DOE PROJECT MANAGEMENT NEWS

Promoting Project Management Excellence

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Director's Corner

An External Independent Review (EIR) was just completed on your project, now what? If the EIR identified either major findings and/or findings, a formal corrective action plan, or CAP, is required before the Performance Baseline can be validated. See the article on page 2 for some tips on developing your CAP.

All projects have unique challenges, but with proper upfront planning and focused execution, the probability of delivering a project on budget and on schedule can be significantly improved. This includes proper performance reporting, analysis and correction where appropriate, and accurate forecasting. As a follow-up to July's article, *Estimate at Completion (EAC) - Reported Values*, this month's newsletter includes Q&A on the logic and value of reporting multiple EACs. See page 3.

As part of our ongoing effort to provide Federal Project Directors (FPD) and project teams with enhanced analytical tools, our PARS Team rolled out some new views, charts, reports and pre-filters in the PARS provided version of Empower last month. I encourage you and your team to explore the use of these tools to better understand the insights they provide and the benefits they offer for your project. A brief discussion of these enhancements can be found on page 5.

Keep charging!

Paul Bosco

Corrective Action Plans (CAPs)

Pete Bako, Office of Project Analysis (PM-20)

DOE Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, requires that the Office of Project Management (PM) perform a performance baseline (PB) external independent review (EIR) prior to Critical Decision (CD)-2, Approve Performance Baseline, for all capital asset projects with a Total Project Cost (TPC) ≥ $100M. The EIR serves to both validate a project's proposed PB and to verify that appropriate project planning and management actions have been taken to prepare federal project directors (FPD) and their staff for the host of challenges they'll need to navigate in order to successfully deliver a project on time and on budget.

EIR findings highlight areas that need to be strengthened or improved prior to PB validation and in response, the project team develops a corrective action plan (CAP) (unfortunately, not the baseball kind) to address those findings. Successful implementation of those corrective actions then helps set the project off on the right path. But despite this upfront process and active risk management throughout the project, unforeseen problems will occur throughout a project. So while the CAP is an essential part of an EIR, it also remains a useful tool to identify root causes and solutions to issues throughout the project lifecycle.

That said, one of the common shortfalls is that project teams often develop CAPs that only address the symptoms of the problem and not the underlying causes. When the root cause is not satisfactorily addressed, it's likely that the same problem may reoccur in this project or even in other future projects. So how can corrective actions be developed to better ensure they address the real problem? To answer that question, it's helpful to think about CAPs having two distinct phases.

1. Assessment is the first phase of the CAP process. This phase is the investigation to find the root causes of the problem and includes the following key elements:

Define the problem- What happened? When, where, and how was it identified? How impactful?

Identify possible causes- What factors contributed to the problem? Process, communication, etc.?

2. Implementation is the second phase of the CAP process. This phase is the set of actions taken to prevent a recurrence of the issue and includes the following key elements:

Identify possible solutions- What changes to project planning and execution processes might preclude repeat instances of the problem?

Select solution- Which possible solutions appear most viable? Are there sufficient time, funds, and personnel resources to implement?

Implement solution- Plan and implement selected solutions ensuring appropriate resources are applied.

Evaluate effectiveness- Review effectiveness of implemented solutions? Did it solve the problem? Did it prevent a recurrence?

Institutionalize/Codify- Update project management guidance, tools, and processes to ensure future projects are executed under the improved processes and procedures.

While the discussion above covers the basic process many are familiar with, there are a number of other issues FPDs and their staff should keep in mind in the development of a successful CAP.


Involve the right people.

Often, a single person is assigned to investigate and solve a problem. Many problems however, are the result of several complex issues and it's unlikely one person has the knowledge or expertise to evaluate effectively in isolation. PMs need to ensure the appropriate personnel are involved.

Make it a habit.

The CAP process is sometimes viewed as additional work rather than part of effective daily project management practices, which generally employs regular use of the Plan-Do-Check-Act (PDCA) cycle. Making the PDCA cycle part of day-to-day thinking within a project team will help all stakeholders better understand their roles and responsibilities.
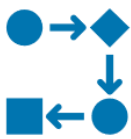
Focus on processes.
Organizations often tend to attribute the cause of problems to human error, but many perceived human errors turn out to actually be deficiencies in information, equipment, and management processes. When a project team focuses on process deficiencies over finger pointing, they find team members are more willing to help uncover the real causes of problems.

Understand the value.
While it's fairly obvious that the CAP process is focused on a specific problem on a specific project, many of those involved are unaware of the potential benefits a corrective action may have on future projects. Team members should learn from the investigations and then carry that knowledge into future projects, where it's often that the true value is appreciated.

Development of root cause analysis skills within the project team is instrumental for risk management, quality management, and for creating a learning culture. So, whether it be in response to findings from an EIR, or to issues faced in day-to-day execution, the process of identifying true root causes and corrective actions to prevent recurrence is an effective project management tool that should be practiced throughout the life of the project.

Understanding the Value of the Multiple Estimate at Completion (EAC) Values

Matthew (Zac) West and David Kester, Office of Project Controls (PM-30)

As noted in the article entitled *Estimate at Completion (EAC) - Reported Values,* contained in the July 2020 newsletter, one may wonder why multiple EAC dollar values are reported or even needed for the management of a project. The below Q&A will help to shed some light on the logic and value for having multiple EACs:

Why does a senior leader at each level from the project to headquarters need to understand the EAC?

One of the key capabilities of an earned value management system (EVMS) is to support timely and informed decisions. A properly established, maintained and reported EAC, which is current, accurate, complete, repeatable, and auditable, enhances the federal project director (FPD)'s and contractor project manager's visibility into the performance of the project, and consequently the project's funding and resource requirements to successfully complete all work scope. There are three parts to a contractor's EAC process: 1) the monthly control account (CA) EAC developed by the control account managers (CAM), 2) the monthly best case, worst case, and most likely EAC range developed by the contractor project manager for completing the performance measurement baseline (PMB), and 3) the comprehensive annual (or bottom-up) EAC developed by the contractor project manager working with his or her team for completing the PMB. The contractor project manager should conduct the comprehensive EAC more frequently than annually when project circumstances warrant it.

Both the CA and PMB level EACs must foremost be realistic, accounting for actual costs to date, open material commitments, projections of future performance (using EVM metrics), probable rate changes, and known risks and opportunities. The EAC should not be constrained by funding availability, but should reflect the most realistic circumstances for successfully completing all work scope. Once derived, the EAC dollar values for each CA and for the PMB should be compared with the respective budgets at completion (BAC) to identify variances at completion (VAC). This provides continuing visibility into the realism of the project's time phased PMB, including the realism of control account baseline plans, schedules, and budgets.

Why would the contractor project manager's most likely EAC and the summation of CA EACs differ?

Because the contractor project manager has a holistic view of the project, with greater insight into overarching risks and opportunities, as well as knowledge of current or future project conditions, his or her most likely EAC dollar value need not agree with the total summation of the CA EAC dollar values plus any undistributed budget. However, the contractor project manager is expected to explain any difference between these EAC dollar values. Conversely, if the contractor project manager's most likely EAC dollar value matches the dollar value of the total summation of the CA EAC dollar values, the contractor project manager should explain why.

How can the realism of the Project Manager's most likely EAC and the CA EACs be independently assessed?

A formula-generated independent estimate at completion (IEAC) of the final total cost (or total dollar value) of the project, which is based on the project's historical performance and represents an independent second opinion, is an important number to validate the reasonableness of the contractor project manager's most likely EAC dollar value.

This independent opinion provides the project management team (both contractor and federal) and other DOE stakeholders with important information to aid in execution and funding decisions for meeting the technical, schedule, and cost performance objectives of the project (Figure 1), and evaluating the potential impacts if the current course of action is not addressed.

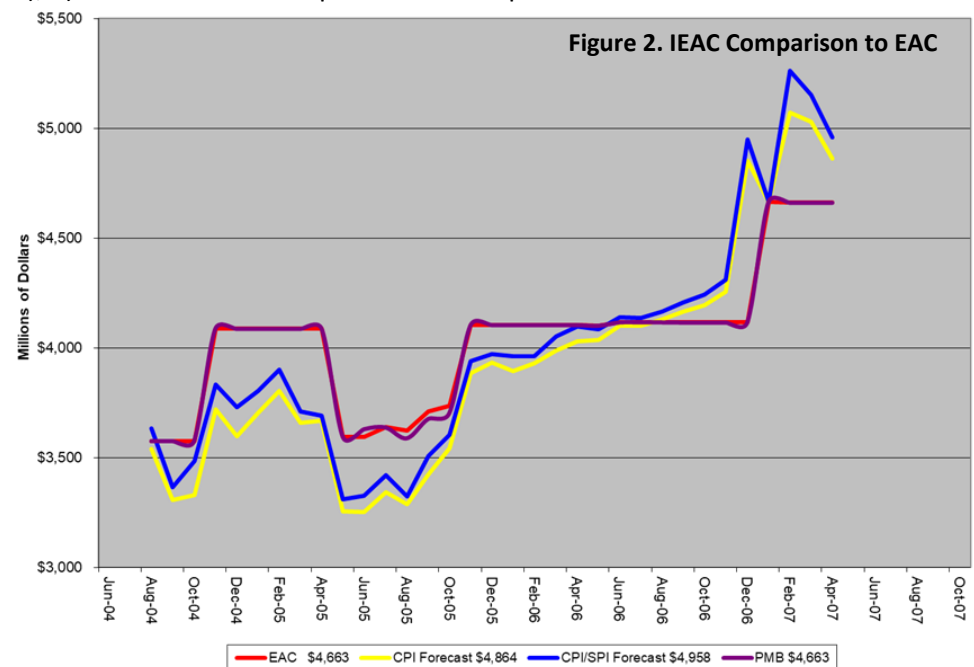**Figure 1. Project Management Based on Technical, Schedule and Cost Performance Objectives**
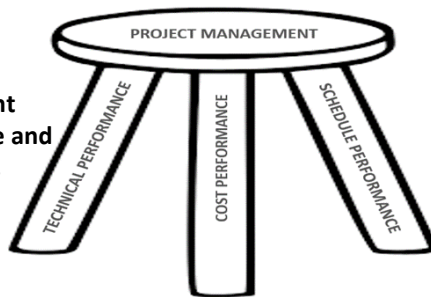
The DOE utilizes the following four IEAC formulae: 1) the cumulative cost performance index (CPI cum), 2) the CPI cum times cumulative schedule performance index (SPI cum) or composite method, 3) the three-month average CPI, and 4) the six month average CPI. Each formulae consider how past performance predicts future expected performance, and when compared with CA and PMB EACs, how realistic they are. Typically the IEAC based on CPI cum provides a lower bound, or the most optimistic outcome. The IEAC composite formulae based on CPI cum and SPI cum provides an upper bound, or the most pessimistic outcome. These formulae are most accurate when the project is between 15% complete and 95% complete. Outside of these ranges, the formulae may not predict the most accurate outcomes.

These and other IEAC formulae are a key feature in the Project Assessment and Reporting System (PARS) Empower Analytics tool.

Figure 2 is illustrative of the comparison of the contractor project manager's most likely EAC dollar value and the CPI and CPI*SPI (or composite) IEAC dollar values. Note the distinct differences in the position of the contractor project manager's most likely EAC dollar value (Red Line) and the CPI (Yellow) and CPI*SPI (Blue) IEAC dollar values. The differences indicate that the contractor project manager's most likely EAC dollar value is unrealistically low. A further examination of Figure 2 shows that the contractor project manager's most likely EAC dollar value equals the PMB dollar value indicating that the contractor project manager's EAC is not being maintained as required for a compliant and effective EVMS.

Figure 2. IEAC Comparison to EAC

Research conducted by David Christensen at the Air Force Institute of Technology (AFIT) and others provide meaningful insights into the phases of a project's meaningful insights into the phases of a project's lifecycle where specific IEAC formulae are more useful than others. The research indicates that the composite method is more useful earlier in the project (prior to 40% complete), but can still be useful through the 80% completion mark. The CPI cum method is best used starting at the 40% completion mark to the end of the project, with the likelihood that the composite and CPI cum methods diverge towards the later stages in a project's lifecycle.

The CPI 3-month average and 6-month average formulae are better in the middle stages of a project's lifecycle as work scope begins to accelerate.

Finally, look for the enhanced *Portfolio Status Report* in PARS starting in August 2020. Contractor project managers are reminded to look at all the tools and methods available to them from their EVMS to ensure they realistically develop and report a most likely, best case, and worst case EAC to the government each month. FPD's, programs, and the Office of Project Management (PM) should strive to understand the basis and assumptions behind the range of reported contractor EAC dollar values, and how each compare to the range of IEAC dollar values. The FPD should include with his or her forecast TPC, a narrative assessment of the contractor project manager's most likely EAC dollar value, explaining any differences at the PMB level.

For further questions regarding this article or EACs in general, please contact PM-30.

Project Analysis and Reporting System (PARS) Update

Matthew "Zac" West, Office of Project Controls (PM-30)

There are new views, charts, reports and pre-filters in the PARS provided version of Empower. This did not remove any of the previous views, charts, reports or pre-filters, only expanded the tools available to users.

Starting with views (S-), there are four categories: Basic, Gantt, Compliance, and Other. The **Basic Views** were present prior to July and remain part of the dashboards that accompany the EVMS and Project Analyst Standard Operating Procedure (EPASOP). This SOP provides a framework for analysts at any level to review projects in PARS and is under the Help menu in Empower.

The **DOE Leadership View** remains a high-level view designed to look at all of the projects in a user's portfolio and is best accessed through the Leadership dashboard as should the balance of the basic views.

GANTT Views provide additional ways of looking at the information in PARS. The Finish Gantt, includes the current period and prior three to help look at slip, float, and if an activity is on, or soon to be on, the critical path. The audit Gantt helps the user compare what the linkages are between the schedule and cost tool. The WBS element IDs from both tools are visible so the user can compare to ensure they link correctly.

EVMS Compliance Views are new and assist users looking at EIA-748 guideline specific tests to allow the user to look at any active element rather than just the top level. This means it is easier to drill in to areas that may be the root of an issue if there is a compliance concern. The audit metrics are still in the reports with these views being an additional capability for the user.

Other Useful Views have specific reason, with one that requires a word of caution. The user should work with the **DOE Earned Schedule** view after the project reaches 65 percent complete and should make sure to verify which are cost and which are schedule based fields. For example – SPI(T) vs SPI. SPI (T) is from the schedule in units of time and SPI is from the cost tools in dollars.

Empower Default cost and Gantt views are also provided. The index numbers to the left are for configuration control by DOE.

ID	Name
	Basic Views
S-001	DOE Leadership
S-002	DOE Data Validity
S-003	DOE Schedule Health
S-004	DOE Variance Analysis
S-005	DOE Trend Analysis
S-006	DOE Forecast
	GANTT Views
S-010	DOE Default (G)
S-011	Finish (G)
S-012	Audit Gantt (G)
S-013	Metric Test Gantt (G)
-	Empower Gantt (G)
	EVMS Compliance Views
S-020	DOE GL 1, 3, & 5
S-021	DOE GL 6
S-022	DOE GL 9, 10, 11, 12
S-023	DOE GL 16, 21, & 22
S-024	DOE GL 27, 29, & 30
	Other Useful Views
S-030	DOE CPR
S-031	DOE Dates
S-032	DOE Earned Schedule
S-033	DOE EAC Realism
S-034	DOE EVM DQI
S-035	DOE IMS DQI
-	Empower Default
-	CPI vs TCPI EAC

More **Global Charts** (C-). The basic charts remain and are part of the dashboards. Additional EAC, BAC, and ETC charts were added to Empower in PARS. Some charts are still under development, such as the Who Charged Chart. Chart C-023 is one that has both earned schedule and earned value lines for the user to compare.

Global Charts

ID	Name
	Basic Charts
C-001	DOE Data Validity
C-002	DOE Schedule Health
C-003	DOE Variance Analysis
C-004	DOE Trend Analysis
C-005	DOE Forecast
	BAC, EAC, ETC
C-010	BAC by CAM
C-011	BAC by EVM
C-012	EACs
C-013	BCWR / ETC
	Indices
C-020	Dual Axis - Index vs Variance
C-021	Index Gauge CPI, SPI, BEI, TCPI to EAC
C-022	BEI CEI Trend
C-023	SPI(t) vs SPI Cum (Use after 65% Complete)
	Other Useful Charts
-	Who Charged

Global Reports

ID	Name
R-001	WAD Reconciliation (Test Only)
R-002	Who Charged? (Test Only)
R-003	BAC Delta
R-004	12 Period Summary
R-005	12 Period Forward
R-006	Banded EOC
R-007	BAC by CAM
R-008	Control Account Plan
R-009	Earned Schedule 12 Period Summary
R-010	VAC Delta

More **Global Reports (R-)**. The first two listed are still in testing and are not available at this time. The balance of new reports help the user see specific items in the data, with the Control Account Plan being one that includes future BCWS to the end of the project (not many do). These reports take a bit of time to go through, but are clear as to what they are showing the user. The 12 month forward and summary expand on the trending compared to the six period reports Encore Analytics (EA) provides in the standard report list. The Control Account Plan report lets the user see future BCWS to the end of the project below the top level. There is also a report that includes earned schedule. These additional reports and charts are on top of those EA provides out of the box. The last new area is with the addition of several pre-filters.

Pre-filters (PF-) Overview. There are both **Sort View** and **Gantt view** pre-filters. Remember that pre-filters actually reduce the dataset, which can help with analysis if there is a large dataset. Up to now, we simply provided the "Level 1 Only" pre-filter. Now there many more, to include those that ask for your filter criteria such as the CAM pre-filter, where the filter will ask you for the name of the CAM. When using this filter, you must enter the name of the CAM in EA (e.g., if all caps, then enter in all caps).

ID	Name
	Sort View Pre-Filters
PF-001	All Elements
PF-002	Level 1 Only
PF-003	CAM
PF-004	CPI < TCPI by 0.05
PF-005	Interesting Stuff
PF-006	Level Less Than
PF-007	No Indirects
PF-008	VAR Required
PF-009	WBS Contains
	GANTT View Pre-Filters
PF-101	High Duration (G)
PF-102	Lags (G)
PF-103	SS Predecessor (G)
PF-104	No LOE (G)
PF-105	Find UID (G)
PF-106	Finish Before BL Finish (G)
PF-107	Finish Slip (G)
PF-108	Late to BL (G)
PF-109	Late to FC (G)
PF-110	LOE Tasks (G)
PF-111	No SVT, ZBA, SM & No MS (G)
PF-112	Task Desc (G)

The pre-filter marked Interesting Stuff is one that EA found useful in the past and we will ask users to try out. When you select it, it identifies elements that are more than 10% complete, but less than 95%, and BCWR or ETC is greater than or equal to $100. These are elements you should be interested in to ensure they are performing right. We left it with the name EA gave it, while the others are generally understood from their name. Remember when you use a pre-filter; you have to return to pre-filter and select All Elements or All Tasks to get out of the pre-filter.

The PM-30 team will continue to improve and add to Empower and PARS with future updates. Questions on these topics or anything PARS related should be directed to matthew.west@hq.doe.gov.

Experience Matters
Sigmond L. Ceaser, Professional Development Division

The Project Management Career Development Program (PMCDP) Certification Review Board (CRB) modified the experience requirement for Federal Project Director (FPD) certification at levels II-IV.

Effective immediately, experience documented and included in the Project Management History section of the FPD application is expected to be on active projects within the past 10 years.

The previous guidance in the Certification Equivalency Guidelines (CEG) and on PM-MAX fluctuated the experience requirement between 3 and 5 years depending on the certification level. PM-MAX is currently updated to reflect the new experience requirement. The next release of the CEG will reflect this change.

We Heard You!
Adding Negotiations Course in FY20
Ruby L. Giles, Professional Development Division (PM-40)

The Learning Nucleus (LN) incorporates an "Interested in the Class" feature that allows the Project Management Career Development Program (PMCDP) to gauge employee interest in PMCDP training that is not currently scheduled for delivery. Using the feature, many employees made their interest in the PMCDP *Negotiation Strategies and Techniques* course known and PMCDP was immediately alerted. As a result, an additional Negotiations course will be offered August 19-September 23, 2020.

If you are interested in any PMCDP course, use the feature and PMCDP will consider your input in determining if sufficient demand exists to support course delivery. More importantly, express your interest in a class to help PMCDP form the FY21 training schedule. You will find the feature within LN in the PMCDP Catalog:
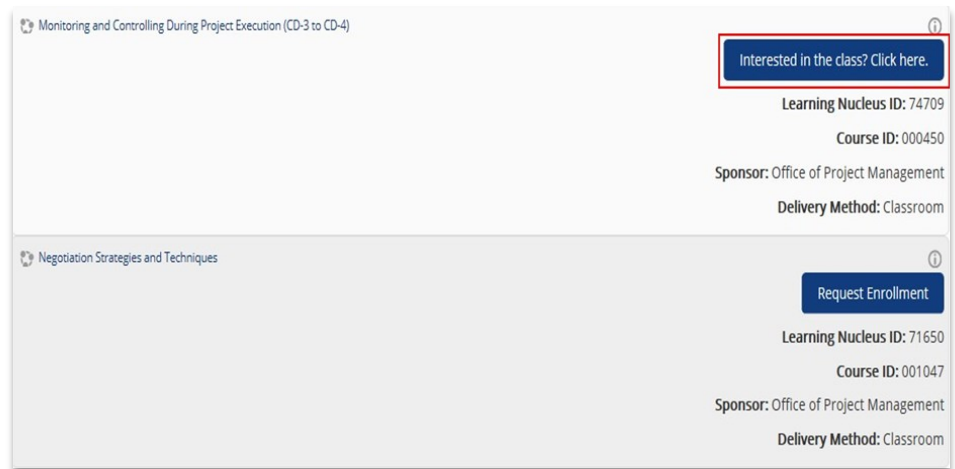
Congratulations to our newly certified FPD!

Level I
Jeffrey Murl, Legacy Management (LM)

PMCDP FY20 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

Looking forward to FY2021 Training Schedule: PMCDP is looking at a different and better training schedule for FY2021. In March 2020, PMCDP quickly shifted all courses to virtual delivery in response to COVID-19. Guiding the training schedule and delivery of classes in FY 2021 are the following:

- Understanding it is difficult to predict when air travel and gathering in groups of more than ten will be considered safe, PMCDP will continue to design and develop courses to support the DOE dispersed program and project management workforce.
- Every new and converted course will be delivered online (self-paced), or via an instructor-led distance learning format.
- Course materials, the learning equipment, the visual aids, the audience engagement, and even the time zones will be given careful consideration. For example, audience engagement will go far beyond polling questions and asking participants to agree or disagree by a show of hands (raise your hand icon).
- The courses delivered in webinar format will leverage subject matter experts and master practitioners who will parachute into the delivery to lecture and offer expert knowledge and experience about topics. You can look for this concept to be piloted in the updated Advanced Risk Management course.

Class Name	LN Code	Days	CLPs	Dates	Delivery Method
FY20/Q4					
Advanced Earned Value Management Techniques	002689	4	24	Aug.18-21,2020 (4, 6 hour days) 10:30am-4:30pm (EDT)	Daily/Webinar GoToMeeting
Negotiation Strategies and Techniques	001047	Desktop	24	August 19-September 23 Wednesdays 12:00 - 1:30 pm	Desktop Adobe Connect
Planning for Safety in Project Management	001035	Desktop	28	Aug. 27-Sept. 17, 2020 Thursdays 1pm-3pm	Desktop Adobe Connect
Project Risk Analysis and Management	001033	5 Days	28	September 14-18,2020 (5, 5-6 hour days) 10:30am-4:30pm (EDT)	Daily/Webinar Adobe Connect
Program Management Portfolio Analysis	001025	5	40	Sept. 21-25, 2020 9am-5pm (EDT)	Daily/Webinar Adobe Connect
Executive Communications	001031	3	24	Sept. 29-Oct. 1,2020 9am-4pm (EDT)	Daily/Webinar WebEx

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

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/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. Check out the links below for information related to FPD Certification and Certification and Equivalency Guidelines.

To reach the Professional Development Division team:

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