

## 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.