

## 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 Phase Questions:

**Q1. ... Please advise on POC to discuss further prior to full application submittal (I did not find a concept paper review period for this, therefore request brief conversation to ensure we're aligned with our use of resources for full proposal). ...**

**ANSWER:** Refer to General FAQ 2.6.

**Q2. ... [W]e are interested in future compatibility with zero carbon fuels like Hydrogen and Ammonia. We're aware that Hydrogen blends are being used up to 12/13% in some Hawaiian islands in pipelines and that HDPE replacement pipelines are somewhat compatible with Hydrogen and existing steel pipelines are prone to corrosion with Hydrogen blends or straight hydrogen. Are there requirements on the project ... to consider future compatibility with zero carbon fuels? ...**

**ANSWER:** REPAIR anticipates future scenarios involving different gas constituents. Category 1.1 includes *[c]ompatibility with current and future gas compositions with regard to corrosion and permeability, especially for hydrogen.*

**Q3. ... If possible we like to arrange a phone discussion with you. ...**

**ANSWER:** Refer to General FAQ 2.6.

**Q4. Please provide clarification regarding the following:**

**Q4.1 Page 26 [FOA Section II.A] of the [FOA] states "Individual awards may vary between \$250,000 and \$10 million." ... If the estimated total project cost exceeds \$10 million, is it recommended to submit multiple proposals?**

**ANSWER:** No. The maximum amount of Federal funding provided for any project under the REPAIR FOA is \$10 million. Allowable project costs in excess of \$10 million may be claimed as cost share.

**Q4.2 Page 37 [FOA Section III.C.4] states "ARPA-E is not limiting the number of submissions from Applicants. Applicants may submit more than one application to this FOA, provided that each application is scientifically distinct." ... Is it recommended that an Applicant submit one distinct proposal for each category if proposing to work on multiple categories ... [as described at FOA Section I.D]? ...**

**ANSWER:** Per Section I.D. of the FOA, "REPAIR has multiple categories, each of which requires diverse technical skills. Applicants may respond to an individual category or multiple categories." Each Applicant/ Project Team must determine, based on their individual circumstances, how to structure its REPAIR Full Application. Project Teams that have coherent, integrated proposals covering multiple Categories (particularly Categories 2 through 5) are encouraged to submit a single proposal. As noted

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in the FOA , “Applicants will need to address plans for integrating Category 2-4 system components into comprehensive offerings.”

However, an Applicant or Project Team may elect to submit a separate proposal for an individual Category; this would be particularly appropriate if an Applicant was planning to submit a proposal to Category 1 (Testing) and/or Category 6 (Mapping) and also to Category 2-5 (Systems component development and integration). Additionally, an entity may be a member of Project Teams for multiple REPAIR Applications.

**Q5. We ... and want[ ] to clarify if the scope of work is limited to:**

*... develop the suite of technologies required to rehabilitate cast iron, wrought iron, and bare steel natural gas distribution pipes by developing technologies that will enable the automated construction of a new pipe inside the old pipe. In order for the program to be successful, the new pipe must meet utilities' and regulatory agencies' requirements, have a minimum life of 50 years, and have sufficient material properties to operate throughout its service life without reliance on the exterior pipe. ...*

**Or if the scope also provides separate funds for [advancing]:**

*... the state of gas distribution pipelines by incorporating smart functionality into structural coating materials and developing new integrity/inspection tools. It will also create 3D maps that integrate natural gas pipe and adjacent underground infrastructure.*

**Are these 2 separate areas of focus or [do they] need to be proposed together? ...**

**ANSWER:** Refer to FAQ 4.2 above.

**Q6. Does this FOA also consider technologies involved materials other than polymers, such as metals for repair that has the potential to meet other FOA requirement/interests?**

**ANSWER:** The FOA does not limit the materials that can be considered for pipe rehabilitation. The coating materials need to be consistent with safe operation, and be able to be placed with minimum disruption to pipeline operations. Post deposition, pipeline operators need to have method(s) for ascertaining the functionality of the coating to establish the integrity of the pipe.

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**Q7. Does a project team composed of domestic education institutions and domestic nonprofits need to provide cost-share for the REPAIR program if the team successfully receives a waiver to include an international education institution as a member of the project team, where the international institution comprises 20% or less of the total budget? If the whole team does need to include cost-share due to the presence of an international institution at less than 20% of the total budget, we assume this would fit us into the 10% cost-share category, is that correct?"**

**ANSWER:** Project teams incorporating foreign entities receiving a waiver to perform work outside the United States are eligible for a cost share reduction in the circumstances set forth at FOA Section III.B.3, including:

*Project Teams where domestic educational institutions, domestic nonprofits, small businesses, and/or FFRDCs perform greater than or equal to 80% of the total work under the funding agreement (as measured by the Total Project Cost) are required to provide at least 10% of the Total Project Cost as cost share. However, any entity (such as a large business) receiving patent rights under a class waiver, or other patent waiver, that is part of a Project Team receiving this reduction must continue to meet the statutory minimum cost share requirement (20%) for its portion of the Total Project Cost.*

**Q8. We write to inquire about a possible extension of the deadline for submission of the applications for Funding Opportunity No. DE-FOA-0002289, Rapid Encapsulation of Pipelines Avoiding Intensive Replacement (REPAIR).**

**ANSWER:** DE-FOA-0002289 is being amended to revise the submission deadline to May 4, 2020 9:30 AM ET.

**Q9.1 We are trying to form a strong team ... . But as the COVID-19 situations are getting worse, it takes longer time than expected to establish the partnership. In this case, we are wondering will the deadline be extended to accommodate such a situation?**

**Q9.2 We have a question regarding Funding Opportunity No. DE-FOA-0002289, Rapid Encapsulation of Pipelines Avoiding Intensive Replacement (REPAIR). When will the revised FOA PDF be made available that documents the extension of the submittal date to May 4, 2020? Is it possible to extend the date any further?**

**Q9.3 I am working with a team on a full application for REPAIR. We noticed the ARPA-E website still has the 4/20 deadline for the full applications, but heard from a workshop participant the deadline has been extended to May 5. Can you please confirm?**

**ANSWER (Q9.1 through Q9.3):** Refer to FAQ 8. This amendment will be published shortly. ARPA-E will consider further extending the submission deadline at a later date.

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### Q10. I have some questions to ask for the submission:

**Q10.1 Do you expect the coating layer to serve as a significant structure for supporting the pressure loading together with original pipelines? Or can it be only a smart coating layer for preventing corrosion and giving health monitoring functions? For example, if the coating layer is very thin, and itself cannot have a very strong strength.**

**ANSWER:** ARPA-E will not pre-assess a prospective applicant's proposal. Applicants must review the technical requirements of the FOA and independently determine whether their proposed concept warrants a submission. See Section B. Program Overview 1. Summary

**Q10.2a Can a proposed project span across two or more categories listed in the FOA?**

**ANSWER:** Refer to FOA Section I.D. As set forth therein, *[a]pplicants may respond to an individual category or multiple categories.*

**Q10.2b If allowed, how to do the budget, and which program category should be used for the submission?**

**ANSWER:** A single budget submission addressing all work to be performed must be submitted. Refer to FOA Section IV.C.3 for additional details. Applicants shall identify, in the Technical Volume, the program category or categories that best describe the proposed work per the template instructions for the Executive Summary.

**Q10.3 Is this a limited submission? Is there any limit for a professor to serve as PI or Co-PI in multiple proposals.**

**ANSWER:** Refer to FOA Section III.C.4 and General FAQ 6.13.

**Q11. What is the guidance on how to report costs for a team only doing task 6? [M]y main question is how should we plan to demonstrate that our mapping technology will deliver at under \$1 Million per mile? If our system costs \$50,000 per unit (just an example), and it can help map 1,000 miles of pipeline, then can we say that our cost per mile is simply  $50,000/1,000 = \$50$  per mile? Is this correct? Or should we also take into account the cost of whatever pipe crawling system our mapping technology is mounted onto?**

**ANSWER:** The worksheet spreadsheet provides inputs to be used for calculating the cost per mile. Use Column E for mapping with your estimated inputs. Per the FOA Applicants can propose an alternative cost model.

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**Q12. We have been considering submitting one generic Cat 3 through 5 proposal since we have been recently approached by several companies interested in submitting just a Category 2 proposal. Each company/organization has their own solution – they are seeking our assistance in developing the robotic solution. It is difficult for us to submit specific proposals for each and every Cat 2 solution being proposed. The idea is that if a Category 2 awardee is selected we would tailor our generic solution to meet the requirements of their solution. We are looking for validation whether such a proposal would be entertained.**

**ANSWER:** Applicants with distinct technology development efforts in Categories 2, 3, and 4, but that will not be proposing all three categories should submit proposals and budgets based on their planned scope of work. Applicants that propose to work on Category 5 (Integrated Testing) but do not have scope/budget for one or more of tasks related to Categories 2, 3, and/or 4 should submit a budget for the scope of work they propose to execute in Category 5, and specify the scope and schedule for work they anticipate others would execute under Category 5.

**Q13. I have one question regarding the REPAIR FOA. The following is stated on page 11, [FOA Section I.]D: [titled] *Program Categories* - "Target pipelines are 10-inch (25 cm) and larger diameter gas distribution mains made of cast iron or bare steel." Would ARPA-E consider it acceptable for a proposal to focus on either cast iron or bare steel or should it focus on both materials?**

**ANSWER:** Applications may focus on a single material (i.e., cast iron or bare steel) or both materials.

**Q14.1 We are preparing a Category 2 proposal. In the FOA [at Section I.D, p.14] it says that "Consequently ARPA-E expects Applicants for Category 2 to address how they intend to collaborate with coating deposition tool Awardees in Category 3 and integrity/inspection tool teams in Category 4, as well as a system integrator in Category 5." At this proposal development stage we do not know who will be the awardees from the other categories. Does this mean that we do not need to identify any specific collaborators in the proposal? Instead, we can state in the proposal that some of the planned tasks are expected to be performed by a collaborator from another category?**

**ANSWER:** Applicants must outline their plan for engaging teams in other categories. Applicants should list tasks that they intend to execute with other teams, and expectations regarding roles and budgets. The overall scope, schedule, and budget should include these expectations.

**Q14.2 If we propose a [description omitted] that is intended to be deployed using [description omitted], do we still need to work with the awardees from the other categories?**

**ANSWER:** ARPA-E will not pre-assess a prospective applicant's proposal. Applicants must review the technical requirements of the FOA and independently determine whether their proposed concept requires collaboration with other Awardees.

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**Q15. Given the extreme complications caused by the Coronavirus pandemic related to running our business and the extreme difficulties experienced by our partners (small businesses, university and government agency), we request an extension of the submittal date of May 4, 2020. Is it possible to extend this date by one month to accommodate the ramifications caused by this unprecedented health crisis?**

**ANSWER:** ARPA-E is not considering any further extensions of the deadline for submission of applications.

**Q16.1 Could you clarify following: [FOA Section I.D, p.11] ... states[:] “Applicants may respond to an individual category or multiple categories”. [FOA Section III.C.3. p.37] states “[a]pproaches that address leaks, but do not create a new pipe with a 50 year life” are deemed nonresponsive and will not be merit reviewed or considered. Does this non-responsiveness criterion apply to a proposal submitted in Category 6?**

**ANSWER:** No.

**Q16.2 Could you provide a clarification on legal responsibility of a prime, if a team consists of an FFRDC and a small business entity, and the FFRDC is the prime, which can't contribute to the cost-share.**

**ANSWER:** As set forth at FOA Section II.C.2, when an FFRDC is the lead organization for a Project Team, ARPA-E executes a funding agreement with the laborator, and a single, separate cooperative agreement with the rest of the Project Team. Per FOA Section III.B.4, the cooperative agreement's Prime Recipient is legally responsible for paying, or ensuring the payment of the entire cash share.

**Q16.3 Could an investor (cost share contribution) be identified during a cost share grace period for a team consisting of a small business and FFRDC?**

**ANSWER:** As set forth at FOA Section II.B.8, Applicants are required to provide information and documentation regarding their cost share contributions upon selection for award negotiations.

**Q16.4 We'd like to inquire about a possible extension of the deadline for submission of the applications for Funding Opportunity No. DE-FOA-0002289, Rapid Encapsulation of Pipelines Avoiding Intensive Replacement (REPAIR)**

**ANSWER:** Refer to REPAIR FAQ 15.

**Q17. The SF-LLL form available through grants.gov does not permit a subrecipient to complete #5 on the form. With the COVID situation, I am unable to write in & scan the information, can you provide guidance on how to complete OR if as a subrecipient it is excusable to not complete this for FOA2289?**

**ANSWER:** It is the reporting entity's responsibility to insure that SF-LLL is properly completed and submitted with any Application for Federal financial assistance, if necessary.

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**Q18.1 Is the focus on repair targeted to a section of the pipe (once the location of the need been reliably located), OR on replacing miles and miles of pipe with a pipe in pipe solution?**

**ANSWER:** The intent is to rehabilitate all legacy pipe. REPAIR will focus on distribution mains, the larger diameter pipes that feed smaller laterals and service lines.

**Q18.2 Is the greatest challenge ARPA-E addressing for the cohesive system (inspect, repair, validate, deploy) and so the focus should be on integration, or is the challenge seen by ARPA-E still the base technologies in each category?**

**ANSWER:** Per the FOA, “REPAIR seeks to develop the suite of technologies required to rehabilitate cast iron, wrought iron, and bare steel natural gas distribution pipes by developing technologies that will enable the automated construction of a new pipe inside the old pipe.”

**Q18.3 How important is it to keep the gas flow operating without requiring a bypass?**

**ANSWER:** Per the FOA, “REPAIR also seeks to minimize gas service disruption costs. Applicants will need to specify the number and duration of gas service disruption(s) for their processes, and these costs will be included in the techno-economic evaluation of proposed processes.”

**Q19. A question about ... DE-FOA-0002289 – REPAIR. The proposal talks of “developed under REPAIR will ultimately need regulatory approval consistent with 49 Code of Federal Regulations Part 192.” [refer to FOA Section I.B.1, p.4]. Since it is suggested that it may be best if coating are not bonded to the original coating, and structural integrity of the original pipe is not to be depended on; does this mean that a new coating will be treated as a new natural gas pipe and need to fulfill all the requirements of CFR 192?**

**ANSWER:** Per the FOA, “the new pipe must meet utilities’ and regulatory agencies’ requirements, have a minimum life of 50 years, and have sufficient material properties to operate throughout its service life without reliance on the exterior pipe.”

**Q20. I am leading an academic team from ... . It will be very helpful if the deadline for the proposal submission was extended to beyond the end of the semester (i.e., May 18th, 2020). ...**

**ANSWER:** Refer to REPAIR FAQ 15.