ORDER

DOE O 413.3B

Approved: 11-29-2010

PROGRAM AND PROJECT MANAGEMENT FOR THE ACQUISITION OF CAPITAL ASSETS

U.S. Department of Energy
Washington, DC

PROGRAM AND PROJECT MANAGEMENT FOR THE ACQUISITION OF CAPITAL ASSETS

1. PURPOSE.

   a. To provide the Department of Energy (DOE) Elements, including the National Nuclear Security Administration (NNSA), with program and project management direction for the acquisition of capital assets with the goal of delivering projects within the original performance baseline (PB), cost and schedule, and fully capable of meeting mission performance, safeguards and security, and environmental, safety, and health requirements unless impacted by a directed change.

   b. To implement Office of Management and Budget (OMB) Circulars to include: A-11, Part 7, *Capital Programming Guide*, which prescribes new requirements and leading practices for project and acquisition management; A-123, *Management's Responsibility for Internal Control*, which defines management's responsibility for internal control in Federal agencies; and A-131, *Value Engineering*, which requires that all Federal agencies use Value Engineering (VE) as a management tool.

2. CANCELLATION. This Order cancels DOE O 413.3A, Chg 1, *Program and Project Management for the Acquisition of Capital Assets*, dated 11-17-08. Cancellation of a directive does not, by itself, modify or otherwise affect any contractual or regulatory obligation to comply with the directive. Contractor Requirements Documents (CRDs) that have been incorporated into a contract remain in effect throughout the term of the contract until the contract or regulatory commitment is modified to either eliminate requirements that are no longer applicable or substitute a new set of requirements.

3. APPLICABILITY.

   a. Departmental Applicability.

      The requirements identified in Appendix A of this Order are mandatory for all DOE Elements (unless identified in Paragraph 3.c., Equivalencies/Exemptions) for all capital asset projects having a Total Project Cost (TPC) greater than or equal to $50M. However, if project performance is not maintained with success targets, the Deputy Secretary (on a case basis) may change the threshold for Order applicability to $20M.

      All other appendices and attachments with the exception of Attachment 1 support Appendix A and provide explanatory information. Any reference to a Program

Secretarial Office (PSO) in this Order is also applicable to the Deputy Administrator/Associate Administrators for the NNSA.

The principles (see Appendix C, Paragraph 1.a.-l.) as set forth in this Order apply to all capital asset projects. They also apply to General Plant Projects (GPPs) as defined in DOE O 430.1B, using a tailored approach.

Regardless of Order applicability thresholds, all projects with a TPC greater than or equal to $10M are required to report performance in Project Assessment and Reporting System (PARS II) at Critical Decision (CD)-0. After CD-2 is approved for projects with a TPC greater than or equal to $20M, earned value reporting shall apply. Additionally, all CD or equivalent documents and performance baseline change proposal approvals shall be submitted to OECM.

This Order does not apply to Financial Assistance Awards (grants and cooperative agreements) covered under 10 CFR Part 600.

The Administrator of the NNSA must assure that NNSA employees comply with their responsibilities under this directive. Nothing in this directive will be construed to interfere with the NNSA Administrator's authority under Section 3212(d) of Public Law (P.L.) 106-65 to establish Administration-specific policies, unless disapproved by the Secretary.

b. DOE Contractors.

Except for the equivalencies/exemptions in paragraph 3.c., the CRD (Attachment 1) sets forth requirements of this Order that will apply to contracts that include the CRD.

The CRD must be included in contracts making the contractor responsible for planning, design, construction and execution of capital asset projects subject to this Order.

c. Equivalencies/Exemptions. Equivalencies and exemptions to this Order are processed in accordance with DOE O 251.1C, *Departmental Directives Program*. Central Technical Authority (CTA) (or designee) concurrence is required for both exemptions and equivalencies to this Order for nuclear facilities. The Deputy Secretary must approve all equivalencies and exemptions to the requirements delineated in this Order except for those stipulated in Paragraphs 3.c.(1)-(2).

(1) Equivalency. In accordance with the responsibilities and authorities assigned by Executive Order (EO) 12344, codified at 50 USC Sections 2406 and 2511 and to ensure consistency through the joint Navy/DOE Naval Nuclear Propulsion Program, the Deputy Administrator for Naval Reactors (Director) will implement and oversee requirements and

practices pertaining to this Directive for activities under the Director's cognizance, as deemed appropriate.

(2) Equivalency. Bonneville Power Administration in accordance with Secretarial Delegation Order 00-033.00B, dated 7-20-09.

(3) Exemption. PSOs that meet all of the following criteria may be excluded from specific requirements of this Order. The intent of this exemption is to shift CD authority to the PSO and place those activities normally carried out by OECM in the hands of the PMSO. They must have:

- An established Project Management Support Office (PMSO) with adequate project management requirements, processes and procedures defined to enable continued project success. This will be validated by OECM and must be consistent with the Acquisition Management System delineated in the Order;

- An on-going set of active capital asset projects, post CD-2, of over 10 projects at any time during the current FY; and

- Completed 90% of projects across a three-year rolling average, not to exceed by more than 10% of the original cost baseline for the original approved scope at CD-2 for all capital asset projects with a TPC greater than or equal to $10M.

To allow OECM to determine Departmental-wide metrics and to permit an independent validation of the PSO eligibility to exercise this exemption, all PSOs are still required to:

- Report all projects into PARS-II monthly, including earned value data, when applicable.

- Submit all CD or equivalent documents to the Office of Engineering and Construction Management (OECM).

- Submit Performance Baseline Change Proposal approvals to OECM.

- OECM will lead Independent Cost Reviews and Independent Cost Estimates as delineated in Appendix A, Tables 2.0 through 2.3.

For PSOs that are eligible for the exemption, the Deputy Secretary must take affirmative action and approve the exemption through an action memorandum from the PSO with concurrence from OECM. The Deputy Secretary may specify exceptions (e.g., retain high profile projects).

Additionally, the nuclear safety-related requirements of the Order, including DOE-STD-1189, shall not be exempted. Further, this exemption does not apply to defense nuclear facilities.

The Deputy Secretary shall rescind this exemption if the PSOs are unable to maintain the exemption requirements listed previously. The exemption may also be rescinded at any time at the discretion of the Deputy Secretary.

When a PSO is no longer exempt, the requirements of this Order must be implemented within six months. Specifically, projects reaching a particular CD or project closeout within six months of exemption rescission are not required to comply with this Order for approval of that CD. Those reaching a CD after six months of exemption rescission shall comply with this Order to gain approval of that particular CD or for project closeout.

4. REQUIREMENTS. Appendix A. Topical Areas are in Appendix C.

a. General.

(1) Detailed requirements on capital asset projects are provided in Appendix A. Other appendices and attachments with the exception of Attachment 1 are included as supporting or explanatory information.

(2) Guides are not requirements documents and are not to be construed as requirements in any audit or appraisal for compliance with the parent Policy, Order, Notice, or Manual. The Guides referenced in this Order are meant as suggestions or potential guidelines for content and purpose of documents.

(3) Tailoring is necessary for the efficient delivery of projects and should be applied to all projects considering size, complexity, cost, and risks. Tailoring does not imply the omission of requirements, and requirements must be addressed to the extent necessary and practical. Tailoring may involve consolidation or phasing of CDs, substituting equivalent documents, using a graded approach to document development and content, concurrency of processes, or creating a portfolio of projects to facilitate a single CD or Acquisition Strategy (AS) for the entire group of projects. Tailoring may also include adjusting the scope of Independent Project Reviews (IPRs) and External Independent Reviews (EIRs), delegation of acquisition authority, and other elements. Major tailored elements such as consolidating or phasing CDs or delegation of Acquisition Executives (AEs) must be specified in the Project Execution

Plan (PEP) or the Tailoring Strategy and approved by the AE. For Hazard Category 1, 2, and 3 nuclear facilities, the Tailoring Strategy must include the approach to satisfying DOE-STD-1189-2008 safety document development.

b. Implementation. New requirements since DOE O 413.3A, Chg 1, must be implemented within six months of the issuance of this Order. Specifically, projects reaching a particular CD or project closeout within six months of issuance will continue to comply with DOE O 413.3A for approval of that CD. Those reaching a CD after six months of issuance shall comply with this Order to gain approval of the particular CD or for project closeout.

5. RESPONSIBILITIES. Key roles and responsibilities of line managers are described in Appendix B.

6. DEFINITIONS. See Attachment 2. See Attachment 3 for Acronyms.

7. REFERENCES. See Attachment 4.

8. CONTACT. Questions concerning this Order should be directed to the OECM, 202-586-1784.

BY ORDER OF THE SECRETARY OF ENERGY:

DANIEL B. PONEMAN
Deputy Secretary

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APPENDIX A
REQUIREMENTS

1. Objective.

The Department's ultimate objective is to deliver every project at the original PB, on schedule, within budget, and fully capable of meeting mission performance, safeguards and security, quality assurance (QA), sustainability, and environmental, safety, and health requirements. Consistent with this objective, a project shall be completed at CD-4 within the original approved performance baseline (CD-2), unless otherwise impacted by a directed change.

The authority and accountability for any project, including its costs, must be vested firmly in the hands of the Federal Project Director (FPD).

Some cost estimate, or cost range, should be provided at each CD gateway, but the degree of rigor and detail for a cost estimate should be carefully defined, depending on the degree of confidence in project scale and scope that is reasonable to expect at that stage. Whatever figure or range that is provided should explicitly note relevant caveats concerning uncertainties inherent in estimates at CD-0 and CD-1 stages.

A project sponsor should never be the sole cost estimator, at any stage (i.e., from CD-0 on), given the inherent conflict of interest.

The second cost estimator should come from outside of the line manager’s chain of command, to avoid conflict of interest.

2. DOE Acquisition Management System.

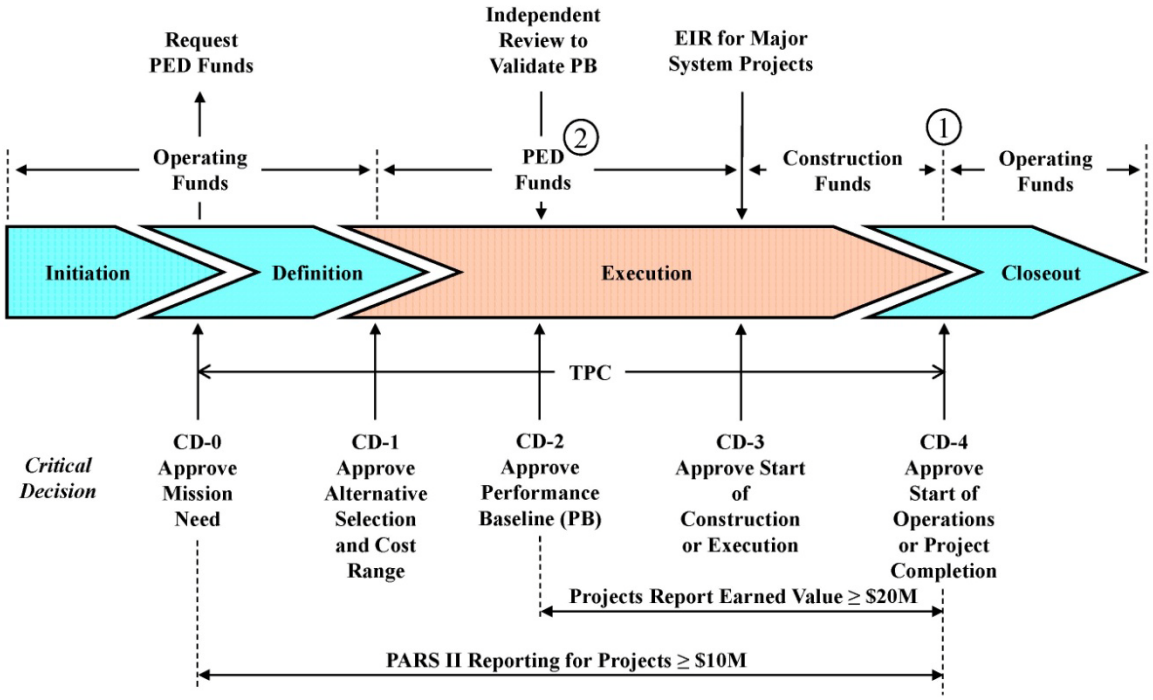
The DOE Acquisition Management System establishes principles and processes that translate user needs and technological opportunities into reliable and sustainable facilities, systems, and assets that provide a required mission capability. The system will be organized by project phases and CDs, progressing from broadly-stated mission needs into well-defined requirements resulting in operationally effective, suitable, and affordable facilities, systems, and other products.

Within DOE, projects typically progress through five CDs, which serve as major milestones approved by the Secretarial Acquisition Executive (SAE) or AE. Each CD marks an authorization to increase the commitment of resources by DOE and requires successful completion of the preceding phase or CD. The amount of time between decisions will vary. The CDs are:

- CD-0, Approve Mission Need. There is a need that cannot be met through other than material means;

- CD-1, Approve Alternative Selection and Cost Range. The selected alternative and approach is the optimum solution;
- CD-2, Approve Performance Baseline. Definitive scope, schedule and cost baselines have been developed;
- CD-3, Approve Start of Construction/Execution. The project is ready for implementation; and
- CD-4, Approve Start of Operations or Project Completion. The project is ready for turnover or transition to operations, if applicable.

Figure 1 illustrates the requirements for the typical implementation of the DOE Acquisition Management System for Line Item Capital Asset Projects. Figure 2 depicts the implementation for Other Capital Asset Projects such as Major Items of Equipment (MIE) and Operating Expense (OE) projects.



NOTES:
1. Operating Funds may be used prior to CD-4 for transition, startup, and training costs.
2. PED funds can be used after CD-3 for design.

Figure 1. Typical DOE Acquisition Management System for Line Item Capital Asset Projects

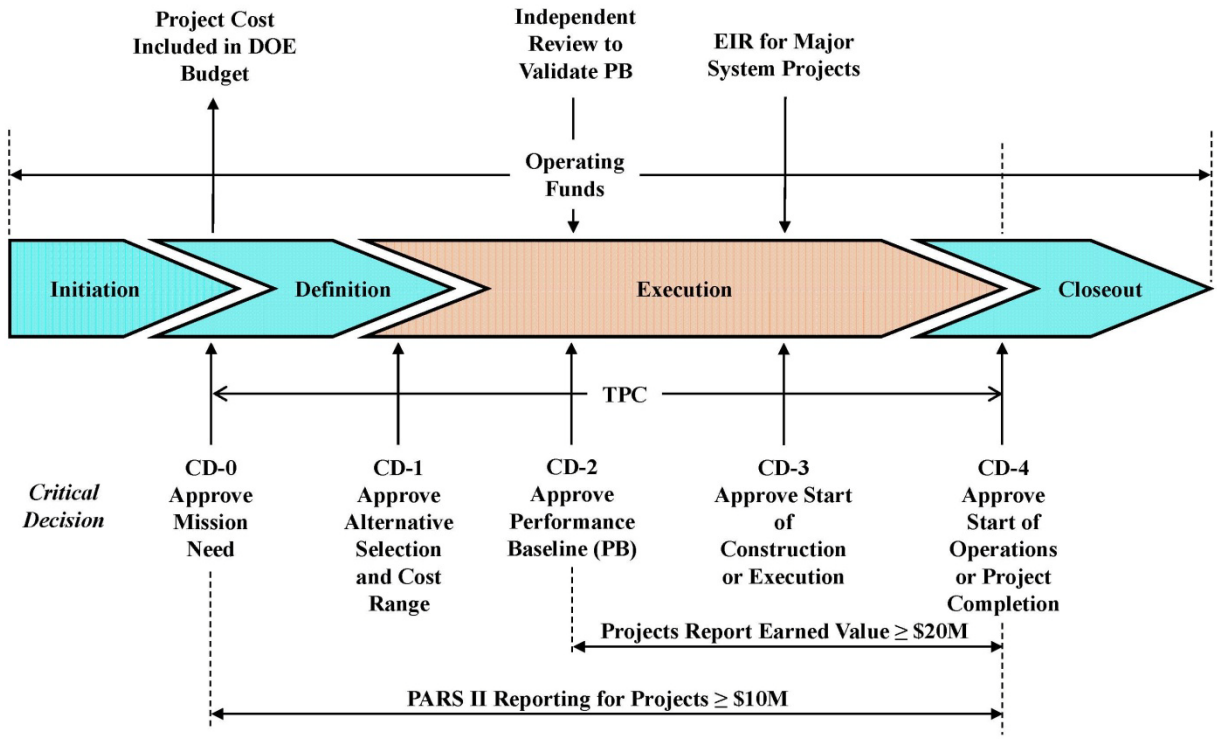


Figure 2. Typical DOE Acquisition Management System for Other Capital Asset Projects (i.e., Major Items of Equipment and Operating Expense Projects)

3. Critical Decision Approval Authority and Thresholds.

The Deputy Secretary serves as the Department's SAE and promulgates Department-wide policy and direction. The CD authorities, thresholds and delegations are identified in Table 1.

a. Major System Projects.

Projects with a TPC greater than or equal to $750M are Major System Projects. All Major System Project CDs must be proposed by the appropriate PSO and approved by the Deputy Secretary as DOE's designated SAE before proceeding to the next project phase or CD.

b. Non-Major System Projects.

Projects with a TPC less than $750M are Non-Major System Projects. The designated AE must approve all Non-Major System Project CDs, except for CD-0, which cannot be delegated below the PSO.

Table 1. Critical Decision Authority Thresholds

Critical Decision Authority	Total Project Cost Thresholds
Secretarial Acquisition Executive	≥ $750M (or any project on an exception basis when designated by the SAE) **Further delegation is allowed.**
Under Secretaries	≥ $100M and < $750M (or any project on an exception basis when designated by the Under Secretaries) **Further delegation is allowed.**
Program Secretarial Officer	≥ $50M and < $100M **Further delegation is allowed.**

4. Requirements for Approval of Critical Decisions.

a. CD-0, Approve Mission Need.

The Initiation Phase begins with the identification of a mission-related need. A Program Office will identify a credible performance gap between its current capabilities and capacities and those required to achieve the goals articulated in its strategic plan. The Mission Need Statement (MNS) is the translation of this gap into functional requirements that cannot be met through other than material means. It should describe the general parameters of the solution and why it is critical to the overall accomplishment of the Department's mission, including the benefits to be realized. The mission need is independent of a particular solution, and should not be defined by equipment, facility, technological solution, or physical end-item. This approach allows the Program Office the flexibility to explore a variety of solutions and not limit potential solutions (refer to DOE G 413.3-17). Table 2.0 lists the requirements needed to attain CD-0.

The cost range provided at CD-0 should be Rough-Order of Magnitude (ROM) and is used to determine the AE authority designation. It does not represent the PB, which will be established at CD-2.

Table 2.0 CD-0 Requirements[1]	
Prior to CD-0	**Approval Authority[2]**
Perform Pre-Conceptual Planning activities that focus on the Program Offices' strategic goals and objectives, safety planning, design, development of capability gaps, high-level project parameters, a ROM cost range, and schedule estimates.	
Perform a Mission Validation Independent Review on all Major System Projects. (Refer to DOE G 413.3-9.)	PSO
Approve a Mission Need Statement Document with recommendation from OECM for projects with a TPC ≥ $100M. (Refer to DOE G 413.3-17.)	PSO
For Major System Projects, or for projects as designated by the SAE, OECM will conduct an Independent Cost Review (ICR).	
For NNSA only, prepare a Program Requirements Document that defines the ultimate goals which the project must satisfy. (Refer to NNSA Business and Operating Policy.)	PSO
***For Hazard Category 1, 2, and 3 nuclear facilities**, and to the specificity possible, document DOE expectations for Safety-in-Design. (Refer to DOE-STD-1189-2008.)*	*Safety Basis Approval Authority (SBAA)*
Post CD-0 Approval	
Submit all CD documents to OECM.	
Develop a Project Data Sheet (PDS) for Line Item Projects to request Project Engineering and Design (PED) funds. Develop funding documents for MIE or OE projects for the design, and OMB 300s. (Refer to OMB Budget Call for PDS and Exhibit 300 Template.)	
Initiate monthly PARS II reporting (excluding earned value data). FPD, Program Manager and OECM will provide monthly assessments, as appropriate.	
Initiate Quarterly Project Reviews (QPRs) with the AE or their designee.	
Proceed with conceptual planning and design used to develop alternative concepts and functional requirements using operating funds.	

NOTES:
1. Documents and reports are not intended to be stand-alone and may be combined.
2. Where no approval authorities are noted, authorities are established through other directives or the Program Offices (e.g., Functions and Requirements Assignment Matrix).

b. CD-1, Approve Alternative Selection and Cost Range.

CD-1 approval marks the completion of the project definition phase and the conceptual design. This is an iterative process to define, analyze, and refine project concepts and alternatives. This process uses a systems engineering methodology that integrates requirements analysis, risk identification and analysis, acquisition strategies, and concept exploration in order to evolve a cost-effective, preferred solution to meet a mission need (refer to DOE G 413.3-1 for more information). The recommended alternative should provide the essential functions and capabilities at an optimum life-cycle cost, consistent with required cost, scope, schedule, performance, and risk considerations. It should be reflected in the site's long-range planning

documents as well. Approval of CD-1 provides the authorization to begin the project Execution Phase and allows PED funds to be used. Table 2.1 lists the requirements needed to attain CD-1.

The cost range provided at CD-1 is the preliminary estimate for the selected alternative. As CD-1 progresses to CD-2, the TPC will be refined and the TPC established at CD-2 may be higher than the range defined at CD-1, in which case the AE must be notified. The CD-1 cost range is not the PB cost. The PB against which project success is measured will be established at CD-2. The only exception is when a construction budget request is submitted in advance of an approved CD-2. In this circumstance, refer to Appendix A, Paragraph 4.c.(2).

If the top end of the original approved CD-1 cost range grows by more than 50% as the project proceeds toward CD-2, the Program, in coordination with the AE, must reassess the alternative selection process. Upon completing the review, the AE must approve a revised CD-1 identifying the new or reaffirmed selected alternative and an updated CD-1 cost range. This new CD-1 information, to include the new CD-1 cost range and CD-1 approval date, will be reflected within PARS II and all subsequent PDSs and similar project documentation.

Table 2.1 CD-1 Requirements[1]

Prior to CD-1	**Approval Authority[2]**
Approve an Acquisition Strategy with endorsement from OECM for Major System Projects. (Refer to DOE G 413.3-13.)	PSO
Approve a preliminary Project Execution Plan (PEP). The Tailoring Strategy, if required, can be included in the PEP or placed in a separate document. (Refer to DOE G 413.3-15.)	SAE or AE
• Approve appointment of the Federal Project Director considering the requirements in DOE O 361.1B.	SAE or AE
• Establish and charter an Integrated Project Team to include a responsibility assignment matrix. The Charter may be included in the PEP. (Refer to DOE G 413.3-18.)	PSO ≥ $750M FPD < $750M
• Develop a Risk Management Plan (RMP) and complete an initial risk assessment of a recommended alternative. This may be included in the PEP. For evaluating the Safety-in-Design Strategy, prepare Risk and Opportunity Assessments for input to the RMP. (Refer to DOE G 413.3-7 and DOE-STD-1189-2008.)	
For projects with a TPC ≥ $100M, OECM will develop an Independent Cost Estimate and/or conduct an Independent Cost Review, as they deem appropriate.	
Comply with the One-for-One Replacement legislation (excess space/offset requirement) as mandated in House Report 109-86. (Refer to DOE O 430.1B.)	

Table 2.1 CD-1 Requirements[1]	
Prior to CD-1	**Approval Authority[2]**
Complete a Conceptual Design.	
• Document High Performance and Sustainable Building provisions per EO 13423, Section 2(f), EO 13514, Section 2, and Sustainable Environmental Stewardship considerations per DOE O 450.1A, as amended, in the Conceptual Design Report, Acquisition Strategy, and/or PEP, as appropriate. (Refer to DOE G 413.3-6 and DOE O 430.2B.)	
• Conduct a Design Review of the conceptual design with reviewers external to the project.	
• ***For nuclear facilities,*** *a Code of Record shall be initiated during the conceptual design.*	
• Complete a Conceptual Design Report. Refer to Appendix C, Paragraph 4.	
Prepare a Preliminary Hazard Analysis Report (PHAR) for facilities that are below the Hazard Category 3 nuclear facility threshold as defined in 10 CFR Part 830, Subpart B.	Field Organization
Develop and implement an Integrated Safety Management Plan into management and work process planning at all levels per DOE M 450.4-1.	
Establish a Quality Assurance Program (QAP). (Refer to 10 CFR Part 830, Subpart A, DOE O 414.1C, and DOE G 413.3-2.) ***For nuclear facilities****, the applicable national consensus standard shall be NQA-1-2008 (Edition) and NQA-1a-2009 (Addenda).*	
Identify general Safeguards and Security requirements for the recommended alternative. (Refer to DOE M 470.4-1 and DOE G 413.3-3.)	
Complete a National Environmental Policy Act (NEPA) Strategy by issuing a determination (e.g., Environmental Assessment), as required by DOE O 451.1B. Prepare an Environmental Compliance Strategy, to include a schedule for timely acquisition of required permits and licenses.	
Update Project Data Sheet, or other funding documents for MIE and OE projects, and OMB 300s, if applicable. (Refer to OMB Budget Call for PDS and Exhibit 300 Template.)	
For Hazard Category 1, 2, and 3 nuclear facilities*, prepare a Safety Design Strategy (SDS), with the concurrence of the CNS or with written advice of the CDNS, as appropriate, for projects subject to DOE-STD-1189-2008.*	*SBAA and FPD*
For Hazard Category 1, 2, and 3 nuclear facilities*, conduct an Independent Project Review (IPR) to ensure early integration of safety into the design process. (Refer to DOE G 413.3-9 and DOE-STD-1189-2008.)*	*PSO*
Prepare a Conceptual Safety Design Report (CSDR)[3] ***for Hazard Category 1, 2, and 3 nuclear facilities****, including preliminary hazard analysis. For a project involving a major modification of an existing facility, the SDS must address the need for a CSDR, as well as the required PDSA. (Refer to DOE-STD-1189-2008.)*	*SBAA via the CSVR*
Prepare a Conceptual Safety Validation Report (CSVR), with concurrence from the FPD, on the DOE review of the CSDR ***for Hazard Category 1, 2, and 3 nuclear facilities****. (Refer to DOE-STD-1189-2008.)*	*SBAA*

Table 2.1 CD-1 Requirements[1]	
Post CD-1 Approval	
Submit all CD documents to OECM.	
Begin expenditure of PED, MIE, or OE funds for the project design.	
Develop an Acquisition Plan, if applicable.	
Continue monthly PARS II reporting (excluding earned value). FPD, Program Manager and OECM will provide monthly assessments, as appropriate.	
Continue QPRs with the AE of their designee.	
***For nuclear facilities**, develop a Checkout, Testing and Commissioning Plan in preparation for acceptance and turnover of the structures, systems and components at CD-4. (Refer to DOE-STD-1189-2008.)*	

NOTES:

1. Documents and reports are not intended to be stand-alone and may be combined.
2. Where no approval authorities are noted, authorities are established through other directives or the Program Offices (e.g., Functions and Requirements Assignment Matrix).
3. Per 10 CFR 830.206, a major modification of an existing Hazard Category 1, 2 or 3 nuclear facility requires the development of a Preliminary Documented Safety Analysis (PDSA) and its approval by DOE (10 CFR 830.207). Per DOE-STD-1189-2008, a SDS must be developed that addresses: (1) the need for a CSDR or Preliminary Safety Design Report (PSDR) as well as the required PDSA, to support project phases; (2) the graded content of the PDSA necessary to support the design and modification; (3) the application of nuclear safety design criteria; and (4) the interface with the existing facility, its operations, and construction activities.

c. CD-2, Approve Performance Baseline.

(1) Completion of preliminary design is the first major milestone in the project Execution Phase. The design must be sufficiently mature (refer to Appendix C, Paragraph 4) at the time of CD-2 approval to provide reasonable assurance that the design will be implementable within the approved PB. The document signed by the SAE or AE approving CD-2 must clearly specify the project's approved PB, which includes the TPC, CD-4 date (month and year), scope and minimum Key Performance Parameters (KPPs) that must be achieved at CD-4. Table 2.2 lists the requirements needed to attain CD-2.

Table 2.2 CD-2 Requirements[1]	
Prior to CD-2	**Approval Authority[2]**
Approve an updated Acquisition Strategy, if there are any major changes to the acquisition approach. Obtain endorsement from OECM for Major System Projects. (Refer to DOE G 413.3-13.)	PSO
Establish a Performance Baseline, reflective of identified and assessed risks and uncertainties, to include TPC, CD-4 date, and minimum KPPs. The key project milestones and completion dates shall be stated no less specific than month and year. The scope will be stated in quantity, size and other parameters that give shape and form to the project. The funding assumptions upon which the PB is predicated will be clearly documented and approved. (Refer to DOE G 413.3-5.)	FPD
Approve updated Project Execution Plan. (Refer to DOE G 413.3-15.)	SAE or AE
• Prepare a Funding Profile to support the execution of the PB and reflect in the budget document. AE must consider fully funding projects (excluding MIE) with a TPC less than $50M. The funding profile may be included in the PEP.	SAE or AE
• Approve Long-Lead Item Procurements, if necessary. Approval may be concurrent with (or prior to) CD-2 approval. (Long-lead item procurement approval will be designated as CD-3A.)	SAE or AE
Develop a Project Management Plan, if applicable. (Refer to Attachment 1.)	
Complete a Preliminary Design.	
• Incorporate the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings per EO 13423, Section 2(f), EO 13514, Section 2, and Sustainable Environmental Stewardship considerations per DOE O 450.1A into the preliminary design and design review. (Refer to DOE G 413.3-6 and DOE O 430.2B.)	
• Conduct a Design Review of the preliminary design.	
• ***For nuclear facilities,*** *design reviews should include a focus on safety and security systems. Additionally, the Code of Record shall be placed under configuration control during preliminary design.*	
• Complete a Preliminary Design Report.	
Perform a Performance Baseline External Independent Review (EIR) or an Independent Project Review (IPR). OECM will conduct EIRs to validate the PB for projects with a TPC ≥ $100M. OECM must issue a Performance Baseline Validation Letter to the PSO that describes the cost, schedule, and scope being validated. PMSO will conduct IPRs to validate the PB for projects with a TPC < $100M. (Refer to DOE G 413.3-9) For projects with a TPC ≥ $100M, OECM will develop an Independent Cost Estimate (ICE). The ICE will support validation of the PB.	OECM ≥ $100M PMSO < $100M

Table 2.2 CD-2 Requirements[1]	
Prior to CD-2	**Approval Authority[2]**
• Conduct a Project Definition Rating Index Analysis, as appropriate, for projects with a TPC ≥ $100M. OECM will review as part of the EIR. (Refer to DOE G 413.3-12.)	FPD
For Major System Projects where new critical technologies are being developed, conduct a Technology Readiness Assessment and develop a Technology Maturation Plan, as appropriate. It is not required of a project if: (1) the technology was adequately demonstrated previously in one or more separate projects; or (2) the objective of the project is to research scientific principles. (Refer to DOE G 413.3-4.)	PSO
Employ an Earned Value Management System compliant with ANSI/EIA-748B, or as required by the contract. This is performed by the contractor. (Refer to DOE G 413.3-10.)	
Prepare a Hazard Analysis Report for facilities that are below the Hazard Category 3 nuclear facility threshold as defined in 10 CFR Part 830, Subpart B by updating the PHAR based on new hazards and design information.	Field Organization
Determine that the Quality Assurance Program is acceptable and continues to apply. (Refer to 10 CFR Part 830, Subpart A, DOE O 414.1C, and DOE G 413.3-2.)	
Conduct a Preliminary Security Vulnerability Assessment, if necessary. (Refer to DOE M 470.4-1 and DOE G 413.3-3.)	
Issue the final Environmental Impact Statement or Environmental Assessment and Finding of No Significant Impact, as required by 10 CFR Part 1021. For an Environmental Impact Statement, the appropriate authority shall issue the Record of Decision after CD-2 is granted, but prior to CD-3 approval. (Refer to DOE O 451.1B.)	
Update Project Data Sheet, or other funding documents for MIE and OE projects, and OMB 300s, if applicable. (Refer to OMB Budget Call for PDS and Exhibit 300 Template.)	
For Hazard Category 1, 2, and 3 nuclear facilities, *conduct a Technical Independent Project Review (TIPR).The TIPR is required at or near the completion of the preliminary design. The TIPR is not required for non-nuclear facilities. (Refer to DOE G 413.3-9.)*	*PSO*
For Hazard Category 1, 2, and 3 nuclear facilities*, update the Safety Design Strategy, with the concurrence of CNS or with written advice from CDNS, as appropriate, for projects subject to DOE-STD-1189-2008.*	*SBAA and FPD*
Prepare a Preliminary Safety Design Report (PSDR)[3] that updates the CSDR ***for Hazard Category 1, 2, and 3 nuclear facilities*** *based on updated hazard analysis and design information. For a project involving a major modification of an existing facility, the SDS must address the need for a PSDR, as well as the required PDSA. (Refer to DOE-STD-1189-2008.)*	*SBAA via the PSVR*
Prepare a Preliminary Safety Validation Report (PSVR), with concurrence from the FPD, based on a DOE review of the PSDR ***for Hazard Category 1, 2, and 3 nuclear facilities****. (Refer to DOE-STD-1189-2008.)*	*SBAA*

Table 2.2 CD-2 Requirements[1]	
Post CD-2 Approval	
Submit all CD documents, and if there are changes to the PB, submit BCP documents to OECM.	
Submit budget request for the TPC.	
Obtain AE endorsement on any changes to the approved funding profile that negatively impacts the project.	
Continue monthly PARS II reporting (including earned value data). FPD, Program Manager and OECM will provide monthly assessments.	
Continue QPRs with the AE or their designee.	
Initiate annual project peer review for projects with a TPC > $100M.	

NOTES:

1. Documents and reports are not intended to be stand-alone and may be combined.
2. Where no approval authorities are noted, authorities are established through other directives or the Program Offices (e.g., Functions and Requirements Assignment Matrix).
3. Per 10 CFR 830.206, a major modification of an existing Hazard Category 1, 2 or 3 nuclear facility requires the development of a PDSA and its approval by DOE (10 CFR 830.207). Per DOE-STD-1189-2008, a SDS must be developed that addresses: (1) the need for a CSDR or PSDR as well as the required PDSA, to support project phases; (2) the graded content of the PDSA necessary to support the design and modification; (3) the application of nuclear safety design criteria; and (4) the interface with the existing facility, its operations, and construction activities.

(2) Optional budget request process for construction projects. Upon AE approval, a construction project can submit a line item budget request prior to CD-2 approval, provided the AE accepts the following conditions:

- Project will document the strategy to request funds prior to CD-2 approval in the AS and preliminary PEP.
- Construction funds cannot be expensed until the approval of CD-2 and CD-3, with exception of CD-3A approval for long lead procurement, where applicable.
- CD-2 approval is obtained within one year following OMB budget submission to Congress. Typically, there are no exceptions and subsequent budget requests would not be allowed until CD-2 approval.
- If CD-2 approval is not achieved within one year following budget submission, any future budget requests for construction must be approved by the SAE through the ESAAB process.
- A default original performance baseline (or TPC) will be established equivalent to the top-end range at CD-1 with the

initial budget submission. At that time, a funding profile will be established and included in the PDS to support this default cost baseline.

- This original PB is refined with formal CD-2 approval and cannot exceed the top-end range established at CD-1. The project funding profile will be modified accordingly to align with the CD-2 cost baseline.

- If the ultimate CD-2 breaches the top-end cost range established at CD-1, approval to continue the project will be obtained from the SAE through the ESAAB process.

- If long lead procurement is needed upon budget submission, pursue CD-3A with the AE. (The default CD-2 performance baseline [or TPC] is the upper limit of the CD-1 cost range.)

(3) Execution typically comprises the longest and most costly phase of the project, but is only a fraction of the total life-cycle cost of a project. Value Management (VM) and VE techniques, as appropriate, should be used to ensure that the most effective life-cycle solutions are implemented. Refer to OMB Circular A-131.

d. CD-3, Approve Start of Construction/Execution.

CD-3 is a continuation of the execution phase. The project is ready to complete all construction, implementation, procurement, fabrication, acceptance and turnover activities. Table 2.3 lists the requirements needed to attain CD-3.

Table 2.3 CD-3 Requirements[1]	
Prior to CD-3	**Approval Authority[2]**
Approve updated CD-2 Project Documentation that reflects major changes from Final Design, the PEP, PB, AS, and PDS/funding documents for MIE and OE funds.	SAE or AE
Complete and review the Final Design or determine that the design is sufficiently mature to start procurement or construction. The FPD will ensure a constructability review is completed as part of the Final Design.	
• ***For nuclear facilities,*** *the Code of Record is controlled during final design and construction with a process for reviewing and evaluating new and revised requirements. This will determine their impact on project safety, cost and schedule before a decision is made to revise the Code of Record. New or modified requirements are implemented if technical evaluations determine that there is a substantial increase in the overall protection of the worker, public or environment, and that the direct and indirect costs of implementation are justified in view of this increased protection.*	
• Incorporate the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings per EO 13423, Section 2(f), EO 13514, Section 2, and Sustainable Environmental Stewardship considerations per DOE O 450.1A into the Final Design and the EIR. (Refer to DOE G 413.3-6 and DOE O 430.2B.)	
Employ a certified Earned Value Management System compliant with ANSI/EIA-748B, or as required by the contract. (Refer to DOE G 413.3-10.)	Certified by: OECM ≥ $100M; PMSO ≥ $50M < $100M; Contractor ≥ $20M < $50M
Perform an External Independent Review by OECM for Construction or Execution Readiness on all Major System Projects. (Refer to DOE G 413.3-9.) Perform an Independent Project Review by the appropriate PMSO for Non-Major System Projects unless justification is provided and a waiver is granted by the AE. For projects with a TPC ≥ $100M, OECM will develop an Independent Cost Estimate, if warranted by risk and performance indicators or as designated by the SAE.	OECM ≥ $750M PMSO < $750M
For Major System Projects where a significant critical technology element modification occurs subsequent to CD-2, conduct a Technology Readiness Assessment, as appropriate. It is not required of a project if: (1) the technology was adequately demonstrated previously in one or more separate projects; or (2) the objective of the project is to research scientific principles. (Refer to DOE G 413.3-4.)	PSO
Update the Hazard Analysis Report for facilities that are below the Hazard Category 3 nuclear facility threshold as defined in 10 CFR Part 830, Subpart B, based on new hazards and design information.	Field Organization
Prior to start of construction, prepare a Construction Project Safety and Health Plan[3] in accordance with 10 CFR Part 851, Appendix A, Section 1(d). This plan must be kept current during construction.	Field Organization
Update the Quality Assurance Program for construction, field design changes, and procurement activities. (Refer to 10 CFR Part 830, Subpart A, DOE O 414.1C, and DOE G 413.3-2.)	
Finalize the Security Vulnerability Assessment Report, if necessary. (Refer to DOE M 470.4-1 and DOE G 413.3-3.)	

Table 2.3 CD-3 Requirements[1]	
Prior to CD-3	**Approval Authority[2]**
***For Hazard Category 1, 2, and 3 nuclear facilities**, update the Safety Design Strategy, with the concurrence of CNS or with written advice from CDNS, as appropriate, for projects subject to DOE-STD-1189-2008.*	*SBAA and FPD*
*Prepare the Preliminary Documented Safety Analysis[4] that updates the PSDR for newly planned **Hazard Category 1, 2, and 3 nuclear facilities** based on updated hazard analysis and design information; also for major modifications of existing facilities. (Refer to 10 CFR Part 830, Subpart B, and DOE-STD-1189-2008.)*	*SBAA via the SER*
*Prepare a Safety Evaluation Report, with concurrence from the FPD, based on review of the PDSA **for Hazard Category 1, 2, and 3 nuclear facilities**. (Refer to 10 CFR Part 830, Subpart B.)*	*SBAA*
Post CD-3 Approval	
Submit all CD documents to OECM.	
Commit all the resources necessary, within the funds provided and within the TPC, to execute the project.	
Within 90 days, submit Lessons Learned regarding up-front project planning and design to PSO and OECM.	
Update PDS, or other funding documents for MIE and OE, and OMB 300s, if applicable. (Refer to OMB Budget Call for PDS and Exhibit 300 Template.)	
Conduct EVMS surveillance to ensure compliance with ANSI/EIA-748B, or as defined in the contract. Contractor must conduct the surveillance annually. OECM and PMSO must conduct their surveillance during the tenure of the contract (at the contract midpoint or every two years, during contract extensions, or as requested by the AE).	Conducted by: OECM ≥ $100M; PMSO ≥ $50M < $100M; Contractor ≥ $20M < $50M
Continue monthly PARS II reporting (including earned value data). FPD, Program Manager and OECM will provide monthly assessments.	
Continue QPRs with the AE or their designee.	
Continue annual project peer reviews for projects with a TPC > $100M.	

NOTES:

1. Documents and reports are not intended to be stand-alone and may be combined.
2. Where no approval authorities are noted, authorities are established through other directives or the Program Offices (e.g., Functions and Requirements Assignment Matrix).
3. For Environmental Management Clean-up Projects, refer to 29 CFR 1910.120.
4. Per 10 CFR 830.206, a major modification of an existing Hazard Category 1, 2 or 3 nuclear facility requires the development of a PDSA and its approval by DOE (10 CFR 830.207). Per DOE-STD-1189-2008, a SDS must be developed that addresses: (1) the need for a CSDR or PSDR as well as the required PDSA, to support project phases; (2) the graded content of the PDSA necessary to support the design and modification; (3) the application of nuclear safety design criteria; and (4) the interface with the existing facility, its operations, and construction activities.

e. CD-4, Approve Start of Operations or Project Completion.

CD-4 is the achievement of the project completion criteria defined in the PEP, the approval of transition to operations, and it marks the completion of the execution phase. The approval of CD-4 is predicated on the readiness to operate and/or maintain the system, facility, or capability. Transition and turnover does not necessarily terminate all project activity. In some cases, it marks a point known as Beneficial Occupancy Date (BOD) at which the operations organizations assume responsibility for starting operations and maintenance. The SAE or AE approves CD-4 upon notification from the project team that all project completion criteria defined in the PEP have been met. The document signed by the SAE or AE approving CD-4 must clearly specify the scope accomplished, the TPC, KPPs met, and the completion date (month and year) as it relates to the original CD-2 performance baseline and latest approved baseline change. The date the SAE or AE signs the document represents the CD-4 completion date. Table 2.4 lists the requirements needed to attain CD-4.

Table 2.4 CD-4 Requirements[1]

Prior to CD-4	**Approval Authority[2]**
Verify that Key Performance Parameters and Project Completion Criteria have been met and that mission requirements have been achieved. The FPD will verify and document the scope accomplished, TPC, KPPs met, and the completion date as it relates to the original CD-2 performance baseline and the latest approved baseline change.	FPD
Issue a Project Transition to Operations Plan[3] that clearly defines the basis for attaining initial operating capability, full operating capability, or project closeout, as applicable. The plan will include documentation, training, interfaces, and draft schedules. (Refer to DOE G 413.3-16.)	
For non-nuclear projects, conduct a formal assessment of the project's Readiness to Operate, as appropriate. Determine the basis for DOE acceptance of the asset and if the facility or area can be occupied from both a regulatory and a work function standpoint. Establish a beneficial occupancy/utilization date for the facility and/or equipment.	
Finalize the Hazard Analysis Report for facilities that are below the Hazard Category 3 threshold as defined in 10 CFR Part 830, Subpart B.	Field Organization
Revise the Environmental Management System in accordance with DOE O 450.1A, as appropriate.	
If applicable, complete and submit Contractor Evaluation Documents to the AE, the appropriate PSO, OPAM, and OECM in accordance with FAR 42.15.	
Conduct an Operational Readiness Review (ORR) or Readiness Assessment(RA) ***for Hazard Category 1, 2, and 3 nuclear facilities*** *in accordance with DOE O 425.1D and DOE-STD-3006-2010.*	
Prepare the Documented Safety Analysis[3] with Technical Safety Requirements ***for Hazard Category 1, 2, and 3 nuclear facilities****. (Refer to 10 CFR Part 830, Subpart B.)*	*SBAA via the SER*

Table 2.4 CD-4 Requirements[1]	
Prior to CD-4	**Approval Authority[2]**
Prepare a Safety Evaluation Report (SER) based on a review of the Documented Safety Analysis and Technical Safety Requirements ***for Hazard Category 1, 2, and 3 nuclear facilities****. (Refer to 10 CFR Part 830, Subpart B.)*	*SBAA*
For nuclear facilities, *the Code of Record will be included as part of the turnover documentation from a design and construction phase contractor to the operating phase contractor; from an operating phase contractor to the decommssioning phase contractor; and when a change in contractor occurs during any single life-cycle phase and is maintained under configuration control.*	
Post CD-4 Approval	
Submit all CD documents to OECM.	
Finalize PARS II reporting (including earned value data).	
Within 90 days, submit Lessons Learned regarding project execution and facility start-up to PSO and OECM.	
Within 90 days, submit an Initial Project Closeout Report.	
NOTES: 1. Documents and reports are not intended to be stand-alone and may be combined. 2. Where no approval authorities are noted, authorities are established through other directives or the Program Offices (e.g., Functions and Requirements Assignment Matrix). 3. For Environmental Management Clean-up Projects, refer to 29 CFR 1910.120.	

f. Project Closeout.

After the project is complete, the next step is project closeout. Project Closeout provides a determination of the overall closure status of the project, contracts, regulatory drivers, and fiscal condition. After CD-4 approval, the project is required to complete the activities listed in Table 2.5.

Table 2.5 Project Closeout Requirements[1]	
Prior to Project Closeout	**Approval Authority[2]**
Perform final administrative and financial closeout. Prepare the final Project Closeout Report once all project costs are incurred and invoiced and all contracts are closed. The report includes final cost details as required to include claims and claims settlement strategy where appropriate. (Refer to DOE G 413.3-16.)	
Complete and document achievement of Facility Sustainment goals (e.g., LEED Gold, LEED Silver, etc.), as applicable, via an independent third-party entity within one year of facility occupancy in accordance with EO 13423, Section 2(f), EO 13514, Section 3, and DOE O 430.2B.	
Establish and/or update the property record in the Facilities Information Management System (FIMS) for all construction of or modifications to real property. Adjust the site's Ten Year Site Plan. (Refer to DOE O 430.1B.)	
NOTES: 1. Documents and reports are not intended to be stand-alone and may be combined. 2. Where no approval authorities are noted, authorities are established through other directives or the Program Offices (e.g., Functions and Requirements Assignment Matrix).	

5. Application of Requirements for Different Circumstances.

Although most DOE projects will follow the requirements outlined in this Order, there are some differing project situations where customizing the process is beneficial:

a. Environmental Management Cleanup Projects.

When the Department, Congress or a regulatory agreement transfers or formally assigns cleanup responsibilities for a parcel of land or facilities to EM for cleanup, this will serve as the basis for a "Mission Need" in support of CD-0 approval by the AE. Characterization and analysis efforts are considered operational activities and shall be conducted prior to selecting scope and performance parameters and establishing a PB. Any project costs that occur after CD-0 and prior to CD-4 approval are considered to be part of the project's TPC. Normally, CD-1/2/3 will be accomplished simultaneously, since project requirements (e.g., baseline development) and associated environmental documents (e.g., regulatory agreements) are finalized in unison. See DOE G 413.3-8 for additional guidance.

b. Design-Build Projects.

To address potential mission impacts, aggressive risk mitigation strategies are required for close-coupled or fast-tracked design-build projects. Risk management strategies must be outlined in the RMP and at a minimum must address:

- All technical uncertainties;

- The establishment of design margins to address the unique nature of the design; and

- Increased technical oversight requirements.

The PDS must be submitted for the budget year in which the Design-Build contract is to be awarded and must include the costs of design as part of the TPC. The PSO may budget for PED funds if there is a need to develop significant performance or technical specifications for the project. For Design-Build projects, PED funds may be used for the design of line item projects and may be used to develop a statement of work or a request for proposal; whereas, operating funds are used for MIE or OE projects.

c. Projects Requiring Long-Lead Procurement.

It may be necessary to obtain CD-3 approval early, namely CD-3A, for long-lead item procurement. When exercising long-lead procurement, the FPD must consider design maturity and the associated project risk. If the long-lead item is nuclear safety-related or nuclear safety-related equipment, safety document maturity must also be considered. A budget document, such as a PDS, should be submitted within the budget process requesting construction funds to procure long lead items or indicating the use of PED funds for long-lead procurement. This is the only instance when a CD action may be taken out of sequence (i.e., CD-3A in advance of CD-2). Activities such as site preparation work, site characterization, limited access, safety and security issues (i.e., fences) are often necessary prior to CD-3, and may be pursued as long as project documents such as a PDS requesting construction or PED funds to procure the long-lead items and funding approvals are in place. The default CD-2 performance baseline (or TPC) is the upper limit of the CD-1 cost range. This represents that project execution has started, but only for the procurement of specified long-lead items.

d. Commissioning of Capital Asset Projects for Nuclear/Chemical Process Facilities.

For projects involving nuclear/chemical processes, Program Offices shall define a capital asset project as completed (CD-4) in a PEP. The Program Office must determine if hot commissioning (i.e., introduction of radioactive material) is a condition of CD-4. Ultimately, the capital asset must have the capability to meet the end-state capacity requirements approved in the CD-2 decision by the respective AE, but not as a condition of CD-4.

e. Alternative Financing.

In some instances, Alternative Financing may be the most appropriate method to obtain use of capital assets. In these instances, it is required that CD-0 and CD-1 approval be attained so that a full evaluation of the mission need and the alternatives can be accomplished. If alternative financing is selected and approved, further compliance with this Order will not be required. At that time, other policies, laws and regulations will apply. For further details, refer to DOE Acquisition Guide, Subchapter 70.3270.

6. Baseline Management.

a. Performance Baseline Deviation.

A performance baseline deviation occurs when the approved TPC, CD-4 completion date, or performance and scope parameters cannot be met. This includes any disaggregation of scope in an effort to establish a smaller discrete project (or projects) for the immediate or at a later date. The FPD must promptly notify management whenever project performance indicates the likelihood of a PB deviation. When a deviation occurs, the approving authority must make a specific determination whether to terminate the project or establish a new PB by requesting the FPD to submit a BCP.

Additionally, all PB deviation decisions must be reported to the SAE and OECM. New PBs to be established because of a deviation must be validated by OECM for projects with a TPC greater than or equal to $100M and by the PMSO for projects with a TPC less than $100M. In circumstances where a PB deviation is beneficial to the project—such as a lower TPC, earlier completion date, or significant scope enhancements, a validation of the PB deviation or approval by the PSO is not required.

b. Performance Baseline Changes.

A performance baseline change represents an irregular event which should be avoided to the maximum extent. Table 3 identifies when a deviation must be approved by the SAE. The approval by the SAE does not constitute approval of individual contract changes and modifications. If a contract change is necessary, the contracting officer has exclusive authority to issue changes and modify contracts, but only if the changes or modifications comply with regulatory and statutory requirements. It is critical that the FPD and the contracting officer ensure that changes to the contract are identified, issued, administered, and managed in a timely manner over the life of the project and contract. The performance baseline change process should not be used to circumvent proper change control management and contract management. The document signed by the SAE approving the BCP must clearly specify the project's revised PB, which

includes the TPC, CD-4 date (month and year), scope and minimum KPPs that must be achieved at CD-4.

Table 3. Performance Baseline Change Authority

Performance Baseline Changes Requiring SAE Approval	
Major System and Non-Major System Projects	
Technical	Any change in scope and/or performance that affect the ability to satisfy the mission need or are not in conformance with the current approved PEP and PDS.
OR	
Cost	Increase in excess of the lesser of $100M or 50% (cumulative) of the original CD-2 cost baseline.

In addition, the SAE must endorse any reduction in funding that adversely affects the project's approved funding profile for all non-Major System Projects and previously approved SAE BCP actions. OECM shall be notified of these funding decrements. The SAE and OECM shall be notified of all:

- Schedule delays that breach the original PB by greater than 12 months; or
- Post-CD-2 projects that get terminated; or
- Capital asset projects, regardless of value, no longer able to meet the Department's objective (see Appendix A, Paragraph 1).

The Under Secretaries are the approval authorities for PB changes below SAE approval level. These approval authorities may not be delegated below the PSOs. New PB or PMB approval thresholds and authorities should be documented in the PEP for project changes below the thresholds identified above. These approval levels must be incorporated into the change control process for each project. Decrements to approved PB funding profiles must be endorsed by the AE. In circumstances where a PB change is beneficial to the project, such as a lower TPC, earlier completion date, or significant scope enhancements, PB changes can be approved at lower levels as designated in the PEP.

c. Directed Changes.

Directed changes are caused by DOE policy directives (such as those that have the force and effect of law and regulation), regulatory, or statutory actions and are initiated by entities external to the Department, to include external funding reductions. Directed change decisions are reviewed and verified by OECM and OMB and follow the appropriate baseline management process.

d. Change Control.

Change control, as defined in the PEP, ensures that project changes are identified, evaluated, coordinated, controlled, reviewed, approved/disapproved, and documented in a manner that best serves the project. One key goal of change control is to ensure that PB thresholds are not exceeded. Approval authority for changes depends upon the estimated impact(s) of the change and can range from the contractor to the SAE, usually with the involvement and support of a Change Control Board (CCB). The CCB membership, authorities, thresholds, and procedures should be detailed or referenced within the PEP.

e. Contract Modifications for New Performance Baseline, if Applicable.

Prior to approval of a baseline change by the AE, the FPD shall coordinate with the Contracting Officer to identify the specific contract changes that may be required, develop an Independent Government Cost Estimate (refer to FAR 36.203 and FAR 15.406-1), establish a schedule for receipt of a contractor's proposal(s), obtain audit support, and ensure the timely analysis, negotiation, and execution of contract modification(s) that comply with regulatory and statutory requirements.

f. Cancellations of Projects.

If a project is to be cancelled at any point after CD-0, the respective AE shall approve a cancellation decision and PARS II will be updated to reflect the cancellation of the project. For all post CD-2 cancellations, a formal written notification shall be issued to the Under Secretary and the Office of the Chief Financial Officer (CFO) via OECM. The formal written notification shall outline the reasons for the cancellation, how the mission need will be impacted, and a disclosure of all funds expended prior to the cancellation and the costs associated with the cancellation. The SAE shall be similarly notified of all post CD-2 cancellations.

7. Energy Systems Acquisition Advisory Board.

The Energy Systems Acquisition Advisory Board (ESAAB) members advise the SAE based on their various functional organizational perspectives on CDs related to Major System Projects and PB deviation dispositions.

a. ESAAB Membership.

(1) Secretarial Acquisition Executive as Chair

(2) Under Secretaries

(3) DOE General Counsel

(4) Director of Management

(5) Chief Financial Officer

(6) Director of the Office of Engineering and Construction Management

(7) Assistant Secretary for Environmental Management

(8) Chief Health, Safety and Security Officer

(9) Chief of Nuclear Safety or Chief of Defense Nuclear Safety, as appropriate

(10) Deputy Administrator for Defense Programs

(11) Director of the Office of Science

(12) Senior Procurement Executive

(13) The Deputy Secretary may designate other PSOs or functional staff as ESAAB members (temporary or permanent) as needed.

b. "Paper" ESAAB: Streamlined ESAAB Process.

In circumstances where the acquisition action is of relatively low monetary value, low risk, and requires non-controversial decisions (i.e., baseline deviation and CD approvals) that need SAE or AE approval, a streamlined ESAAB achieves the required staff coordination and approval without convening a formal meeting of all ESAAB members. This process should be considered, when the following parameters are met:

(1) A Program Office requests OECM to consider a streamlined ESAAB in lieu of a formal ESAAB meeting;

(2) The Office of Management will determine: (1) if a streamlined ESAAB is appropriate; (2) level of inter-office coordination required; and

(3) At a minimum, all streamlined ESAABs will be coordinated with OECM, CFO, and the Office of the General Counsel with the expectation of expeditious review. If issues cannot be resolved within 15 days of document submission to ESAAB members, OECM will forward the issues to the Deputy Secretary for final decision.

c. ESAAB Issue Resolution.

To ensure timely decision making, if open issues cannot be resolved in 15 calendar days following an ESAAB, OECM will forward the issues to the Deputy Secretary for final decision.

d. ESAAB Secretariat.

The ESAAB Secretariat resides in OECM and provides administrative and analytical support and recommendations to the ESAAB.

e. Non-Major System Project Advisory Boards.

The designated AE will appoint an Advisory Board to provide advice and recommendations on actions for projects that are not designated as Major System Projects. The designated AE is the Chair of the Advisory Board. The Advisory Board replicates and conducts identical functions to those performed by the ESAAB. Members may be selected from within the AE's organization. However, at least one member from an office not under the AE will be designated as a contributing representative. OECM will not be a Board member for projects with a TPC less than $750M, but must be invited to attend the Advisory Board meetings. The implementing documentation (including CD and BCP approval memoranda) and composition of each Advisory Board along with meeting agendas and minutes will be provided to OECM.

APPENDIX B
RESPONSIBILITIES

Three objectives regarding roles and responsibilities that are necessary to achieve defined project objectives as well as the objectives of this Order are:

- Strengthening line management accountability for successful project management results;
- Clearly defining the roles, responsibilities, authority, and accountability of the Federal Project Management Team relative to the contractor Project Management Team; and
- Developing effective IPTs to assist the FPD in planning, programming, budgeting, and successfully acquiring capital assets.

Line managers are responsible for successfully developing, executing, and managing projects within the approved PB. Delegation of authority from one line manager to a lower-level line manager must be documented and consistent with DOE delegation authorities and the qualifications of the lower-level line manager. Although the authority and responsibility for decision-making may be delegated to a lower-level manager, the senior manager remains accountable for the decisions made by subordinate managers. Key roles and responsibilities of line managers are described in the following sections:

1. Deputy Secretary.

   a. Serve as the senior manager responsible and accountable for all project acquisitions.

   b. Exercise decision-making authority, including CDs for all Major System Projects.

   c. Ensure that the FPDs appointed for Major System Projects are qualified, experienced, and have appropriate communication skills and leadership characteristics prior to designation.

   d. Identify special interest projects and ensure senior executive-level quarterly reviews are provided for those projects.

   e. Approve disposition of projects and PB changes at the SAE approval level upon PB deviations.

   f. Serve as Chair for the ESAAB.

   g. Approve site selection for facilities at new sites to include real estate purchases outside of the current DOE footprint.

h. Conduct quarterly project reviews for Major System Projects, which may be delegated to the Under Secretaries.

i. Approve exemptions as defined in Paragraph 3.c.(3).

2. Under Secretaries.

a. Receive AE authority from the SAE, as appropriate.

b. Ensure that the FPDs appointed to Non-Major System Projects are qualified and have appropriate communication skills and leadership characteristics prior to designation.

c. Delegate AE authority, as appropriate (refer to Appendix A, Table 1).

d. Exercise decision-making authority, including CDs, functioning as the AE.

e. Hold line accountability for applicable program and capital asset project execution and implementation of policy.

f. Hold accountability for project-related site environment, safety and health, and safeguards and security.

g. Serve as Chair and appoint members for Acquisition Advisory Boards.

h. Approve disposition of projects and PB changes below SAE approval level upon PB deviations (may not be delegated below Program Secretarial Officers).

i. Maintain a list of special interest projects and ensure that senior executive-level quarterly reviews are provided for those projects.

j. Establish PMSO or delegate this responsibility to the Program Secretarial Officer.

k. Address and resolve issues on projects which report to them.

l. Conduct quarterly project reviews when serving as the AE. These reviews may be delegated to the Program Secretarial Officer.

3. Program Secretarial Officers and Deputy Administrators/Associate Administrators for the NNSA.

a. Hold line accountability for applicable capital asset project execution and implementation of policy.

b. Hold accountability for project-related site environment, safety and health, and safeguards and security.

c. Approve MNS documents and AS documents for all capital asset projects (cannot be delegated).

d. Approve disposition of projects and PB changes below the SAE approval level following PB deviations. If delegated, this authority cannot be further delegated.

e. Exercise decision-making authority, including CDs, when functioning as AE.

f. Ensure that the FPDs appointed to Non-Major System Projects are qualified and have the appropriate communication skills and leadership characteristics prior to designation.

g. Delegate AE functions, as appropriate (refer to Appendix A, Table 1).

h. Nominate FPDs, when the AE is above the Program Secretarial Officer, no later than CD-1 (can be delegated). The FPD appointment is subject to the approval of the AE.

i. Approve the IPT charter for Major System Projects.

j. Serve as Chair and appoint members for Acquisition Advisory Boards.

k. Establish PMSO when responsibility is delegated or directed by the Under Secretaries.

l. Explicitly address integration of safety into design and construction for Hazard Category 1, 2, and 3 nuclear facilities as a key consideration in approval of project documentation and when functioning as AE.

m. Appoint a Safety Basis Approval Authority no later than CD-0 for projects including the design and construction of Hazard Category 1, 2, and 3 nuclear facilities or for projects including major modifications thereto.

4. Project Management Support Offices (when established).

a. Provide independent oversight and report directly to the Under Secretaries, or Program Secretarial Officer, as appropriate.

b. Serve as the Secretariat for the Program Secretarial Officer/NNSA-level Advisory Board functions.

c. Coordinate quarterly project reports.

d. Perform IPRs, TIPRs, and Project Peer Reviews as requested by the AE or Program Offices.

e. Develop Program-specific guidance, policies, and procedures.

f. Collect, analyze and disseminate lessons learned and "best practices."

g. Coordinate with other DOE organizations and offices, including OECM, to ensure the effective and consistent implementation of project management policies and directives.

h. Provide assistance and oversight to line project management organizations.

i. Analyze project management execution issues.

j. Actively assist senior management on issues related to project management performance, including implementation of corrective actions.

k. Provide support to the FPDs.

l. Validate the PB for capital asset projects with a TPC less than $100M.

m. Perform EVMS Certification Review of contractors with projects that have a TPC between $50M and $100M.

5. Program Managers and Heads of Field Organizations.

a. Direct initial project planning and execution roles for projects assigned by the AE.

b. Initiate definition of mission need based on input from Sites, Laboratories and Program Offices.

c. Establish the initial IPT in advance of the designation of a FPD.

d. Oversee development of project definition, technical scope and budget to support mission need.

e. Initiate development of the AS before CD-1 (during the period preceding designation of the FPD).

f. Perform functions as an AE when so delegated.

g. Develop project performance measures and monitor and evaluate project performance throughout the project.

h. Allocate resources throughout the program.

i. Oversee the project line management organization and ensure the line project teams have the necessary experience, expertise, and training in design engineering, safety and security analysis, construction, and testing.

j. Serve as the FPD until the FPD is appointed.

k. Ensure that performance measures, resource allocations, and project oversight, as applicable, address integration of safety into design and construction for Hazard Category 1, 2, and 3 nuclear facilities.

l. Review prerequisite documents (as listed in Appendix A, Tables 2.0-2.5) before each CD submission.

m. Identify which contracts should incorporate the CRD and notify the Contracting Officer to include the CRD in the contract.

6. Acquisition Executives.

The following roles and responsibilities are for illustrative purposes and each designated AE is guided by the specific limits of their delegated authority (see DOE/NNSA Senior Procurement Executive for contract award and modification execution authority). There can only be one designated AE per project.

a. Approve CDs for capital asset projects including CD-2, performance baseline approval and its associated funding profile.

b. Appoint and chair Acquisition Advisory Boards to provide advice and recommendations on key project decisions.

c. Approve the appointment of the FPD. Ensure that the FPD has the appropriate qualifications, competencies, and communication and leadership skills prior to designation by interviewing the proposed FPD for each project. When the FPD is not a designated career federal civil servant (i.e., contracted project manager) or is under an Intergovernmental Personnel Act (IPA) Agreement, the SAE must endorse their appointment.

d. For nuclear facilities, designate the Design Authority at CD-1.

e. Monitor the effectiveness of FPDs and their support staff.

f. Approve project changes in compliance with change control levels identified in PEPs, to include all BCPs and funding profile changes that impact the PB.

g. Conduct quarterly project reviews.

h. Explicitly address integration of safety into design and construction for Hazard Category 1, 2, and 3 nuclear facilities as a key consideration in QPRs and approval of project CDs.

i. Direct IPRs be conducted.

7. Federal Project Director.

Successful performance of DOE projects depends on professional and effective project management by the FPD. The FPD is accountable to the AE, Program Secretarial Officer or delegated authority, as appropriate, for the successful execution of the project within a PB.

The FPD's assigned project must meet cost, schedule and performance targets unless circumstances beyond the control of the project directly result in cost overruns and/or delays. FPDs must demonstrate initiative in incorporating and managing an appropriate level of risk to ensure best value for the government. In cases where significant cost overruns and/or delays may occur, the FPD must alert senior management in a timely manner and take appropriate steps to mitigate them.

Roles and responsibilities of the FPD's team must be clearly defined relative to the contractor management team. DOE Guides provide further information. These roles and responsibilities include:

a. Attain and maintain certification in concert with the requirements outlined in DOE O 361.1B before they are delegated the authority to serve as FPD and/or within one year of appointment, achieve the appropriate level of certification.

b. Serve as the single point of contact between Federal and contractor staff for all matters relating to a project and its performance.

c. Prepare and maintain the IPT Charter and operating guidance with IPT support and ensure that the IPT is properly staffed. Define and oversee the roles and responsibilities of each IPT member.

d. Appointed as the Contracting Officer's Technical Representative, as determined by the Contracting Officer.

e. Lead the IPT and provide broad project guidance. Delegate appropriate decision-making authority to the IPT members.

f. Approve the IPT charter for non-Major System Projects.

g. Ensure the development and implementation of key project documentation (e.g., the PEP).

h. Define project cost, schedule, performance, and scope baselines.

i. Ensure that design, construction, environmental, sustainability, safety, security, health and quality efforts performed comply with the contract, public law, regulations and EOs.

j. Ensure timely, reliable and accurate integration of contractor performance data into the project's scheduling, accounting, and performance measurement systems, to include PARS II.

k. Evaluate and verify reported progress; make projections of progress and identify trends.

l. Approve (in coordination with the Contracting Officer) changes in compliance with the approved change control process documented or referenced in the PEP.

m. Ensure that safety is fully integrated into design and construction for Hazard Category 1, 2, and 3 nuclear facilities.

8. Departmental Staff and Support Offices.

Departmental Staff and Support Offices develop policy and related implementing guidance, perform review functions, and provide advice and recommendations to Department leadership. Key roles and responsibilities of these offices regarding the acquisition of capital assets follow.

9. DOE/NNSA Senior Procurement Executives.

The Senior Procurement Executive (SPE) will:

a. Execute the procurement functions and responsibilities in accordance with the Office of Federal Procurement Policy and EO 12931.

b. Serve as the principal procurement advisor to the SAE, AE and the Chief Acquisition Officer.

c. Execute certain decisional authorities reserved for the SPE.

d. Exercise general procurement authority.

e. Delegate procurement authority to the Head of Contracting Activities and Contracting Officers.

f. Serve as a standing member of the ESAAB.

10. Contracting Officer.

The Contracting Officer is the only member of the IPT delegated authority to enter into, administer, modify, change, and/or terminate contracts. Significant responsibilities are:

a. Serve as the principal procurement advisor to the FPD.

b. Participate in the formulation of the DOE and NNSA Acquisition Strategy and Acquisition Plan.

c. Work with the IPT to develop solicitations and evaluate and award mission-oriented contracts.

d. Serve as a standing member of the CCB with sole authority to modify the contract.

e. Work with the IPT to ensure alignment between the PEP and the Contract Management Plan.

f. Assist in the development of contract cost, schedule and performance incentives.

g. Incorporate the applicable clauses, and terms and conditions in the solicitation and the contract. Ensure that the prime contractor complies with the requirements to include subcontractor flow down requirements of this Order, FAR clauses and EVMS-related terms and conditions as identified by the FPD.

11. Office of Health, Safety and Security.

a. Serve as a member of the ESAAB.

b. Advise the Deputy Secretary in his/her role as the SAE on environmental, safety, and security matters related to all CD approvals.

c. Serve as a member of the IPR team at the request of the SAE, PSO, Program Manager, Operations/Field Office Manager or FPD.

d. Participate on EIRs, as an observer, at the request of OECM.

e. Participate in safety and security documentation and QA reviews for acquisition projects at the request of OECM and/or the AE when considered appropriate.

f. Participate in ORRs or RAs at the request of the line organizations.

g. Support the CTAs as requested.

h. Perform targeted reviews of technical processes and products associated with the design and construction of nuclear facilities.

12. Office of Engineering and Construction Management.

a. Serve as DOE's principal point of contact relating to project management.

b. Develop policy, requirements and guidance for the planning and acquisition of capital assets.

c. Assist in the planning, programming, budgeting and execution process for the acquisition of capital assets in coordination with the Program Secretarial Officer and PMSO.

d. Support the Office of the Secretary, SAE, Under Secretaries and Program Secretarial Officer in the CD process; and oversee the acquisition management process.

e. Serve as Secretariat for the ESAAB.

f. Serve as an Acquisition Advisory Board member for Major System Projects with a TPC greater than or equal to $750M.

g. Manage the Project Management Career Development Program (PMCDP).

h. Establish, maintain and execute the EVMS Certification and Surveillance Review processes in accordance with established levels and in coordination with the PMSO to ensure full compliance with applicable ANSI, FAR and OMB requirements.

i. Review MNS documents for projects with a TPC of $100M or greater.

j. Review the AS for Major System Projects.

k. Maintain a corporate project reporting capability.

l. Establish, maintain and execute a corporate EIR capability to provide an independent assessment and analysis of project planning, execution and performance.

m. Validate the PB for all capital asset projects with a TPC greater than or equal to $100M to permit inclusion in the DOE annual budget.

n. For Major System Projects, conduct an ICR prior to CD-0. For projects with a TPC of $100M or greater, develop an ICE and/or conduct an ICR prior to CD-1, develop an ICE prior to CD-2, and, if warranted, develop an ICE prior to CD-3.

13. Integrated Project Team.

a. Support the FPD.

b. Work with the Contracting Officer to develop a project AS and AP, as applicable.

c. Ensure that project interfaces are identified, defined and managed to completion.

d. Identify, define and manage to completion the project environmental, safety, health, security, risk and QA requirements.

e. Identify and define appropriate and adequate project technical scope, schedule and cost parameters.

f. Perform periodic reviews and assessments of project performance and status against established performance parameters, baselines, milestones and deliverables.

g. Plan and participate in project reviews, audits, and appraisals as necessary.

h. Review all CD packages and recommend approval/disapproval.

i. Review and comment on project deliverables (e.g., drawings, specifications, procurement, and construction packages).

j. Review change requests, as appropriate, and support CCBs as requested.

k. Participate, as required, in ORRs or RAs.

l. Support preparation, review and approval of project completion and closeout documentation.

m. Ensure safety is effectively integrated into design and construction as applicable to each team member's respective functional area for design and construction of Hazard Category 1, 2, and 3 nuclear facilities.

14. Central Technical Authorities.

The CTAs are responsible for maintaining operational awareness, especially with respect to complex, high-hazard nuclear operations and ensuring that the Department's nuclear safety policies and requirements are implemented adequately and properly (see DOE O 410.1 for further discussion). In this context, it is important to recognize that the CTAs have responsibilities related to nuclear safety directives that apply to projects. The overall roles and responsibilities of the CTAs include:

a. Concur with the determination of the applicability of DOE directives involving nuclear safety included in contracts pursuant to 48 CFR 970.5204-2(b).

b. Concur with nuclear safety requirements included in contracts pursuant to 48 CFR 970.5204-2.

c. Concur with all exemptions to nuclear safety requirements in contracts that were added to the contract pursuant to 48 CFR 970.5204-2.

d. Recommend to the Chief Health, Safety and Security Officer issues and proposed resolutions concerning DOE safety requirements, concur in the adoption or revision of nuclear safety requirements (including supplemental requirements) and provide expectations and guidance for implementing nuclear safety requirements for use by DOE employees and contractors.

e. For DOE nuclear facilities, CTA concurrence is required on the directives included in requests for proposals for new prime contracts prior to its release and in revisions to existing prime contracts as per DOE O 410.1.

15. Chief of Defense Nuclear Safety and Chief of Nuclear Safety.

The Chiefs (and staff) are responsible for evaluating nuclear safety issues and providing expert advice to the CTAs and other senior officials (see DOE O 410.1 for further discussion). For Hazard Category 1, 2, and 3 nuclear facilities that are not regulated by the Nuclear Regulatory Commission (NRC), or as requested by the CTA or other senior officials for facilities regulated by the NRC, the Chief shall:

a. Participate as a member of the ESAAB and similar advisory boards for nuclear facilities design and construction projects.

b. Provide support to both the CTA and AE regarding the effectiveness of efforts to integrate safety into design at each of the CDs and as requested during other project reviews.

c. Ensure that TIPRs and IPRs, as appropriate, evaluate: 1) the qualifications of IPT members having nuclear safety-related responsibilities, and 2) the effective implementation of DOE-STD-1189-2008 as applicable for design and construction of nuclear facilities.

d. For nuclear facilities, concur on the nuclear safety scope and breadth of TIPRs and IPRs. Ensure that TIPRs and IPRs evaluate the status of project planning to achieve operational readiness.

e. Advise Safety Basis Approval Authorities and concur with (CNS) or provide written advice (CDNS) prior to the approval of Safety Design Strategies and revisions thereto.

16. Project Management Governance Board.

The governance board (and staff) is responsible for evaluating project management issues and providing resolution to PMSOs and Program Managers. The responsibilities will be an additional duty to the existing PMCDP certification review board whose primary function is to certify FPDs.

a. Responsibilities:

(1) Identify issues through OECM as the Secretariat.

(2) Provide interpretation or clarification of Order requirements and resolve 413-series Guide issues.

b. Membership:

(1) OECM Director and NNSA Associate Administrator for Infrastructure and Environment, or designees, co-chair the board.

(2) One senior representative from each of the PMSOs to include EM, NNSA, and SC.

(3) OECM Deputy Director for Project Management Systems and Assessments.

(4) OECM serves as Secretariat.

APPENDIX C
TOPICAL AREAS

1. Project Management Principles. This is the Department's framework for successful project execution:

   a. Line management accountability.

   b. Sound, disciplined, up-front project planning.

   c. Well-defined and documented project requirements.

   d. Development and implementation of sound acquisition strategies that incorporate effective risk handling mechanisms.

   e. Well-defined and managed project scope and risk-based PBs and stable funding profiles that support original cost baseline execution.

   f. Development of reliable and accurate cost estimates using appropriate cost methodologies and databases.

   g. Properly resourced and appropriately skilled project staffs.

   h. Effective implementation of all management systems supporting the project (e.g., quality assurance, integrated safety management, risk management, change control, performance management and contract management).

   i. Early integration of safety into the design process.

   j. Effective communication among all project stakeholders.

   k. Utilization of peer reviews throughout the life of a project to appropriately assess and make course corrections.

   l. Process to achieve operational readiness is defined early in the project for Hazard Category 1, 2, and 3 nuclear facilities.

   A project is a unique effort having defined start and end points which is undertaken to create a product, facility or system. Built on interdependent activities that are planned to meet a common objective, a project focuses on attaining or completing a deliverable within a predetermined cost, schedule and technical scope baseline.

   All projects entail risk. Generally, the larger and more complex the project, the higher the probability that the PB may be breached. By dividing larger projects into multiple smaller projects, the probability of success is generally increased as the duration, complexity and attendant risks for each project have been reduced. Where appropriate,

Program Offices in coordination with the AE should consider breaking large projects into multiple, smaller, discrete usable projects (mindful of project interfaces) that collectively meet the mission need. However, the benefits of reduced risk exposure should be balanced with the potential for increased overhead costs.

Some things to consider when breaking larger projects into multiple smaller projects prior to establishing PBs (at CD-2):

- Time Horizon: Minimize the time horizon and risk to the maximum extent possible. Ideally, execution should take no more than four (4) years starting from CD-3.

- Funding Profile: Develop each project's funding profile to support the optimum project schedule; fully fund when appropriate, and deliver projects quickly.

- Segregate by Building or Group Similar Types of Facilities: Segregate nuclear from non-nuclear work; utility systems/buildings from general use facilities; fixed price work from cost reimbursable work.

- Phase Projects: Execute well-defined, lower-risk, complete and usable projects first, allowing additional time to advance designs on more complex and/or technical projects. Project phases should not impede one another. Refer to Appendix C, Paragraph 22.b.

- Span of Control: Ensure that the planned scope and pace of work is matched to the capacity and capabilities of the management team.

- Segregate Projects by Geographic Area: Occasionally, projects involve separate geographic locations with different site conditions, construction workforce environments, and regulatory and political pressures.

- Workforce Phasing: Phase construction and environmental remediation projects within the program to take advantage of “leap-frogging” trades (i.e., concrete workers moving from one project to the next).

A capital asset project can range from the construction of a simple facility, such as a warehouse, to a group of closely-related projects managed in a coordinated way. This effort is known as program management.

Selection and designation of a Program Manager (see Appendix B, Paragraph 5) is critical as they ensure that all their projects are properly phased, funded over time and that each project manager is meeting their key milestones. Program managers are the project manager's advocate: they ensure proper resourcing and they facilitate the execution process. A program manager is responsible for managing programmatic risks and putting mitigation strategies in place to minimize risks to projects.

Programmatic risks should be identified and quantified in terms of cost and/or schedule contingency and accounted for within one or more of the projects.

With multiple smaller projects, there may be a need for additional FPDs, perhaps at lower certification levels. However, each project, regardless of size, must be led by a certified FPD. Depending on the project size, an FPD can be assigned to direct one large project and/or multiple small projects. In addition, the project organizational structure, roles and responsibilities, and chain of command should be delineated in the PEP.

2. Acquisition Strategy.

An AS is a key activity formulated by the IPT leading up to CD-1. The AS is the FPD's overall plan for satisfying the mission need in the most effective, economical and timely manner. For more details, see FAR 34.004, DOE Acquisition Guide, Chapter 7, and DOE G 413.3-13.

Supporting the execution of the AS is the procurement strategy that must be documented in writing as prescribed by FAR 7.1 and for major systems acquisition, FAR 34.004. While the AS represents a high level plan which is approved through the CD review and approval process, the information and analysis required as part of an AP, if applicable, provides greater focus on the analysis and strategies needed to appropriately execute procurements in accordance with sound business practices, statutory, regulatory and policy requirements. Typically, the AP will not be formulated until after the CD authority has selected the programmatic approach as part of CD-1. The review and approval of the AP resides within the contracting authority of the Senior Procurement Executive or their designee. Therefore, approval of the AS by the AE cannot be presumed to constitute approval of the AP.

While the approval of the AS and the acquisition planning processes may be bifurcated, it is critical that the planning and formulation are aligned. The early formulation of an IPT (including the assignment of a contracting officer), the balance in its composition, and continuity in the membership is critical to the integration and alignment of the AS and acquisition planning processes.

If an AS includes the acquisition of real property, it must be reviewed by a certified Real Estate Specialist for regional land use impact and a real property alternative analysis must be conducted.

3. Baseline Clarity.

There is only one original PB and it is documented at CD-2 approval. The PB represents the Department's commitment to Congress to deliver the project’s defined scope by a particular date at a specific cost. Cost estimates in advance of CD-2 do not represent such commitments. Also, there should be clarity over the terms PB and Performance Measurement Baseline (PMB) as they are different. The former is the project's baseline and the latter is for use by the EVMS. Refer to DOE G 413.3-10 for further clarification.

4. Design Maturity.

All aspects of a project should be carefully studied to employ an economic and functional design that is closely tailored to the requirements. Particular attention shall be directed to advancing design maturity to a sufficient level prior to establishing the PB. The project design will be considered sufficiently mature when the project has developed a cost estimate and all relevant organizations have a high degree of confidence that it will endure to project completion. In determining the sufficiency of the design level, factors such as project size, duration and complexity will be considered.

In conducting EIRs, OECM will evaluate the sufficiency of the project's design maturity. This analysis will serve as a key evaluation factor in formulating its recommendation to validate a project PB. In addition, when approving a CD, the AE should consider the sufficiency of the design maturity.

Project design is a process of preparing design and construction documents that result in fully integrated solutions. For a design to succeed, the entire project team must be involved in the process from project inception through delivery. The Pre-Conceptual Design stage denotes the development and documentation of the functional parameters or capabilities that the potential project must meet. The development of criteria, which are complete and specifically related to the project requirements, allows for orderly development of the design. However, care shall be taken to avoid citing superfluous codes and standards; the primary purpose of functional criteria is to narrow the criteria to only those applicable to specific alternatives or options. These functional criteria are further developed, validated, and expanded during the conceptual design stage.

The conceptual design process must ensure that a solution or alternatives are not only responsive to an approved need, but also technically achievable, affordable and will provide the best value to the Department. Research, development, testing and other efforts may be required to finalize a concept. The conceptual design process may also require negotiation with outside organizations, stakeholders or other legal entities on functional, technical, operational and performance requirements or standards. VM is a key process that supports reaching the best cost and benefit life-cycle cost alternative. VM should be employed as early as possible so that recommendations can be included in the planning and implemented without delaying the project or causing significant rework of designs. VM conducted during the early phases of a project yield the greatest cost reductions. At a minimum, the Conceptual Design shall develop the following:

- Scope required to satisfy the Program mission requirements;
- Project feasibility;
- Attainment of specified performance levels;
- Assessment of project risks and identification of appropriate risk handling strategies;

- Reliable cost and schedule range estimates for the alternatives considered;
- Project criteria and design parameters;
- Impact on the site Sustainability Plan; and
- Identification of requirements and features.

A Conceptual Design Report (CDR) shall be developed that includes a clear and concise description of the alternatives analyzed, the basis for the alternative selected, how the alternative meets the approved mission need, the functions and requirements that define the alternative and demonstrate the capability for success, and the facility performance requirements, planning standards and life-cycle cost assumptions. The CDR should also clearly and concisely describe the KPPs that will form the basis of the PB at CD-2. When the purpose of the project is remediation, restoration, or demolition, other forms of documenting the requirements and alternative(s) may be used.

The following are requirements for projects funded by the annual National Defense Authorization Act (refer to 50 USC 2744 and 2746). These statutory requirements apply only to projects in support of a national security program of the Department.

- The Secretary shall submit a request for funds for a conceptual design for a project if the estimated cost of the conceptual design exceeds $3M.
- The conceptual design for a project shall be completed before requesting funds for a construction project.
- If the Total Estimated Cost (TEC) for construction design for a project exceeds $600,000, funds for that design must be specifically authorized by law.
- Construction on a project may not be started, if the current TEC of the project exceeds by more than 25% the amount shown in the most recent PDS submitted to Congress.

The Preliminary Design stage initiates the process of converting concepts to a more detailed design whereby more detailed and reliable cost and schedule estimates are developed. This stage of the design is complete when it provides sufficient information to support development of the PB. The appropriate completion percentage is dependent upon the type of project. For basic facilities, such as administrative buildings, general purpose laboratories, and utilities, the design does not have to be as mature as for a complex chemical or nuclear processing facility (as depicted in Figure 3). The design is

mature when a point estimate can be developed and is ready for an independent review. The determination of a design completion percentage for reporting purposes will be made by the Architect-Engineer as well as by subsystem designers contracted to do the work, and/or other IPT members.

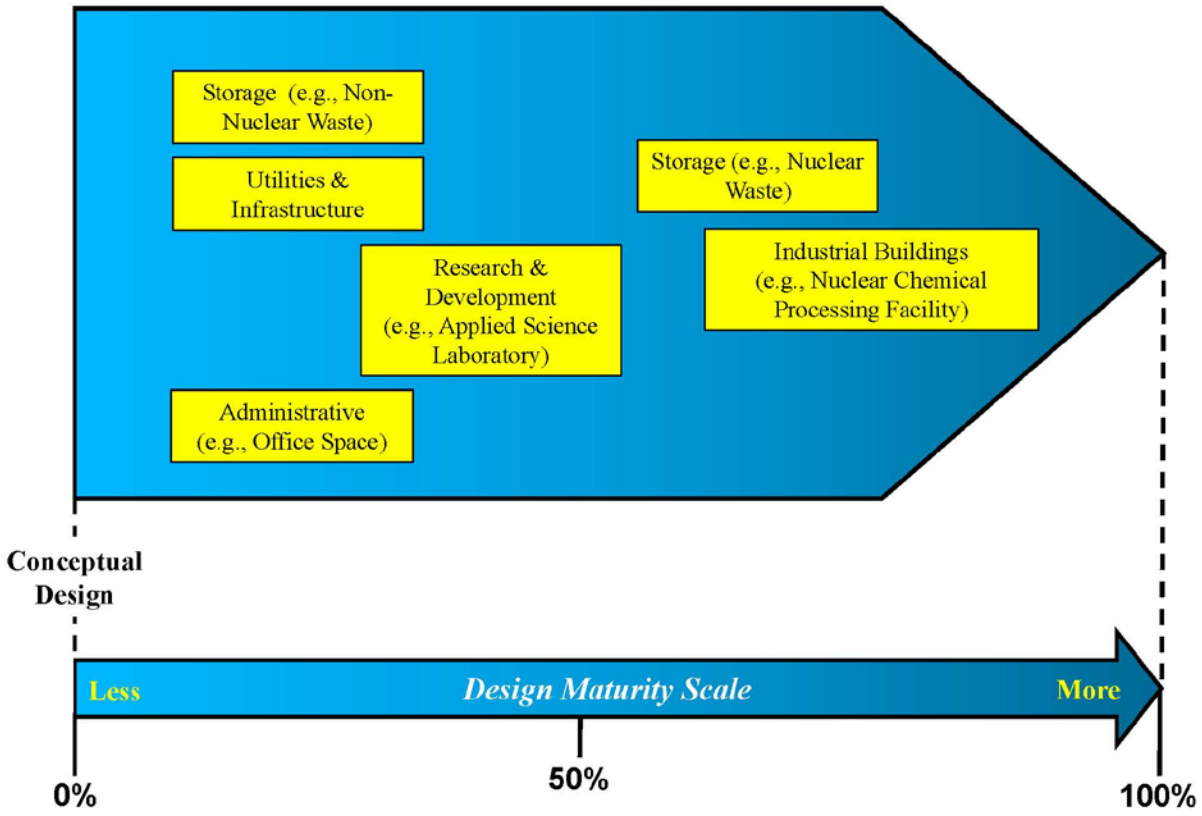


Figure 3. Facility Design Maturity General Guidelines for CD-2.

Final Design is the last stage of development prior to implementation. The purpose of the Final Design stage is to prepare final drawings, technical specifications and contract documents required to obtain bids and quotes for procurement and construction. The Final Design should include clear statements of testing requirements and acceptance criteria for the safety and functionality of all subsystems. The project scope should be finalized and changes (coordinated through a documented and approved change control process and CCBs) should be permitted only for compelling reasons (i.e., substantial economies achieved through VE, accommodation of changed conditions in construction, or reduction in funds or changes in requirements). In any case, construction should not be allowed to proceed until the design is sufficiently mature to minimize change orders.

Scientific systems, such as accelerators, detectors, and production and manufacturing facilities, may not follow a linear design process in which all subsystems reach the same maturity at the same time. Concurrency in these types of projects increases the risk because each subsystem design is dependent upon the design maturity of other

subsystems. Projects that have several subsystems may have separate preliminary and final design stages. Consequently, final designs may be completed at various points in time in the system development process. Regardless, design reviews should be conducted for all projects and should involve a formalized, structured approach to ensure the reviews are comprehensive, objective, professional and documented.

Design reviews (including constructability reviews, where appropriate) are a vital component of the entire process and should be explicitly included in the schedule for the design effort. Design reviews shall be conducted by reviewers external to the project to document the completion of conceptual design, preliminary design and final design. The fundamental purpose of the design review is to ensure the following:

- Quality of the design.
- Operational and functional objectives are met.
- Maintenance of costs within the budget.
- Design is sufficient for the stage of the project, e.g., for final design, the design is biddable, constructible, and cost-effective.
- Interface compatibility.
- Final contract documents comply with the design criteria.
- A detailed, unbiased, analytical approach is given to all of the above items.

Complete design submittals are required at completion of established design stages; design and technical reviews shall then be performed. There shall also be a back-check review at design completion to verify that all comments made during the Final Design review stage have been addressed.

5. Earned Value Management System.

An EVMS is required for all projects with a TPC greater than or equal to $20M. In accordance with FAR Subpart 52.234-4, a contractor's EVMS will be reviewed for compliance with ANSI/EIA-748B, or as required by the contract. (Further details on establishing, employing, and maintaining a compliant EVMS are found in DOE G 413.3-10, ANSI/EIA-748B, GAO Cost Estimating & Assessment Guide, NDIA PMSC Intent Guide, and NDIA PMSC Surveillance Guide).

a. EVMS Certification. This is the initial determination that a Contractor's EVMS is in full compliance with ANSI/EIA-748B, or as required by the contract, on all applicable projects. Documentation of the certification shall be provided to the Contracting Officer and the PMSO (copy to OECM). The higher certification supersedes when they conflict. For example, PMSO certification outweighs that

of contractor self-certification. The EVMS hierarchy in this Order, highest to lowest, is OECM, PMSO and then contractor self-certification.

- For contracts where there are applicable projects with a TPC between $20M and $50M, the FPD must ensure that the contractor conducts a self-certification review ideally by an entity independent of the contractor's project team and provides documentation self-certifying their EVMS compliance with ANSI/EIA-748B, or as required by the contract.

- For contracts where there are applicable projects with a TPC between $50M and $100M, the PMSO must conduct a certification review and certify the contractor's EVMS compliance with ANSI/EIA-748B, or as required by the contract. The PMSO reviewers should be independent from the project's development, implementation, and supervision and have the knowledge, skills and abilities to fairly evaluate the fitness of the EVMS. An OECM representative should participate throughout the certification process as a full team member. The PMSO can request that OECM lead the certification process. If the PMSO does not initiate the certification within one year of contract award, OECM will conduct the certification.

- For contracts where there are applicable projects having a TPC greater than $100M, OECM must conduct the certification review process and certify the Contractor's EVMS compliance with ANSI/EIA-748B, or as required by the contract.

- For firm fixed-price contracts a performance measurement system is required. If an ANSI/EIA-748B compliant EVMS is not used, an alternative performance management system must be approved by the AE. The alternate system requirement must be described in detail by the project team and provided to the contracting officer to be included as a contract requirement. The adequacy of the alternative system must be reviewed during the EIR, IPR or other scheduled project peer review to ensure the contractor has applied sound performance measurement principles and that the system provides adequate insight into potential risks to DOE relating to achievement of cost, schedule and technical performance objectives.

b. EVMS Surveillance. This is meant to ensure that a Contractor's certified EVMS remains in full compliance with ANSI/EIA-748B, or as required by the contract, on all applicable projects. A surveillance review may include an assessment against some or all of the ANSI/EIA-748B requirements. The extent of the surveillance review will be tailored based on current conditions. Surveillance reviews conducted by the PMSO or OECM may also entail a review of how EVMS use is implemented by the contractor, including how value is earned,

recorded in applicable systems to include PARS II, and utilized to control the project.

(1) Annual surveillance will be accomplished as follows:

- FPD must ensure the contractor conducts a self-surveillance, ideally by an entity independent of the contractor's project team, and provides documentation of the self-surveillance to the Contracting Officer and the PMSO (copy to OECM) confirming the continued compliance of their EVMS with ANSI/EIA-748B, or as required by the contract.

(2) During the tenure of a multi-year contract (at the contract midpoint or every 2 years, during contract extensions, or as requested by the AE), a surveillance will be accomplished by the PMSO or OECM according to the thresholds below. Documentation of the surveillance will be provided to the Contracting Officer confirming the continued compliance of the Contractor's EVMS with ANSI/EIA-748B, or as required by the contract.

- For contracts where there are applicable projects with a TPC between $50M and $100M, the surveillance can be accomplished by the PMSO. If the PMSO does not conduct the surveillance, OECM will conduct the surveillance.

- For contracts where there are applicable projects having a TPC greater than $100M, or as requested by the AE, OECM will conduct the surveillance. OECM may also conduct a surveillance of contracts with projects of lesser value following coordination with Program Offices and based upon documented deficiencies such as inconsistent reporting and data anomalies.

(3) Prior to CD-3 of a Major System Project where the Contractor's EVMS has been previously self-certified or PMSO-certified, OECM will conduct a surveillance to validate continued compliance with ANSI/EIA-748B, or as required by the contract.

(4) Corporate Certification. A contractor may adopt one of their existing certified EVMS for application under a new contract and will be considered certified upon acceptance of prior certification documentation. However, an EVMS Surveillance must be conducted prior to CD-3 or at the latest within three months of construction mobilization in accordance with the certification thresholds mentioned above.

(5) Notification of Non-Compliance. If following a surveillance review, the contractor has not fully corrected the noted deficiencies despite offers of assistance from the Program Office or OECM, and has ignored contractual

direction to take corrective action, the PSO or OECM may issue a Notice of Non-Compliance with ANSI/EIA-748B, or as required by the contract, to the Contracting Officer and will note whether the contractor's EVMS certification has been withdrawn.

6. Environment, Safety and Health Documentation Development.

a. For projects involving Hazard Category 1, 2, or 3 nuclear facilities as defined in 10 CFR Part 830, Subpart B:

(1) Prior to CD-1, a CSDR is developed to:

- Document and establish a preliminary inventory of hazardous materials, including radioactive materials and chemicals;
- Document and establish the preliminary hazard categorization of the facility;
- Identify and analyze primary facility hazards and facility Design Basis Accidents;
- Provide an initial determination, based on preliminary hazard analysis, of safety class and safety significant structures, systems, and components;
- Include a preliminary assessment of the appropriate seismic design category for the facility itself as well as safety significant structures, systems, and components;
- Evaluate the security hazards that can impact the facility safety basis (if applicable); and
- Include a commitment to the nuclear safety design criteria of DOE O 420.1B (or proposed alternative criteria).

(2) Prior to CD-2, a PSDR is developed from the CSDR to reflect more refined analyses based on the evolving design and safety integration activities during preliminary design. The PSDR should include the results of process hazards analyses and confirm or adjust, as appropriate, the items included in the CSDR.

(3) Prior to CD-3, a PDSA is prepared which updates the safety information in the PSDR and identifies and justifies changes from the design approach described in the PSDR. A plan to achieve operational readiness is prepared using the core requirements of DOE O 425.1D and DOE-STD-3006-2010.

(4) Prior to CD-4, a Documented Safety Analysis is developed based on information from the PDSA and the SER. Technical safety requirements are developed to document and establish specific parameters and requisite actions for safe facility operation.

(5) An ORR or RA will be conducted in accordance with DOE O 425.1D and DOE-STD-3006-2010.

b. For projects involving facilities that are below the Hazard Category 3 threshold as defined in 10 CFR Part 830, Subpart B:

(1) Prior to CD-1, prepare a PHAR to identify and evaluate all potential hazards and establish a preliminary set of safety controls. Hazardous chemicals are analyzed in accordance with Integrated Safety Management (ISM) requirements in DOE P 450.4, 29 CFR 1910.119, and 40 CFR Part 68.

(2) Prior to CD-2, a Hazard Analysis Report is developed by updating the PHAR to include any new or revised information on facility hazards and safety design.

(3) Prior to CD-3 and CD-4, hazard analysis and controls are updated in the Hazard Analysis Report.

(4) The PSO will determine what level of readiness review will be conducted.

c. All projects must comply with environmental protection requirements including NEPA documentation, anticipated permitting requirements and cost-effective environmental stewardship, advance regional and local integrated planning goals and sustainable sites, and high performance and sustainable building principles.

d. A Construction Project Safety and Health Plan is prepared prior to construction activities per 10 CFR Part 851, Appendix A, Section 1(d).

e. EO 13514 requires that all projects divert at least 50 percent of construction and demolition materials and debris (by weight) from the non-hazardous solid waste stream.

7. Integrated Project Team.

The FPD shall organize and lead the IPT. The IPT is an essential element in DOE's acquisition process and is involved in all phases of a project. This team consists of professionals representing diverse disciplines with the specific knowledge, skills and abilities to support the FPD in successfully executing a project. The team size and membership may change as a project progresses from CD-0 to CD-4 to ensure that the necessary skills are always represented to meet project needs. Team membership may be

full or part time, depending upon the scope and complexity of a project and the activities underway. However, the identified personnel must be available to dedicate an amount of time sufficient to contribute to the IPT's success. Refer to DOE G 413.3-18 for further clarification.

Qualified staff (including contractors) must be available in sufficient numbers to accomplish all contract and project management functions. Project staffing requirements should be based on a variety of factors, including project size and complexity, as well as the management experience and expertise of the project staff. Programs must use a methodology to determine the appropriate project team size and required skill sets. One such algorithm is detailed in DOE G 413.3-19. Regardless of the methodology used, once the appropriate staff size has been determined, programs should plan and budget accordingly.

The FPD and the team will prepare and maintain an IPT Charter that describes:

- Membership (must include the Contracting Officer);
- Responsibilities and authority;
- Leads (as appropriate);
- Meetings;
- Reporting; and
- Operating guidance.

Nuclear safety experts on a nuclear facility project should include personnel in functional areas which relate to nuclear safety aspects of the facility. Disciplines within these functional areas can include: design disciplines (civil, structural, mechanical, electrical, instrumentation); health physics and radiological protection; safety, accident, hazard, or risk analysis; criticality safety; process chemistry; fire protection; configuration management; startup testing; conduct of operations; maintenance; operational readiness; commissioning; quality assurance. This does not preclude personnel from other disciplines providing that they have relevant and appropriate nuclear safety experience for the functional area for which they are responsible.

8. Integrated Safety Management System.

An Integrated Safety Management System (ISMS) must be in place to ensure that potential hazards are identified and appropriately addressed throughout the project (refer to DOE P 450.4). It will be used to systematically integrate safety into management and work processes at all levels. The project management team will implement the following seven guiding principles:

a. Line management responsibility for safety;

b. Clear roles and responsibilities;

c. Competence commensurate with responsibilities;

d. Balanced priorities;

e. For Hazard Category 1, 2, and 3 nuclear facilities, the CSDR must identify safety standards and requirements to include preliminary seismic design category for the facility itself as well as safety class and significant structures, systems, and components;

f. Engineered controls tailored to the functions being designed or performed; and

g. Tailoring should be applied to a project's ISMS to enable tasks to be managed at the appropriate levels enabling those closest to the task plan to assume responsibility for planning and performance. Refer to DOE P 470.1 for more information.

9. Key Performance Parameters.

A Key Performance Parameter is defined by CD-2 and is a characteristic, function, requirement or design basis that if changed would have a major impact on the system or facility performance, schedule, cost and/or risk. In some cases, a minimum KPP or threshold value should be highlighted for CD-4 (project completion) realizing in many instances full operational capabilities may take years to achieve. The minimum KPPs and facility mission must stay intact for the duration of the project since they represent a foundational element within the original PB. For NNSA projects, KPPs are also identified in the PRD. Additional details concerning the application of KPPs are provided in DOE G 413.3-5.

10. Lessons Learned Process.

Lessons Learned and best practices should be captured throughout the continuum of a project. Within 90 days of CD-3 approval, up-front project planning and design lessons learned shall be submitted to OECM. Likewise, project execution and facility start-up lessons learned shall be submitted within 90 days of CD-4 approval. Lessons learned reporting allows the exchange of information among DOE users in the context of project management. Refer to DOE G 413.3-11 for more information.

11. Nuclear Facilities: Safety Design Strategy and Code of Record.

Early in the conceptual design phase, a SDS should be developed for Hazard Category 1, 2, and 3 nuclear projects. The SDS provides preliminary information on the scope of anticipated significant hazards and the general strategy for addressing those hazards. The SDS is updated throughout subsequent project phases and should contain enough detail to guide design on overarching design criteria, establish major safety structures, systems, and components, and identify significant project risks associated with the proposed facility relative to safety.

Consistent with this Order, DOE O 420.1B, and DOE-STD-1189 for nuclear facilities, adequate resources shall be provided to develop a SDS and a Code of Record early in the design phase. The Code of Record shall be maintained throughout the CD process and for the remainder of the nuclear facility's life-cycle. The Code of Record shall serve as the management tool and source for the set of requirements that are used to design, construct, operate and decommission nuclear facilities over their lifespan.

12. Performance Baseline.

The PB, as established in the PEP, defines the TPC, CD-4 completion date, performance and scope commitment to which the Department must execute a project and is based on an approved funding profile. The PB includes the entire project budget (total cost of the project that includes contingency) and represents DOE's commitment to Congress and the OMB. The approved PB must be controlled, tracked and reported from the beginning to the end of a project to ensure consistency between the PEP, the PDS, and the Exhibit 300 (a requirement of OMB Circular A-11, Part 7).

13. Project Definition Rating Index.

The project team will perform comprehensive front-end project planning to an appropriate level before establishing a PB at CD-2. The PDRI model assists the IPT in identifying key engineering and design elements critical to project scope definition. PDRI is to be implemented and used for projects with a TPC of $100M or greater, as appropriate. This will be accomplished by the FPD. While not mandated, it is strongly encouraged for use by Programs for projects with a TPC less than $100M. See DOE G 413.3-12 for additional information.

14. Project Execution Plan.

The PEP is the core document for the management of a project. The FPD is responsible for the preparation of this document. It establishes the policies and procedures to be followed in order to manage and control project planning, initiation, definition, execution and transition/closeout, and uses the outcomes and outputs from all project planning processes, integrating them into a formally approved document. It includes an accurate reflection of how the project is to be accomplished, the minimum KPPs for CD-4, resource requirements, technical considerations, risk management, configuration management, and roles and responsibilities. A preliminary PEP is required to support CD-1. This document continues to be refined throughout the duration of a project and revisions are documented through the configuration management process. Key elements of a PEP are provided in DOE G 413.3-15.

15. Project Funding.

a. Full Funding. All capital asset line item projects (excluding MIE) with a TPC less than $20M will request all construction funds within the same appropriation year as the start of construction. Projects with a TPC less than $50M should request funds within the same appropriation year, if feasible. Any exceptions

must be approved by each organization's PSO in consultation with the CFO and OECM.

b. Incremental Funding. Project budget requests should consider mitigating risks such as continuing resolutions (particularly for new starts), higher than anticipated project burn rate and affordability within the program's capital and operations budget portfolio.

c. Funding Profiles. In approving the funding profile for completing the project, AEs must determine that the proposed funding stream is affordable and executable within the program's capital and operations budget portfolio. Any changes to the approved funding profile that negatively impacts the project after CD-2 must be endorsed by the project's AE, who may not be the Program Budget Officer. Prior to endorsement by the AE, the CFO and OECM will be notified of any proposed project funding profile changes so that the CFO can verify that the funding profile is covered within the President's budget.

16. Project Reporting, Assessments and Progress Reviews.

a. Project Reporting. PARS II is the central repository for key Departmental-level project information. The Program Offices and FPDs will ensure that project data is uploaded monthly into PARS II (including EVMS data provided directly into PARS II from contractor's systems after CD-2). Approval of CD-0 initiates a requirement for project status reporting. This reporting continues through the approval of CD-4 for all projects with a TPC greater than or equal to $10M. The PSO will submit key project documentation such as CD and BCP approval memoranda to OECM within five business days of document approval.

At CD-2 and continuing through CD-4, projects with a TPC greater than $20M must report earned value performance in PARS II no later than the last workday of every month. The data must be current as of the closing of the previous month’s accounting period.

b. Project Assessments. Following the upload of a contractor's monthly performance data, the FPDs have until the third business day of the following month to accomplish their assessment. The Program Managers have until the sixth business day and OECM until the ninth business day to provide their assessment and to compile the monthly project status report. OECM will coordinate the report with the Programs and on the 25th business day, forward the report to the Deputy Secretary.

Project performance assessments shall be determined through quantitative and qualitative methods. Elements to be reviewed include, but are not limited to EVMS data, contractor's monthly reports, acquisition management practices, risk management status, EIR/IPR/TIPR/Project Peer Reviews, site visits, staffing assessments, budget submittals, as well as discussions with the IPT members. OECM will provide project assessments for all capital asset projects in its

monthly reports to the Deputy Secretary. Ratings shall be assessed against the current approved PB:

- Green – Project is expected to meet its current PB.
- Yellow – Project is potentially at risk of not meeting an element of the current PB.
- Red – Project is highly at risk of requiring a change to the PB by the AE or is not being executed within the AS and PEP.

c. Project Progress Reviews. QPRs must be conducted with the applicable AE or their designee. Participation by the AE is strongly encouraged at all QPRs. However, when it is not possible, the AE can delegate the review. In no case should it be delegated beyond two consecutive quarters for projects post CD-2. The SAE may delegate QPRs for Major System Projects to the Under Secretaries. OECM must be provided all QPR reports and invited to participate in QPRs for all projects with a TPC greater than or equal to $100M. Also, OECM will serve as Secretariat for SAE QPRs.

17. Quality Assurance.

QA begins at project inception and continues through all phases of the project. The FPD is responsible for a Quality Assurance Program (QAP) for the project and all applicable QA requirements must be addressed. Apply ASME NQA-1-2008 (Edition) and NQA-1a-2009 (Addenda) for Hazard Category 1, 2, or 3 nuclear facilities. The key elements of a QAP are provided in DOE O 414.1C and 10 CFR Part 830, Subpart A. (See also DOE G 413.3-2.)

18. Reviews.

The authority and accountability for any project, including its costs, must be vested firmly in the hands of the FPD. Some cost estimate, or cost range, should be provided at each CD gateway, but the degree of rigor and detail for a cost estimate should be carefully defined, depending on the degree of confidence in project scale and scope that is reasonable to expect at that stage. Whatever figure or range that is provided should explicitly note relevant caveats concerning risks and uncertainties inherent in early estimates at CD-0 and CD-1 stages given the immature requirements definition at this juncture. A project sponsor should never be the sole cost estimator, at any stage (i.e., from CD-0 on), given the inherent conflict of interest. The second cost estimator should come from outside of the line manager’s chain of command, to avoid conflict of interest.

Reviews are an important project activity and must be planned as an integral part of the project and tailored appropriately to project risk, complexity, duration and CD or phase. Refer to DOE G 413.3-9 for more information. The following is a summary of key reviews organized by CD.

a. Prior to CD-0.

(1) Mission Validation Independent Review.

A Mission Validation Independent Review, performed by the PSO, is a limited review prior to CD-0 for Major System Projects. It validates the mission need and the ROM cost range that is provided, in part, to properly designate the appropriate AE. A Value Study may also be conducted, as appropriate, to assist in CD-0. Refer to DOE G 413.3-17.

(2) Mission Need Statement Document Review.

OECM will review the MNS Document and provide a recommendation to the PSO for projects with a TPC greater than or equal to $100M. The review shall be completed within 10 days after the submission for Non-Major System Projects and within 25 days for Major System Projects.

(3) Independent Cost Review.

For Major System Projects, or for projects as designated by the SAE, OECM will conduct an ICR. This review validates the basis of the ROM cost range and provides an assessment of whether the range reasonably bounds the alternatives to be analyzed in the next project phase. It also determines the AE authority designation.

b. Prior to CD-1.

(1) Acquisition Strategy Review.

Acquisition Strategies for Major System Projects must be sent to the ESAAB Secretariat for review by OECM prior to scheduling CD-1 decisional briefings. The FPD and CO must concur with the AS prior to the OECM review. Within 10 days upon receipt, OECM will provide a recommendation to the appropriate PSO who holds approval authority. Approval of the AS does not constitute approval of the AP. The AP must be submitted for review and approval in accordance with established procurement procedures including DOE Acquisition Guide, Chapter 7.1.

(2) Independent Project Review.

For Hazard Category 1, 2, and 3 nuclear facilities, the PSO will conduct an IPR to ensure early integration of safety into the design process. The review must: 1) ensure that safety documentation is complete, accurate and reliable for entry into the next phase of the project; 2) evaluate whether the preferred alternative process and facility design, and corresponding safety analyses, are sufficiently detailed to identify any

safety controls that, because of cost, maintainability, complexity or other limiting characteristics, could significantly impact the decision to select the preferred alternative; and 3) validate that the IPT charter has identified appropriate functions, roles and responsibilities for members needed to support nuclear safety, and that the IPT members supporting nuclear safety are appropriately qualified, and have the availability to meet their responsibilities. The PSO approval of IPRs, specified in Appendix A, Table 2.1 means that the Program Office and FPD jointly request the review, establish the review scope and schedule, and select a team leader.

CNS or CDNS concurrence, as appropriate, is required for reviews of projects that must implement DOE-STD-1189-2008. The team leader is the approval authority for the review plan (including the Criteria and Review Approach Documents) and for the final review report.

(3) Conceptual Design Review.

Conceptual Design Review must be conducted for all projects and involve reviewers external to the project using a formalized, structured approach to ensure that the reviews are comprehensive, objective and documented.

(4) Independent Cost Estimate and/or Independent Cost Review.

For projects with a TPC greater than or equal to $100M, OECM will develop an ICE and/or conduct an ICR, as they deem appropriate. This review validates the basis of the preliminary cost range for reasonableness and executability. It also includes a full accounting of life cycle costs to support the alternative selection process and budgetary decisions.

c. Prior to CD-2.

(1) Technical Independent Project Review.

For Hazard Category 1, 2, and 3 nuclear facilities, a TIPR will be performed to ensure that safety is effectively integrated into design and construction. The TIPR must: 1) ensure that safety documentation is complete, accurate and reliable for entry into the next phase of the project; and 2) evaluate the IPT to ensure that appropriate team member functions to support nuclear safety during final design have been established, and appropriately qualified team members have been selected and have needed availability to address nuclear safety-related matters during final design. Completion of the TIPR is required prior to the start of any subsequent reviews (including EIRs) and is required prior to CD-2 approval. The PSO approval of TIPRs, specified in Appendix A, Table 2.2 means that the

Program Office and FPD jointly request the review, establish the review scope and schedule, and select a team leader.

CNS or CDNS concurrence, as appropriate, is required for reviews of projects that must implement DOE-STD-1189-2008. The team leader is the approval authority for the review plan (including the Criteria and Review Approach Documents) and for the final review report.

(2) Performance Baseline Validation Review.

A Performance Baseline Validation Review is required to provide reasonable assurance that the project can be successfully executed. IPRs are required to validate the PB for projects with a TPC less than $100M. The AE may request an EIR in lieu of an IPR through OECM, and shall do so if the AE has no PMSO to perform the review. For all projects with a TPC greater than or equal to $100M, OECM will conduct an EIR and develop an ICE in support of the PB validation. Findings resulting from project reviews must be addressed by the IPT in their corrective action plan and expeditiously resolved. Follow-up reviews to validate finding resolution may be required at the discretion of the reviewing entity.

(3) Project Definition Rating Index Analysis.

For projects with a TPC greater than $100M, the FPD shall conduct a PDRI Analysis. Such analyses are also encouraged for projects with a TPC less than $100M.

(4) Technology Readiness Assessment.

For Major System Projects where new critical technologies are being deployed, the IPT shall complete a TRA and Technology Maturation Plan, as appropriate. These assessments are also encouraged for lower cost projects where new technologies may exist.

(5) Preliminary Design Review.

Preliminary Design Review must be conducted for all projects and involve reviewers external to the project using a formalized, structured approach to ensure that the reviews are comprehensive, objective and documented.

d. Prior to CD-3.

(1) Construction or Execution Readiness Review.

An EIR must be performed by OECM on Major System Projects to verify construction or execution readiness.

(2) Independent Cost Estimate.

For projects with a TPC greater than or equal to $100M, OECM will develop an ICE, if warranted by risk and performance indicators or as designated by the SAE.

(3) EVMS Certification Review.

For contracts with a TPC between $20M and $50M, the contractor must conduct a self-certification review ideally by an entity independent of the contractor's project team.

For contracts where there are applicable projects with a TPC between $50M and $100M, the PMSO must conduct a certification review.

For contracts where there are applicable projects with a TPC greater than $100M, OECM must conduct the certification review.

(4) Technology Readiness Assessment.

For Major System Projects where a significant critical technology element modification occurs subsequent to CD-2, conduct a TRA, as appropriate.

(5) Final Design Review.

Final Design Review must be conducted for all projects and involve reviewers external to the project using a formalized, structured approach to ensure that the reviews are comprehensive, objective and documented.

e. Prior to CD-4.

(1) Operational Readiness Review or Readiness Assessment.

Conduct an ORR or RA for Hazard Category 1, 2, and 3 nuclear facilities in accordance with DOE O 425.1D and DOE-STD-3006-2010.

(2) Readiness to Operate Assessment.

For non-nuclear projects, conduct a formal assessment of the project's readiness to operate, as appropriate. Determine the basis for DOE acceptance of the asset and if the facility or area can be occupied from both a regulatory and work function standpoint. Establish a beneficial occupancy/utilization date for the facility and/or equipment.

f. Project Peer Reviews.

These focused, in-depth reviews are conducted by non-advocates (Federal and M&O or other contractor experts) and support the design and development of a

project. For projects greater than or equal to $100M, Program Offices should conduct a Project Peer Review at least once a year, starting at CD-2 and continuing through CD-4, for large or high-visibility projects and more frequently for the most complex projects or those experiencing performance challenges. The reviews should be performed by peers (with relevant experience and expertise) independent of the project, to evaluate technical, managerial, cost, scope and other aspects of the project, as appropriate. These Project Peer Reviews may supplement or replace applicable IPRs at the discretion of the Program Office and vice versa.

19. Risk Management.

Risk Management is an essential element of every project and must be analytical, forward looking, structured and continuous. Risk assessments are started as early in the project life-cycle as possible and should identify critical technical, performance, schedule and cost risks. Once risks are identified and prioritized, sound risk mitigation strategies and actions are developed and documented in the Risk Register. Post CD-1, the risk register (including new risks) should be evaluated at least quarterly.

Risks and their associated confidence levels are dependent on multiple factors such as complexity, technology readiness and strength of the IPT. Risks for all capital asset projects should be analyzed using a range of 70-90% confidence level upon baselining at CD-2 and reflected in funded contingency, budgetary requests and funding profiles. If a project has a PB change, FPDs should consider reanalyzing the risks at a higher confidence level and then reflecting this in budgetary requests and funding profiles. Additional risk management information is provided in DOE G 413.3-7.

20. Safeguards and Security.

Prior to CD-1, general safeguards and security requirements for the recommended alternative and preliminary identification of alternatives (including facility design and the incorporation of safeguards and security technologies) must be made and these alternatives evaluated with respect to their impact on mission needs, satisfaction of other requirements (such as safety requirements) and other cost considerations. This input becomes part of the conceptual design requirements for further development.

Prior to CD-2, a Preliminary Security Vulnerability Assessment must be conducted that accounts for the set of applicable safeguards and security requirements, evaluates the methods selected to satisfy those requirements and addresses any potential risk acceptance issues. The PEP and the PB must be reviewed to ensure that cost, schedule, and integration aspects of safeguards and security are appropriately addressed, all feasible risk mitigation has been identified and concerns for which explicit line management risk acceptance will be required are appropriately supported.

Prior to CD-3, a final Security Vulnerability Assessment Report should be issued addressing all the safeguards and security requirements of the project. The project requirements should be satisfied by the facility design or the proposed operational features.

21. Site Development Planning.

Projects including new construction or modifications to real property assets shall be included in the site's Ten Year Site Plan and must provide the necessary documentation to establish a property record in the Department's Facilities Information Management System in accordance with DOE O 430.1B.

22. Tailoring.

a. General.

Tailoring is an element of the acquisition process and must be appropriate considering the risk, complexity, visibility, cost, safety, security and schedule of the project. Tailoring must be identified as early as possible prior to the impacted CD and must be approved by the AE. In the Tailoring Strategy or the PEP, the FPD will identify those areas in which a project is planned to be tailored as well as an explanation and discussion of each tailored area.

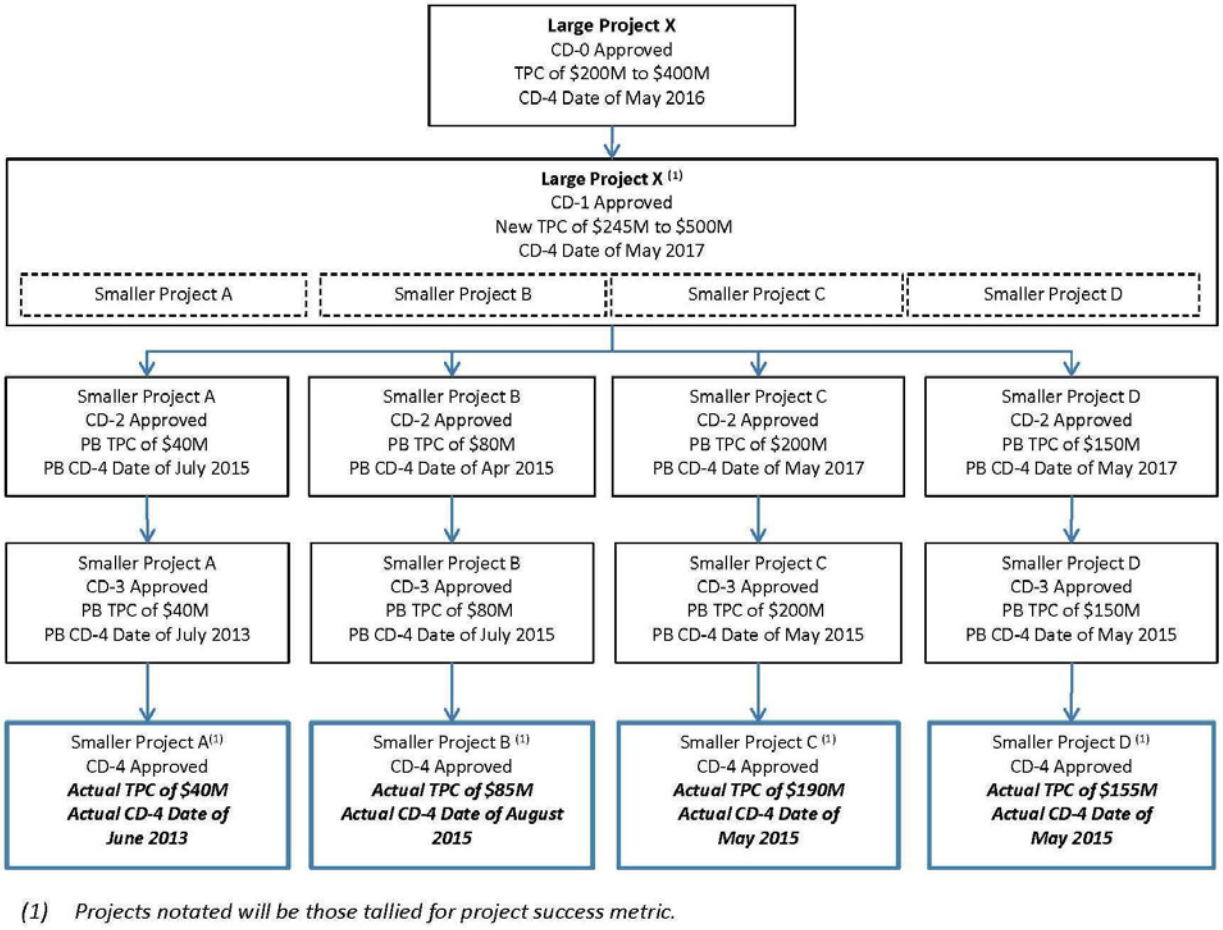
Tailoring does not imply the omission of requirements in the acquisition process or other processes that are appropriate to a specific project's requirements or conditions.

Tailoring may involve consolidation or phasing of CDs, substituting equivalent documents, graded approach to document development and content, concurrency of processes, or creating a portfolio of projects to facilitate a single CD or AS for an entire group of projects. Tailoring may also include adjusting the scope of IPRs and EIRs, delegation of acquisition authority and other elements. Major tailored elements such as consolidating or phasing CDs or delegation of AEs should be specified in the PEP or the Tailoring Strategy.

Tailoring does not apply to nuclear safety requirements, which use a "graded approach" as prescribed in 10 CFR Part 830, Nuclear Safety Management. Details on developing a tailoring approach that could be applied are provided in DOE G 413.3-15.

b. Phasing.

Generally, a CD would not be split and CD-2 is never split. For some projects, it may be appropriate to phase the work (into smaller, related, complete and useable projects) and split or phase the CD. In those instances, it may be appropriate to garner CD-0 and CD-1 approvals for all the smaller projects collectively and simultaneously. Subsequently, each smaller project must have its own distinct performance baseline (CD-2) with clearly defined and documented technical scope, cost, schedule and funding profile including consideration for all applicable contingencies. See Figure 4.



(1) Projects notated will be those tallied for project success metric.

Figure 4. Phasing of a Large Project

As each smaller project achieves CD-2, its cost baseline (or TPC) gets reflected as point estimates but the TPC of the large project is a collective total of the smaller projects with the expectation that it is less than the CD-1 high end range. After each phased CD-2 is approved, the earned value for each smaller project individually must be reported into PARS II monthly if greater than or equal to $20M. When a smaller project is developed, the subsequent CDs will be approved by an AE commensurate with that project's TPC.

Although funded contingency is included as part of each smaller project's TPC, during execution, it may be held at the large project level and utilized as risks are realized. Contingency becomes part of the smaller project or an activity after the approval of the baseline change request to utilize contingency. Cost savings from one small project can be returned to the contingency pool for other small projects covered by the same PDS. These additional contingency funds can be applied toward another small project, if necessary. The large project (aggregated) CD-2 value is finally established when the last small project achieves CD-2 approval. At that time, the large project's CD-2 value equals the total value of each of the

original CD-2 values for each of the smaller projects combined. The project success metrics are based on the execution of each of the small projects.

For construction projects that collectively support one mission need, it would be advisable to include each project on one PDS to achieve maximum funding flexibility. Examples #1 through #4 outline how a time-phased, multiple-project PDS can be developed.

Example #1: Initial Budget Request for PED funds:

	Construction Cost ($M)		PED Cost ($M)				
	CD-0 or CD-1 (TPC Cost Range)	TPC	FY11	FY12	FY13	FY14	FY15
Project A	20-50	-	5	-	-	-	-
Project B	50-100	-	10	-	-	-	-
Project C	100-200	-	10	10	-	-	-
Project D	75-150	-	-	15	-	-	-
TOTAL	245-500	-	25	25	-	-	-

Example #2: Initial Budget Request for Construction, Project A (with CD-2 approval) and Project B (absent of CD-2):

	Construction Cost ($M)						
	CD-0 or CD-1 (TPC Cost Range)	TPC	FY11	FY12	FY13	FY14	FY15
Project A	-	40	-	-	40	-	-
Project B	50-100	100	-	-	10	50	40
Project C	100-200	-	-	-	-	-	-
Project D	75-150	-	-	-	-	-	-
TOTAL	-	140	0	0	50	50	40

Example #3: Initial Budget Request for Construction, Project A & B (with CD-2 approval) and Project C & D (absent of CD-2):

	Construction Cost ($M)						
	CD-0 or CD-1 (TPC Cost Range)	TPC	FY11	FY12	FY13	FY14	FY15
Project A	-	40	-	-	40	-	-
Project B	-	80	-	-	10	50	20
Project C	100-200	200	-	-	-	100	100
Project D	75-150	150	-	-	-	25	125
TOTAL	-	470	0	0	50	175	245

Example #4: Initial Budget Request for Construction (all projects with CD-2 approval):

	Construction Cost ($M)						
	CD-0 or CD-1 (TPC Cost Range)	TPC	FY11	FY12	FY13	FY14	FY15
Project A	-	40	-	-	40	-	-
Project B	-	80	-	-	10	50	20
Project C	-	200	-	-	-	100	100
Project D	-	140	-	-	-	25	115
TOTAL	-	460	0	0	50	175	235

Likewise, it may be appropriate to split CD-4. For example, "CD-4A" to designate beneficial occupancy of a facility in advance of operations start-up, particularly if there is a significant time lapse.

c. Environmental Management Cleanup Projects.

Environmental Management (EM) Cleanup Projects are frequently the antithesis of construction projects in that EM is deactivating, decommissioning, remediating, stabilizing and disposing (also known as Environmental Restoration) versus constructing. These projects are conducted under a variety of regulatory processes and site-specific cleanup agreements which are legally binding and specify the process, end states, decision points and approvals required. The TRAs plays an important role in determining the solution. For these projects, the performance and scope parameters and start/end dates are based on negotiated terms with Federal and/or State regulatory agencies. As a result of this variability, it is not possible to draw a single crosswalk to the traditional construction project that would be applicable to all EM Cleanup Projects. Hence, a tailored approach is necessary for each project. As such, the FPD will submit a Tailoring Strategy, which may be included in the PEP, to the AE for approval. See DOE G 413.3-15 for additional guidance.

d. Design-Build.

Design-Build is a project delivery method whereby a single contract is awarded for both design and construction. Design-Build is normally used most successfully with projects that have well-defined requirements with limited complexity and risks. Example projects include road building, administrative facilities and/or replication of previously accomplished projects. The nuclear safety requirements of this Order will be fully implemented for defense nuclear facilities.

(1) The Design-Build approach requires the development of a functional design and clearly stated operating requirements that provide sufficient information to allow prospective contractors to prepare bids or proposals. It also allows the flexibility to implement innovative design and construction approaches, VE, and other cost and time savings initiatives. The overall objective of the Design-Build approach is to:

- Enhance efficiencies in project design integration into construction execution;
- Reduce the total cost to the Department; and
- Deliver projects faster than by using the traditional Design-Bid-Build approach.

(2) Since the requirements are well-defined early in the process and much of the cost and schedule information and key design criteria are known, CD-1, CD-2 and/or even CD-3 may be accomplished simultaneously. Essentially, in requesting a simultaneous approval, CD-1/2, CD-1/2/3 or CD-2/3, the IPT is asserting that:

- There is no advantage to the Department of further evaluation of alternatives;
- The project functions and requirements are well known; and
- A cost and schedule baseline can be established.

e. Long-Lead Procurement.

CD-3A may be needed for long-lead item procurement. While there is potential risk in procuring equipment before the design is complete, the potential schedule improvement may be significant and more than compensate for the risk. If the long-lead item is nuclear safety-related or nuclear safety-related equipment, safety document maturity must also be considered. Procurement of vendor engineering designs, for example, greatly reduces the risk of incomplete or incorrect final

designs that would otherwise require rework and potentially impact cost and schedule. The need to phase CD-3 should not be confused with minor, early activities that are necessary and generally performed prior to CD-3. Activities such as site preparation work, site characterization, limited access, and safety and security issues (i.e., fences) are often necessary prior to CD-3, and may be pursued as long as project documents such as a PDS requesting construction or PED funds to procure the long-lead items and funding approvals are in place. If CD-3A is anticipated, the need for this decision and the process should be documented in the PEP or Tailoring Strategy.

23. Technology Readiness Assessment.

The TRA model evaluates technology maturity using the Technology Readiness Level (TRL) scale. TRAs and associated Technology Maturation Plans are used as a project management tool to reduce the technical and cost risks associated with the introduction of new technologies. Where technological readiness is a significant concern, TRAs should be considered for alternatives under consideration. For Major System Projects where new critical technologies are being deployed, the TRA shall be conducted and the associated Technology Maturation Plan developed prior to CD-2. On those projects where a significant critical technology element modification occurs subsequent to CD-2, conduct another TRA prior to CD-3. The TRA is not required of a project if: (1) the technology was adequately demonstrated previously in one or more separate projects; or (2) the objective of the project is to research scientific principles. It is strongly encouraged for use by the AE for projects with a TPC less than $750M. See DOE G 413.3-4 for additional information.

CONTRACTOR REQUIREMENTS DOCUMENT
DOE O 413.3B, *PROGRAM AND PROJECT MANAGEMENT FOR THE ACQUISITION OF CAPITAL ASSETS*

This Contractor Requirements Document (CRD) sets forth requirements applicable to the contract to which this CRD is inserted. The Contractor is responsible for performing program and project management of Department-owned or -leased facilities as determined by the Federal Project Director and Contracting Officer, in conjunction with the Federally-assigned Integrated Project Team members. The Contractor shall: (1) comply with the requirements of this CRD to include subcontractor(s), and (2) flow down the appropriate requirements of the CRD to a subcontractor, when the total project cost to the prime contractor are equal to or greater than $20 million.

The Contractor's project management system shall satisfy the following requirements:

1. Except for firm fixed-price contracts, the Contractor shall:

    - Employ an Earned Value Management System (EVMS) prior to Critical Decision (CD)-2 for projects greater than or equal to $20 million. The system shall be compliant with ANSI/EIA-748B (or as required by the contract) in accordance with contract clause FAR Subpart 52.234-4, EVMS.

    - Self-certify the EVMS prior to CD-3 for projects with a total project cost less than $50 million to determine compliance with ANSI/EIA-748B (or as required by the contract) in accordance with contract clause FAR Subpart 52.234-4, EVMS.

    - Annually conduct a self-surveillance of the EVMS confirming continued compliance with ANSI/EIA-748B (or as required by the contract) in accordance with contract clause FAR Subpart 52.234-4, EVMS.

2. The Contractor shall submit monthly project performance data beginning no later than three months following CD-2 for projects having a total project cost greater than or equal to $20 million.

    a. For a cost reimbursement contract, the required project performance data shall include:

        - ANSI/EIA-748B earned value;
        - Earned value time-phased incremental cost and quantity;
        - Management reserve;
        - Schedule;
        - Variance analysis; and
        - Risk management data.

b. Under a firm fixed-price construction contract, EVM is not mandated by the Government. However, it is not discouraged, if used by a contractor to manage its projects as a standard business practice. Unlike a cost reimbursement contract, firm fixed-price contracts are not subject to adjustment on the basis of the contractor's cost experience in performing the contract. Management of firm fixed-price construction projects are accomplished through establishment of performance milestones, schedules, and percentage of project completion. For construction contracts, FAR Subpart 52.232-5 governs the payment provision and the data that the contractor must provide to support its estimate of work accomplished. Substantiation includes an itemization of the amounts requested, related to the various elements of work required by the contract covered by the payment requested and a listing of the amount included for work performed by each subcontractor under the contract, the total amount of each subcontract under the contract, and amounts previously paid to each subcontractor under the contract. While firm fixed-price construction projects cannot require the regular submission of cost data as with a cost reimbursement contract, successful project and contract execution is highly dependent on well defined requirements that serve as the foundation upon which performance milestones are developed, accomplished, and evaluated.

c. Except for firm fixed-price contracts, the data shall be submitted by the prime contractor electronically by uploading the data into the Project Assessment and Reporting System (PARS II) in accordance with the "Contractor Project Performance Upload Requirements" document maintained by the Office of Engineering and Construction Management (OECM). Unless OECM has granted a temporary exemption, all requested data shall be submitted timely and accurately. Data shall be loaded into PARS II no later than the last workday of every month. This data shall be current as of the close of the previous month's accounting period. Ad hoc or periodic reporting by the contractor may be required earlier than CD-2 as specified in the contract.

3. For project contracts to be awarded as subcontracts by the Contractor, the Contractor shall develop a written Acquisition Plan, if applicable. The Acquisition Plan shall receive the Contracting Officer's concurrence.

4. Technical performance analyses and corrective action plans shall be reported to DOE for variances to the project baseline objectives resulting from design reviews, component and system tests and simulations.

5. A critical path schedule and a resource-loaded schedule must be developed and maintained for the project. As a minimum, resource-loaded schedules must contain labor, material and equipment costs to include unit prices and quantities. For firm fixed-price contracts, the total project cost must be included in the resource loaded schedule.

6. Project technical, cost and schedule risks must be identified, quantified and mitigated throughout the life of the project. A Risk Management Plan (RMP) will be developed to cover processes and procedures that will be implemented to address risk assessment (qualitative and quantitative), risk monitoring, risk reporting and lessons learned. The contractor's RMP must receive concurrence from DOE in accordance with contract requirements.

7. The approved integrated contractor technical, cost and schedule baseline shall be maintained using appropriate change control processes (e.g., Change Control Board) as defined in the Project Execution Plan (PEP).

8. A configuration management process must be established that controls changes to the physical configuration of project facilities, structures, systems and components in compliance with ANSI/EIA-649A and DOE-STD-1073-2003. This process must also ensure that the configuration is in agreement with the performance objectives identified in the technical baseline and the approved quality assurance plan.

9. A Value Management/Engineering (VM/VE) process shall be used. Annually, contractors shall submit a progress report identifying VE accomplishments to OECM. Refer to DOE O 430.1B, OMB Circular A-131, and PL 104-106.

10. A Quality Assurance Program must be developed and implemented for the contract scope of work in accordance with DOE O 414.1C, Attachment 2 (CRD) and 10 CFR Part 830, Subpart A. For nuclear-related activities, the applicable national consensus standard shall be ASME NQA-1-2008 (Edition) and NQA-1a-2009 (Addenda).

11. An Integrated Safety Management System must be developed and implemented for the contract scope of work when the contractor is complying with the requirements of 48 CFR 970.5223-1, *Integration of Environment, Safety and Health into Work Planning and Execution*.

12. Contractors performing design for projects shall, at a minimum, conduct a Conceptual, Preliminary and Final Design Review, in accordance with the PEP. For nuclear projects, the design review will include a focus on safety and security systems. A Code of Record shall be maintained under configuration control throughout the CD process and for the remainder of the nuclear facility’s life-cycle.

13. For projects that are Hazard Category 1, 2, and 3 nuclear facilities or include major modifications thereto (as defined in 10 CFR Part 830), the requirements in DOE-STD-1189, as amended, shall be fully implemented. The following documents must be submitted: Safety Design Strategy (CD-1), Conceptual Safety Design Report (CD-1), Preliminary Safety Design Report (CD-2), Preliminary Documented Safety Analysis (CD-3), and Documented Safety Analysis with Technical Safety Requirements (CD-4). For major modifications, the Conceptual Safety Design Report (CSDR) and the Preliminary Safety Design Report (PSDR) may either be separate documents or be subsumed within the Preliminary Documented Safety Analysis. The need to maintain the

CSDR and PSDR as separate documents shall be based on the design development phases. Projects with conceptual and/or preliminary design phases shall develop the corresponding safety documentation.

14. High performance and sustainable building principles in accordance with EO 13423, Section 2(f), must be applied to the siting, design, construction, and commissioning of new facilities and major renovations of existing facilities. At a minimum, all new construction and major building renovations must meet U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Gold certification absent an approved waiver from the Acquisition Executive. Refer to DOE Order 430.2B.

15. For non-M&O contracts, the Contractor shall develop a Project Management Plan (PMP) that supports and complements the Federal PEP and its contract. The PMP shall describe the management methods, organization, control systems and documentation for the project. The PMP shall receive the concurrences of the FPD and the DOE Contracting Officer. If significant changes occur during the project, the PMP shall be revised by the Contractor at the direction of the contracting officer.

DEFINITIONS

1. Acquisition Executive. The individual designated by the Secretary of Energy to integrate and unify the management system for a program portfolio of projects and implement prescribed policies and practices.

2. Acquisition Plan. The document that facilitates attainment of the acquisition objectives. The plan must identify: those milestones at which decisions should be made; all the technical, business, management; and other significant considerations that will control the acquisition including, but not limited to, market research, competition, contract type, source selection procedures and socio-economic considerations.

3. Acquisition Strategy. A high-level business and technical management approach designed to achieve project objectives within specified resource constraints with recognition of key project risks and the strategies identified to handle those risks. It is the framework for planning, organizing, staffing, controlling, and leading a project. It provides a master schedule for activities essential for project success, and for formulating functional strategies and plans.

4. Baseline. A quantitative definition of cost, schedule and technical performance that serves as a base or standard for measurement and control during the performance of an effort; the established plan against which the status of resources and the effort of the overall program, field program(s), project(s), task(s), or subtask(s) are measured, assessed and controlled. Once established, baselines are subject to change control discipline.

5. Baseline Change Proposal. A document that provides a complete description of a proposed change to an approved performance baseline, including the resulting impacts on the project scope, schedule, design, methods, and cost baselines.

6. Beneficial Occupancy. Stage of construction of a building or facility, before final completion, at which its user can occupy it for the purpose it was constructed. Beneficial occupancy does not imply that a project has reached CD-4.

7. Best Practices. An activity or procedure that has produced outstanding results in another situation and could be adapted to improve effectiveness and efficiency in a current situation.

8. Capital Assets. Capital assets are land, structures, equipment and intellectual property, which are used by the Federal Government and have an estimated useful life of two years or more. Capital assets exclude items acquired for resale in the ordinary course of operations or held for the purpose of physical consumption such as operating materials and supplies. Capital assets may be acquired in different ways: through purchase, construction, or manufacture; through a lease-purchase or other capital lease, regardless of whether title has passed to the Federal Government; or through exchange. Capital assets include the environmental remediation of land to make it useful, leasehold

improvements and land rights; assets owned by the Federal Government but located in a foreign country or held by others (such as federal contractors, state and local governments, or colleges and universities); and assets whose ownership is shared by the Federal Government with other entities.

9. Capital Asset Project. A project with defined start and end points required in the acquisition of capital assets. The project acquisition cost of a capital asset includes both its purchase price and all other costs incurred to bring it to a form and location suitable for its intended use. It is independent of funding type. It excludes operating expense funded activities such as repair, maintenance or alterations that are part of routine operations and maintenance functions.

10. CD-0, Approve Mission Need. Approval of CD-0 formally establishes a project and begins the process of conceptual planning and design used to develop alternative concepts and functional requirements. Additionally, CD-0 approval allows the Program to request PED funds for use in preliminary design, final design and baseline development.

11. CD-1, Approve Alternative Selection and Cost Range. CD-1 approval marks the completion of the project Definition Phase and the conceptual design. Approval of CD-1 provides the authorization to begin the project Execution Phase and allows PED funds to be used.

12. CD-2, Approve Performance Baseline. CD-2 approval marks the approval of the performance baseline and requires the completion of preliminary design. It is the first major milestone in the project Execution Phase. Approval of CD-2 authorizes submission of a budget request for the TPC.

13. CD-3, Approve Start of Construction. CD-3 provides authorization to complete all procurement and construction and/or implementation activities and initiate all acceptance and turnover activities. Approval of CD-3 authorizes the project to commit all the resources necessary, within the funds provided, to execute the project.

14. CD-4, Approve Start of Operations or Project Completion. CD-4 approval marks the achievement of the completion criteria (i.e., KPPs) defined in the PEP (or in the PRD, for NNSA projects), and if applicable, subsequent approval of transition to operations.

15. Change Control. A process that ensures changes to the approved baseline are properly identified, reviewed, approved, implemented and tested and documented.

16. Code of Record. A set of requirements, including Federal and state laws, as defined in contracts and Standards or Requirements Identification Documents (or their equivalent), that are in effect at the time a facility or item of equipment was designed and accepted by DOE. It is initiated during the conceptual design phase and prior to approval of CD-1. It is placed under configuration control to ensure it is updated to include more detailed design requirements as they are developed during preliminary design and prior to

approval of CD-2. It is controlled during final design and construction with a process for reviewing and evaluating new and revised requirements to determine their impact on project safety, cost and schedule before a decision is taken to revise the Code of Record. It is maintained and controlled through facility decommissioning.

17. Conceptual Design. The Conceptual Design process requires a mission need as an input. It is the exploration of concepts, specifications and designs for meeting the mission needs, and the development of alternatives that are technically viable, affordable and sustainable. The conceptual design provides sufficient detail to produce a more refined cost estimate range and to evaluate the merits of the project.

18. Confidence Level. The likelihood – expressed as a percentage – that an occurrence will be realized. The higher the confidence level, the higher the probability of success.

19. Configuration Management. The technical and administrative direction and surveillance actions taken to identify and document the functional and physical characteristics of a configuration item; to control changes to a configuration item and its characteristics; and to record and report change processing and implementation status.

20. Constructability Review. A technical review to determine the extent to which the design of a structure facilitates ease of construction, subject to the overall requirements for the completed form.

21. Contractor Requirements Document. The DOE document that identifies the requirements that the prime contractor's project management system must satisfy (Attachment 1).

22. Contingency. The portion of the project budget that is available for risk uncertainty within the project scope, but outside the scope of the contract. Contingency is budget that is not placed on the contract and is included in the TPC. Contingency is controlled by Federal personnel as delineated in the PEP.

23. Corporate Certification. A corporate certification exists when a contractor adopts one of their existing certified EVMS in its entirety for application under a new contract, regardless of location. The EVMS under the corporate certification must remain intact in all aspects to that originally certified and will be validated by an EVMS Surveillance.

24. Critical Decision. A formal determination made by the SAE or AE at a specific point during the project that allows the project to proceed to the next phase or CD.

25. Critical Path. Those series of tasks that define the longest durations of the project. Each task on the critical path is a critical task and must finish on time for the entire project to finish on time.

26. Deactivation. The process of placing a facility in a stable and known condition including the removal of hazardous and radioactive materials to ensure adequate protection of the worker, public health and safety, and the environment, thereby limiting the long-term

cost of surveillance and maintenance. Actions include the removal of fuel, draining and/or de-energizing nonessential systems, removal of stored radioactive and hazardous materials, and related actions. Deactivation does not include all decontamination necessary for the dismantlement and demolition phase of decommissioning, e.g., removal of contamination remaining in the fixed structures and equipment after deactivation.

27. Decommissioning. Takes place after deactivation and includes surveillance and maintenance, decontamination and/or dismantlement. These actions are taken at the end of the life of a facility to retire it from service with adequate regard for the health and safety of workers and the public and for the protection of the environment. The ultimate goal of decommissioning is unrestricted release or restricted use of the site.

28. Decontamination. The removal or reduction of residual chemical, biological, or radiological contaminants and hazardous materials by mechanical, chemical or other techniques to achieve a stated objective or end condition.

29. Demolition. Destruction and removal of physical facilities or systems.

30. Design Authority (for nuclear facilities only). The engineer designated by the Acquisition Executive to be responsible for establishing the design requirements and ensuring that design output documentation appropriately and accurately reflect the design basis. The Design Authority is responsible for design control and ultimate technical adequacy of the design process. These responsibilities are applicable whether the process is conducted fully in-house, partially contracted to outside organizations, or fully contracted to outside organizations. The Design Authority may delegate design work, but not its responsibilities.

31. Design-Bid-Build. A project delivery method whereby design and construction are separate contracts.

32. Design-Build. A project delivery method whereby design and construction contracts are combined. It is important that specific flow down requirements specified in requests for proposals to subcontractors, especially for firm fixed-price subcontracts, to insure implementation of the principles from this Order for effective performance measurement of the subcontractors' scope of work.

33. Design Review. A formal and documented management technique used primarily to conduct a thorough evaluation of a proposed design in order to determine whether or not the proposed design meets the project requirements set forth by the customer, as well as to determine whether the proposed design will be fully functional.

34. Deviation. Occurs when the TPC, CD-4 completion date, or performance and scope parameters, defined by the approved PB at CD-2, cannot be met.

35. Directed Change. A change caused by some DOE policy directives (such as those that have force and effect of law and regulation), regulatory, or statutory action and is initiated by entities external to the Department, to include external funding reductions.

36. Dismantlement. The disassembly or demolition and removal of any structure, system or component during decommissioning and satisfactory interim or long-term disposal of the residue from all or portions of a facility.

37. Disposal. Final placement or destruction of toxic, radioactive, or other waste, surplus or banned pesticides or other chemicals, polluted soils and drums containing hazardous materials from removal actions or accidental releases. Disposal may be accomplished through use of approved, secure, regulated landfills, surface impoundments, land farming, deep well injection or incineration.

38. Disposition. Those activities that follow completion of program missions, including but not limited to, preparation for reuse, surveillance, maintenance, deactivation, decommissioning, and long-term stewardship. DOE O 430.1B provides implementation guidance for requirements specific to the disposition and long-term stewardship of contaminated, excess facilities.

39. Earned Value. The budgeted value of work actually accomplished in a given time. Simply defined, Earned Value represents the value of work accomplished during the period.

40. Earned Value Management. A project performance method that utilizes an integrated set of performance measurements (e.g., scope, cost and schedule) to assess and measure project performance and progress, and estimate cost and schedule impacts at completion.

41. Earned Value Management System. An integrated set of policies, procedures and practices to objectively track true performance on a project or program. EVMS represents an integration methodology that is able to provide an early warning of performance problems while enhancing leadership decisions for successful corrective action.

42. Environmental Remedial Action Plan. Summarizes the remedial alternatives presented in the analysis of the feasibility study and identifies the preferred alternative and the rationale for selecting the preferred alternative.

43. EVMS Certification. The determination that a Contractor's EVMS, on all applicable projects, is in full compliance with ANSI/EIA-748B, or as required by the contract, and in accordance with FAR Subpart 52.234-4, EVMS.

44. EVMS Surveillance. The process of reviewing a Contractor's certified EVMS, on all applicable projects, to establish continuing compliance with ANSI/EIA-748B, or as required by the contract, and in accordance with FAR Subpart 52.234-4, EVMS. Surveillance may also verify that EVMS use is properly implemented by the contractor.

45. Energy Systems Acquisition Advisory Board. Advises the SAE on CDs related to Major System Projects, site selection and PB deviation dispositions.

46. Equivalencies. Alternatives to how a requirement in a directive is fulfilled in cases where the "how" is specified. These represent an acceptable alternative approach to achieving the goal of the directive. Unless specified otherwise in the directive, Equivalencies are granted, in consultation with the OPI, by the Program Secretarial Officer or their designee, or in the case of the NNSA, by the Administrator or designee, and documented for the OPI in a memorandum. For those directives listed in Attachment 1 of DOE O 410.1, CTA concurrences are required prior to the granting of equivalencies.

47. Estimate-At-Completion. Actual cost of work completed to date plus the predicted costs and schedule for finishing the remaining work.

48. Estimate-To-Complete. The value expressed in either dollars or hours developed to represent the cost of the work required to complete a task.

49. Exemptions. The release from one or more requirements in a directive. Unless specified otherwise in the directive, Exemptions are granted, in consultation with the OPI, by the Program Secretarial Officer or their designee, or in the case of the NNSA, by the Administrator or designee, and documented for the OPI in a memorandum. For those directives listed in Attachment 1 of DOE O 410.1, CTA concurrences are required prior to the granting of exemptions.

50. External Independent Review. A project review performed by personnel from OECM and augmented by individuals outside DOE, primarily to support validation of either the Performance Baseline (CD-2) or Construction/Execution Readiness (CD-3). OECM selects an appropriate group of subject matter experts in a contracted capacity to assist with these reviews.

51. Facilities Information Management System. The Department's corporate database for real property. The system provides the Department with an accurate inventory and management tool that assists with planning and managing all real property assets. See DOE O 430.1B for additional information.

52. Federal Program Manager. An individual in the headquarters organizational element responsible for managing a program and, until designation of the FPD, its assigned projects. They ensure that all the projects are properly phased, funded over time, and that each project manager is meeting their key milestones. They are the project manager's advocate, ensure proper resourcing and facilitate the execution process. They predict programmatic risks and put mitigation strategies in place so that projects are not affected.

53. Federal Project Director. The individual certified under the Department's PMCDP as responsible and accountable to the AE or Program Secretarial Officer for project execution. Responsibilities include developing and maintaining the PEP; managing project resources; establishing and implementing management systems, including

performance measurement systems; and approving and implementing changes to project baselines.

54. Funding Profile. A representation of the project funding over the life of the project. It is part of the AE decision and any decremental change requires AE approval.

55. Final Design. Completion of the design effort and production of all the approved design documentation necessary to permit procurement, construction, testing, checkout and turnover to proceed.

56. General Plant Project. Miscellaneous minor new construction project, of a general nature, for which the total estimated cost may not exceed the congressionally established limit. GPPs are necessary to adapt facilities to new or improved production techniques, to effect economies of operations, and to reduce or eliminate health, fire and security problems. These projects provide for design and/or construction, additions, improvements to land, buildings, replacements or additions to roads and general area improvements.

57. Hot Commissioning. The processing of a minimal acceptable sample of an actual material to obtain the desired performance output during the startup and testing phase of a chemical or nuclear processing facility.

58. Independent. An office or entity that is not under the supervision, direction, or control of the sponsor responsible for carrying out the project's development or acquisition.

59. Independent Cost Estimate. A cost estimate, prepared by an organization independent of the project sponsor, using the same detailed technical and procurement information to make the project estimate. It is used to validate the project estimate to determine whether it is accurate and reasonable.

60. Independent Cost Review. An independent evaluation of a project's cost estimate that examines its quality and accuracy, with emphasis on specific cost and technical risks. It involves the analysis of the existing estimate's approach and assumptions.

61. Independent Government Cost Estimate. The government's estimate of the resources and its projected costs that a contractor would incur in the performance of a contract. These costs include direct costs such as labor, supplies, equipment, or transportation and indirect costs such as labor overhead, material overhead, as well as general and administrative expenses, profit or fee. (Refer to FAR 36.203 and FAR 15.406-1.)

62. Independent Project Review. A project management tool that serves to verify the project's mission, organization, development, processes, technical requirements, baselines, progress and/or readiness to proceed to the next successive phase in DOE's Acquisition Management System.

63. Integrated Project Team. A cross-functional group of individuals organized for the specific purpose of delivering a project to an external or internal customer. It is led by a Federal Project Director.

64. Integrated Safety Management System. The application of the integrated safety management system to a project or activity. The fundamental premise of Integrated Safety Management is that accidents are preventable through early and close attention to safety, design, and operation, and with substantial stakeholder involvement in teams that plan and execute the project, based on appropriate standards.

65. Key Performance Parameters. A vital characteristic, function, requirement or design basis, that if changed, would have a major impact on the facility or system performance, scope, schedule, cost and/or risk, or the ability of an interfacing project to meet its mission requirements. A parameter may be a performance, design, or interface requirement. Appropriate parameters are those that express performance in terms of accuracy, capacity, throughput, quantity, processing rate, purity, reliability, sustainability, or others that define how well a system, facility or other project will perform. In aggregate, KPPs comprise the scope of the project.

66. Lessons Learned. The project management related input and output device that represents the knowledge, information or instructional knowledge that have been garnered through the process of actually completing the ultimate performance of the respective project. Lessons learned are valuable because they will benefit future endeavors and ideally prevent any negative happenings from taking place in the future.

67. Life-Cycle Costs. The sum total of all direct, indirect, recurring, nonrecurring and other related costs incurred or estimated to be incurred in the planning, design, development, procurement, production, operations and maintenance, support, recapitalization and final disposition of real property over its anticipated life span for every aspect of the program, regardless of funding source.

68. Line Item. A distinct design, construction, betterment or fabrication activity, effort or project for which Congress will be requested to authorize and appropriate specific funds (capital and/or operating), and where the resulting asset (structure, equipment, facility, product, system or plant) has an estimated useful life of two years or more. A full-scale test asset or other pilot/prototype asset primarily constructed for experimental or demonstration purposes, but planned to continue to operate beyond the experimental or demonstration phase is included in this definition. Budget requests for these projects require a supporting PDS regardless of funding type.

69. Long-Lead Procurement. Equipment, services and/or materials that must be procured well in advance of the need because of long delivery times. If long-lead procurements are executed prior to CD-3 approval for the project, this will be designated as CD-3A and require a stand-alone decision by the AE, outside of the CD process.

70. Major Item of Equipment. Capital equipment not related to a specific construction project. In most cases, capital equipment is installed with little or no installation or construction cost. However, in cases where the equipment requires provision of foundations, utilities, structural modifications, and/or additions to a building, the project can be defined as MIE. The associated construction activities must not constitute more than 20 percent of the costs of the equipment or exceed the GPP threshold established by Congress.

71. Major System Project. A project with a TPC of greater than or equal to $750M or as designated by the Deputy Secretary.

72. Management Reserve. An amount of the total contract budget withheld for management control purposes by the contractor. Management reserve is not part of the Performance Measurement Baseline.

73. Milestone. Any significant or substantive point, time or event of the project. Milestones typically refer to points at which large schedule events or series of events have been completed, and a new phase or phases are set to begin.

74. Mission Need Statement. The primary document supporting the AE's decision to initiate exploration of options to fulfill a capability gap including but not limited to acquisition of a new capital asset.

75. Mitigation. Technique to eliminate or lessen the likelihood and/or consequence of a risk.

76. Non-Major System. Any project with a TPC less than $750M.

77. Operational Readiness Review. A disciplined, systematic, documented, performance-based examination of facilities, equipment, personnel, procedures and management control systems for ensuring that a facility can be operated safely within its approved safety envelope as defined by the facility safety basis plan. The ORR provides the basis for the Department to direct startup or restart of the facility, activity or operation.

78. Other Project Costs. All other costs related to a project that are not included in the TEC. OPCs will include, but are not limited to: research and development; conceptual design and conceptual design report; startup and commissioning costs; NEPA documentation; PDS preparation; siting; and permitting requirements.

79. Performance Baseline. The collective key performance, scope, cost, and schedule parameters, which are defined for all projects at CD-2. The PB includes the entire project budget (TPC including fee and contingency) and represents DOE's commitment to Congress.

80. Performance Measurement Baseline. The baseline cost that encompasses all contractor project work packages and planning packages, derived from summing all the costs from the Work Breakdown Structure. Undistributed management reserve, contingency, profit, fee and DOE direct costs are not part of the Performance Measurement Baseline. The PMB is the benchmark used within EVM systems to monitor project (and contract) execution performance.

81. Preliminary Design. This is the design that is prepared following CD-1 approval. Preliminary design initiates the process of converting concepts to a design appropriate for procurement or construction. All KPPs and project scope are sufficiently defined to prepare a budget estimate. This stage of the design is complete when it provides sufficient information to support development of the PB.

82. Program. An organized set of activities directed toward a common purpose or goal undertaken or proposed in support of an assigned mission area. It is characterized by a strategy for accomplishing a definite objective(s) that identifies the means of accomplishment, particularly in qualitative terms, with respect to work force, material and facility requirements. Programs are typically made up of technology-based activities, projects and supporting operations.

83. Program Management. A group of closely-related projects managed in a coordinated way.

84. Project. A unique effort having defined start and end points undertaken to create a product, facility, or system. Built on interdependent activities planned to meet a common objective, a project focuses on attaining or completing a deliverable within a predetermined cost, schedule and technical scope baseline. Projects include planning and execution of construction, assembly, renovation, modification, environmental restoration, decontamination and decommissioning, large capital equipment, and technology development activities. A project is not constrained to any specific element of the budget structure (e.g., operating expense).

85. Project Assessment and Reporting System. A reporting process to connect field project status with headquarters to report and compare budgeted or scheduled project forecasts.

86. Project Closeout. Occurs after CD-4, Project Completion, and involves activities such as performing financial and administrative closeout, developing project closeout and lessons learned reports, and other activities as appropriate for the project.

87. Project Data Sheet. A document that contains summary project data and the justification required to include the entire project effort as a part of the Departmental budget.

88. Project Definition Rating Index. This is a project management tool which is used for assessing how well the project scope is defined. The tool uses a numeric assessment which rates a wide range of project elements to determine how well the project is defined.

89. Project Engineering and Design. Design funds established for use on preliminary design. Typically, PED funds are used for preliminary and final design and related activities for design-bid-build strategies, and for preliminary design and related costs in design-build strategies. It is also analogous with a project phase that includes preliminary and final design and baseline development.

90. Project Execution Plan. DOE's core document for management of a project. It establishes the policies and procedures to be followed in order to manage and control project planning, initiation, definition, execution, and transition/closeout, and uses the outcomes and outputs from all project planning processes, integrating them into a formally approved document. A PEP includes an accurate reflection of how the project is to be accomplished, resource requirements, technical considerations, risk management, configuration management, and roles and responsibilities.

91. Project Management. Those services provided to DOE on a specific project, beginning at the start of design and continuing through the completion of construction, for planning, organizing, directing, controlling and reporting on the status of the project.

92. Project Management Plan. The contractor-prepared document that sets forth the plans, organization and systems that the contractor will utilize to manage the project. Its content and the extent of detail of the PMP will vary in accordance with the size and type of project and state of project execution.

93. Project Management Support Office. An office established exclusively to oversee and manage the activities associated with projects.

94. Project Peer Reviews. Periodic review of a project performed by peers (with similar experience to project personnel), independent from the project, to evaluate technical, managerial, cost and scope, and other aspects of the project, as appropriate. These reviews are typically led by the PMSO.

95. Quality Assurance. All those actions performed by the DOE prime contractor during the project that provide confidence that quality is achieved. It is executed through a formalized Quality Assurance Program.

96. Quality Control. Those actions related to the physical characteristics of a material, structure, component, or system which provide a means to control the quality of the material, structure, component, or system to predetermined requirements.

97. Readiness Assessment. An assessment to determine a facility's readiness to startup or restart when an ORR is not required or when a contractor's standard procedures for startup are not judged by the contractor or DOE management to provide an adequate verification of readiness.

98. Resource-Loaded Schedule. Schedules with resources of staff, facilities, cost, equipment and materials which are needed to complete the activities required.

99. Risk. Factor, element, constraint or course of action that introduces an uncertainty of outcome, either positively or negatively that could impact project objectives.

100. Risk Assessment. Identification and analysis of project and program risks to ensure an understanding of each risk in terms of probability and consequences.

101. Risk Management. The handling of risks through specific methods and techniques. Effective risk management is an essential element of every project. The DOE risk management concept is based on the principles that risk management must be analytical, forward-looking, structured, informative and continuous. Risk assessments should be performed as early as possible in the project and should identify critical technical, performance, schedule and cost risks. Once risks are identified, sound risk mitigation strategies and actions should be developed and documented.

102. Risk Management Plan. Documents how the risk processes will be carried out during the project.

103. Rough Order of Magnitude Estimate. An estimate based on high-level objectives, provides a high-level view of the project deliverables, and has lots of wiggle room. Most ROM estimates have a range of variance from -25% all the way to +75%.

104. Safeguards and Security. An integrated system of activities, systems, programs, facilities and policies for the protection of classified information and/or classified matter, unclassified control information, nuclear materials, nuclear weapons, nuclear weapon components, and/or the Department's and its contractors' facilities, property and equipment.

105. Sustainability. To create and maintain conditions, under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic and other requirements of present and future generations.

106. System Engineering Approach. A proven, disciplined approach that supports management in clearly defining the mission or problem; managing system functions and requirements; identifying and managing risk; establishing bases for informed decision-making; and, verifying that products and services meet customer needs. The goal of the system engineering approach is to transform mission operational requirements into system architecture, performance parameters and design details.

107. Tailoring. An element of the acquisition process and must be appropriate considering the risk, complexity, visibility, cost, safety, security, and schedule of the project. Tailoring does not imply the omission of essential elements in the acquisition process or other processes that are appropriate to a specific project's requirements or conditions.

108. Technical Independent Project Review. An independent project review conducted prior to obtaining CD-2, for Hazard Category 1, 2, and 3 nuclear facilities. At a minimum, the

focus of this review is to determine that the safety documentation is sufficiently conservative and bounding to be relied upon for the next phase of the project.

109. Technology Maturation Plan. A TMP details the steps necessary for developing technologies that are less mature than desired to the point where they are ready for project insertion.

110. Technology Readiness Assessment. An assessment of how far technology development has proceeded. It provides a snapshot in time of the maturity of technologies and their readiness for insertion into the project design and execution schedule.

111. Technical Readiness Level. A metric used for describing technology maturity. It is a measure used by many U.S. government agencies to assess maturity of evolving technologies (materials, components, devices, etc.) prior to incorporating that technology into a system or subsystem.

112. Total Estimated Cost. All engineering design costs (after conceptual design), facility construction costs and other costs specifically related to those construction efforts. TEC will include, but is not limited to: project, design and construction management; contract modifications (to include equitable adjustments) resulting in changes to these costs; design; construction; contingency ; contractor support directly related to design and construction; and equipment rental and refurbishment.

113. Total Project Cost. All costs between CD-0 and CD-4 specific to a project incurred through the startup of a facility, but prior to the operation of the facility. Thus, TPC includes TEC plus OPC.

114. Value Engineering. A structured technique commonly used in project management to optimize the overall value of the project. Often, creative strategies will be employed in an attempt to achieve the lowest life-cycle cost available for the project. The VE effort is a planned, detailed review/evaluation of a project to identify alternative approaches to providing the needed assets.

115. Value Management. An organized effort directed at analyzing the functions of systems, equipment, facilities, services and supplies for achieving the essential functions at the lowest life-cycle cost that is consistent with required performance, quality, reliability and safety. VM encompasses VE.

116. Value Study. An intensive review of requirements and the development of alternatives by the use of appropriate value techniques utilizing aspects of engineering, requirements analysis, the behavioral sciences, creativity, economic analysis and the scientific method.

117. Variance. A measurable change from a known standard or baseline. It is the difference between what is expected and what is actually accomplished. A variance is a deviation or departure from the approved scope, cost or schedule performance. Variances must be tracked and reported. They should not be eliminated, but mitigated through corrective

actions. Baseline changes, if needed, are submitted for changes in technical scope, funding or directed changes.

118. Work Breakdown Structure. Used by the project management team to organize and define a project into manageable objectives and create a blueprint by which the steps leading to the completion of a project are obtained. It is an outline of the project that becomes more detailed under the subheadings or work packages.

ACRONYMS

AE	Acquisition Executive
ANSI	American National Standards Institute
AP	Acquisition Plan
AS	Acquisition Strategy
ASME	American Society of Mechanical Engineers
BCP	Baseline Change Proposal
BOD	Beneficial Occupancy Date
CCB	Change Control Board
CD	Critical Decision
CDNS	Chief of Defense Nuclear Safety
CDR	Conceptual Design Report
CFO	Office of the Chief Financial Officer
CFR	Code of Federal Regulations
CNS	Chief of Nuclear Safety
CRD	Contractor Requirements Document
CSDR	Conceptual Safety Design Report
CSVR	Conceptual Safety Validation Report
CTA	Central Technical Authority
DOE	U.S. Department of Energy
EIA	Electronic Institute of America
EIR	External Independent Review
EM	Environmental Management
EO	Executive Order
ESAAB	Energy Systems Acquisition Advisory Board
EVMS	Earned Value Management System
FAR	Federal Acquisition Regulation
FPD	Federal Project Director
FIMS	Facility Information Management System
FY	Fiscal Year
G	Guide

GAO	Government Accountability Office
GPP	General Plant Project
ICE	Independent Cost Estimate
ICR	Independent Cost Review
IPA	Intergovernmental Personnel Act
IPR	Independent Project Review
IPT	Integrated Project Team
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
KPP	Key Performance Parameter
LEED	Leadership in Energy and Environmental Design
M	Manual
MIE	Major Items of Equipment
MNS	Mission Need Statement
M&O	Management and Operating
NDIA	National Defense Industrial Association
NEPA	National Environmental Policy Act
NNSA	National Nuclear Security Administration
NRC	U.S. Nuclear Regulatory Commission
NQA	Nuclear Quality Assurance
O	Order
OBS	Organizational Breakdown Structure
OE	Operating Expense
OECM	Office of Engineering and Construction Management
OMB	Office of Management and Budget
OPC	Other Project Costs
ORR	Operational Readiness Review
P	Policy
PARS	Project Assessment and Reporting System
PB	Performance Baseline
PDRI	Project Definition Rating Index

PDS	Project Data Sheet
PDSA	Preliminary Documented Safety Analysis
PED	Project Engineering and Design
PEP	Project Execution Plan
PHAR	Preliminary Hazard Analysis Report
PL	Public Law
PMB	Performance Measurement Baseline
PMCDP	Project Management Career Development Program
PMSO	Project Management Support Office
PMSC	Program Management Systems Committee
PSDR	Preliminary Safety Design Report
PSO	Program Secretarial Office
PSVR	Preliminary Safety Validation Report
PMP	Project Management Plan
QA	Quality Assurance
QAP	Quality Assurance Program
QPR	Quarterly Project Review
RA	Readiness Assessment
RMP	Risk Management Plan
ROM	Rough Order of Magnitude
SAE	Secretarial Acquisition Executive
SBAA	Safety Basis Approval Authority
SDS	Safety Design Strategy
SER	Safety Evaluation Report
SPE	Senior Procurement Executive
STD	Standard
TEC	Total Estimated Cost
TIPR	Technical Independent Project Review
TPC	Total Project Cost
TMP	Technology Maturation Plan
TRA	Technology Readiness Assessment

TRL	Technology Readiness Level
USC	United States Code
VE	Value Engineering
VM	Value Management
WBS	Work Breakdown Structure

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