



DOE PROJECT MANAGEMENT NEWS

Promoting Project Management Excellence

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Director's Corner

Take off your mask! At least if you are vaccinated and work in the Forrestal Building in D.C. It varies by location. Suffice to say, relative to COVID-19, it appears we can now see “the light at the end of the tunnel.” The end is near, and hopefully soon we can get back to “normal”, whatever that will mean. I hope it means no more restrictions on our construction sites.

How do you pick a Project Management Executive (PME)? It’s a function of a project’s Total Project Cost (TPC). Per the DOE Order 413, critical decision authority thresholds are:

- Deputy Secretary - \geq \$750M (or any project on an exception basis when designated by the Deputy Secretary). Further delegation is allowed.
- Under Secretaries - \geq \$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.

In almost all instances, the PME is a Senate-confirmed member of the administration. This is by design. They decide which projects to advance, and whether they desire to delegate their authority. Their delegations often result in their authority being passed to a federal civil servant, a key responsibility and vote of confidence towards project execution success.

One of first steps in establishing a project’s TPC is the development of an independent cost estimate range by the integrated project team’s (IPT). For major system projects, PM executes an independent cost review (ICR) of the integrated project team’s (IPT) estimate range prior to critical decision (CD) – 0. For NNSA projects, the Office of Cost Estimating and Program Evaluation (CEPE) performs this function. For more insight into the ICR requirement at CD-0, see the article on Page 2.

Having clearly defined project scope is crucial to effective project management while ensuring a complete and usable asset is produced to close a capability gap and meet the mission need. While scope is not formally developed prior to CD-0, some consideration should be given to project scope during the early stages of project development. Additional thoughts on the development of project scope can be found in the article on Page 4.

Finally, the Department’s Project Management Career Development Program (PMCDP) is among the best in federal government. The Certification and Equivalency Guidelines (CEG) provides information on certification requirements and guidance on the completion of the Federal Project Director (FPD) application. Both training and developmental experience are evaluated by the Certification Review Board (CRB) when reviewing an FPD’s application. Some tips on documenting equivalency when completing an application are provided in the article on Page 5.

Keep Charging!
Paul Bosco

Major Systems Project (MSP) Independent Cost Review (ICR) at CD-0

Michael Fenn, Office of Project Analysis (PM-20)

Department of Energy (DOE) Order (O) 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, requires that an independent cost review (ICR) be completed for all major systems projects (MSP) prior to critical decision (CD)-0. So why is an ICR performed at the pre-CD-0 phase of the project development, which is very early in the life cycle of a project, when limited project definition and requirements are known? This article will discuss some of the reasons and outline some considerations for these pre-CD-0 cost estimates.

The purpose of an ICR prior to CD-0, *Approve Mission Need*, is to independently evaluate the reasonableness of the project's initial rough order-of-magnitude (ROM) cost range, to confirm the Project Management Executive (PME) authority for the project, and to provide the PME with an estimate of the costs to be incurred prior to CD-1¹. Per DOE O 413.3B, MSPs are those projects over \$750 million and the PME authority is with the Deputy Secretary of Energy (S2) as the Department's Chief Executive for Project Management².

It is prudent to ensure that S2 is thoroughly aware of the significant commitment of future resource requirements the Department is making for a major acquisition with their approval of an MSP mission need. While there will be limited project development and definition of project deliverables at the CD-0 stage, it is important that the ROM cost range and schedule be realistic, because any substantial understatement could convey erroneous information regarding both affordability and whether the project could be delivered in time to close the capability gap.



To develop the ROM cost range at CD-0, parametric or analogous estimating methods are frequently used, based on a high-level assessment of possible solutions, with enough definition to allow sufficient cost analysis. These possible solutions should not restrict potential alternatives during the analysis of alternatives (AoA) and conceptual design and should allow for all alternatives to be considered as the project matures. Also, at CD-0, a proposed project may not yet be associated with a specific site or geographic location, and it is generally premature to have selected a design concept. A detailed, "bottom-up" cost estimate is neither expected nor appropriate at this stage, but thorough ground rules and assumptions as well as a detailed basis of estimate will be needed. If appropriate, the cost estimate at CD-0 should utilize historical information from completed projects and be cross-checked to evaluate if the range is within the appropriate magnitude.

The Office of Project Management (PM) is tasked with conducting all MSP ICR's prior to CD-0, except for those that support the National Nuclear Security Administration (NNSA) projects. For NNSA, pre-CD-0 ICRs are completed by NNSA's Office of Cost Estimating and Program Evaluation (CEPE)³.

Continued on Page 3.

¹DOE G 413.3-21A, Cost Estimating Guide, Jun 6, 2018; Section 3.2.1

²DOE O 413.3B Chg 6, Program and Project Management for the Acquisition of Capital Assets, Jan 12, 2021; pg 3.

³In accordance with Section 3113 of the Fiscal Year 2019 (FY19) National Defense Authorization Act (NDAA), the National Nuclear Security Administration's (NNSA) Office of Cost Estimating and Program Evaluation (CEPE) is the lead agent for conducting independent cost estimates (ICE) and independent cost reviews (ICR) for NNSA capital asset projects over \$100M in support of Critical Decision (CD)-0, *Approve Mission Need*, and CD-1, *Approve Alternative Selection and Cost Range*. The Office of Project Management (PM) retains responsibility for conducting ICEs/ICRs on NNSA capital asset projects over \$100M post CD-1.

A PM ICR at CD-0 will evaluate if sufficient functional requirements to address the identified capability gap are documented, and whether an appropriate range of possible solutions was considered. The ICR will validate the basis of the ROM cost range and provide an assessment of whether the range reasonably bounds the possible alternatives to be analyzed during the AoA. With limited project definition at CD-0, the ICR will focus on assessing the project definition deliverables as outlined by Association for the Advancement of Cost Estimating International (ACEI)'s cost estimate classification system.

The ICR team will determine the cost estimate classification and will use the appropriate cost range for the ICR⁴ (table below); at CD-0 it is typically Class 5 (project maturity 0% to 2%) or limited Class 4 (1% to 15%).

In addition, the ICR team will assess the basis of the schedule range provided by the integrated project team (IPT) and assess whether the schedule is consistent with strategic requirements for when the project is required. The PM ICR team will also evaluate whether the ROM cost estimate meets the Government Accountability Office (GAO) best practices of being comprehensive, well-documented, accurate, and credible.

In summary, MSPs are an important solution to meet DOE's mission requirements and represent a significant current and future commitment of the Department's and taxpayer resources. Ensuring the potential cost liability for an MSP is validated by an independent organization is an industry best practice. Pre CD-0 ICRs provide validated cost and schedule range information to the Deputy Secretary and senior Department leadership to help inform them of initial project affordability and establish a path forward for project success.

Cost Estimate Classification for Process Industries

ESTIMATE CLASS	Primary Characteristic		Secondary Characteristic	
	MATURITY LEVEL OF PROJECT DEFINITION DELIVERABLES Expressed as % of complete definition	END USAGE Typical purpose of estimate	METHODOLOGY Typical estimating method	EXPECTED ACCURACY RANGE Typical variation in low and high ranges
Class 5	0% to 2%	Concept screening	Capacity factored, parametric models, judgment, or analogy	L: -20% to -50% H: +30% to +100%
Class 4	1% to 15%	Study or feasibility	Equipment factored or parametric models	L: -15% to -30% H: +20% to +50%
Class 3	10% to 40%	Budget authorization or control	Semi-detailed unit costs with assembly level line items	L: -10% to -20% H: +10% to +30%
Class 2	30% to 75%	Control or bid/tender	Detailed unit cost with forced detailed take-off	L: -5% to -15% H: +5% to +20%
Class 1	65% to 100%	Check estimate or bid/tender	Detailed unit cost with detailed take-off	L: -3% to -10% H: +3% to +15%

⁴ACEI International Recommended Practice 18R-97, Cost Estimate Classification System – As Applied in Engineering, Procurement, and Construction for the Process Industries (March 2016).

Pre-CD-0 Project Initiation: Do Not Pass Go (Without a Scope)

Matthew Taliaferro, Office of Project Controls (PM-30)

Implicit assumptions have a funny way of catching us by surprise. Despite our efforts to improve project management and provide detailed guidance, we too often assume the development of scope is understood and forget to discuss what it is all about. Yet before there is a project, before we pass go (achieve critical decision (CD)-0, *Approve Mission Need*), there is a defined need and a set of requirements to meet that need.



All projects start with recognition of a mission or business need and conceiving a way to address it. From Department of Energy (DOE) Order (O) 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, CD-0, *Approve Mission Need*, requirements “The Initiation Phase begins with the identification of a mission-related need.” Thus, pre-CD-0 activities are focused on both determining and documenting the mission need in a mission need statement (MNS). As described in DOE Guide-413.3-17, *Mission Need Statement Guide*, when a program office identifies a credible performance gap between its current capabilities and those required to achieve its strategic plan and goals, this mission need is documented in a MNS along with a description of the desired end point. The mission need itself, along with the pre-conceptual technical analyses, will ultimately provide the foundation for the project’s scope.

Scope, as defined by the Project Management Institute’s (PMI) *A Guide to the Project Management Body of Knowledge (PMBOK) 6th Edition*, is “the work performed to deliver a product, service, or result with the specified features and functions.” In the context of DOE capital asset projects, as defined by DOE O 413.3 B, it may be helpful to think of “product, service, or result” as “one or more capital assets”.

Scope is not formally developed prior to CD-0, rather a high level set of requirements (later evolving into a scope) are defined during this early stage. This allows for greater flexibility in meeting the mission need. With that in mind, there are a few scope-related items to consider throughout pre-CD-0 while developing the MNS. These items include three different aspects of scope and scope development as an iterative process in development of the performance baseline (PB) and underlying performance measurement baseline (PMB).

Three different aspects of scope to consider within the context of a capital asset project:

1. Product scope refers to the features and functions that characterize one or more capital assets. It defines and details these features and functions via technical specifications and focuses on how the asset will look and work.
2. Project scope is the work that must be performed to create the product scope. It includes all the materials, processes, methods, resources, and schedules required to produce or provide the capital asset.
3. Project scope management, according to the PMI PMBOK, is the process required to ensure that the project includes all the work required, and only the work required, to complete the project successfully. Managing the project scope is primarily concerned with defining what is and is not included in the project.

While the primary goal of the MNS is to state the need for the project, it is also the jumping off point to capture high-level project management planning components that have emerged from comprehensive pre-conceptual planning and which serve as basis for more detailed project planning. The integrated project team should consider each of the forward-looking elements below as it identifies and analyzes the mission need and desired end point contained within the CD-0 package:

- what has been or will be considered as potential strategies to meet the mission need;
- mission-level assumptions that may be necessary to complete the project;
- functional, technical, operational, staffing, regulatory, safety, or financial constraints;
- rough order of magnitude (ROM) cost and schedule ranges.

Scope thus starts out at a high level and becomes progressively more detailed through an iterative process involving requirements identification, pre-conceptual engineering, technical analyses, alternatives analysis, and design progression. The iterative process comes to an end at CD-2, *Approve Performance Baseline*. Scope is frozen at that point and only changed through formal and controlled processes. Once established, a project’s scope, schedule, and cost performance are evaluated against the PMB and PB. So, while not fully defined or locked in during the pre-CD-0 effort, project scope should be considered and contemplated at this early stage due to the impact it will later have on project success as measured by the PB and PMB.

Documenting Work and Development Experience in your FPD Application

Linda Ott, Professional Development Division (PM-40)

The Certification and Equivalency Guidelines (CEG) provide information about the Project Management Career Development Program (PMCDP) requirements for Federal Project Director (FPD) certification. The CEG offers *guidance* for completing the FPD application. PMCDP training plus work and developmental experience are used by the Certification Review Board (CRB) to assess an FPD's competence to perform the FPD duties and both must be documented in the FPD application in accordance with the CEG.

The Professional Development Division (PM-40) in the Office of Project Management periodically reviews and updates PMCDP course content to ensure it remains consistent with current industry and federal agency best practices. Similarly, the CRB approves periodic revisions to the CEG to keep the requirements aligned with current PMCDP course content and training objectives, and to provide certification candidates flexibility in documenting their work and developmental experience.

There are three parts to the FPD application:

- 1) PMCDP Training;
- 2) Work and Development Experience; and
- 3) Project Management History.

When completing the application, the FPD candidate can select to "Enter Justification" for any entry on the FPD application for Parts 1 and 2. "Enter Justification" can be used to supplement existing information or to address a competency through means other than completion of a PMCDP training course. For work and developmental experience, equivalent options are provided to aid the applicant when completing this portion of the FPD application.

Justification must indicate that the candidate has the required knowledge of the roles, responsibilities, and authorities of an FPD managing a project under Department of Energy (DOE) Order (O) 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, and how this knowledge was applied on project(s) the candidate has worked on. Information provided should be results-oriented and highlight the impact the candidate had on the project and/or lessons learned where appropriate. Examples of ways to document project management experience are included in the CEG.

To illustrate how "Enter Justification" would be used to address a PMCDP training requirement, let's take a look at a candidate applying for FPD Level II who completed *Advanced Concepts in Project Management* and wants to use this course for credit in Part 1 of the FPD application. The current application shows *Monitoring and Controlling during Project Execution* as the required course. The candidate would "Enter Justification" for *Advanced Concepts in Project Management* that shows the date the training was completed on the FPD application. The training certificate for the class would then be uploaded as supporting documentation to the PM-MAX folder.

What happens once the FPD Application is completed? The completed application is ready for CRB review. The application with all supporting documentation is uploaded to a PM-MAX folder; the folder is titled with the applicant's name, program office and FPD certification level requested.

Do you have questions or comments about this article? Please direct them to the PMCDP team. You will find their contact information on the last page of PM News.

Congratulations to our newly certified FPDs!



Level I

Naila Alexander (SC)

Herman Radke (SC)



PMCDP FY21 Training Schedule

The training schedule is posted on PM MAX. Save the direct link to the Project Management Career Development Program PMCDP Training Schedule to your favorites: <https://community.max.gov/x/BgZcQw>

FY21 Q3

Course Title	Dates	CLPs	LN Code	Details
Scope Management & Baseline Development	June 7-10, 2021	24	001036	Webinar 10:30am-4:30pm (Daily) (EST)
Negotiation Strategies	June 14-30, 2021	24	001047	Webinar 6 Sessions 1:00pm-3:00pm (EST) Monday June 14, Wednesday June 16 Monday June 21, Wednesday June 23 Monday June 28, Wednesday June 30
Federal Budget Process in DOE	June 21-24, 2021	32	001034	Webinar 10:30am-4:30pm (Daily) (EST)
Value Management	June 28, 2021 - July 1, 2021	24	001037	Webinar 10:30am-4:30pm (Daily) (EST)

PMCDP FY21 Q4 Training Schedule Coming Soon!

Find up-to-date information and resources anytime! PM axi

All PMCDP Course Descriptions and Course Materials can be found in the Course Catalog on Save the direct link to your favorites: <https://community.max.gov/x/UAT3Rw>



Or download the Interactive Curriculum Map: <https://community.max.gov/x/sQd1Qw>

Have a question, found a bug or glitch in a PMCDP online course, or want to provide feedback? Submit your questions through PMCDPOnlineCourseSupport@hq.doe.gov.

Contact Us!

The Office of Project Management welcomes your comments on the Department's policies related to DOE Order 413.3B. Please send citations of errors, omissions, ambiguities, and contradictions to PMpolicy@hq.doe.gov. Propose improvements to policies at <https://hq.ideascale.com>.

If you have technical questions about PARS, such as how to reset your password, please contact the PARS Help Desk at PARS_Support@Hq.Doe.Gov. And as always, PARS documentation, Frequently Asked Questions (FAQs) and other helpful information can be found at <https://pars2oa.doe.gov/support/Shared%20Documents/Forms/AllItems.aspx>.

The current PARS reporting schedule is located in PM-MAX at the following link <https://community.max.gov/x/m4IIY>.

Need information to apply for FPD certification? The Certification and Equivalency Guidelines (CEG) can be found here <https://community.max.gov/x/IQd1Qw>.

Can't put your finger on a document or information you were told is available on PM-MAX? Looking for information on DOE Project Management? Submit your questions and queries to PMWebmaster@doe.gov. Check out the links below for information related to FPD Certification and Certification and Equivalency Guidelines.

To reach the Professional Development Division team:



Linda Ott — Division Director for Professional Development, PMCDP Program Manager, FPD Certifications Manager, PM Newsletter Editor, Linda.Ott@hq.doe.gov, 202-287-5310



Sigmond Ceaser — Alternate Delivery Platforms, PMCDP Review Recommendations Lead, PMCDP Curriculum Manager, Sigmond.Ceaser@hq.doe.gov



Ruby Giles — PMCDP Budget Manager, PMCDP Training Coordinator and Training Delivery Manager, Course Audit Program, Ruby.Giles@hq.doe.gov

If you would like to contribute an article to the Newsletter or have feedback, contact the Editor at Linda.Ott@hq.doe.gov.

