DOE PROJECT MANAGEMENT NEWS

Promoting Project Management Excellence

SEPTEMBER 2021

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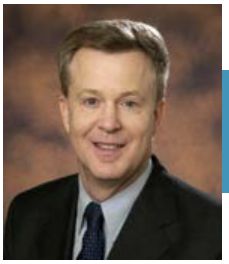


Director's Corner

With Fall just around the corner, we wrap up our series of "Post CD-0/Pre-CD-1" articles in this month's newsletter with articles on assessing project maturity, escalation, and budgeting.

Last month's newsletter discussed the importance of front-end planning and the impact good front-end planning can have on reducing costs, improving schedule and cost performance, and increasing the probability of a project closing the capability gap identified in the mission need statement. For projects with a total project cost (TPC) of $100M or greater, DOE O 413.3B requires the Federal Project Director to conduct a Project Definition Rating Index (PDRI) analysis prior to CD-2 as a means of ensuring the identification of key engineering and design elements and assessing their maturity. For more information on this construction industry best practice and the value it brings to your project, see the article on page 2.

One of the most critical elements in project management is ensuring your project is properly funded. Central to this is an understanding of the Department's budgeting process, including when funding should be requested and how capital asset projects are presented to Congress. See the article on page 3 for more information on DOE's budget process for capital asset projects.

In May, we discussed the ongoing update of PM's escalation model and impacts of the pandemic on the construction industry. The update is now complete and includes an expansion of site-specific escalation rates for locations across the complex. For more information on the updated model, see the article on page 5.

Keep Charging!

Paul Bosco

Facilitation for Assessment of Front-End Planning

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

Most of the techniques and focus for the Department of Energy's (DOE) efforts to improve our capital asset project management processes derive from corrective actions identified to address the April 2008 Root Cause Analysis: Contract and Project Management. In that report, the number one management element in that report needing improvement is that "DOE often does not complete front-end planning (project requirements definition) to an appropriate level before establishing project baselines."

One key action to improve front-end planning (FEP) was the issuance of DOE Guide 413.3-12, *Project Definition Rating Index (PDRI) Guide for Traditional Nuclear and Non-Nuclear Construction Projects,* in July, 2010 (since updated in 2015 and in process of being updated again this year). In November of 2010, DOE Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets* (the Order), was issued. The Order requires the following prior to CD -2: "Conduct a Project Definition Rating Index Analysis, as appropriate, for projects with a TPC ≥ $100M. The Office of Project Management (PM) will review as part of the external independent review (EIR)."

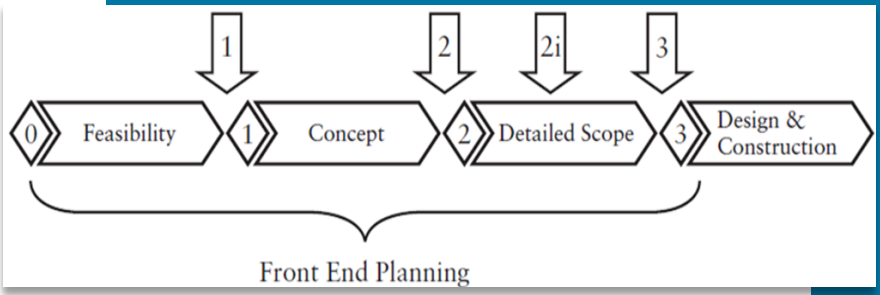
Appendix C in the Order goes on to explain "The project team will perform comprehensive front-end project planning to an appropriate level before establishing a Performance Baseline (PB) at CD-2. The PDRI model assists the IPT in identifying key engineering and design elements critical to project scope 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."

PM collaborates closely with the Construction Industry Institute (CII), the research and development center for the capital projects industry. CII calls PDRI "a powerful, easy-to-use tool for measuring the degree of scope development." Due to its demonstrated utility to the construction industry, they have developed a variety of PDRI tools specific to different industry segments. They have also combined their work assessing Front-End Engineering Design (FEED) to come up with a Project Definition Rating Index Maturity and Accuracy Total Rating System (PDRI MATRS) which combines maturity and accuracy to assist project teams in evaluating FEED for their projects.

PDRI Industrial version 5 incorporates this new approach which provides improved gap analysis and feedback to the project team.

According to CII, "PDRI can be used during the FEP process to ensure alignment, conformance to organizational procedures, and a continual focus on project priorities. The tool can be used both during and at the conclusion of the planning process. Most projects would want to apply the tool at least twice. Regardless of the timing, the assessment will provide the IPT with an understanding of planning gaps. As shown in Figure 1, CII recommends up to four time periods to use the PDRI tool and label these as PDRI 1, 2, 2i, and 3." While PDRI is used during PM's EIR as part of the process to assess readiness to establish the PB, earlier applications by the IPT provide time for the project team to address gaps identified in the process.

Figure 1. PDRI Application Points



A key point noted as a best practice in the guide is that "Ideally, the project team and/or an independent review team should conduct a PDRI evaluation at various points in the project. Experience has shown that the scoring process works best in a team environment with a neutral facilitator familiar with the project. The facilitator provides objective feedback to the team and controls the pace of team meetings."

In fact, in support of this type of requirement in DOE and the overall construction industry, CII provides PDRI facilitator training and recommends that organizations hire such trained facilitators to best utilize the PDRI MATRS tools or have members of their own organization obtain certification. Many of the PM staff members have received this training and three have gone on to receive CII recognition as a Certified PDRI Facilitator which involves demonstrated experience, specified coursework, and examination.

Please contact the PM analyst for your project for further information regarding our recommended best practices for FEP and PDRI or to be put in touch with one of our Certified PDRI Facilitators.

A High-Level Overview of the DOE Budgetary Process and Project Data Sheets

Joseph Grealish, Office of Project Analysis (PM-20)

DOE's capital asset project management community is primarily focused on the successful execution of capital asset projects, ensuring the delivery of technical solutions within the approved cost, schedule, and level of risk. We must also develop a strong understanding of DOE's budgeting process, how projects are presented to Congress, and DOE Order (O) 413.3B, *Program and Project Management for the Acquisition of Capital Assets,* requirements for when and how to request and budget funds for projects.

DOE's budget is an expression of the department's strategic plan and objectives. The program offices develop their long-range capital asset strategy based on direction and guidance from the Secretary of Energy. Additional direction is provided by the Office of Management and Budget (OMB), including its Capital Programming Guide, a supplement to its Planning, Budgeting, and Acquisition of Capital Assets, Circular A-11.

The Budget Cycle

The annual budget process takes over a year to run its course and requires federal managers and executives to manage multiple budget cycles simultaneously. The President typically submits his annual budget to Congress in February to provide ample opportunity for Congressional committees and subcommittees to review the proposed budget, hold hearings, and pass the required authorizations and appropriations before the start of the following fiscal year on October 1st. Following the release of the President's budget, OMB will provide guidance to federal departments and agencies for the next budget cycle. Within DOE, the Secretary and Deputy Secretary, via the respective Under Secretaries and Chief Financial Officer (CFO), will provide additional direction and guidance on administration priorities. As the Programs develop their capital asset budgets, they need to monitor congressional activities, to include departmental testimonies, so they can shape the following fiscal year's budget appropriately.

During the DOE budget formulation phase, programs develop individual project data sheets (PDSs) for each capital asset line-item construction project over $20 million. Program leadership, to include the project owner, must ensure that the individual PDSs are synchronized and represent a holistic, reasonable, and achievable approach for the budget year under consideration. CFO will aggregate these individual PDSs to develop a Departmental approach that is holistic, reasonable and achievable.

The CFO, along with the Programs, will typically brief OMB on DOE's initial budget submission in November and receive OMB's feedback, known as the "Passback," by December. There is then a busy period in December and January finalizing all budget documents and ensuring all of the Passback's deductions, additions, and modifications are accounted for. By the end of January, DOE's budget submission is finalized and ready for inclusion in the normal February release of the President's budget. OMB follows with guidance for the following year's budget and the process repeats.

The Project Data Sheet (PDS)

The PDS is the primary mechanism Programs use to provide DOE leadership, OMB, and Congress with detailed financial information about each project. Congress is the primary audience of a PDS. The CFO provides the detailed guidance on how to complete a PDS, as well as supplemental requirements contained in DOE O 413.3B. There are eight sections in a PDS: 1) Summary, Significant Changes, and Schedule and Cost History; 2) Project Scope and Justification; 3) Financial Schedule; 4) Details of Project Cost Estimates; 5) Schedule of Appropriation Requests; 6) Related Operations and Maintenance Funding Requirements; 7) Disposal and Demolition Information; and 8) Acquisition Approach.

Within section 1, the summary focuses the reader on that fiscal year's request. It should provide the current year request and either the cost range or total project cost (TPC). Then, the PDS should address significant changes since the previous submission, which include critical decision (CD) milestones and changes to the project's performance baseline. Section 1 typically closes with a table depicting the CD history, including any long lead procurements (CD-3A).

Continued on Page 4.

Section 2 details the project's scope and the justification for the project and identifies the project's key performance parameters (KPPs). Section 3 provides both the funding history and projected future funding requirements and costs. Total estimated costs (TEC), generally those funds required for design and construction requirements, are broken out from other project costs (OPCs), which are generally related to work such as conceptual planning, conceptual design, and commissioning, to provide Congress with the detailed information of the project's funding and scope requirements.

Section 4 provides greater detail of the project's cost estimate, including how contingency is allocated and how design costs are split between planning, conceptual design, and final design. It is important to identify under OPCs the funding needed for independent cost estimates and reviews conducted by the Office of Project Management (PM) and Project Management Support Offices (PMSOs). Section 5 provides the schedule of planned appropriation requests for the current and future budget cycles. It is important to include all prior year appropriations, so the actual and planned appropriations add to the TPC. It is also important that the figures used throughout the PDS are in alignment and match the CD documentation and project execution plan (PEP).

Section 6 identifies the anticipated operations and maintenance (O&M) funding requirements once the project is complete and provides an expected number of years the facility will be operational. Section 7 details any disposal and demolition (D&D) information when/if a project is replacing an existing facility. Section 8 closes the PDS with a description of the acquisition approach.

PDS Reviews by the Office of Project Management (PM)

PM reviews PDSs for projects that fall under the cognizance of DOE O 413.3B during the budget development phase to ensure compliance with the Order's requirements. Project funding identified in the PDS should be in alignment with the project's approved execution funding profile and is a critical element for a successful project. When DOE O 413.3B was developed and approved (and successive changes), it used recognized project management best practices to create several requirements related to the funding of projects.

Accordingly, PM reviews PDSs with a focus on the following six requirements that are aligned with these best practices. If any issues are noted, they are promptly identified to CFO and passed to the respective Program for resolution.

1. Project engineering and design (PED) funds cannot be expended until CD-1 is approved (DOE O 413.3B Appendix A, Para 4.b.; Under Secretary exemption approval required for non-compliance).
2. Funds for construction cannot be requested until CD-1 is approved (DOE O 413.3B Appendix A, Paragraph 4.c.(2); Under Secretary exemption approval required for non-compliance).
3. If CD-2 (or CD-3A) is not achieved within two years of a budget request submission to Congress that included a request for construction funds, approval of any subsequent requests for funds is required by the Chief Executive for Project Management via the Energy Systems Acquisition Advisory Board (ESAAB).
4. If funds for construction are requested prior to CD-2 approval, the default original performance baseline (or TPC) will be established equivalent to the top end of the range at CD-1 with the initial budget submission (DOE O 413.3B Appendix A, Paragraph 4.c.(2); if a Program decides not to comply with this requirement, than an Under Secretary exemption approval is required).
5. Project is not requesting funds per the approved CD-2 or baseline change proposal (BCP) funding profile which adversely affects project performance (DOE O 413.3B Appendix A, Table 2.2).
6. PME accepts condition to request funds for construction inclusive of obtaining CD-2 approval within two years of a budget request submission to Congress that included a request for funds for construction (DOE O 413.3B Appendix A, Paragraph 4.c.(2)).

Conclusion

Understanding the Department's budget process will benefit all project management professionals as you develop and submit your project's funding requirements. Specifically, ensuring the PDS for your project is comprehensive and follows the Department's best practices (contained within DOE O 413.3B) will increase the chances of your project getting the funds it needs to support a successful project outcome and completion. If you have any questions about the DOE budget process, and specifically the PDS best practices found within DOE O 413.3B, please contact your respective PM project analyst.

Department of Energy (DOE) Escalation Model

Dipali Amin, Office of Project Controls (PM-30)

As mentioned in the May newsletter, we have now updated the DOE Escalation Model for 2021. In 2017, the Office of Project Management (PM) worked with subject matter experts to develop a model to determine realistic escalation rates applicable to capital asset projects for specific locations across the complex. PM has refreshed and expanded the model to cover additional sites. Note: Current price increases due to pandemic supply chain disruption are not long-term escalation factors, rather they are determined to be part of base costs in the estimate.

Inflation/Escalation is a continuous increase in the general price level. Price escalation is synonymous with price inflation when prices of all units increase over time.

The annual escalation recommendation for total project cost (TPC) is **3.8%**, which represents the compound annual growth rate (CAGR) for projects except for projects at DOE laboratory sites, in which case the recommendation is **4.4%** (labor benefits in academia increase faster than benefits for other labor categories). These rates consider two primary factors, local conditions for labor and materials specific to the project/ site and long-term economic trends with risk. Escalation factors apply for estimates across all major cost category inputs (e.g., craft, non-labor, sub-contracts, materials) associated with the TPC.

Figure 1. Site Index – 3.1% is based on indices constructed for major cost categories:

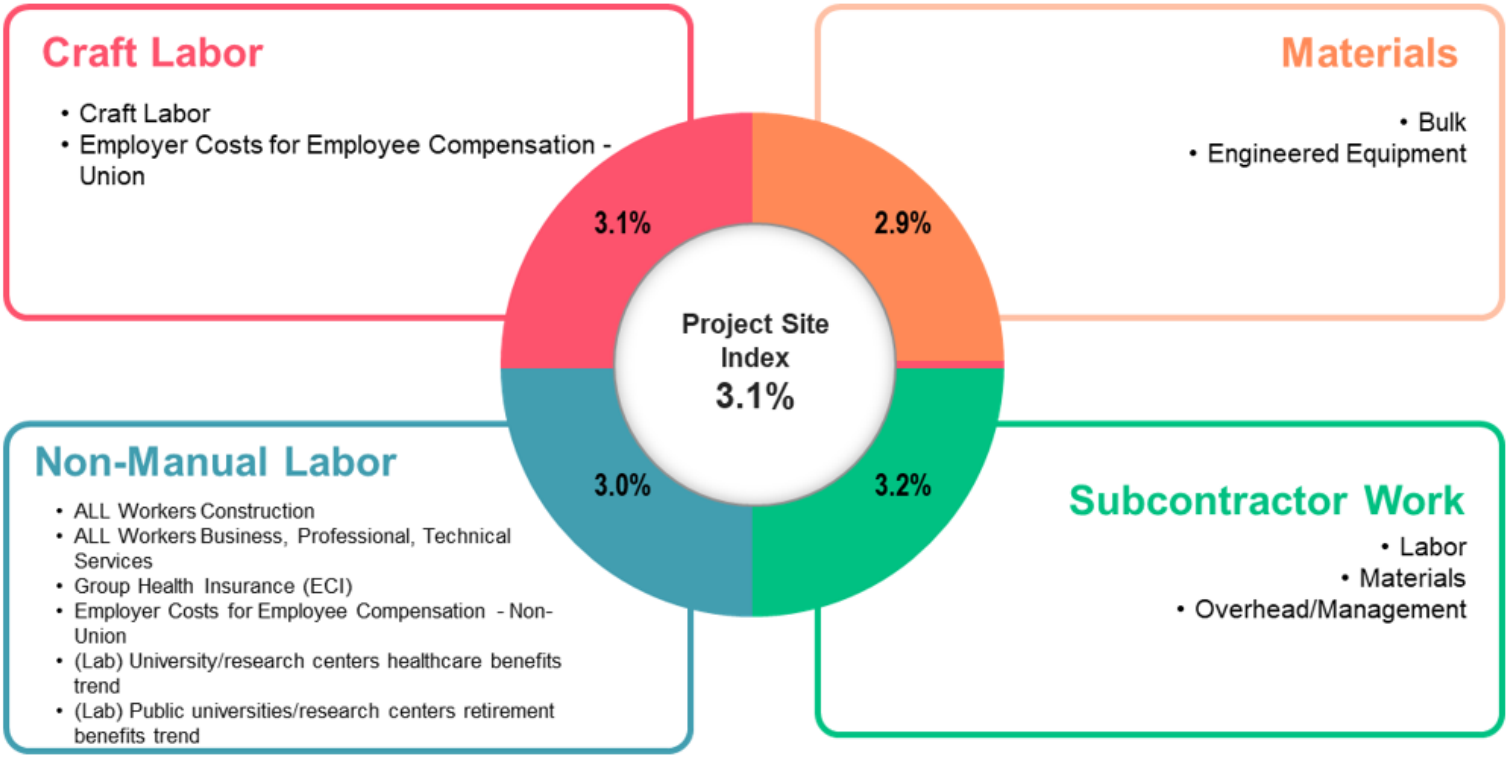


Figure 2. Site Index – Long Term Economic Trends & Risk Factors – 4.4% is based on the following long-term indices:

Continued on Page 6.

Table 1 highlights the composite index weighted in proportion to their respective share based on recent DOE projects as well as long-term economic trends and risk factors. Note the weights on the left side provide an explanation of how much each driver affects the overall escalation rate. This escalation rate should be re-evaluated at critical decision points (e.g., CD-2), or every two years, to ensure it still is consistent with the ever-changing market conditions. DOE PM will refresh the model each year.

Table 1: Escalation Indices and Weights

Weights			Category	Annual Escalation	Index 2017	2018	2019	2020	2021	2022	2023	2024	2025
			Final Index (Average of Site Index and Long-Term Economic Trends)	**3.8%**	**1**	**1.038**	**1.077**	**1.117**	**1.159**	**1.203**	**1.2477**	**1.2946**	**1.3432**
	1		**Project/Site Index (Weighted by Share)**	**3.1%**	**1**	**1.0310**	**1.0629**	**1.0958**	**1.1298**	**1.1648**	**1.2008**	**1.2380**	**1.2764**
	0.15		Craft Labor	3.1%	1	1.0310	1.0630	1.0959	1.1299	1.1650	1.2011	1.2383	1.2767
	0.3		Non-Manual Labor	3.0%	1	1.0304	1.0616	1.0939	1.1271	1.1613	1.1966	1.2329	1.2703
0.5	0.4		Subcontracts	3.2%	1	1.0320	1.0650	1.0991	1.1343	1.1706	1.2080	1.2467	1.2866
		1	Materials	2.9%	1	1.0294	1.0597	1.0909	1.1230	1.1561	1.1901	1.2251	1.2612
	0.15	0.1	Bulk	2.6%	1	1.0258	1.0524	1.0796	1.1075	1.1361	1.1655	1.1956	1.2265
		0.9	Engineered Equipment	3.0%	1	1.0298	1.0605	1.0922	1.1248	1.1583	1.1929	1.2285	1.2651
	1		**Long-Term Economic Trends and Risk Factors**	**4.4%**	**1**	**1.0442**	**1.0903**	**1.1384**	**1.1887**	**1.2412**	**1.2960**	**1.3533**	**1.4131**
			Turner Building Cost Index	4.7%									
			Rider Levett Bucknell National Construction Cost I	4.4%									
0.5	Averaged		US Census Value of Non-Res Construction	4.7%									
			Engineering News-Record: Buildings	4.3%									
			Engineering News-Record: Construction	4.6%									
			Final Sales to Domestic Purchasers (Aggregate De	4.3%									
			Tempered Steel	3.9%									

Weight Tiers: I | II | III

Data Sources: over 500 input and output price series data indexes were evaluated. Some directly contributed to calculations, others identified broad economic trends. Output indices, such as the Turner Building Cost Index, which assess final market value including the overhead and benefits, carried greater weight in determining the long-term trend.

Beginning Date of the Series: The majority of series are analyzed from the earliest date available, sometimes as early as 1960s; and others from the 1990s or 2000s. For trend comparison, CAGR was calculated for the period from 1993 (or the earliest date that the series are available) to 2020 and for the period from 2010 to 2020.

Weighting: The final series index is an average of CAGRs. Series were often grouped by type (e.g., building materials); and in a small number of cases, uneven weights were assigned to series within the group or to a group itself. For example, if the project uses 50% more electricians than roofers, then the electricians' CAGR is weighted proportionately more.

Forecasting Method: Forecasting (by regression) produced inconsistent results because the post-2010 inflationary environment has been very different from the inflationary environment prior to that date. CAGR is a better underlying trend predictor in this case. It is also a better predictor than the mean-reversion method, which often occurs after the price growth had been negative or subdued for some time – as many sectors of the economy have experienced lately. Annual % change is projected at a constant rate through 2025.

Table 2: DOE Office of Project Management Recommended Escalation Rates.

Lab/Site	Rate
ORNL	4.4%
LLNL	4.4%
SNL	4.4%
BNL	4.4%
INL	4.4%
LANL	4.4%
Chicago	4.4%
Carlsbad	3.8%
Louisiana SPR	3.8%
Y-12	3.8%
Texas SPR	3.8%
Pantex	3.7%
SRS	3.7%
Hanford	3.7%

PMCDP: Planning and Budgeting Curriculum

Sig Ceaser, Professional Development Division (PM-40)

Project Management Career Development Program (PMCDP) courses are designed and developed to support the key requirements of DOE capital asset project management as outlined in DOE Order 413.3B and other DOE Directives. This article will highlight the courses in the curriculum that are related to planning and budgeting.

Training begins at Level I with ***Project Management Essentials (PME)***, an introduction to a comprehensive set of project management principals. The broad overview includes the planning, programming, budgeting, and execution process.

The suggested Level I follow-on to PME is ***Project Management Systems and Practices in DOE***. This course is designed to instruct participants in the processes specified in DOE Order 413.3B and the associated Guides. The course also explains the specific roles and responsibilities in managing the critical decision process as well as other requirements which includes the federal budgeting process.

Also, at Level I, ***Capital Planning for DOE O 413.3B Capital Asset Projects*** reviews the documents and reports from the budget formulation and acquisition planning processes. The course tracks the critical decision deliverables, reports, cyclical budget data, and narratives in the context of a structured capital planning process and the critical decision model.

At Level II, ***Federal Budgeting Process in DOE*** imparts a working knowledge of Federal financial and managerial systems, including budget submissions, managing authorized funding, and establishing success criteria.

Front-End Planning: Getting to CD-1, another Level II course, provides the skills necessary to be successful upon initial assignment to a capital asset project, including critical elements in the selection of a preferred alternative for CD-1, and other important components of CD-1 documentation (such as development of a cost range, Key Performance Parameters, and the Conceptual Design Report).

The Level III ***Strategic Planning*** course provides leaders and managers with first-hand knowledge of the strategic planning process, including strategic formulation, plan development and implementation.

PMCDP training courses are intended for prospective Federal Project Directors, certified Contracting Officer Representatives (CORs), DOE Program Managers, and integrated project team members assigned to projects (including matrixed personnel). Other members of the acquisition workforce may also take courses for continuing education credit.

Please visit PMCDP in PM-MAX to review the complete Curriculum Map with course descriptions and details. A schedule of PMCDP Training is also available in PM-MAX.

Congratulations to our newly certified FPDs!

Level II	Level I
Matt Vick (EM)	**Leon Duquella (EM)**
	Russell Alber (SC)
	Mike Hatcher (SC)

Earn a CLP for reading PM News and providing feedback about the edition you read. **Click here**!

WE WANT TO HEAR FROM YOU!

PMCDP FY21 Q4 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

Course Title	Dates	FY21 Q4 CLPs	LN Code	Details
Advanced Earned Value Management Systems (EVMS)	September 7 -10, 2021	24	002689	10:30am-4:30pm EDT Webinar Daily
Monitoring and Controlling During Project Execution	September 13 -17, 2021	32	000450	10:30am-4:30pm EDT Webinar Daily
Program Management Portfolio Analysis	September 13 -17, 2021	40	001025	10:30am-4:30pm EDT Webinar Daily
Advanced Risk Management (Pilot)	September 20 - 24, 2021	28	001042	10:30am-4:30pm EDT Webinar Daily
Leadership in Energy and Environmental Design (LEED)	September 27 -29, 2021	20	001936	10:30am-4:30pm EDT Webinar Daily

Find up-to-date information and resources anytime!

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 report 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/m4lIY.

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.

To reach the Professional Development Division team:

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If you would like to contribute an article to the Newsletter or want to provide feedback, contact the Editor at DL-PM-40.