

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. Concept Paper Phase Questions:

Q1. MY NAME IS ---REDACTED--- AND I WORK AT---REDACTED---, TOGETHER WITH ---REDACTED---IN THE RESEARCH, DEVELOPMENT AND INNOVATION (RD&I) AREA, MORE SPECIFICALLY FOCUSED ON GRANTS AND FUNDING FOR RESEARCH AND DEVELOPMENT. WE ARE INTERESTED IN UNDERSTANDING SPECIFIC ELIGIBILITY ISSUES FOR THE "GRID-FREE RENEWABLE ENERGY ENABLING NEW WAYS TO ECONOMICAL LIQUIDS AND LONG-TERM STORAGE SBIR/STTR (GREENWELLS SBIR/STTR)" OPPORTUNITY.

IF YOU HAVE ANY OTHER OPPORTUNITIES IN THE ENERGY SECTOR, WE'D BE INTERESTED TOO.

HERE ARE THE QUESTIONS:

- **CAN FOR-PROFIT COMPANIES PARTICIPATE IN THIS OPPORTUNITY?**
- **IF COMPANIES CAN PARTICIPATE, IS THERE A LIMIT ON THE SIZE OF THE COMPANY?**

SPEAKING A LITTLE MORE ABOUT OUR COMPANY, ---REDACTED---HEADQUARTERS ARE IN [FOREIGN COUNTRY], BUT WE HAVE OTHER BRANCHES, ONE OF WHICH IS LOCATED IN [THE UNITED STATES]. WE ARE INTERESTED IN PROMOTING RESEARCH, DEVELOPMENT AND INNOVATION IN THE UNITED STATES, JUST AS WE DO HERE IN [FOREIGN COUNTRY] WITH GREAT SUCCESS.

SO THE QUESTION IS ALSO ABOUT THIS: CAN WE PARTICIPATE IN RESEARCH INCENTIVE AND FUNDING PROGRAMS AS A [FOREIGN] COMPANY WITH A BRANCH IN THE UNITED STATES?

OUR AMERICAN SUBSIDIARY IS STILL A SMALL COMPANY ACCORDING TO ITS GROSS ANNUAL INCOME, ALTHOUGH OUR [FOREIGN] COMPANY IS CONSIDERED LARGE.

ANSWER: 1. Please refer to Section III, Eligibility Information of the FOA.

For-Profit Companies may apply to DE-FOA-0003234 (the standard FOA), but must be United States small businesses to be eligible to participate in DE-FOA-0003235 (this SBIR/STTR FOA). Small Business Association (SBA) rules and guidelines govern eligibility to apply to this FOA.

2. Yes, there are size requirements. An SBIR or STTR awardee, together with its affiliates, must not have more than 500 employees. Small Businesses must meet the size eligibility requirements set forth in 13 C.F.R § 121.702. For information on program eligibility, please refer to the SBIR/STTR website, available at <https://www.sbir.gov>.

3. Please refer to 13 CFR 121.702 for SBIR/STTR size and eligibility standards, which specifies that a small business must be more than 50% owned and controlled by one or more individuals who are citizens or permanent resident aliens of the United States, or by other small business concerns that are each more than 50% owned and controlled by one or more individuals who are citizens or permanent resident aliens of the United States.

Q2. I HAVE A QUESTION ON THE ARPA-E GREENWELLS SBIR/STTR DE-FOA-0003235. HOW ARE FFRDCS BEING FUNDED IN THE OPPORTUNITY? IS IT THROUGH THE WORK AUTHORIZATION PROCESS AS PREVIOUS ARPA-E SBIR/STTR FOAS HAVE BEEN IN THE PAST? THERE IS NO MENTION OF FUNDING AGREEMENTS IN THE SBIR/STTR FOA FOR FFRDCS. IN PAST SBIR/STTR FOAS, ARPA-E HAS STATED THE BELOW: (TAKEN FROM THE GOPHURRS SBIR/STTR FOA):

“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.”

ANSWER: Funding agreements with DOE/NNSA FFRDCs through this FOA take the form of Work Authorizations.

Q3. OUR TEAM IS CONSIDERING LEADING A SUBMISSION TO THE GREENWELLS SBIR. WE'RE TRYING TO GET A BETTER UNDERSTANDING OF THE TECHNICAL REQUIREMENTS FOR THIS PROJECT, AND THE ELECTRICITY-TO-LIQUID EFFICIENCY REQUIREMENT IN PARTICULAR.

PER THE SOLICITATION, THE FOLLOWING METRICS ARE REQUIRED AND/OR BASELINED:

- **ELECTRICITY-TO-LIQUID EFFICIENCY: >50%**
- **MULTI-PASS CARBON YIELD: >70%**
- **ELECTROLYSIS EFFICIENCY: 65%**

CONFUSION IS ARISING FROM COMPARING THE THERMODYNAMIC EFFICIENCY OF THE CONVERSION PROCESS. WITH A 65% ELECTROLYSIS EFFICIENCY AND 70% CARBON CONVERSION RATE, A PRODUCT'S LHV WOULD HAVE TO CONTAIN MORE ENERGY THAN THE ELECTRICITY GOING INTO THE PROCESS. THIS ALSO NEGLECTS THE ENERGY CONTENT OF ANY SIDE PRODUCTS LIKE WATER.

IS THERE SOMETHING WE'RE MISINTERPRETING HERE? PERHAPS THERE IS AN ALTERNATE DEFINITION OF CARBON YIELD? ANY INSIGHT HERE INTO THE REQUIREMENTS DEFINITION IS APPRECIATED!

ANSWER: Per Sections I.C and I.D of the FOA, technologies proposed are not required to use hydrogen as a feedstock and may incorporate higher efficiency electrolyzers into their design. Thus, the 70% multi-pass conversion metric is intended to ensure high conversion rates for processes that either do not use hydrogen as an intermediate or incorporate their own electrolyzers.

II. Full Application Phase Questions:

Q4. AFTER SUBMITTING OUR CONCEPT PAPER FOR GREENWELLS, WE WERE ENCOURAGED TO SUBMIT A FULL APPLICATION. WE WERE INTERESTED IN POTENTIALLY ADDING A CO-PI TO THE PROJECT—HOWEVER, THIS PI WORKS AT OUR FIRM. IS IT ACCEPTABLE TO HAVE THE PI AND THE CO-PI FROM THE SAME FIRM?

ANSWER: Yes, it is allowable to have the PI and Co-PI work for the same organization. Per Section III.C.1 and III.C.2. of the FOA, for projects with multiple PIs, at least one PI must meet the primary employment requirement. That PI will serve as the contact PI for the Project Team.

Q5. I AM WRITING TO SEEK CLARIFICATION ON TWO ASPECTS RELATED TO THE APPLICATION PROCESS FOR CFDA NUMBER 81.135, SPECIFICALLY REGARDING SECTION 1. F, TABLE 3 "REQUIRED FINAL DELIVERABLES," AND THE FINAL APPLICATION SUBMISSION REQUIREMENTS.

REQUIRED FINAL DELIVERABLES: IN TABLE 3 OF SECTION 1. F, THE REQUIREMENT FOR A "30 MJ LIQUID LHV" IS SPECIFIED. WHILE I UNDERSTAND THAT THIS PERTAINS TO THE LOWER HEATING VALUE OF THE LIQUID PRODUCT, I WOULD APPRECIATE CLARIFICATION ON THE UNITS OF MEASUREMENT FOR THIS VALUE. IS THE 30 MJ LIQUID LHV REQUIREMENT INTENDED TO BE EXPRESSED PER MOLE, GALLON, KILOGRAM, OR ANOTHER UNIT OF MEASUREMENT? ADDITIONALLY, DOES THIS REQUIREMENT EXCLUDE METHANOL FROM CONSIDERATION?

FINAL APPLICATION SUBMISSION: ACCORDING TO THE GRANT FOA, THE FINAL APPLICATION FOR PHASE I/II IS DUE ON APRIL 18TH. OUR TEAM HAS BEEN DILIGENTLY WORKING ON REFINING OUR PROJECT CONCEPT, WHICH HAS EVOLVED SIGNIFICANTLY THROUGH ITERATIVE PROCESSES AIMED AT ENHANCING COMMERCIALIZATION PROSPECTS. AS A RESULT, WE HAVE NOT YET SUBMITTED A CONCEPT PAPER. GIVEN THESE CIRCUMSTANCES, WE ARE SEEKING GUIDANCE ON WHETHER THE FULL APPLICATION CAN BE SUBMITTED WITHOUT A PRIOR CONCEPT PAPER SUBMISSION. WE ARE CONFIDENT IN THE VIABILITY AND POTENTIAL IMPACT OF OUR INNOVATIVE APPROACH, WHICH AIMS TO DELIVER A HIGH YIELD OF CARBON LIQUID PRODUCTS WHILE REDUCING THE OVERHEAD COST ASSOCIATED WITH DISTILLATION.

ANSWER: 1) Per Table 3, the final deliverable is expressed in terms of MJ/day, regardless of the type of fuel. The metric is a requirement for the scale of production that should be achieved by the end of the project, not a statement on the energy density of the liquid. Methanol is a valid product, as per Section I.C of the FOA: "The final product may be any carbon-containing liquid or liquid mixture at ambient temperature and less than 20 bar."

2) As stated in Section III.F.1 of the FOA, Full Applications will only be considered compliant if the applicant previously submitted a compliant and responsive Concept Paper. Full Applications found to be noncompliant may not be merit reviewed or considered for award.

Q6. WE ARE SUBMITTING AN SBIR/STTR FOR CONSIDERATION UNDER DE-FOA-0003235, AND WERE WONDERING ABOUT BUDGET SEGMENTATION AND TIMELINE FOR JOINT PHASE I/II/III PROJECTS. IS THERE A SPECIFIC MINIMUM/MAXIMUM DURATION FOR THE PHASE I VERSUS PHASE II SEGMENTS OF THE PROJECT? OR SHOULD WE DESIGNATE PHASE I AND PHASE II ACTIVITIES BY BUDGET AND DELIVERABLES?

FOR EXAMPLE: CAN WE USE THE \$306,7872 ALLOCATED FUNDS FOR A 6 MONTH PHASE I, AND THEN USE THE REMAINING FUNDS FOR 2.5 YEARS OF WORK UNDER A PHASE II DESIGNATION?

ANSWER: Please refer to the SBIR website (<https://www.sbir.gov/about>). There is no specific minimum or maximum duration for Phase I and Phase II. Applicants are free to propose an appropriate period of time for each Phase, given the allowable budget and associated proposed project tasks.