



QUESTIONS AND ANSWERS

TABLE OF QUESTIONS

- I. **Frequently Asked Questions:**..... 1
 - A. If I have questions about this funding announcement, who do I contact? 1
 - B. How will I receive a response to questions submitted to arpa-e-co@hq.doe.gov about this FOA? 1
 - C. Will ARPA-E post a response to every question submitted to arpa-e-co@hq.doe.gov? 1
 - D. If I have questions about ARPA-E exchange, who do I contact? 1
 - E. Can I speak or meet with the ARPA-E program director or other ARPA-E personnel about this funding opportunity announcement?..... 1
 - F. Can a person be PI on one proposal and a Co-PI on a second separate proposal?.....2
 - G. May applicants submit more than one concept paper to this funding opportunity?.....2
 - H. I have developed a technology that may be a good fit for this funding opportunity. Will ARPA-E please review my idea and let me know if it is responsive to this FOA?2
 - I. Are foreign entities eligible to apply to this FOA?2
 - J. Are individuals eligible to apply to this FOA?2
 - K. Are we required to register for the Teaming List for this FOA?2
 - L. I missed the last Concept Paper deadline. Can I still submit a Full Application?2
 - M. Our project team includes several team members. Does each team member need to contribute cost share equally?.....3
 - N. Can you tell me whether my project team qualifies for reduced cost share?3
 - O. Will in-kind contributions count towards meeting our cost share requirements?.....3
 - P. We have a question concerning the impact of a large business seeking patent rights under a class waiver if our team qualifies for reduced cost share of 10%. Does this mean the entire team project is subject to 20% cost share or only the large business' portion of the project will be subject to 20% cost share?.....3
 - Q. Can you tell us whether our project team qualifies for reduced cost share based on the following scenario: []?.....3
 - R. How should we include references in our Full Application? Do they count towards the overall page limitation for the Technical Volume?4
 - S. Our team originally submitted a Concept Paper that listed [organization name 1] as the Prime Recipient. For our Full Application, can we change the lead organization to **** [organization name 2] instead?.....4
 - T. Can I include new Co-PIs and/or subrecipients in my Full Application?4
 - U. My Concept Paper was encouraged. What are my chances of being selected for award negotiations by ARPA-E?.....4
 - V. Do subrecipients also need to fill out the Business Assurances & Disclosures Form or is this filled out only by the Prime Recipient?4
- II. **Questions for week ending: October 3, 2014**.....4



QUESTIONS AND ANSWERS

TABLE OF QUESTIONS

Q9. I am a faculty member at **** interested in ****. Looking at the recent call DE-FOA-0001211, it seems the program is mainly interested in gene modification technologies. I was wondering if the program is also interested in systems approaches that can be used to evaluate different technologies in terms of robustness and other sustainability measures. Could you please elaborate or clarify more on this?4

III. Questions for week ending: October 10, 20145

Q10. I wanted to confirm that ARPA-E would consider proposals that studied hemp as an energy crop? The study would be conducted in accordance with the new Federal policy as well as Illinois' recent law change enabling Hemp research. Before proceeding forward we wanted to confirm Hemp would not be disqualified by ARPA-E.5

IV. Questions for week ending: October 17, 20145

Q11. Can Domestic Educational Institutions partner with European/Foreign Educational Institutions for this project? Is there a limitation that the research funded by the ARPA-E grant can only be performed in the US?5

Q12. Are model species related to biofuels crops (such as Brachypodium distachyon and Setaria viridis) eligible? Also, are oil-seed crops such as Safflower, Sunflower, or Canola eligible?5

Q13. In a consortium application, may an organization be the Prime Applicant if it is receiving less than 50% of the total award?.....6

Q14. In the FOA, amounts are specified between \$250,000 and \$10 million but it does not say if that is per year or the entire duration of a project, please clarify.6

Q15. For projects not incorporating Category 1: integrated system or Cat. 5, hosting site, can we assume we would have access to the hosting site facility to perform high-throughput field growth experiments in years 2-4 on at least a small amount of field space? It seems to me that this facility will greatly enhance the capabilities of each of the funded groups and others, and that this should be taken into account for planning of sub-projects. Access to the facility will greatly expand what we can do and result in significant cost savings.6

Q16. Are there administrative or other issues with collaborating with foreign institutions such as **** in a project proposal for this FOA?6

Q17. Will site installation costs be included in the Government Furnished Equipment (GFE) provided by ARPA-E to the Category 5 awardee (“the reference team”) or should applicants include installation costs in the proposed budget for the Concept Paper?6

Q18. Will the GFE installed at the reference team’s site remain with that institution at the end of the project?7

Q19. On p.31 of the FOA, in regards to “foreign entities,” the text read, “all work by foreign entities must be performed by subsidiaries or affiliates incorporated in the United State (including U.S. Territories). If a team wanted to have a collaborator from a foreign university, would this be possible? Would this collaborator be eligible for any funding from the ARPA-E TERRA grant budget?7

Q20. Can an individual be on two proposals?.....7

Q21. Would ARPA-E sponsor obtaining a Certificate of Authorization (CoA) for Unmanned Aerial System (UAS) from the FAA to support TERRA research?7

QUESTIONS AND ANSWERS

TABLE OF QUESTIONS

Q22. Can I submit one Concept Paper that includes a Category 1 and Category 5 submission since it seems that these categories are mutually exclusive?7

Q23. If a project team has the capability of submitting either a Category 1 or a Category 5, should we submit two proposals assuming they would not both be funded?8

V. Questions for week ending: October 31, 2014.....8

Q24. Will funding for procurement of instrument and equipment for high-throughput phenotyping in controlled environment be an allowed cost in the proposed budget?8

Q25. We work on **** [description of technical area]. Would a **** [description of project] be considered for this concept paper?8

Q26. Is there a way that participating industry in category I can avoid disclosing proprietary information and crop lines during the course of the project as well as post-project?.....8

Q27. Does the Prime Recipient/Lead institution need to make up the largest percent effort of the team members on a multi-institutional project? For example, in the potential Concept Paper we are submitting, the Prime Recipient is at 16% effort but there are other project member institutions (subawards) at 20% effort. I couldn't find anything in the TERRA FOA about this yet. However, in my experience with other ARPA-E programs, the Prime/Lead was required to make up the largest percent effort. Is this correct?.....8

Q28. We work for a federal research agency and university in ***** and have been asked by colleagues in the U.S. if we could join a consortium to contribute to the TERRA research program. We have extensive experience in sorghum modelling, genetics and physiology and a recognized world-class research program in this area. From the rules, it seems that our agencies could not receive funds directly from the program. What types of interactions are possible? How/when should a waiver be applied for to complete some research outside of U.S.?.....9

Q29. Would ARPA-E/TERRA be interested in a Concept Paper where we **** [description of project]. Or is ARPA-E exclusively interested in plant genetic improvement?.....9

VI. Questions for week ending: November 7, 20149

Q30. I noticed that there is a "funds and costs" tab on the ARPA-E Exchange website, however funds and cost estimates are not listed as a requirement for Concept Papers in the FOA.9

My question is whether this section is required at the concept paper stage.9

VII. Questions received through the first question submission deadline: November 10, 2014.....10

Q31. We would like to propose using a variety of sorghum (e.g., grain or sweet sorghum) that cannot meet the >25 dry metric tons per acre requirement of the FOA. Is there a way we could apply and be fully considered for funding?.....10

Q32. Are performers expected to continue with repeated field trials during years 2-4?.....10

Q33. Page 5 of the TERRA FOA provides: "although other crops will be considered, this program intends to focus on energy sorghum as a model system because of its potential for improvement through breeding, its resources for genetic analysis, its geographic adaptability, and its commercial utility." If we focus our proposal on energy cane, how much would this undermine the success of our proposal?10

Q34. Under Category 1, are applicants required to employ High Throughput (HTP) phenotyping under controlled conditions in addition to HTP field-based phenotyping? If so, are applicants required to have

QUESTIONS AND ANSWERS

TABLE OF QUESTIONS

access to a HTP phenotyping platform under controlled conditions at the onset of the project, or can applicants build this capability as part of the project?	10
Q35. We are interested in the TERRA FOA, but would like to know if other species than sorghum bicolor would be accepted as the energy production crop. Specifically, we would like to know if managed forest plantations are of interest for this call (i.e., loblolly pine, aspen, or other).	11
Q36. Page 23 of the FOA provides: “2.3 The platform needs to operate over an area of 50 hectares.” Does this mean that I need a testing field of 50 hectares? If not, does this mean that the project must be scalable to an area of 50 hectares?	11
Q37. Can corn be considered a biofuel crop under the TERRA FOA?	11
Q38.A. Our company is very interested in submitting a Concept Paper for Category 3 (Computational Solutions for Selection and Prediction). Are you accepting projects involving data from any kind of crops and from any locations?	11
Q38.B. For Category 3, is ARPA-E only considering projects with fully automated data processes (collection, reduction, interpretation) or are you also interested in semi-automated processes?	12
Q38.C. For Category 3, would you please confirm the level of detail you would like to see in the data system level diagram?	12
Q39.A. We have access to a green house where we control temperature, humidity, level of rainfall, and fertilizer, does the TERRA FOA require a certain building materials or is that up to the applicant?	12
Q39.B. Are applicants required to only use domestic plant species or can applicants propose to use imported plant species, some of which may be on the invasive species list? Our proposed project is in an isolated location and uses a completely controlled growing environment – would ARPA-E consider proposals that use invasive plant species?	12
VIII. Questions for week ending: January 23, 2015	13
Q40. We would like to know if the 40 page limit for a Category 1 proposal applies to the references as well?	13
IX. Questions for week ending: January 30, 2015	13
Q41. As a domestic nonprofit partnering with an FFRDC and a small business, please confirm that we [the domestic nonprofit] would be required to provide 5% of the Total Project Cost as cost share and our small business partner would be required to provide 10% of the Total Project costs for years 2 and 3 of the period of performance.	13
Q42. For questions 3(a) and 3(b) of the Business Assurance and Disclosure Forms, does ARPA-E	13
want a list of current or pending grants only if they specifically relate to (or use the same technology as) our TERRA proposal (which could disqualify some of our current and pending grants as they are not related nor use the same technology)? Or does ARPA-E want a complete list of current and pending grants?	13
Q43. On the Business Assurances & Disclosures Form, does “Point of Contact” mean “Program Officer Contact” (the contact information of the governmental program officer of each funding agency)?	14
Q44. Forms in the application package are for three years only but according to the FOA, the maximum period can be four years. Do we just add another year if we decide to apply for four years? If one or more of the forms are locked, can we get them unlocked?	14

QUESTIONS AND ANSWERS

TABLE OF QUESTIONS

Q45. I am wondering which bioenergy processes are being targeted? While the final target in the FOA is listed as "biomass" is that biomass for combustion, for cellulosic ethanol, for grain-based fermentation, or for something else? To what extent is determination of biomass compositional properties important for this FOA?	14
Q46. Our proposed TERRA Team consists of two FFRDCs, one University, one University Extension Center, and two small businesses (one with ~100 employees and one with ~10 employees). Although the FFRDCs + University + University Extension Center will account less than 80% of the total budget we wonder if we could get a waiver for the 20% cost share, considering the dominance of FFRDCs and academics. The reason the non-profit part of our Team does not command 80% of the budget is because of the expensive development costs for field-phenotyping equipment. Would you please let us know whether or not it would be possible for us to be eligible for a lower cost share.	15
X. Questions for week ending: February 6, 2015	15
Q47. Does the summary slide (Component 5) need to follow the template format, or can it be formatted in any way as long as it contains the required content?	15
Q48. Is it possible to have a phone call about cost share for the TERRA proposal?	15
XI. Questions for week ending: February 13, 2015	15
Q49.A. We are an FFRDC and we were encouraged to submit a full application. As a budget administrator, I am trying to figure out how to present the cost share. If FFRDCs are not permitted to provide cost share, do we ask our other members of the project team to contribute?	15
Q49.B If our full application is selected (FFRDC is the lead applicant) , how is the cost share handled among our project team if our funding mechanism is a Work Authorization issued under the DOE M&O Contract, as proposed in our Field Work Proposal (FWP)?	16
Q50. Our company is a member of a team that will submit a category 1 proposal to the TERRA FOA. We will receive more than 10% of the total budget and therefore will fill out our own budget workbook. We'd like to keep our fringe and overhead rates confidential because they are part of our corporate strategy and competitiveness. May we submit our detailed budget workbook directly to ARPA-E for incorporation into the proposal, as opposed to sharing it with the proposed Prime Recipient?	16
Q51. Can the budget of the final full application be higher than the one specified in the original Concept Paper?	17
Q52. Can new co-PI's be added to the final proposal?	17
Q53. What is the matching funds required from Universities?	17
XII. Questions for week ending: February 20, 2015	17
Q54. Does the HTP phenotyping under controlled environmental conditions need to also mimic the field phenotyping, e.g., by including spectral imaging, or can it excessively focus on developing HTP molecular, precision phenotyping such as metabolite and transcript profiling and compare results from molecular phenotyping of field-grown plants?	17
Q55. Are Cat. 5 proposals required to submit the TERRA Robotics and Breeding Workbook?	17

I. FREQUENTLY ASKED QUESTIONS:

A. 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. 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.

B. How will I receive a response to questions submitted to arpa-e-co@hq.doe.gov about this FOA?

ANSWER: Responses are posted in the "Current Funding Opportunities FAQs" section of ARPA-E's website available at <http://arpa-e.energy.gov/?q=faq/current-funding-opportunities>. In addition, general questions about ARPA-E can be found at <http://arpa-e.energy.gov/?q=faq/general-questions>.

ARPA-E will post responses on a weekly basis to 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.

C. Will ARPA-E post a response to every question submitted to 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.

D. 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. All emails must include the name and number of the Funding Opportunity Announcement in the subject line.

E. 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 Program Directors 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 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 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.

F. Can a person be PI on one proposal and a Co-PI on a second separate proposal?

ANSWER: Yes, an individual may be on more than one submission – either as a lead or member of a Project Team.

G. May applicants submit more than one concept paper to this funding opportunity?

ANSWER: Yes, but each Concept Paper must be “scientifically distinct”. 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.

H. I have developed a technology that may be a good fit for this funding opportunity. Will ARPA-E please review my idea and let me know if it is responsive to this FOA?

ANSWER: ARPA-E will consider concepts that propose to meet or exceed the technical performance targets set forth in Section I.E (Technical Performance Targets) of the FOA and do not fall under Section I.F (Applications Specifically Not of Interest) of the FOA. Applicants must review the technical requirements of the FOA and independently determine whether their proposed concept warrants a submission.

I. Are foreign entities eligible to apply to this FOA?

ANSWER: Foreign entities are eligible to apply for funding. See Section III.A.3 (Eligibility Information- Foreign Entities) of the FOA. However, if the project is selected for award negotiations and an award is made, all work must be performed in the United States by subsidiaries or affiliates incorporated in the United States or U.S. territories, unless ARPA-E grants a foreign work waiver to allow performance of part of the work outside of the United States. ARPA-E's grant of a foreign work waiver is a fact dependent, case-by-case determination that is made only in exceptional circumstances and only for discrete parts of an award that necessitate foreign work. Applicants that anticipate the need for a foreign work waiver to perform some work outside of the U.S. should review Section 5 of the Business Assurances & Disclosures Form.

J. Are individuals eligible to apply to this FOA?

ANSWER: Yes. Individuals are eligible to apply for funding. See Section III.A (Eligibility Information) of the FOA. However, any ARPA-E award funding would need to be made to a business entity formed by the Applicant, if selected for award negotiations.

K. Are we required to register for the Teaming List for this FOA?

ANSWER: No. ARPA-E set up the Teaming Partner List for this FOA to facilitate formation of new project teams. There is no requirement for applicants or any team member to sign up/register for the Teaming Partner List. In addition, ARPA-E does not endorse or otherwise evaluate the qualifications of the entities that self-identify themselves for placement on the Teaming Partner List.

L. I missed the last Concept Paper deadline. Can I still submit a Full Application?

ANSWER: No. Only applicants who have successfully submitted a Concept Paper in eXCHANGE by the published deadline are eligible to submit a Full Application to the FOA.

M. Our project team includes several team members. Does each team member need to contribute cost share equally?

ANSWER: Although the cost share requirement applies to the Project Team as a whole, the funding agreement makes the Prime Recipient legally responsible for paying the entire cost share. See Section III.B.4 for more information on cost sharing. Each Project Team is free to determine how much each team member will contribute towards the cost share requirement. The amount contributed by individual Project Team members may vary, so long as the cost share requirement for the project as a whole is met.

N. Can you tell me whether my project team qualifies for reduced cost share?

ANSWER: ARPA-E may not provide pre-submission assessments on a project team's specific cost sharing requirement.

O. Will in-kind contributions count towards meeting our cost share requirements?

ANSWER: Yes, if the in-kind contribution is determined to be allowable, allocable and reasonable by the ARPA-E Contracting Officer. Since this is necessarily fact determinative inquiry, these types of questions are answered based on a review of all relevant information by the Contracting Officer during award negotiations. For general guidance on acceptable cost share contributions and corresponding cost principles used by the ARPA-E Contracting Officer to make these determinations, see 10 C.F.R § 600.313 and § 600.317 (Cost Matching/Sharing and Cost Principles for For-Profit Organizations), 2 C.F.R. § 200.306 and 2 C.F.R. Part 200, Subpart E (Cost Matching/Sharing and Cost Principles for Institutes of Higher Education, Hospitals, Other Nonprofit Organizations, State and Local Governments).

P. We have a question concerning the impact of a large business seeking patent rights under a class waiver if our team qualifies for reduced cost share of 10%. Does this mean the entire team project is subject to 20% cost share or only the large business' portion of the project will be subject to 20% cost share?

ANSWER: Per Section II.B.3 (Reduced Cost Share Requirement) of the FOA, under this scenario, only the large business' portion of the work under this scenario is subject to the 20% minimum cost share requirement. Please see Section III.B.3 (Reduced Cost Share Requirement), Section III.B.4 (Legal Responsibility), and Section III.B.5 (Cost Share Allocation) of the FOA for more details on the cost sharing requirements. **NOTE: If the large business' portion of Total Project Costs is greater than 20%, then the project team's total cost share minimum is 20% since the team as a whole would no longer qualify for the 80/20 labor distribution for reduced cost share, per Section III.B.3 of the FOA.**

Q. Can you tell us whether our project team qualifies for reduced cost share based on the following scenario: []?

ANSWER: ARPA-E may not provide pre-submission assessments on a project team's specific cost sharing requirement.

R. How should we include references in our Full Application? Do they count towards the overall page limitation for the Technical Volume?

ANSWER: Applicants may provide a list of references in a separate bibliography. Only bibliographic information may be contained in the references, and no additional text or commentary should be included. There is no page limit for the bibliographic references section of the Full Application.

S. Our team originally submitted a Concept Paper that listed [organization name 1] as the Prime Recipient. For our Full Application, can we change the lead organization to ** [organization name 2] instead?**

ANSWER: Yes, the ARPA-E eXCHANGE system will allow applicants to expand or otherwise modify the Project Team for their Full Applications.

T. Can I include new Co-PIs and/or subrecipients in my Full Application?

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

U. My Concept Paper was encouraged. What are my chances of being selected for award negotiations by ARPA-E?

ANSWER: ARPA-E does not provide pre-submission assessments of Applicants' likelihood to receive funding.

V. Do subrecipients also need to fill out the Business Assurances & Disclosures Form or is this filled out only by the Prime Recipient?

ANSWER: The Business Assurances & Disclosures Form requests information regarding the legal entity submitting the application as the Prime Recipient, the legal entities and/or individuals that are proposed to be Subrecipients, and the PI/Co-PIs in their individual capacity. The Prime Recipient may submit one Business Assurances & Disclosures Form covering all of the Project Team members if it has authorization and information to answer on their behalf. Alternatively, the Prime Recipient may request Subrecipients to complete and sign individual Business Assurances & Disclosures Forms that the Prime Recipient will append to its form.

II. Questions for week ending: OCTOBER 3, 2014

Q9. I am a faculty member at ** interested in ****. Looking at the recent call DE-FOA-0001211, it seems the program is mainly interested in gene modification technologies. I was wondering if the program is also interested in systems approaches that can be used to evaluate different technologies in terms of robustness and other sustainability measures. Could you please elaborate or clarify more on this?**

ANSWER: ARPA-E will consider all concepts that propose to meet or exceed the technical performance targets set forth in Section I.E (Technical Performance Targets) of the FOA and do not fall under Section I.F (Applications Specifically Not of Interest) of the FOA. Sustainability measures are not included as a technical performance target in the TERRA FOA. However phenotypes related to sustainability are described in Table 1 in the FOA and, if desired, applicants may include

their measures in addition to the required Concept Paper content specified in Section IV.C (Content and Form of Concept Papers) of the FOA.

III. Questions for week ending: OCTOBER 10, 2014

Q10. I wanted to confirm that ARPA-E would consider proposals that studied hemp as an energy crop? The study would be conducted in accordance with the new Federal policy as well as Illinois' recent law change enabling Hemp research. Before proceeding forward we wanted to confirm Hemp would not be disqualified by ARPA-E.

ANSWER: Please see Sections I.B.3 (Energy Crops), I.D (Technical Categories of Interest) and Section I.F (Applications Specifically Not of Interest) of the FOA.

IV. Questions for week ending: OCTOBER 17, 2014

Q11. Can Domestic Educational Institutions partner with European/Foreign Educational Institutions for this project? Is there a limitation that the research funded by the ARPA-E grant can only be performed in the US?

ANSWER: Per Section III.A (Eligibility Information) of the FOA, foreign entities are eligible to apply for funding. However, if the project is selected for award negotiations and an award is made, all work must be performed in the United States by subsidiaries or affiliates incorporated in the United States or U.S. territories (unless ARPA-E grants a foreign work waiver to allow performance of part of the work outside of the United States). ARPA-E's grant of a foreign work waiver is a fact dependent, case-by-case determination that is made only in exceptional circumstances and only for discrete parts of an award that necessitate foreign work. Applicants that anticipate the need for a foreign work waiver to perform some work outside of the U.S. should review Section 5 of the Business Assurances & Disclosures Form.

Q12. Are model species related to biofuels crops (such as Brachypodium distachyon and Setaria viridis) eligible? Also, are oil-seed crops such as Safflower, Sunflower, or Canola eligible?

ANSWER: The TERRA solicitation focuses on biomass yield, so please see Sections I.B.3 (Energy Crops), I.D (Technical Categories of Interest), and Section I.F (Applications Specifically Not of Interest) of the FOA in regards to ARPA-E's crops of interest.

Q13. In a consortium application, may an organization be the Prime Applicant if it is receiving less than 50% of the total award?

ANSWER: Applicants must independently determine the roles for members of their proposed Project Team. Please see Section III.A.4 of the FOA for a discussion on Consortium Entities.

Q14. In the FOA, amounts are specified between \$250,000 and \$10 million but it does not say if that is per year or the entire duration of a project, please clarify.

ANSWER: Section II.A (Award Overview) of the FOA states that individual awards may vary between \$250,000 and \$10 million. These floor and ceiling award amounts refer to the Total Project Cost for the entire duration of the award.

Q15. For projects not incorporating Category 1: integrated system or Cat. 5, hosting site, can we assume we would have access to the hosting site facility to perform high-throughput field growth experiments in years 2-4 on at least a small amount of field space? It seems to me that this facility will greatly enhance the capabilities of each of the funded groups and others, and that this should be taken into account for planning of sub-projects. Access to the facility will greatly expand what we can do and result in significant cost savings.

ANSWER: ARPA-E will not be providing a central field trial facility for the program for projects that only fit under categories 2-4. However, category 1 and 5 projects will be encouraged to collaborate with other TERRA projects and the field data from the reference project (category 5) will be made available to all TERRA projects.

Q16. Are there administrative or other issues with collaborating with foreign institutions such as ** in a project proposal for this FOA?**

ANSWER: Per Section III.A (Eligibility Information) of the FOA, foreign entities are eligible to apply for funding. However, if the project is selected for award negotiations and an award is made, all work must be performed in the United States by subsidiaries or affiliates incorporated in the United States or U.S. territories unless ARPA-E grants a foreign work waiver to allow performance of part of the work outside of the United States. ARPA-E's grant of a foreign work waiver is a fact dependent, case-by-case determination that is made only for exceptional technical justification for discrete parts of an award that necessitate foreign work. Applicants that anticipate the need for a foreign work waiver to perform some work outside of the U.S. should review Section 5 of the Business Assurances & Disclosures Form.

Q17. Will site installation costs be included in the Government Furnished Equipment (GFE) provided by ARPA-E to the Category 5 awardee ("the reference team") or should applicants include installation costs in the proposed budget for the Concept Paper?

ANSWER: The selected reference team is not expected to incur installation costs for the ARPA-E provided GFE, but the team is expected to incur some specific site preparation costs prior to installation of the GFE which should be included in the budget. As specified in Section I.D (Technical Categories of Interest) of the FOA, the reference team is expected to incur the following site preparation costs as part of the project: space and personnel available to install the GFE in the

2015 growing season, concrete foundations poured in the field, a dedicated field site with at least 20 meters of usable width and at least 200 meters long, a power supply (10s of kW expected), and all relevant construction and safety permits for operation of the GFE system.

Q18. Will the GFE installed at the reference team's site remain with that institution at the end of the project?

ANSWER: Subject to the specific provisions of the ARPA-E award, the GFE may be a permanent installation at the reference team's site, with the system remaining with the reference team at the end of the project. Please see Section I.D (Technical Categories of Interest) of the FOA.

Q19. On p.31 of the FOA, in regards to "foreign entities," the text read, "all work by foreign entities must be performed by subsidiaries or affiliates incorporated in the United State (including U.S. Territories). If a team wanted to have a collaborator from a foreign university, would this be possible? Would this collaborator be eligible for any funding from the ARPA-E TERRA grant budget?

ANSWER: Per Section III.A (Eligibility Information) of the FOA, foreign entities are eligible to apply for funding. However, if the project is selected for award negotiations and an award is made, all work must be performed in the United States by subsidiaries or affiliates incorporated in the United States or U.S. territories unless ARPA-E grants a foreign work waiver to allow performance of part of the work outside of the United States. ARPA-E's grant of a foreign work waiver is a fact dependent, case-by-case determination that is made only for exceptional technical justification for discrete parts of an award that necessitate foreign work. Applicants that anticipate the need for a foreign work waiver to perform some work outside of the U.S. should review Section 5 of the Business Assurances & Disclosures Form.

Q20. Can an individual be on two proposals?

ANSWER: Yes, an individual may be on more than one Concept Paper submission – either as a lead or member of a Project Team – but Prime Applicants that submit multiple submissions must ensure that each submission is "scientifically distinct".

Q21. Would ARPA-E sponsor obtaining a Certificate of Authorization (CoA) for Unmanned Aerial System (UAS) from the FAA to support TERRA research?

ANSWER: ARPA-E will consider sponsoring Certificates of Authorization.

Q22. Can I submit one Concept Paper that includes a Category 1 and Category 5 submission since it seems that these categories are mutually exclusive?

ANSWER: The TERRA FOA does not preclude submission of such a Concept Paper, however, per Section IV.C (Content and Form of Concept Papers) of the FOA, Concept Papers must not exceed 5 pages and must contain all requested content for each technical category as described in the FOA. Alternatively, per Section III.C.2 (Limitation on Number of Applications) of the FOA, applicants may submit separate Concept Papers for Category 1 and Category 5 concepts.

Q23. If a project team has the capability of submitting either a Category 1 or a Category 5, should we submit two proposals assuming they would not both be funded?

ANSWER: Please see the response provided for Question 22 above.

V. Questions for week ending: OCTOBER 31, 2014

Q24. Will funding for procurement of instrument and equipment for high-throughput phenotyping in controlled environment be an allowed cost in the proposed budget?

ANSWER: Applicants should budget for the capabilities necessary to achieve the technical metrics described in Section I.E (Technical Performance Targets) of the FOA.

Q25. We work on ** [description of technical area]. Would a **** [description of project] be considered for this concept paper?**

ANSWER: ARPA-E will consider all concepts that propose to meet or exceed the technical performance targets set forth in Section I.E (Technical Performance Targets) of the FOA and do not fall under Section I.F (Applications Specifically Not of Interest) of the FOA.

Q26. Is there a way that participating industry in category I can avoid disclosing proprietary information and crop lines during the course of the project as well as post-project?

ANSWER: The terms of the Recipient's cooperative agreement will address the protection of proprietary information disclosed by the Recipient. Specifics regarding the information to be protected will be addressed by the applicable cooperative agreement provisions.

Q27. Does the Prime Recipient/Lead institution need to make up the largest percent effort of the team members on a multi-institutional project? For example, in the potential Concept Paper we are submitting, the Prime Recipient is at 16% effort but there are other project member institutions (subawards) at 20% effort. I couldn't find anything in the TERRA FOA about this yet. However, in my experience with other ARPA-E programs, the Prime/Lead was required to make up the largest percent effort. Is this correct?

ANSWER: No, this is not required.

Q28. We work for a federal research agency and university in *** and have been asked by colleagues in the U.S. if we could join a consortium to contribute to the TERRA research program. We have extensive experience in sorghum modelling, genetics and physiology and a recognized world-class research program in this area. From the rules, it seems that our agencies could not receive funds directly from the program. What types of interactions are possible? How/when should a waiver be applied for to complete some research outside of U.S.?**

ANSWER: A foreign work waiver request is submitted as part of a Full Application. Granting such requests depends on the specific circumstances. Please see the answer to question 26 above for further information.

Q29. Would ARPA-E/TERRA be interested in a Concept Paper where we ** [description of project]. Or is ARPA-E exclusively interested in plant genetic improvement?**

ANSWER: ARPA-E will consider all concepts that propose to meet or exceed the technical performance targets set forth in Section I.E (Technical Performance Targets) of the FOA and do not fall under Section I.F (Applications Specifically Not of Interest) of the FOA. Additional phenotypes that may be relevant are described in Table 1 in the FOA and, if desired, applicants may include their measures in addition to the required Concept Paper content specified in Section IV.C (Content and Form of Concept Papers) of the FOA.

VI. Questions for week ending: NOVEMBER 7, 2014

Q30. I noticed that there is a "funds and costs" tab on the ARPA-E Exchange website, however funds and cost estimates are not listed as a requirement for Concept Papers in the FOA.

My question is whether this section is required at the concept paper stage.

ANSWER: The information requested (Federal Share and Non-Federal Share) on the Funds and Costs tab of an applicant's Concept Paper record in the ARPA-E Exchange system must be completed for the Concept Paper phase. (Applicants will have an opportunity to revise the information on the Funds and Costs tab in the Full Application phase of the proposal process.)

VII. Questions received through the first question submission deadline: NOVEMBER 10, 2014

Q31. We would like to propose using a variety of sorghum (e.g., grain or sweet sorghum) that cannot meet the >25 dry metric tons per acre requirement of the FOA. Is there a way we could apply and be fully considered for funding?

ANSWER: ARPA-E will consider all concepts that propose to meet or exceed the technical performance targets set forth in Section I.E (Technical Performance Targets) of the FOA and do not fall under Section I.F (Applications Specifically Not of Interest) of the FOA. Section I.F of the FOA specifies that proposed crops must have a demonstrated yield of >25 dry metric tons biomass/hectare/year on at least a one hectare plot in the continental United States. However, other crop varieties that are sexually compatible and allow for ready introgression of traits into crops that can meet the >25 dry metric ton/hectare/year metric will be considered.

Q32. Are performers expected to continue with repeated field trials during years 2-4?

ANSWER: Performers are expected to continue with field trials in order to meet the technical metrics specified in Section I.E (Technical Performance Targets) of the FOA

Q33. Page 5 of the TERRA FOA provides: “although other crops will be considered, this program intends to focus on energy sorghum as a model system because of its potential for improvement through breeding, its resources for genetic analysis, its geographic adaptability, and its commercial utility.” If we focus our proposal on energy cane, how much would this undermine the success of our proposal?

ANSWER: Please see the response to question 25 above.

Q34. Under Category 1, are applicants required to employ High Throughput (HTP) phenotyping under controlled conditions in addition to HTP field-based phenotyping? If so, are applicants required to have access to a HTP phenotyping platform under controlled conditions at the onset of the project, or can applicants build this capability as part of the project?

ANSWER: Per Section I.D (Technical Categories of Interest – Category 1) of the FOA, projects should be conducted under both field and controlled environmental conditions. The TERRA FOA does not require that Category 1 applicants currently have access to a HTP phenotyping platform. Applicants should budget for the capabilities necessary to achieve the Category 1 technical targets described in Section I.E (Technical Performance Targets) of the FOA.

Q35. We are interested in the TERRA FOA, but would like to know if other species than sorghum bicolor would be accepted as the energy production crop. Specifically, we would like to know if managed forest plantations are of interest for this call (i.e., loblolly pine, aspen, or other).

ANSWER: Please see the response to question 25 above.

Q36. Page 23 of the FOA provides: “2.3 The platform needs to operate over an area of 50 hectares.” Does this mean that I need a testing field of 50 hectares? If not, does this mean that the project must be scalable to an area of 50 hectares?

ANSWER: ARPA-E expects that the platform technology developed under the program can be readily scaled to 50 hectares, but does not expect recipients to operate at that scale during the period of performance.

Q37. Can corn be considered a biofuel crop under the TERRA FOA?

ANSWER: No. Per Section I.F (Applications Specifically Not of Interest) of the FOA, concepts that propose to work with maize are not of interest.

Q38.A. Our company is very interested in submitting a Concept Paper for Category 3 (Computational Solutions for Selection and Prediction). Are you accepting projects involving data from any kind of crops and from any locations?

ANSWER: ARPA-E will consider all concepts that propose to meet or exceed the technical performance targets set forth in Section I.E (Technical Performance Targets) of the FOA and do not fall under Section I.F (Applications Specifically Not of Interest) of the FOA. Please note that Section I.F of the FOA specifies that proposed crops must have a demonstrated yield of >25 dry metric tons biomass/hectare/year on at least a one hectare plot in the continental United States.

Q38.B. For Category 3, is ARPA-E only considering projects with fully automated data processes (collection, reduction, interpretation) or are you also interested in semi-automated processes?

ANSWER: ARPA-E will consider all Category 3 concepts, automated and semi-automated, that propose to meet or exceed the technical performance targets set forth in Section I.E (Technical Performance Targets) of the FOA and do not fall under Section I.F (Applications Specifically Not of Interest) of the FOA.

Q38.C. For Category 3, would you please confirm the level of detail you would like to see in the data system level diagram?

ANSWER: Per Section IV.C.1 (Content and Form of Concept Papers) of the FOA, Category 3 Concept Paper should include a data system level diagram that includes all major data analytics components in order to acquire, model and predict plant performance, with a sufficient level of detail to allow for technical assessment by experts in the field.

Q39.A. We have access to a green house where we control temperature, humidity, level of rainfall, and fertilizer, does the TERRA FOA require a certain building materials or is that up to the applicant?

ANSWER: The TERRA FOA does not specify the types of building materials to be used for the TERRA projects.

Q39.B. Are applicants required to only use domestic plant species or can applicants propose to use imported plant species, some of which may be on the invasive species list? Our proposed project is in an isolated location and uses a completely controlled growing environment – would ARPA-E consider proposals that use invasive plant species?

ANSWER: ARPA-E will consider all concepts that propose to meet or exceed the technical performance targets set forth in Section I.E (Technical Performance Targets) of the FOA and do not fall under Section I.F (Applications Specifically Not of Interest) of the FOA. Per Section I.F of the FOA, submissions must be for technologies that are scalable such that they could be disruptive with sufficient technical progress. To be “scalable,” plants must have the potential for large scale commercial deployment in the United States. Depending on the plant species selected, large scale commercial deployment of the plant may be prohibited – thus, not “scalable” - because it is categorized as a “noxious weed” under federal and state laws/regulations.

VIII. Questions for week ending: JANUARY 23, 2015

Q40. We would like to know if the 40 page limit for a Category 1 proposal applies to the references as well?

ANSWER: Please see the response provided for Frequently Asked Question R above.

IX. Questions for week ending: JANUARY 30, 2015

Q41. As a domestic nonprofit partnering with an FFRDC and a small business, please confirm that we [the domestic nonprofit] would be required to provide 5% of the Total Project Cost as cost share and our small business partner would be required to provide 10% of the Total Project costs for years 2 and 3 of the period of performance.

ANSWER: ARPA-E may not provide pre-submission assessments on a project team's specific cost sharing requirement or how cost share contributions are allocated on the project team. In addition, please note that although the cost share requirement applies to the Project Team as a whole, the funding agreement makes the Prime Recipient legally responsible for paying the entire cost share. Each Project Team is free to determine how much each team member will contribute towards the cost share requirement. The amount contributed by individual Project Team members may vary, so long as the cost share requirement for the project as a whole is met. See Section III.B.4 (Legal Responsibility) of the FOA for more information on cost sharing.

Q42. For questions 3(a) and 3(b) of the Business Assurance and Disclosure Forms, does ARPA-E want a list of current or pending grants only if they specifically relate to (or use the same technology as) our TERRA proposal (which could disqualify some of our current and pending grants as they are not related nor use the same technology)? Or does ARPA-E want a complete list of current and pending grants?

ANSWER: For Question 3(a) of the Business Assurances & Disclosures (BA&D) Form, applicants should only provide the requested information for "...any applications for this project [i.e., the proposed TERRA project] or for related work (i.e., work that relates directly or indirectly to the proposed R&D project) pending with any Federal or non-Federal entity (including, without limitation, industry, private investors, and foreign, state, or local governments)."

For Question 3(b) of the BA&D Form, applicants should only provide the requested information for "...all funding from any Federal or non-Federal entity that the Applicant or any other member(s) of the Project Team (including, without limitation, the PI or any Co-PIs), are currently receiving or

received within the last 5 years in the same technology area as the proposed [TERRA] R&D project.”

Q43. On the Business Assurances & Disclosures Form, does “Point of Contact” mean “Program Officer Contact” (the contact information of the governmental program officer of each funding agency)?

ANSWER: Applicants should use the “Point of Contact” fields contained in Question 3(b) of the Business Assurances & Disclosures Form to provide the contact information for any Federal or non-Federal entity that is currently providing funding to, or provided funding within the last 5 years, to the Applicant or any other member(s) of the project team in the same technology area as the proposed R&D project.

Q44. Forms in the application package are for three years only but according to the FOA, the maximum period can be four years. Do we just add another year if we decide to apply for four years? If one or more of the forms are locked, can we get them unlocked?

ANSWER: ARPA-E has uploaded an amended Budget Justification Workbook/SF-424A on eXCHANGE for the TERRA Program that includes an additional year. The amended Budget Justification Workbook/SF-424A can be downloaded by clicking the following link: <https://arpa-e-foa.energy.gov/FileContent.aspx?FileID=835e0b69-01ca-4aae-a64f-5913cf4ebeda>.

Q45. I am wondering which bioenergy processes are being targeted? While the final target in the FOA is listed as "biomass" is that biomass for combustion, for cellulosic ethanol, for grain-based fermentation, or for something else? To what extent is determination of biomass compositional properties important for this FOA?

ANSWER: The TERRA program does not specify a bioenergy process, and applicants may specify what process their feedstock is intended for in their Full Application. While accurately measuring plant biomass is the primary technical goal of the FOA, depending on the bioenergy process targeted, certain phenotypes may be more important to focus on. Please see Table 1 of the FOA for potential candidate phenotypes, and plant compositions, that that are sought under Category 2 for the TERRA FOA.

Q46. Our proposed TERRA Team consists of two FFRDCs, one University, one University Extension Center, and two small businesses (one with ~100 employees and one with ~10 employees). Although the FFRDCs + University + University Extension Center will account less than 80% of the total budget we wonder if we could get a waiver for the 20% cost share, considering the dominance of FFRDCs and academics. The reason the non-profit part of our Team does not command 80% of the budget is because of the expensive development costs for field-phenotyping equipment. Would you please let us know whether or not it would be possible for us to be eligible for a lower cost share.

ANSWER: Please review Modification 2 of the FOA at Section III.B (Reduced Cost Share Requirement) for clarification of cost share requirements.

X. Questions for week ending: FEBRUARY 6, 2015

Q47. Does the summary slide (Component 5) need to follow the template format, or can it be formatted in any way as long as it contains the required content?

ANSWER: ARPA-E strongly encourages applicants to utilize the Summary Slide template format provided on eXCHANGE. Applicants that deviate from this format must ensure that their submission conforms with the content and form requirements for Summary Slides contained in Section IV.D.5 (Fifth Component – Summary Slide) of the FOA

Q48. Is it possible to have a phone call about cost share for the TERRA proposal?

ANSWER: Please see the response provided for FAQ E above.

XI. Questions for week ending: FEBRUARY 13, 2015

Q49.A. We are an FFRDC and we were encouraged to submit a full application. As a budget administrator, I am trying to figure out how to present the cost share. If FFRDCs are not permitted to provide cost share, do we ask our other members of the project team to contribute?

ANSWER: FFRDCs may contribute allowable, allocable, and reasonable cost share, but only if the contributions are paid directly from the contractor's Management Fee or a non-Federal source.

Please see Section III.B.7 (Cost Share Contributions by FFRDCs and GOGOs) of the FOA for more information on cost sharing and FFRDC contributions.

Q49.B If our full application is selected (FFRDC is the lead applicant) , how is the cost share handled among our project team if our funding mechanism is a Work Authorization issued under the DOE M&O Contract, as proposed in our Field Work Proposal (FWP)?

ANSWER: When a Federally Funded Research and Development Center (FFRDC) or non-DOE/NNSA Government-Owned Government-Operated laboratory (GOGO) is the lead organization for a Project Team, ARPA-E executes a funding agreement directly with the FFRDC or non-DOE/NNSA GOGO and a single, separate Cooperative Agreement with the rest of the Project Team. Notwithstanding the use of multiple agreements, the FFRDC or non-DOE/NNSA GOGO is the lead organization for the entire project, including all work performed by the FFRDC or non-DOE/NNSA GOGO and the rest of the Project Team.

Although the cost share requirement will apply to the Project Team as a whole, the ARPA-E Cooperative Agreement will require the Prime Recipient for the Project Team to be responsible for the entire cost share, and for enforcing cost share obligations assumed by Project Team members in sub-awards or related agreements. For information on how cost share may be allocated on a Project Team, please see the response provided for FAQ M above.

Q50. Our company is a member of a team that will submit a category 1 proposal to the TERRA FOA. We will receive more than 10% of the total budget and therefore will fill out our own budget workbook. We'd like to keep our fringe and overhead rates confidential because they are part of our corporate strategy and competitiveness. May we submit our detailed budget workbook directly to ARPA-E for incorporation into the proposal, as opposed to sharing it with the proposed Prime Recipient?

ANSWER: Total cost data should be provided to the Prime Recipient for incorporation into the consolidated SF424A and the Budget Justification Workbook, but detailed cost data may be provided in a separate SF-424 and Budget Justification Workbook/SF-424A sent directly to ARPA-E via email at ARPA-E-CO@hq.doe.gov by the submission deadline stated in the FOA. Any files sent by email should be clearly marked with the application control number, name of the Prime Recipient, and the title of the application.

Q51. Can the budget of the final full application be higher than the one specified in the original Concept Paper?

ANSWER: Yes.

Q52. Can new co-PI's be added to the final proposal?

ANSWER: See the response provided for FAQ T above.

Q53. What is the matching funds required from Universities?

ANSWER: ARPA-E may not provide pre-submission assessments on a project team's specific cost sharing requirement.

XII. Questions for week ending: FEBRUARY 20, 2015

Q54. Does the HTP phenotyping under controlled environmental conditions need to also mimic the field phenotyping, e.g., by including spectral imaging, or can it excessively focus on developing HTP molecular, precision phenotyping such as metabolite and transcript profiling and compare results from molecular phenotyping of field-grown plants?

ANSWER: As described for Category 4 applications in Section I.D (Technical Categories of Interest) of the FOA, phenotyping under controlled environmental conditions is intended to enable direct comparisons and correlations between lines grown in controlled vs. field environments. It is important to be able to measure the same phenotypes in both environments, therefore submissions to a technical category that requires measurements in controlled environments should utilize similar sensors in both environments to measure phenotypes or justify an alternative approach.

Q55. Are Cat. 5 proposals required to submit the TERRA Robotics and Breeding Workbook?

ANSWER: Per Section IV.D.7 (Seventh Component: TERRA Robotics and Breeding Workbook) of the FOA, Applicants that propose to perform field activities or deploy sensor platforms should submit a TERRA Robotics & Breeding Workbook. Please see Section IV.D.7 for the content and form requirements of the TERRA Robotics and Breeding Workbook.