

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 Questions:

Q1. I HAVE A QUESTION REGARDING THE PERFORMANCE METRICS FOR CATEGORY 1, FAST TRIGGERING FOR IMPROVED PROTECTION. THE FOA SEEKS DEVICES FOR "...VERY FAST BY-PASS, SHUNT, OR INTERRUPT CAPABILITY..." (PAGE 5) TO PROTECT AGAINST, FOR INSTANCE, "...EMERGING THREATS, SUCH AS ELECTROMAGNETIC PULSES AND SPACE WEATHER EVENTS ..." (PAGE 6). YET, IN THE "CATEGORY 1 PROGRAM PERFORMANCE METRICS SUMMARY" (PAGE 22), A CURRENT RATING (CONTINUOUS)" OF >250 A IS REQUIRED. COULD YOU PLEASE EXPLAIN THE NECESSITY OF SUCH A HIGH CONTINUOUS CURRENT RATING FOR SHUNT PROTECTION DEVICES?

ANSWER: The performance metrics table for protection devices specifies peak and continuous rating of a device/module and were determined after an in-depth analysis of the required performance for many possible converter topologies and structures. Applicants may choose to propose advancements related to in-line protection, shunt protection, or both at the same time (reconfigurable, multifunctional devices). Applicants should justify the performance metrics according to the specific application/technology they are proposing. Applicants should provide an explanation if performance metrics do not apply to the proposed technology.

Q2. DOES ULTRAFAST COVER PROJECTS THAT WOULD RESEARCH WAYS TO DO THE HIGH VOLTAGE ISOLATION REQUESTED BUT WITH EXISTING SEMICONDUCTOR TECHNOLOGY? OR PUT ANOTHER WAY, WOULD THESE FUNDS BE APPLICABLE TO DEVELOPING A NOVEL CONTROL SYSTEM THAT WOULD WORK WITH EXISTING SEMICONDUCTOR TECHNOLOGY IF WE BELIEVE THE CONTROL SYSTEM ADVANCEMENTS WOULD ALLOW US TO MEET THE PERFORMANCE REQUIREMENTS IN THE FOA?

ANSWER: Proposals addressing improvements with existing/COTS technology using wireless means of control and/or triggering (possibly optical, but other methods may be considered) of power electronic devices/modules are of interest. However, as specified in the FOA, system-level control

schemes and algorithms that do not include advances in device/module technologies are not of interest to ARPA-E under this FOA.

Q3. I HAVE TWO MAJOR QUESTIONS:

- 1. WE ARE PLANNING TO APPLY FOR STTR, CAN THE PI BE AN EMPLOYEE OF RI NOT FROM SBC?**
- 2. THERE IS NO TARGET MATRIX PROVIDED IN THIS FOA FOR CATEGORY #3, SPECIFICALLY FOR THERMAL MANAGEMENT STRATEGIES. IS THIS A PRIORITY OF THIS FOA? PLEASE CLARIFY.**

ANSWER: 1. Please see ULTRAFAST SBIR/STTR FOA Section III. "Eligibility."

2. Solutions proposed under Category 3 are expected to support device/module development from Categories 1 and/or 2 by enabling them to achieve the associated performance metrics. While category 3 is distinct, it is expected that capabilities developed therein will be realized in a system context corresponding to the next level of integration, such as devices/modules developed in categories 1 and 2, or via suitable alternatives and overall experiment strategy.

Q4. I HAVE SOME QUESTIONS ABOUT DE-FOA-0002999, WHICH I WOULD LIKE TO SUBMIT A CONCEPT PAPER TO:

- 1. IS THERE A WEBSITE WHERE THE ANSWERS TO QUESTIONS ARE POSTED?**
- 2. ONE OF TABS IN THE CONCEPT PAPER APPLICATION ASKS FOR THE FUNDS AND COSTS. SHOULD I BE PUTTING IN THE REQUEST FOR BOTH PHASE I AND PHASE II, OR JUST FOR PHASE I? SIMILARLY, SHOULD I PUT THE PERIOD OF PERFORMANCE FOR BOTH PHASE I AND PHASE II< OR JUST FOR PHASE I?**

ANSWER: 1. The ARPA-E website <http://ARPA-E.energy.gov> FAQ page. FOA Specific Questions and Answer documents are published in the "Current Funding Opportunities FAQs" section.

2. Applicants must apply for a Combined Phase I/II Award or a Combined Phase I/II/IIS Award. ARPA-E plans to fully fund negotiated budgets at the time of award. Please see ULTRAFAST SBIR/STTR FOA Section II.A. "Award Overview."

Q5. WE HAVE A QUESTION REGARDING THE POSSIBILITY OF ADJUSTING ROLES OF KEY PARTICIPANTS IN OUR FULL PROPOSAL.

BOTH ---REDACTED---AND ---REDACTED --- WERE LISTED AS KEY PARTICIPANTS IN THE CONCEPT PAPER SUBMISSION. AT THAT TIME, ---REDACTED--- WAS LISTED AS THE PRINCIPAL INVESTIGATOR; AND ---REDACTED--- WAS LISTED AS THE BUSINESS POINT OF CONTACT.

WE RECENTLY LEARNED THAT TO BETTER MANAGE POTENTIAL CONFLICT OF INTEREST OF THIS PROJECT, IT IS MORE APPROPRIATE TO HAVE ---REDACTED--- AS THE PRINCIPAL INVESTIGATOR AND ---REDACTED--- AS THE BUSINESS POINT OF CONTACT. WOULD YOU ALLOW THE SWITCH OF ROLES BETWEEN ---REDACTED--- AND---REDACTED---? IF IT IS ALLOWED, SHALL WE JUST UPDATE THE ROLES ON THE FUNDING OPPORTUNITY EXCHANGE WEBSITE?

ANSWER: Applicants can update their Technical and business points of contact in the Full Application phase of the submission process.

**Q6. IN READING THE RECENTLY MODIFIED FOA
(ULTRAFAST_SBIR_STTR_FA_FOA_MOD_01.PDF) ONE FINDS:**

APPLICANTS MUST APPLY FOR A COMBINED PHASE I/II AWARD OR A COMBINED PHASE I/II/IIS AWARD. COMBINED PHASE I/II AND I/II/IIS AWARDS ARE INTENDED TO DEVELOP TRANSFORMATIONAL TECHNOLOGIES WITH DISRUPTIVE COMMERCIAL POTENTIAL. SUCH COMMERCIAL POTENTIAL MAY BE EVIDENCED BY (1) THE LIKELIHOOD OF FOLLOW-ON FUNDING BY PRIVATE OR NON-SBIR/STTR SOURCES IF THE PROJECT IS SUCCESSFUL, OR (2) THE SMALL BUSINESS CONCERN'S RECORD OF SUCCESSFULLY COMMERCIALIZING TECHNOLOGIES DEVELOPED UNDER PRIOR SBIR/STTR AWARDS. PHASE IIS AWARDS ARE A "SEQUENTIAL" (I.E., ADDITIONAL) PHASE II AWARD, INTENDED TO ALLOW THE CONTINUED DEVELOPMENT OF PROMISING ENERGY TECHNOLOGIES. COMBINED PHASE I/II/IIS AWARDS MAY BE FUNDED UP TO \$4,241,580. FUNDING AMOUNTS WILL BE CONSISTENT WITH THE PHASE I AND PHASE II LIMITS POSTED ON THE SBA'S WEBSITE.⁵⁶ ARPA-E RESERVES THE RIGHT TO SELECT ALL OR PART OF A PROPOSED PROJECT (I.E. ONLY PHASE I, OR ONLY PHASE I AND PHASE II). IN THE EVENT THAT ARPA-E SELECTS PHASE I ONLY OR PHASE I/II ONLY, THEN THE MAXIMUM AWARD AMOUNT FOR A PHASE I AWARD IS \$295,924 AND THE MAXIMUM AMOUNT FOR A PHASE I/II AWARD IS \$2,268,752.

IF WE ADD THE LIMITS FOR PHASE I AND II AND IIS WE GET $\$295,924 + \$2,268,752 + \$2,268,752 = \$4,833,428$ WHICH IS SIGNIFICANTLY MORE THAN THE STATED MAXIMUM BUDGET OF $\$4,833,428$ FOR THE COMBINED PHASE I/II/IIS.

PLEASE CONFIRM THAT THE BUDGET LIMITS AS STATED IN THE FOA ARE ACCURATE.

ANSWER: The maximum Phase I Award funding amount is \$295,924, Phase II is \$1,972,828, Phase IIS is \$1,972,828, for a total of \$4,241,580.