

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. WHY DOES DE-FOA-0002784: EXPLORATORY TOPICS TOPIC M H2SENSE GO IMMEDIATELY TO FULL APPLICATION (FA) AND NOT GO THROUGH THE CONCEPT PAPER PHASE (CP)?

ANSWER: Exploratory Topics typically do not have a Concept Paper phase due to the shorter project durations and lower funding amounts compared to standard ARPA-E Funding Opportunity Announcements.

Q2. DOES THE PI HAVE TO PROVIDE THE 100 M X 100 M FACILITY FOR LEAK DETECTION, OR WILL ARPA-E PROVIDE THE FACILITY?

ANSWER: The Applicant should provide all necessary testing facilities and equipment to validate their metrics compliance and performance.

Q3. ARE LETTERS OF INTENT AND LETTERS OF COMMITMENT NEEDED FOR SUBMISSIONS OR ARE THOSE ONLY REQUIRED AT THE NEGOTIATION STAGE?

ANSWER: Please see Section IV.C. of the FOA and Section VI.B.3 of the FOA.

Q4. DOES THE COST TARGET OF \$10,000 INCLUDE THE COST OF PACKAGING THE SENSOR, E.G., EXPLOSION PROOF HOUSING IN A POG LIKE ENVIRONMENT, INSTALLATION COSTS, INITIAL SETUP AND CALIBRATION?

ANSWER: As stated in Appendix M, Section 4, Item 5 of the FOA the cost includes all components of the survey cost. Details of the cost estimate may be provided by the applicant.

Q5. IN THE FOA, PAGE 11, UNDER "REQUIRED DOCUMENTS CHECKLIST", IN THE TABLE UNDER FULL APPLICATION, IT LISTS 14 PAGES MAX FOR THE TECHNICAL VOLUME. HOWEVER, THE TEMPLATE FOR TOPIC M-H2SENSE, HAS A PAGE LIMIT OF 20 PAGES MAX.

CAN YOU PLEASE CONFIRM THE CORRECT PAGE LIMIT? SHOULD WE FOLLOW THE 20 PAGE LIMIT IN THE TEMPLATE?

ANSWER: Please see Appendix M, Section 6 of the FOA.

Q6. THE MINIMUM LEAK RATE OF 10KG/HR CORRESPONDS TO A POTENTIAL ENERGY RELEASE OF 1000MJ (EQUIVALENT TO ~200 STICKS OF DYNAMITE) WERE THIS HYDROGEN TO BE IGNITED. EVEN AT AN ACCUMULATION OF 1/10 THIS TOTAL HYDROGEN RELEASE AND ACCUMULATION THE POTENTIAL EH&S ISSUES DURING TESTING WOULD CHALLENGE MOST FACILITIES.

WOULD IT BE ACCEPTABLE TO DEMONSTRATE LEAK RATES OF <10KG/HR AT SMALLER STANDOFF DISTANCES THAN 100M AND USE ANALYTICS TO DEMONSTRATE THAT A LEAK OF 10KG/HR AT 100M IS VIABLE?

ANSWER: The H2 quantification must be confirmed over the full 100 m x 100 m area, which is consistent with Appendix M, Section 4, Item 1 of the FOA.

Q7. FOR DE-FOA-0002784: EXPLORATORY TOPICS TOPIC M H2SENSE ARE WE SUPPOSED TO FIND OUR OWN DEMONSTRATION SITE OF WITH ARPA-E PROVIDE A SITE?

ANSWER: The applicant must determine their own test site.

Q8. WE ARE INTERESTED TO RESPOND TO TOPIC M: H2SENSE AS PART OF THE ARPA-E EXPLORATORY TOPICS FOA (DE-FOA-0002784).

HOWEVER, WE WANTED TO CHECK WHETHER TECHNOLOGIES FOR DETECTING SUBSURFACE/GEOLOGIC HYDROGEN WOULD BE ELIGIBLE. IT IS NOT CLEAR WHETHER THE FOA IS LIMITED JUST TO THE DETECTION OF ATMOSPHERIC HYDROGEN. (ON PAGE 177 OF THE FOA, A REFERENCE IS MADE TO THE FECM-FUNDED SHASTA PROJECT THAT INCLUDES SENSING AND MONITORING FOR GEOLOGIC HYDROGEN STORAGE: "204 "SURVEILLANCE AND MONITORING FOR HYDROGEN STORAGE, SUBSURFACE HYDROGEN ASSESSMENT, STORAGE AND TECHNOLOGY ACCELERATION, ACCESSED APRIL 18, 2024, [HTTPS://EDX.NETL.DOE.GOV/SITES/SHASTA/SURVEILLANCE-AND-MONITORING-FOR-HYDROGEN-STORAGE/".](https://edx.netl.doe.gov/sites/shasta/surveillance-and-monitoring-for-hydrogen-storage/))

ANSWER: Measurements must be made above surface as per metrics in Appendix M, Section 4 of the FOA.

Q9. I AM WORKING WITH AN INVESTIGATOR ON A SUBMISSION FOR THIS FOA, AND I WANTED TO CONFIRM THE PAGE LIMIT FOR THE TECHNICAL VOLUME. IN THE FOA, IT STATES THAT THE EXECUTIVE SUMMARY WILL BE 1 PAGE, AND SECTIONS 1 – 5 OF THE TECHNICAL VOLUME WILL NOT EXCEED 14 PAGES. HOWEVER, IN THE TEMPLATE PROVIDED, IT STATES THAT THE EXECUTIVE SUMMARY WILL BE 1 PAGE, AND SECTIONS 1 – 5 OF THE TECHNICAL VOLUME WILL NOT EXCEED 20 PAGES.

IF COULD YOU PLEASE CONFIRM THE PAGE LIMITS FOR THE TECHNICAL VOLUME.

ANSWER: Please see Q5 above.

Q10. THE SUMMARY SLIDE TEMPLATE APPEARS TO BE A PICTURE, MEANING IT CANNOT BE EDITED. WAS THIS THE INTENTION OR IS THERE A POWER POINT SLIDE WHERE WE CAN EDIT THE TEXT?

ANSWER: The summary slide template has been corrected and is available on ARPA-E eXCHANGE.

Q11. HOPE ALL IS WELL. I AM PLANNING TO SUBMIT A PROPOSAL TO THE H2SENSE. I HAVE LOOKED THE NEW DOE HSENSE PROGRAM SOLICITATION. IT SHOWS IT IS A SBIR/STTR FUNDING MECHANISM. I WOULD LIKE TO DOUBLE CHECK WHETHER THIS PROPOSAL IS SBIR/STTR MECHANISMS OR AN ACADEMIC UNIVERSITY CAN ALSO SUBMIT THE PROPOSAL.

I APPRECIATE ANY ADVICE YOU MAY HAVE FOR THE SUITABILITY OF OUR PROPOSAL AND THE BUDGET LIMITS FOR EACH PROPOSAL.

ANSWER: Please see Section III.A. of DE-FOA-0002784, Exploratory Topics. The SBIR/STTR Exploratory Topics FOA number is DE-FOA-0002785. ARPA-E will not pre-asses an applicant's proposal and budget. Applicants must refer to Appendix M. of the FOA and make their own determination.

Q12. I AM CHECKING WHETHER THE PROPOSAL OF H2 SENSE CAN BE SUBMITTED AS REGULAR DOE GRANT FROM THE ACADEMIC UNIV. RATHER THAN FROM THE SMALL BUSINESS SBIR TYPE SINCE THE SOLICITATION SHOWS IT IS 36 MONTH PROJECT WHICH IS NOT THE STANDARD SBIR TYPES OF THE GRANT. I ALSO LOG IN TO THE SUBMISSION SYSTEM TO CHECK THE SUBMISSION DETAILS AND IT LOOKS LIKE THE PROPOSAL CAN BE SUBMITTED FROM ACADEMIC INSTITUTION.

ANSWER: Please see Q11 above.

Q13. I ALSO HAVE A CLARIFICATION QUESTION REGARDING THE AWARD SIZE FOR THIS CALL. ON PAGE 5 OF THE STANDARD FOA AND PAGE 4 OF THE SBIR/STTR FOA, BOTH CALLS NOTE THAT \$20M IS AVAILABLE TO FUND UP TO 4-6 AWARDS AT A MAXIMUM PERFORMANCE PERIOD OF 3 YEARS. SOME OF OUR PIS THINK THEY COULD BUDGET \$3.33M-\$5M PER AWARD ACROSS 3 YEARS. HOWEVER, THE APPENDICES FOR TOPIC M H2SENSE NOTE THAT THE AWARDS WILL VARY BETWEEN \$1M-\$3M TOTAL ACROSS 3 YEARS. CAN YOU PLEASE LET US KNOW WHICH WE SHOULD TARGET?

ANSWER: ARPA-E may issue one, multiple, or no awards under either FOA (Standard or SBIR/STTR). Individual awards under **each** FOA may vary between approximately \$1,000,000– \$3,000,000.

Q14. WE ARE PLANNING A RESPONSE TO THE DE-FOA-0002784 TOPIC M. H2SENSE FOA AND HAVE A QUESTION ABOUT THE REQUIREMENTS OF THE TECHNOLOGY. WE ARE PROPOSING A DISTRIBUTED SENSOR NETWORK. THIS NETWORK WILL EASILY IDENTIFY THE LOCATION OF LEAKS WITHOUT WEATHER DATA, TRANSPORT MODEL, NOR AN INVERSION CALCULATION. THE FOA, HOWEVER, EMPHASIZES THE INCLUSION OF THESE COMPONENTS. SO WOULD A DISTRIBUTED SENSOR NETWORK APPROACH BE VIEWED AS RESPONSIVE TO THE CALL EVEN THOUGH IT OBTAINES THE NEED FOR THESE THREE COMPONENTS?

ANSWER: A description of the modeling used to obtain H2 quantification over the required area must be provided. See Appendix M, Section 3, paragraph 5 (where detection and quantification is described) and Section 4, Item 5 (where a survey is described) of the FOA.

Q15. OUR GROUP IS INTERESTED IN SUBMITTING A PROPOSAL TO THE H2SENSE EXPLORATORY TOPIC, BUT WE ARE STILL IN DISCUSSIONS WITH POTENTIAL COST SHARE PARTNERS. WOULD IT BE POSSIBLE TO EXTEND DEADLINE BY 2 WEEKS? I UNDERSTAND IF THIS IS NOT POSSIBLE.

ANSWER: No, the deadline will not be extended.



Q16. IN APPENDIX M, IT SAYS: "AWARDS MAY VARY BETWEEN APPROXIMATELY \$1,000,000–\$3,000,000."

CAN YOU CLARIFY IF THIS IS FEDERAL FUNDS OR TOTAL FUNDS?

IN TABLE I OF THE FOA IT SPECIFIES THAT THE TOTAL AVAILABLE FUNDS LISTED ARE FEDERAL FUNDS, BUT THE HEADER TABLE IN APPENDIX M DOESN'T SEEM TO SPECIFY THIS INFORMATION.

ANSWER: THE TERM "AWARDS" REFERS TO FEDERAL FUNDS. PLEASE SEE SECTION III.B. OF THE FOA FOR COST SHARING REQUIREMENTS. Q17. WHAT ARE ACCEPTABLE FORMS OF COST SHARING? WE ARE A SMALL BUSINESS WITH LIMITED INTERNAL RESOURCES. CAN WE REQUEST A WAIVER OF ALL COST SHARING REQUIREMENTS FROM OUR PORTION OF THE EFFORT?

ANSWER: Please see Section III.B.6 of the FOA for Cost Share Types and Allowability, as well as General FAQ 4.5 and 4.6. Please see Section III.B.3 of the FOA for Reduced Cost Share Requirements.

Q18. WE ARE PREPARING THE PROPOSAL FOR H2SENSE AND HAVE FINALIZED OUR TEAM. HAD A QUICK QUESTION REGARDING PERSONAL QUALIFICATION SUMMARIES. SINCE WE ARE WORKING WITH OUR UNIVERSITY PARTNERS, CAN WE USE THE SCIENCECV FORMAT FOR BIOGRAPHICAL SKETCHES OR DO WE NEED TO CREATE THE NEW FORM DESCRIBED IN THE FOA. THE MAIN DIFFERENCE IS IN THE NUMBER OF PUBLICATIONS REQUESTED. WE WILL BE REFERENCING A NUMBER OF OUR CURRENT PUBLICATIONS IN THE REFERENCES AS WELL.

ANSWER: Please follow the required format as outlined in the FOA and in the Full Application Technical Volume Template for Topic M H2SENSE.

Q19. I HAVE QUESTION REGARDING COST: BENEFITS. WOULD APPLICABILITY OF THE TECHNOLOGY BEYOND THE DESIGN SPECS IN THE TOPIC HAVE ANY POSITIVE IMPACT ON THE EVALUATION RUBRIC? IN OTHER WORDS IF THE SENSOR COULD SERVE MULTIPLE PURPOSES SIMULTANEOUSLY, WOULD THAT BE DESIRABLE? FOR EXAMPLE (IN ADDITION TO ASSESSING H2 LEAKS/RELEASES), IF THE SENSOR COULD ALSO HELP WITH MONITORING H2 PRODUCTION PROCESSES AND PIPELINE H2 MIXTURES, COULD THAT BE VIEWED AS A POSITIVE/DESIRABLE FEATURE? ON THE BACK-END OF THAT SAME EQUATION, WOULD MONITORING H2 COMBUSTION PROCESSES AT THE H2 POINT OF USE (E.G., GAS TURBINES) WHILE ALSO MONITORING FOR RELEASES/LEAKS BE OF VALUE? IF H2 PROCESS MONITORING CAN BE DONE WITH EFFECTIVELY ZERO (OR NEARLY SO) ADDITIONAL COST FOR THE RELEASE MONITORING, HOW WOULD THAT BE EVALUATED IN YOUR RUBRIC?

ANSWER: ARPA-E WILL EVALUATE SUBMISSIONS BASED ON THE CRITERIA IN SECTION V.A.1 OF THE FOA AND THEIR ABILITY TO MEET THE TECHNICAL PERFORMANCE TARGETS IN TOPIC M, SECTION 4 OF THE FOA. Q20. TO WHOM IT MAY CONCERN:

- **FOR THIS CALL, IS ARPA-E PLANNING TO DO OR ENABLE CONTROLLED HYDROGEN RELEASES AS A FIELD CALIBRATION?**

ANSWER: Recipients are responsible for all testing and testing facilities required to meet the technical performance targets in Topic M, Section 4 of the FOA.

Q21. I AM PREPARING A PROPOSAL TO BE SUBMITTED IN RESPONSE TO DE-FOA-0002784, TOPIC H2SENSE. I HAVE THE FOLLOWING QUESTIONS.

- 1. FIVE TECHNICAL PERFORMANCE TARGETS FOR THE TOPIC H2SENSE ARE GIVEN IN PAGE 178 OF THE FOA. PER TARGET 1, THE SYSTEM SHOULD ESTIMATE H2 FROM AN AREA 100 M BY 100 M. IS THIS AN OPEN AREA OR CLOSED SPACE OR BOTH? IF IT IS A CLOSED SPACE, WHAT IS THE HEIGHT (OR VOLUME)?**
- 2. I HAVE OBTAINED A PROVISIONAL PATENT FOR MY TECHNOLOGY. NEVERTHELESS, IT WILL HAVE ADDITIONAL CONFIDENTIAL INFORMATION. IS IT SAFE TO EXPLAIN THE DETAILS? IF NOT, CAN I WITHHOLD THE TECHNICAL DETAILS? I AM CONCERNED IF THIS WILL AFFECT THE REVIEWER'S**
- 3. I WILL HAVE A COLLABORATOR FROM ***REDACTED*** NATIONAL LAB. OTHER THAN THE LETTER OF AUTHORIZATION (PER THE BUSINESS ASSURANCES AND DISCLOSURES FORM), DO WE NEED TO SUBMIT ANY DOCUMENTS FROM THE NATIONAL LAB? SHOULD THE COLLABORATOR SUPPLY A LETTER OF SUPPORT/COLLABORATION? IN THE BUSINESS ASSURANCES AND DISCLOSURES FORM, WHO SHOULD SIGN AS AUTHORIZED REPRESENTATIVE (THE INDIVIDUAL FROM NATIONAL LAB, THE PI, AUTHORIZED OFFICER FROM ***REDACTED*** NATIONAL LAB OR THE GRANT OFFICER FROM MY UNIVERSITY)? SHOULD THEIR BUDGET BE INCLUDED IN MY BUDGET?**
- 4. WHO SHOULD DO THE PROPOSAL SUBMISSION VIA ARPA-E EXCHANGE? SHOULD THIS BE THE PI OR COULD THIS BE A DESIGNEE SUCH AS A GRANT OFFICER AUTHORIZED BY THE UNIVERSITY?**

ANSWER: 1. The tested and validated space envisioned must be open.

2. Please see Section VIII.I of the FOA, Marking of Confidential Information.
3. With regards to FFRDCs, a letter of authorization is required whether the FFRDC is the lead organization for the Project Team or a member of the Project Team. Applicants should refer to the Business Assurances & Disclosures Form which they are required to submit as part of a complete Full Application. Regarding letters of support, please see General FAQ 8.3. Regarding authorized representatives, applicants are responsible for designating authorized representatives within their organization. Please see General FAQ 13.3 for additional information on who is responsible for completing the form. Regarding the budget, the proposed budget (SF-424, SF-424A, Budget Justification Workbook) should cover the Total Project Cost, including work performed by the Prime Recipient, subrecipients, contractors, vendors, and any other entities.
4. Applicants may delegate this responsibility as they see fit.

Q22. WE HAVE FEW QUESTIONS REGARDING THE EXPLORATORY TOPICS (DE-FOA-0002784) H2SENSE.

- 1. PERFORMANCE CRITERIA #5 IS \$10,000 OUTLINED FOR SINGLE SURVEY. DOES THAT NUMBER REFER TO THE TOTAL COST OF THE SYSTEM (CAPITAL, INSTALLATION, MAINTENANCE)? IF SO, WHAT IS THE ACCEPTABLE LIFETIME OF THE SYSTEM?**
- 2. DO SOLUTIONS WHICH COST MORE THAN \$10,000 BUT COVER A CORRESPONDINGLY WIDER AREA MEET THE PERFORMANCE CRITERIA? FOR EXAMPLE, A TECHNOLOGY WHICH COVERS 2X THE TARGET AREA BUT COSTS \$20,000?**
- 3. IS THERE A REQUIREMENT FOR COMPLETELY AUTONOMOUS OPERATION FROM DETECTION THROUGH LOCALIZATION? OR ARE HUMAN-IN-THE-LOOP TECHNOLOGIES SUITABLE?**
- 4. SECTION 2.1 APPROACH, "DETECTION LIMIT ANALYSIS" SAYS THAT "THIS SHOULD INCLUDE DISPERSION MODELING UNDER VARYING WIND AND OTHER ENVIRONMENTAL CONDITIONS." DOES THIS MEAN THAT H2 DISPERSION MODELING IS EXPECTED TO BE DONE AS PART OF THIS PROPOSAL?**

ANSWER: 1. Please see Q14 above and Section 2.1 of the Technical Volume.

2. No.
3. There is no requirement for completely autonomous operation from detection through localization. Please refer to Topic M, Section 4 for all technical performance targets.
4. Yes.

Q23. FOR THE COST SHARE REQUIREMENT, IF AN EDUCATIONAL INSTITUTION IS THE LEAD AND WE SUBCONTRACT TO A SMALL BUSINESS, WHAT WOULD BE THE COST SHARE REQUIREMENT?

WOULD IT BE 5% IN YEAR 1 AND THEN 10% THEREAFTER?

ANSWER: ARPA-E may not provide pre-submission assessments on a project team's specific cost sharing requirement. Applicants should carefully review the cost sharing requirements in Section III.B of the FOA.