NOTICE OF DISCLOSURE

A recent Peer Review of the NAVAUDSVC determined that from 13 March 2013 through 4 December 2017, the NAVAUDSVC experienced a potential threat to audit independence due to the Department of Navy organizational structure in effect during this timeframe. Specifically, instead of reporting to the Secretary of the Navy or Under Secretary of the Navy, the Auditor General of the Navy reported to lower level officials who had not been charged with governance over the entire Department of the Navy to include certain non-delegable statutory functions. This alignment did not comply with generally accepted government auditing standards (GAGAS) and the Department of the Navy policy regarding independence. On 4 December 2017, the Auditor General of the Navy once again reported to the Under Secretary of the Navy in accordance with GAGAS. The Navy policy on independence was revised to clarify that the Auditor General of the Navy reports directly to the Under Secretary of the Navy (or to the Secretary of the Navy whenever the position of the Under Secretary of the Navy is vacant.)

With the exception of the potential structural threat outlined above, we believe that the projects performed from 13 March 2013 through 4 December 2017, complied with all other generally accepted government auditing standards.
Validation and Use of Life-Cycle Cost Analysis within the Marine Corps Energy Investment Program

This report contains information exempt from release under the Freedom of Information Act. Exemption (b)(6) applies.

Do not release outside the Department of the Navy or post on non-NAVAUDSVC Web sites without prior approval of the Auditor General of the Navy

N2013-0035
28 June 2013
<table>
<thead>
<tr>
<th>Obtaining Additional Copies</th>
<th>Providing Suggestions for Future Audits</th>
</tr>
</thead>
<tbody>
<tr>
<td>To obtain additional copies of this report, please use the following contact information:</td>
<td>To suggest ideas for or to request future audits, please use the following contact information:</td>
</tr>
<tr>
<td><strong>Phone:</strong> (202) 433-5757</td>
<td><strong>Phone:</strong> (202) 433-5840 (DSN 288)</td>
</tr>
<tr>
<td><strong>Fax:</strong> (202) 433-5921</td>
<td><strong>Fax:</strong> (202) 433-5921</td>
</tr>
<tr>
<td><strong>E-mail:</strong> <a href="mailto:NAVAUDSVC.FOIA.fct@navy.mil">NAVAUDSVC.FOIA.fct@navy.mil</a></td>
<td><strong>E-mail:</strong> <a href="mailto:NAVAUDSVC.AuditPlan@navy.mil">NAVAUDSVC.AuditPlan@navy.mil</a></td>
</tr>
</tbody>
</table>
| **Mail:** Naval Audit Service  
Attn: FOIA  
1006 Beatty Place SE  
Washington Navy Yard DC 20374-5005 | **Mail:** Naval Audit Service  
Attn: Audit Requests  
1006 Beatty Place SE  
Washington Navy Yard DC 20374-5005 |
MEMORANDUM FOR THE COMMANDANT OF THE MARINE CORPS

Subj: VALIDATION AND USE OF LIFE-CYCLE COST ANALYSIS WITHIN THE MARINE CORPS ENERGY INVESTMENT PROGRAM (AUDIT REPORT N2013-0035)

Ref: (a) NAVAUDSVC Memorandum 7510, dated 25 Jul 12
(b) SECNAVINST 7510.7F, “Department of the Navy Internal Audit”

Encl: (1) Status of Recommendations
(2) Scope and Methodology
(3) Pertinent Guidance
(4) Projects with Insufficient Justification for Non-Monetary Benefits
(5) Management Response from the Commandant of the Marine Corps

1. Introduction. We have completed the portion of the subject audit related to the Marine Corps, announced by reference (a), and are providing the report for your review in accordance with reference (b). During our audit, we found that sufficient documentation was maintained and detailed explanations were provided by an installation’s representatives to validate and accurately support life-cycle cost analysis estimates for the two energy projects reviewed. We also evaluated whether life-cycle cost analysis results were used by decisionmakers to ensure planned projects met Federal standards for cost effectiveness for the remaining projects within the Marine Corps’ Fiscal Year 2012 Energy Improvement Program. We found that most energy projects met or exceeded minimum Federal standards for cost effectiveness based on financial analyses. However, we found that funding justifications provided by Marine Corps representatives for some energy projects lacked details of non-monetary benefits when they did not meet minimum Federal requirements for cost effectiveness on a financial/“dollar cost” basis. Specifically, for these projects, the provided justifications only discussed financial benefits rather than their non-monetary project benefits. The Marine Corps concurred with our recommendations regarding justification of non-monetary benefits, and took/planned appropriate corrective actions.

2. Reason for Audit. Our objective as it related to the Marine Corps was to verify that life-cycle cost analysis estimates for selected Marine Corps energy projects are accurate
and sufficiently supported and that these estimates are used to make appropriate funding decisions.\(^1\) A recently published Department of Defense (DoD) Inspector General audit report identified that the Department of the Navy used American Recovery and Reinvestment Act of 2009 funds to invest in certain energy projects that were not deemed “cost effective.” We performed this audit to ensure that selected annual energy projects submitted or funded by the Marine Corps were accurately represented and that the associated programs included effective controls to ensure only projects that were validated as cost effective were considered for funding.

3. **Background.**

   a. **Marine Corps Installation Command.**\(^2\) According to Marine Corps Installation Command representatives, this office was restructured in October 2010 and continues to manage all of Headquarters Marine Corps’ (HQMC’s) facility functions, including the energy program. According to Marine Corps Order P11000.5G, “Real Property Facilities Manual,” Volume IV (Facilities Projects Manual Change 1), dated August 2007, as part of the energy program, the command centrally manages the Marine Corps Energy Investment Program under the umbrella of the Marine Corps Facilities, Sustainment, Restoration, and Modernization Program. In addition to the Energy Investment Program, the Marine Corps can obtain additional funding for energy projects through other options, such as DoD’s Energy Conservation Investment Program as explained in DoD Instruction 4170.11. According to Marine Corps Order P11000.5G, as part of the command’s review process, they review project documentation and analyze potential projects to validate and prioritize for funding consideration. The Marine Corps Order further states that within the Energy Investment Program, the command determines whether to approve, reject, or return the project to project planners for rework upon review and project validation from the Marine Corps Facilities Integration Web site. According to command representatives, the primary factor for selecting and approving projects is their financial cost effectiveness. According to the Marine Corps Order, once the command validates the project, they grant authority-to-advertise, which means that the project is approved to be designed and Architectural and Engineering funds are provided. The Marine Corps Order also states that upon receipt of the installation’s request for authority to award the contract, the command allocates the funds for project execution and obligation. Within DoD’s Energy Conservation Investment Program, the command submits its annual list of potential projects to the Deputy Under Secretary of Defense (Installations and Environment) for funding consideration upon review and project validation.

---

\(^1\) The overarching audit objective, identified in reference (a), was to verify that (1) Energy Return on Investment ratings and/or Life Cycle Cost Analysis estimates for selected Navy and Marine Corps energy projects are accurate and sufficiently supported; and (2) these ratings and/or estimates are used to make appropriate funding decisions. The objective as it related to the Marine Corps is different since the Marine Corps was not using the Energy Return on Investment tool when this audit was initiated. This report reflects the audit results specific to the Marine Corps portion of our review.

\(^2\) Unless otherwise noted, the “Marine Corps Installation Command” will be referred to as “the command” hereafter.
b. **Energy Investment Program.** According to Marine Corps Order P11000.5G, the Marine Corps Energy Investment Program is a subset of the Marine Corps Facilities, Sustainment, Restoration, and Modernization Program (with an energy savings element). The Marine Corps Order further states that both programs are funded with Marine Corps Operation and Maintenance funds. According to recently issued Marine Corps energy-specific guidance, the Energy Investment Program provides the installations with the opportunity to implement sustainment, restoration, and modernization projects that improve the energy and water efficiency of Marine Corps facilities. According to command representatives, it has additionally provided the command a means to update an aging infrastructure while improving energy efficiency. Also, according to the command representatives, the program primarily targets repair and minor construction work affecting:

1. Energy efficient heating, cooling, ventilation, and hot water equipment;
2. Building insulation, windows, weatherization, and reflective roof coatings;
3. Lighting systems and controls, as well as centrally controlled energy management systems with the ability to automatically adjust temperature, shed electrical loads, control motor speeds, and/or adjust lighting intensities;
4. Commissioning measures to verify that building energy-related systems are installed, calibrated, and operating to meet the original design intent;
5. Renewable generation systems; and
6. Advanced metering infrastructure.

c. **Energy Conservation Investment Program.** According to the Under Secretary of Defense Fiscal Year 2013 Energy Conservation Investment Program data call memorandum from 16 December 2011, the Energy Conservation Investment Program is a subset of the Defense-Wide Military Construction Program. The program is specifically designed to fund projects that save energy or reduce the DoD’s energy costs. The Facilities Energy and Privatization Directorate of the Office of the Deputy Under Secretary of Defense (Installations and Environment) centrally manages the program. The memorandum further states that the program supports construction of new, high-efficiency energy systems and the improvement and modernization of existing ones. The program will fund more holistic projects, leveraging the Services’ larger investments that will produce “game-changing” improvements in energy consumption, cost, management, and security. The memorandum explained that at current and anticipated funding levels, the program will provide less than 10 percent of the Department’s investment needs to meet energy goals annually. Additionally, the memorandum states that Services will continue to budget for the majority of investments needed to reach
energy goals.

d. **Installation Commands.** According to Marine Corps Order P11000.5G, installations are responsible for initiating energy project packages for funding consideration that include project documentation, such as the DD Form 1391, initial cost estimates, life-cycle cost analysis, and any other project justification details. According to the Marine Corps Order, installations are responsible for ensuring that work descriptions, justifications, impacts, cost estimates, and drawings in all project documentation are complete, current, and accurate. According to command representatives, once project packages are completed, the installations are required to submit the completed project packages to their respective regional and/or higher command for further review. Upon review by the respective regional and/or higher command, the Marine Corps Order states that installations are required to submit project documentation for validation to the Marine Corps Installation Command through its Facilities Integration Web site. According to the Marine Corps Order, upon receipt of authority-to-advertise, installations will solicit bids and request authority to award the contract through the command’s Facilities Integration Web site. According to command representatives, upon receipt of award authority, installations will award the contract and monitor minor construction/repair.

e. **Briefings with Management.** We conducted meetings with Marine Corps Installation Command representatives to discuss project and program review details while performing our audit work. We met with command representatives on 16 August 2012 to discuss life-cycle cost analysis project details provided for projects selected/approved during Fiscal Year 2012. On 15 October 2012, we provided installation representatives the draft point papers outlining the accuracy of the two projects reviewed, and we discussed these results with command representatives on 18 October 2012. On 18 October 2012, we also discussed the justification/rationale for certain funding decisions that were made during Fiscal Year 2012 as part of the Energy Investment Program. On 20 November 2012, we discussed why projects were removed from the program after the audit team requested justification. We issued a discussion draft outlining our findings on 11 January 2013. We met with command representatives on 24 January 2013 to discuss these findings.

---

3 Unless otherwise noted, the "Installation Commands" will be referred to as the "installation(s)" hereafter.
4 A recently issued “Energy Investment Program Project Documentation Instruction,” dated October 2012, has further detailed project documentation requirements associated with submitting energy projects within the Marine Corps Energy Investment Program.
4. **Noteworthy Accomplishments.**

a. According to a previously published Naval Audit Service report,\(^5\) at the time of that audit Department of the Navy (DON) personnel (including Marine Corps personnel) did not maintain sufficient auditable documentation to support methods used to develop their cost estimates for both the life-cycle cost analysis and DD Forms 1391 for 30 DON energy projects reviewed during the audit. Specifically, DON management was only able to provide copies of their life-cycle cost analyses and DD Forms 1391. However, during the course of our audit, we determined that sufficient documentation was maintained and detailed explanations were provided by installation representatives to validate and accurately support project details for the two energy projects that we reviewed. Specifically, we concluded that the construction costs for both projects were accurately represented, well supported, and remained below or near the approved funding levels. Additionally, installation representatives used consistent and accurate energy prices to calculate the projected savings. We also found that for the two energy projects that we reviewed, the calculations used to project energy and non-energy savings were accurate and were developed using reasonable assumptions.

b. During the course of our audit, Marine Corps Installation Command also developed a detailed instruction that provided guidance for requirements related to Energy Investment Program project documentation. According to command representatives, the instruction was issued to installations in October 2012, which was just prior to the conclusion of our audit work. The instruction discusses the purpose of the Energy Investment Program and defines an energy investment project. Additionally, the instruction identifies responsibilities and requirements for energy project documentation, and includes a submission checklist. According to command representatives, the instruction streamlines the Energy Investment Program project submission process and incorporates reviews at installation and regional levels prior to official submission.

5. **Federal Managers’ Financial Integrity Act.** The Federal Managers’ Financial Integrity Act (FMFIA) of 1982, as codified in Title 31, United States Code, requires each Federal agency head to annually certify the effectiveness of the agency’s internal and accounting system controls. We identified weaknesses regarding internal controls to ensure that funding decisions were based on justification of non-monetary benefits when projects were not cost-effective. In our opinion, the weaknesses noted in this report may warrant reporting in the Auditor General’s annual FMFIA memorandum identifying management control weaknesses to the Secretary of the Navy.

6. Conclusions and Summary of Audit Results.

**Marine Corps Energy Projects**

a. We audited one Fiscal Year 2012 Energy Investment Program project (QU0933M), valued at $2.07 million, and one Fiscal Year 2013 Energy Conservation Investment Program project (P-687), valued at $7.94 million. Based on our review, we determined that installation representatives maintained sufficient documentation to validate and accurately support project details for the two energy projects reviewed during this audit. Specifically, we concluded that the construction costs for both projects were well supported, accurately represented, and aligned with DD Forms 1391, life-cycle cost analyses, and programmed costs. Additionally, we determined that projected energy and non-energy savings were accurately calculated for both projects. For example, installation representatives used identical and accurate energy prices that were validated by the activity’s comptroller’s office to calculate the projected savings. Also, installation representatives explained in detail the assumptions made, the mathematical equations used, and the data needed to compute the estimated energy and non-energy savings included in their life-cycle cost analyses.

**Marine Corps Energy Investment Program**

b. We found that most energy projects funded during Fiscal Year 2012 within the Marine Corps Energy Investment Program met or exceeded minimum Federal standards for cost effectiveness based on financial analyses. However, for some energy projects that did not meet minimum Federal requirements for cost effectiveness on a financial/“dollar cost” basis, we were provided justifications that did not address the non-monetary project benefits as required. We found that, according to the Fiscal Year 2012 Energy Investment Program Project List provided by Marine Corps Installation Command representatives in July 2012, 57 of the 220 listed projects approved and planned for execution showed a savings-to-investment ratio of less than 1.0 or did not show the savings-to-investment ratio at all. In total, these 57 projects were valued at $37.3 million and represented approximately 18 percent of the Fiscal Year 2012 target Energy Investment Program budget. Since these projects were funded in the Energy Investment Program, we held them accountable to energy project guidance and criteria. According to the DoD Energy Manager’s Handbook, dated August 2005, the savings-to-investment ratio is a measure of economic performance for a project alternative that expresses the relationship between the present value of the savings over the study period to the present value of the investment costs. According to the Code of Federal Regulation, Chapter 10, Part 436, an energy or water conservation measure shall be deemed cost-effective if the savings-to-investment ratio is estimated to be greater than 1.0. The National Institute of Standards and Technology Handbook 135, dated February 1996, states that when a project is being evaluated as an accept/reject
proposition, a savings-to-investment ratio greater than 1.0 indicates a cost-effective project. However, the handbook further states that when there are significant non-monetary benefits, decisionmakers can subjectively judge whether the non-monetary benefits outweigh the life-cycle cost penalty. This would include scenarios where an energy retrofit project has a life-cycle cost greater than its base case (e.g., containing a savings-to-investment ratio less than 1.0, which would result in the rejection of the project on a dollar cost basis), but still includes significant non-monetary benefits. If the decision maker judges that the non-monetary benefits of a project are greater than its life-cycle cost penalty, the project can be accepted as “cost effective.”

*Projects with a Savings-to-Investment Ratio Less Than 1.0*

c. In August 2012, we requested justifications for non-monetary benefits for the 50 projects approved and planned for execution within the Fiscal Year 2012 Marine Corps Energy Investment Program that showed a savings-to-investment ratio of less than 1.0. In total, these 50 projects were valued at $32.7 million. In September 2012, in response to our request, Marine Corps Installation Command representatives told us that they intended to make changes to the list of projects they planned to execute by the end of Fiscal Year 2012. In October 2012, we received an updated list of projects that, reportedly, were executed during Fiscal Year 2012, as well as a list of projects planned for execution during Fiscal Year 2013. After analyzing the original list, the updated list, and the list of projects planned for execution in Fiscal Year 2013, we identified that 12 of the 50 projects, valued at $11.7 million, were moved or canceled from the Fiscal Year 2012 program. According to the Fiscal Year 2012 updated list, 8 of those 12 projects were moved to Fiscal Year 2013, and the remaining 4 projects were canceled in their entirety. As a result and for the purposes of this audit, we no longer needed the justifications for the approval/execution of these projects because these projects were not funded within the Fiscal Year 2012 program.

d. Subsequent to being provided the updated list, we requested from the Marine Corps Installation Command representatives the rationale for removing the 12 projects from the Fiscal Year 2012 program. In November 2012, the command representatives stated that rather than being moved or canceled (as reflected in the updated list that was provided in October 2012), 5 of the 12 projects, valued at $3.8 million, were funded just prior to the end of Fiscal Year 2012 even though the savings-to-investment ratios were, in some cases, far less than 1.0. For example, three Repair Energy Management Control Systems projects at Marine Corps Air Ground Combat Center Twenty-nine Palms were funded. These projects had a total value of $3.5 million and each had a savings-to-investment ratio less than 0.5, which is far less than the level considered cost effective. According to command representatives, these three projects ended up being combined and funded late in Fiscal Year 2012, after the updated project list was developed for the Naval Audit Service audit team. Also, according to the command representatives, the
five projects in total were added back to the Fiscal Year 2012 Energy Investment Program because additional funds were made available near the end of the fiscal year.

e. Based on program changes from the original list to the updated list provided in October 2012, we should have received justification for 38 of the 50 projects that had a savings-to-investment ratio less than 1.0 and were approved/executed after considering their non-monetary benefits. However, one project underwent changes resulting in a savings-to-investment ratio greater than 1.0; therefore, we no longer needed justification for its non-monetary benefits. Also, the justification for non-monetary benefits for another project was never provided. Of the 36 projects for which we requested and received justification, we determined that the justifications provided for 2 of the 36 projects were valid. In addition, we found that the justifications for non-monetary benefits for the remaining 34 projects consisted entirely of financial considerations which would have already been considered when computing the life-cycle cost analysis that resulted in a savings-to-investment ratio less than 1.0. These 34 projects had a total value of $17.7 million. According to the written justifications provided by Marine Corps Installation Command representatives, 24 of the 34 energy projects were approved because equipment had reached the end of its economic life, and performance was severely degraded. These details are factors that are already considered when determining the financial/dollar cost feasibility of a project within the life-cycle cost analysis as explained in the Code of Federal Regulations and the National Institute of Standards and Technology Handbook 135. For example, according to the Handbook, capital replacement costs and annual utility reductions are factors used to calculate the savings-to-investment ratio of a project. The handbook explains that non-monetary benefits are external to the life-cycle cost analysis and thus do not directly affect the calculation of a project’s cost effectiveness. Furthermore, according to the command’s justifications, 10 photovoltaic projects were approved because information available from the Department of Energy’s National Renewable Energy Laboratory identified the Southwest region as the prime area to implement photovoltaic generation projects within the Continental United States. However, we determined that the National Renewable Energy Laboratory’s conclusion was based on financial considerations. Specifically, their Web site shows that a photovoltaic system will have more favorable incentives in this region and, therefore, generate more savings than panels in other areas.

Projects That Did Not Have a Savings-to-Investment Ratio Listed

f. According to the original list of projects planned for execution in the Marine Corps’ Fiscal Year 2012 Energy Investment Program that was provided by Marine Corps Installation Command representatives in July 2012, 7 of the 220 projects did not have a

---

6 Justifications for the five projects that were funded just prior to the end of Fiscal Year 2012 are unknown since they were not included in the Marine Corps’ October 2012 response.

7 See Enclosure 4.
savings-to-investment ratio listed that should have had one listed. In total, these 7 projects were valued at $4.6 million. After reviewing applicable criteria, we concluded that the savings-to-investment ratios would have been needed to determine whether the selected projects were cost effective. Upon our request, the savings-to-investment ratios were subsequently provided for four of the seven projects and were greater than 1.0; therefore, further justification was not needed/provided. According to the updated list provided by the command representatives in October 2012, the remaining three projects that did not show a savings-to-investment ratio were subsequently canceled from the Fiscal Year 2012 program in their entirety. However, when the command representatives were contacted in November 2012 to provide a reason for cancelling the projects, they stated that one of the three projects was awarded and funded late in Fiscal Year 2012, after the updated project list provided in October 2012 was developed for the Naval Audit Service audit team. The funded project was for “Air Conditioning System Repairs” in Hawaii and was valued at $454,000.

Cause for Insufficient Justification for Non-Monetary Benefits

g. As noted, according to the National Institute of Standards and Technology Handbook 135, for energy retrofit projects which would be rejected on a dollar-cost basis (e.g., contain a savings-to-investment ratio of less than 1.0) but having significant non-monetary benefits, decisionmakers can subjectively judge whether or not the non-monetary benefits outweigh the financial shortcomings and the project can be accepted as cost effective. According to the Handbook, significant non-monetary effects should be considered for final investment decisions, and they should be included in the project documentation. However, we concluded that the Handbook does not provide detailed examples of what could be considered non-monetary benefits. In addition, we found that existing Marine Corps guidance, including the recently published Energy Investment Program Project Documentation instruction, does not provide sufficiently detailed guidance pertaining to project submission and documentation requirements to support non-monetary benefits associated with submitted and funded energy projects.

h. Even though the National Institute of Standards and Technology Handbook 135 provided guidance that projects rejected on a dollar cost basis must be supported by non-monetary factors, we found that Marine Corps Installation Command representatives believed it was appropriate to fund individual energy projects that were not cost-effective because their overall Energy Investment Program’s savings-to-investment ratio was comparable to DoD program goals for the Energy Conservation Investment Program. Specifically, the DoD Instruction 4170.11, “Installation Energy Management,” dated 11 December 2009, states that each DoD component should strive to attain an overall annual Energy Conservation Investment Program savings-to-investment ratio of 2 to 1 and must meet the minimum savings-to-investment ratio of 1.25 to 1 for this centrally
managed Office of the Secretary of Defense program. The instruction also states that up to 25 percent of the annual Energy Conservation Investment Program target budget may be programmed against renewable energy applications that do not necessarily meet the savings-to-investment and payback criteria in order to expand use of renewable energy applications and meet several goals. However, in our opinion, these program goals do not negate the need to justify funding decisions for individual projects with a savings-to-investment ratio of less than 1.0 based on non-monetary considerations.

**Impact of Insufficient Justification for Non-Monetary Benefits**

i. Without reviewing and considering documented and proper non-monetary benefits for energy projects that are not cost-effective on a financial/dollar cost basis, there is no assurance that: (1) proper and supported investment decisions are being made for those projects; and (2) those projects most effectively align with established energy goals and/or evolving strategic energy initiatives. In addition, this may lead and contribute to an undesirable perception that the Marine Corps, and ultimately DON, are willing to invest in some riskier energy projects.

7. **Recommendations and Corrective Actions.** Our recommendations, summarized management responses, and our comments on the responses are below. The complete text of the management response is in Enclosure 5.

We recommend that the Commandant of the Marine Corps:

**Recommendation 1.** Establish a plan of action with milestones to ensure that justifications for non-monetary benefits are developed and included within project documentation that do not discuss financial benefits as part of the justification for the projects that had savings-to-investment ratios less than 1.0.

**Commandant of the Marine Corps response to Recommendation 1.** The Marine Corps concurs with Recommendation 1 to ensure that justification for non-monetary benefits are captured for the 34 projects listed in Enclosure 4. Headquarters Marine Corps LFF (Facilities Branch) has taken preliminary action and provided justification (including non-monetary benefits) for each project. No later than 21 June 2013, Headquarters Marine Corps Facilities Branch will incorporate the provided justification into the project file for each of the 34 projects. Note that Energy Investment Program project documentation is

---

8 According to justifications provided in October 2012, command representatives reported that their Fiscal Year 2012 Energy Investment Program contained an aggregate savings-to-investment ratio of 1.56 (i.e., 1.56 to 1).

maintained electronically within the Marine Corps Facilities Integration Web site.

**Naval Audit Service comments on management’s response to Recommendation 1.** After the conclusion of our audit, Marine Corps Installation Command representatives subsequently provided a Microsoft Excel spreadsheet containing project justifications for the 34 projects listed in Enclosure 4. Non-monetary benefits related to all 34 projects were included in the spreadsheet with references to the projects’ DD Form 1391 and/or the phrase, “per communication with installation command.” According to Marine Corps Installation Command representatives, they discussed the non-monetary benefits of these projects with installation command representatives that developed and submitted these projects. The spreadsheet summarized those discussions. We reviewed the spreadsheet and verified that each of the 34 projects contained statements that addressed non-monetary benefits. We also confirmed that the statements related to non-monetary benefits were noted in DD Forms 1391 for the projects referenced in the spreadsheet. It should be noted that we did not verify the accuracy/legitimacy of these statements. A review with that level of effort would be conducted during a followup audit. For the purposes of these recommendations, we only wanted some assurances that those 34 projects were approved based in part on their non-monetary benefits. In addition, on 25 June 2013, Marine Corps Installation Command representatives provided documentation that validated that updated justifications were incorporated into the Facilities Integration Web site. Therefore, we consider Recommendation 1 closed as of 25 June 2013.

Within their management responses, the Marine Corps provided “additional technical comments,” which stated the following: “The finding that energy projects with savings-to-investment ratios below 1.0 lacked justification of non-monetary benefits is not supported by a review of DD Form 1391 documentation. DD Form 1391 documentation submitted by installation commands contained an adequate level of justification of non-monetary benefits to warrant Headquarters Marine Corps Facilities Branch approval to authorize and fund the projects in question.”

Our finding that energy projects with savings-to-investment ratios below 1.0 lacked justification of non-monetary benefits is the result of our review of the Marine Corps’ reported rationale/justification for selecting energy projects. During our audit, we interviewed officials involved in the selection and approval of energy projects for funding and analyzed documents provided by Marine Corps representatives related to the projects that were approved for funding.
We performed this audit as a result of a recently published Department of Defense Inspector General audit report that identified internal control weaknesses in the Department of the Navy’s (to include Marine Corps’) process of planning and selecting energy projects. Specifically, the Inspector General’s audit report identified that internal controls were not in place to ensure that the energy projects selected were cost-effective and were the best investments to contribute toward energy goals (i.e. defendable investments). Our audit objective was to verify that life-cycle cost analysis estimates for selected Marine Corps energy projects were accurate and sufficiently supported and that these estimates were used to make appropriate funding decisions. This audit objective consisted of two focus areas: (1) a review of energy project files for selected projects, to include DD Forms 1391, life cycle cost analyses, third party cost estimates, and supporting source documentation; and (2) a review of the Marine Corps’ decisionmaking process for selecting energy projects.

To accomplish the first area of our audit objective, we selected and reviewed project files and source documentation for two Marine Corps energy projects during the survey phase of the audit. While selecting our initial projects for review from a list of approved projects, we also noticed that some projects contained a savings-to-investment ratio of less than 1.0. This meant that they were not considered to be cost-effective on a financial/“dollar cost” basis. Further, during our review of the two projects, Marine Corps Installation Command officials informed us that they would begin using their own version of the Navy’s “energy return on investment tool” to rank and select energy projects in future years. Rather than continuing to review additional Marine Corps energy projects and their associated project files/source documentation while knowing that the submission process was in the process of changing, we decided to conclude our analysis on the two projects reviewed and the Marine Corps decisionmaking process for selecting energy projects with a emphasis on the rationale for funding projects with a savings-to-investment ratio that was less than 1.0.

To determine Marine Corps’ decisionmaking process for selecting energy projects, we requested details regarding: (1) the factors that were considered when deciding which energy projects to approve and fund; and (2) the rationale for approving specific energy projects with a savings-to-investment ratio below 1.0. Marine Corps representatives requested that we formally provide these and other questions in writing.
On 10 October 2012, the Marine Corps Audit Liaison provided the Marine Corps’ formal written response to the questions we submitted on 28 August 2012. The following are two of our questions and the Marine Corps’ responses (shown in italics).

1. What factors are considered when deciding whether or not to approve an energy project for funding?

   “To address both monetary and non-monetary considerations, Marine Corps Installation Command GF (Facilities Branch) utilizes a programmatic approach to select and prioritize energy projects. The primary factor for selecting projects for approval is cost effectiveness as defined by 10 Code of Federal Regulations Part 436. In addition to monetary factors, non-monetary “special considerations” identified under United States Code Title 10, Chapter 173 (Energy Security), Section 2911 (Energy performance goals and plan for Department of Defense) are assessed to justify project approval. Where applicable, consideration is also given to impacts on mission execution, real estate and encroachment issues, and environmental and cultural resource requirements.”

2. What is the justification/rationale for approving the 34 energy projects (among other projects) listed in Enclosure 4 with a savings-to-investment ratio below 1.0?

   “As discussed above, Marine Corps Installation Command uses a programmatic approach to prioritizing and selecting projects ensuring an overall program with a savings-to-investment ratio greater than 1.0. Justification for selecting projects with a savings-to-investment ratio less than 1.0, is per Section 4.6.4.3 of [National Institute of Standards and Technology] Handbook 135 which specifically allows for the consideration of “non-monetary” benefits and costs.”

Included in these responses/statements, Marine Corps representatives provided justifications for the 34 projects that were financial factors rather than the required non-monetary benefits.

On 18 October 2012, we met with Marine Corps Installation Command representatives to brief them on our preliminary finding. Specifically, we informed them of our concerns regarding their “programmatic approach” and the “non-monetary” benefits provided as supporting justification for
projects with a savings-to-investment ratio less than 1.0. We further informed Marine Corps Installation Command representatives that the programmatic approach by itself, does not justify funding projects where the savings-to-investment ratio is lower than 1.0 without proper consideration of the project’s individual non-monetary benefits.

As a result, we concluded that most of the “non-monetary” justifications provided were not valid. We discussed examples of the types of justifications that we would have accepted as valid non-monetary benefits with Marine Corps Installation Command representatives. We also discussed where/how they might document these types of justifications and the associated studies and analyses performed to support the justifications. During this meeting, command representatives agreed that an improved level of non-monetary justification documenting was needed and should be used. On 16 November 2012, we provided command representatives a copy of results briefing slides where we again reported that most of the justifications provided (34 of 36) only discussed financial considerations, and therefore, were not valid. On 6 December 2012, we informed command representatives that due to our audit timeline, we would not be requesting additional justification details for the 34 projects. However, at no point during meeting in which we discussed our results (18 October 2012 through 6 December 2012) did Marine Corps Installation Command representatives indicate that project justifications may be contained within DD Forms 1391 (or any other project documentation). Further, command representatives did not state that they approved the projects based on non-monetary benefits that were noted in the DD Forms 1391. Conversely, command representatives continued to explain that their programmatic approach was their justification for approving and funding projects that were not financially cost effective.

Marine Corps Installation Command representatives had additional opportunities to provide their comments and/or concerns to our audit finding during the discussion draft process that occurred 11 January 2013 through 19 February 2013. After we issued our utilization draft report on 9 April 2013, command representatives began indicating that non-monetary benefits were documented within project DD Forms 1391 for some of the 34 projects listed in Enclosure 4, and were part of their rationale for funding the projects. The Marine Corps’ management response that DD Form 1391 documentation submitted by Installation Commands contained a sufficient level of justification of non-monetary benefits to warrant Headquarters Marine Corps approval to authorize and fund the
projects in question, was not substantiated during this audit. However, this could be evaluated in a future followup audit.

**Recommendation 2.** Update the Energy Investment Program project documentation instruction to: (1) contain an explanation of expected details to be included in justifications of non-monetary benefits for submitting and approving energy projects that have savings-to-investment ratios less than 1.0, and (2) ensure that future energy projects are not funded without meeting these requirements.

**Commandant of the Marine Corps response to Recommendation 2.** The Marine Corps concurs with Recommendation 2. “USMC EIP [U. S. Marine Corp Energy Investment Program] Project Documentation and Instruction” issued October 2012, will be revised to amplify instruction concerning non-monetary benefits and will be issued to Installation Commands no later than 21 June 2013.

**Naval Audit Service comments on management’s responses to Recommendation 2.** Planned actions meet the intent of the recommendation, which is open pending completion of agreed-to actions. On 26 June 2013, Marine Corps Installations Command representatives provided a copy of the updated Energy Investment Program Project Documentation and Instruction, which was promulgated on 26 June 2013. The updates were consistent with the intent of this recommendation; therefore, we consider recommendation 2 closed as of 26 June 2013.

8. **Other Information**

   a. Actions taken by Commandant of the Marine Corps meet the intent of Recommendations 1 and 2, and the recommendations are closed. Please provide any correspondence to the Assistant Auditor General for Installations and Environment Audits, Ron Booth, ronnie.booth@navy.mil, with a copy to the Director, Policy and Oversight, Solita Dallas, solita.dallas@navy.mil. Please submit correspondence in electronic format (Microsoft Word or Adobe Acrobat file), and ensure that it is on letterhead and includes a scanned signature.

   b. Any requests for this report under the Freedom of Information Act must be approved by the Auditor General of the Navy as required by reference (b). This audit report is also subject to followup in accordance with reference (b).
Subj: VALIDATION AND USE OF LIFE-CYCLE COST ANALYSIS WITHIN THE MARINE CORPS ENERGY INVESTMENT PROGRAM (AUDIT REPORT N2013-0035)

c. We appreciate the cooperation and courtesies extended to our auditors.

RON J. BOOTH
Assistant Auditor General
Installations and Environment Audits

Copy to:
UNSECNAV
DCMO
OGC
ASSTSECNAV FMC
ASSTSECNAV FMC (FMO)
ASSTSECNAV EIE
ASSTSECNAV MRA
ASSTSECNAV RDA
CNO (VCNO, DNS-33, N40, N41)
CMC (ACMC)
DON CIO
NAVINSGEN (NAVI-14)
AFAA/DO
## Enclosure 1: Status of Recommendations

<table>
<thead>
<tr>
<th>Rec. No.</th>
<th>Pg. No.</th>
<th>Subject</th>
<th>Status</th>
<th>Action Command</th>
<th>Interim Target Completion Date</th>
<th>Target or Actual Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>Establish a plan of action with milestones to ensure that justifications for non-monetary benefits are developed and included within project documentation that do not discuss financial benefits as part of the justification for the projects that had savings-to-investment ratios less than 1.0.</td>
<td>C</td>
<td>Commandant of the Marine Corps</td>
<td></td>
<td>6/25/2013</td>
</tr>
<tr>
<td>2</td>
<td>15</td>
<td>Update the Energy Investment Program project documentation instruction to: (1) contain an explanation of expected details to be included in justifications of non-monetary benefits for submitting and approving energy projects that have savings-to-investment ratios less than 1.0, and (2) ensure that future energy projects are not funded without meeting these requirements.</td>
<td>C</td>
<td>Commandant of the Marine Corps</td>
<td></td>
<td>6/26/2013</td>
</tr>
</tbody>
</table>

---

10 O = Recommendation is open with agreed-to corrective actions; C = Recommendation is closed with all action completed; U = Recommendation is undecided with resolution efforts in progress.
**Enclosure 2: Scope and Methodology**

**Scope**

Our audit work focused on verifying whether the life-cycle cost analysis estimates for selected Marine Corps energy projects were accurate and sufficiently supported, and whether these estimates were used to make appropriate funding decisions. We conducted our audit pertaining to the validation and use of life-cycle cost analysis estimates within the Marine Corps energy project selection process between 9 July 2012 and 9 April 2013.

The Fiscal Year 2012 Marine Corps Energy Investment Program contained a total of 220 proposed energy projects valued at $217 million as of 30 July 2012. Of the 220 proposed energy projects, we judgmentally selected project QU0933M, valued at $2.07 million. Also, we judgmentally selected project P-687, valued at $7.94 million, from the Fiscal Year 2013 Energy Conservation Investment Program. This program included a total of two Marine Corps energy projects, of which P-687 was one, that were collectively valued at $13.6 million. We selected these projects based on their cost, locality, and the energy project type. Our review focused on verifying whether the project costs and project benefits were accurately captured within supporting documentation.

Additionally, we reviewed project justifications for non-monetary benefits for 57 of the 220 projects planned for execution in the Fiscal Year 2012 Energy Investment Program that showed a savings-to-investment ratio less than one or did not show the savings-to-investment ratio at all. Our review focused on verifying whether decisionmakers maintained justification of non-monetary benefits for projects that were not cost effective to support an approved funding decision.

**Methodology**

To validate the accuracy of the life-cycle cost analysis estimates for projects QU0933M and P-687, we obtained copies of the DD Forms 1391 and the life-cycle cost analysis estimates from Marine Corps Installation Command representatives. For the review of these two projects, we analyzed the DD Forms 1391, life-cycle cost analysis estimates, and the associated supporting documentation to ensure that project costs, energy costs, estimated utility reductions, and reoccurring and one-time non-energy savings were accurately reflected. To accomplish this objective, we interviewed installations’ energy managers and Marine Corps Installations Command representatives to determine how the scope of the two individual energy projects was developed and how the life-cycle cost
analysis estimates were populated. We also evaluated the Marine Corps Installation Command’s compliance with established laws, regulations, policies, directives, procedures, and guidelines.

To determine whether the 220 projects planned for execution complied with minimum Federal requirements for cost effectiveness and whether decisionmakers maintained well-documented justifications to support their decision of funding projects that did not meet the minimum Federal requirement, we requested and obtained an initial list of Fiscal Year 2012 Energy Investment Program projects, as well as the associated savings-to-investment ratio and simple payback period project details. To accomplish these objectives, we evaluated and discussed how life-cycle cost analysis estimates were used to support funding decisions. Additionally, we reviewed the list provided and identified that 57 of the 220 projects showed a savings-to-investment ratio less than 1.0 or did not show the savings-to-investment ratio at all. We requested and attempted to obtain justifications for non-monetary benefits for all 57 projects. We evaluated and discussed the justifications for non-monetary benefits provided with Marine Corps Installation Command representatives to determine whether the justifications were sufficient and appropriate.

According to Marine Corps Installation Command representatives, the Marine Corps will start using their own version of the “energy return on investment tool” (which is used by the Navy to prioritize and select energy projects for funding consideration) to rank and select energy projects for the Fiscal Year 2013 Marine Corps Energy Investment Program. As a result, we decided that it would not be prudent to review additional Fiscal Year 2012 Marine Corps Energy Investment Program projects.

Throughout the audit process, we provided the Marine Corps Installation Command and appropriate installations with feedback of our preliminary results. This gave them an opportunity to provide additional data and information to support projects prior to the Naval Audit Service issuance of the final point papers.

We conducted this audit 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 findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Also, based on our research and coordination with other audit agencies, we concluded that there were no previous audits that required followup actions pertaining to the validation and use of life-cycle cost analysis estimates within the Marine Corps energy project selection process.
Enclosure 3:

Pertinent Guidance

Code of Federal Regulations (CFR), Title 10, Part 436, dated November 2010, states that an energy or water conservation measure shall be deemed cost-effective if the savings-to-investment ratio is estimated to be greater than 1.0. Also, the code states that an “energy or water conservation measure alternative is likely to be cost-effective if the estimated payback time is significantly less than the useful life of that system, and of the Federal building in which it is to be installed.”


The Handbook states that when a project is being evaluated as an accept/reject proposition, a savings-to-investment ratio greater than 1.0 is an economic factor that can consistently indicate a cost-effective project. Additionally, the Handbook states that for a retrofit project having a life-cycle cost greater than its base case (which would thus be rejected on a dollar cost basis), but having significant non-monetary benefits, the decisionmaker can subjectively judge whether or not the non-monetary benefits outweigh the life-cycle penalty. If the decisionmaker judges that the non-monetary benefits of a project are greater than its life-cycle cost penalty, the project can be accepted as “cost effective.” The Handbook explains that non-monetary benefits and costs are project-related effects for which there is no objective way of assigning a dollar value. These items, by nature, are external to the life-cycle cost analysis, and thus do not directly affect the calculation of a project’s cost effectiveness. Nevertheless, significant non-monetary effects should be considered in the final investment decision, and these significant non-monetary effects should be included in the project documentation. The greater the potential savings, the greater the visibility of the project, and the greater the pressure to make a decision based on something other than economics, the more important it is to have a thoroughly researched, carefully performed, and well-documented study.
Department of Defense Energy Manager’s Handbook, dated August 2005, defines “savings to investment ratio” as a measure of economic performance for a project alternative that expresses the relationship between the present value of the savings over the study period to the present value of the investment costs. It is a type of benefit-to-cost ratio where the benefits are primarily savings, typical of energy projects. A savings-to-investment ratio is a relative measure of performance, meaning that it can only be computed with respect to a designated base case. For most energy projects, the base case is the existing situation, and the potential project is the alternative.

Marine Corps Order P11000.5G, “Real Property Facilities Manual”, Volume IV (Facilities Projects Manual Change 1), dated August 2007, states that operation, sustainment, restoration, and modernization of Marine Corps real property shall be consistent with law, Congressional guidance, Department of Defense policy, and Department of the Navy and Marine Corps guidance; performed in full consideration of total life-cycle costs; and accomplished through the most economic means.

The Marine Corps Order also states that commanders of Marine Corps installations shall ensure that work descriptions, justifications, impacts, cost estimates, and drawings in all project documentation are complete, current, and accurate. Additionally, the Marine Corps Order states that each project must be justified on the basis of mission, life-cycle economics, health and safety, environmental compliance, pollution prevention, quality of life, or some combination of the above criteria. Also, the Marine Corps Order states that the need for a proposed project must be supported by verifiable cost data, and an adequate description of the requirement in the narrative portions of the project documents.

Moreover, the Marine Corps Order requires that cost estimates shall be sufficiently detailed to permit accurate determination of the scope of work required, appropriate level of approval authority, and adequacy of requested funds. Also, it requires a life-cycle economic analysis for (1) all repair projects with an estimated cost which is greater than $750,000 and more than 50 percent of the facility’s plant replacement value; and (2) all repair projects with an estimated per facility cost greater than $2 million. The Marine Corps Order states that guidelines and formats for preparing economic analyses are included in the Naval Facilities Engineering Command Economic Analysis Handbook P-442.
### Enclosure 4:

## Projects with Insufficient Justification for Non-Monetary Benefits

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SIR(^{11})</th>
<th>SPB(^{12})</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>YU1104R</td>
<td>INSTALL SOLAR SUNSHADE PV BLDG. 980 (22KW)</td>
<td>0.18</td>
<td>78.93</td>
<td>$386,500.00</td>
</tr>
<tr>
<td>YU1114R</td>
<td>INSTALL SOLAR PV SUNSHADE, BLDG 888</td>
<td>0.20</td>
<td>71.18</td>
<td>$321,000.00</td>
</tr>
<tr>
<td>YU1138R</td>
<td>INSTALL SOLAR PV, BLDG. 930</td>
<td>0.29</td>
<td>50.33</td>
<td>$326,900.00</td>
</tr>
<tr>
<td>YU1103K</td>
<td>INSTALL SOLAR PV BLDG. 1200 (35KW)</td>
<td>0.31</td>
<td>46.35</td>
<td>$447,860.00</td>
</tr>
<tr>
<td>TP1010318M</td>
<td>REPLACE EXISTING EMCS, BLDG 1342</td>
<td>0.36</td>
<td>39.11</td>
<td>$190,058.00</td>
</tr>
<tr>
<td>YU1244M1</td>
<td>HVAC REPAIRS AND CONTROLS OPTIMIZATION BLDG 223</td>
<td>0.42</td>
<td>63.67</td>
<td>$246,400.00</td>
</tr>
<tr>
<td>TP1010328M</td>
<td>REPLACE EXISTING EMCS BLDG #1564</td>
<td>0.52</td>
<td>27.01</td>
<td>$481,378.00</td>
</tr>
<tr>
<td>TP1010326M</td>
<td>REPLACE EXISTING EMCS BLDG #1562</td>
<td>0.57</td>
<td>24.48</td>
<td>$436,313.00</td>
</tr>
<tr>
<td>TP101021R</td>
<td>INSTALL PHOTOVOLTAIC SYSTEM BLDG. 1937 VEHICLE HOLDING SHED</td>
<td>0.69</td>
<td>22.96</td>
<td>$738,003.00</td>
</tr>
<tr>
<td>TP101024R</td>
<td>INSTALL PHOTOVOLTAIC SYSTEM BLDG. 1247 VEHICLE HOLDING SHED</td>
<td>0.71</td>
<td>22.21</td>
<td>$627,576.00</td>
</tr>
<tr>
<td>YU1241M1</td>
<td>HVAC REPAIRS AND CONTROLS OPTIMIZATION VARIOUS BLDGS</td>
<td>0.77</td>
<td>4.00</td>
<td>$1,575,292.00</td>
</tr>
<tr>
<td>TP1010375M</td>
<td>REPLACE EXISTING EMCS, BLDG 5703</td>
<td>0.78</td>
<td>18.11</td>
<td>$161,660.00</td>
</tr>
<tr>
<td>TP1010327M</td>
<td>REPLACE EXISTING EMCS BLDG #1563</td>
<td>0.80</td>
<td>17.47</td>
<td>$311,301.00</td>
</tr>
<tr>
<td>TP101039M</td>
<td>REPLACE EXISTING EMCS BLDG #1095</td>
<td>0.81</td>
<td>17.37</td>
<td>$265,905.00</td>
</tr>
<tr>
<td>TP101038M</td>
<td>REPLACE EXISTING EMCS BLDG #1031</td>
<td>0.82</td>
<td>17.24</td>
<td>$262,244.00</td>
</tr>
<tr>
<td>BU12EC20M</td>
<td>REPLACE CHILLER AT BLDG 4137, CAMP FOSTER</td>
<td>0.84</td>
<td>16.55</td>
<td>$598,800.00</td>
</tr>
<tr>
<td>YU1217M</td>
<td>REPAIR HVAC SYSTEM, BLDG 722</td>
<td>0.84</td>
<td>18.58</td>
<td>$399,597.00</td>
</tr>
<tr>
<td>TP1010331M</td>
<td>REPLACE EXISTING EMCS BLDG #1567</td>
<td>0.85</td>
<td>16.48</td>
<td>$293,650.00</td>
</tr>
<tr>
<td>TP1010332M</td>
<td>REPLACE EXISTING EMCS BLDG #1568</td>
<td>0.85</td>
<td>16.48</td>
<td>$293,650.00</td>
</tr>
<tr>
<td>TP1010329M</td>
<td>REPLACE EXISTING EMCS BLDG #1565</td>
<td>0.86</td>
<td>16.43</td>
<td>$292,662.00</td>
</tr>
<tr>
<td>TP1010325M</td>
<td>REPLACE EXISTING EMCS, BLDG 2061</td>
<td>0.88</td>
<td>15.97</td>
<td>$284,620.00</td>
</tr>
<tr>
<td>TP1010333M</td>
<td>REPLACE EXISTING EMCS BLDG #1569</td>
<td>0.88</td>
<td>15.97</td>
<td>$284,620.00</td>
</tr>
<tr>
<td>TP1010334M</td>
<td>REPLACE EXISTING EMCS BLDG #1570</td>
<td>0.88</td>
<td>15.97</td>
<td>$284,620.00</td>
</tr>
<tr>
<td>TP1010373M</td>
<td>REPLACE EXISTING EMCS, BLDG 5419</td>
<td>0.88</td>
<td>16.04</td>
<td>$164,579.00</td>
</tr>
<tr>
<td>YU1229M1</td>
<td>BLDG 227 SYSTEM OPTIMIZATION AND REPAIRS</td>
<td>0.93</td>
<td>15.66</td>
<td>$486,235.00</td>
</tr>
<tr>
<td>BE1852M</td>
<td>REPLACE MCAS BEAUFORT STREET LIGHTING</td>
<td>0.94</td>
<td>16.44</td>
<td>$153,067.00</td>
</tr>
<tr>
<td>TP1010374M</td>
<td>REPLACE EXISTING EMCS, BLDG 5702</td>
<td>0.94</td>
<td>14.92</td>
<td>$692,197.00</td>
</tr>
<tr>
<td>YU1222M</td>
<td>BLDG. 859 HVAC REPAIR AND RENOVATION</td>
<td>0.94</td>
<td>15.69</td>
<td>$2,003,000.00</td>
</tr>
<tr>
<td>TP09737R</td>
<td>INSTALL PHOTOVOLTAIC SYSTEM BLDG. 2064 VEHICLE HOLDING SHED</td>
<td>0.95</td>
<td>14.82</td>
<td>$723,320.00</td>
</tr>
<tr>
<td>TP09738R</td>
<td>INSTALL PHOTOVOLTAIC SYSTEM BLDG. 2065 VEHICLE HOLDING SHED</td>
<td>0.95</td>
<td>14.82</td>
<td>$714,760.00</td>
</tr>
<tr>
<td>TP09739R</td>
<td>INSTALL PHOTOVOLTAIC SYSTEM BLDG. 2066 VEHICLE HOLDING SHED</td>
<td>0.95</td>
<td>14.82</td>
<td>$723,320.00</td>
</tr>
<tr>
<td>BE1301M</td>
<td>REPAIR BUILDING 1122, PAPA BARRACKS</td>
<td>0.98</td>
<td>10.08</td>
<td>$1,549,355.00</td>
</tr>
</tbody>
</table>

---

11 Savings-to-investment ratio.
12 According to the Department of Defense Energy Manager's Handbook, the Simple Payback (SPB) relates to how long it takes to recover an initial investment in a cost-saving measure, assuming the annual savings remain constant and that the time value of money is unimportant.
Enclosure 5: Management Response from the Commandant of the Marine Corps

From: Commandant of the Marine Corps
To: Assistant Auditor General, Installations and Environment Audits, Naval Audit Service

Subj: NAVAL AUDIT SERVICE (NAVAUDSVC) DRAFT AUDIT REPORT 2012-031, VALIDATION AND USE OF LIFE-CYCLE COST ANALYSIS WITHIN THE MARINE CORPS ENERGY INVESTMENT PROGRAM, DATED 9 APRIL 2013

Ref: (a) NAVAUDSVC Memo 7510 2012-031 dated 9 Apr 13
Encl: (1) Marine Corps Responses

1. Official responses required by the reference are provided at the enclosure.

2. The Marine Corps appreciates the opportunity to respond to the draft report.

3. If you have any questions about the responses, please contact [REDACTED], Headquarters, U.S. Marine Corps Senior Audit Liaison, email [REDACTED] or phone [REDACTED].

[Signature]

Lt. J. WILLIAMS
Director, Marine Corps Staff

Copy to:
NAVINSGEN (N14)
DC, I&L

Freedom of Information Act (b)(6)
NAVAL AUDIT SERVICE (NAVAUDSVC) DRAFT REPORT DATED 9 APRIL 2013
PROJECT # 2012-031

“VALIDATION AND USE OF LIFE-CYCLE COST ANALYSIS WITHIN THE MARINE CORPS ENERGY INVESTMENT PROGRAM”

UNITED STATES MARINE CORPS COMMENTS TO THE NAVAUDSVC RECOMMENDATIONS

**RECOMMENDATION 1:** NAVAUDSVC recommends that the Commandant of the Marine Corps establish a plan of action with milestones to ensure that justifications for non-monetary benefits are developed and included within project documentation that do not discuss financial benefits as part of the justification for the projects that had savings-to-investment ratios less than 1.0.

**USMC RESPONSE:** The Marine Corps concurs with recommendation 1 to ensure that justification for non-monetary benefits are captured for the 34 projects listed in enclosure 4 of the Draft Report (PROJECT # 2012-031). HQMC LFF has taken preliminary action and provided justification (including non-monetary benefits) for each project. NAVAUDSVC has indicated that the justifications provided will be sufficient to close out the recommendation. NLT 21 June 2013, HQMC LFF will incorporate the provided justification into the project file for each of the 34 projects. Note that Energy Investment Program (EIP) project documentation is maintained electronically within the USMC Facilities Integration (FI) website.

**RECOMMENDATION 2:** NAVAUDSVC recommends that the Commandant of the Marine Corps update the Energy Investment Program project documentation instruction to: 1) contain an explanation of expected details to be included in justifications of non-monetary benefits for submitting and approving energy projects that have savings-to-investment ratios less than 1.0, and 2) ensure that future energy projects are not funded without meeting these requirements.

**USMC RESPONSE:** The Marine Corps concurs with recommendation 2. “USMC EIP Project Documentation and Instruction” issued October 2012 will be revised to amplify instruction concerning non-monetary benefits and will be issued to Installation Commands NLT 21 June 2013.

**ADDITIONAL TECHNICAL COMMENTS:** The finding made by NAVAUDSVC that energy projects with savings-to-investment ratios below 1.0 lacked justification of non-monetary benefits is not supported by a review of DD FORM 1391 documentation. DD FORM 1391 documentation submitted by Installation Commands contained an adequate level of justification of non-monetary benefits to warrant HQMC LFF approval to authorize and fund the projects in question.
Use this page as

BACK COVER

for printed copies

of this document