



DOE PROJECT MANAGEMENT NEWS

Promoting Project Management Excellence

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Director's Corner

This month, as we continue our series of articles addressing the project lifecycle within the framework of DOE Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, we take a look at Pre-Conceptual Planning. Research by the Construction Industry Institute (CII) indicates that when properly structured and executed, the front-end planning process can increase a project's cost and schedule predictability. Simultaneously, it increases the likelihood of the project meeting its operational requirements. For additional insight into Pre-Conceptual Planning best practices, see the article on Page 2.

Escalation can have a significant impact on the final cost of a project, particularly those with an extended duration. Large, complex projects are not uncommon in the department; ongoing examples include NNSA's Uranium Processing Facility (UPF) at the Y-12 National Security Complex, EM's Waste Treatment and Immobilization Plant (WTP) at the Hanford Reservation, and the Office of Science's, Long Baseline Neutrino Facility/Deep Underground Neutrino Experiment (LBNF/DUNE) at Fermi National Accelerator Laboratory.

To bolster independent cost estimates (ICEs) and independent cost reviews (ICRs) for projects, particularly those with a total project cost of \$100 million or greater, the Office of Project Management (PM) worked with subject matter experts to set up a model to determine realistic escalation rates. This model is applicable to capital asset projects for specific locations across the DOE complex. PM is currently updating and expanding the model. This update will cover more sites in anticipation of the economy's continued recovery and increased competition for construction commodities and craft. You can learn more about the model update in the article on Page 4.

The Project Management Career Development Program (PMCDP) recently updated *Project Management Essentials*, a required course for individuals seeking Federal Project Director Level 1 certification. You can learn more about this updated, online/on demand course in the article on Page 8.

Keep Charging!

Paul Bosco

What Constitutes "Pre-Conceptual Planning" and What are Best Practices?

Rick Blaisdell, Office of Project Assessments (PM-20)

This article focuses on the very earliest stages of capital asset project¹ development – prior to critical decision (CD)-0, Approve Mission Need. DOE Order (O) 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, identifies numerous pre-CD-0 requirements. Arguably, the most important pre-CD-0 requirements are developing and approving a mission need statement and performing pre-conceptual planning activities. Figure 1 below shows where pre-conceptual planning occurs during typical capital asset project phases.

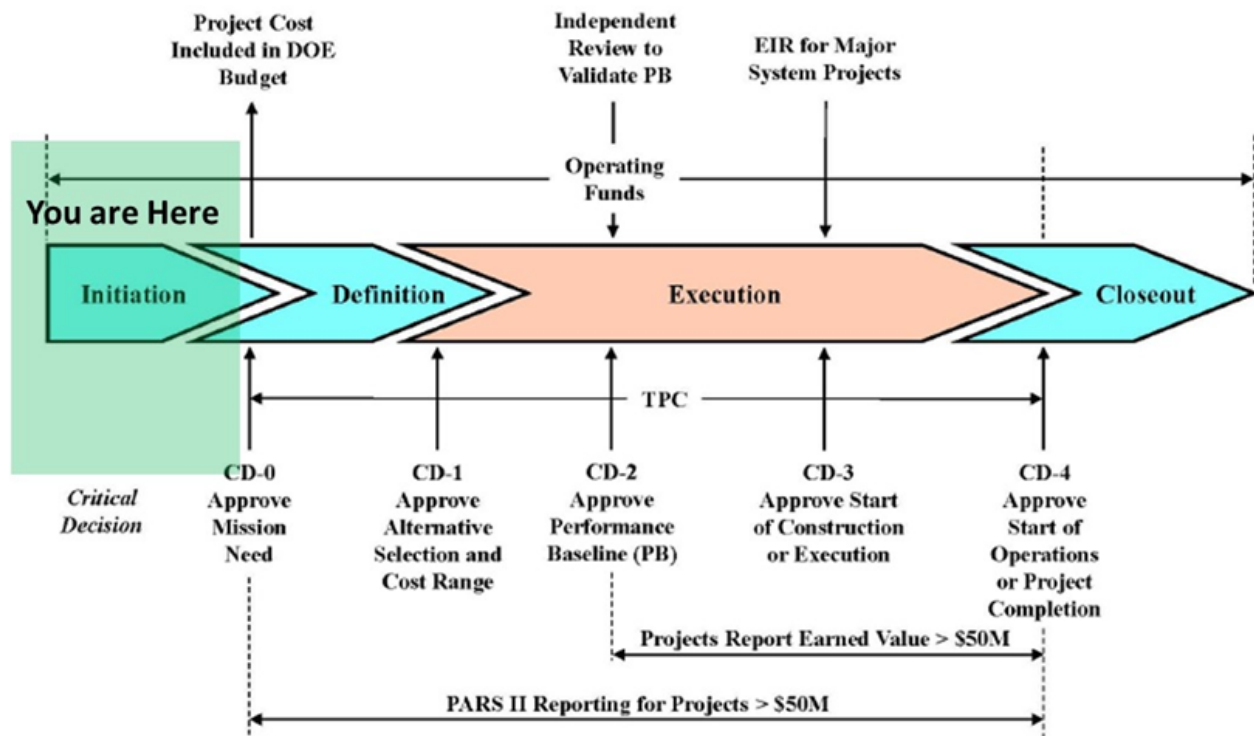
Pre-conceptual planning activities, while focusing on the Program Office's strategic goals and objectives, include the identification and development of the following:

- Capability gaps,
- High-level project parameters,
- A rough order or magnitude (ROM) cost estimate, and
- Schedule estimates.

Why is it so important that the DOE project management community pays close attention to pre-conceptual planning when developing capital asset projects?

Research has shown that project success is greater when an increased level of pre-project planning is used. In fact, the Construction Industry Institute (CII) considers front-end planning a best practice.

Figure 1. Capital Asset Project Planning & Execution Phases



The earliest stages of project development, also known as the "Initiation phase", begin with the identification of a mission-related need. A Program Office² 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.

CII's RS-113-1 document, *Pre-Project Planning Tools: PDRI and Alignment*, states that project success is greater when an increased level of pre-project planning is used, yielding:

- Increased predictability of cost and schedule,
- Reduced probability of project failures,
- Improved operational performance,
- Better achievement of business goals,
- Better definition of risks, and
- Fewer scope changes.

¹ 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. (DOE O 413.3B Change 6 (01-12-2021), Attachment 2)

² The Program Office is considered the owner of the project.

Continued on Page 3.

The key findings identified in this CII research as best practices include:



1. Right Team, Right Project

Teams must be working on the right project in a collaborative manner (alignment) and performing the right work (scope definition) during pre-project planning. (RS113-1, p. 1)

2. Project Definition Rating Index (PDRI)

A project team's effective use of the PDRI will assist project teams in developing a complete project definition package. The PDRI for traditional construction projects (nuclear and non-nuclear) is a project management tool designed to increase the likelihood of project success by improving project scope definition, specifically by identifying deficiencies in scope definition early during the front-end planning process. (RS113-1, p. 7)



3. Project Team Alignment

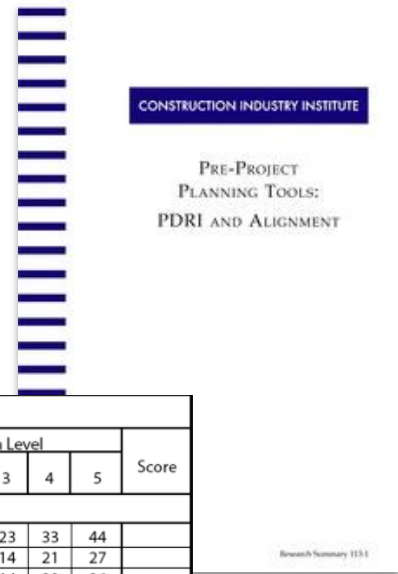
Project team alignment is the process of incorporating all those distinct priorities and requirements into a uniform set of project objectives that meet the business needs for the proposed capital asset project. Additionally, studies indicate a positive correlation between the level of performance of an integrated project team (IPT) and the degree of success in project execution³. This is especially true for large, complex, and technically challenging projects that involve multiple stakeholders, tight budgets and schedules. In all cases, DOE capital asset projects have a much better chance of succeeding when a Federal Project Director works together with a competent and committed IPT. The CII research identified five categories that need to be addressed effectively to achieve project team alignment: (RS113-1, p. 11)

- Execution processes,
- Company culture,
- Information,
- Barriers to creating and maintaining alignment, and
- Tools

4. Ten Critical Alignment Issues

Achieving and maintaining alignment is critical to project success. The 10 critical alignment issues that have the greatest effect on team alignment and ultimate project success, in order of importance are:

1. Stakeholders are appropriately represented on the project team;
2. Project leadership is defined, effective, and accountable;
3. The priority between cost, schedule, and required project features is clear;
4. Communication within the team and with stakeholders is open and effective;
5. Team meetings are timely and productive;
6. The team culture fosters trust, honesty, and shared values;
7. The pre-project planning process includes sufficient funding, schedule, and scope to meet objectives;
8. The reward and recognition system promotes meeting project objectives;
9. Teamwork and team building programs are effective; and
10. Planning tools are effectively used.



SECTION I — BASIS OF PROJECT DECISION							
CATEGORY Element	Definition Level						Score
	0	1	2	3	4	5	
A. BUSINESS STRATEGY (Maximum = 214)							
A1. Building Use	0	1	12	23	33	44	
A2. Business Justification	0	1	8	14	21	27	
A3. Business Plan	0	2	8	14	20	26	
A4. Economic Analysis	0	2	6	11	6	21	
A5. Facility Requirements	0	2	9	16	23	31	
A6. Future Expansion/Alteration Considerations	0	1	7	12	17	22	
A7. Site Selection Considerations	0	1	8	15	21	28	
A8. Project Objectives Statement	0	1	4	8	11	15	

0 = Not Applicable

2 = Minor Deficiencies

4 = Major Deficiencies

1 = Complete Definition

3 = Some Deficiencies

5 = Incomplete or Poor Definition

0 = Not Applicable 2 = Minor Deficiencies 4 = Major Deficiencies
1 = Complete Definition 3 = Some Deficiencies 5 = Incomplete or Poor Definition

³See DOE G 413.3-18A, *Integrated Project Team Guide for Formation and Implementation*.

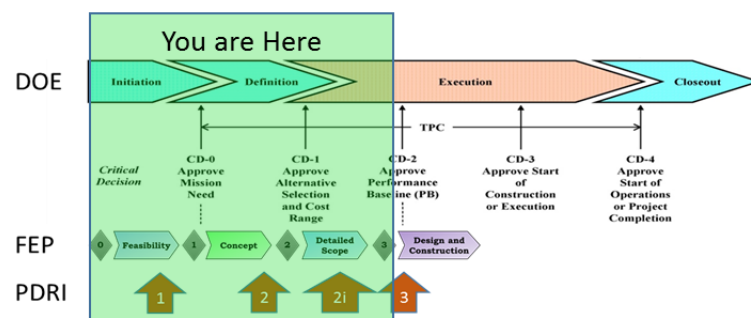
A summary of the CII RS-113-1 document can be found on the PM-MAX home page at [PM Front-end Planning Toolkit - Dept of Energy-External - MAX Federal Community](#) (go to 413 Resource Center dropdown and click on the Front-End Planning Toolkit link).

Findings in another CII study have shown that higher levels of front-end planning effort can result in significant cost and schedule savings. Specifically, the research study categorized 53 capital facility projects into three different intensities of front-end planning effort and compared total potential cost and schedule performance differences as follows: [Reference: Gibson, G.E. and Hamilton, M. R. (1994), "Analysis of pre-project planning effort and success variables for capital projects." Report prepared for the CII, University of Texas at Austin, Texas]



413 Resource Center ▶ Reviews & Metrics ▶ PARS & Earned Value Management

Front-end Planning Toolkit



20% cost savings with a high level of front-end planning effort

39% schedule savings with a high level of front-end planning effort

In summary, pre-conceptual planning activities and overall front-end planning are vital to project success and the research bears this out. It is of utmost importance that the right effort with the right people goes into pre-conceptual planning for capital asset projects.

Other PM-MAX resources to help you with your project planning and execution efforts include:

- The Project Management Library ([PM Library - Dept of Energy-External - MAX Federal Community](#)),
- Other Project Management Resources ([PM Other DOE PM Resources - Dept of Energy-External - MAX Federal Community](#)), and
- Front-end Planning Toolkit ([PM Front-end Planning Toolkit - Dept of Energy-External - MAX Federal Community](#)).

Updating the DOE PM Escalation Model/ Pandemic Effects

Matthew (Zac) West, Brian Kong, Office of Project Controls (PM-30) and Rob Stern, Office of Policy and Program Support (PM-50)

In 2017, the Office of Project Management (PM) worked with subject matter experts to set up a model to determine realistic escalation rates applicable to capital asset projects for specific locations across the Department of Energy (DOE) complex. PM is now refreshing and expanding the model to cover more sites. The most recent update to the model in 2018, found the following escalation rates for:



Oak Ridge, Tennessee - **3.8%**
 Livermore, California - **5.8%**
 Aiken, South Carolina - **3.8%**
 Richland, Washington - **3.8%**
 Los Alamos, New Mexico - **3.8%**

Prior to CD-0, as program offices establish a mission need, either a new mission or identification of gaps in meeting existing missions, a key question to ask is when it is needed. Often, DOE identifies mission needs which are 5 to 10 years or more into the future and the complexity of these projects can extend the duration of construction many years beyond projects typically seen in the commercial sector. This results in escalation playing a significant role in developing the cost ranges required for CD-0 and CD-1, and in establishing the performance baseline at CD-2 or CD-2/3.

Recent events raise interesting questions with respect to escalation rates and reinforces the need to periodically update the DOE PM model. The current update will add closer review of current craft labor rates by location. The model DOE PM set up with support from economists and project analysts determines escalation rates from a variety of indices to include producer price indices (PPI) and craft labor rates (base and fringe) by location.

Continued on Page 5.

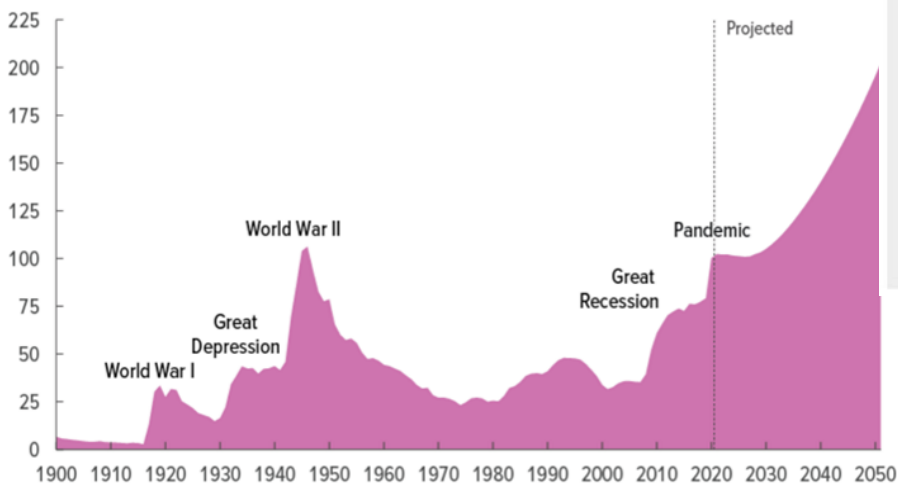
Commodities are selected based on predominance of use across DOE projects. The need to update the model is further supported by escalation influences, such as:

- Construction and project labor agreement updates
- Establishment or changes in tariffs and commodity demands
- Benefits growth
- Overall trend in materials costs
- Final construction costs changes

Most indices are just now starting to capture the impacts of the pandemic. In March, the Congressional Budget Office (CBO) issued [The 2021 Long-Term Budget Outlook](#) and [Additional Information About the Budget Outlook: 2021 to 2031](#) with grim projections on federal debt (see Figure 1. Federal Debt Held by the Public, 1900 to 2051).

Figure 1. Federal Debt Held by the Public, 1900 to 2051

Percentage of Gross Domestic Product



Growing deficits are projected to drive federal debt held by the public to unprecedented levels over the next 30 years. By 2051, debt is projected to reach more than 200 percent of gross domestic product.



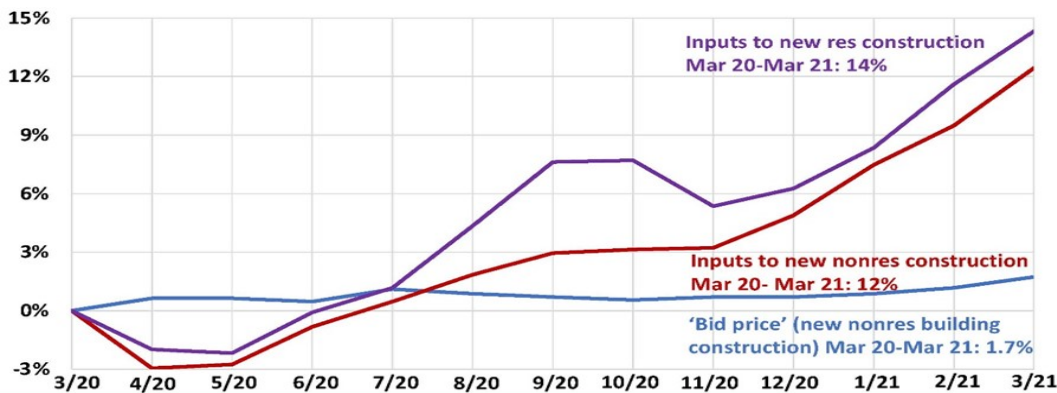
Noting debt generally correlates with inflation, CBO reports *Inflation ... is projected to be considerably higher from 2021 to 2031 than CBO projected last year First, inflation is projected to be higher in the short term because consumers and businesses have proven better able to adapt to social distancing and because of laws enacted in 2020, both of which limit the disinflationary impact of the pandemic. Over the 2021–2025 period, CBO projects the consumer price index for all urban consumers (CPI-U) to grow at an average annual rate of 2.2 percent, more than the average of 1.9 percent Second, inflation is projected to be higher after the economy fully recovers from the 2020 recession because of the Federal Reserve’s recent revision to its statement of goals and policies, which states that when there is a period in which inflation falls short of the Federal Reserve’s objective, inflation will be allowed to moderately exceed that objective in a future period. Over the 2026–2031 period, CBO projects the CPI-U to grow at an average annual rate of 2.4 percent, more than the average of 2.2 percent the agency projected last year*

The [U.S. Census Bureau](#) reported that as of February 2021, since the pandemic, nonresidential construction for both public and private sectors, unlike residential construction, has decreased by double digits. This aligns with the [Associated General Contractors of America \(AGC\) March 2021 compiled indexes](#) inclusive of government construction. However, this data, based on the [U.S. Bureau of Labor Statistics](#), indicates continued significant increases in PPIs such as 40+% for steel mill products, 10+% for plastic construction products, and a strong 2.4+% for compensation. In assessing escalation, bid prices should also be factored. One source is Associated General Contractor ([AGC’s March 2021 data](#) (see Figure 2. Construction input and ‘bid price’ producer price indexes (PPIs) on Pg. 6) which shows a negative trend down 3% initially after the pandemic impacts were realized and then rising to 12+% PPI for nonresidential construction one year later (15% change).

Continued on Page 6.

Figure 2.

Construction input and 'bid price' producer price indexes (PPIs)
cumulative change in PPIs, Mar 2020 -Mar 2021 (not seasonally adjusted)



Escalation for DOE projects is not in decline:

PM's general guidance is to use a general escalation rate greater than **3%** for non-nuclear projects and greater than **3.8%** for nuclear/one-of-a-kind projects.

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Once the DOE PM model update is complete, the output will be shared on PM MAX and a 2022 update will be set up to better understand pandemic impacts.

For additional information on escalation, refer to [DOE G 413.3-21A, Cost Estimating Guide](#), section 6.4.4 escalation.

"Schedule" Your Baseline and Forecast Integrated Master Schedules

Robert Loop and Brian Kong, Office of Project Controls (PM-30), and Derick Lehman, WRPS

It is important that both the Baseline (BL) and Forecast (FC) integrated master schedule (IMS) reflect logical and realistic schedules that are comprehensive, well-constructed, credible, and controlled as discussed in [GAO-16-89G, Schedule Assessment Guide, Best Practices for Project Schedules](#). Project performance is assessed each month by comparing the BL IMS, the originally approved plan (including start & finish dates & units), to the FC IMS reflecting what work was accomplished, when the work was accomplished, and revisions to the schedule of remaining work. To attain an accurate assessment of performance, both the baseline and forecast IMS need to be "scheduled" (i.e., recalculated) after the implementation of baseline changes compliant with the change control process.

"Scheduling" in Primavera P6 is executed using the "schedule" dialogue box depicted below. For additional information, please go to the [P6 online help](#) and search "schedule a project."

The current or earliest data date for the BL IMS should be the project's early start date. The data date for the FC IMS should be aligned with the end of the reporting period date.

The IMSs are "scheduled," in part, to ensure that activities are sequenced in accordance with their logic and durations and that a valid longest/driving path can be confirmed. The software tool does this by executing the forward and backward passes; otherwise, the impacts of the changes are unknown, and the schedules are not valid.

GAO's Biennial Report Card for DOE's Contract and Project Management Shows Mixed Progress

Rob Stern, Office of Policy and Program Support (PM-50)

The Government Accountability Office (GAO) noted both improvements and declines for Department of Energy (DOE)'s Contract and Project Management in the March 2, 2021 release of the Biennial High-Risk Report, [GAO-21-119SP, HIGH-RISK SERIES: Dedicated Leadership Needed to Address Limited Progress in Most High-Risk Areas](#).

GAO placed DOE on the high-risk list in 1990 for contract management—including contract administration and project and program management—as a high-risk area. GAO took this action because DOE's record of inadequate management and oversight of contractors left the department vulnerable to fraud, waste, abuse, and mismanagement. This high-risk area includes programs (functions or activities that typically involve broad objectives) and projects (temporary efforts with defined scopes).

In January 2009, GAO narrowed the focus of DOE's high-risk designation to the National Nuclear Security Agency (NNSA) and the Office of Environmental Management (EM). In February 2013, GAO further narrowed the focus to NNSA's and EM's contracts and major projects—those with an estimated cost of \$750 million or greater—to acknowledge progress in managing non-major projects.”

Overarching changes to note in the 2021 report are the reduced rating for the Department's overall Leadership Commitment from met to partially met to reflect the differences between NNSA's and EM's performance when rating the offices separately for the first time, while the Department's rating for the capacity to manage contracts and projects increased from not met to partially met. There was no change in the partially met rating for the other three criteria: Action Plan, Monitoring, and Demonstrated Progress.

When evaluated at the program level, GAO's rating for NNSA Leadership Commitment increased with their Office of Acquisition and Project Management taking on oversight of projects earlier in the project lifecycle.



Source: GAO analysis. | GAO-21-119SP

The NNSA Capacity rating increased a step as a result of an increase of 200 FTE in the statutory cap for staffing. GAO did note there is still room for improvement in staffing for oversight of management and operating (M&O) contractors.

GAO highlighted the following open recommendations for NNSA:

- Ensuring that the integrated schedule in development for pit production meets NNSA standards, consistent with best practices for schedule development;
- Improving schedule estimates and analyses of alternatives to better align with best practices; and
- Improving management controls to improve the oversight and coordination of programs and activities.

GAO noted that EM has taken steps to improve capacity such as establishment of an “Acquisition Corps” at the Environmental Management Consolidated Business Center but needs to follow through on actions related to leadership commitment. GAO also noted concern with EM's leadership continuity and lack of follow-through with prior management initiatives. While GAO took note of progress at the East Tennessee Technology Park and management initiatives such as the July 2020 demolition project protocol and the November 2020 program management protocol, it also noted that total costs of current and future cleanup activities, which result in part from persistent project and contract management challenges, have increased in recent years at a level far greater than the annual funding available to address them. GAO felt it is too early to evaluate the effectiveness of the end-state contracting model.



Source: GAO analysis. | GAO-21-119SP

GAO highlighted the following three open recommendations for EM:

- Incorporating project management leading practices for operations activities;
- Taking steps to ensure cost and schedule estimates meet best practices; and
- Identifying and fully analyzing additional flexibilities that could be used to address the staffing vacancies at DOE's site office responsible for the Waste Isolation Pilot Plant.



Source: GAO analysis. | GAO-21-119SP

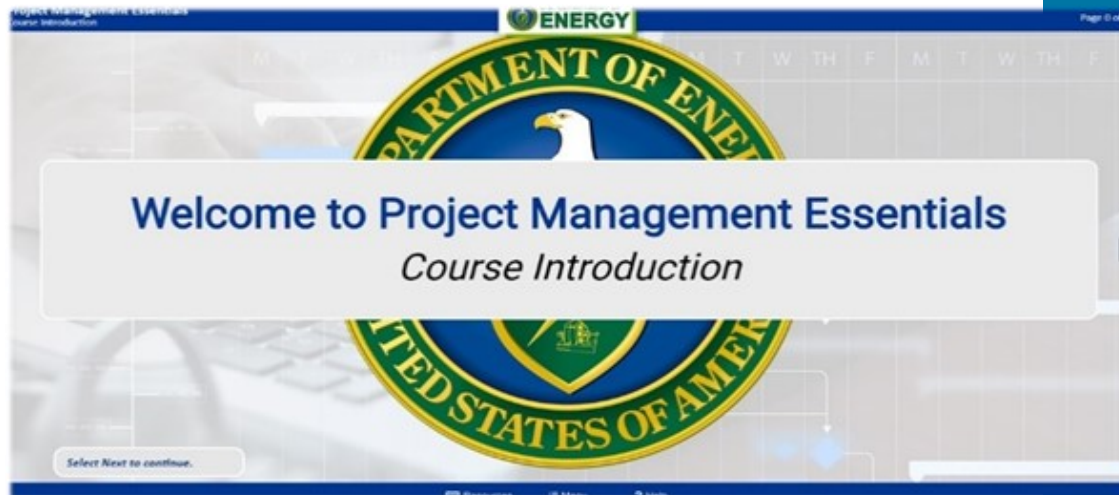
UPDATED COURSE: Project Management Essentials (PME) Now Available

Sigmond Ceaser, Professional Development Division
(PM-40)

The Project Management Career Development Program (PMCDP) recognizes and values the need to provide training anytime and anywhere, meaning employees can take control of their own learning at a time and place that suits them. Content becomes far more relevant and useful when it's acquired at the point-of-need and allows employees to retain and utilize the information on demand.

When the Department of Energy (DOE) introduced the Learning Nucleus (LN), the learning management system (LMS) did not support the legacy PMCDP online/on demand Flash courses. Quite simply, Flash is not supported by the LN. That said, the legacy *Project Management Essentials (PME)* course required conversion to HTML5. While we were at it, PMCDP decided it was time to update the content and dated design.

PME is now completely redesigned in HTML5 with a modern look and feel that includes increased interactivity and learner engagement.



The fully online/on demand course is now available through the Learning Nucleus and serves as the suggested initial course for prospective Level 1 Federal Project Directors (FPDs) in the PMCDP.

PME is comprised of 15 individual lessons and introduces employees to a comprehensive set of project management principles that address the basic concepts of the five fundamental project management processes: Initiating; Planning; Executing; Monitoring and Controlling and Closing.



The primary source materials for this course are the Project Management Institute's Project Management Body of Knowledge® (sometimes referred to as the PMBOK®), DOE Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, and the associated guides supporting the Order. Other guides and manuals are referenced throughout the course.

The intended audience for PME is Federal project managers seeking FPD Level I. DOE Program Managers, IPT members assigned to projects (including matrixed personnel) are encouraged to take the course as the lessons provide introductory level training on the respective topic. The course can be taken in its entirety or the lessons may be taken individually for continuous learning and refresher training.

Lessons Title	CLPs
Lesson 1: Project Framework	3
Lesson 2: Strategic Planning and Project Funding	3
Lesson 3: Initiation/Defining	3
Lesson 4: Planning Scope	3
Lesson 5: Schedule Development	4
Lesson 6: Estimating Costs	4
Lesson 7: Planning Quality	4
Lesson 8: Project Risk Management	5
Lesson 9: Project Execution	3
Lesson 10: Leadership, Communications, and	3
Lesson 11: Procurement	3
Lesson 12: Project Controls	4
Lesson 13: Monitoring Risks	3
Lesson 14: Quality Management and Control	3
Lesson 15: Close Project	2



Congratulations to our newly certified FPD!

Level I

Leonard (Tony) Trujillo (NNSA)



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
Systems Engineering	May 3-6, 2021	24	001049	Webinar 10:30am-4:30pm (Daily) (EST)
Monitoring and Controlling in Project Execution	May 17-21, 2021	28	000450	Webinar 10:30am-4:30pm (Daily) (EST)
Executive Communications	May 25-27, 2021	24	001031	Webinar 10:30am-4:30pm (Daily) (EST)
Front-End Planning	May 25, 2021 - June 10, 2021	20	003176	Webinar: 5 sessions - 2pm-4pm (EST) Tuesday May 25, Thursday May 27, Tuesday June 1, Thursday June 3, Thursday June 10
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)

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 PM-MAX. 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.

