

## QUESTIONS AND ANSWERS

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## I. FREQUENTLY ASKED QUESTIONS:

### Q1. If I have questions about this funding announcement, who do I contact?

**ANSWER:** Please see the FOA guidance on submitting FOA content questions and response publication. Applicants may submit questions regarding this ARPA-E's Funding Opportunity Announcement (FOA) to [ARPA-E-CO@hq.doe.gov](mailto:ARPA-E-CO@hq.doe.gov). All emails must include the FOA name and number in the subject line. The cover page and Executive Summary of the Funding Opportunity Announcement state the deadlines for submitting questions to [ARPA-E-CO@hq.doe.gov](mailto:ARPA-E-CO@hq.doe.gov).

### Q2. How will I receive a response to questions submitted to [arpa-e-co@hq.doe.gov](mailto:arpa-e-co@hq.doe.gov) about this FOA?

**ANSWER:** Responses are posted in the "Frequently Asked Questions" section of ARPA-E's website. There are general FAQs and a FAQ page for each FOA.

ARPA-E will post responses on a weekly basis to any questions that are received.

ARPA-E will cease to accept questions approximately 5 business days 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.

### Q3. Will ARPA-E post a response to every question submitted to [arpa-e-co@hq.doe.gov](mailto:arpa-e-co@hq.doe.gov)?

**ANSWER:** No. ARPA-E will only post responses to questions that have not already been addressed by a published FAQ. Also, ARPA-E may consolidate similar questions for administrative purposes.

### Q4. If I have questions about ARPA-E exchange, who do I contact?

**ANSWER:** Applicants may submit questions regarding ARPA-E's online application portal, ARPA-E eXCHANGE, to [ExchangeHelp@hq.doe.gov](mailto:ExchangeHelp@hq.doe.gov). All emails must include the name and number of the Funding Opportunity Announcement in the subject line.

### Q5. Can I speak or meet with the ARPA-E program director or other ARPA-E personnel about this funding opportunity announcement?

**ANSWER:** No. Upon the issuance of this Funding Opportunity Announcement (FOA), ARPA-E Programs and other ARPA-E personnel are prohibited from communicating (in writing or otherwise) with Applicants, or potential 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 may submit questions regarding the FOA to [ARPA-E-CO@hq.doe.gov](mailto:ARPA-E-CO@hq.doe.gov) with the FOA name and number in the subject line. Applicants may also submit questions regarding ARPA-E's online application portal, ARPA-E eXCHANGE, to [ExchangeHelp@hq.doe.gov](mailto:ExchangeHelp@hq.doe.gov) with the FOA name and number in the subject line. 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.

### Q6. Can a person be PI on one proposal and a co-PI on a second separate proposal?

**ANSWER:** Yes, but the applications must be scientifically distinct from one another.

### Q7. May applicants submit more than one Concept Paper to this funding opportunity?

**ANSWER:** Yes, but each Concept Paper submission must be scientifically distinct.

**Q8. I have developed a technology that may be a good fit for this funding opportunity. Will ARPA-E please review the attached project information and let me know if i should make a submission to this funding opportunity.**

**ANSWER:** No. Applicants must review the Technical Requirements of this funding opportunity to determine if their technology warrants a submission to ARPA-E.

**II. Questions for week ending: MARCH 22, 2013**

**Q9.A Would a novel non-biological process to convert methane to a species that can be fed to organisms to create a fuel fit into the REMOTE program?**

**Q9.A. ANSWER:** Please see Section I.E.3 of the FOA. ARPA-E will evaluate hybrid approaches that are capable of meeting all primary technical target metrics described in Section I.E.3 of the FOA (“Category 3”).

**Q9.B. Would ARPA-E be interested in a self-standing project that converts the methane to a carbon source that microbes can metabolize but does not include a biological component. This project would conceivably enable several of the other performers in the program to succeed.**

**Q9.B. ANSWER:** Please see the answer for Question 8.

**Q10.A. Under Category 3 of the FOA, can a project propose to produce a fuel intermediate that is converted to fuel at a separate facility?**

**10.A. ANSWER:** Please see the answer for Question 9.A.

**Q10.B. How should we calculate our primary technical targets in this case?**

**10.B. ANSWER:** Please see Section 1.E of the FOA.

**Q11. Would a project using MMO would qualify for a category 1 proposal?**

**ANSWER:** Please see Section I.E.1 of the FOA. ARPA-E will evaluate approaches that are capable of meeting all primary technical target metrics described in Section I.E.1 of the FOA (“Category 1”).

**Q12.A. Would ARPA-E consider a hybrid approach that uses a non-biological methane oxidation with downstream biological conversion to liquid fuels?**

**12.A. ANSWER:** Please see the answer for Question 9.A.

**Q12.B. There is a stated desire for fuel targets at least as energy dense as butanol (26.8 MJ/L) but that do not require accumulation of biomass on the road to fuel production. Does this eliminate fuel molecules unless they are able to be excreted in some way?**

**12.B. ANSWER:** Please see Section I.F of the FOA, Calculation 2. ARPA-E will evaluate approaches that are capable of meeting all primary technical target metrics described in Section I.E of the FOA.

**III. Questions for week ending: MARCH 29, 2013**

**Q13.A. Can methanol be used as a starting molecule for a proposal that targets category 2?**

**13.A. ANSWER:** Please see Section I.E.2 of the FOA, Metric Description 2.1. ARPA-E will evaluate approaches that are capable of meeting all primary technical target metrics described in Section I.E.2 of the FOA.

**Q13.B. If technical target 2.3, as detailed in the FOA, is an unreasonable target for my proposed technology, how should I address the specification for this metric in my concept paper?**

**13.B. ANSWER:** Please see Section I.E.2 of the FOA, Metric Description 2.3.

**Q13.C. Page 13 of the FOA, does the "larger than or equal sign,  $\geq$  26.8 MJ/L " imply that n-Butanol or other Butanols are not acceptable or are they an acceptable choice of a liquid fuel?**

**13.C ANSWER:** Yes. Fuels with an energy density greater than or equal to that of n-butanol are responsive to this FOA.

**Q14.A. Referring to figure 4b (page 10 of FOA): can we propose biological process for C-C bond formation (production of fuel precursor) and chemical (non-biological) conversion of fuel precursor to fuel as long as we are > 85% of energy efficiency of these two processes combined?**

**14.A. ANSWER:** Please see Section I.E of the FOA. ARPA-E will evaluate approaches that are capable of meeting all primary technical target metrics described in Section I.E of the FOA.

**Q14.B. Can the proposal focus on category 2 by hypothesizing that category 1 requirements will be met elsewhere by producing a compound x (e.g. Methanol) that quantitatively meets the energy efficiency, turnover frequency and specific activity targets. Can our proposal begin with this compound X and going to a fuel?**

**14.B. ANSWER:** Please see the answer for Question 13.A.

**Q15. Would the restriction in Section 1.g apply to an integrated fuel-generation system wherein methanotrophic material is grown and then thermochemically converted into a liquid fuel output?**

**ANSWER:** Please see the answer for Question 12.B.

**Q16. Is a non-native Methanotroph responsive to this FOA; and can methanol be considered as a final fuel product?**

**ANSWER:** Any organism that is engineered to use methane as a feedstock should be considered methanotrophic. Final fuel products with an energy density greater than or equal to that of n-butanol are responsive to this FOA.

**Q17. Does the total anticipated funding amount of \$20 million refer to year 1 only, or is this the total available for all years (up to 3)? Is it likely that substantially more than \$20 million will be awarded over the course of 3 years?**

**ANSWER:** Please see Section II.A (Award Overview) of the FOA. The total anticipated funding amount for the REMOTE FOA is \$20 million for 3 years. At this time, ARPA-E has no plans to award additional funding for projects funded under the REMOTE FOA.

#### **IV. Questions for week ending: APRIL 5, 2013**

**Q18 I would like to know if a competitive proposal needs to address all of the technical categories of interest or if a proposal can address only one of the technical categories, and assume that other groups will solve the other two categories.**

**ANSWER:** Please see Section 1.D (Technical Categories of Interest) of the FOA.

- Q19.1. Is there opportunity to look at other products from Methanotrophy aside from liquid fuels?**  
**Q19.1. ANSWER:** Please see Section 1.E (Technical Performance Targets) of the FOA. ARPA-E is not interested in proposals where the final fuel is not a liquid fuel molecule with an energy density greater than or equal to 26.8 MJ/L (*n*-butanol)
- Q19.2. How restrictive in this funding call on the metric of cost per unit fuel for Biological Methane activation?**  
**Q19.2. ANSWER:** Please see Section 1.E.1 (Category 1) of the FOA, which does not include a metric of cost per unit fuel.
- Q19.3. How specific does our product production and recovery protocol have to be?**  
**Q19.3 ANSWER:** Please see Section I.E (Technical Performance Targets) of the FOA. ARPA-E will evaluate approaches that are capable of meeting all primary technical target metrics described in Section I.E of the FOA.
- Q19.4 Do we need an industrial partnership?**  
**Q19.4 ANSWER:** Please see Section II.A (Eligible Applicants) of the FOA.
- Q19.5 Two of us are at a Canadian Institution. Can either of us be PI on the proposal or only our us collaborator?**  
**Q19.5 ANSWER:** Please see Section III.A.3 (Eligible Applicants – Foreign Entities) of the FOA. Please be advised that ARPA-E awards are generally subject to: 1) the requirement that all work under the award is conducted in the United States - subject to a partial waiver application process (rarely submitted, and more rarely granted); 2) United States manufacturing requirements for subject inventions resulting from research conducted under the award; 3) export control and ITAR regulations, as applicable, for the research conducted under the award; and 4) other eligibility requirements that vary from FOA to FOA. Thus, Prime Recipients must expend 100% of the Total Project Cost in the United States. Applicants seeking a waiver of this requirement are required to include an explicit request in the Business Assurances 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.
- Q20.1 How do we obtain a control number?**  
**Q20.1. ANSWER:** Please see Section IV.H.1 (Use of ARPA-E eXCHANGE) of the FOA.

**Q20.2 Should we address the cost share commitments in the Concept Paper?**

**Q20.2. ANSWER:** Please see Section IV.C (Content and Form of Concept Papers) of the FOA.

**Q20.3 Shall we describe succinctly the budget, scope of work, and/or business plan?**

**Q20.3. ANSWER:** Please see the answer for Question 20.2.

**Q20.4. Can we provide main applicants' resumes as attachments/supportive materials during the submission of the Concept Paper?**

**Q20.4. ANSWER:** Please see the answer for Question 20.2.

**Q21 What is ARPA-E's definition of "scientifically distinct?"**

**ANSWER:** This term is used in Section III.C.3 (Limitation on Number of Applications) of the FOA. In this context, the term "scientifically distinct" is used to emphasize that, in the event an Applicant intends to submit multiple concept papers/application, the applicant should propose distinct technical approaches in each application. This prohibition on duplicative applications involves a fact-based determination by ARPA-E to ensure a focused review of each technical concept, and appropriate use of ARPA-E's limited time/resources.

**V. Questions received by 5 PM: APRIL 15, 2013**

**Q22. Our proposal addresses category 1, 2 and part of 3. If we address a component of a category must we address all of the metrics (primary technical targets) of that category?**

**ANSWER:** Please see Section 1.D (Technical Categories of Interest) of the FOA.

**Q23. We were wondering whether the listed references count towards the 2 page limit for the technology plan and/or 2 page limit for the addendum.**

**ANSWER:** Yes. Please see Section IV.C (Content and Form of Concept Papers) of the FOA.

**Q24. The FOA specifies that times new roman 12 point font should be used, but the downloadable template has a different font (Calibri). Would you please clarify this issue?**

**ANSWER:** The Concept Paper template has been corrected on ARPA-E eXCHANGE (<https://arpa-e-foa.energy.gov/Registration.aspx>).

**Q25. It appears that a budget is not required for the concept paper. Is it correct that we only need to designate whether the project will require a 1 year seed fund or a 3 year budget?**

**ANSWER:** Yes. Please see Section IV.C (Content and Form of Concept Papers) of the FOA.

**Q26. Does this FOA include research based on a cell-free biosystem comprised of enzyme cascades?**

**ANSWER:** Please see the answer for Question 14.A.

**Q27. Is funding available for commercial implementation of existing methane to liquid diesel or gas (versus R&D proof of concepts)?**

**ANSWER:** No. Please see Section I.A (Agency Overview) and Section I.G (Applications Specifically Not of Interest) of the FOA.

**Q28. What technical information is required to be released if/when the project is funded? Is the technology public knowledge if/when funded?**

**ANSWER:** ARPA-E requires Full Applications (not Concept Papers) to include a "Summary for Public Release". If a Full Application is selected for award negotiations, this Summary will be used by ARPA-E to communicate to the public key technical features and the anticipated impact of the project. The Summary should not include confidential or proprietary information, technical or otherwise. In addition, under the terms of each negotiated award with ARPA-E, certain data ("protected data") generated under the project may be publicly released by DoE five years after the date such data is first produced. Note: Confidential/proprietary information in a Concept Paper or Full Application must be properly marked to ensure protection from release under the Freedom of Information Act. Please see Section V.III of the FOA (Marking of Confidential Information).

## VI. Questions for week ending: MAY 31, 2013

**Q29. Our Concept paper was discouraged and we would like to know if we should include additional modeling data and explanation for key aspects of our proposal, if that would make our proposal a better fit in with the programmatic goals of this FOA and if it would make our proposal responsive.**

**ANSWER:** The purpose of the Concept Paper phase is to save Applicants the time and expense of preparing a Full Application for technologies that are unlikely to be selected for award. However, Applicants that were discouraged during the Concept Paper phase may submit a Full Application. Applicants must review the technical requirements of this funding opportunity and independently determine what information to include in the Full Application.

**Q30. Can we add team members and increase our proposed budget from what was originally proposed in our Concept Paper?**

**ANSWER:** Yes. Applicants may expand or otherwise modify the proposed budget and Project Team for their Full Applications.

**Q31. The required gas transfer coefficient is calculated on pages 19-20 of the REMOTE FOA. Can you please explain how the values for partial pressures are calculated (p<sub>ch4</sub> = 0.493 bar & p<sub>o2</sub> = 0.493 bar), assuming an operating pressure of 1 atm? For a high conversion bioreactor the partial pressure of ch<sub>4</sub> and o<sub>2</sub> in the headspace will be much lower than the partial pressure of these gases in the feed (the latter of which was assumed to be used in the FOA calculation), especially when considering the co<sub>2</sub> produced during the fermentation.**

**ANSWER:** Values provided for partial pressures were intended as examples, and derived from known values, to enable calculation of the required gas transfer coefficient. ARPA-E understands that partial pressure values may vary based on composition of gas mixtures, reactor design, and other variables. Applicants may independently determine partial pressure values and must justify these values in support of calculation of the required gas transfer coefficient in the Full Application.

**Q32. The REMOTE Calculator Tool is locked, therefore, I cannot make formatting changes. In addition, the calculator has limited functionality when considering new technologies and processes not captured under "Case 1." Is it possible for ARPA-E to provide an unlocked version of the calculator for individual customization?**

**ANSWER:** No. The REMOTE Calculator Tool is not intended to be significantly modified or customized. Category 3 Applicants are required to submit a detailed cost and performance analysis using the REMOTE Calculator Tool template (or equivalent tool of comparable detail) tailored to the proposed technology. If submitting an equivalent tool, Category 3 Applicants must provide, at a minimum, the information identified on the "summary" tab of the REMOTE Calculator Tool template. Please see Section IV.D.9 (REMOTE Calculator Tool) of the FOA.

## VII. Questions for week ending: JUNE 7, 2013

**Q33. Is it possible to include an \*additional\* Co-PI not initially included in the pre-proposal submitted April 22?**

**ANSWER:** Please see answer to Q30.

**Q34. In page 49 of modification #2 of the FOA, as well as in pages 6 and 7 of the sample "Other Sources of Funding Disclosure Form" there is reference to "financial assistance" from a federal entity and "funding" from a non-federal entity. Does "Financial Assistance" also include regular research funds usually received by academic institutions?**

**ANSWER:** Yes, "financial assistance" includes any funding received from a federal entity, including regular research funds received by academic institutions.

**Q35. Upon submission do we need to follow the extensive format of the "Other Sources of Funding Disclosure Form" or is it possible to simply respond to the questions stated in the FOA on pages 48-50.**

**ANSWER:** Applicants must complete the "Other Sources of Funding Disclosure Form" as is. Applicants cannot choose to only answer the questions on pages 48 to 50 of the Funding Opportunity Announcement.

**Q36. Mod 2 of the remote FOA states that for proposals against this FOA, the technology to market strategy section of the technical volume is limited to 2 pages (see page 42 of the FOA). However, the technical volume template that is posted on your website states that this section is limited to 5 pages maximum. Could you please clarify which page limit is correct?**

**ANSWER:** ARPA-E has published an updated Technical Volume template on the ARPA-E Funding Opportunity Exchange funding opportunity announcement. The Technical Volume has been modified to a 2 page limit for the Technology to Market Strategy section.

**Q37.. Are we allowed to use a slightly different title in the full application than the one we used in the Concept Paper submitted April 22nd?**

**ANSWER:** Yes.

**Q38. Do sub-awards complete a "Business Assurance Form" and does the prime applicant include it in their full application?**

**ANSWER:** Yes, applicants should add the Sub Recipient Business Assurance forms to the Lead organization Business Assurance form.

**Q39. Do sub-awards complete the “Other Sources of Funding Form” and does the prime applicant include it in their full application?**

**ANSWER:** Yes, applicants should add the Sub Recipient Other Sources of Funding Form to the Lead organization Other Sources of Funding Form.

**Q40.A. I have a general question...when an FFRDC is going to be part of a project team (not as a lead), it is understood that DOE will fund the FFRDC’s directly. However, how does the applicant include the FFRDC in their proposal and what/if any information/forms is needed from the FFRDC to be included in the applicant’s application?**

**ANSWER:** Please see pages 47-48 of modification #2 of the FOA under Section IV.D.7 (“Seventh Component: Business Assurances Form”) and Questions 8 and 9 of the Business Assurances Form. If the Applicant is a FFRDC, it is required to submit written authorization from the cognizant Federal agency and append it to the Business Assurances Form. If the Applicant is a DOE/NNSA FFRDC, it must also submit a Field Work Proposal and append it to the Business Assurances Form.

**Q40.B. Do the FFRDC’s complete an SF 424a?**

**ANSWER:** Per the instructions for completing the SF 424A under Step 7 of the Budget Justification Workbook Guidance, “Applicants must provide and justify proposed costs related to Subrecipients, vendors, contractors, consultants, and FFRDC partners under the tab ‘f. Contractual’ for each Budget Year.”

The instructions for completing tab “f” also include further instructions on submitting budgets specific to an FFRDC.

## VIII. Questions for week ending: JUNE 14, 2013

**Q41. The budget justification workbook on the website today (6-10-13) is labeled as updated as of 5-6-13, but last week I downloaded an updated one dated 5-29-13. Which is the current and correct version to use?**

**ANSWER:** The budget justification document template on the funding opportunity announcement page is the latest version, which is dated 05-06-13. The Budget Justification Guidance is dated 05-29-2013.

**IX. Questions for week ending: JUNE 21, 2013**

**Q42. For the full proposal in response to the REMOTE FOA, does the 20-page allocation for R&D Strategy include a bibliography?**

**ANSWER:** Yes, the 20-page allocation for R&D Strategy includes any bibliography or list of cited literature.

**X. Questions for week ending: JUNE 28, 2013**

**Q43. Are the cited references considered part of the R&D 20 page maximum document?**

**ANSWER:** Please see Q42 above.

**Q44. This document seems to be protected. I need to copy the table under (3) many times to include funding sources for the prime recipient and the subrecipients. How does one deprotect the document to copy and then paste this information?**

**ANSWER:** The original Microsoft Word version of the “Other Sources of Funding Disclosure Form” cannot be modified. Applicants may, however, save the “Other Sources of Funding Disclosure Form” to a .PDF format and then insert additional pages into the .PDF file. This is an acceptable method for including an addendum to this form.

**XI. Questions for Final Questions Deadline: JULY 1, 2013**

**Q45. In reference to Q38 and Q39, can you please confirm that a separate “Business Assurances Form” and “Other Sources of Funding Form” must be completed by sub-recipients? When reviewing the forms, many of the questions are requesting information regarding the prime recipient. Can the sub-recipient information be included in the prime recipient’s forms?**

**If the sub-recipients do need to complete their own form, should the wording of the document be changed?**

**ANSWER:** Sub-recipients should complete a separate “Business Assurances Form” and a separate “Other Sources of Funding Form,” as outlined in the answers to Q38 and Q39.