeholders, American Indian and Alaska Native Tribal Nations have rights as sovereign governments recognized under the Constitution of the United States, treaties, statutes, Executive Orders, and court decisions. Applicants are required to make Indian Tribes aware of potential impacts and obtain letters of support when projects are on Tribal land or intersect with Tribal subsurface rights, as required in the [Impacted Indian Tribes Documentation](#) section above.

Community and labor engagement should lay the groundwork for the negotiation of Workforce and Community Agreements, which could take the form of one or more kinds of negotiated agreements with Indian Tribes, communities, and labor unions. Registered apprenticeship programs, labor-management training partnerships, quality pre-apprenticeship programs, and local and targeted hiring goals are key components of workforce agreements. Community agreements can include economic benefits for Tribes and local and disadvantaged communities as well as provisions such as a community-governed fund and environmental, wealth-building, energy democracy, resilience, or other benefits for local communities, workers, and/or Tribes.

Applicants should also provide Community and Labor Partnership Documentation from representative organizations reflecting substantive engagement and feedback on the applicant's approach to community benefits, including quality jobs; diversity, equity, inclusion, and accessibility; and the Justice40 Initiative detailed below.

2. Investing in Quality Jobs:

A well-qualified, skilled, and trained workforce is necessary to ensure project stability, continuity, and success, and to meet program goals. High-quality jobs are critical to attracting and retaining the qualified workforce required.

³ 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. DOE's Justice40 Implementation Guidance is located at <https://www.energy.gov/media/277188>

The Plan must describe the applicant's approach to investing in workforce education and training of both new and incumbent workers and ensuring jobs are of sufficient quality to attract and retain skilled workers in the industry.

The National Labor Relations Act guarantees employees right to organize and bargain collectively through labor organizations of their choosing, thereby creating a workplace more amenable to resolving disputes before work disruptions occur. This helps assure project efficiency, continuity, and multiple public benefits. Project funds may not be used to influence worker organizing or collective bargaining.

The Plan should include:

- A. A summary of the applicant's plan to attract, train, and retain a skilled and well-qualified workforce for planning, construction, *and* ongoing operations/production activities, as applicable. A collective bargaining agreement, labor-management partnership, or other similar agreement could provide evidence of such a plan. Alternatively, applicants may describe:
 - Wages, benefits, and other worker supports to be provided, benchmarked against prevailing wages for construction and upper quartile wages for other relevant occupations and industries.
 - Commitments to invest in workforce education and training, including measures to reduce attrition, increase productivity from a committed and engaged workforce, and support the development of a resilient, skilled, and stable workforce for the project; and
 - Efforts to establish robust workplace safety and health plans that engage production and hourly employees in design and execution.
- B. It is the policy of the United States to eliminate the causes of certain substantial obstructions to the free flow of commerce by encouraging the practice and procedure of collective bargaining and by protecting the exercise by workers of full freedom of association. Applicant should provide a description of how they plan to affirmatively support worker organizing and collective bargaining. For example, this may include a commitment to negotiate pre-hire project labor agreements for construction activity, a pledge to make public a commitment to remain neutral during any union organizing campaigns, a pledge to make public the intention or willingness to permit union recognition through card check (as opposed to requiring union elections), intention or willingness to enter into binding arbitration to settle first contracts, a pledge to make public a commitment to allow union organizers access to appropriate onsite non-work places (e.g., lunch rooms), a pledge to make public a commitment to refrain from holding captive audience meetings, and other supportive commitments or pledges.

3. Diversity, Equity, Inclusion, and Accessibility (DEIA):

The Community Benefits Plan must include a section describing how DEIA objectives will be incorporated into the project. The section should detail how the applicant will partner and contract with underrepresented⁴ businesses, residents of disadvantaged communities, educational

⁴ "Underrepresented" refers to populations sharing a particular characteristic, as well as geographic communities, that are shown to have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life, as exemplified by communities that have been denied fair, just, and impartial treatment, which may

institutions, and training organizations that serve workers who face barriers to accessing quality jobs, and/or other project partners to help address DEIA.

The following is a list of potential DEIA actions that could be included in a Plan. This list is offered to provide guidance to applicants and is not intended to be comprehensive:

- A. For construction projects, using hiring preferences or goals for people residing in high-poverty areas, disadvantaged communities as defined by the Justice 40 Initiative, or high-unemployment census tracts within a region no smaller than the county where the construction project is located;
- B. Using hiring preferences or goals for individuals with barriers to employment⁵ including women and people from underserved communities as defined by Executive Order 14091;
- C. Using geographic hiring preferences or goals for members of local communities and Indian Tribes;
- D. Using agreements intended to ensure uninterrupted delivery of services; using agreements to ensure community benefits;
- E. Partnering or contracting with Minority Serving Institutions⁶ or businesses majority owned or controlled by residents of disadvantaged communities, underrepresented persons or groups of underrepresented persons;
- F. To fill open positions for the DOE-funded project, partner with workforce training organizations serving underrepresented populations and those facing systemic barriers to quality employment, such as those with disabilities, women, returning citizens, opportunity youth, and veterans;
- G. Provide workers and trainees with comprehensive support services, such as childcare and transportation, to increase representation and access to training opportunities and to the project's construction and operations jobs.

4. Justice40 Initiative:

Applicants must provide an overview of benefits to disadvantaged communities that the project can deliver, supported by measurable milestones. The Justice40 Initiative section should include:

- A. Identification of applicable disadvantaged communities to which the anticipated project benefits will flow, by making clear whether Federally Recognized Tribes or Tribal entities will benefit or if benefits will flow to disadvantaged communities as identified by the Climate and Economic Justice Screening Tool (<https://screeningtool.geoplatform.gov/>).
- B. Identification of applicable benefits that are quantifiable, measurable, and trackable, including, at a minimum, a discussion of the relevance of each of the eight DOE Justice40 Initiative benefits outlined below. Benefits include (but are not limited to) measurable direct or indirect investments or positive project outcomes that achieve or contribute to the following in disadvantaged communities: (1) a decrease in energy burden; (2) a decrease in environmental exposure and burdens; (3) an increase in access to low-cost capital; (4) an increase in quality job creation, the clean energy job pipeline, and job training for individuals; (5) increases in clean energy enterprise creation and contracting; (6) increases in energy

include Black, Latino, and Indigenous and Native American persons, Asian Americans and Pacific Islanders and other persons of color; members of religious minorities; lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons;

⁵ Individuals with barriers to employment are defined in section 3 of the Workforce Innovation and Opportunity Act (29 U.S.C. 3102(24)).

⁶ Minority-Serving Institution is defined in [7 CFR § 3430.302](#).

democracy, including community ownership; (7) increased parity in clean energy technology access and adoption; and (8) an increase in energy resilience. Applicants should also discuss how the project will maximize all the benefits listed in number 4 above.

- C. A description of the mechanism and timing of anticipated benefits are expected to flow to disadvantaged communities. For example, whether the benefits will be provided directly within the disadvantaged communities identified in the Justice40 Initiative section or in another way; whether the benefits will flow during project development and/or after project completion; and how the applicant will track benefits delivered.
- D. A discussion of anticipated negative environmental, social or economic impacts as described in B. above on local and disadvantaged communities including communities geographically near the project or directly affected by project construction or operations, as well as known impacts upstream (in the supply chain, e.g., raw material extraction) or downstream (e.g., waste disposal). Applicants should discuss any anticipated negative or positive environmental impacts associated with the project, and how they will mitigate any negative impacts, including cumulative negative impact. Within the context of negative or positive impacts created by the project, applicants should use the Climate and Economic Justice Screening Tool (CEJST) to quantitatively discuss existing environmental impacts in the project area. See <https://screeningtool.geoplatform.gov/>.

For projects funded under the applicable NOFO Part 1, DOE will provide specific reporting guidance for the community benefits described above.

14. 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 in [eXCHANGE](#) 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 goal⁷. In addition, this section must articulate the applicant's consideration of long-term equity implications of the research and any implications for environmental justice. It must identify how the

⁷ 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.

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.

15. 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.

16. 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)	
Contact Information	Phone, email, and address
Education & Training	Provide name of institution, major/area, degree, and year for undergraduate, graduate, and postdoctoral training

Research & Professional Experience	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
Awards & Honors	List any notable awards and honors received
Publications	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
Synergistic Activities	List up to five professional and scholarly activities related to the proposed effort;
Additional Criteria	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 \(nih.gov\)](https://www.sciencenetwork.org/sciencv/) also available at [Common Form for Biographical Sketch \(nsf.gov\)](https://www.nsf.gov/pubs/2010/pub10010.html). 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.

17. Resumes for Non-Research & Development (R&D) NOFOs

A resume provides information reviewers can use to evaluate an individual's relevant skills and the experience of the key project personnel. Applicants must submit a resume for each 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 at a minimum:

Resume Requirements	
Contact Information	Phone, email, and address
Education	All academic institutions attended, major/area, degree

Training	Examples include certification or credential from a Registered Apprenticeship or Labor Management Partnership
Professional Experience	Beginning with the current position, list professional/academic positions in chronological order with a brief description
Current Appointments	All current academic, professional, or institutional appointments, foreign or domestic, at the applicant institution or elsewhere, whether or not remuneration is received, and whether full-time, part-time, or voluntary.
Additional Criteria	There should be no lapses in time over the past 10 years or since age 18, whichever period is shorter.

18. 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	
Sponsor of the Activity	The sponsor of the activity or the source of funding.
Award Number	The federal award number or any other identifying number.
Award Title	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
Total Cost or Value	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
Award Period	The "Start Date" through "End Date".
Person-months	The person-months of effort per year dedicated to the award or activity
Description	To identify overlap, duplication of effort, or synergistic efforts, append a description of the other award or activity to the current and pending support.

Digital Persistent Identifier (e.g., ORCID iD)	For R&D NOFOs only, provide an ORCID iD (optional until May 2025, and required thereafter).
Certification Statement	<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, 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 malign foreign talent recruitment program.</i></p> <p>The following CPS certification is optional until May 1, 2025, and mandatory thereafter:</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 https://new.nsf.gov/research-security/training.</i></p>
Foreign Government Sponsorship	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.

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](https://www.whitehouse.gov/ostp-foreign-talent-recruitment-program-guidelines.pdf) ([whitehouse.gov](https://www.whitehouse.gov)).

19. 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.

20. 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**.

21. 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	
*Entity Name	Complete legal name of the lead organization.
*Website Address	Link to the entity's website address.
*Mailing Address	Complete mailing address for the entity to include zip code.
*Project Participants Party to ANY Malign Foreign Talent Recruitment Program	The identity of all owners, principal investigators, project managers, and covered individuals who are a party to any Malign Foreign Talent Recruitment Program . 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;
Country of Risk Joint Venture or Subsidiary	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);
Current or Pending Foreign Contractual or Financial Obligation	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;

Disclosure Information	
Percentage Foreign Ownership or Control	Percentage, if any, that the proposed recipient or subrecipient has foreign ownership or control;
Percentage Country of Risk Ownership	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;
Percentage Country of Risk Investment	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;
*Country of Risk Technology Licensing of Intellectual Property Sales	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);
*Foreign Equipment	Any of the following foreign equipment proposed for use on the project: <ul style="list-style-type: none"> i. Unmanned aircraft, control, and communications components originally made or manufactured in a foreign country of risk (including relabeled or rebranded equipment). ii. Coded equipment where the source code is written in a foreign country of risk. iii. Equipment from a foreign country of risk that will be connected to the internet or other remote communication system. 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.
Foreign Entity Relationships	Any foreign business entity, offshore entity, or entity outside the United States related to the proposed recipient or subrecipient;
List of Company Directors (and Board Observers)	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;
Complete Capitalization Table	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%;
Principal Place of Incorporation	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%;

Disclosure Information	
Rounds of Financing Table	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
Organization Chart	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.

22. 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.

23. 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.

If 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.

The DOE Public Access Plan located at

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.

24. Locations of Work

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 Locations of Work (LOW) template for each location. For your convenience, a Locations of Work template is available on eXCHANGE (please refer to the *NOFO Part 1, Application Content and Form—Application Content Requirements* table for the file

format and name instructions). Applicants are strongly encouraged to use the template. If the template is not used, the submission must include all the elements described below, and as outlined in the template.

- Location Type
- Location Type Category
- Is this a Principal Place of Performance?
- Prime or Subrecipient Location?
- If Subrecipient, Subrecipient/Community Name
- Facility Name (if applicable)
- Is location in a foreign country?
- Street Address, City, State, 5-Digit Zip Code - +4
- Briefly describe the primary activity at this location or with this population. For example, management headquarters; construction, operations, production; raw materials extraction, etc.
- Latitude/Longitude
- Does the location of work qualify as a disadvantaged community according to the according to the Climate and Economic Justice Screening Tool (CEJST)?
- Does the location or community that will receive benefits qualify as a disadvantaged community according to the CEJST?
- Will a Federally Recognized Tribe or Tribal entity receive benefits?
- Is the location of work sited on Tribal land or does it intersect with Tribal subsurface rights?
- If a geographically defined disadvantaged community, add the census tract number or describe the distributed (dispersed) disadvantaged community served (e.g., migrant workers)
- % of work performed at this location

25. Environmental Considerations Summary

Refer to the [NOFO Part 1, Application Content Requirements--Application Content Requirements](#) section to determine if the Environmental Considerations Summary is required. If required, the template will be included in eXCHANGE.

26. Environmental Impact Volume

Refer to the [NOFO Part 1, Application Content Requirements--Application Content Requirements](#) section to determine if the Environmental Impact Volume (EIV) is required. If required, the template will be included in eXCHANGE.

If required, the Environmental Impact Volume should describe the proposed action, its alternatives, and the existing environment.

27. 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 in eXCHANGE.

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.).

28. 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 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

29. 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	
Applicant Name	Provide the legal name of the applicant.
Major Participant Names	List all significant project participants and their roles.
Lead Project Manager / Principal Investigator(s)	Provide names and titles.
Project Title	Provide the title for the planned project.
Project Location(s)	Provide the location(s) of work for the proposed project.

Project Objectives	Identify the overarching project objectives aligned with requirements set forth in the NOFO.
Project Description	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
Publicly Releasable (Unlimited Rights)	This document must not include any proprietary or business-sensitive information, as DOE may make it available to the public after selections are made.
Page Limit Clarification	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.

30. Summary Slide

Applicants must provide a single slide summarizing the proposed project. The Summary Slide requirements and instructions are reflected in the NOFO Part 1 (Section X), and the suggested Summary Slide template is available on eXCHANGE. Typically, the Summary Slide includes information such as:

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

C. Additional Requirements

1. Content and Form of Replies to Reviewer Comments

Refer to *NOFO Part 1, Application Content and Form—Summary* to determine if the reply to reviewer comments submission phase applies. If so, the following information applies:

DOE will provide applicants with reviewer comments following the evaluation of all eligible applications. Applicants have a brief opportunity to prepare a short Reply to Reviewer Comments (Reply). The Reply must not exceed three pages. If a Reply is more than three pages in length, DOE will review only the first three pages and disregard additional pages. Applicants may use the Reply to respond to one or more comments or to supplement their application. The Reply may include text, graphs, charts, or data.

DOE will post the reviewer comments in eXCHANGE. The expected submission deadline is on the cover page of the NOFO Part 1; however, it is the applicant's responsibility to monitor eXCHANGE if the expected date changes. The deadline will not be extended for applicants who are unable to timely submit their Reply due to failure to check eXCHANGE or relying on the expected date alone. Applicants should anticipate having approximately three (3) business days to prepare and submit a Reply.

Applicants are not required to submit a Reply to Reviewer Comments. DOE will review and consider each eligible application, even if no Reply is submitted or if the Reply is found to be ineligible.

D. Funding Restrictions

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) 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.

The rest of this page is intentionally left blank.

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

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,⁸ 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".

⁸ See [Critical and Emerging Technologies List Update \(whitehouse.gov\)](https://www.whitehouse.gov/presidential-action/critical-and-emerging-technologies-list-update/).

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

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 in eXCHANGE. 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 post these notifications to eXCHANGE. 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 eXCHANGE. 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. Applicants must designate a primary and a backup point-of-contact in eXCHANGE with whom DOE will communicate to conduct award negotiations.

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

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

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](#)[®] 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
- **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 EERE eXCHANGE and FedConnect, constitutes the authorized representative's approval and electronic signature.

VIII. Award Administration Information

A. Post-Award Requirements and Administration

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)⁹ 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

⁹ 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,¹⁰ *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

¹⁰ 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; [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).

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 application¹¹; 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.

¹¹ 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 Guide¹² 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

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:

¹² 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

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

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

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.

E. Notice Regarding Eligible/Ineligible Activities

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.

F. Notice of Right to Conduct a Review of Financial Capability

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).

G. Requirement for Full and Complete Disclosure

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.

H. Retention of Submissions

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.

I. Title to Subject Inventions

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.

J. Government Rights in Subject Inventions

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 appear with counsel and appeal any adverse decision. To date, DOE has never exercised its march-in rights to any subject inventions.

K. Copyright

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.

L. Export Control

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.

M. Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment

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.

N. Personally Identifiable Information (PII)

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).

O. Annual Independent Audits

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.

P. Buy America Requirements for Infrastructure Projects; Required Use of American Iron, Steel, Manufactured

Products, and Construction Materials Produced in the United States

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 materials¹³ 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 the work site. Furthermore, wet concrete should not be considered a manufactured product if not dried or set prior to reaching the work site.

¹³ Excludes cement and cementitious materials, aggregates such as stone, sand, or gravel, or aggregate binding agents or additives.

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.

Q. Acronyms

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

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