

QUESTIONS AND ANSWERS

PLEASE REFER TO THE GENERAL FAQS SECTION OF ARPA-E'S WEBSITE ([HTTP://ARPA-E.ENERGY.GOV/?Q=FAQ/GENERAL-QUESTIONS](http://arpa-e.energy.gov/?Q=FAQ/GENERAL-QUESTIONS)) FOR ANSWERS TO MANY GENERAL QUESTIONS ABOUT ARPA-E AND ARPA-E'S FUNDING OPPORTUNITY ANNOUNCEMENTS. ADDITIONAL QUESTIONS SPECIFIC TO THIS FOA ONLY ARE INCLUDED BELOW. PLEASE REVIEW ALL EXISTING GENERAL FAQS AND FOA-SPECIFIC QUESTIONS BEFORE SUBMITTING NEW QUESTIONS TO ARPA-E.

I. Full Application Phase Questions:

Q1. About DE-FOA-0001979, I would like to collaborate with one of my colleagues from Europe. Is it possible? In other words, can a faculty member from a university in Europe who is an expert in this area be one of the team members as Co-PI?

Can European base companies be a team member? (Can someone who is working in a European company be a team member as Co-PI?)

ANSWER: Refer to FOA Section III.A.3 and General FAQ 3.1.

Q2. I have a clarification question regarding the BREAKERS FOA.

The FOA states there is a 20 pages max limit on the technical volume. I downloaded the technical volume word template from the ARPA-E site for the BREAKERS FOA and the template says 30 page max, and gives the follow approx page recommendations for the first five sections 4,12,4,4, and 4.

What is the page limit? if it is 20, what are the recommended sizes for each section?

ANSWER: ARPA-E has modified DE-FOA-0001979 to reflect a 30 page limit for the technical volume.

Q3: On page 17 of the FOA in the Program Technical Requirements table ID 1.1 i believe there is a simple error in the rated voltage in relationship to the inequalities. It should read $1\text{kV} \leq V \leq 100\text{kV}$.

not $1\text{kV} \geq V \geq 100\text{kV}$

ANSWER: ARPA-e has modified DE-FOA-0001979 to revise the inequalities for the Rated Voltage on Table 2 to: $1\text{ kV DC} \leq V \leq 100\text{ kV DC}$.

Q4. Table 2 mentions an efficiency at least 99.97%. Can you please clarify how the efficiency was calculated for the dc breaker? Is it that efficiency = instantaneous power / (instantaneous power + breaker loss)?

ANSWER: 99.97% efficiency refers to a 0.03% conduction loss. In other words, Efficiency = $(\text{Power}_{\text{IN}} - \text{Breaker}_{\text{ConductionLoss}}) / \text{Power}_{\text{IN}}$.

Q5. What is the funding mechanism ARPA-E utilizes for Applicants proposing another Federal Agency as a subrecipient? What documents are required for the subrecipient?

ANSWER: Please refer to the ARPA-E website FAQ page General Questions, <https://arpa-e.energy.gov/faq>. See response to Question 2.21, which includes a link for information regarding Funding Agreements. Additional documentation may be requested during the negotiation phase for selected Applicant(s)/Team Member(s) that require other funding agreements.

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Q6. Is there a prescribed contract type for the DC Circuit Breaker solicitation? We read the solicitation to indicate either a Technology Insertion or a Cooperative Agreement may be allowed.

ANSWER: Refer to Section II.B. ARPA-E Funding Agreements.

Q7. On page 40 the FOA states: "APRA-E will provide a template for the U.S. Manufacturing Plan." However, no U.S. Manufacturing Plan template is included on the ARPA-E exchange. Will a template be posted, or should applicants move forward using the information provided in the FOA?

ANSWER: The U. S. Manufacturing Plan template is now available on ARPA-E eXCHANGE. Please refer to ARPA-E eXCHANGE at <https://arpa-e-foa.energy.gov> for all fillable Full Application template documents.

Q8. The listed Nuisance Trips metric is <0.1%. However, Nuisance Trips are defined several ways, some relative to the relay settings. What quantitative basis does ARPA-E use to evaluate a proposers' Nuisance Trip rate?

ANSWER: It is recommended that the submission describe how the proposed technology will satisfy the Nuisance Trips metric defined in the FOA with respect to the state-of-the-art. Guidance is provided in Section I.F (Project Objectives) of the FOA for defining a Nuisance Trip, and the submission should provide appropriate justification for how the metric is satisfied, including rationale for the quantitative definition used (i.e., relative to relay settings or otherwise) and methods for experimental verification. The opportunity also exists for applications with distinct performance and optimization criteria to propose alternative values for metrics 1.4 through 1.8, justified in the context of the overall goals of the program, as detailed in the FOA.

Q9. Based on the requirements of this effort all work under an ARPA-E award must be performed in the U.S. We have a design team which designs the cutting edge solutions in this field. They specialize in design for companies like [us]. They are located in [omitted] so the majority of the work will be done there. We would like to know if a waiver for the requirement for 100% us will be considered.

ANSWER: Refer to General FAQ 3.1.

Q10. We ... have two questions regarding [a non-DOE GOGO or Federal agency]:

Q10.1 Cost share %. According to the solicitation: "Project Teams composed exclusively of domestic educational institutions, domestic nonprofits, and/or FFRDCs are required to provide at least 5% of the Total Project Cost as cost share." [Omitted] might not be a FFRDC, does the project team still qualify for the 5% cost share?

ANSWER: For purposes of determining project cost-sharing requirements, non-DOE Government-owned, Government-operated laboratories and Federal agencies are afforded the same treatment as DOE laboratories/Federally Funded Research and Development Centers (FFRDCs).

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Q10.2 Funding mechanism. Is the [non-DOE GOGO or Federal agency] directly funded by DOE through an Interagency Agreement?

ANSWER: ARPA-E will provide funds separately to the non-DOE GOGO or Federal agency using an instrument that is mutually agreeable to the parties. Also refer to BREAKERS FAQ 5 for additional information.

Q11. We are planning on a proposal for this FOA yet we are confused by “1MW instantaneous” power here. Does it mean that our prototype needs to transfer 1MW power during normal operation (e.g., carrying 100A for normal operation if designed for 10kV system)? Or we just need to assume that the 1 MW is the total power during fault response (eg. Turn off the breaker at 10 kV 100A fault current, while it only transfer much lower current during normal operation)? If it is the first assumption, is there any guidance on how much is the fault current limit?

ANSWER: 1 MW instantaneous power is the total power during a fault response. The Applicant should justify the fault current in the context of the intended application, while ensuring the technical metrics are appropriately satisfied.

Q12.1 If 1MW is the short circuit power, how much should we consider for nominal power ($P_{short}/P_{load}=?$)?

ANSWER: The Applicant should justify the power, under normal operations, in the context of the intended application, while ensuring the technical metrics are appropriately satisfied.

Q12.2 Is 99.97% efficiency related to short circuit power or nominal power? If it is for short circuit power, then how much efficiency should we consider for nominal power or vice versa?

ANSWER: 99.97% efficiency refers to a 0.03% conduction loss. In other words, Efficiency = $(Power_{IN} - Breaker_{ConductionLoss}) / Power_{IN}$.