

FINANCIAL ASSISTANCE FUNDING OPPORTUNITY ANNOUNCEMENT



Department of Energy (DOE) Office of Fossil Energy Carbon Management (FECM)

Bipartisan Infrastructure Law (BIL): CARBON CAPTURE TECHNOLOGY PROGRAM, FRONT-END ENGINEERING AND DESIGN FOR CARBON DIOXIDE (CO₂) TRANSPORT

Funding Opportunity Announcement (FOA) Number: DE-FOA-0002730

FOA Type: Initial

Assistance Listing Number: 81.089, Fossil Energy Research and Development

FOA Issue Date:	09/22/2022
Submission Deadline for Full Applications:	11/28/2022 – 5:00 PM ET
Expected Date for DOE Selection Notifications:	March 2023
Expected Timeframe for Award Negotiations:	March – July 2023

- To apply to this FOA, applicants must register with and submit application materials through Grants.gov at <https://www.grants.gov/>.
- Applicants must designate primary and backup points-of-contact with whom DOE will communicate to conduct award negotiations. 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.

Registration Requirements

There are several one-time actions that must be completed before submitting an application in response to this Funding Opportunity Announcement (FOA) (e.g., register with the System for Award Management (SAM), obtain a Unique Entity Identifier (UEI) number and register with Grants.gov, and if selected for award, be registered in FedConnect). 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.

- **SAM** - Applicants must register with the SAM at <https://www.sam.gov/> prior to submitting an application in response to this FOA. Designating an Electronic Business Point of Contact (EBiz POC) and obtaining a special password called an MPIN are important steps in SAM registration. Failure to register with SAM will prevent your organization from applying through Grants.gov. The applicant must maintain an active SAM registration with current information at all times during which it has an active Federal award or an application under consideration. More information about SAM registration for applicants is found at: https://www.fsd.gov/gsafsd_sp?id=gsafsd_kb_articles&sys_id=650d493e1bab7c105465eaccac4bcbcb.
- **UEI** – Applicants must obtain a Unique Entity Identifier (UEI) from the SAM to uniquely identify the entity. The UEI is available in the SAM entity registration record.

NOTE: Subawardees/subrecipients at all tiers must also obtain an UEI from the SAM and provide the UEI to the Prime Recipient before the subaward can be issued.

- **Grants.gov** – Applicants must register with Grants.gov in order to receive automatic updates, in the event that Amendments to this FOA are posted. However, please note that applications will not be accepted through Grants.gov. You cannot submit an application through Grants.gov unless you are registered. Please read the registration requirements carefully and start the process immediately.
 - 1) The Authorized Organizational Representative (AOR) must register at: <https://apply07.grants.gov/apply/OrcRegister>
 - 2) An email is sent to the E-Business (E-Biz) POC listed in SAM. The E-Biz POC must approve the AOR registration using their MPIN from their SAM registration.

More information about the registration steps for Grants.gov is provided at:
<https://www.grants.gov/web/grants/applicants/registration.html>

In addition:

- Add a Profile to a Grants.gov Account: A profile in Grants.gov corresponds to a single applicant organization the user represents (i.e., an applicant) or an

individual applicant. If you work for or consult with multiple organizations and have a profile for each, you may log in to one Grants.gov account to access all of your grant applications. To add an organizational profile to your Grants.gov account, enter the UEI for the organization in the UEI field while adding a profile. For more detailed instructions about creating a profile on Grants.gov, refer to: <https://www.grants.gov/web/grants/applicants/registration/add-profile.html>

- *EBiz POC Authorized Profile Roles:* After you register with Grants.gov and create an Organization Applicant Profile, the organization applicant's request for Grants.gov roles and access is sent to the EBiz POC. The EBiz POC will then log in to Grants.gov and authorize the appropriate roles, which may include the AOR role, thereby giving you permission to complete and submit applications on behalf of the organization. You will be able to submit your application online any time after you have been assigned the AOR role.

NOTE: When applications are submitted through Grants.gov, the name of the organization applicant with the AOR role that submitted the application is inserted into the signature line of the application, serving as the electronic signature. The EBiz POC **must** authorize people who are able to make legally binding commitments on behalf of the organization as a user with the AOR role; **this step is often missed and it is crucial for valid and timely submissions.**

For more detailed instructions about creating a profile on Grants.gov, refer to: <https://www.grants.gov/web/grants/applicants/registration/authorize-roles.html>

To track your role request, refer to: <https://www.grants.gov/web/grants/applicants/registration/track-role-status.html>

Questions relating to the **registration process, system requirements, or how an application form works** must be directed to Grants.gov at 1-800-518-4726 or support@grants.gov.

FedConnect.net – Applicants must register with FedConnect to submit questions. FedConnect website: <https://www.fedconnect.net/>

See Section IV for Application and Submission Information (including how to create a Workspace).

Table of Contents

Table of Contents.....	iv
I. Funding Opportunity Description	8
A. Background and Context	8
i. Program Purpose	10
ii. Technology Space and Strategic Goals	11
iii. Community Benefits	11
B. Area of Interest	12
i. General Information for Area of Interest	12
ii. Technical Requirements	19
iii. Carbon Matchmaker	21
C. Applications Specifically Not of Interest.....	23
D. Community Benefits Plans	23
E. Authorizing Statutes	27
F. Notice of Bipartisan Infrastructure Law-Specific Requirements	27
II. Award Information.....	28
A. Award Overview	28
i. Estimated Funding	28
ii. Period of Performance	29
iii. New Applications Only	29
B. DOE Funding Agreements	29
i. Cooperative Agreements.....	29
III. Eligibility Information.....	30
A. Eligible Applicants	30
i. Individuals.....	30
ii. Domestic Entities	30
iii. Foreign Entities.....	31
iv. Incorporated Consortia	31
v. Unincorporated Consortia.....	32
B. Cost Sharing.....	32
i. Legal Responsibility	33
ii. Cost Share Allocation.....	33
iii. Cost Share Types and Allowability	33
iv. Cost Share Contributions by FFRDCs	34
v. Cost Share Verification	34
vi. Cost Share Payment.....	35
C. Compliance Criteria	35
D. Responsiveness Criteria.....	36
E. Other Eligibility Requirements	36
i. Requirements for DOE/NNSA and non-DOE/NNSA FFRDCs Included as a Subrecipient	36
ii. Agreement Requirements for DOE/NNSA FFRDC Participating as a Subrecipient	37
F. Limitation on Number of Full Applications Eligible for Review	37
G. Questions Regarding Eligibility	38
IV. Application and Submission Information	39

A.	Application Process	39
B.	Application Forms	40
C.	Content and Form of Full Application	40
i.	Full Application Content Requirements.....	40
ii.	SF-424: Application for Federal Assistance	42
iii.	Project/Performance Site Location(s)	42
iv.	Technical Volume	42
v.	Project Summary for Public Release File	45
vi.	Project Management Plan	46
vii.	Resume File	46
viii.	SF 424A Budget Information – Non-Construction Programs (SF424) File	47
ix.	Budget Justification File.....	47
x.	Subaward Budget Justification (if applicable)	48
xi.	Authorization for DOE/NNSA FFRDC/NLs or non-DOE/NNSA FFRDCs/NLs (if applicable).....	49
xii.	Environmental Questionnaire	49
xiii.	Cost Share Commitment Letters (if applicable).....	49
xiv.	SF-LLL: Disclosure of Lobbying Activities (if applicable)	49
xv.	Waiver Requests: Foreign Entities and Performance of Work in the United States (if applicable).....	50
xvi.	Data Management Plan	51
xvii.	Other Commitment Letter(s).....	51
xviii.	Quality Jobs Plan.....	51
xix.	Diversity, Equity, Inclusion, and Accessibility (DEIA) Plan	52
xx.	Justice40 Initiative Plan Development Proposal.....	53
xxi.	Community and Stakeholder Engagement Plan Development Proposal	54
xxii.	Current and Pending Support	55
D.	Post Selection Information Requests	58
E.	Unique Entity Identifier (UEI) and System for Award Management (SAM)	59
F.	Submission Dates and Times	59
G.	Intergovernmental Review	60
H.	Funding Restrictions	60
i.	Allowable Costs	60
ii.	Pre-Award Costs	60
iii.	Performance of Work in the United States (Foreign Work Waiver).....	61
iv.	Construction	62
v.	Foreign Travel	62
vi.	Equipment and Supplies	62
vii.	Buy America Requirements for Infrastructure Projects	62
viii.	Davis-Bacon Act Requirements	63
ix.	Lobbying	65
x.	Risk Assessment.....	65
xi.	Invoice Review and Approval	66
xii.	Prohibition related to Foreign Government-Sponsored Talent Recruitment Programs	66
V.	Application Review Information	69
A.	Technical Review Criteria	69
i.	Full Applications	69
B.	Standards for Application Evaluation	73
C.	Other Selection Factors	73
i.	Program Policy Factors	73
D.	Evaluation and Selection Process	74
i.	Overview.....	74
ii.	Recipient Integrity and Performance Matters.....	74
iii.	Selection	74

E.	Anticipated Notice of Selection and Award Negotiation Dates	75
VI.	Award Administration Information.....	76
A.	Award Notices	76
i.	Ineligible Submissions.....	76
ii.	Full Application Notifications.....	76
iii.	Successful Applicants.....	76
B.	Administrative and National Policy Requirements.....	77
i.	Registration Requirements.....	77
ii.	Award Administrative Requirements	78
iii.	Foreign National Participation (September 2021)	78
iv.	Subaward and Executive Reporting.....	78
v.	National Policy Requirements	79
vi.	Environmental Review in Accordance with National Environmental Policy Act (NEPA)	79
vii.	Flood Resilience.....	79
viii.	Applicant Representations and Certifications	79
ix.	Statement of Federal Stewardship	81
x.	Statement of Substantial Involvement.....	81
xi.	Subject Invention Utilization Reporting.....	83
xii.	Intellectual Property Provisions	84
xiii.	Reporting	84
xiv.	Go/No-Go Decision Points.....	84
xv.	Conference Spending.....	85
xvi.	Uniform Commercial Code (UCC) Financing Statements	85
xvii.	Implementation of Executive Order 13798, Promoting Free Speech and Religious Liberty	85
xviii.	Participants and Collaborating Organizations	86
xix.	Current and Pending Support.....	86
xx.	U.S. Manufacturing Commitments.....	86
xxi.	Interim Conflict of Interest Policy for Financial Assistance Policy	87
xxii.	Fraud, Waste and Abuse.....	88
xxiii.	Human Subjects Research	89
xxiv.	Indemnity	90
VII.	Questions/Agency Contacts.....	91
VIII.	Other Information.....	92
A.	FOA Modifications.....	92
B.	Government Right to Reject or Negotiate.....	92
C.	Commitment of Public Funds	92
D.	Treatment of Application Information	92
E.	Evaluation and Administration by Non-Federal Personnel	93
F.	Notice Regarding Eligible/Ineligible Activities	93
G.	Notice of Right to Conduct a Review of Financial Capability	94
H.	Requirement for Full and Complete Disclosure	94
I.	Retention of Submissions.....	94
J.	Title to Subject Inventions.....	94
K.	Government Rights in Subject Inventions.....	95
L.	Rights in Technical Data	96
M.	Copyright.....	97
N.	Export Control	97
O.	Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment	97
P.	Personally Identifiable Information (PII)	97
Q.	Annual Independent Audits	98

Appendix A: CO₂ Pipeline Concept Studies	100
Appendix B: Basis for ES&H Analysis.....	101
Appendix C: Regulatory Plan	103
Appendix D: Workforce Readiness Plan Template.....	105
Appendix E: Community Benefits Plan Requirements	108
Appendix F: Principles for an Effective Consent-Based Project Siting Process	116
Appendix G: Business Case Analysis	118
Appendix H: Data Management Plan	120
Appendix I: Project Management Plan Guidance	122
Appendix J: Cost Share Information.....	127
Appendix K: Waiver Requests For: 1. Foreign Entity Participation; and 2. Foreign Work	132
Appendix L: Required Use of American Iron, Steel, Manufactured Products, and Construction Materials	135
Appendix M: Statement of Project Objectives	139
Appendix N: List of Acronyms.....	144

I. Funding Opportunity Description

A. Background and Context

Demand for carbon capture, utilization, and storage (CCUS) technologies to meet climate goals is growing and will continue to grow in the foreseeable future. The International Energy Agency (IEA) 2020 World Energy Outlook suggests that CCUS could contribute approximately 15% of cumulative emissions reductions world-wide¹ and estimates in the Net Zero Emissions Scenario that the scale will increase to 7.6 Gigatons (Gt) per year for CCUS and to 1.9 Gigatons (Gt) for Carbon Dioxide Removal (CDR) per year by 2050.² The Intergovernmental Panel on Climate Change (IPCC) AR6 Working Group III Report further confirms the need for the deployment of carbon dioxide removal and building of a carbon management industry to achieve global net zero goals.³

On November 15, 2021, President Joseph R. Biden, Jr. signed the Infrastructure Investment and Jobs Act (Public Law 117-58), also known as the Bipartisan Infrastructure Law (BIL). The BIL authorizes a total of \$100 million for the five-year period encompassing fiscal years (FYs) 2022 through 2026 for the Carbon Capture Technology Program's (Section 962 of the Energy Policy Act of 2005, as amended by Section 40303 of the BIL) Front-End Engineering and Design (FEED) Program for CO₂ infrastructure projects. The United States will likely have to capture, transport, and permanently store significant quantities of carbon dioxide from stationary point sources and CDR facilities to reach the Biden Administration's decarbonization goals of a net-zero GHG emissions economy by 2050, as highlighted in *The Long-Term Strategy of the United States: Pathways to Net-Zero Greenhouse Gas Emissions by 2050*, published in November 2021.⁴ Meeting these decarbonization goals will require strategic planning and accelerated development of CO₂ transport infrastructure to support CCUS and CDR projects at a fully-commercial scale.

This funding opportunity announcement (FOA) will fund FEED studies that support and accelerate the planning for CO₂ transport by a variety of modes, such as through rail, trucks, ships, and pipelines. Due to the immediate need for CO₂ transport servicing multiple points of capture and one or more points of storage, the first round of solicited applications will prioritize CO₂ pipeline projects with two or more carbon capture sources connected to one or more secure geologic storage locations and/or to one or more CO₂ conversion locations (e.g., a location that converts CO₂ into carbon-based chemicals and/or materials). The CO₂ must be derived only from anthropogenic sources which could include CO₂ derived by direct capture from

¹ <https://www.iea.org/reports/ccus-in-clean-energy-transitions/ccus-in-the-transition-to-net-zero-emissions>

² <https://www.iea.org/reports/world-energy-model/net-zero-emissions-by-2050-scenario-nze>

³ <https://www.ipcc.ch/working-group/wg3/>

⁴ <https://www.whitehouse.gov/wp-content/uploads/2021/10/US-Long-Term-Strategy.pdf>

ambient air and must be delivered to CO₂ conversion sites or secure geologic storage facilities. DOE may give priority to projects sited in different regions that will provide DOE with increased understanding of the diversity of CO₂ transport costs, transport network configurations, technical, regulatory, and commercial considerations to inform DOE's research and development (R&D) strategy and to encourage commercial-scale deployment of CCUS and CDR.

Today, there are approximately 5,000 miles of CO₂ pipelines across the United States with projections of significant scale up of transport capacity demand to align with decarbonization goals. Larson et al. (2021) carried out an investigation of five diverse U.S. emission reduction pathways to achieve net-zero by 2050 in the *Net Zero America: Potential Pathways, Infrastructure and Impacts* study.⁵ Larson et al projects that over 13,000 miles (21,000 km) of CO₂ transport trunk pipelines and over 52,000 miles (85,000 km) of spur pipelines will be required by 2050 to service the secure geologic storage of approximately 1 billion metric tons of CO₂ per year. In the near-term, development of the needed infrastructure must begin within this decade. In the same study, Larson et al. models that by 2030, an injection rate of 65 million metric tons of CO₂ per year and development of over 11,000 miles (19,000 km) of pipelines will be required. This finding is also supported in the 2021 National Academies of Sciences, Engineering, and Medicine report *Accelerating Decarbonization of the U.S. Energy System*, which conducted a review of U.S. decarbonization studies.⁶

CCUS and CDR deployment can and should reduce emissions of other kinds of pollution such as sulfur dioxide and particulate matter in addition to CO₂ pollution; protect communities from increases in cumulative pollution; and maintain and create good, high-wage jobs across the country. This FOA includes requirements related to economic impact and investing in the American workforce; community and labor stakeholder engagement; energy and environmental justice and the Justice40 Initiative; and diversity, equity, inclusion and accessibility (DEIA). These requirements will improve public engagement, create opportunities for communities to help shape projects, and obtain data to support legislative and governmental decision-making. In keeping with the administration's goals, and as an agency whose mission includes strengthening our country's energy prosperity, DOE intends to use this program to support the creation of good-paying jobs with the free and fair choice to join a union, by adopting strong labor standards, and investments in workforce development, especially registered apprenticeships, and quality pre-apprenticeships. This FOA will require broad stakeholder engagement, including interaction with members of energy, labor, industrial, neighboring, and disadvantaged communities. The FEED studies will include community engagement input in identifying alternative routes and applicable safety mitigation measures, where appropriate.

⁵ <https://netzeroamerica.princeton.edu/the-report>

⁶ <https://nap.nationalacademies.org/catalog/25932/accelerating-decarbonization-of-the-us-energy-system>

i. Program Purpose

In accordance with the language in 42 USC 16292, BIL Section 40303, the objective of this FOA is to support completion of FEED studies for regional-scale anthropogenic CO₂ transport projects that can contribute to economies of scale; transport volume growth; support system efficiency of energy use and economics; and maximize optionality and connectivity of disparate CO₂ source, conversion, and storage locations. Applications are being sought for commercial-scale CO₂ pipeline projects, in particular open access or common carrier pipeline projects that connect multiple potential regional CO₂ hubs for source and storage options (e.g., Midcontinent to Gulf Coast, Midwest to Rockies, etc.), or pipeline projects that connect local CO₂ sources with storage and conversion options, to form an integrated regional CO₂ storage hub. Other modes of CO₂ transport, including barge, rail, ship, and truck transport, will be considered in future funding years under the same FOA.

Local CO₂ source and storage applications are defined as intrastate projects with two or more carbon capture sources connected to one or more secure geologic storage locations and/or to one or more CO₂ conversion locations. Similarly, regional CO₂ source and storage applications that cross one or more state lines are defined as interstate projects and should also include more than one single source and storage/conversion option. Recognizing that important future CO₂ sources (e.g., from direct air capture) might not yet exist, this FOA seeks to encourage pipeline developers to consider future demand by constructing open access or common carrier pipeline infrastructure with sufficient capacity to support future additional CO₂ sources and storage/conversion options.

The FEED studies are expected to cost between \$750,000 and \$3,000,000, depending on a variety of factors, including but not limited to scale, terrain, region, size, volume, power supply, CO₂ capture, conversion, and storage parameters. DOE proposes to provide funding up to a ceiling of \$3,000,000 for 6+ projects per year based on their technical merit, commercial and regulatory viability, and strategic value to the CCUS and CDR industry. A single pipeline or pipeline network that increases connectivity within and between regions can enhance flexibility, accelerate the achievement of economy of scale, and spur future development that otherwise would not have been feasible. Applicants are encouraged to propose projects with consideration for the creation and integration into a hub and cluster configuration, rather than a standalone CCUS pipeline. Applicants are also encouraged to propose projects that will repurpose existing pipeline(s) into CO₂ service. For any given set of sources and sinks, DOE will fund only one pipeline FEED study.

The intent is to develop community-informed CO₂ pipeline infrastructure based on designs for right-sized, optimized, and prioritized trunk line routes and build-

out timelines that serve the cost-effective, efficient, equitable, and environmentally responsible expansion of CCUS and CDR operations. Pipeline design should be able to accommodate the intended CO₂ pressure and CO₂ quality and quantity from the carbon capture plant “gate” to the intended storage or conversion site. Proposed pipelines must adhere to and comply with the U.S. Department of Transportation (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA) federal carbon dioxide pipeline regulations. DOE is also interested in how pipeline regulations for the siting and permitting of CO₂ transport, which vary state by state, are expected to impact the anticipated feasibility and timeline for a project.

This FOA is complementary to BIL Section 40304 Carbon Dioxide Transportation Infrastructure Finance and Innovation (CIFIA) federal loan and grant program for common carrier transportation infrastructure. Awarded projects may also be eligible for participation in CIFIA. Projects designed to accommodate estimated future needs may also be eligible to apply for CIFIA’s Future Growth Grant program.

ii. Technology Space and Strategic Goals

This FOA is focused on FEED studies of commercial-scale CO₂ pipeline projects that transport CO₂ from anthropogenic sources to CO₂ conversion plants and/or to secure geologic storage facilities, with an emphasis on FEED studies in different geographic regions that will provide DOE with increased understanding of CO₂ transport costs; transport network configurations; and technical, regulatory, and commercial considerations to inform DOE’s research, development, and demonstration (RD&D) strategy and to encourage fully commercial-scale deployment of CCUS and CDR.

The intent of this FOA is to award projects with consideration for the creation and integration of a hub and cluster configuration, rather than a standalone CCUS/CDR pipeline(s). Applicants are also encouraged to propose projects that will repurpose existing pipeline(s) into CO₂ service.

iii. Community Benefits

To achieve the greatest impact for all Americans with this once-in-a-generation investment in infrastructure, it is critical that BIL-funded projects invest in America’s workforce, mitigate new impacts, and deliver tangible and measurable benefits to impacted communities. Projects that fail to do this may fail to gain social support, and may in turn decrease support for future projects.

To ensure projects offer opportunities, maximize benefits and minimize negative impacts, applications must include strategies to address societal considerations and impacts (SCI). For evaluation for BIL-funded projects, this FOA asks for a Community Benefits Plan in line with other BIL efforts. This plan uses standard language to help applicants applying for multiple programs, and includes:

- A Quality Jobs Plan;
- A Diversity, Equity and Inclusion, and Accessibility (DEIA) Plan;
- A Justice40 Initiative (J40) Plan Development Proposal; and
- A Community, Labor, and Stakeholder Engagement (Engagement) Plan Development Proposal.

If awarded, applicants must implement, evaluate, and update these plans throughout the life of the project. In addition, applicants will be required to report on DEIA, J40, Engagement, and Quality Jobs progress and outcomes throughout the project lifecycle and the final report. Applicants are encouraged to submit letters of support from established labor and community-based organizations that demonstrate the applicant's ability to achieve the above goals as outlined in the Community Benefits Plan. Within the Community Benefits Plan, the applicant is encouraged to provide specific detail on how to ensure the delivery of measurable community and jobs benefits, e.g. through the use of tools such as good neighbor agreements, community workforce agreements, project labor agreements, other collective bargaining agreements, or similar agreements. These priorities are explained in more detail below in Section D – Community Benefit.

B. Area of Interest

i. General Information for Area of Interest

Area of Interest: Front-End Engineering and Design Studies for CO₂ Pipeline Infrastructure (Onshore and Offshore)

Applicants will propose to execute and complete front-end engineering and design (FEED) studies for a commercial-scale open access or common carrier CO₂ pipeline system, capable of transporting anthropogenic CO₂ from one or more carbon capture sources to one or more carbon sinks. For carbon capture sources, it is acceptable for applications to include a combination of CO₂ removal (e.g., direct air capture and biomass carbon removal and storage (BiCRS)), and point sources (e.g., industrial and power generation). For carbon sinks, it is acceptable for the applications to include a combination of one or more secure geologic storage location(s) and/or one or more CO₂ conversion location(s). CO₂ pipeline systems proposed to this FOA should have already completed a concept or basic

feasibility study that demonstrates a basic level of market interest and commercial viability. Prior or existing FEED studies will not be considered as pre-award costs. The applicant should select and propose specific pipeline corridor(s) or route(s), identify plausible options for CO₂ storage and/or CO₂ conversion, and develop a strong case for why the investment should be made for the pipeline system in light of the capture, conversion, and storage options developed and the applicable state regulatory landscape. However, the FEED study should **not** include work to design the CO₂ capture, conversion, or geological storage systems. Pipeline design should be able to accommodate the intended CO₂ pressure, quality, fluid phase(s), and quantity at the carbon capture plant “gate” to the intended conversion or storage solution at appropriate standard operating pressures and temperatures.

DOE is working with our partners including the U.S. Department of Interior (DOI) Bureau of Safety and Environmental Enforcement (BSEE) and Bureau of Ocean Energy Management (BOEM), and U.S. Department of Transportation (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA) to ensure a safe and reliable CO₂ transport network that supports the deployment of CCUS and CDR. As part of these FEED study deliverables, additional critical safety and risk requirements may support future regulatory development processes.

If awarded, selected FEED projects will perform the scope of work needed to produce FEED study deliverables including, but not limited to:

1. Project Scope and Design that includes business objectives and a summary of the proposed project. This document must describe whether the pipeline(s) will be an open access or common carrier pipeline and how the proposed pipeline system(s) can help accelerate CCUS/CDR development.
2. Project Parameters including, but not limited to:
 - a. Site characteristics and ambient conditions;
 - b. Product gas compositions including maximum and minimum limits;
 - c. Permit list and review and approval agencies;
 - d. Land use, right-of-way, utility corridors, property boundaries, and title research;
 - e. Project environment, safety and health (ES&H) criteria including pipeline construction and operational impacts to communities and the environment, as well as pipeline failure risk analysis and risk acceptance criteria for pipeline operations;
 - f. Project management plan and an updated risk register; and
 - g. Overall project schedule in a Gantt chart.
3. Engineering Design Package including, but not limited to:
 - a. A Route Report and Maps, complete with:

- i. A Geographic Information Systems (GIS) database to house all route and survey information;
 - ii. Pipeline route map incorporating aerial photography, right-of-way and workspace, environmental features (waterways, streams, rivers, canals, lakes, wetlands, etc.), topography, elevation profiles, hydrological data, pipeline materials, foreign crossings, and others;
 - iii. Crossing and right-of-way investigation or survey including elevation, crossing methods, constructability, proposed mitigation, land use, access, workspace configuration, and other relevant information at key locations;
 - iv. Geotechnical and hydrotechnical investigations (desktop or field) that consider extreme weather scenarios and other ground movement force considerations aligned with DOT PHMSA's Integrity Management Program and relevant advisory bulletins for all pipelines such as the June 2022 bulletin (Docket PHMSA-2022-0063) titled "Pipeline Safety: Potential for Damage to Pipeline Facilities Caused by Earth Movement and Other Geological Hazards;"⁷
 - v. Wetland and environmental survey or investigation information;
 - vi. Cultural and archeological survey or investigation information;
 - vii. Population density study including major roads and waterway crossings and preliminary High Consequence Area (HCA) determination; and
 - viii. Site selection for aboveground facilities including booster stations, meter stations, launchers and receivers, and mainline block valves.
- b. A Design Basis document that covers:
- i. Operating philosophy;
 - ii. All applicable codes, regulations, standards, specifications, pipe specifications including fracture toughness, and procedures;
 - iii. Design criteria including metallurgical requirements to address ductile fracture propagation including length for fracture arrest based upon material;
 - iv. Route selection process;

⁷ [PHMSA Land Movement Advisory Bulletin.pdf \(dot.gov\)](https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/2022-05/PHMSA%20Land%20Movement%20Advisory%20Bulletin.pdf) - <https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/2022-05/PHMSA%20Land%20Movement%20Advisory%20Bulletin.pdf>

- v. Material and pipe coating specifications including specifications for fracture arrest (maximum arrest distance) and selection;
 - vi. Crossing design including waterways, roads, interstate highways, and railroads including horizontal directional drilling requirements;
 - vii. Corrosion control including location of ground beds;
 - viii. Integrity management including inline inspection of the pipeline;
 - ix. Location of mainline valves for isolation including public safety, waterbody crossings and rupture isolation and detection;
 - x. Supervisory Control and Data Acquisition (SCADA) System and Leak Detection System with pressure and flow monitoring including rupture mitigation valves (RMV) that will isolate pipeline segments within 30 minutes or less;
 - xi. Determination of Maximum Operating Pressure and Minimum Operating Pressure including placement of overpressure safety devices;
 - xii. Pipeline “venting design” and location options at pump stations, mainline valves, and laterals for public safety and minimizing gashouse gas protection; and
 - xiii. Building monitoring designs and equipment to detect and notify personnel of unsafe conditions.
- c. Key Design Calculations and Drawings that cover:
 - i. Pressure design and Maximum Operating Pressure (MOP) determination;
 - ii. Hydraulic analysis;
 - iii. Pipeline and equipment sizing;
 - iv. Material take-off;
 - v. Process flow diagram (PFD) and Preliminary Piping and Instrumentation diagram (P&ID); and
 - vi. Power requirements, sources, costs, and timing.
 - d. Technical Specifications for major materials and activities, including but not limited to pipe, valves, facilities, rotating or static equipment, inline inspection (pigging) facilities, measurement facilities, leak detection, SCADA, controls, communications, buildings, electrical sub-stations, construction, surveying, and others.
 - e. Preliminary Hazard and Operability Analysis (HAZOP).
 - f. If converting a pipeline to CO₂ service, a preliminary conversion-to-service plan for DOT PHMSA regulatory compliance that

includes an integrity assessment plan to demonstrate fitness for service and/or applicable regulatory compliance for offshore pipelines.

- g. Additional critical safety and risk assessments:
 - i. Conducting an Air Dispersion and Potential Impact Radius (PIR) study including terrain and overland flow considerations for determining the effect on any populated areas. It may be required to consider pipeline set-back distances from dwellings for human occupancy;
 - ii. Providing an Emergency Response Plan (ERP) including training and outreach for emergency responders and local communities, as appropriate;
 - iii. Consideration of additional safety critical equipment and redundant safety design such as crack arrestors (or pipe toughness (Charpy Impact Value) and enhanced shut off capabilities in the event of a catastrophic failure including mainline valve spacing and RMV locations;
 - iv. Consideration of odorant additives for CO₂; and
 - v. Consideration of additional distance for pipeline setback in populated areas.
- h. Construction Specifications to meet 49 CFR Part 195:
 - i. Right of way clearing, grading, and ditching;
 - ii. Depth of soil cover and minimum spacing from dwelling;
 - iii. Welding Requirements;
 - iv. 100% Non-Destructive Testing of pipeline girth weld;
 - v. Pressure testing per the requirements in 49 CFR 195.304;
 - vi. Coating;
 - vii. Backfill to protect the pipe and coating;
 - viii. Pipe Bending requirements; and
 - ix. Clean-up of the right of way.
- i. Environmental Specifications:
 - i. Monitoring;
 - ii. Structures, such as for waterbody crossings, to minimize construction damage to the environment;
 - iii. Wetland, river, lake, major stream crossings and horizontal directional drills; and
 - iv. Soil erosion mitigation measures and structures and monitoring after construction for 1 year.
- j. Commissioning

- 4. **Project cost estimate.** Design of the pipeline system shall support an itemized capital cost estimate consistent with AACE (Association of the Advancement of Cost Engineering) Class 3 with an expected accuracy range

of -10% to -20% on the low side and +10% to +30% on the high side. The cost estimate should include a basis of estimate for each item. Successful applicants should provide a benchmark study for the overall cost estimate, if available. Successful applicants will be required to submit a pipeline buildout plan with a P-10, P-50 and P-90 project cost analysis based on the acquisition and installation of CO₂ transport pipeline networks that fulfill the Build America, Buy America Act provisions in the Bipartisan Infrastructure Law (BIL).

5. **Business case analysis.** Successful applicants will be required to prepare the business case analysis in the format provided in Appendix G and submit it within 90 days of project completion. This business case analysis should include the addressable market, development scenarios, proposed business model structure, risk allocation, basic commercial terms, a revenue model, government incentives, financing costs, financial assumptions, and sensitivity analysis discussion. If the plan includes the use of current 45Q tax credits, the business case analysis shall include, at a minimum, details on the anticipated revenue and duration of the credits. Successful applicants should provide a projected use for the pipeline infrastructure over the next 50 years including types of CO₂ sources and sinks in the present and future that will be available to utilize the pipeline infrastructure.
6. **Environmental, Safety and Health (ES&H) analysis.** Successful applicants will be required to prepare an ES&H analysis of the proposed project and submit it within 90 days of project completion in accordance with the format provided in Appendix B. ES&H analysis should include a discussion regarding emissions to air and water, solid waste streams, water use, and potential environmental and health impacts of the project.
7. **Regulatory Plan analysis.** The Regulatory Plan analysis shall set forth the applicant's plans and actions to engage with state and federal regulators and receive the necessary regulatory approvals for the proposed project. Successful applicants must submit a Regulatory Plan that demonstrates how the deployment of the proposed CO₂ transport system will meet or exceed state and federal permitting and other regulatory requirements associated with construction and operation of the proposed CO₂ transport system. Successful applicants will demonstrate the ability of a plan to exceed the minimum health, environment, and safety regulatory requirements. In conjunction with the Community and Stakeholder Engagement Plan, the Regulatory Plan shall identify if community and stakeholder support has been obtained or opposition has been received by the applicant. If awarded, applicants must implement, evaluate, and update this plan throughout the life of the project at the direction of DOE.

In addition, recipients will be required to report on regulatory approval progress and outcomes throughout the project lifecycle and the final report, including the potential or actual use of eminent domain.

8. Required Community Benefits Plan

Recipients are expected to conduct societal considerations and impacts work through the life of the project. This involves understanding and addressing potential energy and environmental justice issues during the planning and design of their CO₂ transport project, and ensuring opportunities for economic revitalization and investing in the American workforce in the communities near the proposed project. Community residents, workers and key stakeholders that could be affected negatively or positively should be identified and engaged in the process such that they have input throughout the project's lifecycle **that meaningfully informs and shapes the development and implementation of the project.** Recipients will explain how societal considerations work will be completed through preparing a Community Benefits Plan, which includes plans for investing in the American workforce, DEIA, labor and community engagement, and environmental justice. The Community Benefits Plan will be evaluated as part of the technical review process. If the project is selected, DOE will incorporate the Community Benefits Plan into the award and the recipient will be required to meet the Community Benefits Plan it proposed. During the life of the DOE award, DOE will evaluate the recipient's progress, including as part of the Go/No-Go review process.

Important information about the Community Benefits Plan:

- The Community Benefits Plan will be implemented by FOA awardees during the project and updated during the project lifecycle.
- Plans and Plan Development Proposals will be evaluated under Merit Review Criterion 4.
- Successful applicants are requested to include work relevant to each plan within the Statement of Project Objectives (SOPO).
- For each plan, the recipient should include at least one SMART (Specific, Measurable, Assignable, Realistic and Time-Related) milestone per calendar year for reporting on work relevant to it in the SOPO. This work should include success measurement metrics for plan actions.
- The recipient should allocate staff time and budget for at least one team member to present in person on societal benefits and impacts Project Work, including DEIA, at a public meeting

convened with support of the DOE. Successful applicants will be required to present a Mid-Project Update on social dimensions work which will be part of peer review.

- A public End-of-Project Progress Report is required, which covers the final Community Benefits Plan, accomplishments, and findings. It will be included in the project's overall final report.

ii. **Technical Requirements**

For this FOA, applicants **must** address the following technical requirements in the Technical Volume:

1. **CO₂ capture sources, conversion options, geologic storage options, and pipeline route description.** The applicant must select and propose pipeline route(s) located in the United States. Applicants that propose a pipeline that crosses international borders is allowable, but DOE funds can only be used for the portion of the FEED study within the borders of the United States. The applicant can use applicant funds for any costs associated with the pipeline outside of the United States, but cannot use DOE funds. The route description should be of sufficient resolution to discern the towns, cities, and counties in which it is located. The description should also identify any environmentally sensitive areas, high consequence areas (HCAs), major hazards and crossings (including population areas, freeways, major 4-lane highways, rivers, waterbodies, wetlands, lakes, etc.), alternative route options, and whether there are existing pipelines that can be converted to CO₂ service or existing rights-of-way that can be used for the proposed project. The chosen route description should also consider the impacts of climate change within the life span of the pipeline infrastructure against alternative routes. The applicant must include the name of the entity that will operate the pipeline system, and a statement of its pipeline operating history, qualifications, and record. The application should identify plausible target sources of anthropogenic CO₂ and options for CO₂ conversion and storage. If applicable, the applicant should submit letters of commitment from CO₂ sources (i.e., carbon dioxide removal approaches including direct air capture and biomass carbon removal and storage, industrial, and/or power plants located exclusively in the United States) and CO₂ conversion and/or CO₂ geologic storage locations. Letters must be signed by the person authorized to commit resources on behalf of the CO₂ capture source or CO₂ conversion and/or CO₂ geologic storage organization. Each letter must demonstrate that the organization has agreed to participate in the project. If applicable, the applicant should submit prior studies performed to characterize the identified geologic storage.

2. **Gas compositions, volume aggregation, and suitability for transport and storage.** The application must describe the target anthropogenic CO₂ sources, the basic processes of these carbon dioxide removal or point source approaches, anticipated CO₂ quantities, plant gate pressures and temperatures of the CO₂ and product compositions at each source, the aggregated volume and quality of the CO₂ stream in pipelines, and its suitability for transport and storage at the target secure geologic storage site(s) or CO₂ conversion location.
3. **Summary of a Pre-FEED or concept study.** The application must describe any existing conceptual design, feasibility, or pre-FEED studies that have been performed and their findings. These details include, but are not limited to, system/network configuration, process flow, pipe and equipment sizing, power requirements, major facilities, desktop review of impacts to sensitive resources, permitting requirements, land use and ownership, basic project risk registers, ES&H criteria, a preliminary project schedule, and a AACE Class 4 or 5 cost estimate along with a basis of estimate.
4. **Preliminary business case analysis.** The application must include a preliminary business case analysis to demonstrate an understanding of the current and projected commercial viability of the proposed project. This analysis should identify the market size, business drivers, rationale for the proposed sources and sinks to be connected, projected revenue sources, expenses, anticipated return on investment (ROI), growth opportunities in the region(s) in which the proposed project is located, along with a list of key economic and financial assumptions. The application must also clearly state whether the proposed project will be an open access or common carrier pipeline to all interested shippers and is considering capacity for future CO₂ sources. Applicants should provide a projected use for the pipeline infrastructure over the next 50 years including types of CO₂ sources and sinks in the present and future that will be available to utilize the pipeline infrastructure. The preliminary business case analysis must also include a discussion of the applicant's plan to address any environmental risks, human safety risks, and/or impacts over the lifetime of the pipeline. Environmental risks, human safety risks, and impacts include, but are not limited to, an adverse impact to air, soil, water, or increase in overall cradle to grave greenhouse gas footprint (carbon dioxide equivalent, CO₂e). Successful applicants will be required to submit a final Business Case Analysis within 90 days of project completion that shall be prepared in the format provided in Appendix G. The preliminary Business Case Analysis included in the application should be prepared based upon prior engineering design and costing work, and does not necessarily have to conform to the requirements in Appendix G.

5. **Regulatory Plan Analysis.** Applicants are required to submit a Regulatory Plan analysis of the proposed project at the time of application submission in accordance with the requirements and format provided in Appendix C. The Regulatory Plan shall set forth the applicant's plans and actions to engage with state and federal regulators and receive the necessary regulatory approvals for the proposed project. Applicants must submit a Regulatory Plan that demonstrates how the deployment of the proposed CO₂ transport system will meet or exceed state and federal regulatory requirements. The Regulatory Plan shall identify the regulatory approvals needed for the proposed CO₂ transport system to operate. Successful applicants will demonstrate the ability of a plan to exceed the minimum health, environment, and safety regulatory requirements. In conjunction with the Community and Stakeholder Engagement Plan, the Regulatory Plan shall identify if community and stakeholder support has been obtained or opposition has been received by the applicant. The plan will be evaluated as part of the technical review process.
6. **Community Benefits Plan.** Applicants will be required to submit analysis and assessment of societal considerations, impacts, and benefits), as well as outline the resources needed to fully develop and implement Community Benefits Plans. Please see the full requirement as described in the appropriate sections of IV.C and as detailed Appendix E.

iii. **Carbon Matchmaker**

Applicants have access to Carbon Matchmaker, which may be utilized to facilitate the formation of new project teams for this FOA. Carbon Matchmaker is an online information resource to connect users across the carbon capture, utilization, and storage (CCUS) and carbon dioxide removal (CDR) supply chains. Carbon matchmaker will:

- Enable a teaming mechanism to support geographically diverse CCUS/CDR projects across the United States, including with relevant labor unions;
- Increase awareness and facilitate development of regional carbon management hubs, including alongside hydrogen hub development where relevant;
- Provide domestic and international community, industry, and technology development stakeholders with carbon dioxide supply and demand maps for current and planned projects; and
- Highlight past and currently funded DOE carbon management projects in a geospatial map.

Carbon Matchmaker is intended to help facilitate regional carbon management team formation by allowing carbon management producers, end-users, labor unions, and other stakeholders to self-identify and align potential needs in specific geographic areas within the United States. Carbon Matchmaker allows organizations who may wish to participate on an application to express their interest to other applicants and to explore potential partnerships.

Participation by underrepresented partners and suppliers is encouraged. Teams that include representation from diverse entities such as, but not limited to: Minority Serving Institutions (MSIs), including Historically Black Colleges and Universities (HBCUs)/Other Minority Institutions (OMIs), or through linkages with Opportunity Zones, are encouraged.

- Minority Serving Institutions (MSIs), including HBCUs/OMIs as educational entities recognized by the Office of Civil Rights (OCR), U.S. Department of Education, and identified on the OCR's Department of Education U.S. accredited postsecondary minorities' institution list. See <https://www2.ed.gov/about/offices/list/ocr/edlite-minorityinst.html>.
- Opportunity Zones were added to the Internal Revenue Code by Section 13823 of the Tax Cuts and Jobs Act of 2017, codified at 26 U.S.C. 1400Z-1. The list of designated Qualified Opportunity Zones can be found in IRS Notices 2018-48 (PDF) and 2019-42 (PDF). Further, a visual map of the census tracts designated as Qualified Opportunity Zones may also be found at Opportunity Zones Resources. Also see, frequently asked questions about Qualified Opportunity Zones.

Interested applicants can follow the submission instructions on the Carbon Matchmaker website at, <https://www.energy.gov/fecm/carbon-matchmaker>. Please indicate if DOE's Carbon Matchmaker enabled or connected partnerships of participants in the application. If so, please describe. This is merely to evaluate the effectiveness and to continually improve the matchmaker tool.

Note: Participation in the Carbon Matchmaker online resource is voluntary. Participation, or lack thereof, will not have any impact on an organization being selected for award. All provided data is self-reported by interested stakeholders and is not furnished by DOE. DOE does not recommend, endorse, or otherwise evaluate the qualifications or validity of any entities or data that were self-reported on this platform. DOE will not fund the provision of any information, nor will it compensate any applicants or requesting organizations for the development of such information.

C. Applications Specifically Not of Interest

The following types of applications will be deemed nonresponsive and will not be reviewed or considered (See Section III.D. of the FOA):

- Submissions that are single CO₂ source and single CO₂ conversion/geologic storage location proposals;
- Submissions that include non-anthropogenic CO₂ sources;
- Submissions for new or converted pipelines that do not adhere to local, state, and DOT PHMSA CO₂ pipeline regulations for new pipelines;
- Submissions for conversion of pipelines that do not adhere to relevant local, state, and/or federal carbon dioxide pipeline regulations;
- Submissions that request funding in excess of the maximum DOE share as outlined in Section II Award Information;
- Submissions for proposed technologies that are not based on sound scientific principles (e.g., violates the laws of thermodynamics);
- Submissions to advance the maturation of CO₂ transport technologies, apart from the required design of a front end engineering and design study system;
- Submissions that include costs for designing and constructing new electric generation and industrial facilities; and
- Submissions for basic research aimed solely at discovery and/or fundamental knowledge generation.

D. Community Benefits Plan

Technology research, development, and deployment will likely be more successful if equity and justice principles and community and labor engagement and partnership development are integrated into funding opportunities. For example, failing to meaningfully engage with communities and labor stakeholders has been a contributing factor to delays or cancellations of energy and carbon management projects in the past. However, with meaningful engagement, communities and labor stakeholders can be project partners whose questions and concerns can improve overall project outcomes. This is clear from feedback obtained from FECM stakeholders,^{8,9} requests for information,¹⁰ published research, and information obtained from FECM project work.

⁸ <https://usea.org/event/departement-energy-public-community-listening-session-regarding-carbon-management>

⁹ [Virtual Carbon Management Applicant Education Workshop | USEA | United States Energy Association](#)

¹⁰ [Request for Information; FedConnect: Opportunity Summary](#)

Therefore, a Community Benefits Plan is required, which consists of:

- A Quality Jobs Plan;
- A Diversity, Equity and Inclusion, and Accessibility (DEIA) Plan;
- A Justice40 Initiative Plan (J40 Plan) Plan Development Proposal; and
- A Community, Labor and Stakeholder Engagement Plan (Engagement) Plan Development Proposal.

Each plan, when fully developed, should include at least one SMART (Specific, Measurable, Assignable, Realistic and Time-Related) milestone per budget period supported by metrics to measure the success of the proposed actions.

The Community Benefits Plan will be evaluated as part of the technical review process. It includes content for all four elements, and if awarded, applicants must implement, evaluate, and update these plans throughout the life of the project. In addition, applicants will be required to report on societal considerations progress and outcomes throughout the project lifecycle and the final report if selected. In addition to ongoing updates to the plans, this involves:

- Updated J40 and Engagement Plan Development Proposals at 90 days;
- J40 and Engagement Plans, submitted 90 days after updated Plan Development Proposals are submitted;
- A public presentation and peer review on societal considerations and impacts work in an Mid-Project Update halfway through the performance period; and
- A public End of Project Progress Report on societal considerations and impacts work, including Community Benefit Plan progress, at end of award.

Applicants to this FOA are required to include information about how their project will support these efforts to deliver community benefits as described below and detailed in Appendix E.

Quality Jobs

As an agency whose mission includes strengthening our country's energy prosperity, the DOE strongly supports investments that expand high-quality, good-paying, union jobs, improve job quality through the adoption of strong labor standards, and support for responsible employers. DOE also supports strategies that develop a skilled and inclusive local workforce to build and maintain the country's energy infrastructure and grow domestic manufacturing. The Quality

Jobs Plan asks applicants to describe their plans to attract, train, and retain a skilled and well-qualified workforce to ensure project stability, continuity, and success.

Diversity, Equity, Inclusion, and Accessibility

DOE supports opportunities that improve job access and foster safe, healthy, and inclusive workplaces and communities. Applicants are highly encouraged to include individuals from groups historically underrepresented^{11,12} in STEM and/or applicable workforces on their project teams. Minority Serving Institutions, Minority Business Enterprises, Minority Owned Businesses, Woman Owned Businesses, Veteran Owned Businesses, or entities located in an underserved community that meet the eligibility requirements are encouraged to apply as the prime applicant or participate on an application as a proposed partner to the prime applicant.

Applicants are also required to describe how diversity, equity, inclusion, and accessibility objectives will be incorporated throughout the life of the project in a DEIA Plan that describes the actions the applicant will take to foster a welcoming and inclusive environment, support people from underrepresented groups in STEM and/or applicable workforces, provide quality pre-apprenticeships and supportive services for individuals with barriers to career-track training and employment, advance equity, and encourage the inclusion of individuals from these groups in the project.

Justice40 Initiative

Executive Order 14008 created the Justice40 Initiative – which established a goal that 40% of the overall benefits of certain federal investments flow to disadvantaged communities.¹³ This calculation of overall benefits of certain federal

¹¹ According to the National Science Foundation’s 2019 report titled, “Women, Minorities and Persons with Disabilities in Science and Engineering”, women, persons with disabilities, and underrepresented minority groups—blacks or African Americans, Hispanics or Latinos, and American Indians or Alaska Natives—are vastly underrepresented in the STEM (science, technology, engineering and math) fields that drive the energy sector. That is, their representation in STEM education and STEM employment is smaller than their representation in the U.S. population. <https://nces.nsf.gov/pubs/nsf19304/digest/about-this-report>. For example, in the U.S., Hispanics, African Americans and American Indians or Alaska Natives make up 24 percent of the overall workforce, yet only account for 9 percent of the country’s science and engineering workforce. DOE seeks to inspire underrepresented Americans to pursue careers in energy and support their advancement into leadership positions. <https://www.energy.gov/articles/introducing-minorities-energy-initiative>

¹² Minority Serving Institutions (MSIs), including Historically Black Colleges and Universities/Other Minority Institutions as educational entities recognized by the Office of Civil Rights (OCR), U.S. Department of Education, and identified on the OCR’s Department of Education U.S. accredited postsecondary minorities’ institution list. See <https://www2.ed.gov/about/offices/list/ocr/edlite-minorityinst.html>.

¹³ The Justice40 initiative, created by E.O. 14008, establishes a goal that 40% of the overall benefits of certain federal investments flow to (disadvantaged communities). The Justice40 Interim Guidance provides a broad definition of disadvantaged communities (Page 2): <https://www.whitehouse.gov/wp-content/uploads/2021/07/M-21-28.pdf>. The DOE, Office of Management and Budget (OMB), and/or the Federal Council on Environmental

investments is not on a per-project basis, meaning that individual projects may contribute more or less substantially to this goal (i.e., have a higher or lower percentage) based on factors unique to the project. Benefits include (but are not limited to) measurable direct or indirect investments or positive project outcomes that achieve or contribute to the following in disadvantaged communities: (1) a decrease in energy burden; (2) a decrease in environmental exposure and burdens; (3) an increase in access to low-cost capital; (4) an increase in job creation, the clean energy job pipeline, and job training for individuals; (5) increases in clean energy enterprise creation and contracting (e.g., minority-owned or disadvantaged business enterprises); (6) increases in energy democracy, including community ownership; (7) increased parity in clean energy technology access and adoption; and (8) an increase in energy resilience. Recipients of DOE funds should ensure that performance of project tasks within disadvantaged communities meaningfully benefits disadvantaged communities and does not result in increased burden to the disadvantaged community.

Applicants to this funding opportunity will be required to submit a J40 Plan Development Proposal. Note that applicants to this FOA are required to develop a Justice40 plan regardless of whether or not a project or work site is located within a disadvantaged community.

Community, Labor and Stakeholder Engagement

For projects funded under this FOA, recipients will be required to develop an Engagement Plan. The Engagement Plan shall set forth the applicant's plans and actions to engage with community stakeholders, such as labor unions, community-based organizations representing local residents and businesses, worker organizations, local government, emergency responders, communities with environmental justice concerns, and relevant Tribes/Alaska Native Corporations (ANCs). Communities involve both local communities — towns, cities or counties in geographic proximity to a project and Tribes/ANCs in close proximity to a project — and potentially, broader groups which experience common conditions, which will need to be identified and scoped as part of the Engagement Plan. Community engagement should involve discussions of regulatory and siting considerations, including eminent domain when applicable. Community and labor engagement should lay the groundwork for the eventual negotiation of a Workforce and Community Agreement, which could take the form of one or more kinds of negotiated agreements with affected communities, such as Community Benefits Agreements, Project Labor Agreements, or others. Successful applicants will demonstrate the ability to develop a plan that would meet the intent of meaningful Tribal, community, and stakeholder engagement.

Quality (CEQ) may issue additional and subsequent guidance regarding the designation of disadvantaged communities and recognized benefits under the Justice40 Initiative.

Applicants are required to submit an Engagement Plan Development Proposal at time of application.

Appendix E describes in more detail what is requested in the Community Benefits Plan.

E. Authorizing Statutes

PL 117-58, Infrastructure Investment and Jobs Act (IIJA) Section 40303, Section 962 of the Energy Policy Act of 2005 as amended by Energy Act of 2020 (Division Z of the “Consolidated Appropriations Act, 2021”), see 42 USC 16292(b)(2)(E) and (d)(1)(E).

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.

F. Notice of Bipartisan Infrastructure Law-Specific Requirements

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

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

Recipients of funding appropriated by the BIL must comply with requirements of all applicable Federal, State, and local laws, regulations, DOE policy and guidance, and instructions in this FOA. Recipients must flow down the requirements to subrecipients to ensure the recipient’s compliance with the requirements. DOE will post guidance and instructions at <https://www.energy.gov/bil/bipartisan-infrastructure-law-homepage>.

II. Award Information

A. Award Overview

i. Estimated Funding

DOE expects to make a total of approximately \$92,000,000 of federal funding available for new awards under this FOA, subject to the availability of BIL funds. DOE anticipates making 6 or more awards per year under this FOA. DOE may issue one, multiple, or no awards. Individual awards may vary between \$750,000 and \$3,000,000 of federal funds.

Total Funding

FY	Total Value			Anticipated No. of Awards	Anticipated Individual Award Size		
	DOE Share \$K/%	Cost Share \$K/%	Total \$K		Maximum DOE Share* \$K/%	Cost Share** \$K/%	Total \$K
22	18,400/80	4,600/20	23,000	6+	3,000/80	750/20	3,750
23	18,400/80	4,600/20	23,000	6+	3,000/80	750/20	3,750
24	18,400/80	4,600/20	23,000	6+	3,000/80	750/20	3,750
25	18,400/80	4,600/20	23,000	6+	3,000/80	750/20	3,750
26	18,400/80	4,600/20	23,000	6+	3,000/80	750/20	3,750
Total	92,000/80	23,000/20	115,000	30+			

Table 1. Anticipated Award Sizes

*The DOE share listed under the anticipated individual award size is the maximum amount of DOE funding that can be proposed. **Applications that propose a DOE share in excess of the maximum limit will not be evaluated and will be considered noncompliant to the FOA.**

** The cost share must be at least 20% of the total project costs for research & development (R&D) projects. The cost share must come from non-federal sources unless otherwise allowed by law. To assist applicants in calculating proper cost share amounts, DOE has included a cost share information sheet and sample cost share calculation as Appendix J to this FOA.

ii. Period of Performance

There will be one area-of-interest (AOI): FEED Studies that will have a period of performance of 1-2 years.

iii. New Applications Only

DOE will accept only new applications under this FOA. DOE will not consider applications for renewals of existing DOE-funded awards through this FOA.

B. DOE Funding Agreements

Through cooperative agreements and other similar agreements, DOE provides financial and other support to projects that have the potential to realize the FOA objectives. DOE does not use such agreements to acquire property or services for the direct benefit or use of the United States government.

i. Cooperative Agreements

DOE generally uses cooperative agreements to provide financial and other support to prime recipients. DOE anticipates that Cooperative Agreements will be issued under this FOA.

Through cooperative agreements, DOE provides financial or other support to accomplish a public purpose of support or stimulation authorized by federal statute. Under cooperative agreements, the government and prime recipients share responsibility for the direction of projects.

DOE has substantial involvement in all projects funded via cooperative agreement. See Section VI.B.x of the FOA for more information on what substantial involvement may involve.

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.

C. Eligible Applicants

i. Individuals

U.S. citizens and lawful permanent residents are eligible to apply for funding as a prime recipient or subrecipient.

ii. Domestic Entities

The proposed prime recipient and subrecipient(s) must be domestic entities. The following types of domestic entities are eligible to participate as a prime recipient or subrecipient of this FOA:

1. Institutions of higher education;
2. For-profit entities;
3. Non-profit entities; and
4. State and local governmental entities, and Tribal Nations.

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

DOE/National Nuclear Security Administration (NNSA) Federally Funded Research and Development Centers (FFRDCs) are eligible to apply for funding as a subrecipient, but are not eligible to apply as a prime recipient. **NETL is not eligible for award under this announcement and may not be proposed as a subrecipient on another entity's application. An application that includes NETL as a prime recipient or subrecipient will be considered non-responsive.**

Non-DOE/NNSA FFRDCs are eligible to participate as a subrecipient, but are not eligible to apply as a prime recipient.

Federal agencies and instrumentalities (other than DOE) are eligible to participate as a subrecipient, but are not eligible to apply as a prime recipient.

Entities banned from doing business with the U.S. government such as entities debarred, suspended, or otherwise excluded from or ineligible for participating in Federal programs are not eligible.

Entities identified on a Department of Homeland Security, Binding Operational Directives as an entity publicly banned from doing business with the United States government are not eligible. See <https://cyber.dhs.gov/directives/>.

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.

iii. Foreign Entities

In limited circumstances, DOE may approve a waiver to allow a foreign entity to participate as a prime recipient or subrecipient. A foreign entity may submit a Full Application to this FOA, but the Full Application must be accompanied by an explicit written waiver request. Likewise, if the applicant seeks to include a foreign entity as a subrecipient, the applicant must submit a separate explicit written waiver request in the Full Application for each proposed foreign subrecipient.

Appendix K lists the information that must be included in a foreign entity waiver request. The applicant does not have the right to appeal DOE's decision concerning a waiver request.

iv. Incorporated Consortia

Domestic incorporated consortia are eligible to participate as a prime recipient or subrecipient. For consortia incorporated (or otherwise formed) under the laws of a state or territory of the United States, please refer to "Domestic Entities" above. For consortia incorporated (or otherwise formed) in a foreign country, please refer to the requirements in "Foreign Entities" above.

Each 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 DOE Contracting Officer.

If the consortium includes foreign members, the applicant must submit a separate explicit written waiver request in the Full Application for each foreign member. See **Appendix K**.

v. Unincorporated Consortia

Unincorporated Consortia must designate one member of the consortium to serve as the prime recipient/consortium representative. The prime recipient/consortium representative must qualify as a domestic entity.

Upon request, unincorporated consortia must provide the DOE 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 include the consortium's:

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

If the consortium includes foreign members, the applicant must submit a separate explicit written waiver request in the Full Application for each foreign member. See **Appendix K**.

D. Cost Sharing

Applicants are bound by the cost share proposed in their Full Applications if selected for award negotiations.

The cost share must be at least 20% of the total project costs¹⁴ for research & development (R&D) projects.¹⁵ The cost share must come from non-federal sources unless otherwise allowed by law.

DOE understands that projects selected under this FOA may require the use of existing data. For purposes of this FOA, DOE will consider data that is commercially available at an established market price to be an allowable cost under the project (either as DOE share or non-federal cost share) but DOE will not consider in-kind data (e.g., data, owned by an entity, that is not routinely sold commercially but is instead donated to the project and assigned a value) to be an allowable cost under the project, including as Recipient cost share. Estimation

¹⁴ Total project costs is the sum of the government share, including FFRDC costs if applicable, and the recipient share of project costs.

¹⁵ Energy Policy Act of 2005, Pub.L. 109-58, sec. 988. Also see 2 CFR 200.306 and 2 CFR 910.130 for additional cost sharing requirements.

methods used by the Recipient to assign a value to in-kind data cannot be objectively verified by DOE and therefore will not be accepted by DOE as an allowable cost under any project selected from this FOA. Consequently, DOE will not recognize in-kind data costs in any resulting approved DOE budget.

To assist applicants in calculating proper cost share amounts, DOE has included a cost share information sheet and sample cost share calculation as Appendix J 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 Section IV.H.i. of 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 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 and 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 J** of the FOA.

vi. Cost Share Payment

DOE 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). Prime recipients will be required to provide project cost share at a percentage commensurate with the total costs on a budget period basis.

In limited circumstances, and where it is in the government's interest, the DOE 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.

E. Compliance Criteria

A review of all submitted documents and information is performed to determine if the submissions are in compliance with the FOA requirements. **All submitted information and documents must meet all Compliance Criteria listed below to be eligible for review or the submission will be considered noncompliant. DOE will NOT review or consider noncompliant submissions.**

Full Applications are deemed compliant if:

- The Full Application complies with the maximum DOE share of the individual award size in Section II.C of the FOA;
- The Full Application complies with the content and form requirements in Section IV.A and IV.B of the FOA; and
- The applicant successfully uploaded all required documents and clicked the "Submit" button in Grants.gov by the deadline stated in the FOA. DOE will not extend the submission deadline for applicants that fail to submit required information by the applicable deadline due to server/connection congestion.

F. Responsiveness Criteria

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

G. Other Eligibility Requirements

i. Requirements for DOE/NNSA and non-DOE/NNSA FFRDCs 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:

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.

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.

Value/Funding

The value of, and funding for, the FFRDC/NL portion of the work will be included in the award to a successful applicant. DOE/NNSA will not fund a DOE/NNSA FFRDC/NL through the DOE field work authorization process and other FFRDC/NLs through an interagency agreement with the sponsoring agency. FFRDCs/NLs will be treated as subawards for applicants. For subawards to DOE FFRDCs, the recipient shall use the Department’s Strategic Partnership Projects program and the terms and conditions established for that program. Subawards to other FFRDCs will utilize the terms and conditions of the sponsoring agency.

Cost Share

The applicant's cost share requirement will be based on the total cost of the project, including the applicant's and the FFRDC/NL's portions of the effort.

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.

Limit on FFRDC Effort

The FFRDC effort, in aggregate, shall not exceed 25% of the total estimated cost of the project, including the applicant's and the FFRDC's portions of the effort.

NETL is not eligible for award under this announcement and may not be proposed as a sub-recipient on another entity's application. An application that includes NETL as a prime recipient or sub-recipient will be considered non-responsive.

ii. Agreement Requirements for DOE/NNSA FFRDC Participating as a Subrecipient

DOE/NNSA FFRDC/NLs participating as a subrecipient on a project are strongly encouraged to establish a Cooperative Research and Development Agreement¹⁶ (CRADA) or, if the role of the DOE/NNSA FFRDC/NL is limited to technical assistance and intellectual property is not anticipated to be generated from the DOE/NNSA FFRDC/NL's work, a Technical Assistance Agreement (TAA), with at least the prime recipient before any project work begins. Any questions regarding the use of a CRADA or TAA should be directed to the cognizant DOE field patent counsel.

The CRADA or TAA is used to ensure accountability for project work and provide the appropriate management of intellectual property (IP), e.g., data protection and background IP.

H. Limitation on Number of Full Applications Eligible for Review

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

¹⁶ A cooperative research and development agreement is a contractual agreement between a national laboratory contractor and a private company or university to work together on research and development. For more information, see <https://www.energy.gov/gc/downloads/doe-cooperative-research-and-development-agreements>

I. Questions Regarding Eligibility

DOE 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

All submissions must conform to the following form and content requirements, described below and must be submitted as specifically stated. DOE will not review or consider submissions submitted through means other than specifically stated in the FOA, submissions submitted after the applicable deadline, and incomplete submissions. DOE will not extend deadlines for applicants who fail to submit required information and documents due to server/connection congestion.

Full Applications must conform to ALL of the following requirements in order to be considered compliant:

- Each must be submitted in Adobe PDF format unless stated otherwise.
- 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. Use Times New Roman typeface, a black font color, and a font size of 11 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.
- Each submission must not exceed the specified maximum page limit (described below) when printed using the formatting requirements set forth above and **single** spaced. The maximum page limitation includes the cover page, references, charts, graphs, data, maps, photographs, other pictorial presentations, and other reference material the applicant may include its submission. **If applicants exceed the maximum page lengths indicated below, DOE will review only the authorized number of pages and disregard any additional pages.**

Full Applications which do not conform to ALL of the requirements listed above will be considered noncompliant (See Section III Compliance Criteria). DOE will not review or consider noncompliant submissions.

Applicants are responsible for meeting the submission deadline. Applicants are strongly encouraged to submit their 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 Full Application. Once the Full Application is submitted, applicants may revise or update that submission until the expiration of the applicable deadline. If

changes are made, the applicant must resubmit the Full Application, before the applicable deadline.

DOE urges applicants to carefully review their Full Applications and 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 of the FOA.

B. Application Forms

The application forms and instructions are available on Grants.gov at <https://www.grants.gov/>.

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

C. Content and Form of 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 Grants.gov website at <https://www.grants.gov/> in accordance with the instructions.

i. Full Application Content Requirements

Each Full Application must conform to the following content and form requirements, and must not exceed the stated page limits. **If applicants exceed the maximum page lengths indicated below, DOE will review only the authorized number of pages and disregard any additional pages:**

Components	Format	Page Limit	File Name
SF-424	Form	N/A	N/A
Project/Performance Site Location(s)	Form	N/A	N/A
Technical Volume	PDF	30	TechnicalVolume.pdf
Summary for Public Release	PDF	1	Summary.pdf

Project Management Plan	PDF	10	PMP.pdf
Resume	PDF	2 pages each	Resume.pdf
SF424a Budget Information – Non-Construction Programs File	MS Excel	N/A	SF424A.xls or .xlsx
Budget Justification – SEE DETAILED INSTRUCTIONS BELOW	MS Excel	N/A	RecipientBudget Justification.xls or .xlsx
Subaward Budget Justification, if applicable – SEE DETAILED INSTRUCTIONS BELOW	MS Excel	N/A	Subawardee_name BudgetJustification.xls or .xlsx
Authorization from cognizant Contracting Officer for DOE/NNSA FFRDC/NL or non-DOE FFRDC/NL, if applicable	PDF	N/A	Use up to 10 letters of the FFRDC/NL name plus FFRDC as the file name (e.g. anlFFRDC or lincolnFFRDC.pdf)
Environmental Questionnaire	PDF	N/A	Env.pdf
Cost Share Commitment Letters, if applicable	PDF		CSCL.pdf
SF-LLL Disclosure of Lobbying Activities, if applicable	Form	N/A	N/A
Foreign Entity Waiver request, if applicable	PDF	N/A	FN_Waiver.pdf
Performance of Work in the United States waiver request, if applicable	PDF	N/A	PerformanceofWork_Waiver.pdf
Waiver of the Buy America Requirement for Infrastructure Projects, if applicable	PDF	N/A	BAWaiver.pdf
Data Management Plan	PDF	N/A	DMP.pdf
Other Commitment Letter(s)	PDF	N/A	CLOthers.pdf
Quality Jobs Plan	PDF	5	QJ.pdf
Diversity, Equity, Inclusion, and Accessibility Plan	PDF	5	DEIAP.pdf
Justice40 Initiative Plan Development Proposal	PDF	4	Justice40PDP.pdf
Community and Stakeholder Engagement Plan Development Proposal	PDF	4	CommunityEngagementPDP.pdf
Current and Pending Support	PDF	N/A	Current_and_Pending_Support.pdf

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

Project Part 1

Project Part 2, etc.

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

Detailed guidance on the content and form of each component is listed below.

ii. SF-424: Application for Federal Assistance

Complete the SF 424 form first to populate data in other forms. Complete all required fields in accordance with the instructions on the form. The list of certifications and assurances in Field 21 can be found at <https://www.energy.gov/management/financial-assistance-forms-and-information-applicants-and-recipients>, under Certifications and Assurances.

iii. Project/Performance Site Location(s)

Indicate the primary site where the work will be performed. If a portion of the project will be performed at any other site(s), identify the site location(s) in the blocks provided.

Note that the Project/Performance Site Congressional District is entered in the format of the 2-digit state code followed by a dash and a 3 digit Congressional district code, for example VA-001. Hover over this field for additional instructions.

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

iv. Technical Volume

The Technical Volume must be submitted in Adobe PDF format. The technical volume must not exceed 30 pages, including cover page, table of contents, footnotes/endnotes, charts, graphs, maps, photographs, and other pictorial presentations, when printed using standard 8.5" by 11" paper with 1 inch margins (top, bottom, left, and right) **single** spaced. The font must not be smaller than 11 point.

Do not include any Internet addresses (URLs) that provide information necessary to review the application. See Section VIII for instructions on how to mark

proprietary application information.

The **Identification of Potential Conflicts of Interest or Bias in Selection of Reviewers, and Bibliography sections are NOT included in the technical narrative page limitation.** If applicants exceed the maximum page lengths indicated below, DOE will review only the authorized number of pages and disregard any additional pages.

Save the information in a single file named "TechnicalVolume.pdf," and click on "Add Mandatory Other Attachment" to attach.

The Technical Volume must address the technical review criteria as discussed in Section V. of the FOA. The applicant should consider the weighting of each of the technical review criterion (see Section V. of the FOA) when preparing the Technical Volume. The Technical Volume must include all of the information in the table below.

SECTION	MAXIMUM PAGE LIMIT* (if applicable)	DESCRIPTION
Cover Page	Included in the page limitation (1-page maximum)	The cover page should include the project title, the Applicant's name, and the names of all team member organizations. In addition, provide the Applicant's technical and business points of contact along with e-mail addresses and telephone numbers. The cover page should also include the federal and non-federal share of costs associated with each team member's proposed effort. Applicants should ensure the cost information is consistent with the submitted budget justification(s).
Table of Contents	Included in the page limitation	Applicant to capture, at a minimum, all of the required sections identified in this table.
Objectives/Aims	Included in the page limitation	This section should provide a clear, concise statement of the specific objectives/aims of the proposed project. Buy America Requirements for Infrastructure Projects: Within the first two (2) pages of the Technical Volume, include a short statement on whether the project will involve the construction, alteration, and/or repair of infrastructure in the United States. See Appendix L for applicable definitions and other information to inform this statement.

Merit Review Criterion Discussion	Included in the page limitation	The section should be formatted to address each of the merit review criterion and sub-criterion listed in Section V. Provide sufficient information so that reviewers will be able to evaluate the application in accordance with these merit review criteria. The Technical Volume should only address Merit Review Criteria when those criteria are not addressed in other required documents, i.e., plans that are required to be submitted under unique file names and have stated page limits.
Statement of Project Objectives	Included in the page limitation	<p>The technical volume must contain a single, detailed Statement of Project Objectives that addresses how the project objectives will be met. The Statement of Project Objectives must contain a clear, concise description of all activities to be completed during project performance. It is therefore required that it shall not contain proprietary or confidential business information.</p> <p>The Statement of Project Objectives is generally less than 8 pages in total for the proposed work. Applicants shall prepare the Statement of Project Objectives in the format provided in Appendix M of the FOA.</p>
Relevance and Outcomes/Impacts	Included in the page limitation	This section should explain the relevance of the effort to the objectives in the program announcement and the expected outcomes and/or impacts. The justification for the proposed project should include a clear statement of the importance of the project in terms of the utility of the outcomes and the target community of beneficiaries.
Multiple Principal Investigators	Included in the page limitation	<p>The applicant, whether a single organization or team/partnership/consortium, must indicate if the project will include multiple PIs. This decision is solely the responsibility of the applicant. If multiple PIs will be designated, the application must identify the Contact PI/Project Coordinator and provide a "Coordination and Management Plan" that describes the organization structure of the project as it pertains to the designation of multiple PIs. This plan should, at a minimum, include:</p> <ul style="list-style-type: none"> - process for making decisions on scientific/technical direction; - publications; - intellectual property issues; - communication plans; - procedures for resolving conflicts; and - PIs' roles and administrative, technical, and scientific responsibilities for the project.
Facilities and Other Resources	Included in the page limitation	Identify the facilities (e.g., office, laboratory, computer, etc.) to be used at each performance site listed and, if appropriate, indicate their capacities, pertinent capabilities, relative proximity, and extent of availability to the project. Describe only those resources that are directly applicable to the proposed work. Provide any information describing the other resources available to the project such as machine and electronics shops.

Equipment	Included in the page limitation	List important items of equipment already available for this project and, if appropriate, note the location and pertinent capabilities of each. If you are proposing to acquire equipment, describe comparable equipment, if any, already at your organization and explain why it cannot be used.
Identification of Potential Conflicts of Interest or Bias in Selection of Reviewers	<u>Not</u> included in the page limitation	<p>Provide the following information in this section:</p> <ul style="list-style-type: none"> ▪ Collaborators and Co-editors: List in alphabetical order all persons, including their current organizational affiliation, who are, or who have been, collaborators or co-authors with you on a research project, book or book article, report, abstract, or paper during the 48 months preceding the submission of this application. Also, list any individuals who are currently, or have been, co-editors with you on a special issue of a journal, compendium, or conference proceedings during the 24 months preceding the submission of this application. If there are no collaborators or co-editors to report, state "None." ▪ Graduate and Postdoctoral Advisors and Advisees: List the names and current organizational affiliations of your graduate advisor(s) and principal postdoctoral sponsor(s) during the last 5 years. Also, list the names and current organizational affiliations of your graduate students and postdoctoral associates.
Bibliography	<u>Not</u> included in the page limitation	If applicable: Provide a bibliography for any references cited in the Technical Volume section. This section must include only bibliographic citations.

v. Project Summary for Public Release File

The project summary/abstract and summary slide must contain a summary of the proposed activity suitable for dissemination to the public.

i. Summary for Public Release

Applicants must submit a one-page summary of their project that is 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), major participants (for collaborative projects), and the project's commitments and goals described in the Community Benefits Plan. 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 must not exceed 1 page when printed using standard 8.5 x 11 paper with 1" margins (top, bottom, left, and right) with font not smaller than 12 point. Save

the Summary for Public Release in a single PDF file using the following naming convention "ControlNumber_LeadOrganization_Summary".

ii. Summary Slide

Applicants must provide a single slide summarizing the proposed project. The Summary Slide template must include 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;
- Topline community benefits;
- Project title, prime recipient, Principal Investigator, and senior/key personnel information; and
- Requested DOE funds and proposed applicant cost share.

Save the Summary Slide in a single Microsoft PowerPoint file using the following convention for the title "ControlNumber_LeadOrganization_Slide".

vi. Project Management Plan

The Project Management Plan (PMP) must not exceed 10 pages including cover page, table of contents, footnotes/endnotes, charts, graphs, maps, photographs, and other pictorial presentations, when printed using standard 8.5" by 11" paper with 1" margins (top, bottom, left and right) **single** spaced with font no smaller than 11 point. Applicants shall prepare the PMP in the format provided in Appendix I of the FOA. Save this information in a file named "PMP.pdf," and click on "Add Optional Other Attachment" to attach.

vii. Resume File

Provide a resume for each key person proposed, including subawardees and consultants if they meet the definition of key person. A key person is any individual who contributes in a substantive, measurable way to the execution of the project. Save all resumes in a single file named "Resume.pdf" and click on "Add Optional Other Attachment" to attach. The biographical information for each resume must not exceed 2 pages when printed on 8.5" by 11" paper with 1-inch margins (top, bottom, left, and right) **single** spaced with font no smaller than 11 point and should include the following information, if applicable:

- Education and Training. Undergraduate, graduate and postdoctoral training, provide institution, major/area, degree and year.

- Research and Professional Experience. Beginning with the current position list, in chronological order, professional/academic positions with a brief description.
- Publications. Provide a list of up to 10 publications most closely related to the proposed project. For each publication, identify the names of all authors (in the same sequence in which they appear in the publication), the article title, book or journal title, volume number, page numbers, year of publication, and website address if available electronically.
- Patents, copyrights, and software systems developed may be provided in addition to or substituted for publications.
- Synergistic Activities. List no more than 5 professional and scholarly activities related to the effort proposed.

viii. SF 424A Budget Information – Non-Construction Programs (SF424) File

You must provide a separate budget for each year of support requested and a cumulative budget for the total project period. Use the SF 424 A Excel, "Budget Information - Non Construction Programs" form on the DOE Financial Assistance Forms Page at <https://www.energy.gov/management/financial-assistance-forms-and-information-applicants-and-recipients> under DOE budget forms.

You may request funds under any of the Object Class Categories as long as the item and amount are necessary to perform the proposed work, meet all the criteria for allowability under the applicable Federal cost principles, and are not prohibited by the funding restrictions in this announcement (See Section IV Funding Restrictions). Save the information in a single file named "SF424A.xls or.xlsx," and click on "Add Optional Other Attachment" to attach.

ix. Budget Justification File

Applicants are required to provide a detailed budget justification for the project as a whole, including all work to be performed by the Applicant and its Subrecipients and Contractors **(with work estimated to be more than \$100,000 or 25 percent of the total work effort - whichever is less)**, and provide all requested documentation (e.g., a Federally-approved rate agreement, vendor quotes). Applicants should include costs associated with required annual audits and incurred cost proposals in their proposed budget documents.

A Budget Justification workbook is included as an attachment to this announcement for use and to describe the level of detail required in the budget

justification. Although the data requested is mandatory, the use of the budget justification workbook is not.

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. In addition, Applicants must carefully read and note each “Instructions” Summary contained within each individual tab of the Budget Justification workbook. **As stipulated within the Budget Justification workbook, all direct costs must be identified by specific task. All cost should include the basis of cost and justification of need, as applicable. Of specific note is the necessity to identify personnel costs for each individual proposed for all tasks to which they are assigned.** Note EXAMPLES provided within each tab for further clarification.

DOE understands that projects selected under this FOA may require the use of existing data. For purposes of this FOA, DOE will consider data that is commercially available at an established price to be an allowable cost under the project (either as DOE share or non-federal cost share) but DOE will not consider in-kind data (e.g., data, owned by an entity, that is not routinely sold commercially but is instead donated to the project and assigned a value) to be an allowable cost under the project, including as Recipient cost share. Estimation methods used by the Recipient to assign a value to in-kind data cannot be objectively verified by DOE and therefore will not be accepted by DOE as an allowable cost under any project selected from this FOA. Consequently, DOE will not recognize in-kind data costs in any resulting approved DOE budget.

Save the Budget Justification workbook in a single file named “RecipientBudgetJustification.xls or.xlsx” and click on “Add Optional Other Attachment” to attach.

x. Subaward 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 \$100,000 or 25 percent of the total work effort** (whichever is less). FFRDCs/NLs are treated as subrecipients and are included in this required submittal if they meet the threshold. 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 “Subrecipient_Budget_Justification.xls or.xlsx” and click on “Add Optional Other Attachment” to attach.

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

The cognizant contracting officer for the DOE/NNSA FFRDC/NL or the non-DOE/NNSA Federal agency sponsoring the FFRDC must authorize in writing the use of the FFRDC on the proposed project, and this authorization, as specified in Section III of the FOA, must be submitted with the application. The use of a FFRDC must be consistent with the contractor's authority under its award. Use up to 10 letters of the FFRDC name plus FFRDC as the file name (e.g., lanlFFRDC.pdf or lincolnFFRDC.pdf), and click on "Add Optional Other Attachment" to attach.

xii. Environmental Questionnaire

The Applicant must submit an environmental questionnaire providing for the work of the entire project. The Applicant is also responsible for submitting a separate environmental questionnaire for each proposed subrecipient performing at a different location. The environmental questionnaire is available at http://www.netl.doe.gov/File%20Library/Business/forms/451_1-1-3.pdf . Save the questionnaire in a single file named "Env.pdf" (or "Env-FILL IN TEAM MEMBER.pdf" if more than questionnaire is submitted) and click on "Add Optional Other Attachment" to attach.

NOTE: If selected for award and if a subrecipient's location is not known at the time of application, a subsequent environmental questionnaire will be needed prior to them beginning work at an alternate location.

xiii. Cost Share Commitment Letters (if applicable)

Cost share commitment letters are required from any party (other than the organization submitting the application) proposing to provide all or part of the required cost share (including sub-recipients). The letter should state the party is committed to providing a specific minimum dollar amount of cost share, identify the type of proposed cost share (e.g., cash, services, and/or property) to be contributed, and be signed by the person authorized to commit the expenditure of funds by the entity. The applicant should submit the letter(s) in PDF format. Save this information in a single file named "CSCL.pdf" and click on "Add Optional Other Attachment" to attach.

xiv. SF-LLL: Disclosure of Lobbying Activities (if applicable)

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.

If applicable, complete SF- LLL. Applicability: If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of

Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the grant/cooperative agreement, you must complete and submit Standard Form - LLL, "Disclosure Form to Report Lobbying."

xv. Waiver Requests: Foreign Entities and Performance of Work in the United States (if applicable)

1) Foreign Entity Participation:

As set forth in Section III, 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. See Appendix K for a list of the necessary information that must be included in a request to waive this requirement. Save the waiver request(s) in a single PDF file titled "FN_Waiver" and click on "Add Optional Other Attachment" to attach.

2) Performance of Work in 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 a written waiver request to DOE. See Appendix K for a list of the necessary information that must be included in a request to waive the Performance of Work in the United States requirement.

The applicant must demonstrate to the satisfaction of DOE that a waiver would further the purposes of the FOA and is in the economic interests of the United States. DOE may require additional information before considering a waiver request. Save the waiver request(s) in a single PDF file titled "PerformanceofWork_Waiver" and click on "Add Optional Other Attachment" to attach. The applicant does not have the right to appeal DOE's decision concerning a waiver request.

3) Waiver of the Buy America Requirement for Infrastructure Projects

As set forth in Section IV.H.vii., federally assisted projects which involve, undertaken by applicable recipient types, require that:

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

In limited circumstances, DOE may grant a waiver of this requirement. **Appendix L** to this FOA provides guidance on how "infrastructure work" is defined, explains the applicable justifications under which a waiver may be

granted, and lists the information that must be included in the waiver request.

Save the Waivers in a single PDF file using the following convention for the title “BAWaiver.pdf” and click on “Add Optional Other Attachment” to attach.

xvi. Data Management Plan

Applicants are required to submit a Data Management Plan as part of their Full Application. The Data Management Plan is a document that outlines the proposed plan for data sharing or preservation. Submission of this plan is required with the full application, and failure to submit the plan may result in rejection of the application without further consideration. Applicants shall prepare the DMP in the format provided in Appendix H of this FOA. Save this plan in a single file named “DMP.pdf” and click on “Add Optional Other Attachment” to attach.”

xvii. Other Commitment Letter(s)

Letter(s) from other relevant parties not submitted under Section IV. C. xii. such as additional team members and parties that may provide data to be used on the project. Save this information in a single file name “CLOthers.pdf” and click on “Add Optional Other Attachment” to attach.

xviii. Community Benefits Plan: Quality Jobs Plan

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

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

Specific components of the Plan must include:

- 1) A summary of the applicant’s plan to attract, train, and retain a skilled and well-qualified workforce. A collective bargaining agreement, project labor agreement, labor-management partnership, or other similar agreement would provide evidence of such a plan. Alternatively, applicants may describe:
 - a) wages, benefits, and other worker supports to be provided;
 - b) commitments to support workforce education and training, including measures to reduce employee turnover costs for employers, increase productivity from a committed and engaged workforce, and promote a nimble, resilient, and stable workforce for the project; and

- c) efforts to engage employees in the design and execution of workplace safety and health plans.
- 2) Describe whether workers can form and join unions of their choosing, exercising collective voice. Employees' ability to organize, bargain collectively, and participate, through labor organizations of their choosing, in decisions that affect them contributes to the effective conduct of business and facilitates amicable settlements of any potential disputes between employees and employers, providing assurances of project efficiency, continuity, and multiple public benefits.

The Quality Jobs Plan must not exceed 5 pages. Save the information in a file named "QJ.pdf" and click on the "Add Optional Other Attachment" to attach.

xix. Community Benefits Plan: Diversity, Equity, Inclusion, and Accessibility (DEIA) Plan

See the Guidance Document: Creating Diversity, Equity, Inclusion, and Accessibility Plans for detailed guidance and examples of how to create a DEIA plan.

Elements of the DEIA Plan to include are:

1. **Background.** Describe prior and ongoing efforts by members of the project team relevant to DEIA, based on findings from an initial assessment that examines the context of DEIA in organizations related to the project team.
2. **Milestones and Timelines.** The DEIA Plan should describe targeted DEIA outcomes and implementation strategies, including milestones, and should include a DEIA Plan schedule for execution. See Guidance for more details on what this could involve.
3. **Resource Summary.** Describe project resources dedicated to implementing the plan including staff, facilities, capabilities, and budget that will support implementing the plan. The application should include information about:
 - i. **Staff:** The number of staff, their time on the project and their educational qualifications and experience (e.g., people trained in DEIA, facilitation, and/or social science).
 - ii. **Facilities, equipment, and capabilities:** Physical buildings and meeting spaces, specialized equipment for use in research, scientific, and DEIA work, and/or the abilities staff, facilities, and equipment enable for the project.
 - iii. **Budget:** Planned federal and/or project cost share aligned with activities in the plan.

The applicant should include at least one SMART (Specific, Measurable, Assignable, Realistic and Time-Related) milestone per calendar year for reporting on work relevant to DEIA in the Statement of Project Objectives. This work should include success measurement metrics for plan actions.

The DEIA Plan will be carried out during the project, through (1) updating the Plan during the first 90 days per DOE feedback; (2) executing the DEIA plan, (3) a public presentation on DEIA work in the Mid-Project Update halfway through the performance period, and (4) a public End-of-Project Progress Report on societal considerations, impacts, and benefits work, including this Plan, at end of award.

The DEIA Plan must not exceed 5 pages. Save the information in a file named “DEIAP.pdf” and click on the “Add Optional Other Attachment” to attach.

xx. Community Benefits Plan: Justice40 Initiative Plan Development Proposal

See the Guidance Document: Creating a Justice40 Initiative Plan for detailed guidance and examples of how to create a J40 Plan Development Proposal.

The Justice40 Initiative Plan (J40 Plan) will describe plans to address energy and environmental justice concerns, which will maximize the likelihood of successful projects. There are two parts to the J40 plan. Part 1 is an Energy and Environmental Justice Assessment (EEJ Assessment), which assesses project benefits and impacts. Part 2 is the Justice40 Implementation Strategy section, which explains what actions the applicants will take to maximize benefits and minimize negative impacts. **See Appendix E for more details about full plan requirements.**

At the time of application, applicants are only asked to submit a “Justice40 Initiative Plan Development Proposal” that will scope the resources that will be required to create this plan and describe their strategy for developing it.

The J40 Plan described in the Plan Development Proposal (PDP) will be carried out during the project, through (1) updating the Plan Development Proposal during first 90 days per DOE feedback; (2) submitting the J40 Plan 90 days following the submission of the revised PDP, and executing on the J40 Plan, (3) a public presentation on environmental justice work in the Mid-Project Update, including this plan, halfway through the performance period, and (4) a public End-of-Project Progress Report on societal considerations and impacts work, including this Plan, at end of award.

Justice40 Initiative Plan Development Proposals should include the following elements:

1. **A preliminary Energy and Environmental Justice Assessment** that includes an analysis of communities, including disadvantaged communities, that will be affected by the project. This can be accomplished by using environmental justice screening tools and DOE's working definition of disadvantaged communities (further described in Guidance Documentation). The assessment should also offer a brief summary of benefits and impacts, including negative impacts, that can be anticipated based on prior experience or readily available data. Some of this may be known from other permitting requirements or similar projects.
2. **A description of research** that will need to be done to develop a detailed plan, including scoping data sources for incorporation into the plan (existing data sources as well as datasets that need to be developed).
3. **A timeline** for developing the plan, including appropriate milestones.
4. **A description of personnel** who will work on the plan, including trainings or qualifications that may need to be acquired.
5. **An estimate of financial resources** required for developing the plan.
6. **A description of any community partners** who may be interested in collaborating on or learning about the plan.

The recommended length for the J40 Plan Development Proposal is 3-4 pages and must not exceed 4 pages. Save the information in a file named "Justice40PDP.pdf" and click on the "Add Optional Other Attachment" to attach.

xxi. Community Benefits Plan: Community, Labor and Stakeholder Engagement Plan Development Proposal

See the Guidance Document: Creating a Community, Labor and Stakeholder Engagement Plan for detailed guidance and examples of how to create an Engagement Plan Development Proposal.

Community and Stakeholder Engagement Plans set forth the applicant's plans for engaging with stakeholders, Tribes/Alaska Native Corporations (ANCs), and community-based organizations representing local residents and businesses, labor unions, worker organizations, local government, emergency responders, and communities with environmental justice concerns. **See Appendix E for more information on full Engagement Plans.**

At the time of application, applicants are asked to submit an "Engagement Plan Development Proposal" that will scope the resources that will be required to create this plan, and describe their strategy for making it.

The Engagement Plan described in the Plan Development Proposal will be carried out during the project, through (1) updating the Plan Development Proposal to an Engagement Plan during first 90 days per DOE feedback; (2) submitting the J40 Plan 90 days following the submission of the revised PDP, and executing on the Engagement Plan, (3) a public presentation on engagement work in the Mid-Project Update halfway through the performance period, and (4) a public End-of-Project Progress Report on societal considerations, impacts, and benefits work, including this Plan, at end of award.

Engagement Plan Development Proposals should include the following elements:

1. Description of prior engagement efforts by the project team (in other words, the first element of the Plan).
2. A description of research that will need to be done to develop a detailed Plan, including scoping data sources for incorporation into the Plan (existing data sources as well as datasets that need to be developed).
3. A timeline for developing the Plan.
4. A description of personnel who will work on the Plan, including trainings or qualifications that may need to be acquired.
5. An estimate of financial resources required for developing the Plan.
6. A brief discussion of resources, references, or community partners that will be useful in developing the Plan.

The Engagement Plan Development Proposal is recommended to be 3-4 pages and must not exceed 4 pages. Save the information in a file named “CommunityEngagementPDP.pdf” and click on the “Add Optional Other Attachment” to attach.

iii. Community Partnership Documentation

In support of the Community Benefits Plan, applicants may submit documentation to demonstrate existing or planned partnerships with community entities, such as, organizations that work with local stakeholders such residents and businesses, organizations that carry out workforce development programs, trade associations, worker organizations including labor unions, and community-based organizations that work with disadvantaged communities. The Partnership Documentation could be in the form of letter on the partner’s letterhead outlining the planned partnership signed by an officer of the entity, a Memorandum of Understanding, or other similar agreement. Such letters must state the specific nature of the partnership and must not be general letters of support. If the applicant intends to enter into a Workforce and Community Agreement as part of the Community Benefits Plan, please include letters from proposed partners as appropriate. Each letter must not exceed 1 page. In total, the partnership documentation must not exceed 10 pages. Save the partnership documentation in a single PDF file using the following convention for the title “ControlNumber_LeadOrganization_PartnerDoc”.

xxii. 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 all 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. Supporting documents of any identified source of support must be provided to DOE on request, including certified translations of any document.

PIs and 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. 3729-3733 and 3801-3812). I further understand and agree that (1) the statements and representations made herein are material to DOE's funding decision, and (2) I have a responsibility to update the disclosures during the period of performance of the award should circumstances change which impact the responses provided above.

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.

Current and Pending Support Save this information in a file named "Current_and_Pending_Support.pdf" and click on "Add Optional Other Attachment" to attach.

Definitions:

Current and Pending Support - (a) All resources made available, or expected to be made available, to an individual in support of the individual's RD&D efforts, regardless of (i) whether the source is foreign or domestic; (ii) whether the resource is made available through the entity applying for an award or directly to the individual; or (iii) whether the resource has monetary value; and (b) includes in-kind contributions requiring a commitment of time and directly supporting the individual's RD&D efforts, such as the provision of office or laboratory space, equipment, supplies, employees, or students. This term has the same meaning as the term Other Support as applied to researchers in NSPM-33: For researchers, Other Support includes all resources made available to a researcher in support of and/or related to all of their professional RD&D efforts, including resources provided directly to the individual or through the organization, and regardless of whether or not they have monetary value (e.g., even if the support received is only in-kind, such as office/laboratory space, equipment, supplies, or

employees). This includes resource and/or financial support from all foreign and domestic entities, including but not limited to, gifts provided with terms or conditions, financial support for laboratory personnel, and participation of student and visiting researchers supported by other sources of funding.

Foreign Government-Sponsored Talent Recruitment Program – An effort directly or indirectly organized, managed, or funded by a foreign government, or a foreign government instrumentality or entity, to recruit science and technology professionals or students (regardless of citizenship or national origin, or whether having a full-time or part-time position). Some foreign government-sponsored talent recruitment programs operate with the intent to import or otherwise acquire from abroad, sometimes through illicit means, proprietary technology or software, unpublished data and methods, and intellectual property to further the military modernization goals and/or economic goals of a foreign government. Many, but not all, programs aim to incentivize the targeted individual to relocate physically to the foreign state for the above purpose. Some programs allow for or encourage continued employment at United States research facilities or receipt of federal research funds while concurrently working at and/or receiving compensation from a foreign institution, and some direct participants not to disclose their participation to United States entities. Compensation could take many forms including cash, research funding, complimentary foreign travel, honorific titles, career advancement opportunities, promised future compensation, or other types of remuneration or consideration, including in-kind compensation.

Senior/key personnel – an individual who contributes in a substantive, meaningful way to the scientific development or execution of a research, development and demonstration (RD&D) project proposed to be carried out with DOE award.¹⁷

D. Post Selection Information Requests

If selected for award, DOE 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 (See Section VI.B.xix. Participants and Collaborating Organizations);
- Current and Pending Support (See Section VI.B.xx. Current and Pending Support);

¹⁷ Typically, these individuals have doctoral or other professional degrees, although individuals at the masters or baccalaureate level may be considered senior/key personnel if their involvement meets this definition. Consultants, graduate students, and those with a postdoctoral role also may be considered senior/key personnel if they meet this definition.

- An Intellectual Property Management Plan (if applicable) describing how the project team/consortia members will handle intellectual property rights and issues between themselves while ensuring compliance with federal intellectual property laws, regulations, and policies;
- 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;
- Information related to Davis-Bacon Act Requirements;
- Information related to any proposed Workforce and Community Agreement, as defined above in “Community Benefits Plan” that applicants may have made with the relevant community; and
- Environmental Questionnaire.

E. 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 number 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.

F. Submission Dates and Times

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

G. Intergovernmental Review

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

H. Funding Restrictions

iv. Allowable Costs

All expenditures must be allowable, allocable, and reasonable in accordance with the applicable federal cost principles. Pursuant to 2 CFR 910.352, the cost principles in the Federal Acquisition Regulations (48 CFR Part 31.2) apply to for-profit entities. The cost principles contained in 2 CFR Part 200, Subpart E apply to all entities other than for-profits. Costs to support or oppose union organizing, whether directly or as an offset for other funds, are unallowable.

v. Pre-Award Costs

Applicants selected for award negotiations (selectee) must request prior written approval to charge pre-award costs. Pre-award costs are those incurred prior to the effective date of the federal award directly pursuant to the negotiation and in anticipation of the federal award where such costs are necessary for efficient and timely performance of the scope of work. Such costs are allowable only to the extent that they would have been allowable if incurred after the date of the federal award and **only** with the written approval of the federal awarding agency, through the DOE Contracting Officer.

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

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

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

DOE'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 DOE completing the NEPA review process.

DOE does not guarantee or assume any obligation to reimburse pre-award costs incurred prior to receiving written authorization from the 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 the requirement 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 DOE 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.

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

1. Requirement

The Recipient agrees that at least **75%** of the direct labor cost for the project (including subrecipient labor) shall be incurred in the United States, unless the Recipient can demonstrate to the satisfaction of the Department of Energy that the United States' economic interest will be better served through a greater percentage of the work being performed outside of the United States.

It is noted that direct labor associated with foreign travel to attend or present at a scientific/technical conference or consortium that has been approved by DOE does not require a waiver.

2. Failure to Comply

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

To seek a foreign work waiver, the applicant must submit a written waiver request to DOE. Appendix K lists the information that must be included in a request for a foreign work waiver.

Save the waiver request(s) in a single PDF file. The applicant does not have the right to appeal DOE's decision concerning a waiver request.

vii. Construction

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

viii. 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 U.S.C. 40118), commonly referred to as the "Fly America Act," and implementing regulations at 41 CFR 301-10.131 through 301-10.143. The law and regulations require air transport of people or property to, from, between, or within a country other than the United States, the cost of which is supported under this award, to be performed by or under a cost-sharing arrangement with a 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.

ix. Equipment and Supplies

Property disposition may 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.

x. Buy America Requirements for Infrastructure Projects

Federally assisted projects which involve infrastructure work, undertaken by applicable recipient types, require that:

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

Whether a given project must apply this requirement is project-specific and dependent on several factors, such as the recipient's entity type, whether the work involves "infrastructure," as that term is defined in Section 70914 of the

Bipartisan Infrastructure Law, and whether the infrastructure in question is publicly owned or serves a public function.

Applicants are strongly encouraged to consult **Appendix L** of this FOA to determine whether their project may have to apply this requirement, both to make an early determination as to the need of a waiver, as well as to determine what impact, if any, this requirement may have on the proposed project's budget.

xi. Davis-Bacon Act Requirements

Projects awarded under this FOA will be funded under Division D of the Bipartisan Infrastructure Law. Accordingly, per section 41101 of that law, all laborers and mechanics employed by the recipient, subrecipients, contractors or subcontractors in the performance of construction, alteration, or repair work funded in whole or in part under this FOA shall be paid wages at rates not less than those prevailing on similar projects in the locality, as determined by the Secretary of Labor in accordance with subchapter IV of chapter 31 of title 40, United States Code commonly referred to as the "Davis-Bacon Act" (DBA).

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

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

- (1) ensuring that the wage determination(s) and appropriate Davis-Bacon clauses and requirements are flowed down to and incorporated into any applicable subcontracts or subrecipient awards;
- (2) ensuring that if wage determination(s) and appropriate Davis-Bacon clauses and requirements are improperly omitted from contracts and subrecipient awards, the applicable wage determination(s) and clauses are retroactively incorporated to the start of performance;
- (3) being responsible for compliance by any subcontractor or subrecipient with the Davis-Bacon labor standards;
- (4) receiving and reviewing certified weekly payrolls submitted by all subcontractors and subrecipients for accuracy and to identify potential compliance issues;

(5) maintaining original certified weekly payrolls for 3 years after the completion of the project and must make those payrolls available to the DOE or the U.S. Department of Labor (DOL) upon request, as required by 29 CFR 5.6(a)(2);

(6) conducting payroll and job-site reviews for construction work, including interviews with employees, with such frequency as may be necessary to assure compliance by its subcontractors and subrecipients and as requested or directed by the DOE;

(7) cooperating with any authorized representative of the DOL in their inspection of records, interviews with employees, and other actions undertaken as part of a DOL investigation;

(8) posting in a prominent and accessible place the wage determination(s) and DOL Publication: WH-1321, Notice to Employees Working on Federal or Federally Assisted Construction Projects;

(9) notifying the Contracting Officer of all labor standards issues, including all complaints regarding incorrect payment of prevailing wages and/or fringe benefits, received from the recipient, subrecipient, contractor, or subcontractor employees; significant labor standards violations, as defined in 29 CFR 5.7; disputes concerning labor standards pursuant to 29 CFR parts 4, 6, and 8 and as defined in FAR 52.222-14; disputed labor standards determinations; DOL investigations; or legal or judicial proceedings related to the labor standards under this Contract, a subcontract, or subrecipient award; and

(10) preparing and submitting to the Contracting Officer, the Office of Management and Budget Control Number 1910-5165, Davis Bacon Semi-Annual Labor Compliance Report, by April 21 and October 21 of each year. Form submittal will be administered through the iBenefits system (<https://doeibenefits2.energy.gov>), its successor system, or other manner of compliance as directed by the Contracting Officer.

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

DOE anticipates entering into a contract with a third-party DBA electronic payroll compliance software application. Recipients of funding under this FOA should plan to ensure the timely electronic submission of weekly certified payrolls through the DOE vendor as part of its compliance with the Davis-Bacon Act unless a waiver is granted to a particular contractor or subcontractor because they are unable or limited in their ability to use or access the DOE vendor.

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

xii. 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.

xiii. 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; mitigation of labor and community disputes; financial stability; quality of management systems and ability to meet the management standards prescribed in this part; project management capabilities, 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.

xiv. 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;
- Proof of compliance with Davis-Bacon and electronic submittals of certified payroll reports;
- Disclosure of any citations related to NLRA, FLSA, OSH, SCA, or DBA, or Title VII;
- 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.

xv. Prohibition related to Foreign Government-Sponsored Talent Recruitment Programs

a. Prohibition

Persons participating in a Foreign Government-Sponsored Talent Recruitment Program of a Foreign Country of Risk are prohibited from participating in projects selected for federal funding under this FOA. Should an award result from this FOA, the recipient must exercise ongoing due diligence to reasonably ensure that no individuals participating on the DOE-funded project are participating in a Foreign Government-Sponsored Talent Recruitment Program of a Foreign Country of Risk. Consequences for violations of this prohibition will be determined according to applicable law, regulations, and policy. Further, the recipient must notify DOE within five (5) business days upon learning that an individual on the project team is or is believed to be participating in a foreign government talent recruitment program of a foreign country

of risk. DOE may modify and add requirements related to this prohibition to the extent required by law.

b. Definitions

1. **Foreign Government-Sponsored Talent Recruitment Program.** An effort directly or indirectly organized, managed, or funded by a foreign government, or a foreign government instrumentality or entity, to recruit science and technology professionals or students (regardless of citizenship or national origin, or whether having a full-time or part-time position). Some foreign government-sponsored talent recruitment programs operate with the intent to import or otherwise acquire from abroad, sometimes through illicit means, proprietary technology or software, unpublished data and methods, and intellectual property to further the military modernization goals and/or economic goals of a foreign government. Many, but not all, programs aim to incentivize the targeted individual to relocate physically to the foreign state for the above purpose. Some programs allow for or encourage continued employment at U.S. research facilities or receipt of federal research funds while concurrently working at and/or receiving compensation from a foreign institution, and some direct participants not to disclose their participation to U.S. entities. Compensation could take many forms including cash, research funding, complimentary foreign travel, honorific titles, career advancement opportunities, promised future compensation, or other types of remuneration or consideration, including in-kind compensation.
2. **Foreign Country of Risk.** DOE has designated the following countries as foreign countries of risk: Iran, North Korea, Russia, and China. This list is subject to change.

xvi. Affirmative Action and Pay Transparency Requirements

All federally assisted construction contracts exceeding \$10,000 annually will be subject to the requirements of Executive Order 11246:

- (1) Recipients, subrecipients, contractors and subcontractors are prohibited from discriminating in employment decisions on the basis of race, color, religion, sex, sexual orientation, gender identity or national origin;
- (2) Recipients and Contractors are required to take affirmative action to ensure that equal opportunity is provided in all aspects of their employment. This includes flowing down the appropriate language to all subrecipients, contractors and subcontractors; and
- (3) Recipients, subrecipients, contractors and subcontractors are prohibited from taking adverse employment actions against applicants and employees

for asking about, discussing, or sharing information about their pay or, under certain circumstances, the pay of their co-workers.

The Department of Labor's (DOL) Office of Federal Contractor Compliance Programs (OFCCP) uses a neutral process to schedule contractors for compliance evaluations. OFCCP's Technical Assistance Guide¹⁸ should be consulted to gain an understanding of the requirements and possible actions the recipients, subrecipients, contractors and subcontractors must take.

Additionally, for construction projects valued at \$35 million or more and lasting more than one year, the recipients, subrecipients, contractors and subcontractors may be assigned by OFCCP as a mega construction project and may be neutrally selected for a compliance evaluation by OFCCP.¹⁹

¹⁸ See OFCCP's Technical Assistance Guide at:

<https://www.dol.gov/sites/dolgov/files/ofccp/Construction/files/ConstructionTAG.pdf?msclkid=9e397d68c4b111ec9d8e6fecb6c710ec> Also see the National Policy Assurances <http://www.nsf.gov/awards/managing/rtc.jsp>

¹⁹ For more information regarding this program, see <https://www.dol.gov/agencies/ofccp/construction/mega-program>.

V. Application Review Information

A. Technical Review Criteria

i. Full Applications

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

Merit Review Criterion 1: Technical Approach and Understanding (40%)

- Breadth, depth, clarity, and completeness of the Applicant's description of the CO₂ sources, CO₂ conversion options, and/or CO₂ geologic storage locations, and pipeline routes comprising the proposed FEED study, as required in Section I.B.ii.1 and in accordance with the Program Purpose described in Section I.A.1 of this FOA.
- Breadth, depth, clarity, and completeness of the Applicant's description of the gas compositions, volume aggregation, and suitability for CO₂ transport and storage associated with the proposed FEED study, as required in Section I.B.ii.2 and in accordance with the Program Purpose described in Section I.A.1 of this FOA.
- Breadth, depth, clarity, and completeness of the description of any pre-FEED or concept studies that have been performed with relation to the proposed FEED study, as required in Section I.B.ii.3 and in accordance with the Program Purpose described in Section I.A.1 of this FOA.
- Breadth, depth, clarity, and completeness of the business case analysis as required in Section I.B.ii.4 and in accordance with the Program Purpose described in Section I.A.1 of this FOA, including the capital budget estimate, market size, business drivers, projected revenue sources, expenses, ROI, and growth opportunities in the region(s) in which the proposed project is located.
- Quality and clarity of the discussion of environmental risks and/or impacts in the business case analysis over the lifetime of the pipeline in accordance with the Program Purpose described in Section I.A.1 of this FOA.
- Feasibility, appropriateness, rationale, and completeness of the proposed Statement of Project Objectives, such that there is a logical methodology and schedule for the progression of work.
- Degree to which the Applicant has considered federal, state, and local CO₂ transport laws and regulations and has identified a reasonable regulatory plan to satisfy all necessary regulatory requirements and has addressed associated project risk as required in Section I.B.ii.5 and in accordance with the Program Purpose described in Section I.A.1 of this FOA.

Merit Review Criterion 2: Scientific and Technological Merit (20%)

- Feasibility of the proposed concept design; the degree to which the proposed work is based on sound scientific and engineering principles.
- Degree to which the Applicant understands risks and challenges posed by the proposed CO₂ source sites, CO₂ conversion site(s), and/or secure CO₂ geologic storage facilities, including but not limited to the effects of impurities on hydraulics, equipment sizing, corrosion, metallurgy, operations, regulatory compliance, leakage, injection, and economics.
- Degree to which the Applicant understands the risk and challenges posed by transporting the proposed volume of CO₂ in the stated physical phase, terrain, geography, jurisdiction, and amongst, if any, applicable extreme weather scenarios and ground movement considerations.
- Understanding of risk assessment and mitigation methodologies against abovementioned risk factors.
- Plausibility of connectivity and flexibility within/between future CCUS hubs and clusters that is supportive of catalyzing CCUS and CDR development that otherwise would not be feasible.

Merit Review Criterion 3: Technical and Management Capabilities, Facilities and Resources (20%)

- Demonstrated experience of the applicant and partnering organizations in the technology areas addressed in the application and in managing projects of similar size, scope, and complexity.
- Credentials, capabilities, and experience of key personnel and partnering organizations.
- Clarity and likely effectiveness of the project organization, including sub-recipients or partners, to successfully complete the project within the proposed budget and timeframe.
- The adequacy and completeness of the Project Management Plan (PMP) in establishing baselines (technical scope, budget, schedule) and in managing project performance relative to those baselines; defining the actions that will be taken when these baselines must be revised; and identification of project risks and strategies for mitigation.
- Adequacy and availability of proposed personnel, facilities, and equipment to perform project tasks in the specified timeframe.
- Evidence of interest/commitment from relevant parties including commitment letters from other team members and cost-share contributors (e.g., CO₂ capture sources including direct air capture, biomass carbon removal and storage, industrial, and/or power plants located exclusively in the United States, CO₂ geologic storage locations, CO₂ conversion locations, land owners, and other relevant stakeholders).

Merit Review Criterion 4: Community Benefits (20%)

Quality Jobs Plan, Diversity, Equity, Inclusion and Accessibility Plan, Justice40 Initiative Plan, and Community, Labor, and Stakeholder Engagement Plan.
Requirements described in Section IV.C and Appendix E.

Overall Approach

- a. Project viability and social risk mitigation.** The extent to which applicant's Community Benefits Plan illustrates project viability and social risk mitigation through community and labor engagement; investment in the American workforce; diversity, equity, inclusion and accessibility, and "Justice40 Initiative" benefits to disadvantaged communities.
- b. Quality.** Adequacy of response to the plans/assessment and extent to which plans provided are thorough and include measurable actions to advance goals and meet requirements as defined within each plan/assessment.
- c. Support.** Extent to which impacted communities are appropriately included as core partners in the project and/or affirm support.
- d. Agreements.** The extent the actions outlined in the Community Benefits Plan are supported by existing Workforce and Community Agreements (e.g., good neighbor agreements, workforce agreements, project labor agreements, collective bargaining agreements, and similar agreements).
- e. Community Benefits Plan Team and Resources.** Extent to which the team and resources are capable of adequately implementing plans.
- f. Integration.** Adequacy and completeness of integrating the community benefits plans into key project management documents, such as the Project Management Plan, including project milestone(s) that evaluate progress of plan implementation; managing project performance relative to the plans; and defining actions and mitigation strategies to revise the plans; to successfully implement the plans.
- g. Influence.** Extent to which the plans and key project management documents provide mechanisms that enable impacts to project direction in a timely manner based on the outcomes and findings of societal considerations and impact work.
- h. Above and Beyond.** Extent in which the project includes analysis, technology development, and/or engagement efforts that address community desires and/or concerns which go above and beyond the requirements for technical, analytical, performance or regulatory compliance.
- i. Previous efforts/lessons learned.** Extent in which lessons learned, from previous societal considerations and impact work, are documented and integrated into future work.

Community and Labor Engagement

- Extent to which the applicant demonstrates community and labor engagement to date and/or a clear and appropriately robust plan to engage

local stakeholders, including labor unions and community-based organizations that support or work with DACs.

Job Quality

- Extent to which Community Benefits Plan demonstrates that the jobs supported by the proposed project will be quality jobs and provides robust and credible plan to attract, train, and retain skilled workers. The bullets include examples of how this could be demonstrated—
 - Collective bargaining agreement, project labor agreement, labor management partnership, labor peace or labor neutrality agreement, or similar agreement or commitment to workers' free and fair choice to join a union or labor organization of their choosing; and
 - Commitments to fair wages, benefits, or other worker support, including education and training and worker engagement in workplace safety and health plans.

Diversity, Equity, Inclusion, and Accessibility

- Extent to which the Community Benefits Plan includes specific and high-quality actions to meet DEIA goals, which may include DEIA recruitment procedures; partnerships with workforce training or support organizations serving workers facing systematic barriers to employment; and other DEIA commitments.

Justice40 Initiative

- Extent to which the Community Benefits Plan identifies: specific, measurable benefits for disadvantaged communities, how the benefits will flow to disadvantaged communities, and how negative environmental impacts affecting disadvantaged communities would be mitigated; and
- Extent to which the project would contribute to meeting the objective that 40% of the overall benefits of climate and clean energy investments flow to disadvantaged communities.

~End of Merit Review Criteria~

Environmental Evaluation Criteria

The environmental evaluation, which is not point scored, will be conducted as follows. The Environmental Questionnaire(s) will be evaluated to: (1) determine the adequacy and completeness of information submitted; (2) assess the applicant's awareness of project-related requirements, including requirements for mitigating any project-related environmental risks and impacts; (3) assess the applicant's ability to meet compliance requirements

and the applicant's approach to identification and resolution of issues; and (4) assess the potential impacts of the proposed work and the potential liability to DOE. The Questionnaire will be used to assist DOE in partially fulfilling requirements for compliance with NEPA and for making a preliminary assessment regarding the level of analysis necessary to comply with NEPA.

The Selection Official may consider the results of this evaluation when making selections.

B. Standards for Application Evaluation

Applications that are determined to be eligible will be evaluated in accordance with this FOA and 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:

- It may be desirable to select for award a project, or group of projects, that represent a diversity of technical approaches and methods under this FOA or the overall program.
- It may be desirable to support complementary and/or similar projects which, when taken together, will best achieve the program's research goals and objectives.
- It may be desirable that different kinds and sizes of organizations be selected for award in order to provide a balanced programmatic effort and a variety of technical perspectives under this FOA or the overall program. For example, it may be desirable to select a project, or group of projects, that exhibit team member diversity, with participants including but not limited to those from MSIs (e.g., HBCUs/OMIs).²⁰
- In order to best achieve the program's research goals and objectives, it may be desirable to select for award a project or group of projects with a broad or specific geographic distribution under this FOA or the overall program.

²⁰ Minority Serving Institutions (MSIs), including HBCUs/OMIs as educational entities recognized by the Office of Civil Rights (OCR), U.S. Department of Education, and identified on the OCR's Department of Education U.S. accredited postsecondary minorities' institution list. See <https://www2.ed.gov/about/offices/list/ocr/edlite-minorityinst.html>.

- It may be desirable to select a project, or group of projects, if such a selection will optimize use of available funds.
- It may be desirable to select a project, or group of projects, if such a selection presents lesser schedule risk, lesser budget risk, lesser technical risk, and/or lesser environmental risks and impacts. Environmental risk and impact include, but is not limited to, an adverse impact to air, soil, water, or increase in overall cradle to grave greenhouse gas footprint (carbon dioxide equivalent, CO₂e).

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. 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.

iii. 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

DOE 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 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 FedConnect. The notification letter will state the basis upon which the full application is ineligible and not considered for further review.

ii. Full Application Notifications

DOE will notify applicants of its determination via a notification letter by email to the technical and administrative points of contact designated by the applicant in grants.gov. The notification letter will inform the applicant whether or not its Full Application was selected for award negotiations. Alternatively, DOE 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.

iii. 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 DOE 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 120 days. Applicants must designate a primary and a backup point-of-contact in grants.gov with whom DOE 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, DOE will cancel the award negotiations and rescind the Selection. DOE reserves the right to terminate award negotiations at any time for any reason.

Please refer to Section IV.H.ii. of the FOA for guidance on pre-award costs.

iv. Alternate Selection Determinations

In some instances, an applicant may receive a notification that its application was not selected for award and DOE designated the application to be an alternate. As an alternate, DOE may consider the 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. DOE may ultimately determine to select or not select the Full Application for award negotiations.

v. Unsuccessful Applicants

DOE 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. 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.

2. Unique Entity Identifier

Applicants must obtain an Unique Entity Identifier (UEI) from the SAM to uniquely identify the entity. The UEI is available in the SAM entity registration record.

NOTE: Subawardees/subrecipients at all tiers must also obtain an UEI from the SAM and provide the UEI to the Prime Recipient before the subaward can be issued.

3. Grants.gov

Register in Grants.gov

(<https://www.grants.gov/web/grants/applicants/registration.html>) to receive automatic updates when Amendments to this FOA are posted. However, please note that Full Applications will not be accepted through Grants.gov.

4. 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>.

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 OCED 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 Participation (September 2021)

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.jsp>.

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

DOE'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. Flood Resilience

Applications should indicate whether the proposed project location(s) is within a floodplain, how the floodplain was defined, and how future flooding will factor into the project's design. The base floodplain long used for planning has been the 100-year floodplain, that is, a floodplain with a 1.0 percent chance of flooding in any given year. As directed by Executive Order 13690, Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input (2015), Federal agencies, including DOE, continue to avoid development in a floodplain to the extent possible. When doing so is not possible, Federal agencies are directed to "expand management from the current base flood level to a higher vertical elevation and corresponding horizontal floodplain to address current and future flood risk and ensure that projects funded with taxpayer dollars last as long as intended." The higher flood elevation is based on one of three approaches: climate-informed science (preferred), freeboard value, or 0.2 percent annual flood change (500-year floodplain). EO 13690 and related information is available at <https://www.energy.gov/nepa/articles/eo-13690-establishing-federal-flood-risk-management-standard-and-process-further>.

viii. 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.

ix. Statement of Federal Stewardship

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

x. Statement of Substantial Involvement

DOE has substantial involvement in work performed under awards made as a result of this FOA. DOE does not limit its involvement to the administrative

requirements of the award. Instead, DOE has substantial involvement in the direction and redirection of the technical aspects of the project as a whole. Substantial involvement includes, but is not limited to, the following:

Recipient's Responsibilities. The Recipient is responsible for:

- Performing the activities supported by this award in accordance with the Project Management Plan, including providing the required personnel, facilities, equipment, supplies and services;
- Managing and controlling project activities in accordance with established processes and procedures to ensure tasks and subtasks are completed within schedule and budget constraints defined by the current Project Management Plan;
- Implementing an approach to identify, analyze, and respond to project risks that is commensurate with the complexity of the project;
- Defining and revising approaches and plans, submitting the plans to DOE for review, and incorporating DOE comments;
- Coordinating related project activities with subrecipients and external suppliers, including contractors, to ensure effective integration of all work elements;
- Notifying the DOE Project Officer in a timely manner of issues that arise during the course of the project that jeopardize the technical, schedule and/or budget objectives;
- Attending annual project review meetings and reporting project status;
- Participating in peer review evaluations of the project, or peer review evaluations of the program that their project supports;
- Submitting technical reports and publicly releasable documents that incorporate DOE comments;
- Facilitating DOE inspection and/or evaluation of project work on the premises of the Recipient or a subrecipient, at all reasonable times and in a manner that will not unduly delay the work. The Recipient shall furnish and shall require subrecipients to furnish all reasonable facilities and assistance for the safe, efficient and convenient performance of these duties;
- Presenting the project results at appropriate technical conferences or meetings as directed by the DOE Project Officer; and
- Submitting data generated as a result of this project to NETL for inclusion in the NETL Energy Data eXchange (EDX), <https://edx.netl.doe.gov/>.

DOE Responsibilities. DOE has the right to intervene in the conduct or performance of project activities for programmatic reasons. Intervention includes the interruption or modification of the conduct or performance of project activities. Suspension or termination of the cooperative agreement under 2 CFR part 200, as amended by 2 CFR part 910 (DOE Financial Assistance Regulations)

does not constitute intervention in the conduct or performance of project activities.

DOE is responsible for:

- Reviewing in a timely manner project plans, including project management, testing and technology transfer plans, and recommending alternate approaches, if the plans do not address critical programmatic issues;
- Participating in project management planning activities, including risk analysis, to ensure DOE's program requirements or limitations are considered in performance of the work elements;
- Conducting quarterly project review meetings to ensure adequate progress and that the work accomplishes the program and project objectives. Recommending alternate approaches or shifting work emphasis, if needed;
- Providing significant involvement to ensure that project results address critical system and programmatic goals established by Fossil Energy and Carbon Management in coordination with Carbon Transport and Storage Programs;
- Promoting and facilitating technology transfer activities, including disseminating program results through presentations and publications;
- Significant direct operational involvement or participation is anticipated to ensure compliance with statutory requirements, such as environmental protection;
- At the DOE's discretion, physically inspecting and evaluating the work performed or being performed under the Cooperative Agreement, including associated documentation, and the premises where the work is being performed;
- Serving as scientific/technical liaison between awardees and other program or industry staff; and
- Reviewing and concurring with ongoing technical performance to ensure that adequate progress has been obtained within the current Budget Period authorized by DOE.

xi. Subject Invention Utilization Reporting

To ensure that prime recipients and subrecipients holding title to subject inventions are taking the appropriate steps to commercialize subject inventions, DOE 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 DOE 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 DOE may specify.

xii. 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>.

xiii. Reporting

Reporting requirements are identified on the Federal Assistance Reporting Checklist and Instructions, DOE F 4600.2, attached to the award agreement. A sample checklist is available at:

<https://www.netl.doe.gov/sites/default/files/netl-file/4600.2-FE.pdf>.

Additional reporting requirements apply to projects funded by BIL. As part of tracking progress toward key departmental goals – ensuring justice and equity, investing in the American workforce, boosting domestic manufacturing, reducing greenhouse gas emissions, and advancing a pathway to private sector deployment – DOE may require specific data collection. Examples of data that may be collected include:

- New manufacturing production, and recycling capacity
- Trainings completed, trainees placed in full-time employment, workforce partnerships involving employers, community-based organizations, or labor unions.
- Justice and Equity data, including:
 - Minority Business Enterprises, Minority Owned Businesses, Woman Owned Businesses and Veteran Owned Businesses acting as vendors and sub-contractors for bids on supplies, services and equipment.
 - Value, number, and type of partnerships with MSIs
 - Community and stakeholder engagement events, consent-based siting activities
 - Other relevant indicators from the Community Benefits Plan,
- Number and type of energy efficient and clean energy equipment installed
- Funding leveraged, follow-on-funding, Intellectual Property (IP) Generation and IP Utilization

xiv. Go/No-Go Decision Points

Project(s) selected under this FOA will have go/no-go decision points incorporated into the Statement of Project Objectives (SOPO) as appropriate to ensure that projects meet certain criteria prior to proceeding beyond the go/no go point. Go/No-Go decision points may include effective implementation of community benefit plans, or to incorporate DOE review of the Progress Report relating to societal considerations, impacts, and benefits (see Appendix E). Go/no-go

decision points will be proposed at the discretion of the Applicant but will be determined during award negotiation.

xv. 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.

xvi. 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.

xvii. 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.

xviii. 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.

xix. 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, project lead, and senior/key personnel, and 2) updated disclosures if there are changes to the current and pending support previously submitted to DOE. Also See Section IV.C.xxii.

xx. U.S. Manufacturing Commitments

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

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

As noted in the U.S. Competitiveness Provision, if an entity cannot meet the requirements of the U.S. Competitiveness Provision, the entity may request a modification or waiver of the U.S. Competitiveness Provision. For example, the entity may propose modifying the language of the U.S. Competitiveness Provision in order to change the scope of the requirements or to provide more specifics on

the application of the requirements for a particular technology. As another example, the entity may request that the U.S. Competitiveness Provision be waived in lieu of a net benefits statement or U.S. manufacturing plan. The statement or plan would contain specific and enforceable commitments that would be beneficial to the U.S. economy and competitiveness. Examples of such commitments could include manufacturing specific products in the U.S., making a specific investment in a new or existing U.S. manufacturing facility, keeping certain activities based in the U.S. or supporting a certain number of jobs in the U.S. related to the technology. DOE may, in its sole discretion, determine that the proposed modification or waiver promotes commercialization and provides substantial U.S. economic benefits, and grant the request. If granted, DOE will modify the award terms and conditions for the requesting entity accordingly.

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

The U.S. Competitiveness Provision is implemented by DOE pursuant to a Determination of Exceptional Circumstances (DEC) under the Bayh-Dole Act and DOE Patent Waivers. See Section VIII for more information on the DEC and DOE Patent Waivers.

xxi. Interim Conflict of Interest Policy for Financial Assistance Policy

The DOE interim Conflict of Interest Policy for Financial Assistance (COI Policy)²¹ is applicable to all non-Federal entities applying for, or that receive, DOE funding by means of a financial assistance award (e.g., a grant, cooperative agreement, or technology investment agreement) and, through the implementation of this policy by the entity, to each Investigator who is planning to participate in, or is participating in, the project funded wholly or in part under the DOE financial assistance award. The term "Investigator" means the PI and any other person, regardless of title or position, who is responsible for the purpose, design, conduct, or reporting of a project funded by DOE or proposed for funding by DOE. Recipients must flow down the requirements of the interim COI Policy to any subrecipient non-Federal entities. Further, for DOE funded projects, the recipient must include all financial conflicts of interest (FCOI) (i.e., managed and unmanaged/ unmanageable) in their initial and ongoing FCOI reports.

²¹ DOE's interim COI Policy can be found at [PF 2022-17 FAL 2022-02 Department of Energy Interim Conflict of Interest Policy Requirements for Financial Assistance](#).

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

xxii. Fraud, Waste and Abuse

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

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

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

The non-Federal entity or applicant for a Federal award must disclose, in a timely manner, in writing to the Federal awarding agency or pass-through entity all violations of Federal criminal law involving fraud, bribery, or gratuity violations potentially affecting the Federal award. Non-Federal entities that have received a Federal award including the term and condition outlined in appendix XII of 2 CFR Part 200 are required to report certain civil, criminal, or administrative proceedings to SAM (currently FAPIIS). Failure to make required disclosures can result in any of the remedies described in [2 CFR 200.339](#). (See also [2 CFR part 180](#), [31 U.S.C. 3321](#), and [41 U.S.C. 2313](#).) [[85 FR 49539](#), Aug. 13, 2020]

Applicants and subrecipients (if applicable) are encouraged to allocate sufficient costs in the project budget to cover the costs associated for personnel and data infrastructure needs to support performance management and program evaluation needs including but not limited to

independent program and project audits to mitigate risks for fraud, waste, and abuse.

xxiii. Human Subjects Research

Research involving human subjects, biospecimens, or identifiable private information conducted with DOE funding is subject to the requirements of DOE Order 443.1C, Protection of Human Research Subjects, 45 CFR Part 46, Protection of Human Subjects (subpart A which is referred to as the “Common Rule”), and 10 CFR Part 745, Protection of Human Subjects.

Federal regulation and the DOE Order require review by an Institutional Review Board (IRB) of all proposed human subjects research projects. The IRB is an interdisciplinary ethics board responsible for ensuring that the proposed research is sound and justifies the use of human subjects or their data; the potential risks to human subjects have been minimized; participation is voluntary; and clear and accurate information about the study, the benefits and risks of participating, and how individuals’ data/specimens will be protected/used, is provided to potential participants for their use in determining whether or not to participate.

The recipient shall provide the Federal Wide Assurance number identified in item 1) below and the certification identified in item 2) below to DOE prior to initiation of any project that will involve interactions with humans in some way (e.g., through surveys); analysis of their identifiable data (e.g., demographic data and energy use over time); asking individuals to test devices, products, or materials developed through research; and/or testing of commercially available devices in buildings/homes in which humans will be present. Note: This list of examples is illustrative and not all inclusive.

No DOE funded research activity involving human subjects, biospecimens, or identifiable private information shall be conducted without:

- 1) A registration and a Federal Wide Assurance of compliance accepted by the Office of Human Research Protection (OHRP) in the Department of Health and Human Services; and
- 2) Certification that the research has been reviewed and approved by an Institutional Review Board (IRB) provided for in the assurance. IRB review may be accomplished by the awardee’s institutional IRB; by the Central DOE IRB; or if collaborating with one of the DOE national laboratories, by the DOE national laboratory IRB.

The recipient is responsible for ensuring all subrecipients comply and for reporting information on the project annually to the DOE Human Subjects Research Database (HSRD) at <https://science.osti.gov/HumanSubjects/Human-Subjects->

[Database/home](#). Note: If a DOE IRB is used, no end of year reporting will be needed.

Additional information on the DOE Human Subjects Research Program can be found at: [HUMAN SUBJECTS Human Subjects Pr... | U.S. DOE Office of Science \(SC\) \(osti.gov\)](#).

xxiv. Indemnity

Awards resulting from this FOA will contain the following provision reminding Recipients of DOE's rights of indemnification.

The Recipient shall indemnify the Government and its officers, agents, or employees for any and all liability, including litigation expenses and attorneys' fees, arising from suits, actions, or claims of any character for death, bodily injury, or loss of or damage to property or to the environment, resulting from the project, except to the extent that such liability results from the direct fault or negligence of Government officers, agents or employees, or to the extent such liability may be covered by applicable allowable costs provisions.

xxv. Cybersecurity Plan

Be advised that under Section 40126 of the BIL, the Secretary of Energy has determined that this FOA requires an applicant to submit a Cybersecurity Plan to the DOE prior to the issuance of an award.

Each applicant whose Full Application is selected for award negotiations must submit a Cybersecurity Plan during the award negotiations phase. A Cybersecurity Plan explains how basic cybersecurity practices throughout the life of the proposed the project will be maintained.

VII. Questions/Agency Contacts

Upon the issuance of a FOA, DOE 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 this FOA must be submitted through the FedConnect portal. You must register with FedConnect to respond as an interested party to submit questions, and to view responses to questions. It is recommended that you register as soon after release of the FOA as possible to have the benefit of all responses. Applicants are encouraged to review previously issued Questions and Answers prior to the submission of questions.

Questions and comments concerning this FOA shall be submitted not later than 3 business days prior to the application due date. 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 the FedConnect portal at: <https://www.FedConnect.net>. DOE 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 relating to the registration process, system requirements, how an application form works, or the submittal process must be directed to Grants.gov at 1-800-518-4726 or support@grants.gov. DOE/NNSA cannot answer these questions.

VIII. Other Information

A. FOA Modifications

Amendments to this FOA will be posted on the Grants.gov system and the FedConnect portal. However, you will only receive an email when an amendment or a FOA is posted on these sites by registering with FedConnect as an interested party for this FOA. DOE 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

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

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

If an applicant chooses to submit business sensitive, trade secrets, proprietary, or otherwise confidential information, the applicant must provide **two copies** of the submission (e.g., Full Application). The first copy should be marked, "non-confidential" with the information believed to be confidential deleted. The second copy should be marked "confidential" and must clearly and conspicuously identify the business sensitive, trade secrets, proprietary, or otherwise confidential information and 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 Government is not liable for the disclosure or use of unmarked information, and may use or disclose such information for any purpose as authorized by law.

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

Notice of Restriction on Disclosure and Use of Data:

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

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

E. Evaluation and Administration by Non-Federal Personnel

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

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

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

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:

- 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

DOE expects to retain copies of all Full Applications and other submissions. No submissions will be returned. By applying to DOE for funding, applicants consent to DOE'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: DOE has issued a class waiver that applies to this FOA. Under this class waiver, domestic large businesses may elect title to their subject inventions similar to the right provided to the domestic small businesses, educational institutions, and nonprofits by law. In order to avail itself of the class waiver, a domestic large business must agree that any products embodying or produced through the use of a subject invention first created or reduced to practice under this program will be substantially manufactured in the United States;

- **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 DOE within the timeframes set forth in the award's intellectual property data terms and conditions. Any patent waiver that may be granted is subject to certain terms and conditions in 10 CFR 784;
- **DEC:** On June 07, 2021, DOE approved a DETERMINATION OF EXCEPTIONAL CIRCUMSTANCES (DEC) UNDER THE BAYH-DOLE ACT TO FURTHER PROMOTE DOMESTIC MANUFACTURE OF DOE SCIENCE AND ENERGY TECHNOLOGIES. In accordance with this DEC, all awards, including sub-awards, under this FOA shall include the U.S. Competitiveness Provision in accordance with Section VI.B.xxi. U.S. Manufacturing Commitments of this FOA. A copy of the DEC can be found at <https://www.energy.gov/gc/determination-exceptional-circumstances-decs>. Pursuant to 37 CFR § 401.4, any nonprofit organization or small business firm as defined by 35 U.S.C. 201 affected by any DEC has the right to appeal it by providing written notice to DOE within 30 working days from the time it receives a copy of the determination; and
- DOE may issue and publish on the website above further DEC's prior to the issuance of awards under this FOA. DOE may require additional submissions or requirements as authorized by any applicable DEC.

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

For this FOA, the funding program may determine that an extended period of protection (more than five years and not to exceed thirty years) is reasonably required for commercialization and will apply to certain categories of data first produced under the resulting awards in accordance with 15 U.S.C. § 3710a(c)(7)(B)(ii) and the Energy Policy

Acts of 1992 and 2005, or 42 U.S.C. § 7256(g)(5) for OTAs, if applicable. Information regarding the categories of data and period of protection will be provided during the negotiation process.

M. Copyright

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

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”. All recipients and subrecipients are responsible for ensuring compliance with Export Control Laws and regulations relating to any work performed under a resulting award.

The recipient must immediately report to DOE any export control violations related to the project funded under the DOE award, at the recipient or subrecipient level, and provide the corrective action(s) to prevent future violations.

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

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

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

P. 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.

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).

Q. 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. DOE will share in the cost of the audit at its applicable cost share ratio.

Table of Appendices

Appendix A: CO ₂ Pipeline Concept Studies.....	100
Appendix B: Basis for ES&H Analysis	101
Appendix C: Regulatory Plan	103
Appendix D: Workforce Readiness Plan Template	105
Appendix E: Community Benefits Plan Requirements.....	108
Appendix F: Principles for an Effective Consent-Based Project Siting Process	116
Appendix G: Business Case Analysis	118
Appendix H: Data Management Plan	120
Appendix I: Project Management Plan Guidance	122
Appendix J: Cost Share Information	127
Appendix K: Waiver Requests For: 1. Foreign Entity Participation; and 2. Foreign Work.....	132
Appendix L: Required Use of American Iron, Steel, Manufactured Products, and Construction Materials	135
Appendix M: Statement of Project Objectives	139
Appendix N: List of Acronyms	144

APPENDIX A: CO₂ PIPELINE CONCEPT STUDIES

CO₂ Pipeline Concept Study

- Pipeline sizes, hydraulic study, compression/pumping needs, power requirements, facilities, and major pipeline appurtenances.
- Maps identifying the pipeline route or alternative routes, including whether project considers existing pipelines for potential service conversion and whether alternative routes take into consideration disadvantaged community designation.
- Basic technical design parameters and system schematic such as a process flow diagram (PFD).
- Desktop review of environmentally, ecologically, and culturally sensitive areas, geotechnical hazards, other significant areas of concern, and proposed mitigation methods.
- Identification of project's major impacts to critical resources including but not limited to water, air, minerals, forests, wildlife, farmland, navigable waterways, and vulnerable communities subject to social and environmental injustice including disadvantaged communities.
- Preliminary permitting procedures, list of agencies, and review timeline.
- Major crossings, field reconnaissance information, and preliminary constructability review.
- Basic pipeline safety risk assessment plans and procedures.
- Project management plan including a preliminary risk register.
- Identification of major land ownership parcels and market appraisal along the pipeline route.
- A preliminary AACE parametric or itemized Class 4 cost estimate, basis of estimate, and a benchmarking study.
- A proposed overall project schedule in Gantt chart.
- Status of any existing project-specific studies to date.

APPENDIX B: BASIS FOR ES&H ANALYSIS

The purpose of the Environmental, Safety, and Health (ES&H) activity is to assess the environmental friendliness and safety of any future process based on the materials and process being proposed under the subject DOE FOA. The ES&H risk assessments shall be conducted by qualified and experienced organizations and professionals (e.g., environmental scientists, industrial hygienists, safety engineers). *Unanticipated or uncontrolled ES&H risks will impede the demonstration and commercialization of CCUS and CDR technologies, and the ES&H assessment is a critical element of the FEED study.*

Required elements for the ES&H Assessment are:

- 1) All potential ancillary or incidental air and water emissions, and solid wastes produced from construction and operations of the proposed CO₂ transport technology (e.g., pipeline) shall be identified and their magnitude estimated.. Short-term and long-term adverse effects on the environment, safety, and health of humans shall be described, including change due to climate change. This includes, but not limited to, impacts due to soil movement, drinking water, surface water, ecology, flora/fauna, air quality, wetlands, fisheries, and land use.
- 2) If possible, a concise but complete and comprehensible description of the various toxicological effects of the substances identified in (1) above shall be provided. A thorough literature search shall be conducted to examine potential human health effects and ecotoxicity. Where information is lacking for a particular material, it shall be compared to similar substances or classes of substances.
- 3) Properties related to volatility, flammability, explosivity, other chemical reactivity, and corrosivity shall also be collected from existing databases or if necessary, through direct measurement in cases where the substance is not in common use.
- 4) The compliance and regulatory implications of the proposed CO₂ transport technology shall be addressed with reference to applicable Federal Pipeline Safety Regulations, U.S. ES&H laws, and associated standards including the Comprehensive Environmental Response and Liability Act of 1980 (CERCLA), Toxic Substances Control Act (TSCA), Clean Water Act (CWA), Clean Air Act (CAA), Superfund Amendments and Reauthorization Act (SARA) Title III, and the Occupational Safety and Health Act (OSHA).
- 5) An engineering analysis shall be conducted for any potentially hazardous materials identified to look for ways their use can be eliminated, mitigates, or minimized. Less hazardous materials should be substituted where possible. For any new materials being proposed, synthetic options shall be examined that may lead to similar, less-hazardous compounds with the required functionality. Possible engineering controls and other mitigation strategies shall be described as appropriate.

- 6) Precautions for safe handling and conditions for safe storage shall be identified, including any incompatibilities with other materials that may be used in the process. Waste treatment and offsite disposal options shall be examined. Accidental release measures shall also be discussed.
- 7) An assessment shall be conducted for population density along the route and pipeline setback distances to dwellings (homes and/or businesses), including when extra depth soil cover and stronger pipe should be installed.

APPENDIX C: REGULATORY PLAN

Applicants must submit a regulatory plan, as part of the initial application, that demonstrates how the deployment of the proposed CO₂ transport system will meet or exceed state and federal regulatory requirements. The regulatory plan shall identify the regulatory approvals needed for the proposed CO₂ transport system to operate. Successful applicants will demonstrate the ability of a plan to exceed the minimum health, environment, and safety regulatory requirements. In conjunction with the Community and Stakeholder Engagement Plan, the Regulatory Plan shall identify if community and stakeholder support has been obtained or opposition has been received by the applicant. The plan will be evaluated as part of the technical review process. If awarded, applicants must implement, evaluate, and update this plan throughout the life of the project. In addition, applicants will be required to report on regulatory approval progress and outcomes throughout the project lifecycle and the final report at the direction of DOE.

The Regulatory Plan must include the following elements and may include additional elements as appropriate. Applicants **must include**:

1. **Background.** A description of prior and ongoing efforts by members of the project team to engage regulators relevant to this proposed project. What regulatory proceedings have already occurred? What regulatory approvals have been granted or denied? What current regulatory proceedings are ongoing? For ongoing proceedings, what is the regulatory request at issue (including legal criteria) and what is the estimated timeline for the process?
2. **Adverse Parties.** Identify any parties or groups that have been adverse to the proposed project in prior or ongoing regulatory proceedings with a brief summary of the relevant opposition.
3. **Regulatory Plan Analysis Summary.** A description of how regulatory requirements were identified. Include an assessment of existing community support for and/or opposition to this project; including a description of steps taken to gather this information.
4. **Engagement Methods and Timeline.** Applicants should develop a schedule that includes when and how they will engage regulators, as well as the objectives for the engagement. This should include a description of specific methods that will be used to engage regulators. Methods, which could include activities like pre-application presentations to regulators, should be matched to project phase. They should also be matched to goals, which may include learning about regulators' policy concerns and legal requirements, seeking input, addressing input and concerns, and providing information, depending on project stage.
 - a. The applicant should propose when they will begin implementing this plan which will be no later than 90 days into the project.
5. **Consent-Based Siting Statement.** This statement should include discussion of whether eminent domain is legally permissible in the jurisdiction of the proposed project and whether the applicant intends to pursue use of it, if allowed under

law. The applicant should explain how use of eminent domain is consistent with two-way engagement and whether there is a pathway to avoid the use of eminent domain.

6. **Project Agreements Statement.** A brief statement describing any plans to negotiate a Community Benefits Agreement, Good Neighbor Agreement, or similar agreement, and whether those agreements will be used to seek regulatory approval.
7. **Resource Summary.** This is a summary of project resources dedicated to implementing the plan. The project should include information about staff (number, time on project, and experience), facilities, capabilities, and budget (both federal and cost share) that will support implementing the plan.
8. **Future work:** A description of potential regulatory activities for future work either under DOE awards or the lifecycle of the carbon transport system.

APPENDIX D: WORKFORCE READINESS PLAN TEMPLATE

This is a suggested format. If it makes sense for the Applicant to present the information in a different format, it may do so provided all content is covered.

Recipient Name:

PI Name:

Award Number:

Project Title:

Technology:

What are the occupations and necessary skills, certificates, certifications, or other educational attainment involved in the occupations related to this technology/activity?

Examples include applicable skills, apprenticeships, certificates, certifications, academic training or other programs available through in-house training or in coordination with education institutions such as community colleges, technical schools, universities, unions or other professional associations.

What is the availability and accessibility of training programs and current and projected future demand for these occupations?

Describe any training required to prepare the workforce needed to commercialize/deploy the technology and if there is availability of training and educational programs to fill current or projected activity / commercialization need as well as any projected future demand for training.

Does this activity have any ongoing or planned collaborations with education and training providers?

Describe how the Recipient plans to access any necessary training for its workforce, through coordination with educational institutions such as community colleges, technical schools, and universities, company-led, in-house training, union training, etc. Please identify any institutions with which working relationships exist.

Is there a need for the creation of a new workforce training program for this specific technology being developed to meet demand or to teach new skills necessary for emerging technologies?

This may include the creation of new apprenticeship, certificate, certifications, or other related training programs with educational training providers, like community colleges or universities or others. Ex. New welding techniques, skills necessary for advanced materials, increased demand for IT and coding skills, etc.

Explanatory Note: The substantive narrative discussion provided through the questionnaire will be used by DOE to populate a database repository of occupations, skills, training, and availability of training associated with the different technologies. This database will be a useful tool for stakeholders to understand the current, up-to-date skills and education necessary for

occupations and trades associated with upstream and downstream of the technologies being developed. Below is an example of the end use of answers to the questionnaire. In the example below you can see two careers or occupations that have been identified, one requiring at least undergraduate training (Data Programmer/Analyst) and another requiring technical skills training, with an associate degree from a community college or equivalent training.

Job/Career Name	Field	Skills Needed	Education Requirements	Availability of Training Programs
Big Programmer/Analyst	Data	<ul style="list-style-type: none"> • Able to: <ul style="list-style-type: none"> ○ Efficiently extract large scale complex business data (time series data, structured/unstructured) from various data sources and prepare them for data analytics. ○ Partner with product experts, leverage common open-source machine learning/deep learning packages for identifying data patterns/trends or building predictive models. ○ Deploy solutions to business units using software technologies to generate measurable values for businesses. ○ Grasp the application of the latest machine learning and artificial intelligence open-source packages, cloud, and distributed computing technologies to ensure the best technologies are implemented to meet businesses' data challenges. 	<ul style="list-style-type: none"> • Undergraduate degree in Data Science, Computer Science, Math, or Statistics. • 7 years of experiences with a minimum of 2 years experiences in extracting the data, using common classification or regression open-source packages through R or Python. • Basic knowledge with big data platforms like Hadoop, Hive, or Phoenix, as well as knowledge in parallel programming, and distributed computing frameworks like Spark. 	Yes, Undergraduate college or university programs.

Welder	<ul style="list-style-type: none"> • Construction experience is required on wellhead platform, topsides, structure, piping, pressure vessels and practical knowledge of applicable codes and standards such as AWS, ISO, API, ASTM and ASME. experience on Construction yard is required. • Comprehensive knowledge in welding, material, and NDE. • Ability to: <ul style="list-style-type: none"> ○ Perform welding on various materials at required position using different welding processes, including, but not limited to, GTAW, SMAW, FCAW, GMAW and SAW. ○ Lay out, position, fit, and weld various piping and structural components, including pipes, flanges, fittings, valves, piping supports, structural plates, beams, etc., in accordance with the supplied piping/structural fabrication drawings. ○ Set up, troubleshoot, and operate welding machines according to job specifications and welding procedures. ○ Adjust valves, gauges, and flames as needed and Be capable of handling compressed gas and oxygen cylinders safely. ○ Operate air arc gouger, grinder, and other industry machines, tools, and equipment. 	<ul style="list-style-type: none"> • Welding, certified to AWS CWI, CSWIP Grade 3.2 or EWIP/IWIP-C or company-approved equivalent. 	Yes, Technical or 2-year college
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APPENDIX E: COMMUNITY BENEFITS PLAN REQUIREMENTS

For Societal Considerations and Impacts (SCI) evaluation for projects funded under the Bipartisan Infrastructure Law, we are asking for a Community Benefits Plan in line with other Bipartisan Infrastructure Law efforts. The Community Benefits Plan includes all the elements of SCI work, and uses standard language to help applicants applying for multiple programs. Provided below are the requirements for applicants to include in the community benefits plan at the time of submission. As a reminder, these plans will be evaluated under Merit Review Criteria 4, and applicants are asked to include work relevant to each plan within the Statement of Project Objectives (SOPO). For each plan, the applicant should include at least one SMART (Specific, Measurable, Achievable, Relevant and Time-Bound) milestone per calendar year for reporting on work relevant to it in the SOPO. This work should include success measurement metrics for plan actions.

- During the first 90 days of award, DOE will work with awardees to update the Plans and Plan Development Proposals, which can include new impacts, metrics and ways of processing the information.
- Justice40 Initiative and Engagement Plan Development Proposals should be updated at 90 days, and full plans submitted 90 days subsequent to that.
- The applicant should allocate staff time and budget for at least one team member to present in person on project work related to community benefits plans at a public meeting convened with support of the DOE. Applicants will present a Mid-Project Update on societal considerations and impacts which will be part of peer review.
- A public End-of-Project Progress Report on societal considerations and impacts is required, which covers final Community Benefits Plans, accomplishments, and findings. It will be included in the project's overall final report.

Quality Jobs Plan

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

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

Specific components of the Plan must include:

- 1) A summary of the applicant's plan to attract, train, and retain a skilled and well-qualified workforce for both construction and ongoing operations/production activities. A collective bargaining agreement, project labor

agreement, labor-management partnership, or other similar agreement would provide evidence of such a plan. Alternatively, applicants may describe:

- a) wages, benefits, and other worker supports to be provided;
 - b) commitments to support workforce education and training, including measures to reduce employee turnover costs for employers, increase productivity from a committed and engaged workforce, and promote a nimble, resilient, and stable workforce for the project; and
 - c) efforts to engage employees in the design and execution of workplace safety and health plans.
- 2) Describe whether workers can form and join unions of their choosing, exercising collective voice. Employees' ability to organize, bargain collectively, and participate, through labor organizations of their choosing, in decisions that affect them contributes to the effective conduct of business and facilitates amicable settlements of any potential disputes between employees and employers, providing assurances of project efficiency, continuity, and multiple public benefits.

The Quality Jobs Plan is recommended to be no longer than 5 pages. Save the information in a file named "QJ.pdf" and click on the "Add Optional Other Attachment" to attach.

Diversity, Equity, Inclusion, and Accessibility Plan

Elements of the DEIA plan to include are:

1. **Background.** Describe prior and ongoing efforts by members of the project team relevant to DEIA, based on findings from an initial assessment that examines the context of DEIA in organizations related to the project team.
2. **Milestones and Timelines.** The DEIA Plan should describe targeted DEIA outcomes and implementation strategies, including milestones, and should include a DEIA Plan schedule for execution. See Guidance for more details on what this could involve.
3. **Resource Summary.** Describe project resources dedicated to implementing the plan including staff, facilities, capabilities, and budget that will support implementing the plan. The application should include information about:
 - Staff: The number of staff, their time on the project and their educational qualifications and experience (e.g., people trained in DEIA, facilitation, and/or social science).
 - Facilities, equipment, and capabilities: Physical buildings and meeting spaces, specialized equipment for use in research, scientific, and DEIA work, and/or the abilities staff, facilities, and equipment enable for the project.
 - Budget: Planned federal and/or project cost share aligned with activities in the plan.

Applicants are encouraged to organize the plan in a way that makes sense for the people in your project / organization and will be read by them. See Guidance Documentation for detailed guidance and examples on creating a DEIA plan.

The DEIA Plan is recommended to be no longer than 5 pages. Save the information in a file named “DEIAP.pdf” and click on the “Add Optional Other Attachment” to attach.

Justice40 Initiative Plan

The J40 Plan describes plans to address energy and environmental justice concerns, which will maximize the likelihood of successful projects. There are two parts to the J40 plan. Part 1 is an Energy and Environmental Justice Assessment (EEJ Assessment), which assesses project benefits and impacts. Part 2 is the Justice40 Implementation Strategy section, which explains what actions the applicants will take to maximize benefits and minimize negative impacts. While meaningful engagement with impacted communities is a key component of environmental justice, this is covered in detail as part of the community and stakeholder engagement plan. If the applying organization and/or team has prior or ongoing efforts to advance environmental and energy justice, applicants are encouraged to discuss how their J40 Plan incorporates lessons learned and builds on these prior/ongoing efforts.

The J40 Plan is required regardless of whether or not a project or work site is located within a disadvantaged community. Because the Justice40 Initiative includes a broad range of benefits that may accrue across many locations, applicants must describe potential to minimize and mitigate negative impacts on disadvantaged communities, even if the project work site(s) itself is not located in or near a disadvantaged community.

J40 Plan Development Proposals should include the following elements:

1. A **preliminary Energy and Environmental Justice Assessment** that includes an analysis of communities, including disadvantaged communities, that will be affected by the project. This can be accomplished by using environmental justice screening tools and DOE’s working definition of disadvantaged communities (further described in Guidance Documentation). The assessment should also offer a brief summary of benefits and impacts, including negative impacts, that can be anticipated based on prior experience or readily available data. Some of this may be known from other permitting requirements or similar projects.
2. A **description of research** that will need to be done to develop a detailed plan, including scoping data sources for incorporation into the plan (existing data sources as well as datasets that need to be developed).
3. A **timeline** for developing the plan, including appropriate milestones.
4. A **description of personnel** who will work on the plan, including trainings or qualifications that may need to be acquired.
5. An **estimate of financial resources** required for developing the plan.

6. A **description of any community partners** who may be interested in collaborating on or learning about the plan.

The recommended length for the J40 Plan Development Proposal not to exceed 4 pages. Save the information in a file named “Justice40PDP.pdf”, and click on the “Add Optional Other Attachment” to attach.

Applicants will be asked to develop a full J40 Plan within 90 days of award.

Part 1: Energy and Environmental Justice Assessment (EEJ Assessment)

Elements include:

1. An assessment of impacted communities and groups. Applicants must describe the applicable communities which could experience project impacts. Applicants should identify which of these are considered disadvantaged communities per DOE’s working definition of Disadvantaged Communities, and characterize the existing burdens they are facing using EJScreen or other analytic tools. Impacts to communities and Tribes/Alaska Native Corporations (ANCs) should be considered for inputs and outputs along the full lifecycle of the project and facility, in addition to impacts at the project site(s) or work location(s).

2. An assessment of project benefits and where they flow. Applicants must describe in detail anticipated project benefits. This description must clearly enumerate: a) specific project benefits, including to the greatest extent possible metrics that will be used to track these benefits; b) where/to whom project benefits are expected to flow and the extent to which these benefits flow to disadvantaged communities; and c) describe how well the anticipated project benefits and impacts align with community priorities. Have community-based organizations or relevant groups identified community priorities that align, or do not align, with project benefits? Benefits should be quantifiable, measurable, and trackable to the greatest extent possible; it is expected that applicants include qualitative alongside quantitative benefits. For more details on what might be a benefit and how to assess it, please see the Guidance.

3. An assessment of project negative impacts, and any other impacts not included under “benefits.” Applicants must describe anticipated project disbenefits / harms, or other impacts not included under “benefits”. Negative impacts could include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health impacts. Consider direct impacts, indirect impacts, and cumulative impacts. Negative impacts should be quantifiable, measurable, and trackable to the greatest extent possible; it is expected that applicants include quantifiable alongside qualitative metrics. Please also discuss whether disadvantaged communities will experience negative impacts disproportionately and how additional project negative impacts will interact with existing cumulative burdens. For more details on what might be a disbenefit and how to assess it, please see the Guidance.

4. Assessment of information gaps: For elements of the EEJ Assessment where additional work is needed to fully assess or measure potential project impacts or impacted communities, applicants can outline research and analytical goals to clarify the unknowns.

Part 2: Justice40 Implementation Strategy

The J40 Implementation Strategy will outline concrete steps the applicant will take to maximize benefits, minimize negative impacts, and measure, track, and report project impacts.

It should include the following elements that build on the EEJ Assessment, and may include additional elements as appropriate:

5. Background: A brief narrative summary of the opportunities and risks related to energy and environmental justice in the project.

6. Milestones and Timelines: Applicants should develop a schedule which includes when and how work in the J40 Plan will be conducted. The J40 Plan schedule should define its timeline on the same schedule as the Project Management Plan. It is expected that pivotal points in the Engagement plan's schedule will also be included in the Project's SOPO. This includes project milestones for maximizing benefits and minimizing negative impacts; milestones to measure, track, and report project impacts; updates to the EEJ assessment; and future work. See Guidance for further details and examples of what might go into this section.

7. Assessment of risks to realizing benefits and minimizing negative impacts: For items outlined in the EEJ Assessment, discuss potential risks to realizing project benefits, minimizing negative impacts, and plans for mitigating those risks.

8. Resource Summary: Describe project resources dedicated to implementing the J40 Plan including staff, facilities, capabilities, and budget that will support implementing the Plan.

Community, Labor, and Stakeholder Engagement Plan

Community and Stakeholder Engagement Plans set forth the applicant's plans for engaging with stakeholders, Tribes/ANCs, and community-based organizations representing local residents and businesses, labor unions and worker organizations, local government, emergency responders, and communities with environmental justice concerns. Community and labor engagement should lay the groundwork for the eventual negotiation of a Workforce and

Community Agreement, which could take the form of one or more kinds of negotiated agreements with affected communities, such as Community Benefits Agreements, Project Labor Agreements, or others. If awarded and in conjunction with DOE, awardees will also identify to DOE any federally recognized Indian Tribes, including Alaska native village or regional or village corporations (who are not project partners) for whom the proposed project may have implications. The awardee will provide information to support DOE's development of a Tribal engagement plan that acknowledges each Tribe's consultation policies, traditions, and expectations, and adheres to DOE Order 144.1 on Tribal consultation, with the hope that appropriate mitigation will be identified through government-to-government consultation to off-set any such potentially adverse implications. DOE is and remains responsible for government-to-government consultation with any federally recognized Indian Tribes, including Alaska native village or regional or village corporations about the proposed project.

Engagement Plan Development Proposals should include the following elements:

1. A description of prior engagement efforts by the project team (in other words, the first element of the Plan)
2. A description of research that will need to be done to develop a detailed plan, including scoping data sources for incorporation into the Plan (existing data sources, as well as datasets that need to be developed)
3. A timeline for developing the plan
4. A description of personnel who will work on the Plan, including training or qualifications that may need to be acquired
5. An estimate of financial resources required for developing the Plan
6. A brief discussion of resources, references, or community partners that will be useful in developing the Plan

Engagement Plan Development Proposals should also describe how the project will address engagement around regulatory and siting considerations, including eminent domain when applicable.

The Engagement Plan Development Proposal is recommended to be no longer than 4 pages. Save the information in a file named "EngagementPDP.pdf" and click on the "Add Optional Other Attachment" to attach.

Applicants will be asked to develop a full Engagement Plan within 90 days of award.

The Engagement Plan should include the following elements, and may include additional elements as appropriate.

1. **Background.** A description of prior and ongoing efforts by members of this project team to engage communities, labor, and other stakeholders relevant in this proposed project.

2. **Social Characterization Assessment.** An analysis of community dynamics and decision-making processes. Applicants are requested to include a brief writeup from this process (see Guidance for more information and resources).
3. **Initial Stakeholder Analysis Summary.** A description of how stakeholders were identified; which sectors, labor unions, communities, organizations, etc. the stakeholders represent; and their current or anticipated level of engagement (e.g., advisory committee, working group member, active public participant, etc.). Include an assessment of existing community support for and/or opposition to this project, including a description of steps taken to gather this information.
4. **Engagement Methods and Timeline.** Applicants should develop an Engagement Plan schedule which includes when and how they will engage stakeholders, communities, and labor unions as well as the objectives for the engagement. Methods, which could include activities like listening sessions, town halls, open houses, mediated discussions, and more (see Guidance Documentation) should be matched to project phase and goals. The Engagement Plan schedule should define its timeline on the same schedule as the Project Management Plan, with pivotal points in the Engagement plan's schedule to be included in the Project's SOPO. If awarded, awardees will work in conjunction with the Department of Energy to develop a Tribal engagement plan as appropriate.
5. **Two-way Engagement Statement.** This statement should include discussion of how the project incorporates principles of consent-based siting *and* the extent to which the host community or communities have already given consent for the siting of a CO2 storage facility and/or pipelines or other conveyances of CO2. The statement should list the points in the project where engagement can impact project decisions or project characteristics, including a discussion of whether there is a pathway for the project to consider changing target site based on social considerations. More information on how to craft the Two-Way Engagement Statement can be found in the Guidance.
6. **Project Agreements Statement.** A brief statement describing any plans to negotiate a Community Benefits Agreement, Good Neighbor Agreement, **Project Labor Agreement, Community Workforce Agreement, and/or other collective bargaining agreements** or similar agreements. Such agreements facilitate community input and social buy-in, identify how concerns will be mitigated, and specify the distribution of community benefits, including access to jobs and business opportunities for local residents, thus reducing or eliminating project risks.
7. **Engagement Evaluation Strategy.** A description of plans for activities to evaluate the success of engagement, including evaluating community, labor, and stakeholder perceptions of the progress.
8. **Resource Summary.** Describe project resources dedicated to implementing the plan including staff, facilities, capabilities, and budget that will support implementing the plan.

The Engagement Plan is recommended to be a maximum of 10 pages. Save the information in a file named "EngagementPlan.pdf" and click on the "Add Optional Other Attachment" to attach.

APPENDIX F: PRINCIPLES FOR AN EFFECTIVE CONSENT-BASED PROJECT SITING PROCESS

DOE Principles for an Effective Consent-Based Project Siting Process
<ol style="list-style-type: none"> 1. Prioritization of Safety – The highest priority will be to site, design, construct, and operate the proposed facilities in a safe and secure manner that is protective of human health and the environment. 2. Environmental Responsibility – The siting process will support the development, construction, and operation of facilities that successfully capture, transport, and store CO₂ and use best practices with respect to rigorous planning, implementation, and monitoring. 3. Regulatory Requirements – The siting process will support the development of facilities that meet or exceed applicable regulatory requirements. Regulatory requirements will be applied rigorously and transparently. 4. Trust Relationship with Indian Tribes – The siting process will respect Tribal sovereignty and self-determination, lands, assets, resources, and treaty and other federally recognized and reserved rights. The process will take into account siting impacts on sacred Tribal lands, and other areas and resources of religious or cultural significance. 5. Environmental Justice – The process will pursue fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income. The process will also embrace environmental justice principles, and comply with federal requirements and guidance on these issues. 6. Informed Participation – Consent is not meaningful unless it is informed. This means that the implementing organization will share information and provide financial and technical resources to communities as needed to enable effective participation and provide for informed decision-making. 7. Equal Treatment and Full Consideration of Impacts – The siting process will be conducted in a manner that is considerate of parties who are or may reasonably be affected, identifies and shares information about potential impacts, and makes explicit the role of fairness and equity considerations in its decision-making 8. Community Well-being – Communities will want to weigh the potential opportunities and risks of hosting a facility, including the social, economic, environmental, and cultural effects—both positive and negative—it may have on the community. To ensure that the siting process is fair and durable, consideration of all these impacts and benefits will be integral to the siting process. 9. Voluntariness/Right to Withdraw – Participation in the consent-based siting process will be voluntary. Further, a community that volunteers to be considered for hosting a pipeline or storage facility reserve the option to reconsider and withdraw itself from further participation up to the point that a binding agreement has been signed. Provisions specifying when and on what grounds agreements could be terminated or amended beyond that point could be negotiated as part of the agreement. 10. Transparency – The siting process will be open to input throughout and transparent with respect to how decisions are made. Every effort will be made to share information and input with all participants in the process and explain how this information and input is being considered or applied. 11. Stepwise and Collaborative Decision-Making that is Objective and Science-Based – The process will be implemented in discrete, transparent, and easily observed and evaluated steps, in

consultation with the public, interested stakeholders, and affected parties. Decisions will be based on sound science and siting considerations and regulatory requirements will be applied rigorously and transparently. The siting process will recognize the value of supporting robust participation, encouraging multiple applications, and keeping options open, especially in the early phases of the siting process

12. A flexible and adaptive process - Experience in the United States and elsewhere suggests that siting processes, especially for complex and controversial facilities, are inherently unique. That means the steps taken may not occur exactly in the sequence described by DOE or elsewhere and may need to be modified—in duration and/or scope—based on the particular needs of potentially interested communities and on the nature of the facility itself.

APPENDIX G: BUSINESS CASE ANALYSIS

The business case analysis should demonstrate an understanding of the current and projected commercial viability of the proposed CO₂ transport network(s). The analysis should describe the projected and intended use for the pipeline infrastructure over the next 50 years including types of CO₂ sources and sinks in the present and future that will be available to utilize the pipeline infrastructure. The analysis must also clearly state whether the project will be an open access or common carrier pipeline to all interested shippers and has considered capacity for future CO₂ sources.

The analysis will contain a Business Case Analysis, Technical overview; Market analysis; Future deployment projection; and Quantification of potential benefits of the technology.

An outline of each of the five major pieces of the analysis are as follows:

Business Case Analysis

- A *pro forma* which quantifies the projected financial parameters such as operating costs, operating revenues, financing cash flows, EBITDA, tax credits and liabilities, and Return on Investment (ROI) over the project lifespan. The Business Case Analysis should also include a list of key economic and financial assumptions.

Technical overview

- Description of the gas compositions, volume aggregation, and suitability for CO₂ transport and storage associated with the FEED study.

Market Analysis

- Description of the CO₂ sources, CO₂ conversion options, and/or CO₂ geologic storage locations, and pipeline routes within the region of interest of the FEED study
- Analysis of applicability for co-location of this technology with other clean energy applications
- Discussion of the potential utilization of tax credits and other incentives, including projected revenue and duration
- Discussion of potential financing structures and partnerships for deployment of the technology

Future deployment projection

- Provide the potential deployment scale of the technology across the current and future CO₂ sources, CO₂ conversion, and/or CO₂ geologic storage locations
- Identify and compare competing technology options and/or competing transportation modes
- Discussion of potential barriers to large scale deployment

Quantify Potential Benefits of the technology

- Provide estimates of the potential benefits of large-scale deployment in terms of metrics such as manufacturing jobs, revenue, emissions reductions, etc.

APPENDIX H: DATA MANAGEMENT PLAN

A Data Management Plan (DMP) will be received as part of the application and will be evaluated as part of the merit review. The DMP will be negotiated and incorporated as an attachment to the award.

- In accordance with Executive and DOE Orders, any data products generated as a result of federally funded research and development shall be provided to NETL for inclusion in the Energy Data eXchange (EDX), <https://edx.netl.doe.gov/>. The data owner should work with its NETL/FECM Project Manager annually to assess if there is data that should be submitted to EDX and identify the proper file formats prior to submission.
- Data products resulting from federally funded research and development include but are not limited to software code, tools, applications, webpages, portfolios, images, videos, and datasets.
- All final data products **shall be submitted to EDX by the project PI/performer one (1) month prior to the end date of the project**. Note, EDX offers the contributor the option to **request a delay in release** to the public for any given contribution. Thus, if there are compelling reasons to delay release (e.g., patent application pending, publication pending, etc.), such requests can be easily accommodated but all agreed to data products still should be submitted by the Project PI/performer to EDX and that contribution process used to request the delay.
- EDX supports a wide variety of file types and formats including: 1) data, 2) metadata, 3) software/tools, and 4) articles (provided that there is an accompanying Government use license). A partial list of file formats accepted by EDX is provided below, however, EDX is designed for flexibility and accepts all types of file formats. Please contact EDXsupport@netl.doe.gov for any questions regarding file types and formats.
- EDX uses federation and web services to elevate visibility for publicly approved assets in the system, including connections with DOE's OSTI systems, Data.gov and Re3Data. This ensures compliance with federal requirements, while raising visibility for researcher's published data products to promote discoverability and reuse.
- It is strongly encouraged that all published research products obtain an OSTI Digital Object Identifier (DOI) to ensure more visibility in other search repositories (i.e., [osti.gov](https://www.osti.gov/), [data.gov](https://www.data.gov/), [Google Scholar](https://scholar.google.com/), etc.). EDX has a custom-built API within the standard contribution workflow that allows contributors the option for obtaining an OSTI DOI by completing just a few additional fields.
- If there are questions about contributions to EDX, Project PIs should work with their Project Manager. EDX help information is also available at <https://edx.netl.doe.gov/about> or edxsupport@netl.doe.gov.
- **Common Data Product Submission Formats:** ASC, AmiraMesh, AVI, CAD, CSV, DAT, DBF, DOC, DSV, DWG, GIF, HDF, HTML, JPEG2000, JPG, MOV, MPEG4, MSH/CAS/DAT, NetCDF, PDF, PNG, PostScript, PPT, RTF, Surface, TAB, TIFF, TIFF Stacks, TXT, XLS, XML, Xradio, ZIP, and others
- **Geographic Formats:** APR, DBF, DEM, DLG, DRG, DXF, E00, ECW, GDB, GeoPDF, GeoTIFF,

GML, GPX, GRID, IMG, KML, KMZ, MDB, MrSID, SHP, and others

APPENDIX I: PROJECT MANAGEMENT PLAN GUIDANCE

The Applicant's Project Management Plan (PMP) is an approved document that defines how the Applicant will execute, monitor, and control the project to accomplish the objectives. The specific contents, level of detail, and inclusion of subsidiary planning documents are tailored according to the needs of the project. Consequently, every PMP will be different based on the risk, visibility, and/or complexity of the project and the Recipient's established processes, procedures, and systems.

Title Page:

PROJECT MANAGEMENT PLAN

{Insert Project Title}

{Date Prepared}

SUBMITTED BY

{Organization Name}
{Organization Address}
{City, State, Zip Code}

PRINCIPAL INVESTIGATOR

{Name}
{Phone Number}
{E-mail}

SUBMITTED TO

U.S. Department of Energy
National Energy Technology Laboratory

This plan should be formatted to include the following sections with each section to include the information as described below:

- A. Executive Summary:** Provide a description of the project that includes the objective, project goals, and expected results. For purposes of the application, this information is included in the Technical Volume and should be simply copied to this document for completeness, so that the Project Management Plan is a stand-alone document.
- B. Project Organization and Structure:** Provide the following information in this section:
- Organizational Chart(s): Include a complete project organizational chart and sub-organization charts (if applicable), accompanied by a discussion of how the organizational structure will facilitate the performance of the Tasks and

achievement of the objectives described in the SOPO within the time frame specified in the application.

- **Roles and Responsibilities of Participants:** Provide a discussion of key project team members, and the capacity in which each team member will assist in achieving the overall objective(s) of the proposed project. For multi-organizational or multi-investigator projects, describe the roles to be performed by each participant/investigator within the context of the Task/subtask structure contained in the SOPO. Include descriptions of any business agreements or intellectual property issues between the applicant and other members of the project team, and how these agreements will be integrated and managed.
- **Decision-making and Communication Strategy:** Provide a discussion of how communication and decision-making will occur within the context of the organizational structure, with particular emphasis on scientific/technical direction and mechanisms for controlling project scope, cost, and schedule. Include a discussion of how the project team will communicate with DOE and external stakeholders during the performance of the project.
- **Management Capabilities:** Provide information relevant to the capabilities and experience of the PI and key project team members in managing technical projects of similar nature and complexity. If applicable, include examples that demonstrate the ability to successfully meet research objectives within scope, budget and schedule.

C. Risk Management Plan: Provide a summary description of the proposed approach to identify, analyze, and respond to perceived risks associated with the proposed project. Project risk events are uncertain future events that, if realized, impact the success of the project. Risk is inherent to all projects regardless of complexity, cost, or visibility. An effective Risk Management Plan will identify perceived risks and explain mitigation strategies for each risk. At a minimum, the Risk Management Plan shall include the initial identification of significant financial, cost/schedule, technical/scope, management, planning and oversight, ES&H, external factors, and management issues that have the potential to impede project progress and strategies to minimize impacts from those issues.

The following table format is provided but is not required:

Perceived Risks and Mitigation Strategies				
Perceived Risk	Risk Rating			Mitigation/Response Strategy
	Probability	Impact	Overall	
	(Low, Med, High)			
Financial Risks:				
Cost/Schedule Risks:				

Technical/Scope Risks:				
Management, Planning, and Oversight Risks:				
ES&H Risks:				
External Factor Risks:				

D. Milestone Log: Provide milestones for each budget period of the project. Each milestone should be linked to a specific Task or Subtask and include a title, planned completion date, and a description of the method/process/measure used to verify completion. Milestones should be quantitative and show progress toward budget period and/or project goals. Conversely, periodic, mandatory progress reports are not considered to be Milestones.

Milestones are presumed to lie on the critical path of the project, i.e., unless all milestones are achieved, the Objectives as defined in the SOPO cannot be met completely. Applicants must provide at least two milestones per year throughout the course of the project. In addition, there must be at least one milestone per year that tracks progress of the Diversity, Equity, Inclusion, and Accessibility Plan, the Justice40 Plan, and the Community and Stakeholder Engagement Plan.

Milestone Format

Task/ Subtask	Milestone Title & Description	Planned Completion Date	Verification method

[Note: During project performance, the Recipient will report the Milestone Status as part of the required quarterly progress report as prescribed under the Federal Assistance Reporting Checklist. The Milestone Status will present actual performance in comparison with Planned Milestones, and include:

- (1) the actual status and progress of the project,

- (2) specific progress made toward achieving the project's milestones, and,
- (3) any proposed changes in the project's schedule required to complete milestones.]

E. Costing Profile: Provide a table (the Spend Plan) that projects the expenditures of government funds by fiscal year for each project team member.

Spend Plan by Fiscal Year Format

	FY 20XX		FY 20XX		FY 20XX		FY 20XX		Total	
	DOE Funds	Cost Share	DOE Funds	Cost Share	DOE Funds	Cost Share	DOE Funds	Cost Share	DOE Funds	Cost Share
Applicant										
Sub-recipient A, if proposed										
Sub-recipient B, if proposed										
FFRDC/NL, if proposed										
Total (\$)										
Total Cost Share %										

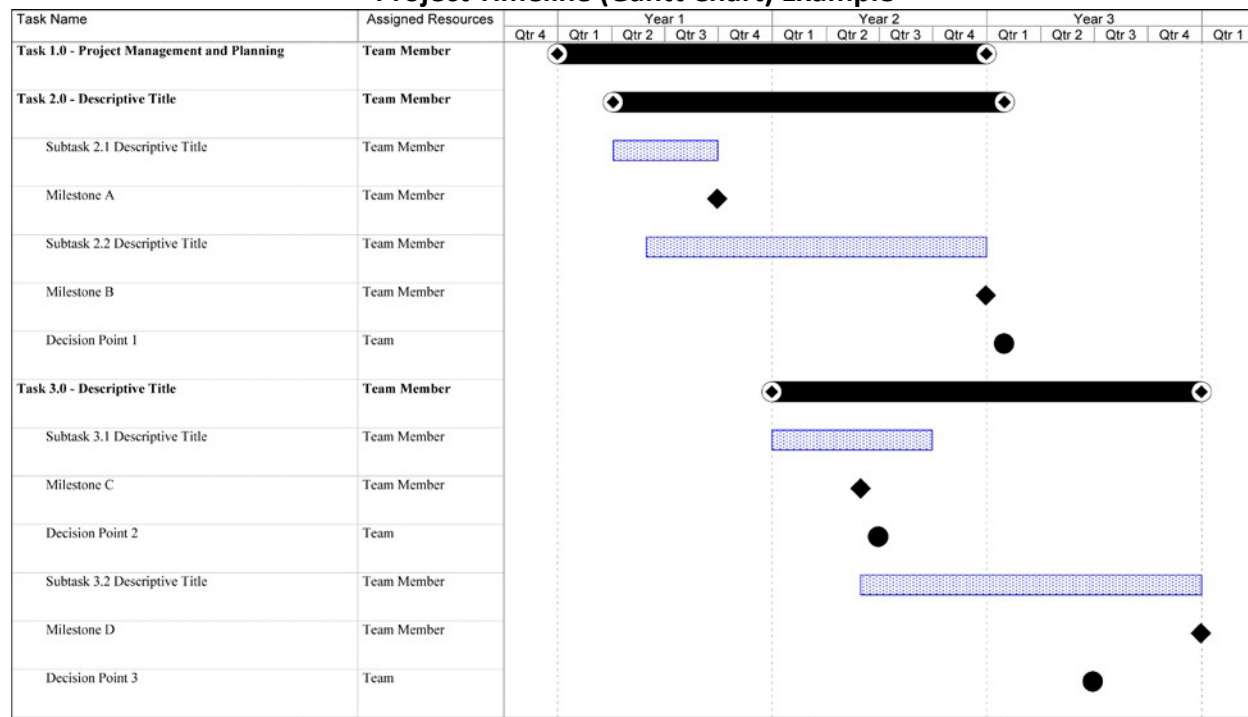
Additionally, provide a table (the Spend Plan) that projects the expenditures of funds for each task by fiscal year.

	FY 20XX		FY 20XX		FY 20XX		Total	
	DOE Funds	Cost Share	DOE Funds	Cost Share	DOE Funds	Cost Share	DOE Funds	Cost Share
Task 1.0 Project Management and Planning								
Task 2.0 Societal Considerations and Impacts (SCI) Assessment and Plans								
Task 3.0 (Title)								
Add additional tasks as necessary								
Total (\$)								
Total Cost Share %								

F. Project Timeline: Provide a timeline of the project (similar to a Gantt chart) broken down by each task and subtask, as described in the Statement of Project Objectives. The timeline should include for each task, a start date, and end date. The timeline should show

interdependencies between tasks and include the milestones that are identified in the Milestone Log (Section C).

Project Timeline (Gantt Chart) Example



G. Success Criteria: Success criteria are used by the DOE to determine if specific goals and objectives were met at the end of budget period(s), go/no-go decision points, and/or project completion. The success criteria should be objective and stated in terms of specific, measurable, and repeatable data. Usually, the success criteria pertain to desirable outcomes, results, and observations from the project.

[Note: As the first task in the Statement of Project Objectives, successful applicants will revise the version of the Project Management Plan that is submitted with their applications by including details from the negotiation process. This Project Management Plan will be updated by the Recipient as the project progresses, and the Recipient must use this plan to report scope, schedule, and budget variances.]

APPENDIX J: COST SHARE INFORMATION

Cost Sharing or Cost Matching

The terms “cost sharing” and “cost matching” are often used synonymously. Even the DOE Financial Assistance Regulations, 2 CFR 200.306, use both of the terms in the titles specific to regulations applicable to cost sharing. DOE 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 Total Project Costs. 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

While it is not possible to explain what specifically qualifies for cost sharing in one or even a couple of sentences, in general, if a cost is allowable under the cost principles applicable to the organization incurring the cost and is eligible for reimbursement under a DOE 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 are generally the same for all types of entities. The specific rules 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, DOE 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, DOE generally does not allow pre-award costs prior to the signing of the Selection Statement by the DOE 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:

- 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 K: WAIVER REQUESTS FOR: 1. FOREIGN ENTITY PARTICIPATION; AND 2. FOREIGN WORK

1. Waiver for Foreign Entity Participation

Many of the technology areas DOE funds fall in the category of critical and emerging technologies (CETs). CETs are a subset of advanced technologies that are potentially significant to U.S. national and economy security.²² For projects selected under this FOA, all recipients and subrecipients must be organized, chartered or incorporated (or otherwise formed) under the laws of a state or territory of the United States; have majority domestic ownership and control; 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.

WAIVER CRITERIA

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

- a. Its participation is in the best interest of the U.S. industry and U.S. economic development;
- b. The project team has appropriate measures in place to control sensitive information and protect against unauthorized transfer of scientific and technical information;
- c. Adequate protocols exist between the U.S. subsidiary and its foreign parent organization to comply with export control laws and any obligations to protect proprietary information from the foreign parent organization;
- d. The work is conducted within the U.S. and the entity acknowledges and demonstrates that it has the intent and ability to comply with the U.S. Competitiveness Provision (see Section VI.B.xxi.); and
- e. The foreign entity will satisfy other conditions that may be deemed necessary by DOE to protect U.S. government interests.

Content for Waiver Request

A Foreign Entity waiver request must include the following:

- a. Information about the entity: name, point of contact, and proposed type of involvement in the project;
- b. Country of incorporation, the extent of the ownership/level control by foreign entities, whether the entity is state owned or controlled, a summary of the ownership breakdown of the foreign entity and the percentage of ownership/control by foreign entities, foreign shareholders, foreign state or foreign individuals;

²² See [Critical and Emerging Technologies List Update \(whitehouse.gov\)](https://www.whitehouse.gov/critical-emerging-technologies/).

- c. The rationale for proposing a foreign entity participate (must address criteria above);
- d. A description of the project's anticipated contributions to the U.S. 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;
- e. A description of how the foreign entity's participation is essential to the project;
- f. A description of the likelihood of Intellectual Property (IP) being created from the work and the treatment of any such IP; and
- g. 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 foreign work waiver).

DOE may also require:

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

DOE may require additional information before considering the waiver request.

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

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

As set forth in Section IV.H.iii., at least 75% of the direct labor cost for the project (including subrecipient labor) must be performed in 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 DOE 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 for a foreign work waiver must include the following:

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

DOE may require additional information before considering the waiver request.

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

APPENDIX L: REQUIRED USE OF AMERICAN IRON, STEEL, MANUFACTURED PRODUCTS, AND CONSTRUCTION MATERIALS

Buy America Requirements for Infrastructure Projects

A. Definitions

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

Construction materials includes an article, material, or supply—other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives²³—that is or consists primarily of:

- non-ferrous metals;
- plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables);
- glass (including optic glass);
- lumber; or
- drywall.

Infrastructure includes, at a minimum, the structures, facilities, and equipment for, in the United States, roads, highways, and bridges; public transportation; dams, ports, harbors, and other maritime facilities; intercity passenger and freight railroads; freight and intermodal facilities; airports; water systems, including drinking water and wastewater systems; electrical transmission facilities and systems; utilities; broadband infrastructure; and buildings and real property. Infrastructure includes facilities that generate, transport, and distribute energy.

In addition to the above, the infrastructure in question must be publicly-owned or must serve a public function; privately owned infrastructure that is solely utilized for private use is not considered “infrastructure” for purposes of Buy America applicability. The Agency, not the applicant, will have the final say as to whether a given project includes infrastructure, as defined herein. Accordingly, in cases where the “public” nature of the infrastructure is unclear, DOE strongly recommends that applicants complete their full application with the assumption that Buy America requirements will apply to the proposed project.

Project means the construction, alteration, maintenance, or repair of infrastructure in the United States.

B. Buy America Requirements for Infrastructure Projects (“Buy America” requirements)

In accordance with section 70914 of the BIL, none of the project funds (includes federal share and recipient cost share) may be used for a project for infrastructure unless:

²³ BIL, § 70917(c)(1).

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

(2) all manufactured products used in the project are produced in the United States—this means the manufactured product was manufactured in the United States; and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product, unless another standard for determining the minimum amount of domestic content of the manufactured product has been established under applicable law or regulation; and

(3) all construction materials²⁴ are manufactured in the United States—this means that all manufacturing processes for the construction material occurred in the United States. The Buy America requirements only applies to articles, materials, and supplies that are consumed in, incorporated into, or affixed to an infrastructure project. As such, it does not apply to tools, equipment, and supplies, such as temporary scaffolding, brought to the construction site and removed at or before the completion of the infrastructure project. Nor does a Buy America requirements apply to equipment and furnishings, such as movable chairs, desks, and portable computer equipment, that are used at or within the finished infrastructure project, but are not an integral part of the structure or permanently affixed to the infrastructure project.

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

These requirements must flow down to all sub-awards, all contracts, subcontracts and purchase orders for work performed under the proposed project.

For additional information related to the application and implementation of these Buy America requirements, please see OMB Memorandum M-22-11, issued April 18, 2022:

<https://www.whitehouse.gov/wp-content/uploads/2022/04/M-22-11.pdf>

C. DOE Submission Requirements for Full Application

Within the first two pages of the workplan, applicants must provide a short statement on whether the project will involve the construction, alteration, and/or repair of infrastructure in

²⁴ Excludes cement and cementitious materials, aggregates such as stone, sand, or gravel, or aggregate binding agents or additives.

the United States. The ultimate determination about whether a project includes infrastructure remains with DOE, but the applicant's statement will assist project planning and integration of domestic preference requirements, which may impact the project's proposed budget.

D. Waivers

In limited circumstances, DOE may waive the application of the Buy America requirements where DOE determines that:

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

If an applicant is seeking a waiver of the Buy America requirements, it must include a written waiver request with the Full Application. A waiver request must include:

- A detailed justification for the use of "non-domestic" iron, steel, manufactured products, or construction materials to include an explanation as to how the non-domestic item(s) is essential to the project
- A certification that the applicant or recipient made a good faith effort to solicit bids for domestic products supported by terms included in requests for proposals, contracts, and nonproprietary communications with potential suppliers;
- Applicant /Recipient name and Unique Entity Identifier (UEI)
- Total estimated project cost, DOE and cost-share amounts
- Project description and location (to the extent known)
- List and description of iron or steel item(s), manufactured goods, and construction material(s) the applicant or recipient seeks to waive from Domestic Content Procurement Preference requirement, including name, cost, country(ies) of origin (if known), and relevant PSC and NAICS code for each.
- Waiver justification including due diligence performed (e.g., market research, industry outreach) by the applicant or recipient
- Anticipated impact if no waiver is issued

DOE may require additional information before considering the waiver request.

Waiver requests are subject to public comment periods of no less than 15 days and must be reviewed by the Made in America Office. There may be instances where an award qualifies, in

whole or in part, for an existing waiver described at [link to awarding agency web site with information on currently applicable general applicability waivers].

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

APPENDIX M: STATEMENT OF PROJECT OBJECTIVES

STATEMENT OF PROJECT OBJECTIVES

Title of Project

(Insert the title of the work to be performed. Be concise and descriptive)

This should be a standalone document that states the work to be conducted and should not include any proprietary/confidential information.

A. OBJECTIVES

Include one paragraph on the overall objective(s) of the work. Note: if the project will be performed in phases, include specific objective(s) for each phase of the work.

B. SCOPE OF WORK

This section should not exceed one-half page and should summarize the effort and approach to achieve the objective(s) of the work. Note: if the project will be performed in phases, includes specific scope statement(s) for each phase.

C. TASKS TO BE PERFORMED

This section provides a brief summary of the planned approach to this project. Tasks/subtasks, concisely written, should be provided in a logical sequence and should be divided into the phases of the project, as appropriate. In writing the Statement of Project Objectives (SOPO), avoid 1) the use of proper nouns to minimize SOPO modifications in the event of changes to the project team, facilities, etc.; 2) figures and equations; 3) references to other documents and publications; and 4) details about past work and discussion of technical background (which should be covered elsewhere in the application technical volume).

Task 1.0 - Project Management and Planning (REQUIRED; APPLICANT INSERT THIS TASK)

Subtask 1.1 - Project Management Plan (REQUIRED; APPLICANT INSERT THE LANGUAGE PROVIDED BELOW IN QUOTES)

"The Recipient shall manage and direct the project in accordance with a Project Management Plan to meet all technical, schedule and budget objectives and requirements. The Recipient will coordinate activities in order to effectively accomplish the work. The Recipient will ensure that project plans, results, and decisions are appropriately documented and project reporting and briefing requirements are satisfied.

The Recipient shall update the Project Management Plan 30 days after award and as necessary throughout the project to accurately reflect the current status of the project. Examples of when it may be appropriate to update the Project Management Plan include: (a) project management policy and procedural changes; (b) changes to the technical, cost, and/or schedule baseline for the project; (c) significant changes in scope, methods, or approaches; or (d) as otherwise required to ensure that the plan is the appropriate governing document for the work required to accomplish the project objectives.

Management of project risks will occur in accordance with the risk management methodology delineated in the Project Management Plan in order to identify, assess, monitor and mitigate technical uncertainties as well as schedule, budgetary and environmental risks associated with all aspects of the project. The results and status of the risk management process will be presented during project reviews and in quarterly progress reports with emphasis placed on the medium- and high-risk items.

Subtask 1.2 – Workforce Readiness for Technology Development (REQUIRED; APPLICANT INSERT THE LANGUAGE PROVIDED BELOW IN QUOTES AND CONTINUE TO COMPLETE. REFERENCE APPENDIX FOR SUGGESTED FORMAT.)

“The Recipient will prepare and maintain a Workforce Readiness Plan related to the technology being researched under the project. The Plan must describe the skillset and availability of the workforce needed for future commercialization and deployment of the technology, including whether any related apprenticeships, certificates, certifications, or academic training are currently available. If a workforce with the required skills is not readily available, or if the technology is so new that a trained workforce does not yet exist, the Recipient’s plan shall detail how the needed workforce could be developed, for instance, through coordination with educational institutions such as community colleges, technical schools, and universities; company-led in-house training; union training, etc. The Recipient will monitor and update its assessment of workforce availability and development plans throughout the life of the project.”

Task 2.0 – Engineering Design Package (REQUIRED; APPLICANT INSERT THIS TASK)

This task may include elements related to the Engineering Design Package such as Project Scope and Design, Business Case, Project Cost and Budget, Project Parameters, Design Basis, Key Design Calculations and Drawings, Critical Safety and Risk Assessments, Construction Specifications, Environmental Specifications, and Commissioning.

APPLICANT continue with tasks/sub-tasks as necessary.

Task 3.0 – Regulatory Plan (REQUIRED; APPLICANT INSERT THIS TASK)

The Recipient shall update the Regulatory Plan no later than 90 days after award and as necessary throughout the project to accurately reflect the current status of the project. The Recipient should propose when they will begin implementing this plan which will be no later than 90 days into the project.

APPLICANT continue with tasks/sub-tasks as necessary.

Task 4.0 - Community Benefits Plan (REQUIRED; APPLICANT INSERT THIS TASK)

The Recipient is also required to implement the project in accordance with the Diversity, Equity, Inclusion, and Accessibility (DEIA) Plan, an Justice40 Initiative Plan, a Community and Stakeholder Engagement (Engagement) Plan, and a Quality Jobs Plan provided in the application. It is expected that these plans will be updated within 90 days of award and provided to the NETL Project Manager. In addition, it is expected that key milestones associated with these plans will be incorporated into the milestone log as part of the overall Project Management Plan and that there will be at least one milestone per year associated with each plan. The quarterly progress reports and the final technical report shall include updates on the progress and challenges throughout the course of the award.

APPLICANT continue with tasks/sub-tasks as necessary.

D. DELIVERABLES (Required: Applicant insert the Language provided below in quotes and continue to complete.)

“The periodic and final reports shall be submitted in accordance with the “Federal Assistance Reporting Checklist” and the instructions accompanying the checklist. In addition to the reports specified in the “Federal Assistance Reporting Checklist”, the Recipient must provide the following to the DOE Project Manager (identified in Block 15 of the Assistance Agreement as the Program Manager).”

“The following guidance applies to all tasks performed under this FOA:

- In accordance with Executive and DOE Orders, any data products generated as a result of federally funded research and development shall be provided to NETL for inclusion in the Energy Data eXchange (EDX), <https://edx.netl.doe.gov/>. The data owner should work with its NETL/FECM Federal Project Manager annually to assess if there is data that should be submitted to EDX and identify the proper file formats prior to submission.
- Data products resulting from federally funded research and development include but are not limited to software code, tools, applications, webpages, portfolios, images, videos, and datasets.
- All final data products shall be submitted to EDX by the project Principal Investigator (PI)/performer one (1) month prior to the end date of the project. Note, EDX offers the contributor the option to request a delay in release to the public for any given

contribution. Thus, if there are compelling reasons to delay release (e.g., patent application pending, publication pending, etc.), such requests can be easily accommodated but all agreed to data products still should be submitted by the Project PI/performer to EDX and that contribution process used to request the delay.

- EDX supports a wide variety of file types and formats including: 1) data, 2) metadata, 3) software/tools, and 4) articles (provided that there is an accompanying Government use license). A partial list of file formats accepted by EDX is provided below, however, EDX is designed for flexibility and accepts all types of file formats. Please contact EDXsupport@netl.doe.gov for any questions regarding file types and formats.
- EDX uses federation and web services to elevate visibility for publicly approved assets in the system, including connections with DOE's OSTI systems, Data.gov and Re3Data. This ensures compliance with federal requirements, while raising visibility for researcher's published data products to promote discoverability and reuse.
- It is strongly encouraged that all published research products obtain an OSTI Digital Object Identifier (DOI) to ensure more visibility in other search repositories (i.e., osti.gov, data.gov, Google Scholar, etc.). EDX has a custom-built API within the standard contribution workflow that allows contributors the option for obtaining an OSTI DOI by completing just a few additional fields.
- If there are questions about contributions to EDX, Project PIs should work with their Federal Project Manager. EDX help information is also available at <https://edx.netl.doe.gov/about> or edxsupport@netl.doe.gov.

Common Data Product Submission Formats: ASC, AmiraMesh, AVI, CAD, CSV, DAT, DBF, DOC, DSV, DWG, GIF, HDF, HTML, JPEG2000, JPG, MOV, MPEG4, MSH/CAS/DAT, NetCDF, PDF, PNG, PostScript, PPT, RTF, Surface, TAB, TIFF, TIFF Stacks, TXT, XLS, XML, Xradio, ZIP, and others.

Geographic Formats: APR, DBF, DEM, DLG, DRG, DXF, E00, ECW, GDB, GeoPDF, GeoTIFF, GML, GPX, GRID, IMG, KML, KMZ, MDB, MrSID, SHP, and others."

Task / Subtask Number	Deliverable Title	Due Date
1.1	Project Management Plan (PMP)	Update due 30 days after award. Revisions shall be submitted as requested by the DOE Project Manager.
1.2	Workforce Readiness Plan	Update due 30 days after award. Revisions shall be submitted as requested by the DOE Project Manager.
2	Environmental Safety & Health Analysis	Update due 90 days after award. Revisions shall be submitted as required by the DOE Project Manager.

2	Business Case Analysis	Update due 90 days after award. Revisions shall be submitted as required by the DOE Project Manager.
3	Regulatory Plan Analysis	Revisions and updates shall be submitted as required by the DOE Project Manager.
4	Diversity, Equity, Inclusion, and Accessibility Plan	Update due 90 days after award. Revisions shall be submitted as required by the DOE Project Manager.
4	Justice40 Initiative Plan Development Proposal	Update due 90 days after award. Revisions shall be submitted as required by the DOE Project Manager.
4	Community Engagement Plan Development Proposal	Update due 90 days after award. Revisions shall be submitted as required by the DOE Project Manager.
4	Quality Jobs Plan	Update due 90 days after award. Revisions shall be submitted as required by the DOE Project Manager.

APPLICANT continue to identify deliverables (other than those identified on the “Federal Assistance Reporting Checklist”) that will be delivered using the format provided in the table above. Ensure the delivery date to DOE is also identified. For examples: Delivery to DOE X months after completion of task/subtask X.

NOTE: If the application is selected for award, DOE may require the Recipient to include additional deliverables, provided that such deliverables are consistent with the budget, schedule, and scope of the project.

E. BRIEFINGS/TECHNICAL PRESENTATIONS (Required: Applicant insert the language provided below in quotes and continue to complete.)

“The Recipient shall prepare detailed briefings for presentation to the NETL Project Manager at their facility located in Pittsburgh, PA, Morgantown, WV, Albany, OR, or via WebEx. The Recipient shall make a presentation to the DOE Project Manager at a project kick-off meeting held within ninety (90) days of the project start date. At a minimum, annual briefings shall also be given by the Recipient to explain the plans, progress, and results of the technical effort and a final project briefing at the close of the project shall also be given.”

At the Applicant’s discretion, other briefings/presentations may be added to Section E of the SOPO.

NOTE: If the application is selected for award, DOE may require the Recipient to include additional briefings/presentations, provided that such briefings/presentations are consistent with the budget, schedule, and scope of the project.

APPENDIX N: LIST OF ACRONYMS

AOI	Area of Interest
CFR	Code of Federal Regulations
COI	Conflict of Interest
CX	Categorical Exclusion
DEC	Determination of Exceptional Circumstances
DEIA	Diversity, Equity, Inclusion, and Accessibility
DMP	Data Management Plan
DOE	Department of Energy
DOI	Digital Object Identifier
DOL	Department of Labor
DOT	Department of Transportation
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPAct	Energy Policy Act
FAR	Federal Acquisition Regulation
FECM	Fossil Energy and Carbon Management
FFATA	Federal Funding and Transparency Act of 2006
FOA	Funding Opportunity Announcement
FOIA	Freedom of Information Act
FFRDC	Federally Funded Research and Development Center
FY	Fiscal Year
GAAP	Generally Accepted Accounting Principles
IPMP	Intellectual Property Management Plan
J40	Justice40 Initiative
LCA	Life Cycle Analysis
LCOE	Levelized Cost of Electricity
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
NETL	National Energy Technology Laboratory
NNSA	National Nuclear Security Agency
OCED	Office of Clean Energy Demonstrations
OMB	Office of Management and Budget
OSTI	Office of Scientific and Technical Information
PDP	Plan Development Proposal
PII	Personal Identifiable Information
PHMSA	Pipeline and Hazardous Materials Safety Administration
PMP	Project Management Plan
R&D	Research and Development

RFI	Request for Information
RFP	Request for Proposal
SAM	System for Award Management
SCI	Societal Considerations and Impacts
SOPO	Statement of Project Objectives
SMART	Specific, Measurable, Achievable, Relevant, and Timely
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
WP	Work Proposal
WRP	Workforce Readiness Plan