

**BROAD AGENCY ANNOUNCEMENT
(BAA)**

N00167-13-BAA-01



**ENERGY CONSERVATION APPLICATIONS
FOR THE U.S. NAVY**

1. Introduction

The Naval Surface Warfare Center, Carderock Division (NSWCCD) is seeking innovative concepts from industry and academia to enable energy conservation and carbon footprint reduction on U.S. Navy ships. The primary focus is on concepts with the potential for rapid transition to Fleet operations. All Military Sealift Command (MSC) ship classes and Navy combatants have opportunities for energy conservation, and all classes are of interest under this BAA. NSWCCD is soliciting short white papers (abstracts) each describing an enabling energy conservation concept, within the requirements identified in this BAA.

The Navy will consider approaches that modify systems, operations or both to affect quantifiable energy conservation and/or carbon footprint reduction in the Fleet. Each proposed solution should be capable of an operational prototype demonstration in a shipboard or other relevant environment by the conclusion of Phase 2. Emphasis is placed on solutions with an identified transition path capable of making near-term, measurable improvements towards the Navy's shipboard energy conservation and carbon footprint reduction needs. Solutions at all levels of development will be considered, ranging from near-term strategies applicable to existing ship classes to those suitable for new construction and future design. Technical maturity of each solution, however, will be considered during evaluations with preference for solutions with more immediate impact.

To minimize risk, energy conservation efforts are typically executed in three distinct phases:

Phase 1: Conceptual Design & Business Case Analysis

Phase 2: Detailed Design, Prototype Development and Demonstration

Phase 3: Multi-ship Implementation

An offeror with a highly rated white paper may be invited to submit a full proposal for a Phase 1 contract only. Based on the results of the Phase 1 effort, a follow-on Phase 2 contract may be awarded under this BAA or, depending on the maturity of the proposed solution and the existence of alternative suppliers, a Phase 2 contract may be open to competition to meet FAR requirements. All Phase 3 contracts for multi-ship implementation will be competitively awarded outside of this BAA.

2. General Information

FAR Section 35.016 “prescribes procedures for the use of a broad agency announcement (BAA) with Peer or Scientific Review ...for the acquisition of basic and applied research and that part of development not related to the development of a specific system or hardware procurement. BAA's may be used by agencies to fulfill their requirements for scientific study and experimentation directed toward advancing the state-of-the-art or increasing knowledge or understanding rather than focusing on a specific system or hardware solution. The BAA technique shall only be used when meaningful proposals with varying technical/scientific approaches can be reasonably anticipated.”

FAR Section 35.016 (d) states: “Proposals received as a result of the BAA shall be evaluated in accordance with evaluation criteria specified therein through a peer or scientific review process. Written evaluation reports on individual proposals will be necessary but proposals need not be evaluated against each other since they are not submitted in accordance with a common work statement.”

FAR Section 35.016 (e) states: “The primary basis for selecting proposals for acceptance shall be technical, importance to agency programs, and fund availability. Cost realism and reasonableness shall also be considered to the extent appropriate.”

This BAA is active when posted on FedBizOps and will be open for approximately two years, closing on 30 November 2014. White papers on any relevant topic may be submitted any time throughout the two year period. White papers will generally be reviewed as soon after receipt as workloads allow. Review of white papers submitted in response to a specified focus areas may be delayed until the focus area due date (as described in the Focus Area section of this BAA). Based on evaluation of the white papers, some offerors may receive an email inviting them to submit a full proposal. A Frequently Asked Questions (FAQ) section is provided below, listing all questions received and their respective answers. The BAA can be accessed at the FedBizOps website <https://www.fbo.gov/> (search for ‘N0016713BAA01’) and also at the NSWCCD Broad Agency Announcement website: <http://www.navsea.navy.mil/nswc/carderock/docs/N00167-13-BAA-01.pdf>.

NSWCCD will not issue paper copies of this announcement. NSWCCD reserves the right to fund all, some or none of the proposals received as a result of this BAA. NSWCCD provides no funding for direct reimbursement of proposal development costs. White papers, proposals or any other material submitted in response to this BAA become the property of the Navy and will not be returned. It is the policy of NSWCCD to treat all proposals as sensitive, competitive information and to disclose their contents only for the purposes of evaluation or potential sponsorship of the concept. All work under this BAA shall be unclassified. The Government does not commit to providing a response to any comments or questions.

This BAA shall not be viewed as an invitation or request for proposal. Offerors are advised that only the Contracting Officer is legally authorized to commit the Government to a contract. The BAA is an expression of interest only and does not commit the Government to pay any costs for responses submitted.

NAVSEA Carderock may disclose offeror’s information to authorized personnel. Submitting a white paper constitutes the offeror’s written consent to such disclosure. All parties with access to white paper information will be required to sign a Conflict of Interest & Non-Disclosure Agreement prior to gaining access to any white papers or related information.

The selection of one or more white papers for full proposals and potential contract award will be based on responses to the BAA and the results of a peer review process. The type of award anticipated for the Phase 1 Conceptual Design is Firm Fixed Price. Contract types for follow-on phases shall be determined on a case basis.

All technical questions regarding this BAA should be submitted via email to NSWCCD_OPLOG@navy.mil, and all contractual questions should be addressed to Ms. Kathy Bonturi at kathleen.bonturi@navy.mil.

3. White Paper Submittal

White papers in response to this BAA shall be sent via email to NSWCCD_OPLOG@navy.mil. The email shall include the following information:

Company Name
Address
Phone Number
FAX Number
Website
Primary POC
 Name
 Email
 Phone number(s)
Secondary POC
 Name
 Email
 Phone number(s)

Offerors will receive an email within 5 business days verifying that their white paper was received.

All white papers shall be clearly marked with BAA # N00167-13-BAA-01. All white papers submitted in response to this BAA shall be limited to five (5) pages. The white papers shall be formatted to print as typewritten on single-sided paper with one-inch margins on all sides and single spaced lines. A 10-point font or larger with normal (uncondensed) spacing shall be used. All white papers shall be submitted in the Portable Document Format (PDF) file format and shall be less than 2 MB in size.

4. White Paper Content and Evaluation Information

White papers shall contain all the following information.

A. Technical

- (1) The basic approach the offeror intends to pursue, the feasibility and applicability of the proposed systems or technologies, the concept of operations and any foreseeable problem areas.
- (2) The benefits anticipated should the concept be implemented (e.g., cost savings, environmental impacts, operational or capability improvements).
- (3) The technical maturity of the approach with a focus on the development and projected implementation times.

- (4) The offeror's awareness of the state of the art and technical understanding of the scope of the application.
- (5) The production or fabrication approach, and the available facilities to provide the product.

B. Management

- (1) Corporate/personnel experience and ability to successfully perform this effort.
- (2) Past performance information on similar projects, and any prior work that will contribute to the success of the effort.
- (3) A proposed schedule for Phase 1: Conceptual Design.
- (4) A proposed schedule for Phase 2: Detailed Design, Prototype Development and Demonstration.

C. Cost

- (1) A cost estimate for the proposed Phase 1: Conceptual Design.
- (2) A rough order of magnitude (ROM) cost estimate for Phase 2: Detailed Design, Prototype Development and Demonstration.

D. Evaluation Factors

White papers shall be evaluated based on three criteria:

- Factor (1) Technical
- Factor (2) Management
- Factor (3) Cost.

The Factors are listed in descending order and degree of relative importance with Technical being most important.

5. Invited Proposals

In accordance with the FAR, this section and the next provide content requirements and evaluation information for invited proposals. **However, only proposals submitted in response to a Proposal Invitation from NSWCCD will be accepted.** If funding is available, an offeror with a highly rated white paper may be invited to submit a full proposal. Following is an overview of the content requirements of the Phase 1 proposal. A detailed description of the requirements will be provided in the invitation to submit a proposal.

Proposals shall be provided in two volumes: a Technical Volume addressing the Technical and Management portions of the proposed effort, and a separate Cost Proposal providing the cost information for the proposed effort. All proposals shall be clearly marked with BAA # N00167-13-BAA-01.

The Technical Volume shall contain a Statement of Work (SOW) including a Phase 1 Task List and Schedule. The SOW shall identify all the Phase 1 tasks, the execution schedule for all tasks, an approximate breakdown of costs by task, and a list of deliverables associated with each task along with the anticipated submission for each deliverable. A list of required deliverables is

provided below; but additional deliverables may be proposed. The proposal shall be formatted to print as typewritten on single-sided paper with one-inch margins on all sides and single spaced lines. A 10-point font or larger with normal (uncondensed) spacing shall be used. All proposals shall be submitted in the Portable Document Format (PDF) file format and shall be no more than 5 MB in size. All proposals shall be submitted via email to NSWCCD_OPLOG@navy.mil.

The proposal's Phase 1 Statement of Work shall include the following required deliverables and their associated proposed submission dates:

1. Business Case Analysis: This shall include an updated Life Cycle Cost Analysis and a Return on Investment (ROI) analysis, identifying all technical information used and assumptions made. This deliverable should expand on the Cost Benefit Assessment provided in the proposal taking into account information learned during the execution of Phase 1.
2. Continuity Plan: This deliverable shall detail a plan for smoothly transitioning from Phase 1 to Phase 2. The Continuity Plan shall include the identification of work done during Phase 1 specifically to prepare for transition to Phase 2. It should also identify any significant issues that can be expected to interfere with transition, and the proposed course of actions to address those issues. The goal of the Continuity Plan is to eliminate or minimize delays and disruptions during the transition to Phase 2.
3. Conceptual Design Technical Specification: This shall identify all the technical information relevant to the conceptual design, including shipboard integration details and requirements. This shall include drawings in sufficient detail to convey all necessary information for the Government to evaluate the conceptual design.
4. Phase 2 Task List, Costs and Schedule: This shall identify all anticipated Phase 2 tasks, and provide a ROM cost estimate and estimated schedule for each task.
5. Updated Preliminary Cost Estimate for Phase 3 - Multi-Ship Implementation: This deliverable should update the preliminary cost estimate to execute the proposed Phase 3 tasks required for multi-ship implementation that was provided in the proposal, taking into account information learned during the execution of Phase 1.
6. Savings Verification Methodology Report: This report shall identify how the contractor will validate the expected savings from the technology during Phase 2, following prototype installation.
7. Energy Conservation Report: This report shall describe how the technology will yield the benefits expected by the Navy and shall explain how the Navy will realize the actual savings during shipboard operations.
8. Kick-Off Meeting: The Kick-Off Meeting shall be executed within thirty (30) days of Contract Award. The agenda and material for the meeting shall be provided to the Navy at least one (1) week before the Kick-Off Meeting occurs.
9. Monthly Status Reports: Monthly Status Reports shall be submitted every month describing the progress made on all tasks; any significant risks or issues identified during the month and associated mitigation plans; the tasks or issues requiring action on the part of the Government; and, the tasks planned for execution in the following month.
10. Quarterly Reviews: The contractor shall plan and execute Quarterly Reviews every three months. The Quarterly Reviews shall include a presentation on, and discussion about the schedule, progress and status of all tasks; any technical information developed during the

Quarter; issues in need of resolution; risks & associated mitigation plans; current cost information; and any other information the Government should have.

For scheduling purposes, items 1-7 shall be delivered via email in draft format along with the draft final report for Government review and feedback. The final versions shall be provided to the Navy within two (2) weeks from the date of receipt of the Government's feedback.

The Cost Proposal shall include a detailed cost breakdown for Phase 1 which shall be effective for one year following the date of submission. The Cost Proposal shall also include and a rough order of magnitude (ROM) cost estimate for Phases 2 & 3.

The costs for Phase 1 shall be provided in the following format:

COST SUMMARY FORMAT				
Prime Offeror Name:				
Subcontractor Name (if applicable):				
DCAA Point of Contact Information:				
Cost Elements	Labor Category	Base Period		
		Rate	Hours	Amount
Prime Contractor Labor Cost				
Prime Contractor Direct Labor				
Employee Name 1				
Employee Name 2				
Etc.				
Total Direct Labor Cost				
Prime Contractor Indirect Labor Cost				
Overhead				
Fringe Benefits				
G&A				
Total Indirect Labor Cost				
Total Direct and Indirect Labor cost				
COM				
Total Prime Contractor Labor Cost				
Subcontractor Labor Cost				
Subcontractor proposed cost and fee				
Subcontractor 1				
Subcontractor 2				
Etc.				
Total proposed subcontractor labor cost and fee				
Total Labor Cost (Prime and Subcontractor Labor)				
Profit				
Total Labor Cost and Profit				
Other Direct Costs				
Travel				
Material				
Total ODCs				
Any adders to ODCs such as G&A (cost only - no fee)				
Total ODCs				
Total Firm Fixed Price				

6. Proposal Evaluation Information

Full Proposals shall be evaluated based on three criteria:

- Factor (1) Technical
- Factor (2) Management
- Factor (3) Cost.

The Factors are listed in descending order and degree of relative importance with Technical being most important. Evaluators will take the following into account when evaluating each section:

A. Technical Evaluation: The Technical and Management Proposal shall be evaluated based on the overall technical and scientific merits of the proposal's Technical Section, while taking the following into account:

- (1) Realism and strength of the business case and the potential to realize the anticipated benefits.
- (2) Soundness of the technical approach to develop, integrate and implement the proposed improvement.
- (3) Applicability of the improvement to specific ship classes.
- (4) Reasonableness of the quantified technical maturity of the proposed approach, technologies, systems and strategies.
- (5) Evidence supporting a solid technical understanding of the requirements, their full scope and any anticipated problem areas.
- (6) Thoroughness of the offeror's knowledge regarding the state of the art.
- (7) Thoroughness of the assessment and ranking of the major technical risk areas, including risk mitigation plans.
- (8) Viability of fabrication strategy, plans and available facilities.
- (9) Ease of implementation and operation, including installation of the proposed equipment within the 15-35 days normally allotted in the Ship's Restricted Availability.
- (10) Other technical criteria that impact the proposal's overall evaluation and rating include:
 - a) Realism of the fuel savings over the range of ship speeds and operating conditions, specifically the Underway, Not Underway and Cold Iron (shore power) states.
 - b) Reasonableness of impacts on ship performance (response time, thrust, etc).
 - c) Reasonableness of impacts on ship service electrical performance (power generation, storage, backup, etc.).
 - d) Reasonableness of impacts on ship propulsion control system changes.
 - e) Realism of impacts on operations, maintenance, and training.
 - f) Realism of impacts on relevant ABS, MSC and NAVSEA certifications.
 - g) Reasonableness of the system's operational status and use during failure modes.

B. Management Evaluation: The Technical and Management Proposal shall also be evaluated based on the overall programmatic, personnel and management related merits of the proposal's Management Section, while taking the following into account.

- (1) Realism and relevance of the offeror's capabilities, related experience, past performance, facilities, techniques, or unique combinations of these which are integral factors for achieving the proposal objectives.
- (2) Realism and relevance of the qualifications, capabilities and experience of the proposed principal investigator, team leader and key personnel who are critical in achieving the proposal objectives.
- (3) Applicability of past performance on similar projects.

- (4) Reasonableness of the approach, plan, schedule and tracking methods for project execution and management, meeting project deadlines and project control during phases.
- (5) Reasonableness of the staffing approach.
- (6) Reasonableness of any data rights asserted.
- (7) For large businesses, the realism of the socio-economic merits of the proposal, including meaningful subcontracting opportunities for small businesses, HUBZone small businesses, small disadvantaged businesses, woman-owned small businesses, veteran-owned small businesses, service disabled veteran-owned small businesses, historically black colleges and universities and other minority institutions.

C. Cost Evaluation: The Cost Proposal shall be evaluated based on the overall cost reasonableness of the proposal, while taking the below into account.

- (1) Realism of the cost information provided.
- (2) Reasonableness and realism of the Cost Summary for Phase 1 - Conceptual Design.
- (3) Reasonableness and realism of a rough order of magnitude budget estimate for Phase 2 - Detailed Design, Prototype Development & Shipboard Demonstration.
- (4) Reasonableness and realism of a rough order of magnitude budget estimate for Phase 3 - Multi-Ship Implementation.
- (5) Reasonableness of proposed payment schedule for Phase 1.

The degree of importance of the offeror's cost shall be based on the assessment of the overall technical merit of the proposal and the funds available for the technology area proposed.

7. Focus Areas

Specific focus areas for energy conservation concepts will be defined periodically to address near term Fleet needs. Whenever a new focus area is identified, the BAA will be updated and any party who has registered or inquired about this or previous Energy Conservation BAAs will receive an email notification about the new focus area. There is no pre-determined schedule for upcoming focus areas. White papers with topics outside the focus areas are always welcome and encouraged.

The following chart lists the Focus Areas for this BAA:

Focus Area Title	Description
Propulsion System Efficiency Upgrades	Marine propulsion system technologies have improved significantly over the past decade. Therefore, it is anticipated that there are many opportunities for propulsive efficiency improvements in the US Navy Fleet. The Navy is interested in concepts for prime movers, drive trains, and ship hydrodynamics that will reduce the overall energy consumption of propulsion systems on Navy ships.

Below is a list of focus areas from the previous BAA, which are still of interest to the Navy.

Focus Area Title	Description
Energy Efficiency Management System with Display and Interface	System to monitor and optimize: ship performance and fuel efficiency; fuel savings by route optimization; diagnosis of malfunctions and problems causing inefficiencies. The system(s) may monitor various aspects of ship performance, energy usage and environmental conditions and provide the information for real time decision making, either manually or automated, to manage and optimize the ship's energy usage and fuel efficiency under various conditions and operating modes. The system or tool should include human interface(s) (e.g., Graphical User Interfaces - GUIs) for easy human monitoring, thus enabling sound decisions to be made based on real time performance feedback.
Energy Efficiency Improvements for Shipboard Lighting	New developments in lighting technologies provide significant opportunities for increased energy efficiency. Solid state lighting, high-efficiency fluorescent lighting, and occupancy lighting sensors are just three examples of these technologies, in addition to many others that are currently under development. The Navy is interested in upgrading existing lighting systems with cost effective options that will increase energy efficiency while meeting any applicable illumination and hazardous Class I, Div II requirements. Low cost replacements that meet the form, fit and function of our current bulbs and fixtures are desired. The life cycle costs from acquisition, installation, energy use, maintenance, replacement cycles, and disposal will be the most important factor during evaluation.
Heating, Ventilation, Air Conditioning & Refrigeration (HVAC&R) Efficiency	There are many opportunities for improving the efficiency of various Heating, Ventilation, Air Conditioning and Refrigeration (HVAC&R) systems across the MSC fleet. The Navy is interested in concepts that will reduce the energy consumption of HVAC&R applications on MSC ships.
Waste Heat Recovery Efficiency Improvements	Across the MSC fleet, there are many shipboard opportunities for capturing waste heat which can be recovered to produce energy for the ship's electrical service. The Navy is interested in concepts that will reduce shipboard energy consumption on MSC ships by recovering waste heat and converting it into usable energy.
Electrical System Efficiency Improvements	There are many opportunities on MSC ships to reduce the inherent energy losses associated with shipboard power conversion, transmission, and quality. MSC is interested in concepts that will significantly improve shipboard electrical system efficiencies.

8. Frequently Asked Questions (FAQ)

1. Can you provide a schedule and/or listing of focus areas that are known thus far?

Future Focus Areas are defined as Fleet needs are identified. There is currently no schedule for upcoming Focus Areas.

2. Can I get on a mailing list to receive information on Focus Areas as they are updated or released?

Any party who has registered or inquired about the BAA has been added to our distribution list. They will receive an email whenever any information in the BAA changes, including the identification of new Focus Areas.

3. Is NSWCCD only interested in responses that address the current or a past focus area?

White paper topics outside the current focus area will still be accepted during focus area timeframes and will be reviewed with the focus area white papers throughout the 2-year BAA cycle. White papers addressing past focus areas or any other topic are definitely of interest.

4. Who are the authorized government personnel that my information may be disclosed to?

The authorized government personnel are either subject matter experts that are part of the white paper or proposal evaluation process, or possibly personnel from other Navy organizations working on shipboard energy conservation and interested in a specific technology. All parties involved in evaluations will be required to sign a Conflict of Interest/Non-Disclosure Agreement prior to gaining access to any white papers or proposals.

5. Should fabrication and distribution details be included in the White Paper submission or should that be included only in the proposal stage?

If fabrication and distribution information is needed to develop cost estimates or schedules, then it must be addressed in the white paper. The white paper should describe how the offeror intends to supply the end product in the quantities MSC or the Navy would need.

6. What is the anticipated funding level?

There are no preset funding levels.

7. Will proposals selected for award be fully funded by the government or are you looking for cooperative funding opportunities?

There is no requirement for “cost sharing” or “cooperative funding.” Concepts developed using outside or internal research and development funding will be considered, however, all products and property developed with BAA funding will be assumed to have full government use rights. Any products and property over which proprietary rights would be exerted must be clearly identified. Specific data rights will be negotiated by the Contracting Officer once a decision is made to award a contract.

8. What is the anticipated white paper and proposal review schedule?

White papers and proposals will be reviewed as soon after receipt as workloads allow. Due to the more formal nature of proposal evaluations and their length, proposal evaluations could

easily take as much as a month to be completed. The proposals and white papers will be evaluated under a peer review process by subject matter experts.

9. Which ship classes should be focused on?

All MSC ship classes and Navy combatants have opportunities for energy conservation, and all classes are of interest under this BAA. A determination of the most appropriate vessel(s) for a particular technology prototype and/or full deployment can often be accomplished in Phase I; however, white papers should, at a minimum, identify the following conditions that were taken into consideration to make savings projections:

Underway – Vessel is deployed and generating power for propulsion and ship service loads

Not Underway – Vessel is pier-side but generating power for ship service loads

Cold-iron – Vessel is pier-side and receiving shore-power for ship service loads

10. What Technology Readiness Level (TRL) is expected?

No specific TRL is targeted, but the requirements identified in the BAA must be met. Preference will be given to mature technologies that can be implemented in the near term. Proposals of any Technology Readiness Level will be considered, however, the anticipated benefits must justify the additional investment required to mature a lower TRL technology for shipboard use.

11. Can you review our proposed technology and let us know if it meets the criteria identified in the BAA?

Within the competitive BAA process, the Government cannot provide advice or suggestions on a particular technical approach. The BAA is intentionally broad in scope to encourage innovative ideas.

12. Can you provide specifications or technical information regarding ships and equipment?

Most specifications or other technical information for MSC ships, needed to develop a white paper, can be found on the internet. Such information for Navy combatants may not be available on the internet; but offerors may request any needed specifications or technical information regarding ships and equipment as Government Furnished Information (GFI) in their proposal. Such information will not be provided in advance for the preparation of white papers or proposals.

13. Can I participate if my company's technology is fully developed or is commercially available?

Under the FAR, BAAs can be used for “the acquisition of basic and applied research and that part of development not related to the development of a specific system or hardware procurement.” It is possible to perform applied research using fully developed or COTs solutions, providing the research focus is on shipboard integration and testing of a particular technology or solution on an MSC or Navy ship.

9. Previous NSWC-CD Energy Conservation BAA Awards

Date of Award	Topic Area	Company	Title
Mar-10	HVAC/R Efficiency	IMECO, Inc.	Utilization of Advanced HVAC Control and Monitoring Systems To Reduce Energy Consumption on Military Sealift Command Vessels
Sep-10	Waste Heat Recovery	Maersk Line, Ltd.	Advanced Waste Heat Recovery System
Mar-11	Hybrid Electric Drive	Cleveland Ship	Ultra Green Modification Program for AOE6 Class
Sep-11	Motor Efficiency	Flux Drive	Permanent Magnet, Adjustable Speed Drives (ASDS) for Energy Savings Onboard Naval Ships
Sep-11	Energy Dashboard	MAERSK	Vessel Performance Management System
Sep-11	Motor Efficiency	DRS Maritime	VFD Upgrade of Fire Water & Seawater Pump Motor Controllers