



ASSISTANT SECRETARY OF DEFENSE
3700 DEFENSE PENTAGON
WASHINGTON, DC 20301-3700

OPERATIONAL ENERGY
PLANS AND PROGRAMS

June 14, 2011

MEMORANDUM FOR THE COMMANDERS OF THE COMBATANT COMMANDS
DEPUTY ASSISTANT SECRETARY OF THE ARMY (ENERGY &
SUSTAINABILITY)
DEPUTY ASSISTANT SECRETARY OF THE NAVY (ENERGY)
DEPUTY ASSISTANT SECRETARY OF THE AIR FORCE (ENERGY)

SUBJECT: Call for Program Proposals, FY 12 Operational Energy Capabilities Improvement Fund

Improving the energy efficiency of the Department of Defense's (DoD's) operational forces is vital to reducing vulnerable supply lines and increasing our operational capabilities. To address this challenge, the President's Budget includes funding for an Operational Energy Capabilities Improvement Fund (OECIF). I estimate \$17.4 million will be available in Fiscal Year (FY) 12 for this fund. OECIF's basic mission is to fund innovation to improve our operational effectiveness by targeted investments that improve the energy performance of key elements of our force. It is meant to:

- Develop or demonstrate and rapidly transition into the force energy technologies and practices that will improve military capabilities and reduce costs; and,
- Establish within the Services a sustainable institutional capacity that will continue to research, develop, and adopt those operational energy innovations.

For FY 12, my office is seeking proposals to support or establish Science and Technology programs that would reduce the energy load at expeditionary outposts such as forward operating bases, combat outposts and patrol bases in combat, stability and humanitarian operations. This includes reducing the energy load of equipment carried by dismounted troops in forward areas. Two types of program proposals are sought: development programs to advance new technologies; and, demonstration programs to demonstrate the readiness of technologies for deployment. OECIF funds are intended as "seed money" to consolidate or initiate promising operational energy programs that can be sustained by the Services. The emphasis of this fund is on supporting or establishing *programs*, rather than one-off projects. Further details are contained in the attachments.

This focus on expeditionary outposts aligns with the *Operational Energy Strategy* goal of reducing demand for operational energy. Expeditionary outposts are the platforms from which we launch our operational forces, including in areas with little to no existing infrastructure, and one of the most significant consumers of energy on the battlefield. Because supply lines to these outposts may be contested, vulnerable and traverse challenging terrain, moving energy to them presents operational burdens and imposes high costs. Reducing their energy load by improving the energy efficiency of equipment used at these locations is the focus of this fund for FY12.

In this call, we are particularly interested in program proposals that:

- Include ways to reach innovators that have typically not been involved in military research or acquisition. We are interested in reaching beyond DoD's traditional base of suppliers in order to tap new sources of energy innovation. Similarly, we are interested in capitalizing on the innovative capacity of small business. Program proposals that identify clear, systematic methods for involving non-traditional or commercial innovators will be more attractive.
- Leverage or integrate ongoing programs, facilities or expertise, including those of other Services, federal agencies, or industry, to create a more significant capacity that would sustain institutional momentum towards the program goals, reduce redundancy and promote interoperability. New joint programs are of particular interest. Also of interest are programs that leverage the federal investment in the Small Business Innovation Research Program.

We will accept submissions through three pathways – from the Energy Offices of the Military Departments, which can vet and coordinate program proposals from their Departments, from the Combatant Commands, and from the Department of Defense-Department of Energy Energy Security Memorandum of Understanding Executive Committee. The deadline for program proposals is September 9; we plan to make funding decisions by October 7.

I look forward to seeing your program proposals to help create a more energy effective force. My point of contact for this is Mr. John Jennings (john.jennings@osd.mil; 571-256-0795).



Sharon E. Burke

Attachments:

TAB A: Call for Program Proposals for FY 12 Operational Energy Capabilities Improvement Fund

TAB B: Return on Investment Assessment Spreadsheet

TAB C: Sample Cost Summary Spreadsheet

TAB A



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OPERATIONAL ENERGY
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Call for Program Proposals for FY 12 Operational Energy Capabilities Improvement Fund

Purpose and Funding: ASD(OEPP) is seeking to fund proposals that would establish or advance programs to develop or demonstrate technologies or practices to reduce the energy load of expeditionary outposts such as forward operating bases, combat outposts, and patrol bases in combat, stability, and humanitarian operations. This includes reducing the energy load of equipment carried by dismounted troops in forward areas. These programs are meant to:

- Develop or demonstrate and rapidly transition into the force energy technologies or practices that will improve the military capabilities and reduce the costs of expeditionary outposts or dismounted operations by reducing their energy loads; and,
- Establish within the Services a sustainable institutional capacity that will continue to research, develop, and adopt those operational energy innovations.

For this call for program proposals:

- “Program” refers to organized, complementary projects, directed to a common goal, under common management.
- “Practices” refers to innovations aimed at non-materiel changes.
- “Load” refers to the energy consumed by the intended final use of the energy. Load drives the total demand for energy and the supply chain necessary to meet it.

OEPP plans to make about \$17M of FY 12 funds available under this call and to provide funding for these programs for up to three years – FY 12, 13 & 14. Actual funding will depend on the quality of the program proposals received and the final appropriations for OEPP’s 6.3 Program Element.¹ Additional funding for these programs would be paid by other components of the Department. In particular, funding for sustaining the programs in FY 15 and beyond will be the responsibility of the Services or other components.

Program Types: OEPP is seeking two types of program proposals for reducing the load at expeditionary outposts. Each program proposal should be in one of these two tracks.

- Development: Longer term research programs to develop new technologies typically up to TRL 6. These programs should advance the technology and help evaluate the practicality and military benefits of technologies with an eye on eventual transition.
- Demonstration: Programs focused on demonstrating the usefulness and readiness of technologies for deployment. Successful demonstrations should lead to rapid acquisition, procurement, or fielding. Programs should have strong ties to the DoD organizations that 1) set the requirements and 2) would execute the acquisition. Technologies should typically be

¹ 0604055DBZ – Operational Energy Capability Improvement RDT&E

TRL 6 or better at the start and individual projects under the programs should be two years or less.

OEPP generally expects these programs to be managed by the Research, Development, Test and Engineering (RDT&E) elements of the funding recipients, with oversight by OEPP.

Technical/Capability Focus Areas: OEPP seeks program proposals aimed at reducing the energy load of expeditionary outposts in the technologies/capabilities below. Generally, any new technologies/capabilities should reduce energy loads while maintaining or improving military capabilities. Program proposals may address more than one focus area at once.

1. More efficient cooling and heating – One of the most significant consumers of energy at expeditionary outposts has been heating and air-conditioning, both to maintain the comfort of personnel and the proper temperature for electronic systems. Programs are sought that would improve the efficiency of heating and cooling needed for expeditionary outposts beyond that of today's Improved Environmental Control Units.
2. More energy efficient shelters and structures – Improving the insulation of expeditionary shelters offers an opportunity to reduce the energy needed for cooling and heating. Programs should optimize the insulating value of shelters, while maintaining the safety, deployability, affordability and other performance attributes necessary for the military usefulness of the shelters.
3. More efficient lighting – Lighting for shelters and work areas is an energy load itself and also increases the thermal load that may need to be cooled. Programs should improve the efficiency of lighting for expeditionary outposts beyond what is fielded today while meeting required lighting levels.
4. More efficient data center power management – Information technology (IT) and IT intensive data centers consume energy directly and also generate thermal loads that require cooling. Programs should improve the energy efficiency of such data centers and reduce their thermal load while maintaining their capabilities. Note that this focus area is aimed at IT and data centers that are forward-deployed.
5. More efficient electronics – A key portion of the load at expeditionary outposts is from the use of electronics of all kinds. Electronic loads also drive the weight of batteries carried by dismounted troops into and around the field. Hence, more efficient electronics and better power management of those electronics offer opportunities to reduce both the fuel used by generators to power electronics and charge batteries and the amount of batteries consumed in the field. Programs should improve the efficiency of electronics systems used in expeditionary outposts or that are carried by dismounted troops, while at least maintaining the same performance.
6. Other Expeditionary Systems – This focus area includes all other systems or technologies used at expeditionary outposts that are not covered above. These include other “hotel loads” such as pumping and heating water for kitchens, laundries and showers. Programs proposed under this focus area should clearly explain the load reduction opportunity.

This call does not seek program proposals that would reduce the demand for fuel either by substituting other energy supplies like solar power or waste to energy or by improving the efficiency of energy conversion systems like generators and microgrids. Instead, this call seeks to complement the ongoing efforts in those areas throughout the Department.

Involving Non-Traditional Innovators: OEPP is particularly interested in program proposals featuring effective methods of involving non-traditional or commercial innovators, especially organizations that have not typically worked with the DoD. The high cost of securely delivering energy to expeditionary outposts offers an opportunity for DoD to be an early adopter of new technologies that haven't yet met price points for the commercial market, but may significantly reduce DoD's cost of energy at deployed locations and improve operational effectiveness by reducing the need to protect supply convoys. OEPP is interested in capitalizing on innovation wherever it exists, including small businesses. Program proposals with clear, systematic methods for overcoming the hurdles to working with non-traditional performers and reaching those innovators, particularly small businesses, will score better in the selection process.

Leveraging and Combining Capabilities: DoD must be prepared to operate expeditionary outposts in a wide variety of conditions and climates, often for joint or combined operations. Moreover, there are a variety of activities in the Department that can shape the energy load at expeditionary outposts. Hence, OEPP is particularly interested in program proposals that would leverage and integrate complementary existing activities within the Department into a comprehensive whole that creates greater institutional momentum and capacity towards solving the problems, reduces any redundancy, and promotes interoperability. Accordingly, joint programs that involve more than one Service or component are of strong interest. In addition, leveraging the federal investment in the Small Business Innovation Research (SBIR) program, which includes \$1.4B each year from the DoD, is also of interest. Program proposals that leverage activities or capabilities of other federal agencies are also of interest, particularly the capabilities and expertise of the Department of Energy (DOE).

Return on Investment Using Fully Burdened Cost of Energy: The primary purpose of reducing energy load is improved military capability; these improvements will also often lead to lower costs. OEPP will assess the potential return on investment (ROI) from the proposed program and the fielding or use of the technologies or practices developed or demonstrated. This requires an incremental analysis comparing costs from a baseline/current scenario to those when the proposed program is implemented, i.e. the additional investments needed and savings achieved. In particular, OEPP is interested in the Net Present Value and Savings to Investment Ratio. These can be calculated using a spreadsheet developed by OEPP that should be submitted with the program proposal.

As noted above, the cost and operational burdens of securely delivering energy in the battlespace are high. In estimating energy costs, proposals should use the Fully Burdened Cost of Energy (FBCE) figures given below. These represent notional figures for the cost of delivering energy to expeditionary outposts and establish a common baseline for the analysis for the purpose of consistently evaluating program proposals.²

² These numbers serve only for this call and in no way are meant to serve as benchmarks for other purposes.

Energy	FBCE
Liquid Fuel	\$15/gallon
Disposable Batteries	\$1118/kilowatt-hour
Rechargeable Batteries	\$6.32/kilowatt-hour

OEPP understands that the actual FBCE calculations will be different than these figures given the range of possible operational scenarios. Accordingly, program proposals may also include additional ROI assessments using other FBCE figures if the basis for those figures is explained; methodology for calculating the FBCE for this call is available from OEPP.

Evaluation Factors: Program proposals will be evaluated and selected for funding by OEPP solely via a holistic assessment of their quality according to the factors below. The first factor is the most important; the remaining are of equal rank. Poor performance against any factor is sufficient for a proposal to be eliminated.

1. Improved Military Capability via Load Reduction – The extent to which military capabilities and operations would be improved by the proposed program. The potential for reducing fuel or battery consumption at expeditionary outposts; larger reductions at more forward areas are of greater interest. Proposals should clearly identify the problem to be solved or opportunity to be pursued and the expected military benefits. Well supported, quantified analysis of the load reduction or military benefits will score better.
2. Return on Investment – The Net Present Value and Savings to Investment Ratio for the proposed program and implementation of the resulting technology/practice; higher values will score better. Significant improvements in military capabilities at the “tactical edge” will be taken into account when considering cost savings ROI. The overall feasibility of the program in light of the total investments required will also be considered.
3. Program Plan and Outreach – The quality of the technical and managerial approach to the proposed program. The technical goals, approaches, schedules and processes of the proposed program should be clearly identified, logical and demonstrate a clear understanding of the problem or opportunity and the path forward. OEPP is interested in reaching beyond DoD’s traditional base of suppliers; proposals that identify clear, systematic methods for involving non-traditional or commercial innovators, particularly small businesses, will score better.
4. Leverage – The extent to which the proposed program would leverage or integrate ongoing programs, facilities or expertise, including those of other federal agencies or industry, to create a more significant capacity that would sustain institutional momentum towards the program goals, reduce redundancy and promote interoperability. New joint programs are of particular interest and will score better. Proposed programs that would effectively leverage SBIR investments and technologies will also score better.
5. Personnel/Team – The quality of program team, including qualifications, expertise and demonstrated accomplishments in work relevant to the proposed program.

6. Transition Potential/Linkages –
 - Development proposals – Evidence for the potential of the technologies or practices to eventually transition to an acquisition or procurement program and fielding. Program proposals that demonstrate a clear understanding of the potential transition path and that have active links to an acquisition program and/or a user community will score better. Proposed programs that have an actual military requirement or one under development will score better.
 - Demonstration proposals – Evidence that the demonstrated technologies will actually transition to an acquisition or procurement program and/or fielding in the event of a successful demonstration. Program proposals that involve DoD organizations that 1) set the requirements needed for an acquisition or procured product and 2) would actually acquire or procure the technologies in the event of a successful demonstration and have made commitments to do so will score better. Proposed programs that have an actual military requirement or one under development will score better.
7. Cost – The reasonableness of proposed cost for the proposed program.
8. Long Term Commitment – Proposals that demonstrate a commitment by the Service(s) to sustaining the proposed program will score better. Of interest is any Service funding in FY 12, 13 and 14 and particularly after OEPP funding ends in FY 15 and beyond. Clearly identified, firm pathways and commitments to sustaining the proposed program will score better. When considering this, OEPP will recognize that obtaining Service funding commitments for FY 12 and FY 13 is more difficult than for later fiscal years.

Proposal Instructions: Program proposals consist of three parts – a technical proposal, ROI assessment worksheet(s) and a cost summary spreadsheet.

The technical proposal should be no more than 12 pages long. A possible, but not required, outline for the technical proposal is as follows:

- I. Military Benefits, Technical Goals and Savings – Describe the improvement in military capabilities or operations expected. Describe the problem or opportunity, the load reduction to be obtained, and the overall technical goals. Describe the Net Present Value and Savings to Investment Ratio. If additional ROI analyses are conducted using FBCE other than provided above, discuss the basis for those FBCE figures. (*Addresses evaluation factors 1, 2, part of 3.*)
- II. Program Plans, Outreach and Leverage – Describe the detailed technical goals, approaches, schedules and processes of the proposed program and how it will leverage or integrate ongoing activities or resources of DoD or others. Describe the management structure. Describe any processes designed to involve non-traditional, small business / SBIR awardees or commercial innovators in the program. (*Addresses evaluation factors 3 and 4.*)
- III. Personnel/Team – Describe the team that will manage the program. (*Addresses evaluation factor 5.*)

- IV. Technology Transition (*Addresses evaluation factor 6.*) –
- A. For Development Programs -- Describe the potential transition pathways and the organizations involved in planning and facilitating transition.
 - B. For Demonstration Programs – Describe the transition pathways, the organizations involved and the commitments to transition in the event of successful demonstrations.
- V. Cost – Describe the overall costs of the program and how it would be financed by OEPP and any contributions from other DoD components or DOE. (*Addresses evaluation factor 7.*)
- VI. Long Term Program Plans -- Describe plans by the Service(s) or DOE to sustain the proposed program once OEPP funding ends. In particular describe any funding commitment for FY 15 and beyond. (*Addresses evaluation factor 8.*)
- VII. Other – Any other issues that should be discussed in order to establish the value and approach of the proposed program.

OEPP has developed a spreadsheet to calculate the Net Present Value and Savings to Investment Ratio for the ROI assessment. Instructions are included with the spreadsheet. Spreadsheet(s) showing the entered data and resulting calculations should be included with the proposal.

The cost summary spreadsheet should summarize across the Future Years Defense Program the major cost elements of the proposed program, the total program costs, funding to be provided by OEPP, and funding to be provided by the Service(s) or others for the program. A sample format is included.

Proposal Submission: Program proposals are due to OEPP no later than September 9, 2011; please submit electronic copies, including the spreadsheets.

OEPP will accept program proposals through three pathways.

- The Energy Office of each Military Department's should submit to OEPP recommended program proposals. This pathway is intended to allow the Military Departments to vet and coordinate proposals from their Department. Any joint proposals must be agreed to by each Department involved.
- Any Combatant Command may directly submit recommended program proposals. These should be approved at the same level as items for the Integrated Priority List (IPL).
- The DoD-DOE Energy Security Memorandum of Understanding Executive Committee may also submit a recommended set of program proposals.

Funding Decisions: OEPP plans to make funding decisions no later October 7, 2011. OEPP may choose to fund all or part of any proposal.