

Inspector General

United States
Department of Defense



Army Projects in the DOD Near Term Energy-Efficient
Technologies Program Funded by the American
Recovery and Reinvestment Act of 2009

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Acronyms and Abbreviations

BAA	Broad Agency Announcement
FAR	Federal Acquisition Regulation
FBO	Fedbizopps
FPDS	Federal Procurement Data System
NTEET	Near Term Energy-Efficient Technologies
OMB	Office of Management and Budget
RDECOM	Research, Development and Engineering Command
RDT&E	Research, Development, Test, and Evaluation
USACE	U.S. Army Corps of Engineers



INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
400 ARMY NAVY DRIVE
ARLINGTON, VIRGINIA 22202-4704

August 27, 2010

MEMORANDUM FOR UNDER SECRETARY OF DEFENSE (COMPTROLLER)/
CHIEF FINANCIAL OFFICER
DIRECTOR, DEFENSE RESEARCH AND ENGINEERING
ASSISTANT SECRETARY OF THE ARMY (ACQUISITION,
LOGISTICS, AND TECHNOLOGY)
ASSISTANT SECRETARY OF THE ARMY (FINANCIAL
MANAGEMENT AND COMPTROLLER)
AUDITOR GENERAL, DEPARTMENT OF THE ARMY

SUBJECT: Army Projects in the DOD Near Term Energy-Efficient Technologies
Program Funded by the American Recovery and Reinvestment Act of 2009
(Report No. D-2010-RAM-019)

We are providing this report for your review and comment. We considered comments on a draft of this report from the Executive Director, U.S. Army Research, Development, and Engineering Command Contracting Center, when preparing the final report. The Executive Director's comments were partially responsive to the intent of the recommendations.

DOD Directive 7650.3 requires that recommendations be resolved promptly. We request that the Executive Director, U.S. Army Research, Development, and Engineering Command Contracting Center verify the implementation of Recommendations 1 and 2 by September 13, 2010, or provide specific date(s) when the recommendations will be completed.

If possible, send a .pdf file containing your comments to audacm@dodig.mil. Copies of your comments must have the actual signature of the authorizing official for your organization. We are unable to accept the /Signed/symbol in place of the actual signature. If you arrange to send classified comments electronically, you must send them over the SECRET Internet Protocol Router Network (SIPRNET).

We appreciate the courtesies extended to the staff. Please direct questions to me at (703) 604-9201 (DSN 664-9201).

A handwritten signature in blue ink, reading "Richard B. Jolliffe".

Richard B. Jolliffe
Assistant Inspector General
Acquisition and Contract Management

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Results in Brief: Army Projects in the DOD Near Term Energy-Efficient Technologies Program Funded by the American Recovery and Reinvestment Act of 2009

What We Did

We audited the implementation of the DOD Near Term Energy-Efficient Technologies (NTEET) Program Plan, May 15, 2009. Specifically, we reviewed the status of eight Army non-small-business NTEET research and development projects valued at \$72.9 million (1) to determine whether DOD and the Department of the Army complied with Recovery Act requirements, Office of Management and Budget (OMB) guidance, the Federal Acquisition Regulation (FAR), and DOD implementing guidance and (2) to ensure that planning and implementation efforts by DOD and the Army facilitated accountability and transparency.

What We Found

Army project officials used competitive techniques such as Broad Agency Agreements or cooperative agreements to solicit or award contracts for six of eight Army Recovery Act NTEET projects. As of December 31, 2009, contracts or cooperative agreements, valued at \$22.5 million, were awarded for three of the eight projects. However, the Army should have:

- included required Recovery Act contract clauses in solicitations for two NTEET projects,
- informed the public of its intent to use existing contractors to perform the Silicon Research NTEET project, and
- provided a description of the procurement in the notice of award for the NTEET Testbed Equipment project.

The Army did not include Recovery Act clauses because contracting officers did not follow DOD and OMB guidance. The Army did not inform the public of its intent to use existing contractors to perform the Silicon Research NTEET project and did not describe the procurement in the award notice of the Testbed Equipment project because of a lack of contracting office oversight.

What We Recommend

We recommend that the Commander, Army Research, Development, and Engineering Command:

- direct contracting officers to include appropriate FAR clauses in solicitation announcements posted on public Web sites and
- implement OMB guidance on Recovery Act contracts and cooperative agreements solicited and awarded by the Command.

Management Comments and Our Response

The Executive Director, U.S. Army Contracting Command, and the Executive Director, U.S. Army Research, Development, and Engineering Command Contracting Center, agreed with the report recommendations. The comments were only partially responsive to the intent of the recommendations as the comments did not include completion date(s). We request further comments regarding the dates. Please see the recommendations table on the back of this page.

Recommendations Table

Management	Recommendations Requiring Comment	No Additional Comments Required
Commander, U.S. Army Research, Development, and Engineering Command	1 and 2	

Table of Contents

Introduction	1
Objectives	1
Recovery Act Background	1
Review of Internal Controls	5
Finding. Army Near Term Energy-Efficient Technologies Program Implementation	6
Management Comments on the Finding and Our Response	10
Recommendations, Management Comments, and Our Response	11
Appendices	
A. Scope and Methodology	12
Prior Coverage	13
B. Recovery Act Criteria and Guidance	14
C. DoD Near Term Energy-Efficient Technologies Program Funding and Functional Areas	16
D. Description and Status of Army Near Term Energy-Efficient Technologies Projects	18
Management Comments	
U.S. Army Contracting Command	21
U.S. Army Research, Development, and Engineering Command Contracting Center	22

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Introduction

Objectives

The primary objective of the audit was to determine whether DOD and its Components are planning and implementing the American Recovery and Reinvestment Act of 2009 (Recovery Act) by meeting the requirements in the Recovery Act; Office of Management and Budget (OMB) Memorandum M-09-10, “Initial Implementing Guidance for the American Recovery and Reinvestment Act of 2009,” February 18, 2009; and subsequent related guidance. For this audit, we reviewed the planning, funding, contracting, and execution of eight Near Term Energy-Efficient Technologies (NTEET) Program research and development projects to ensure that Army contracting efforts complied with Recovery Act requirements, the OMB guidance, the Federal Acquisition Regulation (FAR), and DOD implementing guidance. See Appendix A for a discussion of our scope and methodology.

Recovery Act Background

The President signed the Recovery Act into law on February 17, 2009. It is an unprecedented effort to jump-start the economy and create or save jobs.

The purposes of this Act include the following:

- (1) To preserve and create jobs and promote economic recovery.
- (2) To assist those most impacted by the recession.
- (3) To provide investments needed to increase economic efficiency by spurring technological advances in science and health.
- (4) To invest in transportation, environmental protection, and other infrastructure that will provide long-term economic benefits.
- (5) To stabilize State and local government budgets, in order to minimize and avoid reductions in essential services and counterproductive state and local tax increases

. . . the heads of Federal departments and agencies shall manage and expend the funds made available in this Act so as to achieve the purposes specified . . . including commencing expenditures and activities as quickly as possible consistent with prudent management.

Recovery Act Requirements

The Recovery Act and implementing OMB guidance require projects to be monitored and reviewed. We grouped these requirements into the following four phases: (1) planning, (2) funding, (3) execution, and (4) tracking and reporting. The Recovery Act requires that projects be properly planned to ensure the appropriate use of funds. Review of the funding phase is to ensure the funds were distributed in a prompt, fair, and reasonable manner. Review of the project execution phase is to ensure that contracts awarded with Recovery Act funds were transparent, competed, and contained specific FAR clauses; that Recovery Act funds were used for authorized purposes; and that instances of fraud, waste, error, and abuse were mitigated. Review of the execution phase also ensures that program goals were achieved, including specific program outcomes and improved results

on broader economic indicators; that projects funded avoided unnecessary delays and cost overruns; and that contractors or recipients of funds reported results. Review of the tracking and reporting phase ensures that the recipients' use of funds was transparent to the public and that benefits of the funds were clearly, accurately, and timely reported.

Recovery Act Contracting Requirements

The Recovery Act establishes transparency and accountability requirements. Federal Acquisition Circular 2005-32, March 31, 2009, provides policies and procedures for the Government-wide implementation of the Recovery Act and guidance on special contract provisions. Federal Acquisition Circular 2005-32 amended the FAR and provided interim rules that made FAR solicitation provisions and contract clauses immediately available for inclusion in contracts for Recovery Act work.

The specific FAR Recovery Act requirements are for:

- buying American construction material,
- protecting contractor whistleblowers,
- publicizing contract actions,
- reporting, and
- giving the Government Accountability Office and agency Inspectors General access to contracting records.

Federal Government organizations meet requirements for Recovery Act contract actions by posting information on the Federal Business Opportunities (FBO) and Federal Procurement Data System (FPDS) Web sites. FAR Subpart 5.7, "Publicizing Requirements Under the American Recovery and Reinvestment Act of 2009," directs contracting officers to use the Government-wide FBO Web site (<http://www.fbo.gov>) to:

- identify the action as funded by the Recovery Act,
- post pre-award notices for orders exceeding \$25,000,
- describe supplies in a clear narrative to the general public, and
- provide the rationale for awarding any contracting actions that were not both fixed-price and competitive.

FBO is the Federal Government's central source of Federal procurement opportunities. FBO is a Web-based portal that allows agency officials to post Federal procurement opportunities and contractors to search and review those opportunities. Agencies also post contract award notices on FBO. In addition, to provide transparency, FBO has a separate section identifying Recovery Act opportunities and awards.

FPDS is the Federal Government's central source of procurement information. Contracting officers enter information, to include the Treasury Account Symbol, in the FPDS for all Recovery Act contract actions. The Treasury Account Symbol enables FPDS to provide transparency by generating and posting a report containing all Recovery Act contract actions.

OMB Recovery Act Guidance

Criteria for planning and implementing the Recovery Act continue to change as OMB issues additional guidance, and DOD and the Components issue their implementation guidance. OMB has issued 10 memoranda and 1 bulletin to address the implementation of the Recovery Act. See Appendix B for Recovery Act criteria and guidance.

DoD Recovery Act Program Plans

Under the Recovery Act, Congress appropriated approximately \$12 billion to DOD for the following programs: Energy Conservation Investment; Facilities Sustainment, Restoration, and Modernization; Homeowners Assistance; Military Construction; Near Term Energy-Efficient Technologies; and U.S. Army Corps of Engineers (USACE) Civil Works.

The values of the six programs are shown in Table 1.

Table 1. DOD Agency-Wide and Program-Specific Recovery Act Programs

Program	Amount (in millions)
Energy Conservation Investment	\$120
Facilities Sustainment, Restoration, and Modernization	4,260
Homeowners Assistance	555
Military Construction	2,185
Near Term Energy-Efficient Technologies	300
U.S. Army Corps of Engineers Civil Works	4,600
Total	\$12,020

The Recovery Act divides the approximately \$12 billion among 32 DOD and USACE line items of appropriations.

Army NTEET Program

Under the Recovery Act, Congress appropriated \$300 million for DOD Research, Development, Test, and Evaluation (RDT&E) funds in four appropriation accounts of \$75 million each for Army, Navy, Air Force, and Defense-wide NTEET Recovery Act projects. Each Military Department and Defense agency submitted RDT&E candidate projects for review in five broad areas:

- fuel optimization for mobility platforms,
- facility energy initiatives,
- operational efficiencies/commercial practices,
- domestic energy supply/distribution, and
- tactical power systems/generators.

See Appendix C for a description of each of these five program funding and functional areas.

The DOD Energy Security Task Force, with members from the Military Departments, Defense agencies, and the Office of the Secretary of Defense and chaired by the Director, Defense Research and Engineering, reviewed the projects. The DOD Energy Security Task Force selected the Army NTEET projects shown in Table 2 based on their ability to satisfy DOD capability gaps, present opportunities for military applications, or spur initiatives within industry and DOD Components.

Table 2. Army RDT&E Recovery Act Projects Funded by RDT&E Appropriation

Projects	Amount (in millions)
1. Advanced Power Electronics Ground Systems Testbed Equipment (Testbed Equipment project)	\$14.58
2. High Temperature Silicon Carbide Power Semiconductors (Silicon Research project)	12.15
3. High Temperature Silicon Carbide Power Semiconductors (Silicon Development project)	12.15
4. Ultra Low Energy Community Systems	2.92
5. Energy Security Audit & Islanding Methodology (Energy Security project)	6.80
6. Lightweight, Flexible, Cost-Effective Solar Energy Photovoltaics (Photovoltaics project)	14.58
7. Develop Smaller, Lighter Cogeneration and Absorption Environmental Control Systems (Environmental Control project)	6.32
8. Micro-Grid Field Scaled Demonstration	3.40
Subtotal	72.90
Small Business Innovative Research and Small Business Tech Transfer Set-Aside*	2.10
Total	\$75.00

*We will review Small Business Innovative Research and Small Business Tech Transfer Set Aside Recovery Act NTEET projects for all the Military Departments and DOD agencies in a separate report.

See Appendix D for more details on the eight Army NTEET projects.

Research and Development Contracting

The primary purpose of contracted research and development programs is to advance scientific and technical knowledge and apply that knowledge to achieve agency and national goals. Unlike contracts for other services and supplies, most research and development contracts contain objectives for which the work or method cannot be precisely described in advance. Although the Government prefers to use fixed-price contracts, they do not usually apply in research and development contracting, where specifications and cost estimates are usually not precise enough to permit a fixed-price preference. Therefore, the DoD NTEET Program Plan, May 15, 2009, forecasted a smaller percentage of fixed-price contracts for anticipated Recovery Act NTEET program projects than for other Recovery Act project categories.

FAR part 35, “Research and Development Contracting,” states that the Broad Agency Announcement (BAA) is 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. A BAA is used when proposals with varying technical or scientific approaches can be reasonably anticipated. A BAA describes the agency’s research interest in an individual program requirement or in broadly defined areas of interest covering the full range of an agency’s requirements.

Review of Internal Controls

DOD Instruction 5010.40, “Managers’ Internal Control (MIC) Program Procedures,” July 29, 2010, requires DOD organizations to implement a comprehensive system of internal controls that provide reasonable assurance that programs are operating as intended and to evaluate the effectiveness of the controls. We identified an internal control weakness in the Army Research, Development, and Engineering Command’s posting of solicitation and award notices for contract actions. The Commander, U.S. Army Research, Development, and Engineering Command, (RDECOM) should better facilitate the transparency of contract actions awarded under the Recovery Act and posted on Government Web sites by implementing Recommendations 1 and 2. We will provide a copy of the report to the senior official responsible for internal controls at the U.S. Army Research, Development, and Engineering Command.

Finding. Army Near Term Energy-Efficient Technologies Program Implementation

Army project officials used competitive techniques such as BAAs or cooperative agreements to solicit or award contracts for six of eight Army Recovery Act NTEET projects. As of December 31, 2009, contracts or cooperative agreements, valued at \$22.5 million, were awarded for three of the eight projects. However, the Army should have:

- included required Recovery Act contract clauses in solicitations for two NTEET projects,
- informed the public of its intent to use existing contractors to perform the Silicon Research NTEET project, and
- described the procurement in the award notice of the Testbed Equipment project.

The Army did not include Recovery Act clauses because contracting officers did not follow DOD and OMB guidance. The Army did not inform the public of its intent to use existing contractors to perform the Silicon Research NTEET project and did not describe the procurement in the award notice of the Testbed Equipment project because of a lack of contracting office oversight. As a result, the Army did not achieve the transparency in all its Recovery Act actions, which was a primary objective of the Recovery Act.

Competition for Army NTEET Contracting and Solicitations

The Army planned to use contract actions to execute seven of the eight NTEET projects. The eighth Army NTEET project used a combination of contracting with a competitive cooperative agreement process. Overall, six of the eight Army NTEET projects were solicited or awarded on a competitive basis including five that used the BAA process.

Use of Broad Agency Announcement Contracting Process

Army project officials used a BAA technique to solicit and award contracts for five of the seven NTEET contract-based projects. BAAs are issued in accordance with FAR paragraph 6.102(d)(2), “Use of Competitive Procedures,” paragraph 35.016, “Broad Agency Announcement,” which provide for competitive selection of research and development proposals.

As of December 31, 2009, for three of the eight Army NTEET projects, contracts and cooperative agreements were awarded valued at \$22.5 million out of the \$72.9 million in available Army RDT&E Recovery Act funds. The Army posted Recovery Act solicitation notices using BAAs for five of the seven contract-based projects totaling about \$32.0 million. Army program officials evaluated the numerous proposals received in response to the BAAs before they made the final awards. For example, program officials advised us that they received about 24 proposals for the Photovoltaics project and about 40 proposals for the Environmental Control project.

Army's Use of Fixed-Price Contracts for NTEET

Five Army NTEET projects will use fixed-priced contracts totaling about \$42.2 million. FAR 35.006, "Contracting methods and contract type," states that the absence of precise specifications and difficulties in estimating costs with accuracy normally preclude the use of fixed-price contracting for research and development; therefore, the use of cost-reimbursement contracts is usually appropriate. However, for some of the Army projects, the specifications were sufficiently precise that fixed-price contracts were to be awarded. For example, for the Energy Security project, one technical objective was to develop installation energy security self-audit methodologies to improve installation energy security, including the supply of electricity, natural gas, steam, and water. Program officials determined that the objective was sufficiently detailed that a fixed-price contract could be awarded. For the Photovoltaics project, officials awarded a fixed-price contract to develop a portable, photovoltaic support system to provide power management and energy storage and facilitate the use of power in the battlefield. Program officials determined that fixed-priced contracts could be awarded because there was a lower level of technical risk for the effort.

Inclusion of Recovery Act Contract Clauses in Army NTEET Solicitations and Contracts

The Army did not include Recovery Act contract clauses in solicitations for two NTEET projects (one solicitation per project) that it posted on the Government's FBO Web site because contracting officers did not follow DOD and OMB guidance. An April 13, 2009, solicitation and an April 16, 2009, solicitation lacked the required clauses. Although the Army posted the solicitations just before DOD guidance on including Recovery Act FAR clauses was issued on April 21, 2009, the Army did not amend the solicitations to include the required clauses. However, the Army included the required clauses in five contracts awarded from the solicitations for the Environmental Control and Photovoltaics projects. Nonetheless, the Army Research, Development, and Engineering Command should comply with Recovery Act contracting requirements and include the required FAR clauses in the solicitation announcements posted on public Web sites.

Public Transparency of Army NTEET Solicitations, Contracts, and Cooperative Agreements

Although six of eight Army NTEET projects met transparency requirements for solicitations, the Army contracting office should have increased transparency by informing the public of its intent to use existing contractors to perform the Silicon Research NTEET project and by better describing the procurement in a notice of award for the Testbed Equipment NTEET project.

Six projects met transparency requirements because for all of the projects, the Army posted Recovery Act solicitation notices that included the word "Recovery" in the title and contained a clear description of the work required, as directed by FAR Subpart 5.2, "Synopsis of Proposed Contract Actions." In addition, each solicitation referred prospective offerors to the project's BAA to obtain more detailed information on the work.

Cooperative Agreement Transparency

The Army addressed transparency in awarding three cooperative agreements under the Photovoltaics project. On October 23, November 24, and December 4, 2009, the Army issued cooperative agreements totaling \$4.4 million to support the Photovoltaics project. A cooperative agreement for research and development is a written agreement between a Federal laboratory and a non-Federal party under which the Government provides personnel and facilities to non-Federal parties to conduct specific research efforts consistent with the mission of the laboratory. Cooperative agreements are appropriate when ideas, staff, materials, and equipment are exchanged for collaboration or when an invention may result. The Photovoltaics project cooperative agreement awards were cost-reimbursable (no profit or fee) assistance instruments. The cooperative agreements were subject to competition through a white paper (initial proposal) submission process.

The Army posted awards for the three cooperative agreements for the October through December 2009 reporting period on www.recovery.gov. To meet the transparency and oversight requirement in Section 1512 paragraph (c) of the Recovery Act, each contractor reports on its use of Recovery Act funds, and these reports are made available to the public 30 days after the end of the quarter. Army officials stated that they reported the cooperative agreement awards in the Defense Assistance Awards Data System, a DoD system that reports obligations of funds by assistance instruments to meet statutory requirements for Federal Government reporting.

Projects Without Recovery Act Solicitations

The Army had not issued a solicitation for the \$12.15 million Silicon Research project as of December 31, 2009. However, the Army posted a notification to use an existing indefinite-delivery, indefinite-quantity contract on the FBO Web site on February 11, 2010. The Army did not use a BAA for the project because Army officials stated that only a few vendors could perform the project tasks. The Army planned to contact each of the six vendors directly and award a task order package to each. On April 9, 2010, the Army RDECOM awarded contract DAAD19-C-0067-P00008 valued at \$12.15 million to Honeywell International Inc., one of the six vendors, for the full amount of the project. RDECOM noted to us that Honeywell International would subcontract approximately \$9.6 million of the award to the five other vendors. The Army's award process was not transparent to the public. Army contracting officials should have issued a public presolicitation notification on the FBO Web site to disclose the process they planned to use to contract for the NTEET project and to explain why they believed the contract could not be competed using a BAA. Had officials posted the presolicitation notice, the Army could have increased transparency by informing the public of its intent to use existing contractors to perform another NTEET project.

The Army did not facilitate transparency on contract actions for the Testbed Equipment project because it did not post a Recovery Act solicitation for the project, valued at \$14.5 million, or describe the procurement in the award notice posted on the FBO Web site. Rather, the Army included the project as a modification to an existing non-Recovery Act solicitation posted on the FBO Web site. That solicitation was dated July 17, 2008, for design and construction of the Ground Systems and Power Energy Lab at Detroit

Arsenal, Warren, Michigan. The Recovery Act funds supported the purchase and installation of research and development equipment at the facility. On July 22, 2009, the Army awarded a firm-fixed-price contract for \$14.5 million in Recovery Act funds and \$25.7 million in non-Recovery Act funds. The award notice posted July 28, 2009, on the FBO Web site did not describe the procurement for the Testbed Equipment project. These examples demonstrate that the Army did not achieve transparency in all its Recovery Act actions, which is a primary objective of the Recovery Act.

Jobs Created From Army NTEET Projects

Army officials offered one example of potential jobs to be created from the Army NTEET program. The Army officials advised us that the Testbed Equipment project will provide about 30 to 40 permanent engineering and lab technician positions at the Tank Automotive Research, Development, and Engineering Center in Warren, Michigan, and would encourage Defense contractors to open facilities in Michigan for research and development. In addition, officials estimated that about 115 contractor jobs will be created to build and install the equipment. The officials advised us that one cooperative agreement will allow the Army's Photovoltaics project to hire for four new positions and retain three other employees funded by grants that were due to conclude soon. We could not verify the number of jobs for the project because it has not yet been implemented. We will review and report on the outcomes for this and other selected Army NTEET projects in a future report.

Summary

Army officials were knowledgeable about the new Recovery Act guidance and generally posted public notifications promptly to begin research programs to increase fuel efficiency or alternative energy sources and, in addition, preserve and create jobs. For six of eight NTEET Recovery Act projects, the Army used a competitive BAA process to award new contracts, and program officials plan to issue fixed-price contracts on five of the projects, totaling \$42.2 million. Consequently, Army officials followed the Recovery Act requirements using an acquisition process to award competitive, fixed-price actions for most projects. Further, these results were achieved for research and development projects, which normally preclude fixed-price contracting, while the Recovery Act guidance was still evolving. We found that the Army included the relevant FAR clauses and complied with the OMB transparency requirements in most instances except for two NTEET project solicitations that did not contain the Recovery Act FAR clauses, although contracts awarded from those solicitations included the required FAR clauses. A lack of Army contracting office oversight on the Silicon Research project caused the impairment of transparency regarding disclosing reasoning for using an existing multi-award contract and on the Testbed Equipment project being acquired through a modification to a non-Recovery Act contract.

Management Comments on the Finding and Our Response

The Executive Director, RDECOM Contracting Center, provided comments on three issues in the report and agreed with the recommendations. The Executive Director, U.S. Army Contracting Command, agreed with the response from the Executive Director, RDECOM Contracting Center.

Army Comments on Inclusion of Recovery Act Contract Clauses in Army NTEET Solicitations and Contracts

The Executive Director noted that the notification for solicitation W911NF-07-R-0001 that was posted on the FBO Web site on May 20, 2009, cited the Recovery Act FAR clauses so that responders to the earlier solicitations were made aware that their proposals and subsequent awards were subject to the Recovery Act clause stipulations.

Our Response

We appreciate the Executive Director's response. We acknowledge that the May 20, 2009, notification for solicitation on the FBO Web site included the Recovery Act FAR clauses. However, there is no assurance that responders to earlier solicitations (posted April 13, 2009, and April 16, 2009) would review the May 20, 2009, solicitation because each solicitation referred to a different topic and BAA.

Army Comments on Public Transparency of Army NTEET Solicitations, Contracts, and Cooperative Agreements and on Projects Without Recovery Act Solicitations

The Executive Director stated that the RDECOM Contracting Center adhered to the March 13, 2009, Office of the Under Secretary of Defense guidance, "Posting Pre-Solicitation and Award Notices: Reporting Contract Actions; and Reporting Performance Assessments for Actions Funded by the American Recovery and Re-Investment Act of 2009," in the February 11, 2010, posting of solicitation DAAD19-00-R-0005. The Executive Director further stated that the command received no questions or comments during the timeframe between the solicitation posting and the April 9, 2010, award. The Executive Director indicated that the FBO Web site was appropriate for posting FAR-based contract actions but a comparable instrument for cooperative agreement actions like these was not available. The Executive Director stated that the March 19, 2010, revised guidance did not require contracting personnel to amend non-awarded action postings that were listed prior to the revised guidance.

Our Response

Based on the Executive Director's comments and other Army-provided documentation, we revised the report discussion to include the April 9, 2010, RDECOM award for the Silicon Research project. The RDECOM posting of the February 11, 2010, Silicon Research project solicitation DAAD19-00-R-0005 appeared to be in response to a February 4, 2010, discussion draft of this report that noted that the Silicon Research project was one of two Army NTEET projects without required solicitations as of December 31, 2009. With the posting of solicitation DAAD19-00-R-0005, we agree that

the RDECOM Contracting Center has now adhered to the March 13, 2009, guidance. The Executive Director's comments regarding a March 19, 2010, memorandum appeared to be referring to a August 19, 2009, memorandum, "Revised Posting and Reporting Requirements for the American Recovery and Reinvestment Act of 2009." With the posting of solicitation DAAD19-00-R-0005, we agree that the RDECOM Contracting Center also adhered to the August 19, 2009, memorandum. That memorandum states that presolicitation notices are required for a task order contract that is going to be posted on the FBO Web site.

Recommendations, Management Comments, and Our Response

To improve Recovery Act contract compliance, we recommend that the Commander, Army Research, Development, and Engineering Command:

- 1. Direct contracting officers to include appropriate Federal Acquisition Regulation clauses in the solicitation announcements posted on public Web sites.**
- 2. Establish internal policy implementing Office of Management and Budget Memorandum 09-15, "Updated Implementing Guidance for the American Recovery and Reinvestment Act of 2009," February 18, 2009, relating to Recovery Act Near Term Energy-Efficient Technologies Program contracts and cooperative agreements solicited and awarded by the Command.**

Army Comments

The Executive Director, RDECOM Contracting Center, agreed with Recommendation 1 and stated that his command will issue a reminder to all RDECOM Contracting Center contracting officers on the importance of including the required Recovery Act FAR clauses in applicable solicitations and resultant contracts.

The Executive Director also agreed with Recommendation 2 stating that the RDECOM Contracting Center will issue internal policy implementing OMB Memorandum 09-15, "Updated Implementing Guidance for the American Recovery and Reinvestment Act of 2009," relating to Recovery Act Near Term Energy-Efficient Technologies Program contracts and cooperative agreements solicited and awarded by the command.

Our Response

The comments were partially responsive to the intent of the recommendations as the Army did not provide the expected dates of completion of the proposed actions for Recommendations 1 and 2. We request that the Executive Director provide completion date(s).

Appendix A. Scope and Methodology

This is the first in a series of reports on DOD implementation of the Recovery Act NTEET program. We conducted this performance audit from September 2009 to May 2010 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our finding and our conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our finding and conclusions based on our audit objectives.

Our overall audit objective was to evaluate DOD's implementation of plans for the Recovery Act of 2009. To accomplish our objective, we audited the planning, funding, execution, and tracking and reporting of the Army non-small-business research and development projects in the DOD NTEET program plan, May 15, 2009, to determine whether they complied with Recovery Act requirements, OMB guidance, the FAR, and DOD implementing guidance. We reviewed NTEET program related solicitation and contract award notices posted on the FBO Web site through December 31, 2009. Specifically, we determined whether:

- the selected projects were adequately planned to ensure the appropriate use of Recovery Act funds (Planning);
- funds were awarded and distributed in a prompt, fair, and reasonable manner (Funding);
- contracts contained required Recovery Act FAR clauses (Project Execution).

Before selecting DOD Recovery Act projects for audit, the Quantitative Methods and Analysis Division of the DOD Office of Inspector General analyzed all DOD agency-funded projects, locations, and contracting oversight organizations to assess the risk of waste, fraud, and abuse associated with each. We selected most audit projects and locations using a modified Delphi technique, which allowed us to quantify the risk based on expert auditor judgment, and other quantitatively developed risk indicators. Initially, we selected 83 projects with the highest risk rankings; auditors chose some additional projects at the selected locations. We used information collected from all projects to update and improve the risk assessment model.

We did not use classical statistical sampling techniques that would permit generalizing results to the total population because there were too many potential variables with unknown parameters at the beginning of this analysis. The predictive analytic techniques employed provided a basis for logical coverage not only of Recovery Act dollars being expended, but also of types of projects and types of locations across the Military Services, Defense agencies, State National Guard units, and public works projects managed by USACE.

Use of Computer-Processed Data

We used computer-processed data to perform this audit. Specifically, we used the notices on the FBO Web site, www.recovery.gov, and contract documentation from the

Electronic Data Archive System. We tested the accuracy of the data by comparing the project data reported on these systems for consistency. Our audit was focused on the reporting of contract actions on specific Army projects. From these procedures, we concluded that the DOD data were sufficiently reliable for our purposes.

Prior Audit Coverage

The Government Accountability Office, the Department of Defense Inspector General, and the Military Departments have issued reports and memoranda discussing DOD projects funded by the Recovery Act. You can access unrestricted reports at <http://www.recovery.gov/accountability>.

Appendix B. Recovery Act Criteria and Guidance

The following list includes the primary Recovery Act criteria documents (notes appear at the end of the list):

- U.S. House of Representatives Conference Committee Report 111-16, “Making Supplemental Appropriations for Job Preservation and Creation, Infrastructure Investment, Energy Efficiency and Science, Assistance to the Unemployed, and State and Local Fiscal Stabilization, for the Fiscal Year Ending September 30, 2009, and for Other Purposes,” February 12, 2009
- Public Law 111-5, “American Recovery and Reinvestment Act of 2009,” February 17, 2009
- OMB Memorandum M-09-10, “Initial Implementing Guidance for the American Recovery and Reinvestment Act of 2009,” February 18, 2009
- OMB Bulletin No. 09-02, “Budget Execution of the American Recovery and Investment Act of 2009 Appropriations,” February 25, 2009
- White House Memorandum, “Government Contracting,” March 4, 2009
- White House Memorandum, “Ensuring Responsible Spending of Recovery Act Funds,” March 20, 2009
- OMB Memorandum M-09-15, “Updated Implementing Guidance for the American Recovery and Reinvestment Act of 2009,” April 3, 2009¹
- OMB Memorandum M-09-16, “Interim Guidance Regarding Communications With Registered Lobbyists About Recovery Act Funds,” April 7, 2009
- OMB Memorandum M-09-19, “Guidance on Data Submission under the Federal Funding Accountability and Transparency Act (FFATA),” June 1, 2009
- OMB Memorandum M-09-21, “Implementing Guidance for the Reports on Use of Funds Pursuant to the American Recovery and Reinvestment Act of 2009,” June 22, 2009²
- OMB Memorandum M-09-24, “Updated Guidance Regarding Communications with Registered Lobbyists About Recovery Act Funds,” July 24, 2009
- OMB Memorandum M-09-30, “Improving Recovery Act Recipient Reporting,” September 11, 2009

- OMB Office of Federal Procurement Policy, “Interim Guidance on Reviewing Contractor Reports on the Use of Recovery Act Funds in Accordance with FAR Clause 52.204-11,” September 30, 2009²
- OMB Memorandum M-10-08, “Updated Guidance on the American Recovery and Reinvestment Act – Data Quality, Non-Reporting Recipients, Reporting of Job Estimates,” December 18, 2009²
- OMB Memorandum M-10-14, “Updated Guidance on the American Recovery and Reinvestment Act,” March 22, 2010²
- White House Memorandum, “Combating Noncompliance With Recovery Act Reporting Requirements,” April 6, 2010²
- OMB Memorandum M-10-17, “Holding Recipients Accountable for Reporting Compliance under the American Recovery and Reinvestment Act,” May 4, 2010²

Notes

¹ Document provides Government-wide guidance for carrying out programs and activities enacted in the American Recovery and Reinvestment Act of 2009. The guidance states that the President’s commitment is to ensure that public funds are expended responsibly and in a transparent manner to further job creation, economic recovery, and other purposes of the Recovery Act.

² Document provides Government-wide guidance for carrying out the reporting requirements included in section 1512 of the Recovery Act. The reports will be submitted by recipients beginning in October 2009 and will contain detailed information on the projects and activities funded by the Recovery Act.

Appendix C. DOD Near Term Energy-Efficient Technologies Program Funding and Functional Areas

The Recovery Act appropriated \$300 million in DOD RDT&E funds in four appropriation accounts of \$75 million each for Army, Navy, Air Force, and Defense-wide RDT&E Recovery Act projects. The DOD NTEET program divided the funds to support project categories. The table below provides the RDT&E funding and category of the planned work.

Program Categories and Values of Energy-Related RDT&E Projects
(values in thousands)

Category	Army	Navy	Air Force	Defense-Wide	DOD Total
Fuel Optimization for Mobility Platforms	\$40,000	\$52,900	\$28,000	\$16,000	\$136,900
Facility Energy Initiatives	10,000	3,500			13,500
Operational Efficiencies/ Commercial Practices	None	None	1,000	9,000	10,000
Domestic Supply and Distribution	15,000	16,100	37,000	47,000	115,100
Tactical Power Systems and Generators	10,000	2,500	9,000	3,000	24,500
Total	\$75,000	\$75,000	\$75,000	\$75,000	\$300,000

The energy-related projects have the potential to identify technologies that can increase our fuel efficiency and thereby reduce our dependence on foreign energy.

Fuel Optimization for Mobility Platforms

These RDT&E efforts included testing various materials, like ceramics, in engine and equipment design to lower thermal loads and decrease the need for cooling of component parts that require additional energy to perform the cooling tasks. Efforts also included conducting demonstrations on the fuel efficiency of low observable subsonic propulsion systems for unmanned aerial vehicles.

Facility Energy Initiatives

These projects included developing or reviewing off-the-shelf enterprise energy auditing programs and software that can couple energy security with energy efficiency, reducing power consumption in tactical heating and air-conditioning systems, and developing whole-building energy modeling and monitoring systems and renewable energy building integration.

Operational Efficiencies/Commercial Practices

These projects included developing or reviewing off-the-shelf enterprise energy auditing and water management programs and software that can couple energy security with energy efficiency, whole-building energy modeling, monitoring systems, and renewable energy building integration.

Domestic Energy Supply/Distribution

These included waste-to-energy and waste-to-fuel technology research and demonstrations, landfill gas use, biomass and algae fuel oil production, multijunction solar photovoltaics for cells and sensors, wave and thermal energy from oceans, wind power and analyzing radar cross sections.

Tactical Power Systems/Generators

These projects included developing and demonstrating methanol-based portable fuel cells with improved energy densities, long-duration multijunction photovoltaics for UAVs, waste heat to cooling using absorption environmental control systems, and scalable micro-grid electrical distribution systems for fixed and tactical installation use.

Appendix D. Description and Status of Army Near Term Energy-Efficient Technologies Projects

The Recovery Act provided \$75 million of RDT&E funding for improvements in energy generation and efficiency, transmission, and storage and for use on military installations and within operations forces. The projects included research and development of energy from silicon carbide, flexible solar energy photovoltaics, and microgrids.

1. Advanced Power Electronics Ground Systems Testbed Equipment

The Advanced Power Electronics Ground Systems Testbed Equipment project (Testbed Equipment project) provides state-of-the-art equipment to be installed into the Ground Systems Power and Energy Laboratory. The Ground Systems Power and Energy laboratory and the Advanced Power Electronics Ground Systems Testbed Equipment provides the Army with a state-of-the-art research and development laboratory. The laboratory will have the capability to test, optimize, and integrate all current and alternative power generation, such as hybrid electric power-train development and energy storage systems, as well as power management and control systems, into current and emerging vehicles. One contract was awarded in July 2009 for the total amount of the project; however, the Army should have added a project description to the award announcement on the FBO Web site to facilitate transparency.

2. High Temperature Silicon Carbide Power Semiconductors

The High Temperature Silicon Carbide Power Semiconductors project (Silicon Research project) addresses the gap between the capabilities of devices and components used on Army platforms for power conversion and the requirements of platforms to operate in harsh environments. The project is to develop materials, designs, and fabrication techniques for high-performance silicon carbide devices, modules, and passive components used in power conversion electronics for ground vehicles, tactical generators, and other high-power platforms. It will also include research on advanced packaging concepts for high-current, low-loss silicon carbide modules to enable these devices to operate efficiently in high-temperature environments. However, as noted in the Finding discussion, the Army should facilitate transparency by informing the public of its intent to use existing contractors to perform the Silicon Research project. On February 11, 2010, the Army posted a notice on the FBO Web site of the intent to award a task order to an existing contract. On April 9, 2010, the Army RDECOM awarded contract DAAD19-C-0067-P00008 valued at \$12.15 million to Honeywell International Inc.

3. High Temperature Silicon Carbide Power Semiconductors

The High Temperature Silicon Carbide Power Semiconductors project (Silicon Development project) is for the development of efficient, high-temperature silicon carbide power electronics for military vehicles that use hybrid electric mobility and

power generation systems. The reductions in cooling system and electrical power converter size and weight, along with increased cooling efficiency and power conversion efficiency, will make vehicle electric and hybrid electric power systems smaller, lighter, and more fuel-efficient. This effort is to quantify the advantages and demonstrate the feasibility of silicon carbide power electronics, to overcome the main barriers to commercial development of this technology. The solicitation was posted on the FBO Web site on May 27, 2009, and included the Recovery Act FAR requirements by reference to the BAA. On February 25, 2010, the Army awarded three cost reimbursement contracts with a total value of \$12.1 million for the Silicon Development project.

4. Ultra Low Energy Community Systems

The project is to develop concepts, methodologies, integrated technologies, and validations by modeling one or more Army installations. The objective is to change the typical Army installation to an ultra-low-energy-consuming community that achieves reduced energy wastes and greater use of energy-conserving (ultra-low-energy) technologies, maximized use of renewable energy technologies, and optimized life-cycle cost. The project included developing energy models providing an optimal selection of cost-effective, low-energy technologies to meet energy demands for a specific site with its unique weather, buildings, energy costs, and occupancy. The project was added to the U.S. Army Engineer Research Development Center Broad Agency Announcement, and the Recovery Act synopsis was posted on the FBO Web site on May 1, 2009, and met FAR clause and transparency requirements. Program officials said they had received eight responses to the solicitation. The Army awarded fixed price contracts on January 22 and February 22, 2010, respectively, valued at \$0.5 million and \$2.4 million, for the Ultra Low Energy Community Systems project.

5. Energy Security Audit and Islanding Methodology

The Energy Security Audit and Islanding Methodology project (Energy Security project) is to develop energy security self-audit methodologies and analysis tools for Army installations to validate at up to 16 sites. Also, the project will develop the capability to continue critical missions separate from the commercial electric grid. Installation energy security consists of the capacity to avoid any adverse impact to critical missions caused by natural, accidental, or intentional events adversely affecting installation energy and utility supply. The solicitation was posted on the FBO Web site on May 1, 2009, and met the FAR clause and transparency requirements. Program officials said they had received eight responses to the solicitation. From February through March 2010, the Army awarded six fixed price contracts with a total value of \$6.8 million for the Energy Security project.

6. Lightweight, Flexible, Cost-Effective Solar Energy Photovoltaics

The Lightweight, Flexible, Cost-Effective Solar Energy Photovoltaics (Photovoltaics project) is to develop flexible solar technology addressing battlefield power and energy needs. The objective is to increase the conversion efficiency of Photovoltaics to benefit both the commercial and military user. One benefit of this project is to provide power for

battery recharging, sensors, surveillance systems, shelters, and small command posts and to reduce battlefield logistics of supplying fuel and batteries.

Three solicitations to support this project were issued April 16, May 20, and August 6, 2009. According to contracting officials, about 24 proposals were received for the April 16 solicitation, and about 36 were received for the May 20 solicitation. As of December 31, 2009, four contracts and three cooperative agreements had been awarded. However, as noted in the finding, the Army should have included required Recovery Act clauses in the April 16, 2009, solicitation or a subsequent amendment.

7. Develop Smaller, Lighter Cogeneration and Absorption Environmental Control Systems

The Develop Smaller, Lighter Cogeneration and Absorption Environmental Control Systems (Environmental Control project) is to demonstrate the co-generation of cooling, heating, and power from waste heat sources, such as diesel engine exhaust, and engine cooling fluids. Another objective is to develop small, light-weight, efficient environmental control technologies. The benefit of the project is to reduce size, weight, or fuel consumption for a variety of stand-alone and platform-mounted co-generation applications.

The solicitation and BAA were posted on the FBO Web site on April 2009, and while the solicitation mentioned the effort was part of the Recovery Act, it did not contain the specific FAR clauses relating to the Recovery Act. Program officials stated they received about 40 white paper proposals. On December 15, 2009, and March 16, 2010, the Army awarded two cost reimbursable contracts valued at \$1.5 million and \$0.6 million, respectively, for the Environmental Control project.

8. Micro-Grid Field Scaled Demonstration

The objective of this project is to develop hardware, software, and controls to implement a field-scale microgrid at (part of) an Army installation. The microgrid represents a new approach to integrating distributed energy resources to meet growing customer needs for electric power, emphasizing flexibility, reliability, power quality, and improved efficiencies. The demonstration will determine the microgrid's ability to quantify and combine distributed energy technologies with other distributed generation sources in a seamless manner for meeting the power and energy needs of all mission-critical loads.

The solicitation was posted on the FBO Web site on May 1, 2009, and met the transparency requirements. Program officials said that they were evaluating 15 responses to the solicitation. No awards had been made as of March 31, 2010.

Department of the Army Comments



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
U.S. ARMY CONTRACTING COMMAND
9301 CHAPEK ROAD
FORT BELVOIR, VA 22060-5527

AMSCC-IR

14 June 2010

MEMORANDUM FOR [REDACTED] Internal Review and Audit
Compliance Office, Headquarters, U.S. Army Materiel Command, 9301 Chapek Road,
Fort Belvoir, VA 22060

SUBJECT: DODIG Draft Audit Report "Army Projects in DOD Near Term Energy-
Efficient Technologies Program Funded by the American Recovery and Reinvestment
Act of 2009" (D2009AB-0170.001(D0961))

1. The U.S. Army Contracting Command (ACC) has reviewed, and concurs with, the
enclosed response from the RDECOM Contracting Center to the subject draft report.

2. The ACC point of contact is [REDACTED]

Encl


JEFFREY P. PARSONS
Executive Director



DEPARTMENT OF THE ARMY
US ARMY RESEARCH, DEVELOPMENT AND ENGINEERING COMMAND CONTRACTING CENTER
4118 SUSQUEHANNA AVENUE
ABERDEEN PROVING GROUND MD 21005-3013

CCRD

1 June 2010

MEMORANDUM FOR Director, Internal Review and Audit Compliance Office, US Army Contracting Command, ATTN: AMSCC-IR, 9301 Chapek Road, Fort Belvoir, VA 22060-5527

SUBJECT: Comments on Army Projects in the DOD Near Term Energy-Efficient Technologies Program Funded by the American Recovery and Reinvestment Act of 2009 Draft Report.

1. U.S. Army Research, Development and Engineering Command Contracting Center (RDECOMCC) acknowledges receipt of subject report and provides the following comments to the findings therein:

a. Response related to "Inclusion of Recovery Act Contract Clauses in Army NTEET Solicitations and Contracts" on page 7 of the report:

RDECOMCC issued special notice to the W911NF-07-R-0001 ARL Broad Agency Announcement on 20 May 2009. Although the special notice did not include the clauses in full text, it did cite the ARRA FAR clauses and the 2 CFR 176 language in which the ARRA clauses could be found. Thus, responders were made aware that their proposals and subsequent awards were to be subject to the ARRA clause stipulations.

b. Response related to "Public Transparency of Army NTEET Solicitations, Contracts, and Cooperative Agreements" on page 7 of the report:

RDECOMCC followed 13 March 2009 Office of the Under Secretary of Defense memorandum titled, "Posting Pre-Solicitation and Award Notices; Reporting Contract Actions; and Reporting Performance Assessments for Actions Funded by the American Recovery and Re-Investment Act of 2009." The Fedbizopps (FBO) posting was provided on 11 February 2010 and award was made on 09 April 2010 with no comments or questions received during this time frame. The FBO system is appropriate for posting FAR-based contract actions only; no comparable instrument for Cooperative Agreement actions is currently available.

c. Response related to "Projects Without Recovery Act Solicitations" on page 8 of the report and "Appendix D - Description and Status of Army Near Term Energy-Efficient Technologies Projects, Paragraph 2, 'High Temperature Silicon Carbide Power Semiconductors (Silicon Research Project)'"

RDECOMCC posted an FBO notice on 11 February 2010 concerning this action in accordance with the 13 March 2009 USD memorandum. Although we did receive the revised guidance titled: "Revised Posting and Reporting Requirements for the American Recovery and

CCRD

SUBJECT: Comments on Army Projects in the DOD Near Term Energy-Efficient Technologies Program Funded by the American Recovery and Reinvestment Act of 2009 Draft Report

Reinvestment Act of 2009 (Recovery Act)" dated 19 March 2010, the guidance did not include any directive to amend non-awarded action postings that were listed on FBO prior to 19 March 2010.

2. RDECOMCC acknowledges receipt of subject report and provides the following comments to recommendations 1 and 2.

a. Recommendation 1: Direct contracting officers to include appropriate Federal Acquisition Regulation clauses in the solicitation announcements posted on public Web sites.

Comment: RDECOMCC agrees with the recommendation and will issue a reminder to all RDECOMCC contracting officers of the importance of including required Recovery Act clauses in applicable solicitations and resultant contracts.

b. Recommendation 2: Establish internal policy implementing Office of Management and Budget Memorandum 09-15 "Updated Implementing Guidance for the American Recovery and Reinvestment Act of 2009" issued April 3, 2009, relating to Recovery Act Near Term Energy-Efficient Technologies Program contracts and cooperative agreements solicited and awarded by the Command.

Comment: RDECOMCC agrees with the comment and will issue such policy guidance.


BRYON J. YOUNG
Executive Director



Inspector General Department of Defense

