



Program Description:



Project Management for DOE Office of Science Projects with TPC \$50M or Less

Management System: Project Management

Subject Matter Expert:

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Management System Executive:

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Effective Date:

10/18/2019 (Rev 1.0)

Last Reviewed:

10/18/2019

Periodic Review Due:

10/18/2024

Management System Steward:

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1.0 Introduction

1.1 Background

The Department of Energy (DOE) Memo from Steve Binkley, Deputy Director of Science Programs, Office of Science (SC), dated August 2, 2018, exempted projects with a Total Project Cost (TPC) Equal to or Less than \$50 Million from DOE Order (O) 413.3B Project Management requirements. This Memo delegates the responsibility for managing these projects to the Laboratory Director.

1.2 Purpose and Applicability

This program description describes the project management process that Brookhaven National Laboratory (BNL) will implement to manage Office of Science (SC) projects with a TPC of \$50 million (50M) or less and greater than \$10 million (10M). All SC projects with TPC of \$50M or less and greater than \$10M will follow this procedure unless specifically exempted by DOE.

This document provides the guidance requirements for delegating the management of BNL projects to BNL's Laboratory Director for projects equal to or less than \$50 million dollars and greater than \$10 million dollars. The Office of Science must identify whether a specific project is to be delegated as defined within the August 2, 2018, DOE Memorandum, from Dr. J. Stephen Binkley. The DOE process for delegation is under development at the writing of this document, but it is expected that the delegation decision would occur at CD-1 following a formal request from the Laboratory requesting management responsibility. The process for BNL receiving management responsibility is:

- The responsible BNL Department Associate Lab Director (ALD) requesting the exemption from DOE Order 413.3B and delegation of the management of the project will communicate their intention to BNL's Laboratory Director. Prior to communication, it is advised that the ALD notify the responsible DOE Program Office of its plans to pursue this delegation.
- The request for delegation will include a response to the eight (8) expectations and requirements found in Dr. Binkley's August

- 2, 2018, memorandum, and provide a cost benefits analysis expected to be realized by the project if delegated.
- The format of the request will be written in accordance with [Exhibit 1](#) of this guidance.
 - Once the request memorandum has been developed and approved by BNL's Laboratory Director it will be submitted to the BHSO Manager and OPA Director for concurrence and to the DOE Associate Program Director for approval.
 - The responsible Program Office will evaluate the request from BNL's Laboratory Director. Approval or disapproval is expected to be communicated at the CD-1 ESAAB.

The BNL procedure will follow the principles of good project management and the intent of DOE O 413.3B, which include:

1. Line management accountability.
2. Sound, disciplined, up-front planning.
3. Well-defined and documented project requirements.
4. Corporate effective risk handling mechanisms.
5. Well-defined and managed project scope and risk-based performance baselines and stable funding profile that support original baseline execution.
6. Development of reliable and accurate cost estimates using appropriate cost methodologies and databases.
7. Properly resourced and appropriately skilled project staffs.
8. Effective implementation of management systems supporting the project (e.g., quality assurance, integrated safety management, risk management, change control, performance management and contract management systems).
9. Early integration of safety into the design process.
10. Effective communication among all project stakeholders.
11. Utilization of peer reviews throughout the life of a project to appropriately assess and make course corrections.

Tailoring Strategy

BNL's Project Management process allows for the development of a tailoring strategy for each project, based on the risk, complexity, visibility, cost, safety, security, and schedule. The requirements of BNL are to be applied on a tailored basis as appropriate to the project. Tailoring is subject to the Laboratory Director's approval and DOE concurrence and is identified prior to the impacted significant project decisions/approvals (e.g., Approve Project Performance Baseline, Approve Project Execution, and Approve Project Completion). These reviews will be conducted as independent reviews with invitations to the respective DOE Program Offices and the DOE BHSO Manager to observe. The projects will follow all federal regulations and Executive Orders.

2.0 Roles and Responsibilities

BNL Laboratory Director

The BNL Laboratory Director has full responsibility for project planning and execution, and for establishing broad policies and requirements for achieving project goals. The Laboratory Director is accountable to DOE for BNL Project Performance and has the following responsibilities:

- Approves the Project Management Plan.
- Approves the appointment of the Project Director
- Approves Level 1 baseline changes.
- Approves Project Decisions (PD) through BNL Independent Project Reviews (IPRs) including:
 - PD-1 Approve Conceptual Design and Cost Range
 - PD-2 Approve Project Performance Baseline
 - PD-3 Approve Project Execution
 - PD-4 Approve Project Completion
 - The responsibility for CD-0 Mission Need is the responsibility of DOE
- Concurs with funding requests to DOE.

BNL Associate Laboratory Director (ALD)

The BNL Associate Laboratory Director, as delegated by the BNL Laboratory Director, has the following responsibilities:

- Ensures BNL Lead Laboratory commitments are met in executing the project within scope, cost, and schedule in a safe and responsible manner.
- With the Laboratory Director's concurrence, appoints the Project Director and ensures the Project Director is qualified and has appropriate communication and leadership skills prior to designation.
- Initiates objectives of the project.
- Initiates and successfully executes BNL Independent Project Reviews (IPRs) for Project Decisions (PDs) and status reviews:
 - PD-1 Approve Conceptual Design and Cost Range
 - PD-2 Approve Project Performance Baseline
 - PD-3 Approve Start of Execution
 - PD-4 Approve Project Completion
 - Annual Project Status Reviews after approval of the Project Performance Baseline (PD-2)
 - PDs can be tailored to request LLP, site prep, or other tailoring requests
- Ensures access to Laboratory/contractor resources, systems, and capabilities required to execute the project.
- Accepts changes to the funding profile as directed by DOE.
- Approves KPPs (Key Performance Parameters) with DOE concurrence.
- Approves major subcontracts in accordance with federal regulations and BNL policy.

Project Management Executive

The Project Management Executive has the following responsibilities:

- Supports the request for the federal appropriation necessary to support this project.
- May concur on the PMP.
- May concur on KPPs.
- May attend and concur on BNL's Independent Project Reviews and Project Decisions.
- Will assign a Performance Evaluation Measurement Plan (PEMP) goal to the Laboratory.

Federal Program Manager (FPM)

Serves as the primary DOE Program Office point of contact for the project and is charged to fulfill program responsibilities for project funding, coordination, oversight, and communication with other DOE Headquarters (HQ) offices. The DOE FPM has the following responsibilities:

- Functions as DOE HQ point of contact for project matters.
- Serves as the representative in communicating the interests of the SC program.
- Coordinates with Laboratory Director, DOE BHSO Manager, SC Staff offices, and DOE HQ program offices, as needed, to execute the project.
- Assists with budget formulation.
- Reviews and concurs with Level 1 baseline changes.
- Attends monthly meetings.
- Reviews and concurs with the PMP.
- Reviews project progress reports and deliverables.

The DOE FPM is consulted in the charge, agenda and schedule of formal periodic reviews of the project, including BNL Independent Project Reviews (IPRs) and is invited to attend the reviews.

Brookhaven Site Office Manager

The Brookhaven Site Office (BHSO) supports the Program Office in their oversight of their respective BNL Projects. The DOE BHSO Manager has the following responsibilities:

- Assigns a Contracting Officer to oversee performance in accordance with contract requirements.
- Appoints a BHSO Project point of contact.
- Reviews and concurs on Project Decisions PD-1 PD-2, PD-3, and PD-4.
- Reviews development and implementation of key project documentation.
- Reviews project cost, schedule, performance, and scope progress to baseline plans.
- Ensures design, construction, environmental, safety, security, health, and quality efforts performed comply with the M&O Contract, public law, regulations, and Executive Orders.
- Concurs with the PMP.

CD-0 (Mission Need) is still the responsibility of DOE and the remaining critical decision equivalent, called Project Decisions, will be the responsibility of the Laboratory to initiate and execute. The respective Program Office and BHSO will be invited to participate in the Project Decisions.

Project Director/Project Manager

The Project Director leads the Project Management team. The Project Director/Project Manager is appointed by and reports directly to the BNL ALD. The Project Director/Project Manager is responsible for ensuring that adequate direct, indirect, and support resources are available for the successful execution of the project. The Project Director's/Project Manager's responsibilities include the following:

- Approves the project organization in consultation with the ALD.
- Represents the project in interactions with the DOE.
- Collaborates with the responsible Project Scientist to provide overall direction to the project.
- Establishes clear and achievable project objectives (KPPs) in consultation with the FPM.
- Successfully executes the project scope.
- Assembles the staff and resources necessary to complete the project.
- Appoints Level 2 Managers, Level 3 Managers and Control Account Managers (CAMs) for the project whom will be responsible for managing bid package(s), overseeing daily technical and managerial oversight of specific assigned WBS tasks from design through construction, and for preparing change requests in conformance with Baseline Change control.
- Manages the completion of Project deliverables as defined in the PMP.
- Ensures that the project deliverables meet functional requirements.
- Ensures timely resolution of critical issues within Project Director's control.
- Identifies risks to scientific and technical performance; works with the CAMs to control project risks.
- Defines areas of collaboration and relationship between the project and other BNL departments and divisions, and other institutions participating in the project. Develops appropriate Memoranda of Agreements (MoAs), Memorandum of Understandings (MOUs) and other collaborative agreements as applicable.
- Works with the Project team to define the WBS structure and to establish intermediate milestones.
- Allocates contingency funds according to the procedure defined in the Baseline Change Controls.
- Provides monthly financial reports to BNL and DOE.
- Approves major subcontracts.
- Implements a tailored Earned Value Management System (EVMS) in accordance with the DOE-approved EVMS system at BNL.
- Maintains change control log and documentation.
- Assures that work is performed in compliance with the BNL Environmental, Safety and Health requirements and Worker Safety Regulations.

3.0 Project Management Plan (PMP)

Projects will develop a Project Management Plan (PMP) which will describe the elements and process for planning and executing a successful project. The PMP will be approved by the Laboratory Director and BNL will obtain concurrence from BHSO and the responsible Program Office.

The PMP will include the following elements:

1. Introduction, Background, Mission Need
2. Project Baseline (Including scope, cost, schedule baseline)
 1. Scope Baseline
 1. Key Performance Parameters (KPP)
 2. WBS Dictionary
 2. Schedule Baseline
 1. Summary Schedule
 2. Project Milestones (L1-L4)
 3. Detailed Resource Loaded Schedule
 4. Critical Path
 5. Schedule Contingency/Float
 3. Cost Baseline
 1. Cost Estimate by WBS, Labor and Material
 2. Obligations Profile
 3. Estimate Uncertainty and Cost Contingency
 4. Time phased Plan by month
 4. Funding Profile
 1. TEC (Total Estimated Cost), OPC (Other Project Costs)
 2. TPC -Total Project Cost (TEC+OPC)
 3. Time-phased by Fiscal Year
3. Risk Management
 1. Risk Management Plan
 2. Risk Register
4. ES&H
5. Procurement
6. Tailoring Strategy
7. Management Organization
8. Roles and Responsibilities
9. PM Oversight
10. Change Control
11. Project Controls Systems/EVMS
12. Project Reviews
13. Project Reporting
14. Transition to Operations
15. Project Closeout

Projects will maintain all project documentation in a shared site accessible by DOE and the project team.

3.1 Key Performance Parameters (KPPs)

The project will define Key Performance Parameters (KPPs) with which DOE concurs. KPPs will be developed similar to larger projects, with threshold, objective, and if required, Ultimate PPs. The Laboratory Director and ALD must approve all KPPs. The responsible Program Office must concur on all KPPs.

3.2 Project Phases/Reviews

Reviews will be conducted for each phase in the project lifecycle (Conceptual Design - CDR, PDR-Preliminary Design, FDR-Final Design, procurement phase, start of construction, execution or production and project closeout) Project Decisions (PD) will be defined in a procedure which will follow a similar but tailored review process. Experienced external reviewers will chair the PD reviews

to ensure independence. Projects will conduct external Independent Project Reviews at these critical points, based on guidance from the Program Office in the project lifecycle at least annually and during the Project Decision phases. DOE will be asked to concur with the review team members and will be invited to attend the reviews.

1. The Conceptual Design will be finalized and approved as part of PD-1 (Project Decision 1) (similar to CD-1). The Cost Range and Conceptual Design is approved.

Project Decision 1 - The Conceptual Design and Cost Range will be developed and approved as part of PD-1 (Project Decision 1). A successful PD-1 Review will be attained when an approach to meet the gap in mission capability has been identified, selected, and a nominal cost range established. This is an indication that the project team and the sponsor have agreed on path forward for meeting the mission need defined by DOE CD-0. To achieve PD-1 the project team should meet the following requirements and produce the following documentation:

- Conduct Conceptual Design Review
 - Complete Conceptual Design Report
 - Approve Preliminary Project Management Plan (PPMP)
 - Develop a Risk Management Plan (RMP)
 - Develop a project cost range, initial cost estimate and schedule.
 - Develop NEPA Determination
 - Prepare a Preliminary Hazard Analysis Report
 - Develop a preliminary Integrated Safety Management Plan, and
 - Develop a preliminary Quality Assurance Plan
 - Conduct a Safeguards and Security Vulnerability Assessment, if required
 - Begin reporting monthly progress to BNL Project Oversight Board.
2. The Preliminary Design will be finalized and approved as part of PD-2 (Project Decision 2) (similar to CD-2). The project Performance Measurement Baseline is approved.

Project Decision 2 - The Preliminary Design and Project Baseline will be finalized and approved as part of PD-2 (Project Decision 2). A successful PD-2 Review will be attained when the project team has estimated and time-phased the resources required to execute the project against an integrated project schedule, and a risk analysis is conducted to help determine the potential variability in scope, schedule and/or cost which might be encountered in the course of executing the project. To achieve PD-2 the project team should meet the following requirements and produce the following documentation:

- Conduct Preliminary/Technical Design Review
 - Complete Preliminary/Technical Design Report
 - Update and approve Project Management Plan (PMP)
 - Develop a Performance Baseline including Resource-loaded schedule
 - Finalize Hazards Analysis Plan
 - Finalize Quality Assurance Program
 - Update and approve funding changes
 - Continue Monthly Reporting include Cost Performance Report
 - Implement tailored Earned Value Management System (EVMS) and change control
 - Review Project Risk Registry and assess Contingency
 - Initiate Annual Status Review and EVMS Reporting after PD-2 approval.
3. The Final Design will be finalized and approved as part of PD-3 (Project Decision 3) (similar to CD-3). Procurement Execution authorization is approved.

Project Decision 3 (PD-3) includes Approval of the Project Final Design requirements and specifications and Authorization to start Execution of the Project. A successful PD-3 Review will be attained when it is determined that the state of the development of the project planning is adequately defined to execute the project plan for successful delivery of the

project scope with effective management, resource planning, scheduling, risk assessment, and progress tracking at a level that ensures project delivery that addresses the expectations of the stakeholders. To achieve PD-3 the project team should meet the following requirements and produce the following documentation:

- Conduct Design Review of the final design requirements and specifications.
 - Update Project Management Plan (PMP)
 - Generate a preliminary Transition to Operations Plan
 - Update Hazard Analysis Plan
 - Continue Quality Assurance Program
 - Update Project Integrated Safety Management Plan
 - Continue Monthly Reporting include Cost Performance Report
 - Implement tailored EVMS and change control
 - Monitor Project Risks and Contingency
 - Continue Annual Status Reviews
4. The Project Closeout will ensure all scope has been completed and approved as part of PD-4 (Project Decision 4) (similar to CD-4) and will be submitted to BHSO and the responsible DOE Program Office for concurrence after the PD-4 review has been held and all open items have been addressed. The Laboratory Director will inform BHSO and the responsible DOE Program Office in writing that BNL has successfully completed all deliverables and KPPs and will request DOE concurrence on PD-4.

Project Decision 4 (PD-4) includes approval for Completion of the project or Start of Operations. A successful PD-4 Review will be attained when it is determined that the project has met the technical, cost, and schedule deliverables consistent with the approved project plan/objectives. To achieve PD-4 the project team should meet the following requirements and produce the following documentation:

- Verify KPPs are met
- Verify Scope completed, close accounts
- Finalize Hazard Analysis Plan
- Finalize Transition to Operations Plan
- Complete Project Closeout Report
- Document Lessons Learned

3.3 Qualifications for Project Director or Project Manager

The Project Director or Project Manager must be approved by the Laboratory Director or his designee. The Project Director or Project Manager must meet the following minimum requirements:

1. Either the Project Director or Project Manager on the project must have successfully completed BNL's Project Management Comprehensive Training Course, a similar course elsewhere, or have demonstrated experience managing projects.
2. The Project Director or Project Manager must have experience in delivering successful projects on time within budget.
3. The Laboratory Director must approve the Project Director or Project Manager.

3.4 Independent High-Quality Cost Estimates

BNL will follow the characteristics of a good estimate, the BNL Cost Estimating checklist and the BNL Standards-Based Management System (SBMS); best practice guidelines will be followed and documented in the Project Management Subject Area.

4.0 Project Controls Systems/Earned Value Management System

Projects over \$20M will develop a tailored Earned Value Management System (EVMS) implementation which will meet the following EVMS principles:

- Objectively assess accomplishments at the work performance level
- Plan all work scope for the program from inception to completion
- Break down the program work scope into finite pieces that can be assigned to a responsible person or organization for control

of technical, schedule, and cost objectives

- Integrate program work scope, schedule, and cost objectives into a performance measurement baseline plan against which accomplishments may be measured
- Use actual costs incurred and recorded in accomplishing the work performed
- Analyze significant variances from the plan, forecast impacts, and prepare an estimate at completion based on performance to date and work to be performed
- Control changes to the baseline and maintain the baseline throughout contract execution
- Use EVMS information in the organization's management processes with tailoring defined in the PMP.

These projects will use the standard project controls tools that are used on most BNL projects including: Primavera for scheduling, Cobra for Earned Value Reporting, PeopleSoft for Actual Costs and Procurement, and Integrated Project Database for reporting.

After PD-2 approval, the project will generate a monthly Cost Performance Report (CPR) each month by WBS that provides BCWS (planned value), BCWP (earned value) and ACWP (actual costs) for current month and cumulative to date. The cost and schedule variances and SPI and CPI indices will be calculated and reported each month along with the running SPI and CPI trends for the past six months. The calculated remaining contingency on the ETC will be calculated and reported each month. Variance analysis will be written for each Control Account when the cumulative cost and schedule variances exceed the thresholds to be determined by the Laboratory Director.

Some examples of EVMS tailoring include:

- Perform monthly cumulative variance analysis only.
- Simplify change control thresholds and reduce change control documentation requirements.
- Simplify or eliminate the Work Authorization process to minimize excessive documentation.
- Eliminate PARSII reporting for EVMS, prepare monthly reports CPR and scheduling status reports for Laboratory management and customer reporting.
- Simplify or eliminate earned value assessment on contributed effort.

For projects less than \$20M, EVMS is not required, however there is an expectation that the projects will develop a budget and schedule to measure performance against. Monthly reporting will be required to assess and report performance against the cost/schedule plan. Milestones will be established (one to two per quarter) for reporting schedule performance.

5.0 Project Oversight

The Project Oversight Board (POB) has been established by the Laboratory Director and chaired by the Deputy Director for Science and Technology to review monthly project performance, risk assessment, share lessons learned, ensure acceptable trends of performance on Laboratory large/critical projects and to provide assistance if needed, to line and project managers to resolve issues that may threaten budgets, schedules or key performance requirements. POB meetings will also serve as an opportunity to share common experiences between Project and Laboratory managers and chartered by the Deputy Director for Science and Technology. DOE is invited and may be in attendance at the POB reviews.

The Project Oversight Board Subpanels (POB-S) are established by the Deputy Director for Science and Technology to serve as dedicated review teams tasked with assisting the Project Oversight Board (POB) in providing oversight to the Project Decision process to ensure project performance and improve overall project success at BNL. If the Laboratory Director identifies issues that require additional management attention, he can call on the POB to provide oversight and, if necessary, will convene a POB sub-panel review to assess the project performance in more detail. A charge will be developed for the review team by the Deputy Director for Science and Technology who will oversee the review process.

The project will report regularly to the ALD through the department Project Management Group (PMG) or equivalent, chaired by the ALD or their delegate, where project issues will be raised in a timely manner.

6.0 Baseline Change Control Thresholds

The project will establish a formal change control process that requires all baseline changes to be managed in a controlled manner. Changes are addressed with PCRs (Project Change Requests) that clearly describe the type of change (scope, cost, schedule or administrative) and the cause, impact and corrective action for the change. A baseline log will be maintained and approvals will follow the change control thresholds below:

Change Control	Laboratory Director **: Change Control Level 1	Associate Laboratory Director Change Control Level 2	Project Director/ Project Manager Change Control Level 3
Scope	Any changes in scope and/or performance that affect the ability to satisfy the mission need or that are not in conformance with the current approved Threshold KPPs	Any changes to scope/technical performance as described in the PMP	Changes in scope affecting the technical performance WBS Level 2 elements that do not affect the KPPs
Cost	Any increase in the Total Project Cost of the Project as stated in the PMP	Cumulative allocation of 50% of Contingency or Management Reserve*	Any Contingency or Management Reserve usage
Schedule	Any delay in PD-4, Approve Project Completion.	Any delay to a Project Decision Level 1 Milestone except PD-4 or Project Level 2 Milestones or use of schedule contingency	Any delay greater than or equal to three months to all Project Milestones to Level 3.

: Baseline Change Control Thresholds and Authorities

*After the cumulative threshold has been reached and the associated change approved, the cumulative cost thresholds will be reset.

** Level 1 changes will require review and concurrence by the Federal Program Manager and the BHSO Manager or his point of contact.

7.0 Project Reporting

The project will generate a monthly project performance/status report submitted to and reviewed by the Laboratory Director, DOE BHSO Manager, and the Program Office. Upon approval of the project baseline (PD-2), with DOE concurrence, a monthly cost/schedule performance report will be provided. Milestone status will be assessed on a monthly basis.

The project will conduct weekly meetings with the project team.

The project will define and manage the project progress with project milestones assigned at increasing authority levels which will be defined in the PMP:

- L1 Milestones – Laboratory Director and BNL Deputy Director for Science and Technology
- L2 Milestones – Project Director
- L3 Milestones – Project Manager
- L4 Milestones – L2 WBS Manager/CAM

The responsible DOE Program Office will assign an annual PEMP goal to the Laboratory and hold the Laboratory accountable for successful execution of these projects under \$50M.

8.0 Cost Savings Reporting

The BNL Project Management Center (PMC) will track, maintain and report all documented cost savings from implementation of this procedure. Types of cost savings include:

- Cost savings from DOE and Lab personnel travel for CD Reviews will be part of the cost savings reporting.

- Reducing the number of documents required for the CD Review process.
- Tailoring of EVMS implementation and reduced requirements for oversight and surveillance of EVMS guidelines.
- Labor saved from elimination of PARSII monthly EVMS reporting.
- A more streamlined review process will reduce time required for review preparation.
- Additional costs to BNL for the organization of the independent reviews.

Cost Savings reporting will be provided to Laboratory management upon request and will be reported annually to the DOE BHSO Manager and the responsible DOE Program Office.

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