A--Research and Development in support of the Living Marine Resource Program

LIVING MARINE RESOURCES (LMR) PROGRAM FY23 ENVIRONMENTAL NEEDS
Solicitation Number N3943023S2503
Posted under Contract Opportunities on SAM.gov on 10/20/2022 – https://sam.gov

DESCRIPTION:

This announcement constitutes a Broad Agency Announcement (BAA) for the Naval Facilities Engineering and Expeditionary Warfare Center (NEXWC) under FAR 6.102(d)(2) and 35.106. A formal Request for Proposals (RFP), other solicitation, or additional information regarding this announcement will not be issued.

FAR Part 35 restricts the use of BAAs, such as this, to the acquisition of basic and applied research and that portion of advanced technology development not related to the development of a specific system or hardware procurement. Contracts made under BAAs are for scientific study and experimentation directed towards advancing the state of the art and increasing knowledge or understanding. This announcement is not for the acquisition of technical, engineering, or other types of support services.

The Naval Facilities Engineering and Expeditionary Warfare Center, through the Living Marine Resources (LMR) program, is soliciting pre-proposals for efforts related to the need topic listed below.

NEED TOPIC LMR-N-0279-23: AUTOMATED DETECTION OF MARINE MAMMALS FOR UNMANNED SURFACE VESSEL STRIKE AVOIDANCE

Background
The U.S. Navy is required under the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA), to mitigate any potential strike of large whales from a Navy vessel. The primary means of mitigation is to use lookouts to visually detect marine mammals at the surface to direct the vessel to avoid striking the animal. With Navy's ongoing development of new vessel technology such as medium and large displacement unmanned surface vessels, there is an increasing need for new methods of visual detection of marine mammals.
The Navy has reviewed various technologies to detect marine mammals from a moving vessel and is primarily interested in infrared camera systems for this effort. Infrared camera systems offer the potential to observe marine mammals on the surface across all light conditions (low-light or night-time). Infrared systems usually are comprised of an infrared camera, camera gimballed stabilization for shipboard operations and detection algorithms. Infrared camera technology has been demonstrated on cliff-based observation points and vessels, and the performance of the system to detect whale blows and the body at the surface has been compared to human visual observers (Zitterbart et al 2013, Zitterbart et al 2020, Baille and Zitterbart 2021). Agent-based models have been developed to explore the effectiveness of surface-based whale detection methods for vessel strike mitigation. However, this type of technology has not been demonstrated on an unmanned vessel to determine how it would be used as the primary means of autonomous marine mammal detection.

Need
LMR is seeking pre-proposals to demonstrate an existing infrared system developed for the purpose of whale detection on a Navy unmanned surface vessel platform. The initial goals of this effort are to establish infrared system performance criteria aboard Navy unmanned surface vessels, and identify integration and application requirements so that the infrared system's output could be used to inform the unmanned surface vessel navigation and avoid striking a whale. After the initial planning and development phase, the primary goals of the project are to: refine the hardware and software components of the infrared system for specific Navy unmanned surface vessel application, test the infrared system performance onboard a Navy unmanned surface vessel platform and

demonstrate the infrared system's capability of detecting whales to inform and comply with ship strike mitigation requirements. Current mitigation requirements state that while underway, all Navy vessels shall avoid approaching marine mammals head on and shall maneuver to maintain a mitigation zone of 500 yards around observed whales.

Pre-Proposal Structure

A successful pre-proposal will demonstrate the offeror's experience and capability to leverage existing research on infrared system technology development for marine mammal detection. Prior experience with the proposed infrared system for whale detection must be included in the pre-proposal. Pre-proposals might also include infrared camera specifications, stabilization hardware description, results of detection algorithm performance (i.e. comparison to human visual observers), and prior land-based and/or vessel-based infrared system application performance results (i.e. probability of detection with distance, probability of detection of different cues, how detection is affected by environmental conditions), and any validation effort (i.e. false positives, false negatives).

Phase I – Initial plan and proposed design.

- Outline a strategy to work with LMR program managers and applicable Navy program offices to define infrared system integration requirements, performance goals, and decision-making criteria for ship-strike mitigation on an unmanned surface vessel platform.
- Evaluate acceptable detection performance as a function of vessel speed, sensor height off the water, and maneuvering capability for strike avoidance. With the assistance of the applicable Navy program office, evaluate acceptable false alarm rate to avoid impeding operations.
- Evaluate whether existing infrared system components used for navigation (i.e. camera, stabilization system and detection algorithms) on Navy unmanned surface vessels would be feasible to be used for this application. A list of existing infrared system components will be provided to successful offerors.
- Determine detection software interface and appropriate output requirements as specified by the Unmanned Maritime Autonomy Architecture Interface Definition Language that will be provided to successful offerors.
- Detail proposed infrared system technology design and configuration for application on the Navy unmanned surface vessel platform identified for testing.
- Detail how the technology will be made available to the Navy for use and procurement.
- Propose a Phase II study.

While the statement of prior experience and Phase I plan is the focus of the current pre-proposal, phases II-IV would be funded via separate awards. Please structure the remainder of the pre-proposal to include how you would approach the following phases:

Phase II – Camera system development and initial field tests. Phase II would be implemented if Phase I is successful and meet performance requirements for Navy application.

- Field test prototype infrared system with human-operator configuration (i.e. human operator in the loop) on a Navy unmanned surface vessel platform (without integration) in comparison with marine mammal visual observers onboard to characterize infrared system performance.
- Assess whether infrared prototype performance and outputs meet the interface requirements as specified in the Unmanned Maritime Autonomy Architecture Interface Definition Language.
- Detail system performance results and readiness level for testing on a Navy unmanned surface vessel.
- Propose a Phase III study.

Phase III – Semi-Autonomous infrared system testing and performance evaluation in full integration configuration on Navy unmanned surface vessel platform. Phase III will be implemented if Phase II is successful and meets established performance and integration requirements.

- Integrate infrared system hardware (i.e. camera and camera stabilization) and software (i.e. detection algorithms) into Navy unmanned surface vessel platform and command and control system.
- Field-test the effectiveness of infrared system to detect marine mammals and for the unmanned surface vessel to maneuver to mitigate a strike.

- Evaluate operational impact and remaining system requirements for operational use.
- Propose a Phase IV plan.

Phase IV – System testing to meet full integration requirements on operational Navy unmanned surface vessels.

- Propose a plan to test the infrared system to meet full integration requirements as specified by the Navy program office, for future inclusion in operational unmanned surface vessel platforms running in full autonomous configuration.

Additional Requirements:

a) No foreign developed hardware or software technology.
b) All technology needs to meet Information Assurance specifications as required by the Navy program office.

SUPPORTING INFORMATION:

For more information on what is required in a proposal, how to submit a proposal, and how proposals are evaluated, refer to Appendix A (Proposal Submission and Evaluation Guide). Offerors need to understand and adhere to the requirements outlined in Appendix B (Data Rights and Handling Procedures) and the geospatial data requirements in Appendix C (Geospatial Data Requirements). Modifications to the data rights and handling procedures agreement or geospatial data requirements should be discussed with the LMR program staff prior to proposal submission. Offerors will also need to comply with the LMR Ocean Observing Systems (OOS) Notification Procedures (Appendix D). Offerors should note, however, that locations labelled in red in Appendix D as incompatible with acoustic OOS actually overlap with some of the LMR priority geographic regions outlined in Appendix A. Strict adherence to passive acoustic monitoring site selection, passive acoustic device deployment notification and data custody guidance will be required. Site selection should be discussed with the LMR program staff prior to submission of the proposal package. DoD is still finalizing their plan to meet the goals and requirements of the White House Office of Science and Technology Policy (OSTP) memorandum titled Increasing Access to the Results of Federally Funded Scientific Research issued 2013 February 22. All projects funded by LMR would be subject to DoD policy once it is finalized.

Proposed efforts involving interaction with and contact with marine mammals or endangered species may require research permits including but not limited to a Marine Mammal Protection Act (MMPA) Research Permit, Endangered Species Act (ESA) scientific research permit, Institutional Animal Care and Use Committee (IACUC), and/or Department of Defense Animal Care and Use authorization. It is the expectation that all offerors will complete any necessary regulatory compliance permitting/consultations, necessary to conduct the research. If the offeror currently possesses a permit or other documentation, it should be noted in the pre-proposal. If your project involves developing or demonstrating a technology, an agreement with NAVFAC EXWC will need to be established to describe the ownership/use of the technology. Contract award may be delayed if appropriate regulatory documentation and agreements are not in place.

SUBMISSION PROCESS:

The pre-proposal submittal process is an email-based submission. Pre-proposals should be submitted via email to exwc_lmr_program@navy.mil. There is no specific format required for the pre-proposal, however, the pre-proposal should be consolidated into one single file (PDF) and should not exceed ten pages in length (CVs are not included in the page limit). All pre-proposal submissions must be received before the deadline.

SUBMISSION DEADLINE:

To be considered for FY 2023/24 funding, pre-proposals must be received no later than 11:59 pm, Pacific Standard Time on 5 December 2022. Pre-proposals may be submitted at any time during this period. Offerors will receive a confirmation email message acknowledging successful submission within 1 business day. It is the responsibility of the offeror to confirm receipt of the submission.

EVALUATION PROCESS:

Following an approximately 3-month evaluation and selection process, offerors will be notified of the evaluation results. Unsuccessful pre-proposal offerors will receive an email, but will not receive a detailed description of the reasons the pre-proposal was not selected, due to the anticipated volume of submissions. Some pre-proposal offerors may receive a request to provide additional technical information in the form of a revised pre-proposal submission. Successful pre-proposal offerors will receive an email from the NAVFAC EXWC contracting office, requesting submission of additional required information in order to determine whether the offeror is eligible for a contract. Awards to non-government entities (academic institutions, not-for-profit organizations, industry) will be in the form of contracts. A nominal award amount has not been provided because the scope of the need topics varies considerably. However, proposals less than $300K/year are more likely to be funded given the available budget of the LMR program in FY 2023/24. Proposals costing over $300K per year will still be considered, but we would expect a strong justification for the increased cost. The nominal duration of a project is expected to be 1-3 years, with a maximum of 5 years. Applicants are strongly encouraged to use realism of cost for the proposed effort as their metric, as this will be a critical element in the review process. Cost realism means that estimated costs are based on a coherent logic and are corroborated by authoritative or factual data. Otherwise, meritorious proposals will be rejected if cost does not accurately reflect the proposed scope of work.

EVALUATION CRITERIA:

The pre-proposals will be evaluated based on the following criteria, of approximately equal weight.

1. TECHNICAL APPROACH: The scientific/technical merits and objectives in terms of meeting the stated need topic, as well as evidence that the science/technology is mature enough for applied research funding, and the performance criteria to measure success of the research effort.
2. OFFEROR'S EXPERIENCE: The offeror should clearly provide evidence or examples showing the offeror's (academic institution, organization, firm, etc.) experience related to the solution being proposed. The offeror's capabilities related to experience, techniques, or a unique combination of these that are integral factors in achieving the offeror's proposed objectives. This equates to past performance, and will be assessed based on both relevance and confidence.
3. PRINCIPAL INVESTIGATOR'S AND KEY MEMBER'S RELATED EXPERIENCE: The offeror should provide a summary table with the names, highest degree, organization/affiliations, location, and years of experience for each Principal Investigator (PI) and key team member. Principle Investigators and key personnel should be identified in the pre-proposal as such. Provide a one-page CV for each Principal Investigator (PI) and key team member.
4. COST/PRICE: The cost relative to the proposed scientific/technical approach. This information may be limited to a total cost estimate by calendar year (Jan 1 – December 31) and quarter. Assume for Year 1 of your project that effort will begin in September 2023 due to the time it takes to get a contract in place (Year 1 = 1 Sep – 31 Dec 2023). In addition to any other relevant travel required for the project, please include a trip for the PI to attend the In-Progress Review (IPR) meeting each year (Fall) in Ventura, CA to present on the progress of the project. The IPR meeting is 3 full days and offerors are required to attend for the duration of the meeting. In addition to the PI, if there is a co-PI with significant contributions to the project, you can include travel for the co-PI to attend as well. However, due to space limitations for the meeting, you are only allowed a maximum of 2 people to attend the IPR from your entire project team (including all subcontractors). NOTE: If you have an existing LMR project and costs to attend the IPR are already covered, please do not include these costs again. Successful offerors will be provided additional guidance by the NAVFAC EXWC contracting office on required cost/price information.
5. PROJECT BENEFITS: Expected benefits of the proposed project, key issues the proposed solution addresses, potential application of the results of the project, and advantages over current approaches.
6. PRODUCT IMPLEMENTATION: Describe the intended product(s) and all associated deliverables, the requirements for implementing the proposed products of this effort, and the potential technical risks that may pose a challenge to successful implementation.

NOTES:

1. An eligible pre-proposal does not guarantee a contract. Multiple contracts may result.

2. An offeror is required to register with the system for award management (SAM). No contract award will be made to any offeror that is not registered. Registration may take up to three weeks. SAM may be accessed at https://www.sam.gov. Registration is not required for proposal submission, but must be completed prior to initiation of award negotiation. To avoid delays in the award process, applicants are encouraged to initiate SAM registration early in the submission and review process. Non-government awardees will also need to provide a Unique Entity Identifier (UEI) in the System for Award Management (SAM) (https://sam.gov/content/home) and CAGE (Commercial and Government Entity) code (http://govwin.com/knowledge/ccr-registration) before an award can be made.

3. The preceding data should be sufficient for completing a pre-proposal.

4. There are no solicitation documents applying to this BAA. Request for a solicitation package will not be acknowledged. Those interested in participating in the BAA must follow the instructions to submit a pre-proposal.

5. There is no commitment by the Navy either to make any contract awards or to be responsible for any money expended by the contractor before a contract award.

6. For need topics that may be applicable to other Federal Government activities, NEXWC will be sharing qualified pre-proposals to seek demonstration sites and/or funding. Some Federal Government activities may employ civilian contractors to determine the applicability of an offered technology to specific projects. Pre-proposals submitted under this BAA will be protected from unauthorized disclosure in accordance with FAR 3.104-4 and 15.207. The cognizant Program Manager and other scientific experts will perform the evaluation of technical proposals. Restrictive notices notwithstanding, one or more support contractors may be utilized as subject-matter-expert technical consultants in accordance with FAR 37.204. However, pre-proposal selection and award decisions are solely the responsibility of Government personnel. Each support contractor's employee having access to pre-proposals submitted in response to this BAA will be required to sign a non-disclosure statement prior to receipt of any pre-proposal submissions. An offeror may require the non-government personnel to execute a supplemental non-disclosure agreement by including a copy of their institutional NDA with their proposal. However, note that a failure to come to an agreement may impact the ability to make an award. Please review FAR 37.204 and NFAS 15.303(d)(4). Eligibility notification will be sent to all offerors who have submitted a pre-proposal, after the Review Committee reviews all pre-proposals submitted by the solicitation cut-off date.

7. For questions regarding this BAA, contact NAVFAC EXWC via this email address: exwc_lmr_program@navy.mil. Correspondents are advised not to include Personally Identifiable Information (PII), business proprietary, or competition-sensitive information via email. Offerors will receive an automated email message acknowledging successful submission. If the offeror does not receive a notification of pre-proposal receipt, the offeror should call or e-mail NEXWC by using the phone number or e-mail address provided in this section.

8. Historically Black Colleges/Universities and Minority Institutions (HBCU/MI) will be recognized according to DFARS 226.3. All responsible sources from academia and industry may submit proposals. No portion of this BAA will be set aside for HBCU and MI participation, due to the impracticality of reserving discrete or severable items of this research for exclusive competition among the entities. Federally Funded Research and Development Centers (FFRDCs) including Department of Energy National Laboratories, are not eligible to receive awards under this BAA. However, teaming arrangements between FFRDCs and eligible principal bidders are allowed so long as they are permitted under the sponsoring agreement between the Government and the specific FFRDC.

DFARS 235.017-1 allows DOD FFRDCs which function primarily as research laboratories to apply. Naval laboratories and Warfare Centers as well as other DOD and civilian agency laboratories are not eligible to receive awards under this BAA and should not directly submit proposals in response to this BAA. If any such organization is interested in one or more of these program areas, they should contact the NEXWC program office to discuss its interest. As with the FFRDCs, these organizations may team with other responsible sources from industry and academia that are submitting proposals under the BAA. University Affiliated Research Centers (UARC) are eligible to submit proposals under this BAA unless precluded from doing so by their DOD UARC contract or an organizational conflict of interest.

9. Do not call the Contracting Office for verification. The pre-proposal is not received by the Contracting Office.