



**Department of Energy (DOE)
Grid Deployment Office (GDO)**

Wholesale Electricity Market Studies and Engagements

Funding Opportunity Announcement (FOA) Number: DE-FOA-0003126

FOA Type: Initial

Assistance Listing Number: 81.254

	FOA Issue Date:	September 28, 2023
CLOSING DATE 1 DE-FO1-0003126	Submission Deadline for Concept Papers:	November 17, 2023 5:00pm ET
	Submission Deadline for Full Applications:	January 19, 2024 5:00pm ET
	Expected Date for GDO Selection Notifications:	March 14, 2024
	Expected Timeframe for Award Negotiations:	March – May 2024
CLOSING DATE 2 DE-FO2-0003126	Submission Deadline for Concept Papers:	June 13 2024 5:00pm ET
	Submission Deadline for Full Applications:	August 22, 2024 5:00pm ET
	Expected Timeframe for Award Negotiations:	October - December 2024

- Applicants must submit a Concept Paper by 5:00pm ET on the due date listed above to be eligible to submit a Full Application.
- Applicants must designate primary and backup points-of-contact in eXCHANGE with whom GDO will communicate to conduct award. To apply to this FOA, applicants must register with and submit application materials through the Clean Energy Infrastructure eXCHANGE at [eXCHANGE: Funding Opportunity Exchange \(energy.gov\)](https://www.energy.gov/eXCHANGE), DOE’s Office of the Under Secretary for Infrastructure’s online application portal. If an application is selected for award negotiations, it is not a commitment to issue an award. It is imperative that the applicant/selectee be responsive during award negotiations and meet negotiation deadlines. Failure to do so may result in cancelation of further award negotiations and rescission of the selection.



Modifications

All modifications to the FOA are [HIGHLIGHTED] in the body of the FOA.

Mod. No.	Date	Description of Modification
000001	11/02/2023	Extending the Concept Paper Submission deadline for DE-FO1-0003126 from November 2, 2023 to November 17, 2023. Updating the Full Application Submission deadline for DE-FO3-0003126 from December 21, 2023 to December 20, 2023.
000002	4/17/2024	Removed Round 3.
000002	4/17/2024	Extended Round 2 schedule: Moved Concept Paper deadline to June 13, 2024 and Full Application deadline to August 22, 2024
000002	4/17/2024	Narrowed Topic Area 2 to focus on convenings and education for States outside of existing RTOs/ISOs.
000002	4/17/2024	Inserted new area of interest on integrating long duration energy storage (LDES) operations in markets to Topic Area 1 with \$1.5 million available.



Table of Contents

- Modifications..... 2**
- Table of Contents..... i**
- I. Funding Opportunity Description 1**
 - A. Background and Context 1
 - i. Background and Purpose 1
 - B. Applications Specifically Not of Interest..... 6
 - C. Authorizing Statutes 6
- II. Award Information..... 7**
 - A. Award Overview 7
 - i. Estimated Funding 7
 - ii. Period of Performance 7
 - B. GDO Funding Agreements..... 7
 - i. Grants 7
 - ii. Funding Agreements with Federally Funded Research and Development Center (FFRDCs)..... 8
- III. Eligibility Information..... 8**
 - A. Eligible Applicants 8
 - i. Individuals 8
 - ii. Domestic Entities 8
 - iii. Foreign Entities 9
 - iv. Incorporated Consortia 9
 - v. Unincorporated Consortia 9
 - B. Cost Sharing..... 10
 - i. Legal Responsibility..... 10
 - ii. Cost Share Allocation 11
 - iii. Cost Share Types and Allowability 11
 - iv. Cost Share Contributions by FFRDCs 12
 - v. Cost Share Verification 12
 - vi. Cost Share Payment..... 12
 - C. Compliance Criteria 13
 - i. Compliance Criteria 13
 - D. Responsiveness Criteria..... 13
 - E. Other Eligibility Requirements 14
 - i. Requirements for DOE/NNSA and non-DOE/NNSA Federally Funded Research and Development Centers Included as a Subrecipient 14
 - F. Limitation on Number of Concept Papers and Full Applications Eligible for Review 15
 - G. Questions Regarding Eligibility of Applications 15
- IV. Application and Submission Information 15**
 - A. Application Process 15
 - i. Additional Information on Infrastructure eXCHANGE 16
 - B. Application Forms 17
 - C. Content and Form of the Concept Paper 17
 - i. Concept Paper Content Requirements 17
 - D. Content and Form of the Full Application 18

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 number in subject line.*



- i. Full Application Content Requirements..... 19
- ii. Technical Volume..... 20
- iii. Resumes..... 24
- iv. Letters of Commitment 25
- v. Statement of Project Objectives (SOPO) 25
- vi. SF-424: Application for Federal Assistance..... 25
- vii. Budget Justification Workbook..... 25
- viii. Summary Memo 26
- ix. Subrecipient Budget Justification (if applicable)..... 26
- x. Budget for DOE/NNSA FFRDC (if applicable) 26
- xi. Authorization for non-DOE/NNSA or DOE/NNSA FFRDCs (if applicable)..... 27
- xii. SF-LLL: Disclosure of Lobbying Activities (required) 27
- xiii. Waiver Requests: Foreign Entity and Foreign Work (if applicable) 27
- xiv. Diversity, Equity and Inclusion Plan 28
- xv. Current and Pending Support 29
- E. Content and Form of Replies to Reviewer Comments 30
- F. Post Selection Information Requests 31
- G. Unique Entity Identifier (UEI) and System for Award Management (SAM) 32
- H. Submission Dates and Times 32
- I. Intergovernmental Review 32
- J. Funding Restrictions 32
 - i. Allowable Costs..... 32
 - ii. Pre-Award Costs 32
 - iii. Performance of Work in the United States (Foreign Work Waiver) 34
 - iv. Construction 34
 - v. Foreign Travel 34
 - vi. Equipment and Supplies 35
 - vii. Domestic Preference – Infrastructure Projects 35
 - viii. Lobbying..... 35
 - ix. Risk Assessment..... 36
 - x. Invoice Review and Approval..... 36
- V. Application Review Information 37**
 - A. Technical Review Criteria 37
 - i. Concept Papers 37
 - ii. Full Applications..... 37
 - B. Standards for Application Evaluation 39
 - C. Other Selection Factors 39
 - i. Program Policy Factors 39
 - D. Evaluation and Selection Process 40
 - i. Overview 40
 - ii. Pre-Selection Clarification..... 40
 - iii. Recipient Integrity and Performance Matters 41
 - iv. Selection 41
 - E. Anticipated Notice of Selection and Award Negotiation Dates 41
- VI. Award Administration Information..... 41**
 - A. Award Notices 41
 - i. Ineligible Submissions..... 41
 - ii. Concept Paper Notifications 42
 - iii. Full Application Notifications..... 42

*Questions about this FOA? GDO_FOA3126@hq.doe.gov
 Problems with Infrastructure Exchange? Email infrastructureexchangesupport@hq.doe.gov Include FOA name and
 number in subject line.*



- iv. Successful Applicants 42
- v. Alternate Selection Determinations 43
- vi. Unsuccessful Applicants..... 43
- B. Administrative and National Policy Requirements..... 43
 - i. Registration Requirements 43
 - ii. Award Administrative Requirements..... 44
 - iii. Foreign National Access..... 44
 - iv. Subaward and Executive Reporting 45
 - v. National Policy Requirements..... 45
 - vi. Environmental Review in Accordance with National Environmental Policy Act (NEPA) 45
 - vii. Applicant Representations and Certifications 45
 - viii. Statement of Federal Stewardship 47
 - ix. Intellectual Property Management Plan (IPMP)..... 47
 - x. Subject Invention Utilization Reporting..... 48
 - xi. Intellectual Property Provisions 48
 - xii. Reporting 49
 - xiii. Go/No-Go Review 49
 - xiv. Conference Spending..... 49
 - xv. Uniform Commercial Code (UCC) Financing Statements..... 50
 - xvi. Implementation of Executive Order 13798, Promoting Free Speech and Religious Liberty..... 50
 - xvii. Participants and Collaborating Organizations 50
 - xviii. Current and Pending Support..... 50
 - xix. Data Management Plan (DMP) (if applicable) 51
- VII. Questions/Agency Contacts 51**
- VIII. Other Information..... 51**
 - A. FOA Modifications..... 51
 - B. Government Right to Reject or Negotiate..... 52
 - C. Commitment of Public Funds 52
 - D. Treatment of Application Information 52
 - E. Evaluation and Administration by Non-Federal Personnel 53
 - F. Notice Regarding Eligible/Ineligible Activities 53
 - G. Notice of Right to Conduct a Review of Financial Capability 53
 - H. Requirement for Full and Complete Disclosure 53
 - I. Retention of Submissions..... 54
 - J. Title to Subject Inventions..... 54
 - K. Government Rights in Subject Inventions..... 55
 - L. Rights in Technical Data 55
 - M. Copyright 56
 - N. Export Control 56
 - O. Personally Identifiable Information (PII) 56
 - P. Annual Independent Audits 57
- Appendix A – Cost Share Information 58**
- Appendix B – Waiver Requests and Approval Processes: 1. Foreign Entity Participation as the Prime Recipient; and 2. Performance of Work in the United States (Foreign Work Waiver) 63**
- Appendix C – Glossary..... 65**
- Appendix D – List of Acronyms 67**

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 number in subject line.*



GDO
GRID DEPLOYMENT OFFICE



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I. Funding Opportunity Description

A. Background and Context

i. Background and Purpose

The U.S. Department of Energy (DOE) is issuing, on behalf of the Grid Deployment Office (GDO), this Funding Opportunity Announcement (FOA). Awards made under this FOA will be funded, in whole or in part, with funds authorized under the Consolidated Appropriations Act, 2023 (Public Law 117-328).

Building a grid that can deliver affordable and reliable electricity to all Americans is a top priority of the Biden Administration. President Joseph R. Biden, Jr. signed and implemented the Bipartisan Infrastructure Law (BIL) and Inflation Reduction Act (IRA) that provide once-in-a-generation investment in the nation's infrastructure. These investments provide the backbone for a more sustainable and resilient economy through enhancing U.S. competitiveness in the world, diversifying regional economies to include supply chain and manufacturing industries, creating good union jobs, and ensuring stronger access to economic and other benefits for underserved communities.

Creating more efficient and flexible wholesale electricity markets that will support a more resilient and reliable grid will be critical as new load and generation come online. Functioning wholesale markets provide a platform for energy trading and the integration of electric resources into the grid. Efficient, fair, and transparent market constructs are thus foundational to transitioning to a clean, reliable, and equitable electric grid.

Additional renewable resources, distributed energy resources (DERs), and transmission infrastructure upgrades or build-outs are increasingly being deployed to cost-effectively meet clean energy goals. This requires maintaining, modernizing, and investing in the U.S. power grid at all levels from distribution to the bulk power system. GDO is developing programs that make these historic investments. The Department is deploying programs to support a more resilient and reliable grid to protect against the increasing number of extreme weather events that cause energy supply disruptions by investing in innovative efforts to upgrade and build out the transmission system and connecting regions and working with existing clean dispatchable generating facilities to maintain grid reliability. Wholesale electricity markets need to accommodate and even incentivize these changes in the energy industry to maintain a reliable, resilient, affordable, and equitable grid.

This FOA will assist applicants—States, Regional Transmission Organizations (RTOs)/Independent System Operators (ISOs), and domestic entities that have partnered with States and/or RTOs/ISOs—to perform analytical studies on critical market issues or convene stakeholders to address issues facing developing or existing wholesale markets. GDO suggests five (5) broad analytical priorities for proposed projects: 1) seams between markets, 2) regional resource adequacy, 3) market design and price formation, 4) regional footprint studies, and 5) integrated regional planning approaches.

a. Topic Areas (Areas of Interest)

Congress has directed GDO to provide States and regions with technical and financial assistance related to developing, expanding, and improving wholesale electricity markets so that markets can contribute to an affordable, reliable, resilient, and equitable electric grid.¹ This FOA is open to all applicants that meet the eligibility criteria in Section III.A of this FOA. GDO seeks proposals that will build State and RTOs/ISO capacity, which can be shared with other regions, particularly capacity building related to engaging in market design reform efforts and stakeholder planning processes at a regional level. Therefore, multi-state or multi-region coalitions are encouraged.

Topic Area 1: Analytical Studies

Market concepts that GDO considers ripe for analytical studies are outlined below. Proposed projects can draw from elements of any one of the five concepts in this FOA or may include areas of analysis not contemplated in this FOA. If submitting an application that covers multiple topic areas, separate applications must be submitted each area. GDO’s market analysis priorities include the following:

1. **Seams:** “Seams” refers to differences in wholesale electricity market designs, rules, and planning timelines and approaches between neighboring wholesale electricity markets. These differing market rules, timelines, or configurations can reduce the overall efficiency of the grid and prevent interdependent markets from optimizing physically possible and economic electricity flows, resulting in increased consumer costs. Applications may propose to study how seams impact wholesale electricity prices and resulting retail consumer prices in geographic regions that fall within different RTOs/ISOs and other organized markets, such as day-ahead markets (DAM). Proposed analytical studies may also identify impacts that result from inefficiencies of moving electricity across market seams. Proposals may also analyze existing joint operating agreements and inter-regional dialogues to identify reforms and propose best practices that could mitigate or resolve differences across seams, between market footprints, such as from differing system operations, transmission access scheduling, pricing models, transmission tariffs, and any other issues that create inefficient economic transactions of capacity and energy between markets and increase costs to consumers.

¹ H.R. COMM. ON APPROPRIATIONS, 117 CONG., 2d SESSION, PUBLIC LAW 117-328 LEGIS. TEXT AND EXPLANATORY STATEMENT, 922 (Comm. Print Book 1 of 2, Divisions A–F).

Applications may also collate and analyze best practices to mitigate seams. Seams studies may include the study of seams between non-RTO/ISO entities, including DAMs, differences in resource adequacy programs between RTOs/ISOs or non-RTO/ISOs, and how seams between the electricity and natural gas markets impact reliability and/or consumer costs.

2. **Regional resource adequacy:** Project applicants may develop a study on how accelerated deployment of renewable resources and retirement of existing resources impact resource adequacy metrics (e.g., planning reserve margins) and may analyze the role that clean dispatchable resources such as hydropower, pumped-storage hydropower (PSH), geothermal, and nuclear power plants have on resource adequacy. For example, proposals may focus on specific resource adequacy characteristics or specific resource contributions, such as:
 - Applicants may propose to analyze the replacement generation capacity for closed plants and the impact such a transition in the generation fuel mix would have on regional resource adequacy and grid reliability, including how regional planning reserve margins can be met post-retirement, what changes to the existing transmission system could accommodate the interconnection of likely replacement generation resources, and the effects of these generation portfolio changes on consumer prices.
 - With respect to hydropower, proposals could include efforts to model hydropower's contributions to resource adequacy under various climate, water, and policy scenarios, and could also seek to improve the detailed representation of hydropower capabilities (e.g., hourly generation flexibility, multi-day to seasonal storage) in existing models and tools.
 - With regard to the role that renewable resources or DERs have in potentially replacing retiring dispatchable generation, projects may develop methodologies to measure the creditable capacity provided by DERs to wholesale markets and methodologies that might better link distributed and wholesale market systems.

3. **Market design and price formation:** The high penetration of renewable resources with low or zero marginal energy costs has raised new questions about how energy market designs may need to evolve to ensure stable compensation for needed generation resources. Analysis could include how market design related to energy price formation or ancillary services may be improved to provide more stable pricing while incentivizing efficient investment in new generating capacity and exit decisions. Applications may propose to analyze what new product categories and ancillary services may need to be created to allow system operators to schedule, dispatch and pay for capacity to meet reliability and consumer needs and whether scarcity pricing approaches adequately incentivize adequate resource procurement. Applications may also analyze how existing market design should change or how new market proposals may be designed to accommodate the changing resource mix in an increasingly zero marginal cost environment.

-
4. **Regional footprint studies:** Footprint studies of regions where there are emerging market concepts or market expansions being contemplated may be proposed to analyze the economic impact that different regional market configuration options would have on States, utilities, and consumers. Utility rate and consumer impact studies could allow utilities and States to make more informed regulatory and policy decisions about these options. Regional footprint analysis could include multi-state stakeholder convenings to consensus-build on governance structures available in or appropriate for differing market footprints.
 5. **Integrated regional planning approaches:** Planning regions (both inside and outside organized markets) do not necessarily perform integrated resource and transmission planning, particularly at a regional or multi-state level. Yet, there is a growing recognition that planning systems for new generation, transmission, and distribution are largely siloed. Internal interconnection queue processing improvements are needed for a clean energy transition and DERs that are subject to state authority but which participate in wholesale markets need to be planned for both within States as well as regionally. Increased linkages between integrated resource planning at the State and utility level, procurement of clean generation resources, and individual transmission interconnection processes with regional wholesale market operations would improve market reliability. Study methodologies to affect such linkages across siloed generation, transmission and distribution planning functions and to create effective, integrated, long term, regional planning may include:
 - a. **Impact of FERC Order 2222 compliance on distribution systems:** As additional distributed resources (i.e., generation, storage, and/or load assets sited on electrical distribution networks) participate in RTO/ISO markets pursuant to FERC Order 2222, dispatch patterns may cause new or unexpected conditions on the distribution network such as local (non-coincident) distribution peaks, frequency excursions, or voltage deviations. In different areas, this may lead to restrictions imposed by distribution grid operators on distributed resource participation in wholesale markets, incursion of distribution-related capital costs to compensate for wholesale market participation-related conditions, or both. Studies may evaluate distribution system impacts associated with DERs' participation in wholesale markets and suggest best practices (including technological, regulatory, and other improvements) for enabling wholesale market DERs participation that minimizes capital or reliability/power quality impacts on the distribution system. Studies may also discuss the capabilities needed by distribution grid operators or utilities to enable participation while minimizing negative impacts on the grid.
 - b. **Interconnection queues:** An increase in planned generation projects, particularly clean generation projects incentivized by the IRA, have caused backlogs in interconnection queues in RTOs/ISOs and transmission operator queues across

the country. FERC recently adopted new regulations to improve generator interconnection processes. Transmission owners, RTOs/ISOs, generators, and other stakeholders have all proposed additional potential interconnection queue reforms that could be pursued above and beyond FERC's new rules. GDO is interested in proposals to analyze interconnection queue management methods that could help further alleviate backlogged queues. Projects may analyze best practices or new processes for increasing certainty, reducing study times, allocating interconnection capacity, and maintaining grid reliability and safety.

- c. **Interregional Transmission Planning:** Interregional transmission capacity needs are expected to grow in the coming years as the clean energy transition progresses and regions seek to integrate more low-cost clean energy resources across longer distances. Increasing interregional transmission capacity can also provide resilience and reliability benefits, especially in reducing risks from extreme weather events by delivering energy from where it is available to where it is needed. Despite these growing needs, few interregional transmission projects have been built in the U.S. in the past decade. There are several reasons for the lack of interregional transmission projects, such as a lack of formal interregional planning processes, regional planning processes that take a narrow view of project needs and benefits, and over reliance on generator interconnection processes to expand the grid to accommodate changing resource needs. GDO is interested in proposals for interregional planning efforts that would support more robust interregional transmission planning and project identification. Interregional planning proposals could seek to develop new metrics and flexible cost allocation methods to account for all project benefits across regions and develop a full range of future scenarios that consider a variety of needs across multiple regions.

6. Long-Duration Energy Storage: As long-duration energy storage (LDES) technologies (e.g., energy storage technologies with the ability to discharge at rated capacity for >10 hours) approach commercialization and wide deployment, planning regions are faced with the need to integrate these technologies into their operations, planning, and/or markets. Applications may propose to analyze the operating behavior of LDES; develop planning assumptions related to LDES; develop considerations for the use of LDES as a transmission asset; and may develop market, tariff, and rate designs to incorporate LDES into grid operations. \$1.5 million of funding is available specifically for responsive LDES analytical studies.

Topic Area 2: Education and Convenings

GDO intends to facilitate State (individually or in collaboration with other States), public interest organization, and utility convening and education programs, which can be replicated to benefit additional States and **wholesale markets**. Accordingly, DOE seeks applications for multi-state stakeholder educational efforts or convenings to consensus-build on **new market structures appropriate for regions that are not currently in RTOs/ISO but are developing new**

wholesale electricity markets, such as the West and Southeast. Convenings on wholesale electricity markets must involve more than one State. This convening topic area may include multi-state efforts to organize new wholesale markets, including developing or expanding DAMs. Education on wholesale electricity markets could include activities such as developing informational materials on wholesale markets for State agencies, including utility commissions and State energy offices.

All work under GDO funding agreements must be performed in the United States. See Appendix B.

B. Applications Specifically Not of Interest

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

- Applications for proposed development or deployment of technologies (e.g., electric generation, transmission, or distribution innovations to be deployed on the grid).
- Applications by domestic entities that do not include States and/or RTOs/ISOs as a partner.
- Applications that broadly analyze, educate or convene on other related topics, such as climate change broadly, demand forecasting for market areas, legal interpretations of market rules, or anything beyond the primary purpose of analyzing wholesale electricity market design and operations.

C. Authorizing Statutes

The programmatic authorizing statute is the Energy Act of 2020 which amended the Energy Independence and Security Act of 2007 (42 U.S.C. 17381 et seq.). Section 8002 directs the DOE to study grid architecture and scenario development (42 U.S.C. § 17384a). Additionally, funding was appropriated by the Consolidated Appropriations Act, 2023 (Public Law 117-328) for technical and financial assistance to states and regions to develop market governance, planning and policy, and regulatory development assistance related to the formation, expansion, or improvement of grid regions to ensure a clean, reliable, resilient, and equitable grid.

Awards made under this announcement will fall under the purview of 2 Code of Federal Regulation (CFR) Part 200 as amended by 2 CFR Part 910.

II. Award Information

A. Award Overview

i. Estimated Funding

GDO expects to make a total of approximately \$9 million of federal funding available for new awards under this FOA, subject to the availability of appropriated funds. GDO anticipates making approximately 6 to 14 awards under this FOA. GDO may issue one, multiple, or no awards. Individual awards for Topic Area 1 and Topic Area 2 may vary between \$0.5 million and \$3 million.

GDO may establish more than one budget period for each award and fund only the initial budget period(s). Funding for all budget periods, including the initial budget period, is not guaranteed. Before the expiration of the initial budget period(s), GDO may perform a down-select among different recipients and provide additional funding only to a subset of recipients.

ii. Period of Performance

GDO anticipates making awards that will run from 1 year up to 3 years in length, comprised of one or more budget periods. Project continuation will be contingent upon several elements, including satisfactory performance and Go/No-Go decision review. At the Go/No-Go decision points, GDO 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. As a result of this evaluation, GDO 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.

B. GDO Funding Agreements

i. Grants

GDO anticipates issuing grants to provide financial support to prime recipients.

ii. Funding Agreements with Federally Funded Research and Development Center (FFRDCs)

In most cases, FFRDCs are funded independently of the remainder of the project team. The FFRDC then executes an agreement with any non-FFRDC project team members to arrange work structure, project execution, and any other matters. Regardless of these arrangements, the entity that applied as the prime recipient for the project will remain the prime recipient for the project.

III. Eligibility Information

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.

A. Eligible Applicants

Consistent with the definitions in 2 CFR 200.1, and for the purposes of this FOA:

- “Recipient” means an entity that receives a grant *directly* from DOE. That is, the Recipient and DOE are the parties to the grant agreement. Recipients are often referred to as prime recipients.
- “Subrecipient” means an entity that receives a subgrant from a prime recipient to carry out part of a DOE grant. That is, the recipient and subrecipient are the parties to the subgrant agreement. The prime recipient maintains responsibility for management and monitoring of the subrecipient’s work, including compliance with DOE grant requirements.

i. Individuals

U.S. citizens and lawful permanent residents may apply as prime recipients provided that they have partnered with a State and/or RTO/ISO on the application, and they may be included as subrecipients on any applications to this FOA.

ii. Domestic Entities

These entities are eligible to apply as prime recipients either individually or in partnership with other domestic entities or subrecipients:

- States
- RTOs/ISOs

These entities are eligible to apply as prime recipients, provided they include a State or RTO/ISO as a partner on the application/project team:

-
- For-profit entities,
 - Tribal entities,
 - Educational institutions, and
 - Nonprofits

To be eligible to apply for funding as a prime recipient or subrecipient, entities must also be incorporated (or otherwise formed) under the laws of a particular state or territory of the United States and have a physical location for business operations in the United States. 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.

These entities are only eligible to be included on an application or project team as subrecipients:

- DOE/NNSA FFRDCs are eligible to apply for funding as a subrecipient but are not eligible to apply as a prime recipient.
- Non-DOE/NNSA FFRDCs are eligible to apply for funding as a subrecipient but are not eligible to apply as a prime recipient.
- Federal agencies and instrumentalities (other than DOE).

iii. Foreign Entities

Foreign entities are not eligible to apply.

iv. Incorporated Consortia

Incorporated consortia, which may include domestic entities, may apply as prime recipients provided that they have partnered with a State and/or RTO/ISO on the application, and they may be included as subrecipients on any applications to this FOA. For consortia incorporated (or otherwise formed) under the laws of a state or territory of the United States, please refer to “Domestic Entities” above.

Each incorporated consortium must have an internal governance structure and a written set of internal rules. Upon request, the consortium must provide a written description of its internal governance structure and its internal rules to the GDO Contracting Officer.

v. Unincorporated Consortia

Unincorporated Consortia, which may include domestic entities, may apply as prime recipients provided that they have partnered with a State and/or RTO/ISO on the application, and they may be included as subrecipients on any applications to this FOA. Unincorporated consortia must designate one member of the consortium to serve as the prime recipient/consortium representative. The prime recipient/consortium representative must be incorporated (or otherwise formed) under the laws of a state or territory of the United States. The

eligibility of the consortium will be determined by the eligibility of the prime recipient/consortium representative under [Section III.A.](#) of the FOA.

Upon request, unincorporated consortia must provide the GDO Contracting Officer with a collaboration agreement, commonly referred to as the articles of collaboration, which sets out the rights and responsibilities of each consortium member. This agreement binds the individual consortium members together and should discuss, among other things, the consortium's:

- Management structure;
- Method of making payments to consortium members;
- Means of ensuring and overseeing members' efforts on the project;
- Provisions for members' cost sharing contributions; and
- Provisions for ownership and rights in intellectual property developed previously or under the agreement.

B. Cost Sharing

Applies to Topic Area 1: The cost share must be at least 5% of the total allowable costs for research and development projects (i.e., the sum of the government share, including FFRDC costs if applicable, and the recipient share of allowable costs equals the total allowable cost of the project) and must come from non-federal sources unless otherwise allowed by law. (See 2 CFR 200.306 and 2 CFR 910.130 for the applicable cost sharing requirements.)

Applies to Topic Area 2: Due to the nature of the work under Topic Area 2 being education/outreach, cost sharing is not required for this Topic Area.

To assist applicants in calculating proper cost share amounts, GDO has included a cost share information sheet and sample cost share calculation as Appendices A and B to this FOA.

i. Legal Responsibility

Although the cost share requirement applies to the project as a whole, including work performed by members of the project team other than the prime recipient, the prime recipient is legally responsible for paying the entire cost share. If the funding agreement is terminated prior to the end of the project period, the prime recipient is required to contribute at least the cost share percentage of total expenditures incurred through the date of termination.

The prime 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.

ii. Cost Share Allocation

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

iii. Cost Share Types and Allowability

Every cost share contribution must be allowable under the applicable federal cost principles, as described in the FOA. In addition, cost share must be verifiable upon submission of the Full Application.

Project teams may provide cost share in the form of cash or in-kind contributions. Cost share may be provided by the prime 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 funding was not provided to the state or local government by the federal government.

The prime recipient may not use the following sources to meet its cost share obligations including, but not limited to:

- 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); or
- Expenditures that were reimbursed under a separate federal program.

Project teams may not use the same cash or in-kind contributions to meet cost share requirements for more than one project or program.

Cost share contributions must be specified in the project budget, verifiable from the prime 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 Contracting Officer and incorporated into the project budget before the expenditures are incurred.

Applicants are encouraged to refer to 2 CFR 200.306 as amended by 2 CFR 910.130 for additional cost sharing requirements.

iv. 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.

v. Cost Share Verification

Applicants are required to provide written assurance of their proposed cost share contributions in their Full Applications.

Upon selection for award negotiations, applicants are required to provide additional information and documentation regarding their cost share contributions. Please refer to Appendix A of the FOA.

vi. Cost Share Payment

GDO requires prime recipients to contribute the cost share amount incrementally over the life of the award. Specifically, the prime 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). As FFRDC funding will be provided directly to the FFRDC(s) by DOE, prime 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 GDO Contracting Officer may approve a request by the prime recipient to meet its cost share requirements on a less frequent basis, such as monthly or quarterly. Regardless of the interval requested, the prime recipient must be up-to-date on cost share at each interval. Such requests must be sent to the Contracting 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 prime recipient has complied with its cost share obligations to date. The Contracting Officer must approve all such requests before they go into effect.

C. Compliance Criteria

Concept Papers, Full Applications, and Replies to Reviewer Comments, if applicable, must meet all compliance criteria listed below or they will be considered noncompliant. GDO will not review or consider noncompliant submissions, including Concept Papers, Full Applications, and Replies to Reviewer Comments that were: submitted through means other than Infrastructure eXCHANGE; submitted after the applicable deadline; and/or submitted incomplete. GDO will not extend the submission deadline for applicants that fail to submit required information by the applicable deadline due to server/connection congestion.

i. Compliance Criteria

i. Concept Papers

Concept Papers are deemed compliant if:

- The Concept Paper complies with the content and form requirements in Section IV.D. of the FOA; and
- The applicant successfully uploaded all required documents and clicked the “Submit” button in Infrastructure eXCHANGE by the deadline stated in this FOA.

ii. Full Applications

Full Applications are deemed compliant if:

- The applicant submitted a compliant Concept Paper;
- The Full Application complies with the content and form requirements in of the FOA; and
- The applicant successfully uploaded all required documents and clicked the “Submit” button in Infrastructure eXCHANGE by the deadline stated in the FOA.

D. Responsiveness Criteria

All “Applications Specifically Not of Interest,” as described in the FOA (Section I.B.), are deemed noncompliant and are not reviewed or considered.

E. Other Eligibility Requirements

i. **Requirements for DOE/NNSA and non-DOE/NNSA Federally Funded Research and Development Centers Included as a Subrecipient**

DOE/NNSA and non-DOE/NNSA FFRDCs may be proposed as a subrecipient on another entity's application subject to the following guidelines:

i. Authorization for non-DOE/NNSA 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.

ii. Authorization for DOE/NNSA 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.

iii. Value/Funding

The value of and funding for the FFRDC portion of the work will not normally be included in the award to a successful applicant. Usually, DOE will fund a DOE/NNSA FFRDC contractor through the DOE field work proposal (WP) system and non-DOE/NNSA FFRDC through an interagency agreement with the sponsoring agency.

iv. Cost Share

Although the FFRDC portion of the work is usually excluded from the award to a successful applicant, 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.

v. Responsibility

The prime 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 prime recipient and the FFRDC contractor.

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

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

G. Questions Regarding Eligibility of Applications

GDO will not make eligibility determinations for potential applicants prior to the date on which applications to this FOA must be submitted. The decision whether to submit an application in response to this FOA lies solely with the applicant.

IV. Application and Submission Information

A. Application Process

The application process will include two phases: a Concept Paper phase and a Full Application phase. **Only applicants who have submitted an eligible Concept Paper will be eligible to submit a Full Application.**

At each phase, GDO performs an initial eligibility review of the applicant submissions to determine whether they meet the eligibility requirements of Section III. of the FOA. GDO will not review or consider submissions that do not meet the eligibility requirements of Section III. All submissions must conform to the following form and content requirements, including maximum page lengths (described below) and must be submitted via Infrastructure eXCHANGE at <https://infrastructure-exchange.energy.gov> unless specifically stated otherwise. **GDO will not review or consider submissions submitted through means other than Infrastructure eXCHANGE, submissions submitted after the applicable deadline, or incomplete submissions.** GDO will not extend deadlines for applicants who fail to submit required information and documents due to server/connection congestion.

A **Control Number** will be issued when an applicant begins the Infrastructure eXCHANGE application process. This control number must be included with all application documents, as described below.

The Concept Paper, Full Application, and Reply to Reviewer Comments must conform to the following requirements:

- Each must be submitted in Adobe PDF format unless stated otherwise;

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- Each must be written in English;
 - All pages must be formatted to fit on 8.5 x 11 inch paper with margins not less than one inch on every side. All pages must use 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 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;
 - The Control Number must be prominently displayed on the upper right corner of the header of every page. Page numbers must be included in the footer of every page; and
 - 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. If applicants exceed the maximum page lengths indicated below, GDO will review only the authorized number of pages and disregard any additional pages.

Applicants are responsible for meeting each submission deadline. **Applicants are strongly encouraged to submit their Concept Papers and Full Applications at least 48 hours in advance of the submission deadline.** Under normal conditions (i.e., at least 48 hours in advance of the submission deadline), applicants should allow at least 1 hour to submit a Concept Paper or Full Application. Once Concept Paper or Full Application is submitted in Infrastructure eXCHANGE, 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 the Concept Paper or Full Application before the applicable deadline.

GDO urges applicants to carefully review their Concept Papers and Full Applications to allow sufficient time for the submission of required information and documents. All Full Applications that pass the initial eligibility review will undergo comprehensive technical merit review according to the criteria identified in Section V.A.ii. of the FOA.

i. Additional Information on Infrastructure eXCHANGE

Infrastructure eXCHANGE is designed to enforce the deadlines specified in this FOA. The “Apply” and “Submit” buttons will automatically disable at the defined submission deadlines. Should applicants experience problems with Infrastructure eXCHANGE, the following information may be helpful.

Applicants that experience issues with submission PRIOR to the FOA deadline: In the event that an applicant experiences technical difficulties with a submission, the applicant should contact the Infrastructure eXCHANGE helpdesk for assistance (infrastructureexchangesupport@hq.doe.gov). The Infrastructure

eXCHANGE helpdesk and/or the Infrastructure eXCHANGE system administrators will assist applicants in resolving issues.

B. Application Forms

The application forms and instructions are available on Infrastructure eXCHANGE. To access these materials, go to <https://Infrastructure-eXCHANGE.energy.gov> and select the appropriate funding opportunity number.

C. Content and Form of the Concept Paper

To be eligible to submit a Full Application, applicants must submit a Concept Paper by the specified due date and time.

i. Concept Paper Content Requirements

GDO will not review or consider ineligible Concept Papers (see Section III. of the FOA).

Each Concept Paper must be limited to a single concept or technology. Unrelated concepts and technologies should not be consolidated into a single Concept Paper.

The Concept Paper must conform to the following content requirements:

Section	Page Limit	Description
Cover Page	1 page maximum	The cover page should include the project title, both the technical and business points of contact, names of all team member organizations, including whether the organizations are States, coalitions of States or market operators, the name of the Lead Organization (i.e., prime recipient) as well as the name and contact information for the project lead or lead contact person and any statements regarding confidentiality.
Project Description	5 pages maximum	Applicants are required to describe succinctly: <ul style="list-style-type: none">• The proposed activity, goals and planned methodologies, including software;• Or, the proposed stakeholders to be included in any convening and the goals or discussion topics to be set for those convenings;• How the proposed analytical approach or convening process would address the knowledge gaps, limitations, and challenges facing the electricity industry;• The funding being requested, in US dollars (\$) and the impact that GDO funding would have on the proposed project.

Addendum	3 pages maximum	<p>Applicants are required to describe succinctly the qualifications, experience, and capabilities of the proposed Project Team, including:</p> <ul style="list-style-type: none"> • Whether the Project Team has the skill and expertise needed to successfully execute the project plan; • Whether the Project Team includes States and/or, RTOs/ISOs; • Whether the applicant has prior experience which demonstrates an ability to perform tasks of similar risk and complexity; • Whether the applicant has worked together with its teaming partners on prior projects or programs; and • Whether the applicant has adequate access to data and software tools necessary to accomplish the effort and/or clearly explain how it intends to obtain access to the necessary data. • Applicants may provide graphs, charts, or other data to supplement their Description.
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GDO makes an independent assessment of each Concept Paper based on the criteria in the FOA. GDO will encourage a subset of applicants to submit Full Applications. Other applicants will be discouraged from submitting a Full Application. An applicant who receives a “discouraged” notification may still submit a Full Application. GDO will review all eligible Full Applications. However, by discouraging the submission of a Full Application, GDO intends to convey its lack of programmatic interest in the proposed project in an effort to save the applicant the time and expense of preparing an application that is unlikely to be selected for award negotiations.

GDO may include general comments provided from reviewers on an applicant’s Concept Paper in the encourage/discourage notification posted on Infrastructure eXCHANGE at the close of that phase.

D. Content and Form of the Full Application

Applicants must submit a Full Application by the specified due date and time to be considered for funding under this FOA. Applicants must complete the following application forms found on the Infrastructure eXCHANGE website at <https://infrastructure-exchange.energy.gov/>, in accordance with the instructions.

Applicants will have approximately 30 days from receipt of the Concept Paper Encourage/Discourage notification on Infrastructure eXCHANGE to prepare and submit a Full Application. See page 1 of FOA for Full Application due dates (i.e., FOA Closing Dates). Regardless of the date the applicant receives the Encourage/Discourage notification, the submission deadline for the Full Application remains the date and time stated on the FOA cover page.

All Full Application documents must be marked with the Control Number issued to the applicant. Applicants will receive a control number upon clicking the “Create Concept Paper” button in Infrastructure eXCHANGE and should include that control number in the file name of their Full Application submission (i.e., *Control number_Applicant Name_Topic_Full Application*).

i. Full Application Content Requirements

GDO will not review or consider ineligible Full Applications.

Each Full Application shall be limited to a single concept or application. Unrelated concepts shall not be consolidated in a single Full Application. Full Applications must conform to the following requirements:

Component	File Format	Page Limit	File Name
Technical Volume	PDF	15	ControlNumber_LeadOrganization_Topic_TechnicalVolume
Resumes	PDF	2 pages each	ControlNumber_LeadOrganization_Topic_Resumes
Letters of Commitment	PDF	1 page each	ControlNumber_LeadOrganization_Topic_LOCs
Statement of Project Objectives	MS Word	4	ControlNumber_LeadOrganization_Topic_SOP
SF-424	PDF	n/a	ControlNumber_LeadOrganization_Topic_App424
Budget Justification Workbook	MS Excel	n/a	ControlNumber_LeadOrganization_Topic_Budget_Justification
Summary Memo	PDF	1	ControlNumber_LeadOrganization_Topic_Summary
Subrecipient Budget Justification	MS Excel	n/a	ControlNumber_LeadOrganization_Topic_Subrecipient_Budget_Justification
DOE Work Proposal for FFRDC, if applicable (see DOE O 412.1A, Attachment 3)	PDF	n/a	ControlNumber_LeadOrganization_Topic_WP
Authorization from cognizant Contracting Officer for FFRDC	PDF	n/a	ControlNumber_LeadOrganization_Topic_FFRDCAuth
SF-LLL Disclosure of Lobbying Activities	PDF	n/a	ControlNumber_LeadOrganization_Topic_SF-LLL
Foreign Entity and Foreign Work Waivers	PDF	n/a	ControlNumber_LeadOrganization_Topic_Waiver
Diversity Equity and Inclusion Plan	PDF	2	ControlNumber_LeadOrganization_Topic_DEIP
Current and Pending Support	PDF	n/a	ControlNumber_LeadOrganization_Topic_CPS

Note: The maximum file size that can be uploaded to the Infrastructure eXCHANGE website is 10MB. Files in excess of 10MB cannot be uploaded, and hence cannot be submitted for review. If a file exceeds 10MB but is still within the maximum page limit specified in the FOA it must be broken into parts and denoted to that effect. For example:

TechnicalVolume_Part_1

TechnicalVolume_Part_2

GDO will not accept late submissions that resulted from technical difficulties due to uploading files that exceed 10MB.

GDO provides detailed guidance on the content and form of each component below.

ii. Technical Volume

The Technical Volume must be submitted in PDF format. The Technical Volume must conform to the following content and form requirements, including maximum page lengths. If applicants exceed the maximum page lengths indicated below, GDO will review only the authorized number of pages and disregard any additional pages. This volume must address the Merit Review Criteria of the FOA. Save the Technical Volume in a single PDF file using the following convention for the title “ControlNumber_LeadOrganization_Topic_TechnicalVolume”.

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

The Technical Volume to the Full Application may not be more than 15 pages, including the cover page, table of contents, and all citations, charts, graphs, maps, photos, or other graphics, and must include all of the information in the table below. The applicant should consider the weighting of each of the evaluation criteria when preparing the Technical Volume.

The Technical Volume should clearly describe and expand upon information provided in the Concept Paper. The Technical Volume must conform to the following content requirements:

SECTION/PAGE LIMIT	DESCRIPTION
Cover Page	The cover page should include the project title, both the technical and business points of contact, names of all team member organizations, names of the senior/key personnel and their organizations, including whether the organizations are States, coalitions of States or market operators, and any statements regarding confidentiality.
Project Overview (Approximately 10% of the Technical Volume)	<p>The Project Overview should contain the following information:</p> <ul style="list-style-type: none"> • Background: The applicant should discuss the background of their organization, including the history, successes, and current research and development status (i.e., the technical baseline) relevant to the technical topic being addressed in the Full Application. • Project Goal: The applicant should explicitly identify the targeted improvements to market footprints, operations, governance, resource adequacy constructs, or other wholesale market structures and the critical success factors in achieving that goal to be analyzed or addressed in the proposal. • 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)	<p>The Technical Description should contain the following information:</p> <ul style="list-style-type: none"> • Relevance and Outcomes: The applicant should provide a detailed description of the proposal, including the principles and objectives that will be pursued during the project. This section should describe the relevance of the proposed project to the goals and objectives of the FOA, including the potential to meet specific DOE technical targets or other relevant performance targets. The applicant should clearly specify the expected outcomes of the project. • Feasibility: The applicant should demonstrate the technical feasibility of the proposed project and capability of achieving the anticipated targets, including a description of previous work done and prior results.
Workplan and Market Transformation Plan (Approximately 40% of the Technical Volume)	<p>The Workplan should include a summary of the Project Objectives, Technical Scope, Work Breakdown Structure (WBS), Milestones, appropriate Go/No-Go Decision Points, and Project Schedule. A detailed SOPO is separately requested. The Workplan should contain the following information:</p> <ul style="list-style-type: none"> • 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.

	<ul style="list-style-type: none">• 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 FOA. The summary provided should be consistent with the SOPO. The SOPO will contain a more detailed description of the WBS and tasks.• Milestone Summary: The applicant should provide a summary of appropriate milestones throughout the project to demonstrate success. A milestone may be either a progress measure (which can be activity based) or a SMART technical milestone. SMART milestones should be Specific, Measurable, Achievable, Relevant, and Timely, and must demonstrate a technical achievement rather than simply completing a task. Unless otherwise specified in the FOA, the minimum requirement is that each project must have at least one milestone per quarter for the duration of the project with at least one SMART technical milestone per year (depending on the project, more milestones may be necessary to comprehensively demonstrate progress). The applicant should also provide the means by which the milestone will be verified. The summary provided should be consistent with the Milestone Summary Table in the SOPO.• Go/No-Go Decision Points: The applicant should provide a summary of project-wide Go/No-Go decision points at appropriate milestones in the Workplan. A Go/No-Go decision point is a risk management tool and a project management best practice to ensure that, for each phase or period of performance, technical success is definitively achieved and potential for success in future phases or periods of performance is evaluated, prior to actually beginning the execution of future phases. The summary provided should be consistent with the SOPO. Go/No-Go decision points are considered “SMART” and can fulfill the requirement for an annual SMART milestone.• End of Project Goal: The applicant should provide a summary of the end of project goal(s). At a minimum, each project must have one SMART end of project goal. The summary provided should be consistent with the SOPO.
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	<ul style="list-style-type: none"> • Project Schedule (Gantt Chart or similar): The applicant should provide a schedule for the entire project, including task and subtask durations, milestones, and Go/No-Go decision points. • Project Management: The applicant should discuss the team’s proposed management plan, including the following: <ul style="list-style-type: none"> ○ The overall approach to and organization for managing the work ○ The roles of each project team member ○ Any critical handoffs/interdependencies among project team members ○ The technical and management aspects of the management plan, including systems and practices, such as financial and project management practices ○ The approach to project risk management ○ A description of how project changes will be handled ○ If applicable, the approach to Quality Assurance/Control ○ How communications will be maintained among project team members
<p>Technical Qualifications and Resources (Approximately 20% of the Technical Volume)</p>	<p>The Technical Qualifications and Resources should contain the following information:</p> <ul style="list-style-type: none"> • Describe the project team’s unique qualifications and expertise, including those of key subrecipients. • Describe the participation of States, coalitions of States or market operators on the project team. • Describe the project team’s existing equipment and facilities that will facilitate the successful completion of the proposed project; include a justification of any new equipment or facilities requested as part of the project. • This section should also include relevant, previous work efforts, demonstrated innovations, and how these enable the applicant to achieve the project objectives. • Describe the time commitment of the key team members to support the project. • Describe the technical services to be provided by DOE/NNSA FFRDCs, if applicable. • For multi-organizational or multi-investigator projects, describe succinctly: <ul style="list-style-type: none"> ○ The roles and the work to be performed by each PI and senior/key personnel;

	<ul style="list-style-type: none"> ○ Business agreements between the applicant and each PI and senior/key personnel; ○ How the various efforts will be integrated and managed; ○ Process for making decisions on scientific/technical direction; ○ Publication arrangements; ○ Intellectual Property issues; and ○ Communication plans, as appropriate
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iii. Resumes

A resume provides information that can be used by reviewers to evaluate the individual's skills, experience, and potential for leadership within the scientific community. Applicants are required to submit two-page resumes for the Principal Investigator (PI) and all Senior/Key Personnel that include the following:

1. Contact Information;
2. Education and training: Provide institution, major/area, degree, and year for undergraduate, graduate, and postdoctoral training;
3. Research and 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 or not remuneration is received, and, whether full-time, part-time, or voluntary;
4. Awards and honors;
5. Synergistic Activities: List up to five professional and scholarly activities related to the proposed effort.

Save the resumes in a single PDF file using the following convention for the title "ControlNumber_LeadOrganization_Topic_Resumes".

In future FOAs, GDO may require a biographical sketch for the PI and senior/key personnel. In the meantime, in lieu of 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 <https://www.ncbi.nlm.nih.gov/sciencv/>, and is also available at <https://nsf.gov/bfa/dias/policy/nsfapprovedformats/biosketch.pdf>. 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.

iv. Letters of Commitment

Submit letters of commitment from all subrecipient and third-party cost share providers. If applicable, also include any letters of commitment from partners/end users (one-page maximum per letter). Save the letters of commitment in a single PDF file using the following convention for the title “ControlNumber_LeadOrganization_Topic_LOCs”.

v. Statement of Project Objectives (SOPO)

Applicants are required to complete a SOPO. A SOPO template is available on Infrastructure eXCHANGE at <https://infrastructure-eXCHANGE.energy.gov/>. The SOPO, including the Milestone Table, must not exceed 4 pages when printed using standard 8.5 x 11 paper with 1” margins (top, bottom, left, and right) with font not smaller than 12 point (except in figures or tables, which may be 10 point font). Save the SOPO in a single Microsoft Word file using the following convention for the title “ControlNumber_LeadOrganization_Topic_SOPO”.

vi. SF-424: Application for Federal Assistance

Applicants are required to complete the SF-424 Application for Federal Assistance. This form is available on Infrastructure eXCHANGE at <https://infrastructure-eXCHANGE.energy.gov/>. Complete all required fields in accordance with the instructions on the form. The list of certifications and assurances in Field 21 can be found at <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms>, under Certifications and Assurances. Note: The dates and dollar amounts on the SF-424 are for the complete project period and not just the first project year, first phase or other subset of the project period. Save the SF-424 in a single PDF file using the following convention for the title “ControlNumber_LeadOrganization_Topic_424”.

vii. Budget Justification Workbook

Applicants are required to complete the Budget Justification Workbook. This form is available on Infrastructure eXCHANGE at <https://infrastructure-eXCHANGE.energy.gov/>. Prime recipients must complete each tab of the Budget Justification Workbook for the project as a whole, including all work to be performed by the prime recipient and its subrecipients and contractors. Applicants should include costs associated with required annual audits and incurred cost proposals in their proposed budget documents. The “Instructions and Summary” included with the Budget Justification Workbook will auto-populate as the applicant enters information into the Workbook. Applicants must carefully read the “Instructions and Summary” tab provided within the Budget Justification Workbook. Save the Budget Justification Workbook in a single Microsoft Excel file using the following convention for the title “ControlNumber_LeadOrganization_Topic_Budget_Justification”.

viii. Summary Memo

Applicants are required to provide a single-page memo summarizing the proposed project. This memo is used during the evaluation process. The project memo must contain a summary of the proposed activity suitable for dissemination to the public. It should be a self-contained document that identifies the name of the applicant, the project director/principal investigator(s), the project title, the objectives of the project, a description of the project, including methods to be employed, the potential impact of the project (e.g., benefits, outcomes), and major participants (for collaborative projects). This document must not include any proprietary or sensitive business information as DOE may make it available to the public after selections are made.

The Summary Memo template requires the following information:

- A technology summary;
- A description of the technology's impact;
- Proposed project goals;
- Any key graphics (illustrations, charts and/or tables);
- The project's key idea/takeaway;
- Project title, prime recipient, Principal Investigator, and senior/key personnel information; and
- Requested GDO funds and proposed applicant cost share.

Save the Summary Memo in a single Microsoft Word file using the following convention for the title "ControlNumber_LeadOrganization_Topic_Memo".

ix. Subrecipient Budget Justification (if applicable)

Applicants must provide a separate budget justification for each subrecipient that is expected to perform work estimated to be more than \$250,000 or 25 percent of the total work effort (whichever is less). The budget justification must include the same justification information described in the "Budget Justification" section above. Save each subrecipient budget justification in a Microsoft Excel file using the following convention for the title "ControlNumber_LeadOrganization_Topic_Subrecipient_Budget_Justification".

x. Budget for DOE/NNSA FFRDC (if applicable)

If a DOE/NNSA FFRDC contractor is to perform a portion of the work, the applicant must provide a DOE WP in accordance with the requirements in DOE Order 412.1A, Work Authorization System, Attachment 3, available at: <https://www.directives.doe.gov/directives-documents/400-series/0412.1-BOrder-a-chg1-AdmChg> Save the WP in a single PDF file using the following convention for the title "ControlNumber_LeadOrganization_Topic_WP".

xi. Authorization for non-DOE/NNSA or DOE/NNSA FFRDCs (if applicable)

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 the contractor's authority under its award. Save the Authorization in a single PDF file using the following convention for the title "ControlNumber_LeadOrganization_Topic_FFRDCAuth".

xii. SF-LLL: Disclosure of Lobbying Activities (required)

Prime 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.

Prime recipients and subrecipients are required to complete and submit SF-LLL, "Disclosure of Lobbying Activities"

(<https://www.grants.gov/web/grants/forms/sf-424-individual-family.html>) 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.

Save the SF-LLL in a single PDF file using the following convention for the title "ControlNumber_LeadOrganization_Topic_SF-LLL".

xiii. Waiver Requests: Foreign Entity and Foreign Work (if applicable)

i. Foreign Entity Participation:

All prime recipients receiving funding under this FOA must be incorporated (or otherwise formed) under the laws of a State or territory of the United States. To request a waiver of this requirement, the applicant must submit an explicit waiver request in the Full Application. Appendix B lists the necessary information that must be included in a request to waive this requirement.

ii. Performance of Work in the United States (Foreign Work Waiver)

All work under GDO funding agreements must be performed in the United States. This requirement does not apply to the purchase of supplies and equipment, so a waiver is not required for foreign purchases of these items.

However, the prime recipient should make every effort to purchase supplies and equipment within the United States. Appendix B lists the necessary information that must be included in a foreign work waiver request.

Save the Waivers in a single PDF file using the following convention for the title “ControlNumber_LeadOrganization_Topic_Waiver”.

xiv. Diversity, Equity and Inclusion Plan

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, and Inclusion Plan that describes the actions the applicant will take to foster a welcoming and inclusive environment, support people from groups underrepresented 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 (also see Section I.A.iii.). The plan should include at least one SMART milestone per Budget Period supported by metrics to measure the success of the proposed actions, and will be incorporated into the award if selected. The Diversity, Equity, and Inclusion Plan should contain the following information:

- Equity Impacts: the impacts of the proposed project on underserved communities, including social and environmental impacts.
- Benefits: The overall benefits of the proposed project, if funded, to underserved communities; and
- How diversity, equity, and inclusion objectives will be incorporated in the project.

The following is a non-exhaustive list of actions that can serve as examples of ways the proposed project could incorporate diversity, equity, and inclusion elements. These examples should not be considered either comprehensive or prescriptive. Applicants may include appropriate actions not covered by these examples.

- a. Include persons from groups underrepresented in STEM as PI, co-PI, and/or other senior personnel;
- b. Include persons from groups underrepresented in STEM as student researchers or post-doctoral researchers;
- c. Include faculty or students from Minority Serving Institutions as PI/co-PI, senior personnel, and/or student researchers, as applicable;
- d. Enhance or collaborate with existing diversity programs at your home organization and/or nearby organizations;
- e. Collaborate with students, researchers, and staff in Minority Serving Institutions;

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- f. Disseminate results of research and development in Minority Serving Institutions or other appropriate institutions serving underserved communities;
 - g. Implement evidence-based, diversity-focused education programs (such as implicit bias training for staff) in your organization;
 - h. Identify Minority Business Enterprises, Minority Owned Businesses, Woman Owned Businesses and Veteran Owned Businesses to solicit as vendors and sub-contractors for bids on supplies, services and equipment.

The Diversity, Equity, and Inclusion Plan must not exceed 2 pages. Save the Diversity, Equity and Inclusion Plan in a single PDF file using the following convention for the title "ControlNumber_LeadOrganization_Topic_DEIP".

xv. 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 and senior/key personnel 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 foreign government-sponsored talent recruitment programs must be identified in current and pending support.

For every activity, list the following items:

- The sponsor of the activity or the source of funding
- The award or other identifying number
- The title of the award or activity. 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
- 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
- The award period (start date – end date)
- The person-months of effort per year being dedicated to the award or activity

If required to identify overlap, duplication of effort, or synergistic efforts, append a description of the other award or activity to the current and pending support.

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.

Senior/key personnel must provide a separate disclosure statement listing the required information above regarding current and pending support. Each individual must sign and date their respective disclosure statement and include the following certification statement:

I, [Full Name and Title], 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. 3729-3730 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.

The information may be provided in the format approved by the National Science Foundation (NSF), which may be generated by the Science Experts Network Curriculum Vita (SciENCv), a cooperative venture maintained at <https://www.ncbi.nlm.nih.gov/sciencv/>, and is also available at <https://www.nsf.gov/bfa/dias/policy/nsfapprovedformats/cps.pdf>. 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. If the NSF format is used, the individual must still include a signature, date, and a certification statement using the language included in the paragraph above.

Save the Current and Pending Support in a single PDF file using the following convention for the title "ControlNumber_LeadOrganization_Topic_CPS".

E. Content and Form of Replies to Reviewer Comments

If replies to reviewer comments are applicable, GDO will provide applicants with reviewer comments following the evaluation of all eligible Full Applications. Applicants will have a brief opportunity to review the comments and to prepare a short Reply to Reviewer Comments responding to the comments however they desire or supplementing their Full Application. The Reply to Reviewer Comments is

an optional submission; applicants are not required to submit a Reply to Reviewer Comments. GDO will post the Reviewer Comments in Infrastructure eXCHANGE. The expected submission deadline is on the cover page of the FOA; however, it is the applicant’s responsibility to monitor Infrastructure eXCHANGE in the event that 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 Infrastructure eXCHANGE or relying on the expected date alone. Applicants should anticipate having approximately three (3) business days to submit Replies to Reviewer Comments.

GDO will not review or consider ineligible Replies to Reviewer Comments. GDO will review and consider each eligible Full Application, even if no Reply is submitted or if the Reply is found to be ineligible.

Replies to Reviewer Comments must conform to the following content and form requirements, including maximum page lengths, described below. If a Reply to Reviewer Comments is more than three (3) pages in length, GDO will review only the first three (3) pages and disregard any additional pages.

SECTION	PAGE LIMIT	DESCRIPTION
Text	2 pages max	Applicants may respond to one or more reviewer comments or supplement their Full Application.
Optional	1 page max	Applicants may use this page however they wish; text, graphs, charts, or other data to respond to reviewer comments or supplement their Full Application are acceptable.

F. Post Selection Information Requests

If selected for award, GDO reserves the right to request additional or clarifying information regarding the following (non-exhaustive list):

- Personnel proposed to work on the project and collaborating organizations;
- Current and Pending Support;
- A Data Management Plan (if applicable) describing how all research data displayed in publications resulting from the proposed work will be digitally accessible at the time of publications;
- Indirect cost information;
- Other budget information;
- Commitment Letters 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);
- Representation of Limited Rights Data and Restricted Software, if applicable; and
- Environmental Questionnaire.

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

Each applicant (unless the applicant is an individual or federal awarding agency that is excepted from those requirements under 2 CFR 25.110(b) or (c), or has an exception approved by the federal awarding agency under 2 CFR 25.110(d)) is required to: (1) Be registered in the SAM at <https://www.sam.gov> before submitting its application; (2) provide a valid UEI in its application; and (3) continue to maintain an active SAM registration with current information at all times during which it has an active federal award or an application or plan under consideration by a federal awarding 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.

H. Submission Dates and Times

All required submissions must be submitted in Infrastructure eXCHANGE no later than 5 p.m. Eastern Time on the dates provided on the cover page of this FOA.

I. Intergovernmental Review

This FOA is not subject to Executive Order 12372 – Intergovernmental Review of Federal Programs.

J. Funding Restrictions

i. Allowable Costs

All expenditures must be allowable, allocable, and reasonable in accordance with the applicable federal cost principles.

Refer to the following applicable federal cost principles for more information:

- Federal Acquisition Regulation (FAR) Part 31 for For-Profit entities; and
- 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.

ii. Pre-Award Costs

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 Contracting Officer assigned to the award.

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. GDO 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.

1. National Environmental Policy Act (NEPA) Requirements Related to Pre-Award Costs

GDO's decision whether and how to distribute federal funds under this FOA 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 GDO completing the NEPA review process.

GDO does not guarantee or assume any obligation to reimburse pre-award costs incurred prior to receiving written authorization from the Contracting 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 Contracting Officer, the applicant is doing so at risk of not receiving federal funding for their 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 Contracting Officer override these NEPA requirements to obtain the written authorization from the Contracting 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 prime recipient elects to undertake activities that are not authorized for federal funding by the Contracting Officer in advance of GDO completing a NEPA review, the prime recipient is doing so at risk of not receiving federal funding and such costs may not be recognized as allowable cost share.

iii. Performance of Work in the United States (Foreign Work Waiver)

1. Requirement

All work performed under GDO awards must be performed in the United States. This requirement does not apply to the purchase of supplies and equipment; however, the prime recipient should make every effort to purchase supplies and equipment within the United States. The prime recipient must flow down this requirement to its subrecipients.

2. Failure to Comply

If the prime recipient fails to comply with the Performance of Work in the United States requirement, GDO may deny reimbursement for the work conducted outside the United States and such costs may not be recognized as allowable recipient cost share. The prime 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 prime recipient, subrecipients, contractors or other project partners.

3. Waiver

There may be limited circumstances where it is in the interest of the project to perform a portion of the work outside the United States. To seek a foreign work waiver, the applicant must submit a written waiver request to GDO. Appendix B lists the necessary information that must be included in a request for a foreign work waiver.

The applicant must demonstrate to the satisfaction of GDO that a waiver would further the purposes of the FOA and is in the economic interests of the United States. GDO may require additional information before considering a waiver request. Save the waiver request(s) in a single PDF file. The applicant does not have the right to appeal GDO's decision concerning a waiver request.

iv. Construction

Recipients are required to obtain written authorization from the Contracting Officer before incurring any major construction costs.

v. Foreign Travel

If international travel is proposed for your project, please note that your organization must comply with the International Air Transportation Fair Competitive Practices Act of 1974 (49 USC 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 U.S. flag carrier, if service is available. Foreign travel costs are allowable only with the written prior approval of the Contracting Officer assigned to the award.

vi. Equipment and Supplies

To the greatest extent practicable, all equipment and products purchased with funds made available under this FOA should be American-made. This requirement does not apply to used or leased equipment.

Property disposition will be required at the end of a project if the current fair market value of property exceeds \$5,000. For-profit entity disposition requirements are set forth at 2 CFR 910.360. Property disposition requirements for other non-federal entities are set forth in 2 CFR 200.310 – 200.316.

vii. Domestic Preference – Infrastructure Projects

As appropriate and to the extent consistent with law, Applicants shall ensure that, to the greatest extent practicable, iron and aluminum as well as steel, cement, and other manufactured products (items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber) used in the proposed project shall be produced in the United States. This requirement shall flow down to all sub-awards including all contracts, subcontracts and purchase orders for work performed under the proposed project.

viii. 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”

(<https://www.grants.gov/web/grants/forms/sf-424-individual-family.html>) 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.

ix. Risk Assessment

Prior to making a federal award, the DOE is required by 31 U.S.C. 3321 and 41 U.S.C. 2313 to review information available through any Office of Management and Budget (OMB)-designated repositories of government-wide eligibility qualification or financial integrity information, such as SAM Exclusions and “Do Not Pay.”

In addition, DOE evaluates the risk(s) posed by applicants before they receive federal awards. This evaluation may consider: results of the evaluation of the applicant's eligibility; the quality of the application; financial stability; quality of management systems and ability to meet the management standards prescribed in this part; history of performance; reports and findings from audits; and the applicant's ability to effectively implement statutory, regulatory, or other requirements imposed on non-federal entities.

In addition to this review, DOE must comply with the guidelines on government-wide suspension and debarment in 2 CFR 180, and must require non-federal entities 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.

x. 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;
- 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.

V. Application Review Information

A. Technical Review Criteria

i. Concept Papers

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

Concept Paper Criterion: Overall FOA Responsiveness and Viability of the Project (Weight: 100%)

This criterion involves consideration of the following factors:

- The applicant clearly describes the proposed analysis or convening effort and how it will advance the current state-of-the-art understanding of wholesale markets;
- The applicant has identified risks and challenges, including possible mitigation strategies, and has shown the impact that GDO funding and the proposed project would have on the relevant field and market;
- The applicant has the qualifications, experience, capabilities and other resources necessary to complete the proposed project;
- The applicant has partnered with States, coalitions of States, or state agencies, or wholesale market operators, such as RTOs/ISOs; and
- The proposed work, if successfully accomplished, would clearly meet the objectives as stated in the FOA, including prioritizing involvement of States and/or market operators.

ii. Full Applications

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

Criterion 1: Clarity, Innovation, and Impact (20%)

This criterion involves consideration of the following factors related to whether the applicant clearly describes the proposed project, describes how the project is unique and innovative, and explains how the project will advance the current understanding of wholesale market policy:

- Extent to which the proposed study or convening process is innovative;
- Degree to which the current issues with wholesale markets and the proposed advancement are clearly described;
- Extent to which the application specifically and convincingly demonstrates how the applicant will advance the national dialogue on building and improving wholesale energy markets; and
- Sufficiency of detail in the application to assess whether the proposed work is unique and incremental to studies or initiatives already in progress.

Criterion 2: Project Challenges Addressed and Funding Impacts (15%)

This criterion involves consideration of the applicant's identification of risks and challenges to electricity markets and the impact that GDO funding of the proposed project would have on the relevant field, including the following factors:

Identification of Risks

- Discussion and demonstrated understanding of the key risk areas involved in the proposed work and linkages from the proposed work to how to address them.

Baseline, Metrics, and Deliverables

- The level of clarity in the definition of the baseline, metrics, and milestones.

Market Transformation Plan

- Identification of target market footprint(s) for analysis, competing analysis initiatives and, if applicable, how conclusions from this analysis or convening may be implemented in a given market(s).

Criterion 3: Team and Resources (20%)

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;
- Degree to which the proposed consortia/team demonstrates the ability to complete the proposed analysis (i.e., data modelling capabilities or relevant software access); and
- Reasonableness of the budget and spend plan for the proposed project and objectives.

Criterion 4: Likelihood of Successful Objectives (20%)

This criterion involves consideration of whether the proposed work, if successfully accomplished, would clearly meet the objectives stated in the FOA.

- 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.

Criterion 5: State/Market Operator Prioritization (25%)

The applicant has demonstrated partnerships with States or ISOs/RTOs/market operators. This criterion involves consideration of whether the proposed work includes substantive, e.g., via involvement as key personnel or lead applicants,

involvement from States, state entities, market operators (ISOs, RTOs, etc.) in the analysis or convening.

B. Standards for Application Evaluation

Applications that are determined to be eligible will be evaluated in accordance with this FOA, by the guidance provided in the “DOE Merit Review Guide for Financial Assistance,” effective September 2020, which is available at:

<https://energy.gov/management/downloads/merit-review-guide-financial-assistance-and-unsolicited-proposals-current>.

C. Other Selection Factors

i. Program Policy Factors

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

- The degree to which the proposed project exhibits regional diversity of wholesale markets when compared to the existing DOE project portfolio and other projects selected from the subject FOA;
- The degree to which the proposed project, including proposed cost share beyond the minimum required, optimizes the use of available GDO funding to achieve programmatic objectives;
- The degree to which the proposed project will accelerate market solutions and advancements in areas that industry by itself is not likely to undertake because of technical and financial uncertainty; and
- The degree to which the proposed project, or group of projects, represent a desired geographic distribution (considering past awards and current applications);
- The degree to which the proposed project incorporates diversity, equity, and inclusion elements;
- The degree to which proposals include partnerships with coalitions of States or RTOs/ISOs.

Diversity (other than technological)

- The degree to which the proposed project collectively represents diverse types and sizes of applicant organizations.

Optimize Funding

- The degree to which the proposed project avoids duplication/overlap with other publicly or privately funded work.

Complementary Efforts

- The degree to which the proposed project supports complementary efforts or projects, which, when taken together, will best achieve the research goals and objectives.

Market Impact

- The degree to which the proposed project enables new and expanding market design, operations, or configurations.

D. Evaluation and Selection Process**i. 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 FOA. Ultimately, the Selection Official considers the recommendations of the reviewers, along with other considerations such as program policy factors, in determining which applications to select.

ii. Pre-Selection Clarification

GDO 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. These pre-selection clarifications will solely be for the purposes of clarifying the application and will be limited to information already provided in the application documentation. 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 GDO's written clarification questions or video or conference calls with GDO representatives.

The information provided by applicants to GDO through pre-selection clarifications is incorporated in their applications and contributes to the merit review evaluation and GDO's selection decisions. If GDO 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.

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

iii. Recipient Integrity and Performance Matters

DOE, prior to making a federal award with a total amount of federal share greater than the simplified acquisition threshold, is required to review and consider any information about the applicant that is in the designated integrity and performance system accessible through SAM (currently FAPIIS) (see 41 U.S.C. 2313).

The applicant, at its option, may review information in the designated integrity and performance systems accessible through SAM and comment on any information about itself that a federal awarding agency previously entered and is currently in the designated integrity and performance system accessible through SAM.

DOE will consider any written comments by the applicant, in addition to the other information in the designated integrity and performance system, 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.

iv. Selection

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

E. Anticipated Notice of Selection and Award Negotiation Dates

GDO anticipates notifying applicants selected for negotiation of award and negotiating awards by the dates provided on the cover page of this FOA.

VI. Award Administration Information

A. Award Notices

i. Ineligible Submissions

Ineligible Concept Papers and Full Applications will not be further reviewed or considered for award. The Contracting Officer will send a notification letter by email to the technical and administrative points of contact designated by the applicant in Infrastructure eXCHANGE. The notification letter will state the basis upon which the Concept Paper or the Full Application is ineligible and not considered for further review.

ii. Concept Paper Notifications

GDO will notify applicants of its determination to encourage or discourage the submission of a Full Application. GDO will post these notifications to Infrastructure eXCHANGE.

Applicants may submit a Full Application even if they receive a notification discouraging them from doing so. By discouraging the submission of a Full Application, GDO 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 a Full Application that is unlikely to be selected for award negotiations.

A notification encouraging the submission of a Full Application does not authorize the applicant to commence performance of the project.

iii. Full Application Notifications

GDO 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 Infrastructure eXCHANGE. The notification letter will inform the applicant whether or not its Full Application was selected for award negotiations. Alternatively, GDO may notify one or more applicants that a final selection determination on particular Full Applications will be made at a later date, subject to the availability of funds or other factors.

iv. Successful Applicants

Receipt of a notification letter selecting a Full 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 GDO to issue an award. Applicants do not receive an award until award negotiations are complete and the Contracting Officer executes the funding agreement, accessible by the prime recipient in FedConnect.

The award negotiation process will take approximately 60 days. Applicants must designate a primary and a backup point-of-contact in Infrastructure eXCHANGE with whom GDO will communicate to conduct award negotiations. The applicant must be responsive during award negotiations (i.e., provide requested documentation) and meet the negotiation deadlines. If the applicant fails to do so or if award negotiations are otherwise unsuccessful, GDO will cancel the award negotiations and rescind the Selection. GDO reserves the right to terminate award negotiations at any time for any reason.

v. Alternate Selection Determinations

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

vi. Unsuccessful Applicants

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

B. Administrative and National Policy Requirements

i. Registration Requirements

There are several one-time actions before submitting an application in response to this FOA, and it is vital that applicants address these items as soon as possible. Some may take several weeks, and failure to complete them could interfere with an applicant's ability to apply to this FOA, or to meet the negotiation deadlines and receive an award if the application is selected. These requirements are as follows:

1. Infrastructure Funding Opportunity Exchange (eXCHANGE)

Register and create an account on Infrastructure eXCHANGE at <https://infrastructure-eXCHANGE.energy.gov>. This account will allow the user to apply to any open Infrastructure FOAs that are currently in Infrastructure eXCHANGE.

Beginning on July 29, 2022, eXCHANGE will be updated to integrate with [Login.gov](https://login.gov). As of September 30, 2022, potential applicants will be required to have a Login.gov account to access Infrastructure eXCHANGE. 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. For more information, refer to the eXCHANGE Multi-Factor Authentication (MFA) Quick Guide in the [Manuals section](#) of eXCHANGE.

It is recommended that each organization or business unit, whether acting as a team or a single entity, use only one account as the contact point for each submission. Applicants should also designate backup points of contact so they may be easily contacted if deemed necessary. **This step is required to**

apply to this FOA. The eXCHANGE registration does not have a delay; however, **the remaining registration requirements below could take several weeks to process and are necessary for a potential applicant to receive an award under this FOA.**

2. System for Award Management

Register with the SAM at <https://www.sam.gov>. Designating an Electronic Business Point of Contact (EBiz POC) and obtaining a special password called a Marketing Partner ID Number (MPIN) are important steps in SAM registration. Please update your SAM registration annually.

3. FedConnect

Register in FedConnect at <https://www.fedconnect.net>. To create an organization account, your organization's SAM MPIN is required. For more information about the SAM MPIN or other registration requirements, review the FedConnect Ready, Set, Go! Guide at https://www.fedconnect.net/FedConnect/Marketing/Documents/FedConnect_Ready_Set_Go.pdf.

4. Grants.gov

Register in Grants.gov (<http://www.grants.gov>) to receive automatic updates when Amendments to this FOA are posted. However, please note that Concept Papers and Full Applications will not be accepted through Grants.gov.

5. Electronic Authorization of Applications and Award Documents

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

ii. Award Administrative Requirements

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

iii. Foreign National Access

All applicants selected for an award under this FOA may be required to provide information to DOE in order to satisfy requirements for foreign nationals' access to DOE sites, information, technologies, equipment, programs or personnel. A foreign national is defined as any person who is not a U.S. citizen by birth or naturalization. If a selected applicant (including any of its subrecipients, contractors or vendors) anticipates involving foreign nationals in the performance of its award, the selected applicant may be required to provide

DOE with specific information about each foreign national to ensure compliance with the requirements for access approval. National laboratory personnel already cleared for site access may be excluded.

iv. 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. Prime recipients must register with the new FFATA Subaward Reporting System database and report the required data on their first tier subrecipients. Prime recipients must report the executive compensation for their own executives as part of their registration profile in SAM.

v. 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.isp>.

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

GDO's decision whether and how to distribute federal funds under this FOA 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 recipients selected for 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 records must be prepared to complete the NEPA review process (e.g., biological evaluations or environmental assessments), the recipient may be required to prepare the records and the costs to prepare the necessary records may be included as part of the project costs.

vii. Applicant Representations and Certifications

1. Lobbying Restrictions

By accepting funds under this award, the prime 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.

2. Corporate Felony Conviction and Federal Tax Liability Representations

In submitting an application in response to this FOA, 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 the following definitions apply:

A Corporation includes any 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]. It includes both for-profit and non-profit organizations.

3. Nondisclosure and Confidentiality Agreements Representations

In submitting an application in response to this FOA 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:

(1) *“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.”

- (2) 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.
- (3) 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 United States government, may contain provisions appropriate to the particular 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 in the course of such activity unless specifically authorized to do so by the United States 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 Department of Justice, that are essential to reporting a substantial violation of law.

viii. Statement of Federal Stewardship

GDO will exercise normal federal stewardship in overseeing the project activities performed under GDO 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.

ix. Intellectual Property Management Plan (IPMP)

Within 30 days of selection, applicants must submit an executed IPMP between the members of the consortia or team.

The award will set forth the treatment of and obligations related to intellectual property rights between GDO and the individual members. The IPMP should

describe how the members will handle intellectual property rights and issues between themselves while ensuring compliance with federal intellectual property laws, regulations, and policies. Guidance regarding the contents of IPMP is available from GDO upon request.

The following is a non-exhaustive list of examples of items that the IPMP may cover:

- The treatment of confidential information between members (e.g., the use of NDAs);
- The treatment of background intellectual property (e.g., any requirements for identifying it or making it available);
- The treatment of inventions made under the award (e.g., any requirements for disclosing to the other members on an application, filing patent applications, paying for patent prosecution, and cross-licensing or other licensing arrangements between the members);
- The treatment of data produced, including software, under the award (e.g., any publication process or other dissemination strategies, copyrighting strategy or arrangement between members);
- Any technology transfer and commercialization requirements or arrangements between the members;
- The treatment of any intellectual property issues that may arise due to a change in membership of the consortia or team; and
- The handling of disputes related to intellectual property between the members.

x. Subject Invention Utilization Reporting

In order to ensure that prime recipients and subrecipients holding title to subject inventions are taking the appropriate steps to commercialize subject inventions, GDO may require that each prime recipient holding title to a subject invention submit annual reports for ten (10) years from the date the subject invention was disclosed to GDO on the utilization of the subject invention and efforts made by prime recipient or their 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 prime recipient, and such other data and information as GDO may specify.

xi. 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>.

xii. Reporting

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

xiii. Go/No-Go Review

Each multi-phase project selected under this FOA will be subject to a periodic project evaluation referred to as a Go/No-Go Review. At the Go/No-Go decision points, GDO will evaluate project performance, project schedule adherence, meeting milestone objectives, compliance with reporting requirements, and overall contribution to the GDO 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) GDO's Go/No-Go decision; (7) the recipient's submission of a continuation application; and (8) written approval of the continuation application by the Contracting 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.

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, GDO may take appropriate action, including but not limited to, redirecting, suspending or terminating the award.

xiv. 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 United States government of a conference held by any Executive branch department, agency, board, commission, or office for which the cost to the United States 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.

xv. 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 \$1,000,000, 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 \$5,000 purchased with project funds. These financing statement(s) must be approved in writing by the Contracting 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 Contracting 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 Contracting Officer may direct.

xvi. Implementation of Executive Order 13798, Promoting Free Speech and Religious Liberty

States, local governments, or other public entities may not condition sub-awards in a manner that would discriminate, or disadvantage sub-recipients based on their religious character.

xvii. 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 collaborating organizations within 30 days after the applicant is notified of the selection. 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.

xviii. Current and Pending Support

If selected for award negotiations, within 30 days of the selection notice, the selectee must submit 1) current and pending support disclosures and resumes for any new PIs or senior/key personnel and 2) updated disclosures if there have been any changes to the current and pending support submitted with the

application. 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 PI and senior/key personnel and 2) updated disclosures if there are changes to the current and pending support previously submitted to DOE.

xix. Data Management Plan (DMP) (if applicable)

Each applicant whose Full Application is selected for award negotiations will be required to submit a DMP during the award negotiations phase. A DMP explains how, when appropriate, data generated in the course of the work performed under an GDO award will be shared and preserved in order to validate the results of the proposed work or how the results could be validated if the data is not shared or preserved. 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.

VII. Questions/Agency Contacts

Upon the issuance of a FOA, GDO personnel are prohibited from communicating (in writing or otherwise) with applicants regarding the FOA except through the established question and answer process as described below. Specifically, questions regarding the content of this FOA must be submitted to:

GDO_FOA3126@hq.doe.gov. Questions must be submitted not later than 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 FOA will be posted on Infrastructure eXCHANGE at: <https://infrastructure-exchange.energy.gov>. **Please note that you must first select this specific FOA Number in order to view the questions and answers specific to this FOA.** GDO will attempt to respond to a question within 3 business days, unless a similar question and answer has already been posted on the website.

Questions related to the registration process and use of the Infrastructure eXCHANGE website should be submitted to:

InfrastructureeXCHANGESupport@hq.doe.gov.

VIII. Other Information

A. FOA Modifications

Amendments to this FOA will be posted on the Infrastructure eXCHANGE website and the Grants.gov system. However, you will only receive an email when an amendment or a FOA is posted on these sites if you register for email notifications

for this FOA in Grants.gov. GDO recommends that you register as soon after the release of the FOA as possible to ensure you receive timely notice of any amendments or other FOAs.

B. Government Right to Reject or Negotiate

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

C. Commitment of Public Funds

The Contracting 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 Contracting Officer, either express or implied, is invalid.

D. Treatment of Application Information

Applicants should not include trade secrets or commercial or financial information that is privileged or confidential in their application unless such information is necessary to convey an understanding of the proposed project or to comply with a requirement in the FOA. Applicants are advised to not include any critically sensitive proprietary detail.

If an application includes trade secrets or information that is commercial or financial, or information that is confidential or privileged, it is furnished to the 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, GDO 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 Government's right to use the information if it is obtained from another source.

Full Applications, and other submissions containing confidential, proprietary, or privileged 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 U.S. Government is not liable for the disclosure or use of unmarked information, and may use or disclose such information for any purpose.

The cover sheet of the Full Application, and other submission must be marked as follows and identify the specific pages containing trade secrets, confidential, proprietary, or privileged information:

Notice of Restriction on Disclosure and Use of Data:

Pages [list applicable pages] of this document may contain trade secrets, confidential, proprietary, or privileged information that is exempt from public disclosure. Such information shall be used or disclosed only for evaluation purposes or in accordance with a financial assistance or loan 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]

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

E. 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 GDO 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.

F. Notice Regarding Eligible/Ineligible Activities

Eligible activities under this FOA include those which 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.

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

GDO 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).

H. 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:

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- The termination of award negotiations;
 - The modification, suspension, and/or termination 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.

I. Retention of Submissions

GDO expects to retain copies of all Full Applications and other submissions. No submissions will be returned. By applying to GDO for funding, applicants consent to GDO's retention of their submissions.

J. Title to Subject Inventions

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

- 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;
- 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 waiver is granted (see below);
- Class Patent Waiver:

Under 42 U.S.C. § 5908, title to subject inventions vests in the U.S. government and large businesses and foreign entities do not have the automatic right to elect to retain title to subject inventions. However, GDO may issue "class patent waivers" under which large businesses and foreign entities that meet certain stated requirements may elect to retain title to their subject inventions.

- Advance and Identified Waivers: For an applicant not covered by a Class Patent Waiver or the Bayh-Dole Act, the applicant 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 GDO 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.

K. Government Rights in Subject Inventions

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

i. 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 contractors doing work on behalf of the government.

ii. 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 prime 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 prime 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 U.S. 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.

L. 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 retains unlimited rights in technical data produced under government financial assistance awards, including the right to distribute to the public. One exception to the foregoing is that invention disclosures may be protected from public disclosure for a reasonable time in order to allow for filing a patent application.

M. Copyright

The prime recipient and subrecipients may assert copyright in copyrightable works, such as software, first produced under the award without GDO 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.

N. Export Control

The U.S. government regulates the transfer of information, commodities, technology, and software considered to be strategically important to the U.S. 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”. To ensure compliance with Export Controls, it is the prime recipient’s responsibility to determine when its project activities trigger Export Controls and to ensure compliance.

Export Controls may apply to individual projects, depending on the nature of the tasks. When Export Controls apply, the recipient must take the appropriate steps to obtain any required governmental licenses, monitor and control access to restricted information, and safeguard all controlled materials. Under no circumstances may foreign entities (organizations, companies or persons) receive access to export-controlled information unless proper export procedures have been satisfied and such access is authorized pursuant to law or regulation.

O. Personally Identifiable Information (PII)

All information provided by the applicant must to the greatest extent possible exclude PII. The term “PII” refers to information which can be used to distinguish or trace an individual's identity, such as their name, social security number, biometric records, alone, or when combined with other personal or identifying information which is linked or linkable to a specific individual, such as date and place of birth, 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).

P. Annual Independent Audits

If a for-profit entity is a prime recipient and has expended \$750,000 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, non-profit organization, or state/local government is a prime recipient or subrecipient and has expended \$750,000 or more of federal awards during the non-federal entity's fiscal year, then 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. GDO will share in the cost of the audit at its applicable cost share ratio.

APPENDIX A – COST SHARE INFORMATION

Cost Sharing or Cost Matching

The terms “cost sharing” and “cost matching” are often used synonymously. The DOE Financial Assistance Regulations, 2 CFR 200.306, use both of the terms in the titles specific to regulations applicable to cost sharing. GDO almost always uses the term “cost sharing,” as it conveys the concept that non-federal share is calculated as a percentage of the Total Project Cost. An exception is the State Energy Program Regulation, 10 CFR 420.12, State Matching Contribution. Here “cost matching” for the non-federal share is calculated as a percentage of the federal funds only, rather than the Total Project Cost.

How Cost Sharing Is Calculated

As stated above, cost sharing is calculated as a percentage of the Total Project Cost. FFRDC costs must be included in the Total Project Cost. The following is an example of how to calculate cost sharing amounts for a project with \$1,000,000 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%

What Qualifies For Cost Sharing

In general, if a cost is allowable under the cost principles applicable to the organization incurring the cost and is eligible for reimbursement under an GDO grant or cooperative agreement, then it is allowable as cost share. Conversely, if the cost is not allowable under the cost principles and not eligible for reimbursement, then it is not allowable as cost share. In addition, costs may not be counted as cost share if they are paid by the federal government under another award unless authorized by federal statute to be used for cost sharing.

The rules associated with what is allowable as cost share are specific to the type of organization that is receiving funds under the grant or cooperative agreement, though the cost principles are generally applicable to all entities. The specific cost share rules are applicable to:

- FAR Part 31 for For-Profit entities, (48 CFR Part 31); and
- 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.

In addition to the regulations referenced above, other factors may also come into play such as timing of donations and length of the project period. For example, the value of ten years of donated maintenance on a project that has a project period of five years would not be fully allowable as cost share. Only the value for the five years of donated maintenance that corresponds to the project period is allowable and may be counted as cost share.

Additionally, GDO generally does not allow pre-award costs for either cost share or reimbursement when these costs precede the signing of the appropriation bill that funds the award. In the case of a competitive award, GDO generally does not allow pre-award costs prior to the signing of the Selection Statement by the GDO Selection Official.

General Cost Sharing Rules on a DOE Award

- 1.** Cash Cost Share – encompasses all contributions to the project made by the recipient or subrecipient(s), for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project.
- 2.** In-Kind Cost Share – encompasses all contributions to the project made by the recipient or subrecipient(s) that do not involve a payment or reimbursement and represent donated items or services. In-Kind cost share items include volunteer personnel hours, donated existing equipment, donated existing supplies. The cash value and calculations thereof for all In-Kind cost share items must be justified and explained in the Cost Share section of the project Budget Justification. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out the In-Kind cost share section of the Budget Justification.
- 3.** Funds from other federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC subrecipients. Non-federal sources include any source not originally derived from federal funds. Cost sharing commitment letters from subrecipients must be provided with the original application.
- 4.** Fee or profit, including foregone fee or profit, are not allowable as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.

DOE Financial Assistance Rules 2 CFR Part 200 as amended by 2 CFR Part 910

As stated above, the rules associated with what is allowable cost share are generally the same for all types of organizations. Following are the rules found to be common, but again, the specifics are contained in the regulations and cost principles specific to the type of entity:

(A) Acceptable contributions. All contributions, including cash contributions and third party in-kind contributions, must be accepted as part of the prime recipient's cost sharing if such contributions meet all of the following criteria:

- (1)** They are verifiable from the recipient's records.
- (2)** They are not included as contributions for any other federally-assisted project or program.
- (3)** They are necessary and reasonable for the proper and efficient accomplishment of project or program objectives.
- (4)** They are allowable under the cost principles applicable to the type of entity incurring the cost as follows:
 - a.** For-profit organizations. Allowability of costs incurred by for-profit organizations and those nonprofit organizations listed in Attachment C to OMB Circular A-122 is determined in accordance with the for-profit cost principles in 48 CFR Part 31 in the FAR, except that patent prosecution costs are not allowable unless specifically authorized in the award document. (v) Commercial Organizations. FAR Subpart 31.2—Contracts with Commercial Organizations; and
 - b.** Other types of organizations. For all other non-federal entities, allowability of costs is determined in accordance with 2 CFR Part 200 Subpart E.
- (5)** They are not paid by the federal government under another award unless authorized by federal statute to be used for cost sharing or matching.
- (6)** They are provided for in the approved budget.

(B) Valuing and documenting contributions

- (1)** Valuing recipient's property or services of recipient's employees. Values are established in accordance with the applicable cost principles, which mean that amounts chargeable to the project are determined on the basis of costs incurred. For real property or equipment used on the project, the cost principles authorize depreciation or use charges. The full value of the item may be applied when the item will be consumed in the performance of the award or fully depreciated by the end of the award. In cases where the full value of a donated capital asset is to be applied as cost sharing or matching, that full value must be the lesser or the following:

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- a. The certified value of the remaining life of the property recorded in the recipient's accounting records at the time of donation; or
 - b. The current fair market value. If there is sufficient justification, the Contracting Officer may approve the use of the current fair market value of the donated property, even if it exceeds the certified value at the time of donation to the project. The Contracting Officer may accept the use of any reasonable basis for determining the fair market value of the property.
- (2) Valuing services of others' employees. If an employer other than the recipient furnishes the services of an employee, those services are valued at the employee's regular rate of pay, provided these services are for the same skill level for which the employee is normally paid.
- (3) Valuing volunteer services. Volunteer services furnished by professional and technical personnel, consultants, and other skilled and unskilled labor may be counted as cost sharing or matching if the service is an integral and necessary part of an approved project or program. Rates for volunteer services must be consistent with those paid for similar work in the recipient's organization. In those markets in which the required skills are not found in the recipient organization, rates must be consistent with those paid for similar work in the labor market in which the recipient competes for the kind of services involved. In either case, paid fringe benefits that are reasonable, allowable, and allocable may be included in the valuation.
- (4) Valuing property donated by third parties.
- a. Donated supplies may include such items as office supplies or laboratory supplies. Value assessed to donated supplies included in the cost sharing or matching share must be reasonable and must not exceed the fair market value of the property at the time of the donation.
 - b. Normally only depreciation or use charges for equipment and buildings may be applied. However, the fair rental charges for land and the full value of equipment or other capital assets may be allowed, when they will be consumed in the performance of the award or fully depreciated by the end of the award, provided that the Contracting Officer has approved the charges. When use charges are applied, values must be determined in accordance with the usual accounting policies of the recipient, with the following qualifications:
 - i. The value of donated space must not exceed the fair rental value of comparable space as established by an independent appraisal of comparable space and facilities in a privately-owned building in the same locality.
 - ii. The value of loaned equipment must not exceed its fair rental value.

(5) Documentation. The following requirements pertain to the recipient's supporting records for in-kind contributions from third parties:

- a.** Volunteer services must be documented and, to the extent feasible, supported by the same methods used by the recipient for its own employees.
- b.** The basis for determining the valuation for personal services and property must be documented.

APPENDIX B – WAIVER REQUESTS AND APPROVAL PROCESSES: 1. FOREIGN ENTITY PARTICIPATION AS THE PRIME RECIPIENT; AND 2. PERFORMANCE OF WORK IN THE UNITED STATES (FOREIGN WORK WAIVER)

1. Waiver for Foreign Entity Participation as the Prime Recipient

All prime recipients receiving funding under this FOA 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 Full Application.

Overall, the applicant must demonstrate to the satisfaction of GDO that it would further the purposes of this FOA and is otherwise in the economic interests of the United States to have a foreign entity serve as the prime recipient. A request to waive the *Foreign Entity Participation as the prime recipient* requirement must include the following:

- Entity name;
- The rationale for proposing a foreign entity to serve as the prime recipient;
- Country of incorporation and the extent, if any, the entity is state owned or controlled;
- A description of the project’s anticipated contributions to the US economy;
- How the project will benefit U.S. research, development and manufacturing, including contributions to employment in the U.S. and growth in new markets and jobs in the U.S.;
- How the project will promote domestic American manufacturing of products and/or services;
- A description of how the foreign entity’s participation as the prime recipient is essential to the project;
- A description of the likelihood of Intellectual Property (IP) being created from the work and the treatment of any such IP; and
- Countries where the work will be performed (Note: if any work is proposed to be conducted outside the U.S., the applicant must also complete a separate request for waiver of the Performance of Work in the United States requirement).

GDO may require additional information before considering the waiver request.

The applicant does not have the right to appeal GDO’s decision concerning a waiver request.

2. Waiver for Performance of Work in the United States (Foreign Work Waiver)

All work under GDO funding agreements must be performed in the United States. This requirement does not apply to the purchase of supplies and equipment, so a waiver is not required for foreign purchases of these items. However, the prime recipient should make every effort to purchase supplies and equipment within the United States. There may be limited circumstances where it is in the interest of the project to perform a portion of the work outside the United States. To seek a waiver of the Performance of Work in the United States requirement, the applicant must submit an explicit waiver request in the Full 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 GDO that it would further the purposes of this FOA and is otherwise in the economic interests of the United States to perform work outside of the United States. A request to waive the *Performance of Work in the United States* requirement must include the following:

- The rationale for performing the work outside the U.S. (“foreign work”);
- A description of the work proposed to be performed outside the U.S.;
- An explanation as to how the foreign work is essential to the project;
- A description of the anticipated benefits to be realized by the proposed foreign work and the anticipated contributions to the US economy;
- The associated benefits to be realized and the contribution to the project from the foreign work;
- How the foreign work will benefit U.S. research, development and manufacturing, including contributions to employment in the U.S. and growth in new markets and jobs in the U.S.;
- How the foreign work will promote domestic American manufacturing of products and/or services;
- A description of the likelihood of Intellectual Property (IP) being created from the foreign work and the treatment of any such IP;
- The total estimated cost (DOE and recipient cost share) of the proposed foreign work;
- The countries in which the foreign work is proposed to be performed; and
- The name of the entity that would perform the foreign work.

GDO may require additional information before considering the waiver request.

The applicant does not have the right to appeal GDO’s decision concerning a waiver request.

APPENDIX C – GLOSSARY

Applicant – The lead organization submitting an application under the FOA.

Continuation application – 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 to GDO its continuation application, which includes the following information:

- i. A report on the Recipient’s progress towards meeting the objectives of the project, including any significant findings, conclusions, or developments, and an estimate of any unobligated balances remaining at the end of the budget period. If the remaining unobligated balance is estimated to exceed 20 percent of the funds available for the budget period, explain why the excess funds have not been obligated and how they will be used in the next budget period.
- ii. A detailed budget and supporting justification if there are changes to the negotiated budget, or a budget for the upcoming budget period was not approved at the time of award.
- iii. A description of any planned changes from the negotiated Statement of Project Objectives and/or Milestone Summary Table.

Cooperative Research and Development Agreement (CRADA) – 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>

Federally Funded Research and Development Centers (FFRDC) – FFRDCs are public-private partnerships which conduct research for the United States government. A listing of FFRDCs can be found at <http://www.nsf.gov/statistics/ffrdclist/>.

Go/No-Go Decision Points – A decision point at the end of a budget period that defines the overall objectives, milestones and deliverables to be achieved by the recipient in that budget period. As a result of GDO’s review, GDO may take one of the following actions: 1) authorize federal funding for the next budget period; 2) recommend redirection of work; 3) discontinue providing federal funding beyond the current budget period; or 4) place a hold on federal funding pending further supporting data.

Project – The entire scope of the cooperative agreement which is contained in the recipient’s Statement of Project Objectives.

Recipient or “Prime Recipient” – A non-federal entity that receives a federal award directly from a federal awarding agency to carry out an activity under a federal program. The term recipient does not include subrecipients.

States – For purposes of this FOA, States include federal territories and the District of Columbia.

Subrecipient – A non-federal entity that receives a subaward from a pass-through entity to carry out part of a federal program; but does not include an individual that is a beneficiary of such program. A subrecipient may also be a recipient of other federal awards directly from a federal awarding agency. Also, a DOE/NNSA and non-DOE/NNSA FFRDC may be proposed as a subrecipient on another entity’s application.

APPENDIX D – LIST OF ACRONYMS

COI	Conflict of Interest
DEC	Determination of Exceptional Circumstances
DEI	Diversity, Equity, and Inclusion
DMP	Data Management Plan
DOE	Department of Energy
DOI	Digital Object Identifier
FAR	Federal Acquisition Regulation
FERC	Federal Energy Regulatory Commission
FFATA	Federal Funding and Transparency Act of 2006
FOA	Funding Opportunity Announcement
FOIA	Freedom of Information Act
FFRDC	Federally Funded Research and Development Center
GAAP	Generally Accepted Accounting Principles
GDO	Grid Deployment Office
IPMP	Intellectual Property Management Plan
ISO	Independent System Operator
M&O	Management and Operating
MPIN	Marketing Partner ID Number
MSI	Minority-Serving institution
MYPP	Multi-Year Program Plan
NDA	Non-Disclosure Acknowledgement
NEPA	National Environmental Policy Act
NNSA	National Nuclear Security Agency
OMB	Office of Management and Budget
OSTI	Office of Scientific and Technical Information
PII	Personal Identifiable Information
R&D	Research and Development
RFI	Request for Information
RFP	Request for Proposal
RTO	Regional Transmission Organization
SAM	System for Award Management
SOPO	Statement of Project Objectives
SPOC	Single Point of Contact
STEM	Science, Technology, Engineering, and Mathematics
TIA	Technology Investment Agreement
TRL	Technology Readiness Level
UCC	Uniform Commercial Code
UEI	Unique Entity Identifier
WBS	Work Breakdown Structure
WEMSE	Wholesale Electricity Market Studies and Engagement Program
WP	Work Proposal