



Component Development for Advanced Shipboard Desalination Systems

INTRODUCTION

This publication constitutes a Broad Agency Announcement (BAA) as contemplated in Federal Acquisition Regulation (FAR) 6.102(d)(2) and the Department of Defense Grants and Agreements Regulations (DoDGARS) 22.315(a). A formal Request for Proposals (RFP), other solicitation, or additional information regarding this announcement will not be issued.

The Office of Naval Research (ONR) will not issue paper copies of this announcement. The ONR reserves the right to fund all, some or none of the proposals received under this BAA. ONR provides no funding for direct reimbursement of proposal development costs. Technical and cost proposals (or any other material) submitted in response to this BAA will not be returned. It is the policy of ONR to treat all proposals as sensitive competitive information and to disclose their contents only for the purposes of evaluation.

I. GENERAL INFORMATION

SPECIAL NOTICE 1: All Grant Full Proposal Applications submitted under this BAA shall be submitted via the Grants.Gov "APPLY" function. No other form of paper or electronic submission will be accepted unless the prospective grantee organization applies for and receives a waiver in accordance with Section IV, Application and Submission Information, Paragraph 5 entitled 'Submission of Grant Proposals to Grants.gov' below.

SPECIAL NOTICE 2: All attachments to grant applications submitted through Grants.Gov must be in Adobe Portable Document Format. The previous Application Package Template was based on PureEdge forms which is no longer supported by Grants.Gov. To submit an electronic grant application/proposal through Grants.Gov, you must download and complete the new Adobe Forms Application Package Template which is now associated with this BAA. Proposals with attachments submitted in word processing, spreadsheet, or any format other than Adobe Portable Document Format will not be considered for award.

1. Agency Name –

Office of Naval Research
One Liberty Center
875 N. Randolph Street
Arlington, VA 22203-1995

2. Research Opportunity Title – Component Development for Advanced Shipboard Desalination Systems

3. Program Name – Future Naval Capability (FNC) Advanced Shipboard Water Desalination

4. Research Opportunity Number - ONR BAA 09-013

5. Response Date –

White Papers Due: 3 April 2009 by 2:00 p.m. (Eastern Time)

Proposals Due: 1 June 2009 by 2:00 p.m. (Eastern Time)

6. Research Opportunity Description –

Synopsis:

Reverse Osmosis (RO) desalination has become the Navy standard for the shipboard production of freshwater since its introduction into the Navy in the early 1990s. RO plants have provided significant operational and cost benefits over conventional distillers which have been used on Navy ships since before the introduction of steam propulsion. These benefits include reduced monitoring and manpower requirements and significant reductions in operational costs including: reduced power requirements, independence from ship steam systems, reduction in the use of chemical additives, and large improvements in reliability and maintainability. Over the past two decades, there has been a large increase in the use of membrane based separations for both liquid and gas streams, much of this due to technical advancements such as improved membranes and pumps, novel membrane topologies and operational approaches, and staged separation processes. The Office of Naval Research has encouraged such technology development through the Expeditionary Unit Water Purification (EUWP) research program. It is the goal of this solicitation to further develop promising water purification and desalination technologies, on a component and not a complete system level, over a two year period to a readiness level that would be appropriate for consideration for use in a robust shipboard desalination system (technical readiness level 4 or 5). It is anticipated that there will be a second program to build complete shipboard desalination systems to a Technical Readiness Level 6, possibly using technologies matured during this program. (A description of Technical Readiness Levels is available at: http://www.onr.navy.mil/ctto/naval_needs.asp)

Most RO-based water purification is done in large land-based facilities by public utilities. The major goal of those installations is to produce the water at minimal cost and so plant capital cost and energy usage are primary drivers. There is real estate to store and mix water streams, to

store and mix chemicals, and for settling ponds. The fixed facilities are designed for a specific source water with seasonal variations in quality. Naval systems must be compact because of the limited space on ships. These systems must operate unattended and should be very reliable and have very little required maintenance. Since ships go on long missions without resupply, chemical usage should be minimal or required chemicals should be generated in place. Energy cost is important, but the energy to make water is small compared with the overall shipboard energy demands. Capital cost is certainly a factor, but the Navy will build a system to last as long as the ship (30 or 40 years) so operating and maintenance costs become a significant portion of the total ownership costs.

Any equipment that goes on a ship must be capable of withstanding shock loadings which may occur due to the effects of explosions in waters near or below the ship's hull. Equipment must also be capable of performing its principal functions under environmental vibrations caused by the hydrodynamic forces on the propeller blades interacting with the hull and ship attitude and motion and, if applicable, any internal excitation caused by unbalanced rotating components. Additionally, the installed components must be electromagnetically compatible with surrounding equipment, meet all ship noise requirements, and be made from materials that will not create toxic fumes during fires in enclosed spaces or corrode from seawater service or in a salt atmosphere. Also, policies have been established for the storage, handling, and disposal of hazardous materials on Navy ships (see Naval Instructions available online OPNAVINST 5100.19E, OPNAVINST 5090.1C). Procedures for the operation and maintenance of newly developed equipment should not conflict with these Navy hazardous materials policies. This solicitation will seek to develop technologies relevant to water desalination and purification that could operate under these shipboard constraints.

Under the EUWP Program, ONR has developed modern military prototypes using either ultrafiltration (UF) or microfiltration (MF) membrane pretreatment systems in front of RO membranes. These prototype systems are the starting point for this work. This solicitation is for the development of components or parts of a desalination and water purification system and is not restricted to the further development or evolutionary improvement of MF/UF-RO components, but heavy consideration will be given to the Navy shipboard constraints discussed above, the potential to complete the proposed research within the stated timeframe, and the potential to move quickly towards a mature commercial/ military component if fully successful. Though a complete Navy shipboard desalination system will be a unique product, it is likely that many components, including some developed under this program, will be commercial products with much broader application. This is a preferred approach to keep down initial costs and to ensure long term availability of replacement and maintenance items.

This solicitation is for the development of advanced components for a desalination system as described in the specific areas below. It is anticipated that a complete system comprised of such components will be lighter, more compact, more energy efficient, and have reduced operations and maintenance costs relative to current shipboard units. The general point of comparison for this BAA is to evaluate newer components and technologies against legacy equipment used on the existing 12,000 gal/day Navy Standard RO unit. Accordingly, any future desalination systems using the developed products from this BAA shall be capable of producing 12,000

gal/day (8.3 gal/min) of product water while generally not exceeding the following Navy Standard RO dimensions and weights:

Pretreatment Section: 100 cubic feet, 2875 lbs dry, 3130 lbs operating

Pumping Section: 80 cubic feet, 4035 lbs dry, 4090 lbs operating

Desalination Section: 160 cubic feet, 2850 lbs dry, 3261 lbs operating

Most Navy ship spaces have a height limit of 7 feet; vertical dimension for developed product(s), including any space required for parts installation/removal or maintenance, shall be less than this height limitation. At the component level, these are guidelines and it may be, for example, that pretreatment volume is increased to allow significant decrease in desalination cubic volume. All developed products shall be capable of operating without damage on incoming seawater temperatures of 34°F to 105°F and total dissolved solids up to 42,000 ppm.

Specific areas of interest for this BAA:

6.1 Advanced Pretreatment

ONR is interested in receiving proposals for advanced seawater filtration pretreatment to meet RO desalination plant feed water 15-minute silt density index values (ASTM D4189-07) of less than 3.0 and turbidity values less than 1.0 NTU when operated in harbor and coastal seawaters. The objective of this area is to develop a low maintenance, back-flushable membrane pretreatment system that removes colloidal and suspended solids often contained in coastal and harbor waters to protect the RO membrane elements from plugging and fouling during operation. During the EUWP Program, commercial polymeric UF and MF membrane systems for the pretreatment of seawater were demonstrated as capable of providing very good feed water quality to the RO membranes. This solicitation seeks to advance existing and develop new pretreatment technologies that will give superior filtrate quality prior to RO membranes with minimal burden on ship crews and the Navy logistic system, low operational costs, and maintain an operational availability of greater than 99% for the desalination system. Additionally, the developed product(s) shall be capable of operating under the shipboard constraints identified above. Developed prototype system(s) shall be ready for government testing at a natural seawater test site within 18 months of award and there must be a viable route to full commercial availability of all components within an additional 18 months.

6.2 Advanced Chemical Pretreatment Enhancements

ONR is interested in receiving proposals for chemical pretreatment technologies for the enhancement of seawater UF and MF systems when operating in harbor and coastal seawaters. ONR is seeking to apply advanced filtration systems for the pretreatment of seawater for shipboard RO application to enable these RO systems to operate in coastal and harbor waters without the need for replaceable cartridge filters. During the EUWP Program, commercial polymeric UF and MF membrane systems for the pretreatment of seawater were demonstrated as capable of providing very good feed water quality to the RO membranes. This solicitation seeks technologies that can enhance the operation of oxidant resistant UF and MF membrane systems and reduce or eliminate the need for periodic acid cleanings of these systems, which would create a significant maintenance burden and chemical storage, handling, and disposal problems on a Navy ship. Proposed technologies shall minimize the use of logistically supported

chemicals and use, to the maximum extent possible, chemicals produced onsite in the oceans where naval ships operate. Such technologies include but are not limited to electrolytically generated chlorine, ozone generation, and electrocoagulation. Developed product(s) shall have a minimal burden on ship crews and the Navy logistic system, low operational costs, and maintain an operational availability of greater than 99% for the desalination system. Additionally, the developed product(s) shall be capable of operating under the shipboard constraints identified above. Developed prototype system(s) shall be ready for government testing at a natural seawater test site within 18 months of award and there must be a viable route to full commercial availability of all components within an additional 18 months.

6.3 Advanced Reverse Osmosis Membranes

ONR is interested in receiving proposals for the development of advanced RO membranes for the desalination of seawater in Navy shipboard RO systems that are any combination of non-fouling, high flux, high rejection and/or chlorine-tolerant. The objective of this project is to develop RO membrane elements that are resistant to fouling during operation of shipboard RO systems at sea. This fouling may be either biological in nature or calcareous scale deposits. Additionally, another objective of this project is the development of RO membranes that are tolerant to the chemical oxidizing agents (chlorine, bromine) used on ships for biofouling control in feed seawater piping and for disinfection of potable water (which is typically used to fresh water flush the RO systems upon shutdown). Additionally, chlorine-tolerant RO membranes would permit removal of the shipboard activated carbon filter systems currently necessary for these required fresh water flushes. The goal for the Navy is longer membrane lifetime and reduced cleaning of the membranes. The potential for higher fluxes would help with Navy space constraints. Candidate membranes/membrane chemistries should be at a level of development such that seawater RO membrane modules with stabilized salt rejection rates of 99.4% or greater and brackish water RO membrane modules with stabilized salt rejection rates of 99.0% or greater shall be ready for government testing at a natural seawater test site within 18 months of award and there must be a viable route to full commercial availability within an additional 18 months.

6.4 Advanced Energy Recovery Systems

ONR is interested in receiving proposals for the development of advanced energy saving technologies. The objective of this project is to develop advanced energy recovery devices which recover waste energy from the RO system pressurized concentrate stream. These will include separate "energy or work exchangers" as well as "energy recovery pumps" which incorporate both the energy recovery mechanism and pumping mechanism in one unit. These systems can have a tremendous effect on system energy consumption – reducing consumption by greater than 40%. At this time, a commercial energy recovery system is not available for small RO plants of 12,000 gal/day and less capacity and this will be the primary focus of this developmental effort. Developed product(s) shall have a minimal burden on ship crews and the Navy logistic system, low operational costs, and maintain an operational availability of greater than 99% for the desalination system. Additionally, the developed product(s) shall be capable of operating under the shipboard constraints identified above. Developed prototype system(s) shall be ready for government testing at a natural seawater test site within 18 months of award and there must be a viable route to full commercial availability within an additional 18 months.

6.5 Alternative Approaches, Miscellaneous Enhancements

ONR is interested in receiving proposals on alternative approaches to desalination that can be matured in the desired timeframe. ONR is also interested in novel components or approaches to enhance a baseline ‘microfiltration or ultrafiltration pretreatment prior to reverse osmosis’ approach to seawater desalination. Water desalination and purification is not a new field. It is receiving new attention because of the potential worldwide water shortages and the need for cost effective solutions. The strengths and weaknesses of established technologies are well known. Many hybrid processes are being investigated as a route to cost reduction through energy savings, reduced capital costs, or reduced liquid discharge. These may not be predominant drivers for the Navy. ONR is interested in robust, low maintenance, compact desalination that is also energy efficient. Under this topic, alternative desalination approaches to UF/MF-RO may be proposed. Also, individual components or subsystems of a UF/MF-RO process that do not fit nicely under topic areas 6.1-6.4 may be proposed. This may include, but is not limited to, novel approaches to coarse particle separation, novel routes for *in situ* oxidant generation, and novel approaches to minimize membrane fouling or for cleaning membranes. Developed technologies shall be ready for government testing at a natural seawater test site within 18 months of award and there must be a viable route to full commercial availability of all components within an additional 18 months.

6.6 Summary

The goal of this solicitation is to provide a mechanism for ONR to evaluate and further develop a multitude of promising technologies relevant to Navy shipboard desalination. It is also a mechanism for the developers of such promising technologies to get feedback from the Navy on the applicability of their technology to such applications. This solicitation is not requesting proposals for the development of complete shipboard desalination systems.

It is the desire that developed product(s) or components shall be applicable to use in complete desalination systems that have minimal burden on ship crews and the Navy logistic system, low operational costs, and maintain an operational availability of greater than 99% for the desalination system. Additionally, the developed product(s) shall be capable of operating under the shipboard constraints identified above. For all topic areas, developed products shall be ready for government testing at a natural seawater test site within 18 months of award and there must be a viable route to full commercial availability of all components within an additional 18 months.

In general, the awards under this BAA will be for two years, with a device or technology development period of 18 months followed by 6 months of testing by the Navy at a government test site with the performer available as a consultant to support its technology. Also, performers will be granted some level of access to the test site and assistance from Navy engineers within 6 months of the award start date.

6.7 Fundamental Research Description

Work funded under a BAA may include basic research, applied research and some advanced technology development (ATD). With regard to any restrictions on the conduct or outcome of work funded under this BAA, ONR will follow the guidance on and definition of "contracted fundamental research" as provided in the Under Secretary of Defense (Acquisition, Technology and Logistics) Memorandum of 26 June 2008. As defined therein the definition of "contracted fundamental research", in a DoD contractual context, includes [research performed under] grants and contracts that are (a) funded by Research, Development, Test, and Evaluation Budget Activity 1 (Basic Research), whether performed by universities or industry or (b) funded by Budget Activity 2 (Applied Research) and performed on campus at a university or by industry. ATD is funded through Budget Activity 3. In conformance with the USD(AT&L) guidance and National Security Decision Directive 189, ONR will place no restriction on the conduct or reporting of unclassified fundamental research, except as otherwise required by statute, regulation or Executive Order. Normally, fundamental research is awarded under grants with universities and under contracts with industry. ATD is normally awarded under contracts and may require restrictions during the conduct of the research and DoD pre-publication review of research results due to subject matter sensitivity. As regards to the present BAA, the Research and Development efforts to be funded will consist of applied research and advanced technology development. The funds available to support awards are Budget Activity 2 and 3.

7. Point(s) of Contact – Questions of a technical nature should be submitted via email to:

Dr. Paul Armistead
Office of Naval Research
875 North Randolph St, Code 332, Rm 656
Arlington, VA 22203-1995
E-mail: paul.armistead@navy.mil

Questions of a business nature should be submitted to:

Brenda Burke
Contract Specialist
Office of Naval Research
875 North Randolph St, Code 254
Arlington, VA 22203-1995
E-mail: brenda.burke@navy.mil

8. Instrument Type(s) - Awards may take the form of contracts and grants.

9. Catalog of Federal Domestic Assistance (CFDA) Numbers – 12.300

10. Catalog of Federal Domestic Assistance (CFDA) Titles – DoD Applied Scientific Research

11. Other Information - This announcement is restricted to applied research and advanced technology development related to the development of Navy shipboard desalination systems.

Contracts and grants made under this BAA are for scientific study and experimentation directed towards advancing the state of the art and increasing knowledge or understanding.

II. AWARD INFORMATION

The estimated total amount of awards is \$4.4 M anticipated to be made available over a two year period. ONR may award less than \$4.4 M under this BAA and apply subsequent funding as it is made available in the out-years.

*Estimated Total Amount of Funding Available (\$K):

BAA Topic Area	Totals
6.1 Advanced Pretreatment	1,000
6.2 Advanced Chemical Pretreatment Enhancements	800
6.3 Advanced Reverse Osmosis Membranes	1,000
6.4 Advanced Energy Recovery Systems	800
6.5 Alternative Approaches, Miscellaneous Enhancements	800

* Anticipated Number of Awards:

6.1 Advanced Pretreatment: 2 to 4

6.2 Advanced Chemical Pretreatment Enhancements: 1 to 3

6.3 Advanced Reverse Osmosis Membranes: 2 to 4

6.4 Advanced Energy Recovery Systems: 1 to 3

6.5 Alternative Approaches, Miscellaneous Enhancements: 1 to 3

* Anticipated Period of Performance: Up to two (2) years

III. ELIGIBILITY INFORMATION

All responsible sources from academia and industry may submit proposals under this BAA. Historically Black Colleges and Universities (HBCUs) and Minority Institutions (MIs) are encouraged to submit proposals and join others in submitting proposals. However, no portion of this BAA will be set aside for HBCU and MI participation.

Federally Funded Research & 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.

Navy laboratories and warfare centers as well as other Department of Defense and civilian agency laboratories are also not eligible to receive awards under this BAA and should not directly submit either white papers or full proposals in response to this BAA.

If any such organization is interested in one or more of the programs described herein, the organization should contact an appropriate ONR POC to discuss its area of interest. The

various scientific divisions of ONR are identified at <http://www.onr.navy.mil/>. As with FFRDCs, these types of federal organizations may team with other responsible sources from academia and industry that are submitting proposals under this BAA.

Teams are encouraged to submit proposals in any and all areas. However, offerors must be willing to cooperate and exchange software, data and other information in an integrated program with other contractors, as well as with system integrators, selected by ONR.

IV. APPLICATION AND SUBMISSION INFORMATION

1. Application and Submission Process –

White Papers are required prior to submitting a Full Proposal. The due date for White Papers is no later than 2:00 p.m. (Eastern Time) on 3 April 2009. Initial Navy evaluations of the White Papers will be issued via e-mail notification on or about 24 April 2009. Detailed technical and cost proposals will be subsequently encouraged from those Offerors whose proposed technologies have been identified through the above referenced e-mail as being of “particular value” to the Navy. Any such encouragement, however, does not assure a subsequent award. Technical and Cost Proposals may also be submitted by any Offeror whose White Paper was not identified as being of particular value to the Navy, but the initial White Paper appraisal is intended to give companies a sense of whether their concepts are likely to be funded under this BAA. Full Proposals will not be considered under this BAA unless a White Paper was received on or before the due date specified above.

Industry Day

Industry/Applied Research Day for this BAA was held at the Asilomar Conference Center in Pacific Grove, CA on February 25, 2009. Online registration was required for attendance. The specific details were posted to the following website:

<https://www.onr.navy.mil/about/events/regdetail.asp?cid=494>. The results from Industry Day will be posted as an amendment to the BAA one week after BAA posting and can be accessed from the following website: <http://www.onr.navy.mil/02/baa>

Full Proposal Submission

The due date for receipt of Full Proposals is no later than 2:00 p.m. (Eastern Time) on 1 June 2009. It is anticipated that initial selections will be made on or about 29 June 2009. As soon as the final evaluation process is completed, the Offeror will be notified via e-mail of selection or non-selection for an award.

2. Content and Format of White Papers/Full Proposals –

Unclassified Proposal Instructions:

White Papers and Full Proposals submitted under the BAA are expected to be unclassified.

Unclassified white papers and contract proposals shall be submitted directly to the cognizant ONR Program Officer through email as discussed below under the white paper format and full

proposal format sections. Unclassified grant full proposals shall be submitted through grants.gov as discussed in section “IV, paragraph 5 below”.

Proposal submissions will be protected from unauthorized disclosure in accordance with FAR Subpart 15.207, applicable law, and DoD/DoN regulations. Offerors are expected to appropriately mark each page of their submission that contains proprietary information. The proposal shall include a severable, self-standing Statement of Work, which contains only unclassified information and does not include any proprietary restrictions.

IMPORTANT NOTE: Titles given to the White Papers/Full Proposals should be descriptive of the work they cover and not be merely a copy of the title of this solicitation.

The proposal format and content identified below are applicable to the submission of proposals for contracts. As noted in Paragraph 5 below, proposals seeking grants are to be formatted as required by Standard Form 424 (R&R), which is available via the internet at <http://www.grants.gov/>.

a. WHITE PAPERS

White Paper Format

- Paper Size – 8.5 x 11 inch paper
- Margins – 1 inch
- Spacing – single or double-spaced
- Font – Times New Roman, 12 point
- Number of Pages – No more than six (6) single-sided pages (excluding cover page and resumes). White Papers exceeding the page limit may not be evaluated.
- **Copies** – Electronic (email) submissions shall be provided on or before the date and time outlined in the BAA. Email submissions in either Microsoft® Word or Excel compatible or .PDF format should be sent to the attention of Dr. Paul Armistead at paul.armistead@navy.mil. Hard copies will not be accepted.

White Paper Content

- **Cover Page:** The Cover Page shall be labeled “WHITE PAPER” and shall include the following:
 1. BAA number,
 2. Proposed title,
 3. Relevant Topic Area within this BAA,
 4. Offeror’s administrative and technical points of contact along with their telephone numbers, facsimile numbers, and email addresses.

The cover page shall be signed by an authorized officer.

- **Technical Concept:** A three (3) page technical section which clearly describes the objectives of the proposed effort, technical issues to be resolved to accomplish objectives, the technical approach proposed to resolve these issues, an assessment of the proposed new capability over the existing state of the art, and a comparison against competing technological developments.

This section should include references. Please address issues mentioned in the Technical Concept and Operational Utility Assessment areas of the full proposal format section below.

- **Deliverables:** A one (1) page list of proposed deliverables for the effort.
- **Programmatic Section:** A one (1) page programmatic section that includes milestones and a timetable.
- **Cost:** A one (1) page summary of costs segregated by tasks.
- **Resumes:** – A single page (each) summary resume (including previous relevant experience and pertinent publications) for the Principal Investigator (PI) and other key personnel.

b. FULL PROPOSALS

Full Proposal Format: VOLUME 1 – TECHNICAL PROPOSAL and VOLUME 2 - COST PROPOSAL

- Paper Size – 8.5 x 11 inch paper
- Margins – 1 inch
- Spacing – single or double-spaced
- Font – Times New Roman, 12 point
- Number of Pages – The total number of pages in VOLUME 1: TECHNICAL PROPOSAL should not exceed 20 (excluding cover page, table of contents, management approach, and other agencies sections). Proposals exceeding the page limit may not be evaluated. There are no page limitations to VOLUME 2: COST PROPOSAL.
- **Copies** – Electronic (email) submissions provided on or before the date and time outlined in the BAA are deemed acceptable for **contract** proposals. Emailed submissions in either Microsoft® Word or Excel compatible or .PDF format should be sent to the attention of Dr. Paul Armistead at paul.armistead@navy.mil. Backup hard copies are required as well. One (1) original and one (1) copy of the proposal shall be submitted to the ONR Program Officer within five (5) days thereafter via U. S. Postal Service Express Mail, Federal Express or UPS. If a grant is sought, the full proposal shall be submitted electronically at <http://www.grants.gov/> as delineated below.

Full Proposal Content

VOLUME 1: TECHNICAL PROPOSAL

- **Cover Page:** This shall be labeled “TECHNICAL PROPOSAL” and shall include the following:
 1. BAA number;
 2. Title of Proposal;
 3. Identity of prime Offeror and complete list of subcontractors, if applicable;
 4. Technical contact (name, address, phone/fax, electronic mail address)
 5. Administrative/business contact (name, address, phone/fax, electronic

mail address) and;

6. Duration of effort (differentiate basic effort and any proposed options)

The cover page shall be signed by an authorized officer.

• **Table of Contents:** An alphabetical/numerical listing of the sections within the proposal, including corresponding page numbers.

• **Statement of Work:** A Statement of Work (SOW) clearly detailing the scope and objectives of the effort and the technical approach. It is anticipated that the proposed SOW will be incorporated as an attachment to the resultant award instrument. To this end, the proposals must include a severable, self-standing SOW; without any proprietary restrictions, which can be attached to the contract or agreement award. Include a detailed listing of the technical tasks/subtasks organized by year.

• **Technical Concept:** The Technical Concept shall include thorough description of the concept of technology innovation and relevant technical risk areas. This section should detail the S&T challenges, plan to address the challenges, and resultant benefits of performing this effort. This section should also include a description of the potential Navy relevance and contributions of the proposed effort to the goals of this BAA. This section should include a synopsis of the Offeror's proposed conceptual detailed design along with system process diagrams (including expected flow rates). Identification of the following should be included with respect to the detailed design:

- Exotic materials, hazardous materials, or materials requiring special storage or handling.
- Anticipated electrical power requirements. The test facility expected to be used for Government evaluation has 208 V, 3 phase, 800 amp and 460 V, 3 phase, 1000 amp power service from a wye transformer, in addition to standard 110 V service, available. Developed product(s) shall be wired to use existing test facility electrical service.
- Anticipated compressed air requirements. The test facility expected to be used for Government evaluation has limited compressed air service; supplemental compressed air sources should be included with the developed product(s) if large quantities are required.
- Anticipated effluent discharges. At a minimum, these details should include identification of any of the following that are expected to be increased from the feed seawater prior to discharge: fluid temperature, turbidity, total suspended solids, oil and grease, residual oxidants, cadmium, copper, lead, mercury, nickel, selenium, silver, or zinc. Any anticipated differences in effluent pH from the feed seawater should also be identified.
- Anticipated equipment environmental protection. It is expected that during Government test and evaluation some or all equipment will be operated outdoors at a natural seawater test site with minimal shelter. Appropriate protection (e.g., NEMA 4X enclosures) should be included as part of the developed product(s) to allow safe operation and maintain the principal functions of the equipment during the entire test and evaluation period. Projected problems and limitations with operating the equipment in this type of environment shall be identified in the full proposal.
- High risk areas associated with meeting Navy needs identified in this BAA.

Additional details regarding the testing requirements and capabilities at government facilities will be provided as part of the Industry Day presentation materials to the ONR BAA website: <http://www.onr.navy.mil/02/baa>

• **Operational Utility Assessment Plan:** A detailed plan for demonstrating the operational effectiveness of the Offeror's proposed product(s) shall be included in the proposal. As stated in the solicitation, it is expected that developed products will be delivered to the Navy and be ready for evaluation 18 months from the date of award. Government testing will be done at the Seawater Desalination Test Facility (SDTF) located at the Naval Facilities Engineering Service Center (NFESC), Port Hueneme, CA or other government test facility and it is expected that the contractor will work with the Government personnel as an active consultant in the test and operation of the proposed product(s) throughout months 19 through 24 on the award. Performers are encouraged to begin working with government personnel as early as possible after award. Prior to month 19, government personnel will not evaluate products but will provide, within reason, engineering support, power, source water, drainage source, minimal shelter, and help with troubleshooting site dependant aspects of the work.

It is the intent of the government to fully and fairly evaluate the prototypes and associated technologies obtained as a part of this BAA. To do this, the selected contractors must maintain communications with the government evaluators, work with them, provide technical support, and have a certain amount of flexibility. Examples of this are:

- Allow the government to modify the test equipment for purposes of evaluation (for example adding sample ports and meters if necessary)
- Contractor will replace any damaged or defective components at its cost.
- Contractor will provide recommended spare parts and consumable items.
- Contractor's prototype system will not rely on government computers/equipment for operation unless it is tested as an integral part of an existing Navy/government system, and this is approved in advance. A manual with operating instructions, parts list with manufacturer and part number information, and routine maintenance instructions will be supplied.
- Contractor will support the evaluation of its device at government facilities by being available to diagnose problems and repair and/or modify equipment.

• **Project Schedule and Milestones:** A summary of the schedule of events and milestones.

• **Assertion of Data Rights and/or Rights in Computer Software:** For a contract award, an Offeror may provide with its proposal assertions to restrict use, release or disclosure of data and/or computer software that will be provided in the course of contract performance. The rules governing these assertions are prescribed in Defense Federal Acquisition Regulation Supplement (DFARS) clauses 252.227-7013, -7014 and -7017. These clauses may be accessed at the following web address:

<http://farsite.hill.af.mil/VFDFARA.HTM>

The Government may challenge assertions that are provided in improper format or that

do not properly acknowledge earlier federal funding of related research by the Offeror.

- **Deliverables:** A detailed description of the results and products to be delivered inclusive of the timeframe in which they will be delivered.

- **Management Approach:** A discussion of the overall approach to the management of this effort, including brief discussions of the total organization; use of personnel; project/function/subcontractor/subrecipient relationships; government research interfaces; and planning, scheduling and control practice. Identify which personnel and subcontractors/subrecipients (if any) will be involved. Include a description of the facilities that are required for the proposed effort with a description of any Government Furnished Equipment/Hardware/Software/Information required, by version and/or configuration.

- **Other Agencies:** Include the name(s) of any other agencies to which the proposal has also been submitted.

VOLUME 2: COST PROPOSAL

Although not required and provided for informational purposes only, adhering to the instructions delineated below may expedite contract or assistance award placement. Detailed instructions, entitled “Instructions for Preparing Cost Proposals for Contracts and Agreements”, including a sample template for preparing costs proposals for contracts and agreements, may be found at ONR’s website listed under the ‘Acquisition Department – Submitting a Proposal’ link at: http://www.onr.navy.mil/02/how_to.asp

The Cost Proposal shall consist of a cover page and two parts. Part 1 will provide a detailed cost breakdown of all costs by cost category by calendar or Government fiscal year, and Part 2 will provide a cost breakdown by task/sub-task corresponding to the task numbers in the proposed Statement of Work. Options must be separately priced.

Cover Page: The use of the SF 1411 is optional. The words “COST PROPOSAL” shall appear on the cover page in addition to the following information:

1. BAA number;
2. Title of Proposal;
3. Identity of prime Offeror and complete list of subcontractors, if applicable;
4. Technical contact (name, address, phone/fax, electronic mail address);
5. Administrative/business contact (name, address, phone/fax, electronic mail address); and
6. Duration of effort (separately identify basic effort and any proposed options).

CONTRACTS AND GRANTS

Part 1 – Contract Costs: Detailed breakdown of all costs by cost category by calendar or Government fiscal year:

- Direct Labor – Individual labor categories or persons, with associated labor hours and unburdened direct labor rates. Provide escalation rates for out years;

- Indirect Costs – Fringe Benefits, Overhead, G&A, COM, etc. and their applicable allocation bases. If composite rates are used, provide the calculations used in deriving the composite rates.;
- Travel – The proposed travel cost should include the following for each trip: the purpose of the trip, origin and destination if known, approximate duration, the number of travelers, and the estimated cost per trip must be justified based on the organizations historical average cost per trip or other reasonable basis for estimation. Such estimates and the resultant costs claimed must conform to the applicable Federal cost principals.
- Subcontracts – A cost proposal as detailed as the Offeror’s cost proposal will be required to be submitted by the subcontractor. The subcontractor’s cost proposal can be provided in a sealed envelope with the Offeror’s cost proposal or may be sent directly to the Government. Subcontractor proposals must be received and reviewed prior to contract award. The prime contractor should perform and provide a cost/price analysis of each subcontractor’s cost proposal.*
 - ***Note:** DoD Federal Acquisition Regulation provision 252.215-7003 (48 CFR §252.215-7003) is incorporated into this solicitation by reference. The offeror is to exclude excessive pass-through charges from subcontractors. The offeror must identify in its proposal the percentage of effort it intends to perform and the percentage to be performed by each of its proposed subcontractors. If more than 70 percent of the total effort will be formed through subcontractors, the offeror must include the additional information required by the above-cited clause.
- Consultants – Provide a breakdown of the consultant’s hours, the hourly rate proposed, any other proposed consultant costs, a copy of the signed Consulting Agreement or other documentation supporting the proposed consultant cost, and a copy of the consultant’s proposed statement of work if it is not already separately identified in the prime contractor’s proposal.
- Materials & Supplies – Provide an itemized list of all proposed materials and supplies including quantities, unit prices, proposed vendors (if known), and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists).
- Contractor Acquired Equipment or Facilities – Equipment and/or facilities are normally furnished by the Contractor. If acquisition of equipment and/or facilities is proposed, a justification for the purchase of the items must be provided. Provide an itemized list of all equipment and/or facilities costs and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists).
- Other Direct Costs – Provide an itemized list of all other proposed other direct costs and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists).
- Options – The Base Period of Performance and Option Periods must be priced at the submission of the proposal. Unpriced options will not be included in any resulting contract or agreement.
- Fee/Profit (Contract Proposals Only) – Profit or fee is not allowed on direct costs for facilities or in cost-sharing contracts.

Note: Indicate if you have an approved Purchasing/Estimating System and/or describe the process used to determine the basis of reasonableness (e.g., competition, market research,

best value analysis) for subcontractors, consultants, materials, supplies, equipment/facilities, and other direct costs.

Part 2: Cost breakdown by task/sub-task corresponding to the same task breakdown in the proposed Statement of Work. When options are contemplated, options must be separately identified and priced by task/subtask.

Part 1 –Grant Costs:

The offeror must use the Grants.Gov forms from the application package template associated with the BAA on the Grants.Gov web site located at <http://www.grants.gov/> . Elements of the budget should include:

- Direct Labor – Individual labor categories or persons, with associated labor hours and unburdened direct labor rates or percentage of effort or total man-years. Provide escalation rates for out years. Justify in Field K
- Indirect Costs – Fringe Benefits, Overhead, F&A, G&A etc. and their applicable allocation bases. If composite rates are used, provide the calculations used in deriving the composite rates. Justify in Field K
- Travel – The proposed travel cost should include the following for each trip: the purpose of the trip, origin and destination if known, approximate duration, the number of travelers, and the estimated cost per trip must be justified based on the organizations historical average cost per trip or other reasonable basis for estimation. Such estimates and the resultant costs claimed must conform to the applicable Federal cost principals.
- Subawards - Cost proposal as detailed as the recipient’s cost proposal will be required to be submitted by the subrecipient. The subawardee’s or subrecipient’s cost proposal can be provided in a sealed envelope with the recipient’s cost proposal or may be sent directly to the Government. Subawardee proposals must be received and reviewed prior to award.
- Consultants – Provide a breakdown of the consultant’s hours, the hourly rate proposed, any other proposed consultant costs and a copy of the consultant’s proposed statement of work if it is not already separately identified in the prime recipient’s proposal. Strong justification must be provided, and consultants are to be used only under exceptional circumstances where no equivalent expertise can be found at a participating university. Justify in Field K.
- Materials & Supplies – Provide an itemized list of all proposed materials and supplies including quantities, unit prices, proposed vendors (if known), and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists). Justify in Field K.
- Recipient Acquired Equipment or Facilities – Equipment and/or facilities are normally furnished by the Recipient. If acquisition of equipment and/or facilities is proposed, a justification for the purchase of the items must be provided. Provide an itemized list of all equipment and/or facilities costs and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists). For

computer/laptop purchases include a statement indicating the computer/laptop will be integrated into the program or used as an integral part of the research effort. Justify in Field K.

- **Other Direct Costs** – Provide an itemized list of all other proposed other direct costs such as Graduate Assistant tuition, laboratory fees, report and publication costs, and the basis for the estimates (e.g., quotes, prior purchases, catalog price lists). Justify in Field K.

NOTE: If the grant proposal is for a conference, workshop, or symposium, the proposal should include the following statement: “The funds provided by ONR will not be used for food or beverages.”

- **Options** – The Base Period of Performance and Option Periods must be priced at the submission of the proposal. Any proposal containing unpriced options will not be included in the award.
- **Fee/Profit** - Fee/profit is unallowable.

3. Significant Dates and Times

Anticipated Schedule of Events

EVENT	DATE	TIME
White Papers Due Date	3 April 2009*	2:00 p.m. (Eastern Time)
Notification of Navy Evaluation of White Papers .	24 April 2009 *	
Full Proposals Due Date	1 June May 2009*	2:00 p.m. (Eastern Time)
Notification of Navy Evaluation of Proposals and the Selection the Contract Awardee(s).	29 June 2009*	
Awards Issued	15 October 2009*	

*These dates are estimates as of the date of this announcement.

Note: Due to changes in security procedures since September 11, 2001, the time required for hard-copy written materials to be received at the Office of Naval Research has increased. Materials submitted through the U.S. Postal Service, for example, may take seven days or more to be received, even when sent by Express Mail. Thus any hard-copy proposal should be submitted long enough before the deadline established in the solicitation so that it will not be received late and thus be ineligible for award consideration.

4. Submission of Late Proposals –

Any proposal, modification, or revision that is received at the designated Government office after the exact time specified for receipt of proposals is “late” and will not be considered unless it is received before award is made, the contracting officer determines that accepting the late proposal would not unduly delay the acquisition and:

- If it was transmitted through an electronic commerce method authorized by the announcement, it was received at the initial point of entry to the Government infrastructure not later than 5:00 P.M. one working day prior to the date specified for receipt of proposals; or
- There is acceptable evidence to establish that it was received at the Government installation designated for receipt of proposals and was under the Government's control prior to the time set for receipt of proposals; or
- It was the only proposal received.

However, a late modification of an otherwise timely and successful proposal that makes its terms more favorable to the Government will be considered at any time it is received and may be accepted.

Acceptable evidence to establish the time or receipt at the Government installation includes the time/date stamp of that installation on the proposal wrapper, other documentary evidence of receipt maintained by the installation, or oral testimony or statements of Government personnel.

If an emergency or unanticipated event interrupts normal Government processes so that proposals cannot be received at the Government office designated for receipt of proposals by the exact time specified in the announcement, and urgent Government requirements preclude amendment of the announcement closing date, the time specified for receipt of proposals will be deemed to be extended to the same time of day specified in the announcement on the first work day on which normal Government processes resume.

The contracting officer must promptly notify any offeror if its proposal, modifications, or revision was received late and must inform the offeror whether its proposal will be considered.

5. Submission of Grant Proposals through Grants.gov (NOT APPLICABLE TO PROPOSALS FOR CONTRACTS)

Detailed instructions entitled "Grants.Gov Electronic Application and Submission Information" on how to submit a grant proposal through Grants.gov may be found at the ONR website listed under the 'Acquisition Department – Contracts & Grants Submitting a Proposal' link at: http://www.onr.navy.mil/02/how_to.asp

Grant proposals shall be submitted through Grants.gov using the Grants.gov forms from the application package template associated with the BAA on the Grants.gov website. To be considered for award, applicants must include the ONR Department Code in Block 4 entitled 'Federal Identifier' of the Standard Form (SF) 424 R&R. The proper Department Code is 332 - that of the Program Officer identified in Paragraph I.7. Applicants who fail to provide a Department Code identifier may receive notification that their proposal submission has been rejected.

White Papers should not be submitted through the Grants.govApply process but rather should be sent directly to ONR. White paper submissions should be emailed directly to the appropriate ONR Program Officer/Program Manager.

By completing Blocks 18 and 19 the Grant Applicant is providing the certification on lobbying required by 32 CFR Part 28. Refer to Section VI, 'Award Administration Information' entitled "Certifications" for further information.

For electronic submission of grant full proposals, several one-time actions must be completed in order to submit an application through Grants.gov. These include obtaining a Dun and Bradstreet Data Universal Numbering System (DUNS) number, registering with the Central Contract Registration (CCR), registering with the credential provider, and registering with Grants.gov. See www.grants.gov, specifically www.grants.gov/GetStarted.

Use the Grants.gov Organization Registration Checklist at http://www.grants.gov/applicants/register_your_organization.jsp which will provide guidance through the process. Designating an E-Business Point of Contact (EBiz POC) and obtaining a special password called 'MPIN' are important steps in the CCR registration process. Applicants who are not registered with CCR and Grants.gov should allow at least 21 days to complete these requirements. The process should be started as soon as possible. Any questions relating to the registration process, system requirements, how an application form works, or the submittal process must be directed to Grants.gov at 1-800-518-4726 or support@grants.gov.

Special Notices Relative to Grant Applications to be submitted through Grants.Gov:

All attachments to grant applications submitted through Grants.Gov must be in Adobe Portable Document Format. The previous Application Package Template was based on PureEdge forms which is no longer supported by Grants.Gov. To submit an electronic grant application/proposal through Grants.Gov, you must download and complete the new Adobe Forms Application Package Template which is now associated with this BAA. Proposals with attachments submitted in word processing, spreadsheet, or any format other than Adobe Portable Document Format will not be considered for award.

Process to Obtain a Waiver from the Use of Grants.Gov for Submission of Full Grant Proposals: If a prospective grantee is unable to comply with the requirement to use Grants.Gov "APPLY" for submission of a grant application under this BAA or finds it would be an excessive burden to comply with this requirement, a waiver request may be submitted not less than 30 calendar days prior to the closing date for receipt of Full Proposals. Such request should be submitted by the Electronic Business Point of Contact listed in the CCR for the organization and should contain the Organization/Individual's name, address, telephone number, and email address. The request should state the reason for the request in sufficient detail so a decision can be made. The Waiver Request should be submitted to the ONR Acquisition Department point of contact or Grants Officer listed in the BAA. Such request can be sent by registered mail or email. The "postmark" stamp on the envelope or the time annotated on the email will be used to determine timeliness of the request. A decision and response will be issued within 14 calendar days of receipt of the request by ONR. Foreign Grantees who are not registered in CCR may request a waiver on that basis since CCR registration is integral to the Grants.Gov application process.

6. Address for the Submission of Full Proposals Proposals for Contracts –

Hard copies of Full Proposals for Contracts should be sent to the Office of Naval Research at the following address:

Office of Naval Research
Attn: Dr. Paul Armistead
ONR Sea Warfare and Weapons Department
Code 332, Room 656
875 North Randolph Street
Arlington, VA 22203-1995

V. EVALUATION INFORMATION

1. Evaluation Criteria –

Award decisions will be based on a competitive selection of proposals resulting from a scientific and cost review. Evaluations will be conducted using the following evaluation criteria:

- 1) The overall scientific and technical merits of the proposal;
- 2) Potential relevance of the proposed effort and the product under development to meet the Navy's mission as identified in this solicitation;
- 3) The potential of the proposed product under development to be production-ready and available for shipboard application in Calendar Year 2012;
- 4) Potential of the proposed product under development to be militarized to meet applicable Navy qualification testing;
- 5) The Offeror's capabilities, related experience, facilities, techniques or unique combinations of these which are integral factors for achieving the proposal objectives and bringing product under development to production;
- 6) The qualifications, capabilities and experience of the proposed principal investigator, team leader and other key personnel who are critical in achieving the proposal objects;
- 7) Proposed costs and realism of those costs to meet the proposed objectives.

Overall, the Technical Factors (Factors 1 – 6 above) are more important than the Cost Factor (Factor 7), with the Technical Factors all being of equal value.

The degree of importance of cost will increase with the degree of equality of the proposals in relation to the other factors on which selection is to be based, or when the cost is so significantly high as to diminish the value of the proposal's technical superiority to the Government.

For proposed awards to be made as contracts to other than small businesses, the socio-economic merits of each proposal will be evaluated based on the extent of the Offeror's commitment in providing meaningful subcontracting opportunities for small businesses, small disadvantaged businesses, woman-owned small businesses, HUBZone small businesses, veteran-owned small businesses, service disabled veteran-owned small businesses, historically black colleges and universities, and minority institutions.

The Government will evaluate options for award purposes by adding the total cost for all options to the total cost for the basic requirement. Evaluation of options will not obligate the Government to exercise the options during contract performance.

2. Evaluation Panel –

Technical and cost proposals submitted under this BAA will be protected from unauthorized disclosure in accordance with FAR 3.104-4 and 15.207. The Program Officer and other Government scientific experts will perform the evaluation of technical proposals in accordance with the above criteria. Restrictive notices notwithstanding, one or more support contractors may be utilized as subject-matter-expert technical consultants. Similarly, support contractors may be utilized to evaluate cost proposals. However, proposal selection and award decisions are solely the responsibility of Government personnel. Each support contractor's employee having access to technical and cost proposals submitted in response to this BAA will be required to sign a non-disclosure statement prior to receipt of any proposal submissions.

VI. AWARD ADMINISTRATION INFORMATION

1. Administrative Requirements –

- The North American Industry Classification System (NAICS) code – The North American Industry Classification System (NAICS) code for this announcement is “541712” with a small business size standard of “500 employees”.
- Central Contractor Registry (CCR) - Successful Offerors not already registered in the CCR will be required to register in CCR prior to award of any grant, contract, cooperative agreement, or other transaction agreement. Information on CCR registration is available at <http://www.onr.navy.mil/02/ccr.htm>.
- Subcontracting Plans - Successful contract proposals that exceed \$550,000, submitted by all but small business concerns, will be required to submit a Small Business Subcontracting Plan in accordance with FAR 52.219-9 prior to award.
- Certifications – Proposals for contracts should be accompanied by a completed certification package.

Contracts:

For contracts, in accordance with FAR 4.1201, prospective contractors shall complete and submit electronic annual representations and certifications at <http://orca.bpn.gov>. In addition to completing the Online Representations and Certifications Application (ORCA), proposals must be accompanied with a completed DFARS and contract specific representations and certifications. These "DFARS and Contract Specific Representations and Certifications", i.e., Section K, may be accessed under the Contracts and Grants Section of the ONR Home Page at http://www.onr.navy.mil/02/rep_cert.asp.

Grants:

Grant awards greater than \$100,000 require a certification of compliance with a national policy mandate concerning lobbying. Grant applicants shall provide this certification by electronic submission of SF424 (R&R) as a part of the electronic proposal submitted via [Grants.gov](https://www.grants.gov) (complete Blocks 18 and 19); The following certification applies to each applicant seeking federal assistance funds exceeding \$100,000:

CERTIFICATION REGARDING LOBBYING ACTIVITIES

(1) No Federal appropriated funds have been paid or will be paid by or on behalf of the applicant, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the Federal contract, grant, loan, or cooperative agreement, the applicant shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The applicant shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, title 31, U.S.C. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Grants not through Grants.gov:

Proposers seeking grants who have received Grants.gov waiver approval for awards greater than \$100,000 shall complete and submit electronic representations and certifications at the Contracts and Grants Section of the ONR Home Page at http://www.onr.navy.mil/02/rep_cert.asp

2. Reporting -

The following are samples of data deliverables that are typically required under a research effort:

- Technical and Financial Progress Reports
- Presentation Materials
- Final Report

Additional data deliverables may be proposed and finalized during negotiations. Research performed under contracts may also include the delivery of software, prototypes, and other hardware deliverables.

VII. OTHER INFORMATION

1. Government Property/Government Furnished Equipment (GFE) and Facilities

Each proposer must provide a very specific description of any equipment/hardware that it needs to acquire to perform the work. This description should indicate whether or not each particular piece of equipment/hardware will be included as part of a deliverable item under the resulting award. Also, this description should identify the component, nomenclature, and configuration of the equipment/hardware that it proposes to purchase for this effort. The purchase on a direct reimbursement basis of special test equipment or other equipment that is not included in a deliverable item will be evaluated for allowability on a case-by-case basis. Maximum use of Government integration, test, and experiment facilities is encouraged in each of the Offeror's proposals.

Government research facilities and operational military units are available and should be considered as potential government-furnished equipment/facilities. These facilities and resources are of high value and some are in constant demand by multiple programs. It is unlikely that all facilities would be used for any one specific program. The use of these facilities and resources will be negotiated as the program unfolds. Offerors should explain as part of their proposals which of these facilities are critical for the project's success.

2. Project Meetings and Reviews

Individual program reviews between the ONR sponsor and the performer may be held as necessary. Program status reviews may also be held to provide a forum for reviews of the latest results from experiments and any other incremental progress towards the major demonstrations. These meetings will be held at various sites throughout the country. For costing purposes, offerors should assume that 40% of these meetings will be at or near ONR, Arlington VA and 60% at other contractor or government facilities. Interim meetings are likely, but these will be accomplished via video telephone conferences, telephone conferences, or via web-based collaboration tools.

3. Submission of Questions

Any questions regarding this solicitation must be provided to the Science and Technology Point of Contacts and/or Business Point of Contact listed in this solicitation. All questions shall be submitted in writing by electronic mail.

Questions regarding **White Papers** must be submitted by 2:00 p.m. Eastern Time on 27 **March 2009**. Questions after this date and time may not be answered, and the due date for submission of the white papers will not be extended.

Questions regarding **Full Proposals** must be submitted by 2:00 p.m. Eastern Time on **22 May 2009**. Questions after this date and time may not be answered, and the due date for submission of the proposals will not be extended.