

U.S. DEPARTMENT OF ENERGY  
CONTRACT AND PROJECT MANAGEMENT



ROOT CAUSE ANALYSIS AND CORRECTIVE ACTION PLAN  
CLOSURE REPORT

FINAL

FEBRUARY 2011



# Executive Summary

The Department of Energy (DOE) is committed to making continuous improvements in contract and project management performance. Improving DOE contract and project management is a top priority of the Department’s senior management and entire organization. While DOE’s contract and project management has been on the Government Accountability Office (GAO) High Risk List since 1990, several real and measurable improvements have been implemented recently.

The Department conducted a root cause analysis (RCA) workshop on October 16-17, 2007, to identify the systemic challenges of planning and managing DOE projects. During the workshop participants singled out 143 issues, which they consolidated and prioritized. The Department published the results of the RCA workshop in an April 2008 DOE report entitled, *U.S. Department of Energy Contract and Project Management Root Cause Analysis*. This report identified the ten most significant issues DOE faces in managing contracts and projects. These issues are summarized in priority order in Table ES-1, Department of Energy Most Significant Contract and Project Management Issues.

**Table ES-1 Department of Energy Most Significant Contract and Project Management Issues**

1.	DOE often does not complete front-end planning (project requirements definition) to an appropriate level before establishing project baselines.
2.	DOE does not have an adequate number of federal contracting and project personnel with the appropriate skills (e.g., cost estimating, scheduling, risk management, and technical expertise) to plan, direct, and oversee project execution.
3.	Risks associated with projects are not objectively identified, assessed, communicated, and managed through all phases of planning and execution.
4.	Failure to request and obtain full funding or planned incremental funding results in increased risk of project failure.
5.	Contracts for projects are too often awarded prior to the development of an adequate independent government estimate.
6.	DOE acquisition strategies and plans are often ineffective and are not developed and driven by federal personnel. DOE does not begin acquisition planning early enough in the process or devote the time and resources to do it well.
7.	The DOE organizational structure is not optimized for managing projects.
8.	DOE has not ensured that its project management requirements are consistently followed. In some instances projects are initiated or carried out without fully complying with the processes and controls contained in DOE policy and guidance.
9.	Ineffective DOE project oversight has sometimes resulted in failure to identify project performance issues in a timely manner.
10.	DOE is not effectively executing its ownership role on some large projects with respect to the oversight and management of contracts and contractors.

Following the RCA report, the DOE published the *U.S. Department of Energy Contract and Project Management Root Cause Analysis Corrective Action Plan (CAP)* in July 2008. This report focused on addressing deficiencies identified in the RCA report by developing eight corrective measures and associated actions to address root causes and remedy the most significant issues hindering effective contract and project management.

This RCA CAP Closure Report presents a status of the Department’s initiatives to address the most significant issues and their corresponding root causes and officially closes out most of the issues and root causes and use of the RCA CAP to establish and implement corrective measures. With few exceptions, all of the actions delineated in the RCA CAP have been completed.

The Department has fully or partially completed all eight corrective measures which address the most significant issues and associated root causes. While some remaining work continues in the areas of improving cost estimating (to be completed in FY 2011) and improving project oversight and management (to be completed in FY 2012), the Department has successfully addressed most of the underlying weaknesses. Table ES-2 provides a status of the Department’s RCA CAP corrective measure implementation.

**Table ES-2 Status of the Department’s Corrective Measure Implementation**

<b>Significant Contract and Project Management Issues And Associated Corrective Measures</b>	<b>Status</b>
1. CM 1 – Improve Project Front-End Planning	Complete
2. CM 2 – Enhance the Federal Contract and Project Management Workforce	Substantially Complete
3. CM 3 – Improve Project Risk Assessment, Communication, and Management	Complete
4. CM 4 – Align and Integrate Budget Profiles and Project Cost Baselines	Substantially Complete
5. CM 5 – Improve Independent Government Cost Estimates	Partially Complete: FY11
6. CM 6 – Improve Acquisition Strategies and Plans	Complete
7. CM 7 – Improve Project Oversight and Management <sup>1</sup>	Partially Complete: FY12
8. CM 8 – Improve Adherence to Project Management Requirements	Complete

There were a total of 29 root causes that were identified as the underlying reasons for the existence of the Department’s most significant contract and project management issues. The Department successfully mitigated and/or eliminated 25 of the 29 root causes. The four root causes that have not been successfully addressed are being dealt with through the Department’s ongoing continuous improvement activities. The root causes were grouped into five categories, and the specific issues with which they are associated are identified in parentheses and summarized in Table ES-3. Further elaboration on individual root causes is included in the Department’s RCA report.

<sup>1</sup> Corrective Measure 7 includes and addresses Issues 7, 9, and 10.

**Table ES-3 Status of the Department's Efforts to Address the Root Causes of the Most Significant Contract and Project Management Issues**

Major Categories of Root Causes and Underlying Specific Root Causes	Status
<p><b>1. Personnel Management, Qualifications, and Training</b></p> <p>1a. Insufficient number of personnel (1, 3) *</p> <p>1b. Lack of adequate personnel resources (10)</p> <p>1c. Lack of personnel with the appropriate skills (1, 5, 6, 9)</p> <p>1d. Inadequate training (2, 3, 10)</p>	<p>Addressed: 1a, 1b, 1c, and 1d</p>
<p><b>2. Policies, Orders, Processes, Procedures, and Guidance Documents</b></p> <p>2a. Lack of defined benchmarks (1)</p> <p>2b. Inferior federal government compensation compared to the private sector (2)</p> <p>2c. Lack of policy or standards (5)</p> <p>2d. Lack of databases with current or historical information (5)</p> <p>2e. Lack of lessons learned (6)</p> <p>2f. Lack of failed project reviews (10)</p>	<p>Addressed: 2a, 2c, 2d, 2e, and 2f</p> <p>Ongoing Improvement: 2b</p>
<p><b>3. Management and Business Practices</b></p> <p>3a. Inadequate time dedicated to front-end planning (1)</p> <p>3b. Reliance on the M&amp;O contractor (1)</p> <p>3c. Lack of prioritization on project management (7, 8)</p> <p>3d. Attributes of optimized organizational structure are not understood (7)</p> <p>3e. Lack of effective interdepartmental integration (1)</p> <p>3f. Lack of effective field and headquarters integration (6)</p> <p>3g. Lack of management emphasis and direction (3)</p> <p>3h. Inadequate field oversight (8)</p>	<p>Addressed: 3a, 3b, 3c, 3d, 3e, 3g, and 3h</p> <p>Ongoing Improvement: 3f</p>
<p><b>4. Budget Resource Management, Prioritization, and Allocation</b></p> <p>4a. Insufficient planning budget resources (1)</p> <p>4b. Insufficient budget resources (2)</p> <p>4c. Conflicting and competing priorities (2, 6, 7, 8, 10)</p> <p>4d. Ineffective project and program prioritization (4)</p> <p>4e. Inadequate resource allocation (4)</p> <p>4f. Personnel resource conflicts and budget limitations (6)</p>	<p>Addressed: 4a, 4b, 4c, 4e, and 4f</p> <p>Ongoing Improvement: 4d</p>
<p><b>5. Roles, Responsibilities, Authority and Accountability</b></p> <p>5a. Inadequate roles and responsibilities definition (2, 6)</p> <p>5b. Lack of alignment in authority, accountability, and responsibility (7)</p> <p>5c. Inconsistent expectations and definition of federal ownership role (9)</p> <p>5d. Limited authority of FPDs (9)</p> <p>5e. Lack of accountability (9)</p>	<p>Addressed: 5a, 5b, 5c, and 5d</p> <p>Ongoing Improvement: 5e</p>

\* The numbers in the parentheses correspond to the issues outlined in Table ES-1.

The Department has achieved several accomplishments through the RCA CAP implementation. Some of these accomplishments are summarized in Table ES-4. A more detailed discussion of accomplishment is included in Section 2.0, Corrective Measure Implementation.

## Table ES-4 Department of Energy Contract and Project Management Key Accomplishments

DOE Contract and Project Management Key Accomplishments
<ul style="list-style-type: none"> <li>▪ Improved front-end planning by: requiring sufficient design maturity prior to establishing performance baselines; using industry standard practices such as Technology Readiness Assessment and Project Definition Rating Index tools to determine projects readiness for baselining; and dividing large programs/projects into smaller, stand alone projects, as appropriate.</li> <li>▪ Developed a Departmental project team staffing guide to help determine and assess project staff size and required skill set across the life of each capital asset project.</li> <li>▪ Established project funding stability by: fully funding capital asset projects with a total project cost less than \$50 million; approving funding profiles at Critical Decision 2 and Acquisition Executive approval of any subsequent changes to the profile; and ensuring affordability and adherence to baseline funding profiles for incrementally funded projects in annual budget requests.</li> <li>▪ Enhanced senior DOE management dedication and commitment to improving contract and project management, including the Department's follow through on actions from the RCA and CAP, memoranda from the Deputy Secretary of Energy, and ongoing initiatives being made in EM and NNSA.</li> <li>▪ Conducted over 30 Deputy Secretary-led deep dives on EM and NNSA capital asset projects and contracts.</li> <li>▪ Improved the Project Assessment and Reporting System (PARS II) to maintain leadership awareness of project status and to effect appropriate corrective actions in a timely manner.</li> <li>▪ Strengthened project management procedures by revising DOE Order 413.3A, Program and Project Management for the Acquisition of Capital Assets, and providing new cost estimating requirements in the Order, along with revisions to, or development of, associated supporting Guides, including risk management and change control.</li> <li>▪ Enhanced the Project Management Career Development Program and the Acquisition Career Development Program to improve the training and qualifications of contract and project management personnel.</li> <li>▪ Achieved project management professional (PMP) and certified cost engineer (CCE) certifications for OEMC personnel, and PMP certifications for EM PMSO personnel.</li> <li>▪ Implemented Project Peer Reviews across the complex to better monitor project development and execution by leveraging the successful best practices employed by SC.</li> <li>▪ Expanded the breadth and depth in scope of external independent reviews (EIRs) by expanding existing lines of inquiry and adding lines of inquiry.</li> <li>▪ Enhanced the use of project management tools and techniques, including Technology Readiness Assessments, the Project Definition Rating Index, Risk Registers and Monte Carlo risk analyses, and Earned Value Measurement, for improved management decision-making.</li> </ul>

The aforementioned accomplishments and those documented in Section 2.0 are producing measurable contract and project results. These results include:

- The Department has achieved a 100 percent success rate (i.e., completed within 10 percent of the original cost baseline) for projects initiated within the past 2 years and completed in FY 2010, including two construction and three clean-up projects.
- DOE has effectively managed the 44 projects launched in the past 2 years so that 91 percent are on track to meet the Department's project success performance measure in FY 2011.
- The Department has certified that 97 percent of DOE line-item projects use Earned Value Management Systems that comply with the industry standard, ANSI/EIA-748B, to track performance.

Based on the progress under the RCA CAP, the Department has now established the proper personnel levels, budget resources, and management systems to resolve its contract and project management challenges and to monitor and independently validate the effectiveness and sustainability of the corrective measures. Since the last update in January 2009, GAO has acknowledged that DOE has met the first three criteria of the five required for removal of high-risk designation. Over the past 2 years, the Department has put measures in place to meet the remaining two criteria. Given the depiction in Table ES-5, coupled with the fact that numerous corrective measures (e.g., matured front-end planning) have been implemented and initial project success indicators show an upward trend, we believe that contract and project management within the Department of Energy is no longer a high-risk proposition.

**Table ES-5 Status of the Department's Accomplishment of GAO High-Risk Criteria**

Criteria DOE Must Meet Before High-Risk Designation Can Be Removed	DOE Status
1. Demonstrate Strong Commitment and Leadership	Met Criteria
2. Demonstrate Progress in Implementing Corrective Measures	Met Criteria
3. Develop a Corrective Action Plan that Identifies Root Causes, Effective Solutions, a Near-Term Plan for Implementing the Solutions	Met Criteria
4. Have the Capacity (People and Resources) to Resolve the Problems	Met Criteria
5. Monitor and Independently Validate the Effectiveness and Sustainability of Corrective Measures	Met Criteria

Specifically, the Department has the personnel and budget resources (the capacity) in place to resolve the past contract and project management challenges. Specific accomplishments include:

- Hired (or contracted for) additional contract and project management professionals with the skills to successfully manage our contracts and project portfolio.
- Developed a departmental staffing model to determine appropriate staffing levels and issued an accompanying guide.
- Implemented a protocol to evaluate staffing levels during independent project reviews.

- EM conducted independent studies of staffing needs and developed a remediation plan, especially focused on capital asset projects.
- EM has hired over 100 additional project and contract management professionals since FY 2008.
- Developed an agreement with the Seaborg Group for an EM Technical Expert Group to provide expeditious access to high caliber technical expertise for design reviews and technical analysis.
- Certified 87 percent of EM contract specialists through DOE's Acquisition Career Management program.
- 91 percent of EM Cleanup projects are managed by a Federal Project Director certified at the appropriate level of the Project Management Career Development Program.
- Developed an NNSA staffing algorithm based upon the Departmental model.
- Conducted a review of five largest NNSA projects to determine staffing requirements.
- NNSA submitted a request for FY 2012 funding sufficient to support project staffing needs.
- NNSA is requiring use of the staffing algorithm at each Critical Decision-1 determination.
- NNSA developed an NNSA Business Operating Procedure for ensuring appropriate staffing; it will be in effect by the second quarter of FY 2011.

In addition, the Department has put in place the required management systems to monitor and independently validate the effectiveness and sustainability of the corrective measures.

Completed actions include the following:

- Accelerated deployment of the new Project Assessment and Reporting System (PARS II) by 7 months—September 2010 vice April 2011—providing consistent, reliable, and auditable data directly from DOE contractors' EVM systems to all levels of management.
- Developed "Program Management Scorecard" to monitor DOE O 413.3B compliance.
- EM established a new Construction Project Review (CPR) process for all construction projects modeled after the Office of Science "Lehman Reviews."
- Established an Independent Quality Assurance Program to verify that corrective actions resulting from studies of EM project management remain as continuing elements of EM program execution, with a focus on ensuring that processes and procedures are effective and being followed.
- Increased the frequency of EM senior management-led contract and project management performance reviews with program/project staff and contractors from quarterly to monthly. OMB and GAO are invited to participate in these reviews.
- Developed an Executive Dashboard for EM projects to track commitments resulting from "deep dives" held by the Deputy Secretary as well as project/program performance.
- Instituted monthly project performance briefings with the NNSA Administrator.
- Established an internal NNSA monthly project assessment process to identify any at-risk projects and resolve issues.



- Established annual peer reviews for all NNSA projects and special reviews for at-risk projects.
- Conducted independent reviews of NNSA's CMRR, PDCF, and UPF projects.

Despite these accomplishments, the Department recognizes that continuous improvement is a never-ending journey. Accordingly, DOE recently conducted a Contract and Project Management Summit in December 2010 to keep management attention focused on other challenges that may require further improvement. These challenges include, but are not limited to:

- Project and Contract Alignment and Change Control
- Contract Administration, including Surveillance, Monitoring, and Oversight
- Program/Project Prioritization and Funding Alignment
- Roles and Responsibilities—Contracting Officers and Contracting Officer Representatives
- Accountability—Aligning Incentives
- Adequate Project and Contract Management Staffing

Continuous improvements identified in each of these areas will be established and implemented directly by the Department's Program and Staff Support Offices. DOE understands the principles fundamental to effective project management, including leadership commitment, appropriate management and technical expertise, and disciplined and rigorous implementation of project management policies. These principles have been and will continue to be aggressively pursued by the Department to ensure project management requirements are consistently followed, federal oversight of contractors continues to improve, and accountability for performance is strengthened. Ultimately, the Department's effectiveness and success will be measured and validated by improved cost and schedule performance.

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# Chapter 1

## Introduction

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The Department of Energy (DOE) has made real, measurable progress over the past 20 years to improve contract and project management. Despite recent progress, there is still a perception that DOE contract and project management remains highly susceptible to waste, fraud, abuse, and mismanagement. While contract and project management are inherently risky endeavors, recent progress has dramatically reduced the inherent risks. The Department remains committed more than ever to ensure that contracts and projects are managed with the required discipline to meet mission requirements in accordance with cost and schedule objectives.

### 1.1 BACKGROUND

The Department conducted a root cause analysis (RCA) workshop on October 16-17, 2007, to identify the systemic challenges of planning and managing DOE projects. During the workshop participants singled out 143 issues, which they consolidated and prioritized. The Department published the results of the RCA workshop in an April 2008 DOE report entitled, *U.S. Department of Energy Contract and Project Management Root Cause Analysis*. This report identified the ten most significant issues DOE faces in managing contracts and projects. These issues are summarized here in priority order.

1. DOE often does not complete front-end planning (project requirements definition) to an appropriate level before establishing project baselines.
2. DOE does not have an adequate number of federal contracting and project personnel with the appropriate skills (e.g., cost estimating, scheduling, risk management, and technical expertise) to plan, direct, and oversee project execution.
3. Risks associated with projects are not objectively identified, assessed, communicated, and managed through all phases of planning and execution.
4. Failure to request and obtain full funding or planned incremental funding results in increased risk of project failure.
5. Contracts for projects are too often awarded prior to the development of an adequate independent government estimate.
6. DOE acquisition strategies and plans are often ineffective and are not developed and driven by federal personnel. DOE does not begin acquisition planning early enough in the process or devote the time and resources to do it well.
7. The DOE organizational structure is not optimized for managing projects.
8. DOE has not ensured that its project management requirements are consistently followed. In some instances projects are initiated or carried out without fully complying with the processes and controls contained in DOE policy and guidance.

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9. Ineffective DOE project oversight has sometimes resulted in failure to identify project performance issues in a timely manner.
  10. DOE is not effectively executing its ownership role on some large projects with respect to the oversight and management of contracts and contractors.

Following the RCA report, the DOE published the *U.S. Department of Energy Contract and Project Management Root Cause Analysis Corrective Action Plan (CAP)* in July 2008. This report focused on addressing deficiencies identified in the RCA report by developing eight corrective measures and associated actions to address root causes and remedy the most significant issues hindering effective contract and project management.

## 1.2 PURPOSE AND OBJECTIVES

The purpose of this RCA CAP Closure Report is to demonstrate the progress in implementing all eight corrective measures and close out the RCA CAP as a separate, discrete initiative.

The primary objectives are to:

- ◆ Identify the specific Departmental improvements to implement the CAP;
- ◆ Document the results from these improvements; and
- ◆ Demonstrate that systems and process are established, being implemented, or are under development to sustain and foster these and additional future improvements.

## 1.3 SCOPE AND LIMITS

The scope of this report includes the accomplishments and specific actions completed in each of the eight corrective measures to mitigate and/or eliminate the root causes and resolve the significant contract and project management issues identified in the CAP. The report is limited to information and documentation produced by the Department in support of the eight corrective measures.

## 1.4 APPROACH

The approach used to develop this report included a review of the deliverables and outcomes from each of the eight corrective measures in the CAP. Key personnel within selected DOE organizational entities, (including NNSA, EM, SC, OECM, and OPAM) involved in the corrective measures, provided first-hand observations, expert opinion, and related evidence focused on the status of resolving the root causes and their associated CAP issues. Based on the verbal and written documentation, a summary of accomplishments and actions to address root causes was compiled for each of the issues.

## 1.5 REPORT ORGANIZATION

The following summarizes the organization and content of this report.

- ◆ Chapter 1 provides an overview of the Department's most recent contract and project root cause analysis and corrective action plan initiatives, including the purpose and objectives for this report.
- ◆ Chapter 2 includes specific accomplishments on each of the ten significant contract and project management issues and associated underlying root causes.
- ◆ Chapter 3 documents the performance metrics, including metrics to be maintained and those to be discontinued.
- ◆ Chapter 4 summarizes the major Departmental contract and project management accomplishments and ongoing continuous performance improvements.

# Chapter 2

## Corrective Measure Implementation

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The Department has made significant progress in implementing all eight RCA CAP corrective measures. The following section documents the Department's accomplishments and specific actions to address the most significant contract and project management issues and their associated underlying root causes.

The Department's most significant contract and project management issues and the underlying root causes have been addressed through the implementation of eight corrective measures. To date, the Department has effectively completed six of the eight corrective measures. While much has already been accomplished on the other two corrective measures, some remaining actions are being taken to further improve the Department's cost estimating capabilities (to be fully completed in FY 2011) and its oversight and management of projects (to be fully completed in FY 2012).

Table 2-1 summarizes the status of the Department's corrective measure implementation. This section contains more details associated with each issue, corrective measure, and root causes.

**Table 2-1 Status of the Department's Corrective Measure Implementation**

<b>Significant Contract and Project Management Issues and Associated Corrective Measures</b>	<b>Status</b>
1. CM 1 – Improve Project Front-End Planning	Complete
2. CM 2 – Enhance the Federal Contract and Project Management Workforce	Substantially Complete
3. CM 3 – Improve Project Risk Assessment, Communication, and Management	Complete
4. CM 4 – Align and Integrate Budget Profiles and Project Cost Baselines	Substantially Complete
5. CM 5 – Improve Independent Government Cost Estimates	Partially Complete: FY11
6. CM 6 – Improve Acquisition Strategies and Plans	Complete
7. CM 7 – Improve Project Oversight and Management <sup>1</sup>	Partially Complete: FY12
8. CM 8 – Improve Adherence to Project Management Requirements	Complete

<sup>1</sup> Corrective Measure 7 includes and addresses Issues 7, 9, and 10.

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## 2.1 CORRECTIVE MEASURE 1—IMPROVE PROJECT FRONT-END PLANNING

The most significant contract and project management issue identified by the DOE was inadequate front-end planning. The following identifies the Department's accomplishments associated with this issue and efforts to address the underlying root causes.

**Corrective Measure 1:** Establish and implement measures to ensure adequate project requirements definition is accomplished before a project performance baseline is established. This would include defining planning benchmarks, ensuring adequate resource allocation, and conducting third-party reviews prior to project approval, additional funding authorization, and project execution.

**Accomplishments:** The Department has taken the necessary steps to ensure project front-end planning is completed to an appropriate level before establishing a project's performance baseline. The Department:

- Implemented policy requiring that adequate front-end project planning is completed and designs are sufficiently mature before establishing a project performance baseline.
- Established design maturity guidelines by facility type to guide appropriate timing of the establishment of a project's performance baseline.
- Established a benchmarking chart to identify the appropriate level of mark up on a complex project as a function of the percentage of design completion.
- Mandated the need to develop Independent Cost Estimates (ICEs) for all projects greater than \$100M prior to approving a project's performance baseline, and mandated the need to conduct an ICE and/or Independent Cost Reviews (ICRs) for all projects greater than \$100M prior to selection of the project alternative.
- Adopted industry standard practices, including the Technology Readiness Assessment (TRA) and Project Definition Rating Index (PDRI) tools, to determine whether a project is ready for baselining and incorporated them as lines of inquiry into future project reviews.
- Divided large programs/projects into smaller, stand-alone projects, as appropriate, and implemented policy to encourage this practice.

### Office of Environmental Management

- Used PDRI to evaluate all American Recovery and Reinvestment Act of 2009 (ARRA) projects prior to baselining.
- Conducted TRAs to ensure timely resolution of engineering and technology issues early in the project's development.
- Developed a Corporate Work Breakdown Structure (CWBS) to standardize collection of data across EM, assist in analyzing performance data, develop cost estimates, and simplify budget preparation.
- Required capital asset projects to complete 70-90 percent design prior to baseline approval.

### National Nuclear Security Administration

- Uses PDRI and TRA during IPRs to assess readiness/maturity of project planning activities.
- Conducted Technical Safety Reviews (TSRs) to determine whether safety documentation is sufficiently conservative and bounding, and that necessary requirements are incorporated into the preliminary design prior to beginning the final design.
- Required hazard category 1, 2, and 3 nuclear facilities to complete 90 percent design prior to baseline approval.



**Corrective Measure 1:** Establish and implement measures to ensure adequate project requirements definition is accomplished before a project performance baseline is established. This would include defining planning benchmarks, ensuring adequate resource allocation, and conducting third-party reviews prior to project approval, additional funding authorization, and project execution.

**Issue 1:** DOE often does not complete front-end planning to an appropriate level before establishing project performance baselines.

**Actions to Address Root Causes:**

**Root Cause: Insufficient number of personnel**

- See Corrective Measure 2 Accomplishments for actions taken to address insufficient number of personnel.
- DOE Program Offices develop and implement Human Capital Management Plans that identify the required number and qualifications of federal personnel to manage and oversee projects.
- DOE Integrated Project Teams (IPTs) are established at CD-1 and include the requisite number of personnel with necessary skills to ensure that the appropriate level front-end project planning is conducted.
- EM conducted independent studies of staffing needs and developed a remediation plan, especially focused on capital asset projects.
- EM has hired over 100 additional project and contract management professionals since FY 2008.
- EM developed an agreement with the Seaborg Group for a Technical Expert Group to provide expeditious access to high-caliber technical expertise for design reviews and technical analyses.
- Developed NNSA staffing algorithm based upon the Departmental model to determine the required number of personnel, including resources required for front-end planning.
- Conducted review of the five largest NNSA projects to determine staffing requirements.
- NNSA submitted a request for FY 2012 funding sufficient to support project needs.
- NNSA is requiring the use of staffing algorithm at each CD-1 determination.
- NNSA developed an NNSA Business Operating Procedure for ensuring appropriate staffing; it will be in effect by the second quarter of FY 2011.

**Root Cause: Lack of personnel with the appropriate skills**

- The Department has undertaken contract and project management training to improve personnel skills and qualifications and to ensure a uniform and consistent skill set across the Department, including risk management classes, additional contracting classes, and cost estimating classes.
- EM identified projects where specific skills were lacking and augmented project teams with USACE personnel with specific expertise and experience.
- NNSA and EM conducted project-specific reviews to assess appropriate number of skilled personnel necessary to provide adequate front-end planning for their projects.
- NNSA adapted the Departmental staffing model to address productivity in an attempt to capture the appropriate personnel skills.

**Corrective Measure 1:** Establish and implement measures to ensure adequate project requirements definition is accomplished before a project performance baseline is established. This would include defining planning benchmarks, ensuring adequate resource allocation, and conducting third-party reviews prior to project approval, additional funding authorization, and project execution.

**Root Cause: Inadequate time dedicated to front-end planning**

- The Department uses a structured Critical Decision process, with an emphasis on CD-0 and CD-1, which requires specific front-end project requirements to be established and met prior to project approval and execution.
- The Department is moving to commit dedicated personnel resources for IPTs early in project development to increase the time and effort dedicated to front-end planning.
- The Department is performing IPRs for projects at CD-1.
- The use of technology readiness and project definition assessment tools during IPRs is improving front-end project planning.

**Root Cause: Reliance on the M&O contractor**

- The Department has documented the roles and responsibilities for the various contract and project management and federal functions (both Federal and M&O) that serve on the IPT throughout the life of a project.
- DOE is assuming more project management responsibilities as the number of Federal staff and their requisite qualifications have increased.
- EM is moving away from the large, site-wide M&O contracts to FAR Part 15 contracts. The nature of EM's work allows DOE to obtain greater competition using the FAR Part 15 process. Even though these types of contracts are much more difficult to place and administer, they provide the mechanism to achieve higher performance.
- NNSA is implementing a new contracting strategy—an Integration, Management, and Execution (IME) contract that transfers construction management responsibility from M&O contractors to an independent contractor that will operate as an owner's representative for NNSA.

**Root Cause: Lack of defined benchmarks**

- The Department is implementing TRA and PDRI to ensure projects are adequately planned prior to proceeding.
- EM is using benchmarks to improve the contract and project management functions. EM conducted an assessment comparing EM's acquisition practices to the Naval Facilities Engineering Command's (NAVFAC) practice for environmental restoration.
- EM uses the TRA Guide on waste processing projects to compare candidate technologies.
- NNSA conducts TSRs to determine that safety documentation is sufficiently conservative and bounding; the requirements are fully incorporated into the preliminary design prior to granting approval to commence final design.

**Root Cause: Lack of effective interdepartmental integration**

- DOE Program Offices are directly involved in the development of DOE Policies, Directives, and Guides to be used to plan and execute projects.
- The Department conducts peer reviews at CD-1 and now includes contracting professionals in external independent reviews (EIRs).
- EM is working with DOE's CFO to establish and maintain out-year funding profiles (minimum 5-year profiles) that are utilized for project planning and execution.
- EM and DOE's Office of Procurement and Acquisition Management (OPAM) have improved the coordination of the Headquarters Business Clearance Review processes and staff interactions.
- EM participates in monthly EM Pre-Award Reviews where IPTs, OPAM, and the Office of General Counsel (GC) meet to discuss the status of procurement actions.

**Corrective Measure 1:** Establish and implement measures to ensure adequate project requirements definition is accomplished before a project performance baseline is established. This would include defining planning benchmarks, ensuring adequate resource allocation, and conducting third-party reviews prior to project approval, additional funding authorization, and project execution.

**Root Cause: Insufficient planning budget resources**

- The Department is applying staffing models to identify and allocate the required level of Program Direction budget resources for adequate front-end planning.
- Programs are required to establish and maintain project funding profiles, and Acquisition Executives (AEs) are required to endorse any changes.
- The Department's policy is to "reset CD-1," if the top end of the original approved CD-1 cost range grows by more than 50 percent as the project proceeds to CD-2. Moreover, the Program, in coordination with the AE, must reassess the alternative selection process.
- NNSA's advance planning initiatives have resulted in a \$20-million funding request for FY 2012 to ensure there are sufficient personnel resources for project management, including front-end planning.

**CAP Items Requiring Further Action To Complete:**

- No further corrective actions needed.

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## 2.2 CORRECTIVE MEASURE 2—ENHANCE THE FEDERAL CONTRACT AND PROJECT MANAGEMENT WORKFORCE

The following identifies the Department's accomplishments associated with improving federal staffing and efforts to address the underlying root causes.

**Corrective Measure 2:** Develop and implement a comprehensive federal staffing plan, with an associated resource plan, to recruit, develop, and retain the optimum contract and project management federal workforce.

**Accomplishments:** The Department has taken the necessary steps to ensure it has an adequate number of federal contracting and project management personnel with the appropriate skills.

- Developed a Departmental staffing model to determine appropriate contract and project management staffing levels.
- Established a Departmental Staffing Guide under the DOE directives program and included project staffing as part of the lines of inquiry in EIRs.
- Hired (or contracted for) additional contract and project management professionals with the skills to successfully manage DOE contracts and projects.

### Office of Environmental Management

- Conducted independent studies of staffing needs and developed a remediation plan, especially focused on capital asset projects.
- Hired over 100 additional project and contract management professionals since FY 2008.
- Developed an agreement with the Seaborg Group for a Technical Expert Group to provide expeditious access to high-caliber technical expertise for design reviews and technical analyses.
- Certified 87 percent of contract specialists through DOE's Acquisition Management Career Development Program.
- A total of 94 percent of EM Cleanup projects are managed by a Federal Project Director (FPD) certified at the appropriate level of the Project Management Career Development Program (PMCDP).

### National Nuclear Security Administration

- Developed a staffing algorithm based upon the Departmental model.
- Conducted a review of the five largest NNSA projects to determine staffing requirements.
- Submitted a request for FY 2012 funding sufficient to support project needs.
- Requiring the use of an algorithm at each CD-1 determination.
- Developed an NNSA Business Operating Procedure for ensuring appropriate staffing; it is currently under internal review; it will be in effect by the second quarter of FY 2011.

**Corrective Measure 2:** Develop and implement a comprehensive federal staffing plan, with an associated resource plan, to recruit, develop, and retain the optimum contract and project management federal workforce.

**Issue 2:** DOE does not have an adequate number of federal contracting and project management personnel with the appropriate skills (e.g., cost estimating, scheduling, risk management, and technical) to plan, direct, and oversee project execution.

**Actions to Address Root Causes:**

**Root Cause: Insufficient budget resources**

- Departmental budget requests are now developed and submitted based on the Program staffing model results and analyses.
- NNSA is reallocating its budget resources and justifying requests based on application of its staffing model and prioritization process, which is required at each critical decision determination.

**Root Cause: Conflicting and competing priorities**

- The Department is using the staffing model to identify the required resources to manage contracts and projects.
- Departmental budget requests are being developed and submitted in accordance with results from the staffing analyses.
- In FY 2009, EM created the Office of Project Management and the Office of Acquisition and Contract Management to focus resources on the priorities of project management and contract management, respectively.
- EM hired additional Procurement Analysts and Acquisition Planning Managers with the necessary experience to resolve resource conflicts for these valuable resources.

**Root Cause: Inferior federal government compensation compared to the private sector**

- DOE did not address this root cause due to the limitations of the Department in changing federal government compensation.

**Root Cause: Inadequate roles and responsibilities definition**

- The Department documented project and contract management roles and responsibilities in DOE O 413.3B and the IPT Guide.
- The Department requires a responsibilities and accountabilities matrix for its capital asset projects in accordance with the DOE O 413.3B.
- EM has reorganized its headquarters function and clearly defined roles and responsibilities at the Assistant Secretary levels and below. Additionally, the reorganization resulted in clear and documented roles and responsibilities between the headquarters function and field activities.
- In EM, a Concept of Operations document was issued to clarify roles and responsibilities and to provide guidance on the realignment of EM procurement operations under a single Head of Contracting Activity (HCA).
- NNSA is reviewing how it governs its contractors and is establishing a new governance model. This effort will streamline the federal and contractor roles and responsibilities, as well as accountability between federal and contractor personnel.

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**Corrective Measure 2:** Develop and implement a comprehensive federal staffing plan, with an associated resource plan, to recruit, develop, and retain the optimum contract and project management federal workforce.

**Root Cause: Inadequate training**

- DOE's Certification Review Board (comprised of NNSA, EM, and SC) increased funding for the PMCDP from \$1M in 2008 to \$1.4M in 2009.
- The PMCDP was benchmarked and OECM partnered with other federal agencies (FAI, DAU, DoD, and NASA) to compare program metrics and to standardize and leverage class offerings and project management certification processes.
- PMCDP courses (risk management, contract management, and cost estimating) were updated and revised; there is a 20-percent increase in the number of course offerings between 2009 and 2010.
- The number of certified FPDs has increased 34% between 2008 and 2010 (from 255 to 342); additional increases are expected between 2010 and 2011.

**CAP Items Requiring Further Action To Complete:**

- No further corrective actions needed.

## 2.3 CORRECTIVE MEASURE 3—IMPROVE PROJECT RISK ASSESSMENT, COMMUNICATION, AND MANAGEMENT

The following identifies the Department's accomplishments associated with improving risk management and efforts to address the underlying root causes.

**Corrective Measure 3:** Establish objective, uniform methods for assessing, communicating, and managing project risks and uncertainties. This would include the development of realistic budgets and schedules, and the consistent definition, development, and use of management reserve and contingency.

**Accomplishments:** The Department adjusted risk management procedures to ensure risks associated with projects are objectively identified, assessed, communicated and managed through all phases of planning and execution. Additionally the Department:

- Conducted pilot courses; Project Risk Analysis and Management (Level II) and Advanced Risk Management (Level III) courses are now an integral part of PMCDP.
- Posted risk management tools on the project management website.
- Developed a contingency and management reserve (MR) protocol.
- Revised the Risk Management Guide to incorporate new tools and clarify determination and use of contingency and MR.

Office of Environmental Management

- Implemented policy on the proper application of contingency and MR and requiring Federal Risk Management Plans (RMPs).
- Requires that Federal RMPs be a component of all EM projects. All ARRA projects received a HQ review of the RMP prior to funding.
- Contingency and MR use is presented in Monthly Reports for HQ review.

National Nuclear Security Administration

- Conducted risk management training for NNSA project managers.

**Issue 3:** Risks associated with projects are not objectively identified, assessed, communicated, and managed through all phases of planning and execution.

**Actions to Address Root Causes:**

**Root Cause: Insufficient number of personnel**

- DOE Program Office Human Capital Management Plans identify the required number and qualifications of federal personnel to support project risk management.
- DOE IPTs are established at CD-1 and include personnel with risk management skills to ensure that the appropriate project risk management is conducted.
- EM has hired additional project and contract management professionals, including some with risk management expertise, to address known shortfalls.

**Corrective Measure 3:** Establish objective, uniform methods for assessing, communicating, and managing project risks and uncertainties. This would include the development of realistic budgets and schedules, and the consistent definition, development, and use of management reserve and contingency.

**Root Cause: Inadequate training**

- Conducted pilot courses; Project Risk Analysis and Management (Level II) and Advanced Risk Management (Level III) courses are now an integral part of PMCDP.
- DOE's Certification Review Board (comprised of NNSA, EM, and SC) increased funding for PMCDP from \$1M in 2008 to \$1.4M in 2009.
- PMCDP courses were updated and revised; there is a 20-percent increase in the number of course offerings between 2009 and 2010. The number of certified FPDs has increased 34% between 2008 and 2010 (from 255 to 342); additional increases are expected between 2010 and 2011.

**Root Cause: Lack of management emphasis and direction**

- The Deputy Secretary holds regular project management review meetings, and often conducts focused reviews ("deep dives") on projects experiencing significant issues. Project risks and how they are effectively being managed are central to these reviews.
- DOE senior management has provided strong leadership and direction to improving risk management, including the Department's follow through on actions from the RCA CAP Corrective Measure 3.
- The Department has enhanced the use of project management tools and techniques, including risk registers and risk analysis using Monte Carlo techniques for improved management decision-making.

**CAP Items Requiring Further Action To Complete:**

- No further corrective actions needed.



## 2.4 CORRECTIVE MEASURE 4—ALIGN AND INTEGRATE BUDGET PROFILES AND PROJECT COST BASELINES

The following identifies the Department's accomplishments associated with funding and baseline alignment and efforts to address the underlying root causes.

**Corrective Measure 4:** Improve the alignment and integration of cost baselines with budget funding profiles to account for federal budget fiscal realities and to ensure uninterrupted project execution. Enhance project and program prioritization and associated resource allocation to minimize negative impacts to the performance baseline.

**Accomplishments:** The Department improved the alignment and integration of cost baselines with budget funding profiles to account for fiscal realities and ensures uninterrupted project execution. Specifically, the Department:

- Required that funding profiles be approved at CD-2, and if the changes to the funding profile negatively impact the project, the AE endorses any changes to the profile.
- Required that construction projects consider fully funding construction if the total project cost is less than \$50M, particularly when construction should take less than 2 years.
- Required that Programs ensure affordability and adhere to baseline funding profiles for incrementally funded projects in annual budget requests.

### Office of Environmental Management

- Restructured projects into smaller, better defined capital asset projects and non-capital operations activities to provide more focused management and oversight.
- Used Analytical Building Blocks (ABBs) to facilitate planning and the integrated priority list (IPL) to align budget and project management functions.
- Implemented a policy requiring that performance baselines for capital asset projects are established with a minimum 80 percent confidence level, and that contingency is budgeted for in the baseline.

### National Nuclear Security Administration

- Issued full-funding policy for projects less than \$50M.
- Issued a requirement prohibiting the establishment of project baselines without a realistic funding profile.

**Corrective Measure 4:** Improve the alignment and integration of cost baselines with budget funding profiles to account for federal budget fiscal realities and to ensure uninterrupted project execution. Enhance project and program prioritization and associated resource allocation to minimize negative impacts to the performance baseline.

**Issue 4:** Failure to request and obtain full funding or planned incremental funding results in increased risk of project failure.

**Actions to Address Root Causes:**

**Root Cause: Ineffective project and program prioritization**

- EM is working with DOE's S-3 and CFO to establish and obtain commitment for outyear profiles; even if below current outyear baselines, the profiles will provide the opportunity to re-evaluate baselines to ensure effective project management.
- EM develops and maintains an IPL for each one of its sites and provides a 5-year funding requirement for each project.
- Beginning in FY 2011, EM's activities are categorized as follows: Capital Asset, Line Item Construction, and Operating Activity. This categorization will allow EM to better manage and prioritize projects from a programmatic perspective.
- EM prioritizes cleanup projects within the overall framework of achieving the greatest risk reduction benefit per radioactive content overlaying regulatory compliance commitments and best business practices to maximize cleanup progress.

**Root Cause: Inadequate resource allocation**

- Projects are prohibited from achieving CD-2 without alignment of appropriate funding.
- Capital Asset Projects and Operating Activities are given current year budget authority and have individual Spend Plans established for tracking of uncosted balances and performance relative to plan. Projects have specific metrics and milestones that are monitored and tracked for efficiencies and proper resource allocation.
- EM utilizes analyses in the budget decision process to determine the proper allocation of funding resources. Excessive uncosted balances and poor performing projects are reviewed to determine appropriate allocations.
- NNSA management ensures adequate design maturity levels are achieved prior to establishing project baselines and requesting funding to ensure adequate resource allocations.

**CAP Items Requiring Further Action To Complete:**

- No further corrective actions needed.

## 2.5 CORRECTIVE MEASURE 5—IMPROVE INDEPENDENT GOVERNMENT COST ESTIMATES

The following identifies the Department's accomplishments associated with cost estimating and efforts to address the underlying root causes.

**Corrective Measure 5:** Establish and implement a federal independent government cost estimating capability, including the development of appropriate policy and standards, allocation of required resources, and compilation of unit cost labor and material databases.

**Accomplishments:** The Department established and implemented a federal independent government cost estimating capability and requires independent government cost estimates be accomplished prior to contract awards. Additionally, the Department:

- Certified three Cost Engineers (CCEs) with accreditation from the Association for the Advancement of Cost Engineering (AACE) International with more in the pipeline.
- Leveraging experienced CCEs/analysts from industry to augment staff in the conduct of EIRs, ICRs, and ICEs.
- Revised DOE O 413.3B to include specific roles and responsibilities for cost estimating.
- Expanded the breadth and depth of EIRs; strengthened lines of inquiry on the review of cost baselines to include GAO's cost estimating best practices.
- Published an Excel version of historical cost database, iCost, within the iPortal.
- Incorporated GAO's 12-step cost estimating process into the Department's EIR process to ensure credible cost estimates.
- Requiring an ICR at CD-0 for major system projects.
- For projects greater than or equal to \$100M, require an ICE and/or ICR at CD-1, an ICE at CD-2, and an ICE at CD-3 (if warranted).
- Developing a companion cost estimating guide for DOE O 413.3B, incorporating best practices from GAO's Cost Estimating and Assessment Guide as well as procedures to conduct cost reviews and develop cost estimates. DOE guide will be completed by third quarter of FY 2011.
- Conducted extensive training for 72 Federal project management professionals on cost estimating techniques.

### Office of Environmental Management

- Established a cost estimating Center of Excellence at the EM Consolidated Business Center to improve the quality of independent government cost estimates for construction and cleanup projects.
- Continued to develop the Environmental Cost Analysis System (ECAS) to consolidate data from completed projects in a database to promote improved cost estimating.
- Utilizing FAR Part 15 contracts that require offerers to develop cost proposals.
- Performed Independent Government Cost Estimates for all new procurements.

### National Nuclear Security Administration

- Hired experienced cost estimator to oversee NNSA cost estimating activities.
- Issued NNSA Cost Estimating Business Operating Policy setting forth requirements for conducting cost estimates and published a companion best practices guide.
- Conducted an ICR on RadLiquid Waste project. An ICE is under development for PDCF. Schedule and cost reviews were performed on CMRR and UPF to support the Department's FY 2012-2016 budget request.

**Corrective Measure 5:** Establish and implement a federal independent government cost estimating capability, including the development of appropriate policy and standards, allocation of required resources, and compilation of unit cost labor and material databases.

**Issue 5:** Contracts for projects are too often awarded prior to the development of an adequate independent government cost estimate.

**Actions to Address Root Causes:**

**Root Cause: Lack of personnel with the appropriate skills**

- See Corrective Measure 2 accomplishments.
- The Department has undertaken training in cost estimating to improve personnel skills and qualifications and ensure a uniform and consistent skill set across the Department.
- Increased the number of CCEs within the OECM.
- EM identified projects where specific skills, including cost estimating, were lacking and augmented project teams with USACE personnel with cost estimating expertise and experience.

**Root Cause: Lack of policy or standards**

- Deputy Secretary of Energy issued Project Management Principles policy memorandum on March 4, 2010, including improving DOE cost estimates.
- DOE has updated and issued DOE O 413.3B which includes standards for cost estimates.
- EM established the Cost Estimating & Analysis Center to establish standards, policy, and procedures to ensure that cost estimates are accurate, traceable, and reliable.
- EM issued guidance to standardize contingency and management reserve policy for EM projects.
- NNSA has a Cost Estimating Business Operating Policy that provides for the implementation of independent cost estimating on projects being executed by the NNSA.

**Root Cause: Lack of databases with current or historical information**

- Published an Excel version of historical cost database, iCost, within the iPortal.
- EM developed an ECAS that contains historical cost information from the Rocky Flats, Fernald, Mound, and Oak Ridge Melton Valley closure projects. Going forward, ECAS will be used to capture current and historical information related to ARRA projects.

**CAP Items Requiring Further Action To Complete:**

- Complete and issue the Cost Estimating Guide.

## 2.6 CORRECTIVE MEASURE 6—IMPROVE ACQUISITION STRATEGIES AND PLANS

The following identifies the Department’s accomplishments associated with improving acquisition strategy and planning and efforts to address the underlying root causes.

**Corrective Measure 6:** Strengthen the commitment to federal ownership by aligning and integrating acquisition strategies and acquisition plans and project plans; clearly define roles and responsibilities, enhance integrated project teams participation, and ensure accountability for ownership and integration.

**Accomplishments:** The Department strengthened its commitment to federal ownership by aligning and integrating acquisition strategies and plans with project plans.

- Established the new course “Managing Contract Changes.”
- DOE O 413.3B includes Contracting Officer representation on IPTs.
- Realigning procurement policy and guidance with newly revised project management guidance.
- Conducted extensive Procurement Management Reviews of field procurement operations.
- DOE documented project and contract management roles and responsibilities in DOE O 413.3B and the IPT Guide.
- Reducing the Department’s risk by increasing use of fixed-price contracts.
- Developing a Change Control Guide to ensure project and contract changes are integrated and completed in a timely manner, which will be completed by third quarter of FY 2011.
- Aligned procurement policy and guidance with newly revised project management guidance. Issued Acquisition Policy Flashes and revised portions of DOE’s Acquisition Guide.

Office of Environmental Management

- Expanded the use of FAR Part 15 contracts for its capital asset projects and other non-capital work and awarded smaller, more-focused contracts.
- Established Procurement Strategy Panel with senior level representation from EM, MA, GC, OECM, and the Office of Small and Disadvantaged Business Utilization to discuss procurement strategy with the IPT early in the planning process to address issues that could result in future delays.
- Established the Environmental Management Acquisition Center (EMAC) to standardize the acquisition planning process resulting in more efficient and timely acquisitions.

National Nuclear Security Administration

- Developed a requirement for preparing a responsibilities and accountabilities matrix for its capital asset projects.

**Issue 6:** DOE’s acquisition strategies and plans are often ineffective and are not developed and driven by federal personnel. DOE does not begin acquisition planning early enough in the process or devote the time and resources to do it well.

**Actions to Address Root Causes:**

**Root Cause: Lack of personnel with the appropriate skills**

- See Corrective Measure 2 accomplishments.
- The Department has undertaken contract management training to improve personnel skills and qualifications and ensure a uniform and consistent skill set across the Department.

**Corrective Measure 6:** Strengthen the commitment to federal ownership by aligning and integrating acquisition strategies and acquisition plans and project plans; clearly define roles and responsibilities, enhance integrated project teams participation, and ensure accountability for ownership and integration.

**Root Cause: Conflicting and competing priorities**

- EM created the Office Acquisition and Contract Management to establish a clear priority on contract administration and management.
- EM hired additional Procurement Analysts and Acquisition Planning Managers with the necessary experience to resolve resource conflicts for these valuable resources.

**Root Cause: Inadequate roles and responsibilities definition**

- DOE documented contract management roles and responsibilities in DOE O 413.3B and the IPT Guide.
- EM has reorganized its headquarters function and clearly defined roles and responsibilities at the Assistant Secretary levels and below. Additionally, the reorganization resulted in clear and documented roles and responsibilities between the headquarters function and field activities.
- EM issued a Concept of Operations document to clarify roles and responsibilities and provide guidance on the realignment of EM procurement operations under a single HCA.
- NNSA developed a requirement for preparing a responsibilities and accountabilities matrix for its capital asset projects.
- NNSA is reviewing how it governs its contractors and is establishing a new governance model. This effort will streamline the federal contract management roles, responsibilities, and accountability.

**Root Cause: Personnel resource conflicts and budget limitations**

- EM established the Office of Acquisition and Contract Management to focus and prioritize budget and personnel resources on acquisition strategy and planning.

**Root Cause: Lack of effective field and headquarters integration**

- OPAM will participate early in the procurement process and on the IPTs.
- Strengthened the contract requirements section of DOE O 413.3B.
- EM will participate on teams led by OPAM to conduct Procurement Management Reviews at selected DOE field sites and at DOE Headquarters.
- EM works with the OPAM to improve the coordination of the Headquarters Business Clearance Review processes and staff interactions.
- EM participates in Pre-Award Reviews where IPTs, OPAM, and GC meet to discuss the status of procurement actions.
- EM introduced an 80-percent review activity that provides an interim review at the final stages of the procurement process to expedite the final review of procurement documents.
- EM introduced Procurement Strategy Panels that enable EM Senior Managers, OPAM, GC, the Office of Small and Disadvantaged Business Utilization, and OECM to meet and discuss all aspects of an upcoming procurement with the IPT early in the planning process to address issues that could potentially cause delays later in the process.
- EM has developed a count-down schedule to ensure that all those engaged in the final stages of the procurement process are aware of and working together to meet the contract award need date.
- EM has established monthly/quarterly meetings with Field Procurement Directors for both Pre-award and Post-award activities.

**Corrective Measure 6:** Strengthen the commitment to federal ownership by aligning and integrating acquisition strategies and acquisition plans and project plans; clearly define roles and responsibilities, enhance integrated project teams participation, and ensure accountability for ownership and integration.

**Root Cause: Lack of lessons learned**

- Following the completion of each major contract award, EM surveys the appropriate team members to solicit lessons learned. The lessons are posted on the EM portal for review by EM project team members.
- EM has assessed Pre-award and Post-award activities to identify lessons learned for improving the procurement process. As a result of the assessment, EM is planning to move to a pilot to increase the delegated procurement authority for the EM Consolidated Business Center.
- EM has undertaken a review to benchmark its Request for Proposal process against other federal agencies to determine if these agencies have better approaches, innovations, or best practices that could be applied to future EM contracts as lessons learned.

**CAP Items Requiring Further Action To Complete:**

- Complete and issue the Change Control Guide.
- Update other guides as documented in the CM#6 Report.

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## 2.7 CORRECTIVE MEASURE 7—IMPROVE PROJECT OVERSIGHT AND MANAGEMENT

The following identifies the Department's accomplishments to improve project oversight and management and efforts to address the underlying root causes.

**Corrective Measure 7:** Identify and implement opportunities to improve the management and oversight of projects; clarify federal project management roles, responsibilities, and authorities, including field and headquarters integration; establish a project oversight benchmark; and align the program and project organizational structures.

**Accomplishments:** The Department has improved the management and oversight of projects.

- Procured, piloted, and deployed next generation (web-enabled) of PARS II, which provides consistent, reliable, and auditable data to all levels of management.
- Enhanced IPRs by exporting the Office of Science "project peer review" process across the Department.
- Expanded project reviews to include contract management.

### Office of Environmental Management

- Established an improved EM Business Model shifting greater authority and accountability to the field, strengthening Headquarters policy, planning, and best practice dissemination functions (e.g., adopting an "Advise-Assist-Assess" headquarters model).
- Established policy requiring development of a Responsibility Assignment Matrix for each project, clearly delineating responsibilities between the field and headquarters.
- Conducted five acquisition management reviews at field sites in FY 2009 and completed validation and verification reviews for corrective actions by May 2010.
- Conducts combined reviews for capital projects and operations activities and has increased the frequency of EM senior management reviews with the prime contractor and Federal staff from quarterly to monthly.
- Developed an Executive Dashboard that is accessible to all EM federal employees, enables the tracking of commitments made as part of the Program Reviews conducted by the Deputy Secretary, and provides key information on project performance.
- Established an Independent Quality Assurance Program to verify that corrective actions resulting from studies of EM project management are sustained as continuing elements of EM program execution, with a focus on ensuring that processes and procedures are effective and being followed.

### National Nuclear Security Administration

- Trained project managers on enhanced Federal oversight roles and responsibilities.
- Established requirement for project managers to submit Lessons Learned semi-annually, which are posted on NNSA's website.
- Instituted annual peer reviews for all projects based on the Office of Science model.
- Ensured that nearly all projects are managed by FPDs certified at the appropriate level.
- Trained FPDs on their roles and responsibilities.
- Established monthly project performance briefings for the NNSA Administrator.
- Developing guidance on inherently Federal responsibilities in an NNSA Business Operating Procedure.



**Corrective Measure 7:** Identify and implement opportunities to improve the management and oversight of projects; clarify federal project management roles, responsibilities, and authorities, including field and headquarters integration; establish a project oversight benchmark; and align the program and project organizational structures.

**Issue 7:** DOE's organizational structure is not optimized for managing projects.

**Actions to Address Root Causes:**

**Root Cause: Conflicting and competing priorities**

- The Department's project management priorities are clearly delineated in the Deputy Secretary's March 4, 2010, memorandum and in revised DOE O 413.3B. All DOE Programs are focused on compliance with the documented project management priorities.

**Root Cause: Lack of prioritization on project management**

- Project management remains a high priority within the Department. The Deputy Secretary reinforced this by publishing project management principles and conducting a Contract and Project Management Summit in December 2010.
- EM established the Office of Project Management to reinforce its focus and priority on project management.
- EM chartered a GAO Task Team in July 2010 to focus on recent and continuing actions to improve project and contract management sufficient to be removed from the GAO High-Risk List.

**Root Cause: Lack of alignment in authority, accountability, and responsibility**

- DOE documented project and contract management roles and responsibilities in DOE O 413.3B and the IPT Guide.
- EM has reorganized its headquarters function and clearly defined roles and responsibilities at the Assistant Secretary levels and below. The reorganization resulted in clear and documented roles and responsibilities between the headquarters function and field activities.
- EM issued a Concept of Operations document to clarify roles and responsibilities and provide guidance on the realignment of EM procurement operations under a single HCA.
- NNSA is reviewing how it governs its contractors and is establishing a new governance model. This effort will streamline the federal and contractor roles and responsibilities, as well as accountability between federal and contractor personnel.
- NNSA has developed a requirement for preparing a responsibilities and accountabilities matrix for its capital asset projects that will be included in DOE O 413.3B and applicable to DOE.

**Root Cause: Attributes of optimized organizational structure are not understood**

- EM recognized the attributes of an optimized organizational structure and has implemented a new organizational structure. Priorities are clearly documented and communicated, and EM is able to achieve its mission, goals and objectives more effectively.
- Selected elements of NNSA have re-organized to establish a new Infrastructure and Construction organization that aligns authority, accountability, and responsibility for all Defense Programs construction activities.

**Corrective Measure 7:** Identify and implement opportunities to improve the management and oversight of projects; clarify federal project management roles, responsibilities, and authorities, including field and headquarters integration; establish a project oversight benchmark; and align the program and project organizational structures.

**Issue 9:** Ineffective DOE project oversight has sometimes resulted in failure to identify project performance issues in a timely manner.

**Actions to Address Root Causes:**

**Root Cause: Conflicting and competing priorities**

- See conflicting and competing priorities root cause on page 2-17.

**Root Cause: Lack of prioritization on project management**

- See lack of prioritization on project management root cause on page 2-17.

**Root Cause: Inadequate field oversight**

- Procured, piloted, and deployed next generation (web-enabled) of PARS II, which provides consistent, reliable, and auditable data to all levels of management
- Enhanced IPRs by exporting the Office of Science “project peer review” process across the Department.
- Expanded project reviews to include contract management.
- Conducting Quarterly Contract Reviews between EM-Sites and EM-Headquarters.
- EM conducts monthly project reviews for all line item projects, current projects with RED/YELLOW performance, and high-visibility projects with GREEN performance. Projects with GREEN performance and CD-1 are reviewed on a quarterly basis.
- EM has conducted several Construction Project Reviews (CPRs) that included the following projects: WTP, SWPF, IWTU, U233, DUF6, and Plutonium Preparation.
- FPDs participate in field office regularly scheduled monthly contractor performance reviews, including post-review discussions relating to project performance and issues requiring attention.
- EM has established the Quality Assurance Corporate Board.
- EM FPDs have been directed to implement the Vendor Shop Initiative (VSI), Phase I. Lines of inquiry relative to the quality of inspections at the Vendor Shops will be part of either the HQ Oversight Strategy vendor reviews or as part of the Joint Supplier Evaluation Program.
- EM also developed a methodology for planning, prioritizing, and scheduling QA assessments. High priority areas include major construction and capital asset projects as well as ARRA-funded projects.
- NNSA established a Construction Working Group to ensure adequate project oversight.

**Corrective Measure 7:** Identify and implement opportunities to improve the management and oversight of projects; clarify federal project management roles, responsibilities, and authorities, including field and headquarters integration; establish a project oversight benchmark; and align the program and project organizational structures.

**Issue 10:** DOE is not effectively executing its ownership role on some large projects with respect to the oversight and management of contracts and contractors.

**Actions to Address Root Causes:**

**Root Cause: Lack of personnel with the appropriate skills**

- See Corrective Measure 2 accomplishments.

**Root Cause: Inconsistent expectations and definition of federal ownership role**

- DOE documented project and contract management roles and responsibilities in DOE O 413.3B and the IPT Guide.
- In FY 2009, EM implemented an improved new business model that clearly identifies roles and responsibilities between EM headquarters and the field; establishes direct authority and accountability; recognizes that EM's mission is performed in the field; and drives EM towards "one way of doing business".
- EM has reorganized its headquarters function and clearly defined roles and responsibilities at the Assistant Secretary levels and below. The reorganization resulted in clear and documented roles and responsibilities between the headquarters function and field activities.
- EM issued a Concept of Operations document to clarify roles and responsibilities and provide guidance on the realignment of EM procurement operations under a single HCA.
- NNSA has developed a requirement for preparing a responsibilities and accountabilities matrix for its capital asset projects.
- NNSA is reviewing how it governs its contractors and is establishing a new governance model. This effort will streamline the federal and contractor roles and responsibilities, as well as accountability between federal and contractor personnel.
- NNSA is issuing guidance on "inherently Federal" responsibilities in its business operating policy.

**Root Cause: Limited authority of FPDs**

- FPD roles, responsibilities, and authorities are clearly defined in DOE O 413.3B and in the IPT Guide.

**Root Cause: Lack of accountability**

- Developed "Program Management Scorecard" to monitor DOE O 413.3B compliance and hold project members accountable for project performance.

**CAP Items Requiring Further Action To Complete:**

- Implement a program/project prioritization process, improve alignment of project performance and contract incentives/fee determination, and improve accountability.

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## 2.8 CORRECTIVE MEASURE 8—IMPROVE ADHERENCE TO PROJECT MANAGEMENT REQUIREMENTS

The following identifies the Department's accomplishments associated with strengthen compliance with project management requirements and efforts to address the underlying root causes.

**Corrective Measure 8:** Re-evaluate program and project management policy, guidance, and standards for alignment and consistency. Establish measures and procedures to ensure that all project management requirements are clearly documented and followed and responsible personnel are held accountable.

**Accomplishments:** The Department re-evaluated program and project management policy, guidance and standards and improved adherence to project management requirements.

- DOE O 413.3B has been revised and approved by the Deputy Secretary.
- Developed "Program Management Scorecard" to monitor DOE O 413.3B compliance.

### Office of Environmental Management

- Updated and aligned corporate metrics with restructured projects and operations.
- Ensured that nearly 86 percent of EM projects are managed using certified EVM systems.
- Increased the frequency of senior management reviews of projects and operations activities with the prime contractor and Federal staff from quarterly to monthly.
- Established Recovery Act Site Representatives (RASRs) to provide additional oversight of contractor ARRA work.
- Piloted use of the Enterprise Project Control System (EPCS) in September 2010 to collect the baseline and schedule data for projects and operations and evaluate performance.
- Enhanced IPABS to improve reporting information and expand performance data.

### National Nuclear Security Administration

- Conducted a DOE O 413.3B compliance review at each NNSA site and identified required corrective actions, following-up during successive project reviews.
- Established a requirement that Program Requirements Document be developed at CD-0.
- Created Criteria Review and Approach Documents to guide all CD reviews.

**Corrective Measure 8:** Re-evaluate program and project management policy, guidance, and standards for alignment and consistency. Establish measures and procedures to ensure that all project management requirements are clearly documented and followed and responsible personnel are held accountable.

**Issue 8:** DOE has not ensured that its project management requirements are consistently followed. In some instances projects are initiated or carried out without fully complying with the processes and controls contained in DOE policy and guidance.

**Actions to Address Root Causes**

**Root Cause: Conflicting and competing priorities**

- DOE O 413.3B has been revised and approved by the Deputy Secretary and establishes clear and consistent project management requirements and priorities.
- EM created the Office of Project Management to focus priorities and resources on improving adherence to project management requirements.

**Root Cause: Inadequate training**

- DOE's Certification Review Board (comprised of NNSA, EM, and SC) increased funding for the PMCDP from \$1M in 2008 to \$1.4M in 2009.
- The PMCDP was benchmarked and OECM partnered with other federal agencies (FAI, DAU, DoD, and NASA) to compare program metrics and standardize and leverage class offerings and project management certification processes.
- PMCDP courses were updated and revised, and had a 20-percent increase in the number of course offerings between 2009 and 2010. The number of certified FPDs has increased 34% between 2008 and 2010 (from 255 to 342); additional increases are expected between 2010 and 2011.

**Root Cause: Lack of adequate personnel resources**

- See Corrective Measure 2 accomplishments.
- DOE IPTs are established at CD-1 and include the requisite number of personnel with necessary skills to ensure the appropriate level of project oversight is conducted.
- EM implemented the Technical Expert Group (TEG), which allows EM to partner with laboratories across the DOE complex for technical expertise support to EM projects.
- NNSA is developing a Business Operating Procedure for construction projects that provides direction to FPDs, Program Office management, and Site Office management relating to establishing adequate federal staff for managing NNSA construction projects.

**Root Cause: Lack of failed project reviews**

- Increased use of construction reviews, peer reviews, S-2 reviews, IPRs, and EIRs.
- The Department's findings from the reviews of projects that are not meeting cost and schedule performance expectations are captured in the DOE lessons learned processes.

**CAP Items Requiring Further Action To Complete:**

- No further corrective actions needed.

# Chapter 3

## Performance Metrics

The Department has reviewed the metrics that were established as part of the RCA CAP in 2008. As a result of this review, the Department has decided to maintain and continue to monitor some of the metrics and discontinue others. Metrics that have been identified to be discontinued have either been met, incorporated into the Department’s contract and project management systems, or have been determined not to measure the effectiveness of the corrective measure implementation and associated issue and underlying root cause resolution.

The Department has effectively met or exceeded all but one of the FY 2010 performance metrics. The tables in the following sections reflect the Department’s performance through FY 2010. The performance measures and metrics below correspond to the overall performance metrics and specific corrective measure metrics included in the Department’s RCA CAP published in July 2008.

### 3.1 PERFORMANCE METRICS TO MAINTAIN

The following metrics will be maintained beyond FY 2010.

Overall Contract and Project Management Performance Metrics (Target and Actual)				
Performance Measure	Target or Actual	FY 2008	FY 2009	FY 2010
<b>Capital Asset (Construction) Line Item Projects:</b> Capital asset projects will be completed at CD-4 within the original scope baseline and not to exceed 110% of the original approved cost baseline (CD-2), unless otherwise impacted by a directed change. Baselines impacted by a directed change will be adjusted. On a program portfolio basis, 90% of DOE line item projects will meet the project success definition benchmark.	Target Construction	75%	80%	85%
	Actual Construction	76%	76%	69%
	Pre-CAP			67%
	Post-CAP			100%
<b>Comments:</b> The Capital Asset Project performance measure for construction projects is one of the Department’s key overarching metrics to assess project baseline performance. To demonstrate improved project performance, the Department will continue to measure the completion of project scope not to exceed 110% of the original approved cost baseline. The performance targets are based on a 3-year rolling average of projects reaching CD-4. FY targets include projects reaching CD-4 in the respective subsequent 3 years.				

Overall Contract and Project Management Performance Metrics (Target and Actual)				
Performance Measure	Target or Actual	FY 2008	FY 2009	FY 2010
<b>Capital Asset (Environmental Cleanup) Line Item</b> <b>Projects:</b> Capital asset projects will be completed at CD-4 within the original scope baseline and not to exceed 110% of the original approved cost baseline (CD-2), unless otherwise impacted by a directed change. Baselines impacted by a directed change will be adjusted. On a program portfolio basis, 90% of DOE line item projects will meet the project success definition benchmark.	Target Envir. Cleanup	Establish Baseline	Establish Baseline	70%
	Actual Envir. Cleanup	--	--	100%
	Pre-CAP			100%
	Post-CAP			100%
<b>Comments:</b> The Capital Asset Project performance measure for Environmental Cleanup projects is one of the Department's key overarching metrics to assess project baseline performance. To demonstrate improved project performance, the Department will continue to measure the completion of project scope not to exceed 110% of the original approved cost baseline. The performance targets are based on a 3-year rolling average of projects reaching CD-4. FY targets include projects reaching CD-4 in the respective subsequent 3 years.				

Overall Contract and Project Management Performance Metrics (Target and Actual)				
Performance Measure	Target or Actual	FY 2008	FY 2009	FY 2010
<b>Certified EVM Systems:</b> For projects post CD-3, by the end of FY 2011 and FY 2012, 95% of cost reimbursable capital asset line item projects (greater than \$20M) use certified EVM systems.	Target Construction	65%	85%	90%
	Actual Construction	65%	86%	97%
	Target Envir. Cleanup	55%	65%	75%
	Actual Envir. Cleanup	55%	67%	86%
<b>Comments:</b> Earned value management (EVM) is a proven, industry standard management system to measure and monitor project performance. The Department will continue to measure the implementation of certified EVM systems for its projects to maintain baseline schedule and cost integrity. The focus of this metric is to certify the EVM systems being used in accordance with ANSI/EIA-748B.				

Specific Issue and Corrective Measure Performance Metrics (Target and Actual)				
Performance Metric	Target or Actual	FY 2008	FY 2009	FY 2010
<b>Corrective Measure 2:</b> By the end of FY 2011, 95% of projects have certified FPDs no later than CD-1.	Target	85%	90%	93%
	Actual	85%	95%	98%
<b>Comments:</b> The Department recognizes that having qualified project management personnel is critical to the success of its projects. Accordingly, Federal Project Director certification will continue to be measured.				

Specific Issue and Corrective Measure Performance Metrics (Target and Actual)				
Performance Metric	Target or Actual	FY 2008	FY 2009	FY 2010
<b>Corrective Measure 2:</b> By the end of FY 2011, 90% of projects have FPDs certified at the appropriate level assigned to projects no later than CD-3.	Target	80%	85%	88%
	Actual	80%	63%	89%
<b>Comments:</b> The Department recognizes that having qualified project management personnel is critical to the success of its projects. Accordingly, Federal Project Director certification will continue to be measured.				

Specific Issue and Corrective Measure Performance Metrics (Target and Actual)				
Performance Metric	Target or Actual	FY 2008	FY 2009	FY 2010
<b>Corrective Measure 2:</b> By the end of FY 2011, 85% of the 1102 contracting series will be certified.	Target	78%	80%	83%
	Actual	78%	79%	85%
<b>Comments:</b> The Department recognizes that having qualified acquisition management personnel is critical to the success of its projects. Accordingly, certification of the Department's contracting professionals will continue to be measured. The percentage of certified 1102 series employees fluctuates significantly with changes in personnel due to the normal and expected cycles in attrition and hiring. It is also dependent on the actual level of funding made available for training.				



Specific Issue and Corrective Measure Performance Metrics (Target and Actual)				
Performance Metric	Target or Actual	FY 2008	FY 2009	FY 2010
<b>Corrective Measure 7:</b> By the end of FY 2011, on a program portfolio basis, 90% of all projects will meet the project schedule metric that follows: from CD-3 to CD-4, for projects less than 5 years in duration, they will be completed within 12 months of the original CD-3/4 duration.	Target	75%	80%	85%
	Actual	75%	82%	70%
<b>Comments:</b> The Department recognizes there is a strong correlation between baseline schedule and cost performance; schedule delays frequently translate into cost increases. To maintain a Departmental focus on adherence to project cost and schedule baselines, the schedule performance metric will be maintained. The performance targets are based on a 3-year rolling average of projects reaching CD-4. FY targets include projects reaching CD-4 in the respective subsequent 3 years.				

Specific Issue and Corrective Measure Performance Metrics (Target and Actual)				
Performance Metric	Target or Actual	FY 2008	FY 2009	FY 2010
<b>Corrective Measure 7:</b> By the end of FY 2011, on a program portfolio basis, 90% of all projects will meet the project schedule metric that follows: from CD-3 to CD-4, for projects greater than 5 years in duration, they will be completed within 20% of the original CD-3/4 duration.	Target	75%	80%	85%
	Actual	75%	N/A	100%
<b>Comments:</b> The Department recognizes there is a strong correlation between baseline schedule and cost performance; schedule delays frequently translate into cost increases. To maintain a Departmental focus on adherence to project cost and schedule baselines, the schedule performance metric will be maintained. The performance targets are based on a 3-year rolling average of projects reaching CD-4. FY targets include projects reaching CD-4 in the respective subsequent 3 years.				

## 3.2 PERFORMANCE METRICS TO DISCONTINUE

The following metrics will no longer be monitored and measured beyond FY 2010.

Overall Contract and Project Management Performance Metric (Target and Actual)				
Performance Measure	Target or Actual	FY 2008	FY 2009	FY 2010
<b>EM Cleanup (Soil and Groundwater Remediation, D&amp;D, and Waste Treatment and Disposal) Projects:</b> EM cleanup projects will be completed by achieving at least 80% of the defined near-term baseline end-state scope (CD-2) with less than a 25% cost variance from the original approved baseline, unless impacted by a directed change. On a program portfolio basis, 90% of EM cleanup projects will meet the project success definition benchmark.	Target	Establish Baseline	Establish Baseline	70%
	Actual	Establish Baseline	Establish Baseline	--
<b>Comments:</b> This performance measure has been deleted as approved by RCA/CAP ESC. The performance measure to assess EM Cleanup has been revised and aligned with the original measure for Capital Asset (Construction) Line Item Projects.				

Specific Issue and Corrective Measure Performance Metrics (Target and Actual)				
Performance Metric	Target or Actual	FY 2008	FY 2009	FY 2010
<b>Corrective Measure 1:</b> By the end of FY 2011, 80% of projects (greater than \$100M) will use PDRI methodologies no later than CD-2.	Target	Establish Baseline	50%	65%
	Actual	Establish Baseline	71%	100%
<b>Comments:</b> This performance measure has been incorporated into DOE Order 413.3B. Performance will be monitored and documented through the external independent review (EIR) process and reported in the Program Management Scorecard. Since OECM conducts EIRs for all projects greater than \$100M, and DOE uses PDRI as a routine project requirement, this metric is no longer necessary.				

Specific Issue and Corrective Measure Performance Metrics (Target and Actual)				
Performance Metric	Target or Actual	FY 2008	FY 2009	FY 2010
<b>Corrective Measure 1:</b> By the end of FY 2011, all projects (greater than \$750M [i.e., Major System Projects]) applying new technology, as appropriate, will implement technology readiness assessment methodologies no later than CD-2.	Target	Establish Baseline	50%	70%
	Actual	Establish Baseline	N/A	N/A
<b>Comments:</b> This performance measure has been incorporated into DOE Order 413.3B. Performance will be monitored and documented through the external independent review process and reported in the Program Management Scorecard. This metric is no longer necessary.				

Specific Issue and Corrective Measure Performance Metrics (Target and Actual)				
Performance Metric	Target or Actual	FY 2008	FY 2009	FY 2010
<b>Corrective Measure 2:</b> By the end of FY 2011, federal contract and project management positions (based on new model) are staffed at 80% of the desired level.	Target	Start New Staffing Model	50%	65%
	Actual	Start New Staffing Model	71%	N/A
<b>Comments:</b> This performance measure has been incorporated into DOE Order 413.3B. Performance will be monitored and documented through the external independent review process and reported in the Program Management Scorecard. The Department has maintained performance measures for key project (Federal Project Director) and acquisition (1102 series) professionals.				

Specific Issue and Corrective Measure Performance Metrics (Target and Actual)				
Performance Metric	Target or Actual	FY 2008	FY 2009	FY 2010
<b>Corrective Measure 3:</b> By the end of FY 2011, for all capital asset line item projects that are completed at CD-4, 50% are completed below their currently approved TPC with some contingency and/or management reserve remaining.	Target	Establish Baseline	25%	40%
	Actual	Establish Baseline	0%	43%
<b>Comments:</b> The Department's overall project success measure addresses this specific performance measure and monitors and documents actual cost performance against the original cost baseline. This metric provides limited value.				

Specific Issue and Corrective Measure Performance Metrics (Target and Actual)				
Performance Metric	Target or Actual	FY 2008	FY 2009	FY 2010
<b>Corrective Measure 4:</b> By the end of FY 2013, 80% of capital asset line item projects (less than \$50M) are fully funded in one Fiscal Year (one Appropriation).	Target	N/A	N/A	N/A
	Actual	N/A	N/A	N/A
<b>Comments:</b> This performance measure has been incorporated into DOE Order 413.3B. Performance will be monitored and documented through the project approval process and the budgeting process.				

Specific Issue and Corrective Measure Performance Metrics (Target and Actual)				
Performance Metric	Target or Actual	FY 2008	FY 2009	FY 2010
<b>Corrective Measure 5:</b> By the end of FY 2010, establish and staff (at 80% of authorized FTEs) a cost estimating and analysis organization in the Chief Financial Officer, Office of Cost Analysis (CF-70) organization.	Target	20%	50%	80%
	Actual	20%	90%	100%
<b>Comments:</b> The Department shifted the cost estimating function for capital asset projects from the Office of Cost Analysis to the Office of Engineering and Construction Management. This performance measure has been completed and no longer requires monitoring and measurement.				

Specific Issue and Corrective Measure Performance Metrics (Target and Actual)				
Performance Metric	Target or Actual	FY 2008	FY 2009	FY 2010
<b>Corrective Measure 5:</b> By the end of FY 2011, 80% of contract awards are within plus or minus 25% of independent government cost estimates.	Target	Establish Baseline	70%	75%
	Actual	Establish Baseline	100%	80%
<b>Comments:</b> This performance measure has been incorporated into DOE Order 413.3B. Performance will be monitored and documented through the external independent review process and reported in the Program Management Scorecard.				

Specific Issue and Corrective Measure Performance Metrics (Target and Actual)				
Performance Metric	Target or Actual	FY 2008	FY 2009	FY 2010
<b>Corrective Measure 6:</b> By the end of FY 2011, achieve a contract specialist to contract value ratio of 1 per \$X million or less. The staffing study will establish the appropriate benchmark factor "X" to be applied.	Target	Start Staffing Study	1 per \$2.0M or less	1 per \$1.5M or less
	Actual	Start Staffing Study	N/A	N/A
<b>Comments:</b> Metric has been overcome by events and deleted as approved by the RCA/CAP ESC. The Departmental staffing models address the staffing requirements of contract specialists (series "1102").				

Specific Issue and Corrective Measure Performance Metrics (Target and Actual)				
Performance Metric	Target or Actual	FY 2008	FY 2009	FY 2010
<b>Corrective Measure 7:</b> By the end of FY 2012, achieve a FPD (including Deputy FPD(s), as applicable) to annual work in place ratio of 1 per \$X million or less, and/or in accordance with the staffing study. The staffing study will establish the appropriate benchmark factor "X" to be applied.	Target	Start Staffing Study	1 per \$2.5M or less	1 per \$2.0M or less
	Actual	Start Staffing Study	N/A	N/A
<b>Comments:</b> Metric has been overcome by events and deleted as approved by the RCA/CAP ESC. The results of the staffing study provide an acceptable range of federal staff, including the FPD and Deputy FPD, to be considered based on various project characteristics.				

# Chapter 4

## Summary and Next Steps

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The Department has addressed all eight corrective measures in the RCA CAP. The Department has effectively mitigated most of the underlying root causes identified as responsible for the most significant issues impacting cost and schedule performance.

The Department's Program and Staff Support Offices will keep working on remaining issues and root causes. Because the RCA CAP has effectively served its purpose, it is being closed out. Ongoing initiatives will persist and new initiatives will emerge as part of the continuous improvement process. The Department's focus on contract and project management will endure with the goal of consistent and sustainable project success.

A summary of the major Departmental accomplishments and associated project results as well as some ongoing continuous performance improvement areas are documented in the following sections.

### 4.1 DEPARTMENTAL ACCOMPLISHMENTS

The Department has continued to make major improvements in its management of contracts and projects. A summary of some of the improvements realized through the RCA CAP corrective measure implementation includes:

#### Strong Commitment and Leadership

- Enhanced senior DOE management dedication and commitment to improving contract and project management, including the Department's follow through on actions from the RCA and CAP, memoranda from the Deputy Secretary of Energy, and ongoing initiatives being made in EM and NNSA.
- Conducted over 30 Deputy Secretary-led "deep dives," or in-depth reviews, on EM and NNSA capital asset projects and contracts.

#### Improved Project Front-End Planning

- Implemented policy requiring that adequate front-end project planning is completed and designs are sufficiently mature before establishing a project performance baseline.
- Used industry standard practices, including the Technology Readiness Assessment and Project Definition Rating Index tools, to determine whether a project is ready for baselining.
- Divided large programs/projects into smaller, stand-alone projects, as appropriate.

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### Enhanced Federal Contract and Project Management Workforce

- Hired (or contracted for) additional contract and project management professionals with the skills to successfully manage our contracts and project portfolio.
- Developed a departmental staffing model to determine appropriate staffing levels and issued an accompanying guide.
- Implemented a protocol to evaluate staffing levels during IPRs.
- Enhanced the PMCDP, the FPD Certification Program, the Acquisition Management Career Development Program, and the Acquisition Professional Certification requirements to improve the training and qualifications of contract and project management personnel.

### Improved Project Risk Assessment, Communication, and Management

- Adjusted risk management procedures and training to ensure risks associated with projects are objectively identified, assessed, communicated, and managed through all phases of planning and execution.
- Conducted pilot courses; Project Risk Analysis and Management (Level II) and Advanced Risk Management (Level III) courses are now an integral part of the PMCDP.
- Posted risk management tools on project management website.
- Developed a contingency and management reserve protocol.
- Revised the Risk Management Guide to incorporate new tools and clarify determination and use of contingency and management reserve.
- Revamped risk management training courses to provide additional tools and explain how to manage contingency and management reserve.

### Alignment and Integration of Budget Profiles and Project Cost Baselines

- Required approval of funding profiles at CD-2 and that Acquisition Executives approve any subsequent changes to the profile.
- Required full funding of most construction projects that are less than \$50M.
- Required that Programs ensure affordability and adhere to baseline funding profiles for incrementally funded projects in annual budget requests.

### Improved Independent Government Cost Estimates

- Established new cost estimating requirements and policy; incorporated it within DOE O 413.3B.
- Require an ICR at CD-0F for major systems projects.
- Require an ICE and/or ICR at CD-1, an ICE at CD-2, and an ICE at CD-3 (if warranted) for capital asset projects greater than or equal to \$100M.
- Developed a companion cost estimating guide for DOE O 413.3B, incorporating best practices from GAO's Cost Estimating and Assessment Guide as well as procedures to conduct cost reviews and develop cost estimates.
- Certified three Cost Engineers (CCEs) with accreditation from the Association for the Advancement of Cost Engineering (AACE) International with more CCEs in the pipeline.
- Published an Excel version of historical cost database, iCost, within the iPortal.

- Incorporated GAO's 12-step cost estimating process into the EIR process to ensure credible cost estimates.
- Conducted extensive training for 72 Federal project management professionals on cost estimating techniques.

#### Improved Acquisition Strategies and Plans

- Piloted "Managing Contract Changes" course at DOE Headquarters.
- Realigning procurement policy and guidance with newly revised project management guidance.
- Conducted extensive Procurement Management Reviews of field procurement operations.
- Reducing risk by increasing use of fixed-price contracts.
- Strengthened commitment to federal ownership by aligning and integrating acquisition strategies and plans with project plans.
- Developing a Change Control Guide to ensure project and contract changes are integrated and completed in a timely manner; publication is projected for third quarter of FY 2011.
- Aligned procurement policy and guidance with newly revised project management guidance; issued Acquisition Policy Flashes and revised portions of DOE's Acquisition Guide.

#### Improved Project Oversight and Management

- Procured, piloted, and deployed next generation (web-enabled) of PARS II, which provides consistent, reliable, and auditable data to all levels of management.
- Enhanced IPRs by exporting the Office of Science "project peer review" process across the Department.
- Expanded project reviews to include contract management.

#### Improved Adherence to Project Management Requirements

- Strengthened project management procedures by revising and issuing DOE O 413.3B, along with revisions to, and/or development of, associated supporting Guides, including risk management, cost estimating, and change control.
- Developed "Program Management Scorecard" to monitor DOE O 413.3B compliance.

These improvements have produced the following results:

- The Department has achieved a 100 percent success rate (i.e., completed within 10 percent of the original cost baseline) for projects initiated within the past 2 years and completed in FY 2010, including two construction and three cleanup projects.
- DOE has effectively managed the 44 projects launched in the past 2 years so that 91 percent are on track to meet the Department's project success performance measure in FY 2011.
- The Department has certified that 97 percent of DOE line item projects use EVM systems that comply with the industry standard, ANSI/EIA-748B, to track performance.



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While significant project improvements have been realized, the DOE recognizes that further improvements are possible. Accordingly, the Department is moving forward under a new contract and project management continuous improvement initiative.

## 4.2 CONTINUOUS PERFORMANCE IMPROVEMENTS

Despite the above-mentioned Departmental accomplishments, continuous improvement is necessary to ensure that all the developed and implemented solutions addressing the root causes of contract and project management issues are independently validated for their effectiveness and sustainability. The Department recognizes that further improvements are necessary to continue demonstrating improved contract and project management performance. Accordingly, DOE conducted a Contract and Project Management Summit on December 1-2, 2010, to keep management attention focused on challenges that require further improvement. The challenges discussed included:

- Project and Contract Alignment and Change Control
- Contract Administration, including Surveillance, Monitoring, and Oversight
- Program/Project Prioritization and Funding Alignment
- Roles and Responsibilities—Contracting Officers and Contracting Officer Representatives
- Accountability—Aligning Incentives
- Adequate Project and Contract Management Staffing

Continuous improvements identified in each of these areas will be established and implemented directly by the Department's Program and Staff Support Offices. DOE understands the principles fundamental to effective project management, including leadership commitment, appropriate management and technical expertise, and disciplined and rigorous implementation of contract and project management policies. These principles have been and will continue to be aggressively pursued by the Department to ensure contract and project management requirements are consistently followed, federal oversight of contractors continues to improve, and accountability for performance is strengthened. Ultimately, the Department's effectiveness and success will be measured and validated by improved cost and schedule performance.