

**FINANCIAL ASSISTANCE
FUNDING OPPORTUNITY ANNOUNCEMENT**



**ADVANCED RESEARCH PROJECTS AGENCY – ENERGY (ARPA-E)
U.S. DEPARTMENT OF ENERGY**

**ARPA-E AND ENVIRONMENTAL
SECURITY TECHNOLOGY CERTIFICATION PROGRAM
DEMONSTRATION PARTNERSHIP**

**Announcement Type: ~~Initial Announcement~~ Modification 01
Funding Opportunity No. DE-FOA-0002039
CFDA Number 81.135**

Funding Opportunity Announcement (FOA) Issue Date:	Tuesday, April 10, 2019
First Deadline for Questions to ARPA-E-CO@hq.doe.gov:	5 PM ET, Friday, May 31, 2019
Submission Deadline for Concept Papers:	9:30 AM ET, Monday, June 10, 2019
Second Deadline for Questions to ARPA-E-CO@hq.doe.gov	5 PM ET, Friday, November 1, 2019
Submission Deadline for Full Applications:	9:30 AM ET, Wednesday, November 13, 2019
Expected Date for Selection Notifications:	January 2020
Total Amount to Be Awarded	Approximately \$4 million, subject to the availability of appropriated funds.
Anticipated Awards	ARPA-E may issue one, multiple, or no awards under this FOA. Individual awards are not anticipated to exceed \$2 million.

- For eligibility criteria, see Section III.A of the FOA.
- For cost share requirements under this FOA, see Section III.B of the FOA.
- To apply to this FOA, Applicants must register with and submit application materials through ARPA-E eXCHANGE (<https://arpa-e-foa.energy.gov/Registration.aspx>). For detailed guidance on using ARPA-E eXCHANGE, see Section IV.G.1 of the FOA.
- Applicants are responsible for meeting each submission deadline. Applicants are strongly encouraged to submit their applications at least 48 hours in advance of the submission deadline.
- For detailed guidance on compliance and responsiveness criteria, see Sections III.C.1 through III.C.3 of the FOA.

Questions about this FOA? Check the Frequently Asked Questions available under the Documents Section for this FOA <https://arpa-e-foa.energy.gov>. For questions that have not already been answered, email ARPA-E-CO@hq.doe.gov (with FOA name and number in subject line); see FOA Sec. VII.A.

MODIFICATIONS

Mod. No.	Date	Description of Modifications
01	08/14/2019	<ul style="list-style-type: none">• Inserted certain deadlines, including the deadlines for submitting questions and Full Applications. See Cover Page and Required Documents Checklist.• Revised the following sections of the FOA to provide guidance on required application forms and the content and form of Full Applications: Required Documents Checklist and Sections IV.D, and IV.F of the FOA. Applicants are strongly encouraged to use the templates provided on ARPA-E eXCHANGE (https://arpa-e-foa.energy.gov).• Inserted criteria that ARPA-E will use to evaluate Full Applications, see Section V.A.2 of the FOA.• Inserted information on the anticipated announcement and award dates, see Section V.C of the FOA.• Inserted information concerning Full Application Notifications, see Section VI.A.3 of the FOA.• Inserted Administrative and National Policy Requirements, see Section VI.B of the FOA.

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Questions about this FOA? Check the Frequently Asked Questions available under the Documents Section for this FOA <https://arpa-e-foa.energy.gov>. For questions that have not already been answered, email ARPA-E-CO@hq.doe.gov (with FOA name and number in subject line); see FOA Sec. VII.A.

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REQUIRED DOCUMENTS CHECKLIST

For an overview of the application process, see Section IV.A of the FOA.

For guidance regarding requisite application forms, see Section IV.B of the FOA.

For guidance regarding the content and form of Concept Papers and Full Applications, see Sections IV.C, and IV.D of the FOA.

SUBMISSION	COMPONENTS	OPTIONAL/ MANDATORY	FOA SECTION	DEADLINE
Concept Paper	<ul style="list-style-type: none"> • Each Applicant must submit a Concept Paper in Adobe PDF format by the stated deadline. The Concept Paper must not exceed 5 pages in length and must include the following: <ul style="list-style-type: none"> ○ Title ○ Lead Principal Investigator ○ Problem Statement ○ Technology Description ○ Expected DoD Benefit ○ Schedule of Milestones ○ Technology Transition ○ Performers ○ Funding 	Mandatory	IV.C	9:30 AM ET, Monday, June 10, 2019
Full Application	<ul style="list-style-type: none"> • Each Applicant must submit a Technical Volume in Adobe PDF format by the stated deadline. Applicants may use the Technical Volume template available on ARPA-E eXCHANGE (https://arpa-e-foa.energy.gov). The Technical Volume must include the following: <ul style="list-style-type: none"> ○ Sections 1-7 (15 pages max.) <ul style="list-style-type: none"> • 1. Problem Statement • 2. Technology Demonstration • 3. Expected End-User Benefit • 4. Schedule of Milestones • 5. Technology Transition • 6. Installation Support • 7. Performers ○ Budget (4 pages max.) ○ Appendices (no page limit) <ul style="list-style-type: none"> • 1. ARPA-E Review Comments • 2. Acronym List • 3. Letters of Support • 4. POC Email or Memo • 5. ESTCP Installation Support Checklist • 6. Optional: Supporting Technical Data (Limited to 5 pages) 	Mandatory	IV.D	9:30 AM ET, Wednesday, November 13, 2019

Questions about this FOA? Check the Frequently Asked Questions available under the Documents Section for this FOA <https://arpa-e-foa.energy.gov>. For questions that have not already been answered, email ARPA-E-CO@hq.doe.gov (with FOA name and number in subject line); see FOA Sec. VII.A.

	<ul style="list-style-type: none">• 7. Literature Citations (Required, if literature is cited)• 8. Abbreviated Curricula Vitae (CV) (3 pages or less per CV)○ The Technical Volume must be accompanied by:<ul style="list-style-type: none">○ SF-424 (no page limit, Adobe PDF format);○ Budget Justification Workbook/SF424A (no page limit, Microsoft Excel format)○ Summary for Public Release (1 page limit, Adobe PDF format);○ Summary Slide (1 page limit, Microsoft PowerPoint format) – Applicants may use the Summary Slide template available on ARPA-E eXCHANGE (https://arpa-e-foa.energy.gov); and○ Completed and signed Business Assurances & Disclosures Form (no page limit, Adobe PDF format).○ U.S. Manufacturing Plan (1 page limit, Adobe PDF format).			
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I. FUNDING OPPORTUNITY DESCRIPTION

A. AGENCY OVERVIEW

The Advanced Research Projects Agency – Energy (ARPA-E), an organization within the Department of Energy (DOE), is chartered by Congress in the America COMPETES Act of 2007 (P.L. 110-69), as amended by the America COMPETES Reauthorization Act of 2010 (P.L. 111-358) to:

- “(A) to enhance the economic and energy security of the United States through the development of energy technologies that result in—
- (i) reductions of imports of energy from foreign sources;
 - (ii) reductions of energy-related emissions, including greenhouse gases; and
 - (iii) improvement in the energy efficiency of all economic sectors; and
- (B) to ensure that the United States maintains a technological lead in developing and deploying advanced energy technologies.”

ARPA-E issues this Funding Opportunity Announcement (FOA) under the programmatic authorizing statute codified at 42 U.S.C. § 16538. The FOA and any awards made under this FOA are subject to 2 C.F.R. Part 200 as amended by 2 C.F.R. Part 910.

B. INTRODUCTION

ARPA-E is teaming with the Department of Defense’s (DoD) Environmental Security Technology Certification Program (ESTCP) to demonstrate and validate select ARPA-E derived technologies at DoD installations. Throughout this document, “technology” refers broadly to integrated systems based on any combination of hardware (equipment) and software (processing), engineering processes, and resource management devices, methods, tools, or models based on scientific principles. Technologies appropriate for demonstration and validation must be sufficiently mature that all required laboratory or other proof-of-concept work has been completed and a field ready application can be deployed for testing within one year of project start. Commercial technologies already in use are not considered appropriate for demonstration and validation.

ARPA-E is seeking submissions to demonstrate innovative energy technologies at DoD installations. The technologies demonstrated under this program must be derived from research that ARPA-E has supported under a prior or current financial assistance award.

C. BACKGROUND

ARPA-E supports high-potential, high-impact energy technologies that are too early for private-sector research investment. For its part, ESTCP demonstrates and validates promising technologies that target DoD’s urgent environmental and installation energy needs and are projected to pay back the capital investment through cost savings, improved efficiencies, or

other improved outcomes.¹ The complementary nature of these missions has led to this partnership to demonstrate ARPA-E supported technologies at DoD installations, with ARPA-E providing technologies and funding and ESTCP providing access to DoD's installations and expertise in conducting demonstration projects.

The projects funded by this FOA will respond to high priority DoD installation energy technology requirements and the need to improve Defense readiness by reducing facilities' operation and maintenance costs and improving energy security. The goal is to conduct demonstrations to validate the performance and operational costs of promising energy efficiency and security technologies; to provide any data needed for end-user acceptance; and, to accelerate the transition of the technology to commercial use.

These demonstrations will be conducted under operational conditions at DoD facilities or locations for which DoD holds responsibility. Candidate technologies are expected to have successfully completed laboratory testing and, when applicable, initial small-scale field testing. The demonstrations are intended to generate supporting cost and performance data for acceptance or validation of the technology. As appropriate, these projects should also support the future implementation of the tested technology through the development of appropriate guidance, design, and/or protocol documents. This program will not support full-scale demonstrations that are primarily intended to solve an individual installation's problem; priority will be given to those projects that address multi-Service or DoD-wide requirements.

These projects must:

1. Execute the technology demonstration to validate the technology's performance and expected operational costs:
 - Each project must develop one or more Demonstration Plans, as appropriate, to govern the technical execution and management of the demonstration. Guidance describing the requirements of the Demonstration Plan can be found on the [ESTCP website \(https://www.serdp-estcp.org/Investigator-Resources/ESTCP-Resources/Demonstration-Plans\)](https://www.serdp-estcp.org/Investigator-Resources/ESTCP-Resources/Demonstration-Plans). The Demonstration Plan must be reviewed and approved by ARPA-E prior to beginning any work at the installation.
 - Each project is expected to generate sufficient pertinent and high quality data to scientifically validate all claims made for that technology.
 - Cost and performance data will be collected and shared with ARPA-E and DoD during and after the demonstration(s) to allow realistic estimates to be derived for full-scale implementation of the technology at the demonstration site and other DoD sites.

¹ For more insight on the ESTCP program and DoD's installation energy goals and challenges, please see: www.serdp-estcp.org/Program-Areas/Installation-Energy-and-Water

2. Transfer the technology:

- Identify and work with the intended DoD user community to achieve their acceptance and feedback on the usefulness of the technology.
- Publish appropriate user guidance, design, and/or protocol documents to assist the future implementation of the technology.
- Publish a Final Report that will be publically available and contain demonstration test data.
- Publish the results of the demonstration in the scientific peer reviewed literature and present results at technical conferences, as appropriate.
- Identify pathways to implementation of the technology.

3. Provide data and support to achieve regulatory and end-user acceptance:

- Technologies needing regulatory approval for use will be required to engage the regulatory community at the outset of project execution. Feedback from regulators must be solicited and incorporated into the project's Demonstration Plan.
- No single approach for working with the regulatory community is prescribed by the program. Interaction with individual state regulatory organizations, interstate groups, and the U.S. Environmental Protection Agency (EPA), as needed, is encouraged. The approach taken should be appropriate for the technology being demonstrated and the regulatory issues associated with implementing the technology.

Applicants selected for demonstration will be teamed with a DoD liaison who will be responsible for assisting in selecting the demonstration site, validating the technology's cost and performance, interfacing with the regulatory and user community, and supporting the transfer of the technology across DoD.

II. AWARD INFORMATION

A. AWARD OVERVIEW

ARPA-E expects to make approximately \$4 million available for new awards under this FOA, subject to the availability of appropriated funds. ARPA-E may issue one, multiple, or no awards.

Individual awards are not anticipated to exceed \$2 million.

The period of performance for funding agreements will not be less than 12 months and may not exceed 48 months.

ARPA-E will accept only new applications under this FOA. Applicants may not seek renewal or supplementation of their existing awards through this FOA.

ARPA-E plans to fully fund negotiated budgets at the time of award.

ARPA-E expects the start date for funding agreements to be May 2020, or as negotiated.

B. RENEWAL AWARDS

At ARPA-E's sole discretion, awards resulting from this FOA may be renewed by adding a new award, adding one or more budget periods and/or extending the period of performance of the initial award. Renewal funding is contingent on: (1) availability of funds appropriated by Congress for the purpose of this program; (2) substantial progress towards meeting the objectives of the approved application; (3) submittal of required reports; (4) compliance with the terms and conditions of the award; (5) ARPA-E approval of a renewal application; and (6) other factors identified by the Agency at the time it solicits a renewal application.

C. ARPA-E FUNDING AGREEMENTS

Through Cooperative Agreements, other transactions, and similar agreements, ARPA-E provides financial and other support to projects that have the potential to realize ARPA-E's statutory mission. ARPA-E does not use such agreements to acquire property or services for the direct benefit or use of the U.S. Government.

Congress directed ARPA-E to "establish and monitor project milestones, initiate research projects quickly, and just as quickly terminate or restructure projects if such milestones are not

achieved.”² Accordingly, ARPA-E has substantial involvement in the direction of every Cooperative Agreement, as described in Section II.C below.

1. COOPERATIVE AGREEMENTS

ARPA-E generally uses Cooperative Agreements to provide financial and other support to Prime Recipients.³

Cooperative Agreements involve the provision of 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.

ARPA-E encourages Prime Recipients to review the Model Cooperative Agreement, which is available at <https://arpa-e.energy.gov/?q=site-page/funding-agreements>.

2. FUNDING AGREEMENTS WITH FFRDCs/DOE LABS, GOGOs, AND FEDERAL INSTRUMENTALITIES

Any Federally Funded Research and Development Centers (FFRDC) involved as a member of a Project Team must provide the information requested in the “FFRDC Lab Authorization” and “Field Work Proposal” section of the Business Assurances & Disclosures Form, which is submitted with the Applicant’s Full Application.

When a FFRDC/DOE Lab (including the National Energy Technology Laboratory or NETL) is the *lead organization* for a Project Team, ARPA-E executes a funding agreement directly with the FFRDC/DOE Lab and a single, separate Cooperative Agreement with the rest of the Project Team. Notwithstanding the use of multiple agreements, the FFRDC/DOE Lab is the lead organization for the entire project, including all work performed by the FFRDC/DOE Lab and the rest of the Project Team.

When a FFRDC/DOE Lab is a *member* of a Project Team, ARPA-E executes a funding agreement directly with the FFRDC/DOE Lab and a single, separate Cooperative Agreement with the rest of the Project Team. Notwithstanding the use of multiple agreements, the Prime Recipient under the Cooperative Agreement is the lead organization for the entire project, including all work performed by the FFRDC/DOE Lab and the rest of the Project Team.

Funding agreements with DOE/NNSA FFRDCs take the form of Work Authorizations issued to DOE/NNSA FFRDCs through the DOE/NNSA Field Work Proposal system for work performed under Department of Energy Management & Operation Contracts. Funding agreements with

² U.S. Congress, Conference Report to accompany the 21st Century Competitiveness Act of 2007, H. Rpt. 110-289 at 171-172 (Aug. 1, 2007).

³ The Prime Recipient is the signatory to the funding agreement with ARPA-E.

non-DOE/NNSA FFRDCs, GOGOs (including NETL), and Federal instrumentalities (e.g., Tennessee Valley Authority) will be consistent with the sponsoring agreement between the U.S. Government and the Laboratory. Any funding agreement with a FFRDC or GOGO will have similar terms and conditions as ARPA-E's Model Cooperative Agreement (<https://arpa-e.energy.gov/?q=site-page/funding-agreements>).

Non-DOE GOGOs and Federal agencies may be proposed to provide support to the project team members on an applicant's project, through a Cooperative Research and Development Agreement (CRADA) or similar agreement.

3. OTHER TRANSACTIONS AUTHORITY

ARPA-E may use its "other transactions" authority under the America COMPETES Reauthorization Act of 2010 to enter into an other transaction agreement with Prime Recipients, on a case-by-case basis.

ARPA-E may negotiate an other transaction agreement when it determines that the use of a standard cooperative agreement, grant, or contract is not feasible or appropriate for a project.

In general, an other transaction agreement would require a cost share of 50%. See Section III.B of the FOA.

D. STATEMENT OF SUBSTANTIAL INVOLVEMENT

ARPA-E is substantially involved in the direction of projects from inception to completion. For the purposes of an ARPA-E project, substantial involvement means:

- Project Teams must adhere to ARPA-E's agency-specific and programmatic requirements.
- ARPA-E may intervene at any time in the conduct or performance of work under an award.
- ARPA-E does not limit its involvement to the administrative requirements of an award. Instead, ARPA-E has substantial involvement in the direction and redirection of the technical aspects of the project as a whole.
- ARPA-E may, at its sole discretion, modify or terminate projects that fail to achieve predetermined Go/No Go decision points or technical milestones and deliverables.
- During award negotiations, ARPA-E Program Directors and Prime Recipients mutually establish an aggressive schedule of quantitative milestones and deliverables that must be met every quarter. In addition, ARPA-E will negotiate and establish "Go/No-Go" milestones for each project. If the Prime Recipient fails to achieve any of the "Go/No-Go" milestones or technical milestones and deliverables as determined by the ARPA-E Contracting Officer, ARPA-E may – at its discretion - renegotiate the statement of project objectives or schedule of technical milestones and deliverables for the project.

In the alternative, ARPA-E may suspend or terminate the award in accordance with 2 C.F.R. §§ 200.338 and 200.339.

- ARPA-E may provide guidance and/or assistance to the Prime Recipient to accelerate the commercial deployment of ARPA-E-funded technologies. Guidance and assistance provided by ARPA-E may include coordination with other Government agencies and nonprofits to provide mentoring and networking opportunities for Prime Recipients. ARPA-E may also organize and sponsor events to educate Prime Recipients about key barriers to the deployment of their ARPA-E-funded technologies. In addition, ARPA-E may establish collaborations with private and public entities to provide continued support for the development and deployment of ARPA-E-funded technologies.

III. ELIGIBILITY INFORMATION

A. ELIGIBLE APPLICANTS

This FOA is by invitation only.

Eligibility is restricted to entities and organizations invited by ARPA-E. Invitees may apply for funding as a Standalone Applicant⁴ or as the lead for a Project Team.⁵ ARPA-E will not review or consider submissions from entities or organizations that were not invited to submit to this FOA. Selection determinations will be based on the Project Team described in the Full Application.

1. INDIVIDUALS

U.S. citizens or permanent residents may apply for funding in their individual capacity as a Standalone Applicant, as the lead for a Project Team, or as a member of a Project Team. However, ARPA-E will only award funding to an entity formed by the Applicant.

2. DOMESTIC ENTITIES

For-profit entities, educational institutions, and nonprofits⁶ that are incorporated in the United States, including U.S. territories, are eligible to apply for funding as a Standalone Applicant, as the lead organization for a Project Team, or as a member of a Project Team.

FFRDCs/DOE Labs are eligible to apply for funding as the lead organization for a Project Team or as a member of a Project Team that includes institutions of higher education, companies, research foundations, or trade and industry research collaborations, but not as a Standalone Applicant.

State, local, and tribal government entities are eligible to apply for funding as a member of a Project Team, but not as a Standalone Applicant or as the lead organization for a Project Team.

Federal agencies and instrumentalities (other than DOE) are eligible to apply for funding as a member of a Project Team, but not as a Standalone Applicant or as the lead organization for a Project Team.

⁴ A Standalone Applicant is an Applicant that applies for funding on its own, not as part of a Project Team.

⁵ The term "Project Team" is used to mean any entity with multiple players working collaboratively and could encompass anything from an existing organization to an ad hoc teaming arrangement. A Project Team consists of the Prime Recipient, Subrecipients, and others performing or otherwise supporting work under an ARPA-E funding agreement.

⁶ 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 as a Prime Recipient or Subrecipient.

3. FOREIGN ENTITIES

U.S. incorporated subsidiaries of foreign entities, whether for-profit or otherwise, are eligible to apply for funding under this FOA as a Standalone Applicant, as the lead organization for a Project Team, or as a member of a Project Team, subject to the requirements in 2 C.F.R. § 910.124, which includes requirements that the entity's participation in this FOA's Program be in the economic interest of the U.S. The Full Application must state the nature of the corporate relationship between the foreign entity and domestic subsidiary or affiliate.

Entities not incorporated in the U.S., whether for-profit or otherwise, are not eligible to apply for funding, but may be proposed by an Applicant as a member of a Project Team.

All work under an ARPA-E award must be performed in the U.S. The Applicants may request a waiver of this requirement in the Business Assurances & Disclosures Form, which is submitted with the Full Application and can be found at <https://arpa-e-foa.energy.gov/>. Please refer to the Business Assurances & Disclosures Form for guidance on the content and form of the request.

4. CONSORTIUM ENTITIES

Consortia, which may include domestic and foreign entities, must designate one member of the consortium as the consortium representative to the Project Team. The consortium representative must be incorporated in the United States. The eligibility of the consortium will be determined by reference to the eligibility of the consortium representative under Section III.A of the FOA. Each consortium must have an internal governance structure and a written set of internal rules. Upon request, the consortium entity must provide a written description of its internal governance structure and its internal rules to the Contracting Officer (ARPA-E-CO@hq.doe.gov).

Unincorporated consortia must provide the 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 collaboration agreement binds the individual consortium members together and shall include the consortium's:

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

B. COST SHARING⁷

Applicants are bound by the cost share proposed in their Full Applications.

The Prime Recipient must provide at least 50% of the Total Project Cost as cost share.⁸ When calculating Total Project Costs, the Applicant should not include those costs that will be reimbursed directly to the applicable installation by DoD ESTCP to fund work completed by the installation staff. Those costs will typically include modifications to infrastructure, permitting/approval, and integration costs at the installation.

ARPA-E may consider the amount of cost share proposed when selecting applications for award negotiations (see Section V.B.1 of the FOA).

1. LEGAL RESPONSIBILITY

Although the cost share requirement applies to the Project Team as a whole, the funding agreement makes the Prime Recipient legally responsible for paying, or ensuring payment of, the entire cost share. The Prime Recipient's cost share obligation is expressed in the funding agreement as a static amount in U.S. dollars (cost share amount) and as a percentage of the Total Project Cost (cost share percentage). If the funding agreement is terminated prior to the end of the period of performance, 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 obligations assumed by Project Team members in subawards or related agreements.

2. COST SHARE ALLOCATION

Each Project Team is free to determine how much each Project Team member will contribute towards the cost share requirement. 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.

3. COST SHARE TYPES AND ALLOWABILITY

Every cost share contribution must be allowable under the applicable Federal cost principles, as described in Section IV.F.1 of the FOA.

⁷ Please refer to Section VI.B.3-4 of the FOA for guidance on cost share payments and reporting.

⁸ The Total Project Cost is the sum of the Prime Recipient share and the DOE share of total allowable costs under the Statement of Work with ARPA-E. The DOE share generally includes costs incurred by GOGOs, FFRDCs, and GOCOs. Total Project Cost does not include costs incurred at the DoD installation for work completed by the installation staff that is paid for directly by DoD ESTCP, such as for modifying infrastructure, permitting/approval, or integration costs at the installation.

Project Teams may provide cost share in the form of cash or in-kind contributions. Cash contributions may be provided by the Prime Recipient or Subrecipients. Allowable in-kind contributions include but are not limited to personnel costs, indirect costs, facilities and administrative costs, rental value of buildings or equipment, and the value of a service, other resource, or third party in-kind contribution. Project Teams may use funding or property received from state or local governments to meet the cost share requirement, so long as the funding or property was not provided to the state or local government by the Federal Government.

The Prime Recipient may not use the following sources to meet its cost share obligations:

- Revenues or royalties from the prospective operation of an activity beyond the period of performance;
- 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.

In addition, Project Teams may not use independent research and development (IR&D) funds⁹ to meet their cost share obligations under cooperative agreements. However, Project Teams may use IR&D funds to meet their cost share obligations under “other transaction” agreements.

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. 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 may wish to refer to 2 C.F.R. Parts 200 and 910, and 10 C.F.R Part 603 for additional guidance on cost sharing, specifically 2 C.F.R. §§ 200.306 and 910.130, and 10 C.F.R. §§ 603.525-555.

4. COST SHARE CONTRIBUTIONS BY FFRDCs AND GOGOS

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 a non-Federal source.

⁹ As defined in Federal Acquisition Regulation Subsection 31.205-18.

Because GOGOs/Federal Agencies are funded by the Federal Government, GOGOs/Federal Agencies may not provide cost share for the proposed project. However, the GOGO/Agency costs would be included in Total Project Costs for purposes of calculating the cost-sharing requirements of the applicant.

5. COST SHARE VERIFICATION

Upon selection for award negotiations, Applicants are required to provide information and documentation regarding their cost share contributions. Please refer to Section VI.B.3 of the FOA for guidance on the requisite cost share information and documentation.

C. OTHER

1. COMPLIANT CRITERIA

Concept Papers are deemed compliant if:

- The Applicant meets the eligibility requirements in Section III.A of the FOA;
- The Concept Paper complies with the content and form requirements in Section IV.C of the FOA; and
- The Applicant entered all required information, successfully uploaded all required documents, and clicked the “Submit” button in ARPA-E eXCHANGE by the deadline stated in the FOA.

Concept Papers found to be noncompliant may not be merit reviewed or considered for award. ARPA-E may not review or consider noncompliant Concept Papers, including Concept Papers submitted through other means, Concept Papers submitted after the applicable deadline, and incomplete Concept Papers. A Concept Paper is incomplete if it does not include required information. ARPA-E will not extend the submission deadline for Applicants that fail to submit required information and documents due to server/connection congestion.

Full Applications are deemed compliant if:

- The Applicant submitted a compliant and responsive Concept Paper;
- The Applicant was invited to submit a Full Application;
- The Applicant meets the eligibility requirements in Section III.A of the FOA;
- The Full Application complies with the content and form requirements in Section IV.D of the FOA; and
- The Applicant entered all required information, successfully uploaded all required documents, and clicked the “Submit” button in ARPA-E eXCHANGE by the deadline stated in the FOA.

Full Applications found to be noncompliant may not be merit reviewed or considered for award. ARPA-E may not review or consider noncompliant Full Applications, including Full Applications submitted through other means, Full Applications submitted after the applicable deadline, and incomplete Full Applications. A Full Application is incomplete if it does not include required information and documents, such as Forms SF-424 and SF-424A. ARPA-E will not extend the submission deadline for Applicants that fail to submit required information and documents due to server/connection congestion.

2. RESPONSIVENESS CRITERIA

ARPA-E performs a preliminary technical review of Concept Papers and Full Applications. The following types of submissions may be deemed nonresponsive and may not be reviewed or considered:

- Submissions relying on technology that is not clearly derived in large measure from research ARPA-E has sponsored.
- Submissions based on a technology that is not mature enough or ready for a demonstration
- Submissions from Prime Recipients who were not invited to apply.
- Submissions that have been submitted in response to other currently issued ARPA-E FOAs.
- Submissions that are not scientifically distinct from applications submitted in response to other currently issued ARPA-E FOAs.
- Submissions for basic research aimed solely at discovery and/or fundamental knowledge generation.
- Submissions for proposed technologies that are not based on sound scientific principles (e.g., violates a law of thermodynamics).
- Submissions that are not distinct in scientific approach or objective from activities currently supported by or actively under consideration for funding by any other office within Department of Energy.
- Submissions that are not distinct in scientific approach or objective from activities currently supported by or actively under consideration for funding by other government agencies or the private sector.
- Submissions that do not propose a plan that allows ARPA-E to evaluate the submission under the applicable merit review criteria provided in Section V.A of the FOA.

3. LIMITATION ON NUMBER OF SUBMISSIONS

ARPA-E is not limiting the number of submissions from Applicants. Applicants may submit more than one application to this FOA, provided that each application is scientifically distinct.

IV. APPLICATION AND SUBMISSION INFORMATION

A. APPLICATION PROCESS OVERVIEW

1. REGISTRATION IN ARPA-E eXCHANGE

The first step in applying to this FOA is registration in ARPA-E eXCHANGE, ARPA-E's online application portal. For detailed guidance on using ARPA-E eXCHANGE, please refer to Section IV.G.1 of the FOA and the "ARPA-E eXCHANGE Applicant Guide" (<https://arpa-e-foa.energy.gov/Manuals.aspx>).

2. CONCEPT PAPERS

Applicants must submit a Concept Paper by the deadline stated in the FOA. Section IV.C of the FOA provides instructions on submitting a Concept Paper.

ARPA-E performs a preliminary review of Concept Papers to determine whether they are compliant and responsive, as described in Section III.C of the FOA. Concept Papers found to be noncompliant or nonresponsive may not be merit reviewed or considered for award. ARPA-E makes an independent assessment of each compliant and responsive Concept Paper based on the criteria and program policy factors in Sections V.A.1 and V.B.1 of the FOA.

After evaluation of the Concept Papers, ARPA-E will contact each Applicant and invite them to submit a Full Application or not. At that time, detailed instructions will be provided for the Full Application format. Those Applicants who are invited to submit Full Applications, but who do not have a DoD partner or a DoD demonstration site, will be assigned a liaison to assist in the identification of an appropriate demonstration site. If ESTCP and/or ARPA-E are unable to identify a DoD site willing to host an Applicant's demonstration, then that Applicant will not be invited to submit a Full Application.

Applicants selected for demonstration will be teamed with a DoD liaison who will assist in selecting the demonstration site, validating the technology's cost and performance, interfacing with the regulatory and user community, and supporting the transfer of the technology across DoD. If necessary, ARPA-E and ESTCP will coordinate a partnering meeting with an appropriate DoD partner to provide input for the Full Application including, but not limited to, selection of a DoD demonstration site. Full Applications may not be submitted outside the Concept Paper process. Any Full Application that has not been reviewed in the Concept Paper phase will not be evaluated nor considered.

3. FULL APPLICATIONS

Applicants must submit a Full Application by the deadline stated in the FOA. Applicants will have 90 days from receipt of the Invitation notification to prepare and submit a Full Application. Section IV.D of the FOA provides instructions on submitting a Full Application.

ARPA-E performs a preliminary review of Full Applications to determine whether they are compliant and responsive, as described in Section III.C of the FOA. Full Applications found to be noncompliant or nonresponsive may not be merit reviewed or considered for award. ARPA-E makes an independent assessment of each compliant and responsive Full Application based on the criteria and program policy factors in Sections V.A.2 and V.B.1 of the FOA.

4. PRE-SELECTION CLARIFICATIONS AND “DOWN-SELECT” PROCESS

Once ARPA-E completes its review of Full Applications, it may, at the Contracting Officer’s discretion, conduct a pre-selection clarification process and/or perform a “down-select” of Full Applications. Through the pre-selection clarification process or down-select process, ARPA-E may obtain additional information from select Applicants through pre-selection meetings, webinars, videoconferences, conference calls, written correspondence, or site visits that can be used to make a final selection determination. ARPA-E will not reimburse Applicants for travel and other expenses relating to pre-selection meetings or site visits, nor will these costs be eligible for reimbursement as pre-award costs.

ARPA-E may select applications for award negotiations and make awards without pre-selection meetings and site visits. Participation in a pre-selection meeting or site visit with ARPA-E does not signify that Applicants have been selected for award negotiations.

5. SELECTION FOR AWARD NEGOTIATIONS

ARPA-E carefully considers all of the information obtained through the application process and makes an independent assessment of each compliant and responsive Full Application based on the criteria and program policy factors in Sections V.A.2 and V.B.1 of the FOA. The Selection Official may select all or part of a Full Application for award negotiations. The Selection Official may also postpone a final selection determination on one or more Full Applications until a later date, subject to availability of funds and other factors. ARPA-E will enter into award negotiations only with selected Applicants.

Applicants are promptly notified of ARPA-E’s selection determination. ARPA-E may stagger its selection determinations. As a result, some Applicants may receive their notification letter in advance of other Applicants. Please refer to Section VI.A of the FOA for guidance on award notifications.

B. APPLICATION FORMS

Required forms for Full Applications are available on ARPA-E eXCHANGE (<https://arpa-e-foa.energy.gov>), including the SF-424 and Budget Justification Workbook/SF-424A. A sample Summary Slide is available on ARPA-E eXCHANGE. Applicants may use the templates available on ARPA-E eXCHANGE, including the template for the Technical Volume of the Full Application, the template for the Summary Slide, the template for the Summary for Public Release, and the template for the Business Assurances & Disclosures Form. A sample response to the Business Assurances & Disclosures Form is available on ARPA-E eXCHANGE.

C. CONTENT AND FORM OF CONCEPT PAPERS

The Concept Paper must concisely describe the technology, including its level of development or maturity, and its cost/benefit. Specific DoD demonstration site(s) may be suggested in the Concept Paper but final site identifications are not required.

Concept Papers shall be no longer than five (5) pages and type face not less than 11 point. All margins (top, bottom, left, and right) shall not be less than 1 inch. An abbreviated one-page curriculum vitae is required for each of the principal performers. One attachment of up to three pages of supporting data also may be submitted. The curricula vitae and supporting data including references are not included in the five-page limit.

The Concept Paper must contain the following information:

1. Project Title
2. Lead Principal Investigator
3. Lead Organization: Project lead, organization, address, telephone number, and e-mail address.
4. Problem Statement: Clearly state the problem the technology demonstration is addressing and its relevance and importance to DoD. Identify the current approach (if one exists) for this problem and discuss its shortcomings.
5. Technology Description: The technology description should include the following information:
 - a. Technical Objectives. Briefly state the objective(s) of the proposed effort.
 - b. Technology Description. Describe the technology or technical approach in sufficient detail to provide an accurate and factual understanding of its theory, functionality, and operation. If appropriate, provide an overall schematic of the technology. Discuss how the technology is innovative.

Compare it to the state-of-the-art, if relevant. Identify the specific performance issues that require validation.

- c. *Technology Maturity.* Provide evidence the technology is mature enough for demonstration (include references and funding history). Discuss any development or design work that is required prior to demonstration. Clearly identify the ties between the proposed technology and previous support from ARPA-E.
 - d. *Technical Approach.* Structure the technical approach in terms of tasks to be accomplished. Clearly define the performance objectives for the technology, including their associated performance metrics, data requirements, and success criteria, and provide a table containing this information. Refer to Table 1 in the Demonstration Plan Guidance for the type of information expected. Within the technical approach, provide a broad overview of the test design of the demonstration proposed for evaluating the technology and the scale of the proposed tests. Include a brief description of a proposed site(s), if known, or the desired site characteristics. Refer to section 5.0 of the ESTCP Energy & Water Demonstration Plan Guidance for more perspective on test design. Generally, projects should plan and budget to remove any newly installed and demonstrated technology at the end of the project.
 - e. *Technical Risks.* Identify potential issues of concern and technical risks in taking the technology from its current state to the proposed scale of the demonstration. Identify any assumptions that have been made that, if not realized, could impact the successful implementation of the project. Discuss risk mitigation and management. If the demonstration is not at full scale, discuss any scale-up issues that will remain at the conclusion of a successful demonstration.
 - f. *Related Efforts.* Provide information on any relationship to other similar projects. Identify funding sources for these efforts.
6. Expected End-User Benefit: Describe the expected benefit in terms of impact and/or reduced cost. Assess the benefit per site or implementation and the expected aggregate benefit for DoD. Provide realistic projections of the number of DoD sites or facilities where the technology could be deployed. Discuss how the information obtained from the demonstration will enable adoption of the technology throughout DoD and beyond, to the greater benefit of the public. If appropriate, estimate the expected return on investment and the time for payback. Discuss the life-cycle cost advantages over current approaches.
 7. Schedule of Milestones: Provide a project schedule with expected milestones and deliverables for the duration of the project in the form of a Gantt chart including, at a minimum, start and end dates for the demonstration(s). Other appropriate milestones include obtaining any required permits, completion of any planned development work, shake down testing, system commissioning,

accreditation, permitting or operation and removal. Projects will be expected to deliver a demonstration plan, final report, and in-progress review briefings.

8. **Technology Transition:** All Concept Papers are expected to include a description of a specific technology transition plan that will aid in the transition of the technology to the end user and to commercialize the technology if required. Reliance on presentations at conferences, scientific publications, or final project deliverables (i.e., Final Report) is not sufficient. Consider innovative methods to convey such information including user guides and web-based or electronic tools.

Specify how technology transfer methods will differ to reach appropriate audiences (e.g., regulators, consultants, energy managers, energy services companies, etc.). Describe any proposed guidance documents that will assist in future implementation (e.g., guidance, design, protocol documents, Unified Facilities Criteria and/or IEEE standards). Explicitly identify potential first DoD users and follow-on implementation. Discuss the timeline required upon completion of a successful demonstration to transition to a product or service suitable for acquisition or implementation by DoD installations. If there are known institutional or regulatory barriers that affect the transition, describe them in this section along with recommendations for addressing these barriers.

9. **Performers:** List the name and organization of the lead person(s) for each organization involved in the proposed demonstration and their expected contributions. Provide a one-page curriculum vitae for each of the performers (not included in the five-page limit).
10. **Funding:** State the level of requested funding per year for the duration of the project, including any development or design work. Identify costs for any major equipment to be purchased. For planning purposes, Applicants should assume a project initiation date of April 2020. Funds required should be broken out by the year in which they will be expended. Although identification of a specific demonstration site is not required for Concept Papers, include an estimate of the cost for a representative field demonstration of the technology. Ensure adequate funds are requested to meet all reporting and travel requirements. List other sources of expected funding such as cost share to support the demonstration.

D. CONTENT AND FORM OF FULL APPLICATIONS

Full Applications must conform to the following formatting requirements:

- Each document must be submitted in the file format prescribed below.
- The Full Application must be written in English.

- All pages must be formatted to fit on 8-1/2 by 11 inch paper with margins not less than one inch on every side. Single space all text and use Times New Roman typeface, a black font color, and a font size of 12 point or larger (except in figures and tables).
- The ARPA-E assigned Control Number, the Lead Organization Name, and the Principal Investigator’s Last Name must be prominently displayed on the upper right corner of the header of every page. Page numbers must be included in the footer of every page.

Full Applications found to be noncompliant or nonresponsive may not be merit reviewed or considered for award (see Section III.C of the FOA).

Each Full Application should be limited to a single concept or technology. Unrelated concepts and technologies should not be consolidated in a single Full Application.

Fillable Full Application template documents are available on ARPA-E eXCHANGE at <https://arpa-e-foa.energy.gov>.

Full Applications must conform to the content requirements described below.

Component	Required Format	Description and Information
Technical Volume	PDF	The centerpiece of the Full Application. Provides a detailed description of the proposed R&D project and Project Team. A Technical Volume template is available on ARPA-E eXCHANGE (https://arpa-e-foa.energy.gov).
SF-424	PDF	Application for Federal Assistance (https://arpa-e-foa.energy.gov). Applicants are responsible for ensuring that the proposed costs listed in eXCHANGE match those listed on forms SF-424 and SF-424A. Inconsistent submissions may impact ARPA-E’s final award determination.
Budget Justification Workbook/SF-424A	XLS	Budget Information – Non-Construction Programs (https://arpa-e-foa.energy.gov)
Summary for Public Release	PDF	Short summary of the proposed R&D project. Intended for public release. A Summary for Public Release template is available on ARPA-E eXCHANGE (https://arpa-e-foa.energy.gov).
Summary Slide	PPT	A four-panel project slide summarizing different aspects of the proposed R&D project. A Summary Slide template is available on ARPA-E eXCHANGE (https://arpa-e-foa.energy.gov).
Business Assurances & Disclosures Form	PDF	Requires the Applicant to make responsibility disclosures and disclose potential conflicts of interest within the Project Team. Requires the Applicant to describe the additionality and risks associated with the proposed project, disclose applications for funding currently pending with Federal and non-Federal entities, and disclose funding from Federal and non-Federal entities for work in the same technology area as the proposed R&D project. If the Applicant is a FFRDC/DOE

Questions about this FOA? Check the Frequently Asked Questions available under the Documents Section for this FOA <https://arpa-e-foa.energy.gov>. For questions that have not already been answered, email ARPA-E-CO@hq.doe.gov (with FOA name and number in subject line); see FOA Sec. VII.A.

		Lab, requires the Applicant to provide written authorization from the cognizant Federal agency and, if a DOE/NNSA FFRDC/DOE Lab, a Field Work Proposal. Allows the Applicant to request a waiver or modification of the Performance of Work in the United States requirement. This form is available on ARPA-E eXCHANGE at https://arpa-e-foa.energy.gov . A sample response to the Business Assurances & Disclosures Form is also available on ARPA-E eXCHANGE.
U.S. Manufacturing Plan	PDF	As part of the application, Applicants are required to submit a U.S. Manufacturing Plan. The U.S. Manufacturing Plan represents the Applicant's measurable commitment to support U.S. manufacturing as a result of its award.

ARPA-E provides detailed guidance on the content and form of each component below.

1. FIRST COMPONENT: TECHNICAL VOLUME

The Technical Volume must be submitted in Adobe PDF format. A Technical Volume template is available at <https://arpa-e-foa.energy.gov>. The Technical Volume must conform to the content and form requirements included within the template, including maximum page lengths. If Applicants exceed the maximum page lengths specified for each section, ARPA-E will review only the authorized number of pages and disregard any additional pages.

ARPA-E and reviewers may review primary research literature in order to evaluate applications. However, ARPA-E and reviewers are under no obligation to review cited sources (e.g., Internet websites).

2. SECOND COMPONENT: SF-424

The SF-424 must be submitted in Adobe PDF format. This form is available on ARPA-E eXCHANGE at <https://arpa-e-foa.energy.gov>.

The SF-424 includes instructions for completing the form. Applicants are required to complete all required fields in accordance with the instructions.

Prime Recipients and Subrecipients are required to complete SF-LLL (Disclosure of Lobbying Activities), available at <https://www.grants.gov/forms/post-award-reporting-forms.html>, if any non-Federal funds have been paid or will be paid to any person for influencing or attempting to influence 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 in connection with your application or funding agreement. The completed SF-LLL must be appended to the SF-424.

ARPA-E provides the following supplemental guidance on completing the SF-424:

- Each Project Team should submit only one SF-424 (i.e., a Subrecipient should not submit a separate SF-424).

- The list of certifications and assurances in Block 21 can be found at <http://energy.gov/management/downloads/certifications-and-assurances-use-sf-424>.
- The dates and dollar amounts on the SF-424 are for the entire period of performance (from the project start date to the project end date), not a portion thereof.
- Applicants are responsible for ensuring that the proposed costs listed in eXCHANGE match those listed on forms SF-424 and SF-424A. Inconsistent submissions may impact ARPA-E's final award determination.

3. THIRD COMPONENT: BUDGET JUSTIFICATION WORKBOOK/SF-424A

Applicants are required to complete the Budget Justification Workbook/SF-424A Excel spreadsheet. This form is available on ARPA-E eXCHANGE at <https://arpa-e-foa.energy.gov>. Prime Recipients must complete each tab of the Budget Justification Workbook for the project as a whole, including all work to be performed by the Prime Recipient and its Subrecipients and Contractors. The SF-424A form included with the Budget Justification Workbook will “auto-populate” as the Applicant enters information into the Workbook. Applicants should carefully read the “Instructions and Summary” tab provided within the Budget Justification Workbook. Subrecipient information must be submitted as follows:

- Each Subrecipient incurring greater than or equal to 10% of the Total Project Cost must complete a separate Budget Justification workbook to justify its proposed budget. These worksheets must be inserted as additional sheets within in the Prime Recipient's Budget Justification.
- Subrecipients incurring less than 10% of the Total Project Cost are not required to complete a separate Budget Justification workbook. However, such Subrecipients are required to provide supporting documentation to justify their proposed budgets. At a minimum, the supporting documentation must show which tasks/subtasks are being performed, the purpose/need for the effort, and a sufficient basis for the estimated costs.

ARPA-E provides the following supplemental guidance on completing the Budget Justification Workbook/SF-424A:

- Applicants may request funds under the appropriate object class category tabs as long as the item and amount requested 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 described herein.
- If Patent costs are requested, they must be included in the Applicant's proposed budget (see Section IV.G.3 of the FOA for more information on Patent Costs).
- Normally, ARPA-E projects are required to spend 5% of their Federal Funding on Technology Transfer & Outreach and clearly include that cost in their budget. However,

the transition oriented nature of these demonstration projects is such that those specific expenditures are not required in this case. All project tasks funded under this FOA will be regarded as Technology Transfer & Outreach.

- For more information, please refer to the ARPA-E Budget Justification Guidance document at <https://arpa-e-foa.energy.gov>.

4. FOURTH COMPONENT: SUMMARY FOR PUBLIC RELEASE

Applicants are required to provide a one page or less Summary for Public Release. A Summary for Public Release template is available on ARPA-E eXCHANGE (<https://arpa-e-foa.energy.gov>). The Summary for Public Release must be submitted in Adobe PDF format. This summary should not include any confidential, proprietary, or privileged information. The summary should be written for a lay audience (e.g., general public, media, Congress) using plain English; if you are selected for award it will be posted on ARPA-E's and ESTCP's websites.

One Page	SUMMARY FOR PUBLIC RELEASE	Briefly describe the proposed project, covering these topics: <ul style="list-style-type: none">• Objective – provide a succinct statement of the project's overall objective and the problem or opportunity it addresses.• Technology Description – describe the innovative aspects of the technology compared to the state of the art.• Expected Benefits – describe the anticipated cost and/or performance benefits of using the technology. INSTRUCTIONS: <ol style="list-style-type: none">(1) The Summary for Public Release <u>shall not exceed one page</u>.(2) The Summary for Public Release <u>shall consist only of text</u>—no graphics, figures, or tables.(3) For applications selected for award negotiations, the Summary may be used as the basis for a public announcement by ARPA-E; therefore, <u>this Cover Page and Summary should not contain confidential or proprietary information</u>. See Section VIII.E of the FOA for additional information on marking confidential information
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5. FIFTH COMPONENT: SUMMARY SLIDE

Applicants are required to provide a single PowerPoint slide summarizing the proposed project. The slide must be submitted in Microsoft PowerPoint format. This slide will be used during ARPA-E's evaluation of Full Applications. A summary slide template and a sample summary slide are available on ARPA-E eXCHANGE (<https://arpa-e-foa.energy.gov>).

Summary Slides must conform to the content requirements described below:

- A Demonstration Summary;
 - Describe what will be demonstrated and what is technically novel;
- A description of the technology's benefits;
 - Describe the potential benefits to DoD and possibly other users;
- Program Plan;
 - Highlight key elements of the program plan, including the host site;
- Any key graphics (illustrations, charts and/or tables) summarizing technology development and/or impact;
- The project's key idea/takeaway;
- Project title and Principal Investigator information; and
- Requested ARPA-E funds and proposed Applicant cost share.

6. SIXTH COMPONENT: BUSINESS ASSURANCES & DISCLOSURES FORM

Applicants are required to provide the information requested in the Business Assurances & Disclosures Form. The information must be submitted in Adobe PDF format. A fillable Business Assurances & Disclosures Form template is available on ARPA-E eXCHANGE at <https://arpa-e-foa.energy.gov>. A sample response to the Business Assurances & Disclosures Form is also available on ARPA-E eXCHANGE.

As described in the Business Assurances & Disclosures Form, the Applicant is required to:

- Disclose conditions bearing on responsibility, such as criminal convictions and Federal tax liability;
- Disclose potential conflicts of interest within the Project Team;
- If the Applicant is a FFRDC/DOE Lab, submit written authorization from the cognizant Federal agency; and
- If the Applicant is a DOE/NNSA FFRDC/DOE Lab, submit a Field Work Proposal.

In addition, ARPA-E is required by statute to “accelerate transformational technological advances in areas that industry is by itself not likely to undertake because of technical and financial uncertainty.”¹⁰ In accordance with ARPA-E’s statutory mandate, the Applicant is required to:

- Describe the additionality and risks associated with the proposed R&D project;
- Disclose any applications for the same project or related work currently pending with any Federal or non-Federal entities; and

¹⁰ America COMPETES Act, Pub. L. No. 110-69, § 5012 (2007), as amended (codified at 42 U.S.C. § 16538).

- Disclose all funding for work in the same technology area as the proposed project received from any Federal or non-Federal entity within the last 5 years.

Finally, the Applicant may use the Business Assurances & Disclosures Form to request authorization to perform some work overseas.

7. SEVENTH COMPONENT: U.S. MANUFACTURING PLAN

As part of the application, Applicants are required to submit a U.S. Manufacturing Plan that should not exceed one page in length. The U.S. Manufacturing Plan represents the Applicant's measurable commitment to support U.S. manufacturing as a result of its award. U.S. Manufacturing Plans are a Program Policy Factor during the review and selection process. See Section V.B.1 of the FOA. A U.S. Manufacturing Plan must contain a commitment to the U.S. manufacturing requirements stated in Section VI.B.8 below.

In addition, the plan should include other specific and measurable commitments. For example, an Applicant may commit particular types of products to be manufactured in the U.S. These plans should not include requirements regarding the source of inputs used during the manufacturing process. In addition to or instead of making a commitment tied to a particular product, the Applicant may make other types of commitments still beneficial to U.S. manufacturing. An Applicant may commit to a particular investment in a new or existing U.S. manufacturing facility, keep certain activities based in the U.S. (i.e., final assembly), or support a certain number of jobs in the U.S. related to the technology and manufacturing.

When an Applicant is selected for an award, the U.S. Manufacturing Plan submitted by the Applicant will become part of the terms and conditions of the award. It is important to note that the U.S. Manufacturing Plan is in support of and not a replacement for the U.S. Manufacturing Requirement described in Section VI.B.8. The Applicant/Awardee may request a waiver or modification of the U.S. Manufacturing Plan from DOE/ARPA-E upon a showing that the original U.S. Manufacturing Plan is no longer economically feasible.

Class patent waivers usually apply to domestic large businesses as set forth in Section VIII.A of the FOA. Under this class patent 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 patent waiver, a domestic large business must agree that any products embodying or produced through the use of an invention conceived or first actually reduced to practice under the award will be substantially manufactured in the United States, unless a waiver is granted by DOE/ARPA-E. The U.S. Manufacturing Plan submitted by the Applicant will become part of the terms and conditions of the award in addition to the requirements attaching to subject inventions.

E. INTERGOVERNMENTAL REVIEW

This program is not subject to Executive Order 12372 (Intergovernmental Review of Federal Programs).

F. FUNDING RESTRICTIONS

1. ALLOWABLE COSTS

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

2. PRE-AWARD COSTS

ARPA-E will not reimburse any pre-award costs incurred by Applicants before they are selected for award negotiations. Please refer to Section VI.A of the FOA for guidance on award notices.

Upon selection for award negotiations, Applicants may incur pre-award costs at their own risk, consistent with the requirements in 2 C.F.R. Part 200, as modified by 2 C.F.R. Part 910, and other Federal laws and regulations. ARPA-E generally does not accept budgets as submitted with the Full Application. Budgets are typically reworked during award negotiations. ARPA-E is under no obligation to reimburse pre-award costs if, for any reason, the Applicant does not receive an award or the award is made for a lesser amount than the Applicant expected, or if the costs incurred are not allowable, allocable, or reasonable.

Please refer to the “Applicants’ Guide to ARPA-E Award Negotiations” (<https://arpa-e.energy.gov/?q=arpa-e-site-page/pre-award-guidance>) for additional guidance on pre-award costs.

3. PATENT COSTS

For Subject Inventions disclosed to DOE under an award, ARPA-E will reimburse the Prime Recipient – in addition to allowable costs associated with Subject Invention disclosures - up to \$30,000 of expenditures for filing and prosecution of United States patent applications, including international applications (“PCT application”) submitted to the United States Patent and Trademark Office (USPTO).

The Prime Recipient may request a waiver of the \$30,000 cap.

4. CONSTRUCTION

ARPA-E generally does not fund projects that involve major construction. Recipients are required to obtain written authorization from the Contracting Officer before incurring any major construction costs.

5. FOREIGN TRAVEL

ARPA-E generally does not fund projects that involve foreign travel. Recipients are required to obtain written authorization from the ARPA-E Program Director before incurring any foreign travel costs and provide trip reports with their reimbursement requests.

6. PERFORMANCE OF WORK IN THE UNITED STATES

ARPA-E strongly encourages interdisciplinary and cross-sectoral collaboration spanning organizational boundaries. Such collaboration enables the achievement of scientific and technological outcomes that were previously viewed as extremely difficult, if not impossible.

ARPA-E requires all work under ARPA-E funding agreements to be performed in the United States – i.e., Prime Recipients must expend 100% of the Total Project Cost in the United States. However, Applicants may request a waiver of this requirement where their project would materially benefit from, or otherwise requires, certain work to be performed overseas.

Applicants seeking a waiver of this requirement are required to include an explicit request in the Business Assurances & Disclosures Form, which is part of the Full Application submitted to ARPA-E. Such waivers are granted where there is a demonstrated need, as determined by ARPA-E.

7. PURCHASE OF NEW EQUIPMENT

All equipment purchased under ARPA-E funding agreements must be made or manufactured in the United States, to the maximum extent practicable. This requirement does not apply to used or leased equipment. The Prime Recipients are required to notify the ARPA-E Contracting Officer reasonably in advance of purchasing any equipment with a total acquisition cost of \$250,000 or more that is not made or manufactured in the United States. The ARPA-E Contracting Officer will provide consent to purchase or reject within 30 calendar days of receipt of the Recipient's notification.

8. LOBBYING

Prime Recipients and Subrecipients may not use any Federal funds, directly or indirectly, to influence or attempt to influence, directly or indirectly, congressional action on any legislative 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.

Prime Recipients and Subrecipients are required to complete and submit SF-LLL, “Disclosure of Lobbying Activities” (<http://www.whitehouse.gov/sites/default/files/omb/grants/sflllin.pdf>) if any non-Federal funds have been paid or will be paid to any person for influencing or attempting to influence any of the following in connection with your 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.

9. CONFERENCE SPENDING

Prime Recipients and Subrecipients may not use any Federal funds to:

- Defray the cost to the United States Government of a conference held by any Executive branch department, agency, board, commission, or office which is not directly and programmatically related to the purpose for which their ARPA-E award is made and for which the cost to the United States Government is more than \$20,000; or
- To circumvent 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 a conference.

10. INDEPENDENT RESEARCH AND DEVELOPMENT COSTS

ARPA-E does not fund Independent Research and Development (IR&D) as part of an indirect cost rate under its financial assistance awards. IR&D, as defined at FAR 31.205-18(a), includes cost of effort that is not sponsored by an assistance agreement or required in performance of a contract, and that consists of projects falling within the four following areas: (i) basic research, (ii) applied research, (iii) development, and (iv) systems and other concept formulation studies.

ARPA-E’s goals are to enhance the economic and energy security of the United States through the development of energy technologies and ensure that the United States maintains a technological lead in developing and deploying advanced energy technologies. ARPA-E accomplishes these goals by providing financial assistance for energy technology projects, and

has well recognized and established procedures for supporting research through competitive financial assistance awards based on merit review of proposed projects. Reimbursement for independent research and development costs through the indirect cost mechanism could circumvent this competitive process.

To ensure that all projects receive similar and equal consideration, eligible organizations may compete for direct funding of independent research projects they consider worthy of support by submitting proposals for those projects to ARPA-E. Since proposals for these projects may be submitted for direct funding, costs for independent research and development projects are not allowable as indirect costs under ARPA-E awards. IR&D costs, however, would still be included in the direct cost base that is used to calculate the indirect rate so as to ensure an appropriate allocation of indirect costs to the organization's direct cost centers.

G. OTHER SUBMISSION REQUIREMENTS

1. USE OF ARPA-E eXCHANGE

To apply to this FOA, Applicants must register with ARPA-E eXCHANGE (<https://arpa-e-foa.energy.gov/Registration.aspx>). Concept Papers, and Full Applications, must be submitted through ARPA-E eXCHANGE (<https://arpa-e-foa.energy.gov/login.aspx>). ARPA-E will not review or consider applications submitted through other means (e.g., fax, hand delivery, email, postal mail). For detailed guidance on using ARPA-E eXCHANGE, please refer to the "ARPA-E eXCHANGE Applicant Guide" (<https://arpa-e-foa.energy.gov/Manuals.aspx>).

Upon creating an application submission in ARPA-E eXCHANGE, Applicants will be assigned a Control Number. If the Applicant creates more than one application submission, a different Control Number will be assigned for each application.

Once logged in to ARPA-E eXCHANGE (<https://arpa-e-foa.energy.gov/login.aspx>), Applicants may access their submissions by clicking the "My Submissions" link in the navigation on the left side of the page. Every application that the Applicant has submitted to ARPA-E and the corresponding Control Number is displayed on that page. If the Applicant submits more than one application to a particular FOA, a different Control Number is shown for each application.

Applicants are responsible for meeting each submission deadline in ARPA-E eXCHANGE. **Applicants are strongly encouraged to submit their applications at least 48 hours in advance of the submission deadline.** Under normal conditions (i.e., at least 48 hours in advance of the submission deadline), Applicants should allow at least 1 hour to submit a Concept Paper, or Full Application. Once the application is submitted in ARPA-E eXCHANGE, Applicants may revise or update their application until the expiration of the applicable deadline.

Applicants should not wait until the last minute to begin the submission process. During the final hours before the submission deadline, Applicants may experience server/connection

congestion that prevents them from completing the necessary steps in ARPA-E eXCHANGE to submit their applications. **ARPA-E will not extend the submission deadline for Applicants that fail to submit required information and documents due to server/connection congestion.**

ARPA-E may not review or consider incomplete applications and applications received after the deadline stated in the FOA. Such applications may be deemed noncompliant (see Section III.C.1 of the FOA). The following errors could cause an application to be deemed “incomplete” and thus noncompliant:

- Failing to comply with the form and content requirements in Section IV of the FOA;
- Failing to enter required information in ARPA-E eXCHANGE;
- Failing to upload required document(s) to ARPA-E eXCHANGE;
- Failing to click the “Submit” button in ARPA-E eXCHANGE by the deadline stated in the FOA;
- Uploading the wrong document(s) or application(s) to ARPA-E eXCHANGE; and
- Uploading the same document twice, but labeling it as different documents. (In the latter scenario, the Applicant failed to submit a required document.)

ARPA-E urges Applicants to carefully review their applications and to allow sufficient time for the submission of required information and documents.

V. APPLICATION REVIEW INFORMATION

A. CRITERIA

ARPA-E performs a preliminary review of Concept Papers and Full Applications to determine whether they are compliant and responsive (see Section III.C of the FOA).

ARPA-E considers a mix of quantitative and qualitative criteria in determining whether to encourage the submission of a Full Application and whether to select a Full Application for award negotiations.

1. CRITERIA FOR CONCEPT PAPERS

The following evaluation criteria will be the sole basis for reviewing Concept Papers.

TECHNICAL MERIT

An assessment of the technical merit of the Concept Paper will be made. Factors to be considered include: (a) the methodology is scientifically sound; (b) the technology is innovative and its performance compares favorably to the current state-of-the-art; (c) the technical risks are well characterized; and (d) the technical team is qualified to execute the proposed project.

COST/BENEFIT OF TECHNOLOGY

An assessment of the cost/benefit of the proposed technology, if it were deployed, will be made. Factors to be considered include: (a) the projected cost savings and/or risk reduction are significant; (b) the projected benefits are reasonable and consistent with the proposed technology; and (c) the payoffs from the proposed technology are commensurate with the projected costs and risks.

TRANSITION POTENTIAL

An assessment of the potential for a successful transfer of the technology to the DoD user and, eventually, commercial users will be made. Factors to be considered include: (a) there is a well-defined DoD user for the technology; (b) there are clearly identified activities that will support and enhance the transfer of the technology; and (c) the technology can be implemented within DoD.

The above criteria will be weighted as follows:

Technical Merit	50%
Cost/Benefit of Technology	25%
Transition Potential	25%

2. CRITERIA FOR FULL APPLICATIONS

Full Applications are evaluated based on the following criteria:

TECHNICAL MERIT

An assessment of the technical merit of the Concept Paper will be made. Factors to be considered include: (a) the methodology is scientifically sound; (b) the technology is innovative and its performance compares favorably to the current state-of-the-art; (c) the technical risks are well characterized; and (d) the technical team is qualified to execute the proposed project.

COST/BENEFIT OF TECHNOLOGY

An assessment of the cost/benefit of the proposed technology, if it were deployed, will be made. Factors to be considered include: (a) the projected cost savings and/or risk reduction are significant; (b) the projected benefits are reasonable and consistent with the proposed technology; and (c) the payoffs from the proposed technology are commensurate with the projected costs and risks.

TRANSITION POTENTIAL

An assessment of the potential for a successful transfer of the technology to the DoD user and, eventually, commercial users will be made. Factors to be considered include: (a) there is a well-defined DoD user for the technology; (b) there are clearly identified activities that will support and enhance the transfer of the technology; and (c) the technology can be implemented within DoD.

The above criteria will be weighted as follows:

Technical Merit	50%
Cost/Benefit of Technology	25%
Transition Potential	25%

B. **REVIEW AND SELECTION PROCESS**

1. PROGRAM POLICY FACTORS

In addition to the above criteria, ARPA-E may consider the following program policy factors in determining which Concept Papers to encourage to submit a Full Application and which Full Applications to select for award negotiations:

- I. **ARPA-E Portfolio Balance.** Project balances ARPA-E portfolio in one or more of the following areas:
 - a. Diversity of technical personnel in the proposed Project Team;

- b. Technological diversity;
 - c. Organizational diversity;
 - d. Geographic diversity;
 - e. Technical or commercialization risk; or
 - f. Stage of technology development.
- II. **Relevance to ARPA-E Mission Advancement.** Project contributes to one or more of ARPA-E's key statutory goals:
- a. Reduction of US dependence on foreign energy sources;
 - b. Stimulation of domestic manufacturing/U.S. Manufacturing Plan;
 - c. Reduction of energy-related emissions;
 - d. Increase in U.S. energy efficiency;
 - e. Enhancement of U.S. economic and energy security; or
 - f. Promotion of U.S. advanced energy technologies competitiveness.
- III. **Synergy of Public and Private Efforts.**
- a. Avoids duplication and overlap with other publicly or privately funded projects;
 - b. Promotes increased coordination with nongovernmental entities for demonstration of technologies and research applications to facilitate technology transfer; or
 - c. Increases unique research collaborations.
- IV. **Low likelihood of other sources of funding.** High technical and/or financial uncertainty that results in the non-availability of other public, private or internal funding or resources to support the project.
- V. **High-Leveraging of Federal Funds.** Project leverages Federal funds to optimize advancement of programmatic goals by proposing cost share above the required minimum or otherwise accessing scarce or unique resources.
- VI. **High Project Impact Relative to Project Cost.**

2. ARPA-E REVIEWERS

By submitting an application to ARPA-E, Applicants consent to ARPA-E's use of Federal employees, contractors, and experts from educational institutions, nonprofits, industry, and governmental and intergovernmental entities as reviewers. ARPA-E selects reviewers based on their knowledge and understanding of the relevant field and application, their experience and skills, and their ability to provide constructive feedback on applications.

ARPA-E requires all reviewers to complete a Conflict-of-Interest Certification and Nondisclosure Agreement through which they disclose their knowledge of any actual or apparent conflicts and

agree to safeguard confidential information contained in Concept Papers, and Full Applications. In addition, ARPA-E trains its reviewers in proper evaluation techniques and procedures.

Applicants are not permitted to nominate reviewers for their applications. Applicants may contact the Contracting Officer by email (ARPA-E-CO@hq.doe.gov) if they have knowledge of a potential conflict of interest or a reasonable belief that a potential conflict exists.

3. ARPA-E SUPPORT CONTRACTOR

ARPA-E utilizes contractors to assist with the evaluation of applications and project management. To avoid actual and apparent conflicts of interest, ARPA-E prohibits its support contractors from submitting or participating in the preparation of applications to ARPA-E.

By submitting an application to ARPA-E, Applicants represent that they are not performing support contractor services for ARPA-E in any capacity and did not obtain the assistance of ARPA-E's support contractor to prepare the application. ARPA-E will not consider any applications that are submitted by or prepared with the assistance of its support contractors.

C. ANTICIPATED ANNOUNCEMENT AND AWARD DATES

ARPA-E expects to announce selections for negotiations in approximately January 2020 and to execute funding agreements in approximately May 2020.

VI. AWARD ADMINISTRATION INFORMATION

A. AWARD NOTICES

1. REJECTED SUBMISSIONS

Noncompliant and nonresponsive Concept Papers and Full Applications are rejected by the Contracting Officer and are not merit reviewed or considered for award. The Contracting Officer sends a notification letter by email to the technical and administrative points of contact designated by the Applicant in ARPA-E eXCHANGE. The notification letter states the basis upon which the Concept Paper or Full Application was rejected.

2. CONCEPT PAPER NOTIFICATIONS

ARPA-E promptly notifies Applicants of its determination to invite or not invite the submission of a Full Application. ARPA-E sends a notification letter by email to the technical and administrative points of contact designated by the Applicant in ARPA-E eXCHANGE. ARPA-E may also provide feedback in the notification letter of reviewer comments and questions from the Concept Paper that should be addressed in the Full Application.

Selected Concept Paper Applicants will be invited to submit a Full Application via a web portal provided to the selected Applicants. Rejected Applicants will not be allowed to submit a Full Application.

A notification letter encouraging the submission of a Full Application does not authorize the Applicant to commence performance of the project. Please refer to Section IV.F.2 of the FOA for guidance on pre-award costs.

3. FULL APPLICATION NOTIFICATIONS

ARPA-E promptly notifies Applicants of its determination. ARPA-E sends a notification letter by email to the technical and administrative points of contact designated by the Applicant in ARPA-E eXCHANGE. The notification letter may inform the Applicant that its Full Application was selected for award negotiations, or not selected. Alternatively, ARPA-E 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 and other factors.

a. SUCCESSFUL APPLICANTS

ARPA-E has discretion to select all or part of a proposed project for negotiation of an award. A notification letter selecting a Full Application for award negotiations does not authorize the Applicant to commence performance of the project. **ARPA-E selects Full Applications for award negotiations, not for award.** Applicants do not receive an award until award negotiations are complete and the Contracting Officer executes the funding agreement. ARPA-E may terminate award negotiations at any time for any reason.

Please refer to Section IV.G.2 of the FOA for guidance on pre-award costs. Please also refer to the “Applicants’ Guide to ARPA-E Award Negotiations” (<https://arpa-e.energy.gov/?q=arpa-e-site-page/pre-award-guidance>) for guidance on the award negotiation process.

b. POSTPONED SELECTION DETERMINATIONS

A notification letter postponing a final selection determination until a later date does not authorize the Applicant to commence performance of the project. ARPA-E may ultimately determine to select or not select the Full Application for award negotiations.

Please refer to Section IV.G.2 of the FOA for guidance on pre-award costs.

c. UNSUCCESSFUL APPLICANTS

By not selecting a Full Application, ARPA-E intends to convey its lack of programmatic interest in the proposed project. Such assessments do not necessarily reflect judgments on the merits of the proposed project. ARPA-E hopes that unsuccessful Applicants will submit innovative ideas and concepts for future FOAs.

B. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS

The following administrative and national policy requirements apply to Prime Recipients. The Prime Recipient is 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 a FFRDC contractor. Prime Recipients are required to flow down these requirements to their Subrecipients through subawards or related agreements.

1. DUNS NUMBER AND SAM, FSRs, AND FEDCONNECT REGISTRATIONS

Prime Recipients and Subrecipients are required to obtain a Dun and Bradstreet Data Universal Numbering System (DUNS) number at <http://fedgov.dnb.com/webform> and to register with the System for Award Management (SAM) at <https://www.sam.gov/portal/public/SAM/>.

Prime Recipients and Subrecipients should commence this process as soon as possible in order to expedite the execution of a funding agreement. Obtaining a DUNS number and registering with SAM could take several weeks.

Prime Recipients are also required to register with the Federal Funding Accountability and Transparency Act Subaward Reporting System (FSRS) at <https://www.fsrs.gov/>.¹⁵ Prime Recipients are required to report to FSRS the names and total compensation of each of the Prime Recipient's five most highly compensated executives and the names and total compensation of each Subrecipient's five most highly compensated executives. Please refer to <https://www.fsrs.gov/> for guidance on reporting requirements.

ARPA-E may not execute a funding agreement with the Prime Recipient until it has obtained a DUNS number and completed its SAM and FSRS registrations. In addition, the Prime Recipient may not execute subawards with Subrecipients until they obtain a DUNS number and complete their SAM registration. Prime Recipients and Subrecipients are required to keep their SAM and FSRS data current throughout the duration of the project.

Finally, Prime Recipients are required to register with FedConnect in order to receive notification that their funding agreement has been executed by the Contracting Officer and to obtain a copy of the executed funding agreement. Please refer to <https://www.fedconnect.net/FedConnect/> for registration instructions.

2. NATIONAL POLICY ASSURANCES

Project Teams, including Prime Recipients and Subrecipients, are required to comply with the National Policy Assurances attached to their funding agreement in accordance with 2 C.F.R. 200.300. Please refer to Attachment 6 of ARPA-E's Model Cooperative Agreement (<https://arpa-e.energy.gov/?q=site-page/funding-agreements>) for information on the National Policy Assurances.

3. PROOF OF COST SHARE COMMITMENT AND ALLOWABILITY

Upon selection for award negotiations, the Prime Recipient must confirm in writing that the proposed cost share contribution is allowable in accordance with applicable Federal cost principles.

The Prime Recipient is also required to provide cost share commitment letters from Subrecipients or third parties that are providing cost share, whether cash or in-kind. Each Subrecipient or third party that is contributing cost share must provide a letter on appropriate letterhead that is signed by an authorized corporate representative. Please refer to the

¹⁵ The Federal Funding Accountability and Transparency Act, P.L. 109-282, 31 U.S.C. 6101 note.

“Applicants’ Guide to ARPA-E Award Negotiations” (<https://arpa-e.energy.gov/?q=arpa-e-site-page/pre-award-guidance>) for guidance on the contents of cost share commitment letters.

4. COST SHARE PAYMENTS¹²

All proposed cost share contributions must be reviewed in advance by the Contracting Officer and incorporated into the project budget before the expenditures are incurred.

The Prime Recipient is required to pay the “Cost Share” amount as a percentage of the total project costs in each invoice period for the duration of the period of performance. Small Businesses see Section III.B.3 of the FOA.

Please refer to the “Applicants’ Guide to ARPA-E Award Negotiations” (<https://arpa-e.energy.gov/?q=arpa-e-site-page/pre-award-guidance>) for additional guidance on cost share payment requirements.

ARPA-E may deny reimbursement requests, in whole or in part, or modify or terminate funding agreements where Prime Recipients (or Project Teams) fail to comply with ARPA-E’s cost share payment requirements.

5. ENVIRONMENTAL IMPACT QUESTIONNAIRE

By law, ARPA-E is required to evaluate the potential environmental impact of projects that it is considering for funding. In particular, ARPA-E must determine before funding a project whether the project qualifies for a categorical exclusion under 10 C.F.R. § 1021.410 or whether it requires further environmental review (i.e., an environmental assessment or an environmental impact statement).

To facilitate and expedite ARPA-E’s environmental review, Prime Recipients are required to complete an Environmental Impact Questionnaire during award negotiations. This form is available at <https://arpa-e.energy.gov/?q=site-page/required-forms-and-templates>. The Environmental Impact Questionnaire is due within 21 calendar days of the selection announcement.

6. TECHNOLOGY-TO-MARKET PLAN

During award negotiations, Prime Recipients are required to negotiate and submit an initial Technology-to-Market Plan to the ARPA-E Program Director, and obtain the ARPA-E Program Director’s approval prior to the execution of the award. During the period of performance, Prime Recipients are required to provide regular updates on the initial Technology-to-Market plan and report on implementation of Technology-to-Market activities. Prime Recipients may

¹⁶ Please refer to Section III.B of the FOA for guidance on cost share requirements.

be required to perform other actions to further the commercialization of their respective technologies.

ARPA-E may waive or modify this requirement, as appropriate.

7. INTELLECTUAL PROPERTY AND DATA MANAGEMENT PLANS

ARPA-E requires every Project Team to negotiate and establish an Intellectual Property Management Plan for the management and disposition of intellectual property arising from the project. The Prime Recipient must submit a completed and signed Intellectual Property Management plan to ARPA-E within six weeks of the effective date of the ARPA-E funding agreement. All Intellectual Property Management Plans are subject to the terms and conditions of the ARPA-E funding agreement and its intellectual property provisions, and applicable Federal laws, regulations, and policies, all of which take precedence over the terms of Intellectual Property Management Plans.

ARPA-E has developed a template for Intellectual Property Management Plans (<https://arpa-e.energy.gov/?q=site-page/project-management-reporting-requirements>) so as to facilitate and expedite negotiations between Project Team members. ARPA-E does not mandate the use of this template. ARPA-E and DOE do not make any warranty (express or implied) or assume any liability or responsibility for the accuracy, completeness, or usefulness of the template. ARPA-E and DOE strongly encourage Project Teams to consult independent legal counsel before using the template.

Awardees are also required, post-award, to submit a Data Management Plan (DMP) that addresses how data generated in the course of the work performed under an ARPA-E award will be preserved and, as appropriate, shared publicly. The Prime Recipient must submit a completed and signed DMP - as part of the Team's Intellectual Property Management Plan - to ARPA-E within six weeks of the effective date of the ARPA-E funding agreement. The DMP must meet the minimum requirements set forth in ARPA-E's "Applicant Guide to Award Negotiations" available at the following website: <https://arpa-e.energy.gov/?q=arpa-e-site-page/pre-award-guidance>."

8. U.S. MANUFACTURING REQUIREMENT

As part of its Full Application, each applicant is required to submit a U.S. Manufacturing Plan that includes the following U.S. Manufacturing Requirements. For more information on the required U.S Manufacturing Plan, see Section IV.D.7 above.

a. SMALL BUSINESSES (INCLUDING SMALL BUSINESS CONCERNS)

Small businesses (and in rare cases where a non-profit might manufacture) that are Prime

Recipients or Subrecipients under ARPA-E funding agreements must agree that any products embodying any subject invention or produced through the use of any subject invention will be manufactured substantially in the United States for any use or sale anywhere in the world.

Small business must also agree that, for their exclusive and nonexclusive licensees, any products that embody any subject invention or that will be produced through the use of any subject invention will be manufactured substantially in the United States for any use or sale anywhere in the world.

Small businesses must require their assignees and entities acquiring a controlling interest in the small business to apply the same U.S. Manufacturing requirements to their licensees.

b. LARGE BUSINESS

Large businesses that are Prime Recipients or Subrecipients (and in rare cases, foreign entities that are subrecipients) under ARPA-E funding agreements are required to substantially manufacture the following products in the United States: (1) products embodying subject inventions, and (2) products produced through the use of subject inventions. This requirement applies to products that are manufactured for use or sale in the United States and outside the United States.

Large businesses (and in rare cases, foreign entities that are subrecipients) must apply the same U.S. Manufacturing requirements to their assignees, licensees, and entities acquiring a controlling interest in the large business or foreign entity. Large businesses must require their assignees and entities acquiring a controlling interest in the large business to apply the same U.S. Manufacturing requirements to their licensees.

c. EDUCATIONAL INSTITUTIONS AND NONPROFITS

Domestic educational institutions and nonprofits that are Prime Recipients or Subrecipients under ARPA-E funding agreements must require their exclusive and nonexclusive licensees to substantially manufacture the following products in the United States for any use or sale anywhere in the world: (1) articles embodying subject inventions, and (2) articles produced through the use of subject inventions. Educational institutions and nonprofits must require their assignees to apply the same U.S. Manufacturing requirements to their licensees.

d. FFRDCs/DOE LABS AND STATE AND LOCAL GOVERNMENT ENTITIES

FFRDCs/DOE Labs that are GOCOs and state and local government entities that are Prime Recipients or Subrecipients under ARPA-E funding agreements must require their exclusive licensees to substantially manufacture the following products in the United States for any use or sale in the United States: (1) products embodying subject inventions, and (2) products produced through the use of subject inventions. This requirement does not apply to products that are manufactured for use or sale overseas. They must also require their assignees to apply

the same U.S. Manufacturing requirements to their exclusive licensees. GOGOs are subject to the requirements in 37 CFR § 404.5(a)(2).

e. CRITERIA FOR WAIVING U.S. MANUFACTURING REQUIREMENTS

ARPA-E seeks to “enhance the economic and energy security of the United States ...” and “ensure that the United States maintains a technological lead in developing and deploying advanced energy technologies.” The preferred benefit to the U.S. economy is the creation and maintenance of manufacturing capabilities and jobs within the United States. However, an applicant or awardee may request a modification or waiver of the standard U.S. Manufacturing Requirement, or its submitted U.S. Manufacturing Plan, if the applicant/awardee can demonstrate to the satisfaction of DOE/ARPA-E that it is not commercially feasible to comply with U.S. manufacturing requirements. In addition, such requests must include a description of specific economic or other benefits to the U.S. economy which are related to the commercial use by requestor of the technology being funded by ARPA-E and which are commensurate with the Government’s contribution to the proposed work. These types of benefits are more easily measured and evaluated after technical advance has been made under an award, such as by the making of a subject invention.

Such benefits may include one or more of the following:

- Direct or indirect investment in U.S.-based plant and equipment.
- Creation of new and/or higher-quality U.S.-based jobs.
- Enhancement of the domestic skills base.
- Further domestic development of the technology.
- Significant reinvestment of profits in the domestic economy.
- Positive impact on the U.S. balance of payments in terms of product and service exports as well as foreign licensing royalties and receipts.
- Appropriate recognition of U.S. taxpayer support for the technology; e.g., a quid-pro-quo commensurate with the economic benefit that would be domestically derived by the U.S. taxpayer from U.S.-based manufacture.
- Cross-licensing, sublicensing, and reassignment provisions in licenses which seek to maximize the benefits to the U.S. taxpayer.

Any foreign manufacturing/use will occur in a country that protects U.S. patents/intellectual property.

9. SAFEGUARDING CONTROLLED UNCLASSIFIED INFORMATION

Projects awarded under this FOA may produce or handle “Controlled Unclassified Information” (CUI) (e.g., information about utility usage at a DoD building or installation). Accordingly, projects involving CUI will be required to conform to ESTCP’s policies and procedures regarding

cybersecurity which can be found at <https://serdp-estcp.org/Tools-and-Training/Installation-Energy-and-Water/Cybersecurity/FRCS-Protecting-CUI>.

For these projects, ESTCP will provide a cybersecurity subject matter expert to assist each Project Team to complete a Cyber Risk Management Plan (CRMP). ARPA-E will reimburse the Prime Recipient for expenditures to create the CRMP (estimated to be approximately \$10,000) and comply with ESTCP requirements with respect to monitoring and auditing the implementation of the CRMP (estimated to be approximately \$2,500 per quarter). More information on CUI and the CRMP processes is on the ESTCP Cybersecurity webpage referenced above.

10. CORPORATE FELONY CONVICTIONS AND FEDERAL TAX LIABILITY

In submitting an application in response to this FOA, the Applicant represents that:

- It is not a corporation that has been convicted of a felony criminal violation under any Federal law within the preceding 24 months; and
- 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.

11. APPLICANT RISK ANALYSIS

If selected for award negotiations, ARPA-E may evaluate the risks posed by the Applicant using the criteria set forth at 2 CFR §200.205(c), subparagraphs (1) through (4). ARPA-E may require special award terms and conditions depending upon results of the risk analysis.

12. RECIPIENT INTEGRITY AND PERFORMANCE MATTERS

Prior to making a Federal award with a total amount of Federal share greater than the simplified acquisition threshold (presently \$150,000), ARPA-E is required to review and consider any information about Applicants that is contained in the Office of Management and Budget's designated integrity and performance system accessible through SAM (currently the Federal Awardee Performance and Integrity Information System or FAPIIS) (41 U.S.C. § 2313 and 2 C.F.R. 200.205).

Applicants may review information in FAPIIS and comment on any information about itself that a Federal awarding agency previously entered into FAPIIS.

ARPA-E will consider any written comments provided by Applicants during award negotiations, in addition to the other information in FAPIIS, in making a judgment about an Applicant's integrity, business ethics, and record of performance under Federal awards when reviewing potential risk posed by Applicants as described in 2 C.F.R. §200.205.

12. NONDISCLOSURE AND CONFIDENTIALITY AGREEMENTS REPRESENTATIONS

In submitting an application in response to this FOA the Applicant represents that:

- (1) **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.
- (2) **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:
 - a. *“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.”*
 - b. The limitation above shall not contravene requirements applicable to Standard Form 312, Form 4414, or any other form issued by a Federal department or agency governing the nondisclosure of classified information.
 - c. Notwithstanding provision listed in paragraph (a), a nondisclosure 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 disclosure 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.

REPORTING

Recipients are required to submit periodic, detailed reports on technical, financial, and other aspects of the project, as described in Attachment 4 to ARPA-E's Model Cooperative Agreement (<https://arpa-e.energy.gov/?q=site-page/funding-agreements>).

VII. AGENCY CONTACTS

A. COMMUNICATIONS WITH ARPA-E

Upon the issuance of a FOA, only the Contracting Officer may communicate with Applicants. ARPA-E personnel and our support contractors are prohibited from communicating (in writing or otherwise) with Applicants regarding the FOA. This "quiet period" remains in effect until ARPA-E's public announcement of its project selections.

During the "quiet period," Applicants are required to submit all questions regarding this FOA to ARPA-E-CO@hq.doe.gov. Questions and Answers (Q&As) about ARPA-E are available at <http://arpa-e.energy.gov/fag>. Questions and Answers (Q&As) about the FOA will be provided under the Documents section for the FOA: <https://arpa-e-foa.energy.gov/Default.aspx#Foald25132eb7-e67c-4e8c-b9d3-04fde882ccc3>. For questions that have not already been answered, please send an email with the FOA name and number in the subject line to ARPA-E-CO@hq.doe.gov. Due to the volume of questions received, ARPA-E will only answer pertinent questions that have not yet been answered and posted at the above link.

- ARPA-E will post responses on a weekly basis to any questions that are received that have not already been addressed at the link above. ARPA-E may re-phrase questions or consolidate similar questions for administrative purposes.
- ARPA-E will cease to accept questions approximately one week in advance of each submission deadline. Responses to questions received before the cutoff will be posted approximately one business day in advance of the submission deadline. ARPA-E may re-phrase questions or consolidate similar questions for administrative purposes.
- Responses are published in a document specific to this FOA under "CURRENT FUNDING OPPORTUNITIES – FAQs" on ARPA-E's website (<http://arpa-e.energy.gov/fag>).

Applicants may submit questions regarding ARPA-E eXCHANGE, ARPA-E's online application portal, to ExchangeHelp@hq.doe.gov. ARPA-E will promptly respond to emails that raise legitimate, technical issues with ARPA-E eXCHANGE. ARPA-E will refer any questions regarding the FOA to ARPA-E-CO@hq.doe.gov.

ARPA-E will not accept or respond to communications received by other means (e.g., fax, telephone, mail, hand delivery). Emails sent to other email addresses will be disregarded.

During the "quiet period," only the Contracting Officer may authorize communications regarding the FOA between ARPA-E personnel and Applicants. The Contracting Officer may communicate with Applicants as necessary and appropriate. As described in Section IV.A of the FOA, the Contracting Officer may arrange pre-selection meetings and/or site visits during the "quiet period."

B. DEBRIEFINGS

ARPA-E does not offer or provide debriefings. ARPA-E provides Applicants with a notification inviting or not inviting the submission of a Full Application based on ARPA-E's assessment of the Concept Paper.

VIII. OTHER INFORMATION

A. TITLE TO SUBJECT INVENTIONS

Ownership of subject inventions is governed pursuant to the authorities listed below. Typically, either by operation of law or under the authority of a patent waiver, Prime Recipients and Subrecipients may elect to retain title to their subject inventions under ARPA-E funding agreements.

- 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. If they elect to retain title, they must file a patent application in a timely fashion.
- All other parties: The Federal Non-Nuclear Energy Research and Development 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 Waiver: Under 42 U.S.C. § 5908, title to subject inventions vests in the U.S. Government and large businesses and foreign entities do not have the automatic right to elect to retain title to subject inventions. However, ARPA-E typically issues “class patent waivers” under which large businesses and foreign entities that meet certain stated requirements, such as cost sharing of at least 20%, may elect to retain title to their subject inventions. If a large business or foreign entity elects to retain title to its subject invention, it must file a patent application in a timely fashion. If the class waiver does not apply, a party may request a waiver in accordance with 10 C.F.R. §784.
- GOGOs are subject to the requirements of 37 C.F.R. Part 501.
- Determination of Exceptional Circumstances (DEC): DOE has determined that exceptional circumstances exist that warrant the modification of the standard patent rights clause for small businesses and non-profit awardees under Bayh-Dole to maximize the manufacture of technologies supported by ARPA-E awards in the United States. The DEC, including a right of appeal, is dated September 9, 2013 and is available at the following link: <http://energy.gov/gc/downloads/determination-exceptional-circumstances-under-bayh-dole-act-energy-efficiency-renewable>. Please see Section IV.D.7 and VI.B.8 for more information on U.S. Manufacturing Requirements.

B. GOVERNMENT RIGHTS IN SUBJECT INVENTIONS

Where Prime Recipients and Subrecipients retain title to subject inventions, the U.S. Government retains certain rights.

1. 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.

2. 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. In addition, the Government may grant licenses for use of the subject invention when Prime Recipients, Subrecipients, or their assignees and exclusive licensees refuse to do so.

The U.S. Government may exercise its march-in rights 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 satisfactory manner;
- The owner has not met public use requirements specified by Federal statutes in a reasonably satisfactory manner; or
- The U.S. Manufacturing requirement has not been met.

C. 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.

- Background or “Limited Rights Data”: The U.S. Government will not normally require delivery of 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.
- Generated Data: The U.S. Government normally retains very broad 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 ARPA-E awards may be protected from public disclosure for up to five years in accordance with provisions that will be set forth in the award. The interests of the DoD will be taken into account in determining what categories of generated data will be subject to the possibility of protection and what categories must be publicly available. In addition, invention disclosures may be protected from public disclosure for a reasonable time in order to allow for filing a patent application.

D. PROTECTED PERSONALLY IDENTIFIABLE INFORMATION

Applicants may not include any Protected Personally Identifiable Information (Protected PII) in their submissions to ARPA-E. Protected PII is defined as data that, if compromised, could cause harm to an individual such as identity theft. Listed below are examples of Protected PII that Applicants must not include in their submissions.

- Social Security Numbers in any form;
- Place of Birth associated with an individual;
- Date of Birth associated with an individual;
- Mother's maiden name associated with an individual;
- Biometric record associated with an individual;
- Fingerprint;
- Iris scan;
- DNA;
- Medical history information associated with an individual;
- Medical conditions, including history of disease;
- Metric information, e.g. weight, height, blood pressure;
- Criminal history associated with an individual;
- Ratings;
- Disciplinary actions;
- Performance elements and standards (or work expectations) are PII when they are so intertwined with performance appraisals that their disclosure would reveal an individual's performance appraisal;
- Financial information associated with an individual;
- Credit card numbers;
- Bank account numbers; and
- Security clearance history or related information (not including actual clearances held).

E. FOAs AND FOA MODIFICATIONS

FOAs are posted on ARPA-E eXCHANGE (<https://arpa-e-foa.energy.gov/>), Grants.gov (<http://www.grants.gov/>), and FedConnect (<https://www.fedconnect.net/FedConnect/>). Any modifications to the FOA are also posted to these websites. You can receive an e-mail when a modification is posted by registering with FedConnect as an interested party for this FOA. It is recommended that you register as soon as possible after release of the FOA to ensure that you receive timely notice of any modifications or other announcements. More information is available at <https://www.fedconnect.net>.

F. OBLIGATION OF PUBLIC FUNDS

The Contracting Officer is the only individual who can make awards on behalf of ARPA-E or obligate ARPA-E to the expenditure of public funds. A commitment or obligation by any individual other than the Contracting Officer, either explicit or implied, is invalid.

ARPA-E awards may not be transferred, assigned, or assumed without the prior written consent of a Contracting Officer.

G. REQUIREMENT FOR FULL AND COMPLETE DISCLOSURE

Applicants are required to make a full and complete disclosure of the information requested in the Business Assurances & Disclosures Form. Disclosure of the requested information is mandatory. Any failure to make a full and complete disclosure of the requested information may result in:

- The rejection of a Concept Paper, and/or Full Application;
- 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.

H. RETENTION OF SUBMISSIONS

ARPA-E expects to retain copies of all Concept Papers, Full Applications, and other submissions. No submissions will be returned. By applying to ARPA-E for funding, Applicants consent to ARPA-E's retention of their submissions.

I. MARKING OF CONFIDENTIAL INFORMATION

ARPA-E will use data and other information contained in Concept Papers and Full Applications, for evaluation purposes.

Concept Papers, Full Applications, and other submissions containing confidential, proprietary, or privileged information must be marked as described below. Failure to comply with these marking requirements may result in the disclosure of the unmarked information under the Freedom of Information Act or otherwise. The U.S. Government is not liable for the disclosure or use of unmarked information, and may use or disclose such information for any purpose.

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

Notice of Restriction on Disclosure and Use of Data:

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

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

J. COMPLIANCE AUDIT REQUIREMENT

A prime recipient organized as a for-profit entity expending \$750,000 or more of DOE funds in the entity's fiscal year (including funds expended as a Subrecipient) must have an annual compliance audit performed at the completion of its fiscal year. For additional information, refer to Subpart F of: (i) 2 C.F.R. Part 200, and (ii) 2 C.F.R. Part 910.

If an educational institution, non-profit organization, or state/local government is either a Prime Recipient or a Subrecipient, and has expended \$750,000 or more of Federal funds in the entity's fiscal year, the entity must have an annual compliance audit performed at the completion of its fiscal year. For additional information refer to Subpart F of 2 C.F.R. Part 200.

IX. GLOSSARY

Applicant: The entity that submits the application to ARPA-E. In the case of a Project Team, the Applicant is the lead organization listed on the application.

Application: The entire submission received by ARPA-E, including the Concept Paper, Full Application, and Reply to Reviewer Comments.

ARPA-E: is the Advanced Research Projects Agency – Energy, an agency within the U.S. Department of Energy.

Controlled Unclassified Information: Information that requires safeguarding or dissemination controls pursuant to and consistent with applicable law, regulations and government-wide policies but is not classified under Executive Order 13526 or the Atomic Energy Act, as amended.

Cost Sharing: is the portion of project costs from non-Federal sources that are borne by the Prime Recipient (or non-Federal third parties on behalf of the Prime Recipient), rather than by the Federal Government.

Deliverable: A deliverable is the quantifiable goods or services that will be provided upon the successful completion of a project task or sub-task.

DoD: U.S. Department of Defense

DOE: U.S. Department of Energy.

DOE/NNSA: U.S. Department of Energy/National Nuclear Security Administration.

ESTCP: Environmental Security Technology Certification Program.

FFRDCs: Federally Funded Research and Development Centers.

FOA: Funding Opportunity Announcement.

GOCOs: U.S. Government Owned, Contractor Operated laboratories.

GOGOs: U.S. Government Owned, Government Operated laboratories.

Milestone: A milestone is the tangible, observable measurement that will be provided upon the successful completion of a project task or sub-task.

Prime Recipient: The signatory to the funding agreement with ARPA-E.

PI: Principal Investigator.

Project Team: A Project Team consists of the Prime Recipient, Subrecipients, and others performing or otherwise supporting work under an ARPA-E funding agreement.

Standalone Applicant: An Applicant that applies for funding on its own, not as part of a Project Team.

Subject Invention: Any invention conceived or first actually reduced to practice under an ARPA-E funding agreement.

Task: A task is an operation or segment of the work plan that requires both effort and resources. Each task (or sub-task) is connected to the overall objective of the project, via the achievement of a milestone or a deliverable.

Total Project Cost: The sum of the Prime Recipient share and the DOE share of total allowable costs under the Statement of Work with ARPA-E. The DOE share generally includes costs incurred by GOGOs, FFRDCs, and GOCOs. Total Project Cost does not include costs incurred at the DoD installation for work completed by the installation staff that is paid for directly by DoD ESTCP, such as for modifying infrastructure, permitting/approval, or integration costs at the installation.