



DOE PROJECT MANAGEMENT NEWS

Promoting Project Management Excellence

February 2024



IN THIS ISSUE:

Director's Corner.....	1
Product-Oriented Work Breakdown Structure (WBS) Best Practices.....	2
Proposed DOE Guide 413.3X.....	4
IP2M METRR Training of the Month.....	7
Congrats to Our New FPDs.....	7
Rate Your PM Newsletter Experience.....	7
PMCDP Training Schedule.....	8
PM Workshop Save the Date.....	8
Contact Us.....	9



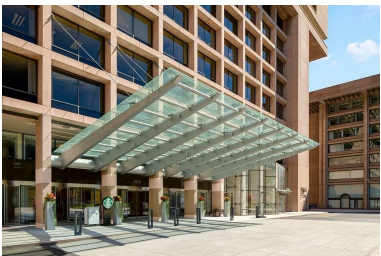
DIRECTOR'S CORNER

A new guide is being developed. Its focus is to enhance Department of Energy (DOE)'s project management practices by providing updated guidance on managing project scope. The guide will replace two older handbooks. It will integrate the processes of identifying project requirements, defining clear scope of work, and organizing work into a product-oriented work breakdown structure. It will also address the roles and responsibilities of project-related individuals and the development of key performance parameters. You can learn more about the guide, tentatively titled, DOE Guide 413.3X, *Project Scope – Development and Management of Requirements, Key Performance Parameters, and Work Breakdown Structure*, on page 4.

A product-oriented work breakdown structure is crucial for the successful management of DOE's capital asset projects. It provides a detailed framework for planning, assigning responsibility, and integrating the project's schedule.

The hierarchical, product-focused structure breaks the project down into smaller, manageable deliverables, allowing for effective cost, schedule, and technical tracking. Learn more about this best practice and some common pitfalls in the article on page 2.

Don't forget, registration is underway for the 2024 DOE Project Management Workshop. It will be held at the Hilton Washington DC National Mall The Wharf, on April 2 – 3, 2024, followed by a half-day project controls session in the morning and program office breakout sessions in the afternoon on April 4th. Registration is already over 360 attendees and as of press time, a limited number of rooms were still available at the government per diem rate. Questions about the Workshop should be addressed to PMWorkshop@hq.doe.gov.



Keep Charging!

Paul Bosco

PRODUCT-ORIENTED WORK BREAKDOWN STRUCTURE (WBS) BEST PRACTICES

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

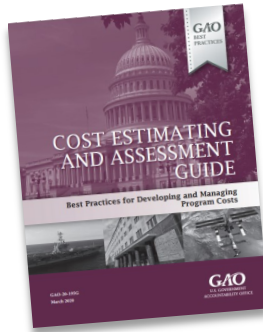
For Department of Energy (DOE) capital asset projects subject to DOE O 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, the importance of the product-oriented work breakdown structure (WBS) in enabling successful project management cannot be overstated. According to the Government Accountability Office's (GAO's) [*Cost Estimating and Assessment Guide*](#), the WBS is the cornerstone of every project because it defines in detail the work necessary to accomplish a project's objectives. The WBS provides a consistent framework for planning and assigning responsibility for the work and is an essential element for identifying activities in a project's integrated master schedule. The WBS is initially set up when the project is initiated and becomes increasingly detailed over time as the project proceeds through the planning, definition, and design phases.

The *Cost Estimating and Assessment Guide* identifies a product-oriented WBS as a best practice: "The cost estimate WBS is product-oriented, traceable to the statement of work, and at an appropriate level of detail to ensure that cost elements are neither omitted nor double-counted."

DOE's [*Work Breakdown Structure Handbook*](#) defines the WBS as a product-oriented hierarchical structure that may be composed of products, material, equipment, services, data, support facilities, and related tasks that make up a project. It is a grouping of project scope elements shown in a graphical display to organize and subdivide the total work scope of a project. The WBS and accompanying WBS dictionary define the products to be developed or produced.

Product-Oriented WBS

As a best practice, a product-oriented WBS allows a project to track cost, schedule, and technical achievement by defined deliverables, such as a facility, work area, hardware or software component. The WBS diagrams the elements of work to be accomplished to each other and to the overall end-product of the project. Products such as facilities are broken down into smaller more manageable discrete products or deliverables, such as a facility's wings, floors, and rooms.



In other words, it is an organized method to break down a product into subproducts at lower levels of detail.

The WBS should decompose the project's end-product into smaller specific elements that enable effective management. The *Cost Estimating and Assessment Guide* states that the WBS provides the basic framework for estimating costs, developing schedules, identifying resources, and determining where risks may occur. The number of WBS levels employed should be sufficient to enable the identification and measurement of work progress, assignment of responsibility, effective management, and the reporting of project performance to the DOE. While the *Cost Estimating and Assessment Guide* states that a WBS should contain a minimum of three levels, the appropriate level of work decomposition within any WBS varies depending on the project's size and complexity, technical maturity, organizational constraints, and management's assessment of need. The first level represents the project as a whole and contains one element – the project's name. The second level contains the major project products and the third level contains the subproducts of the major project products.

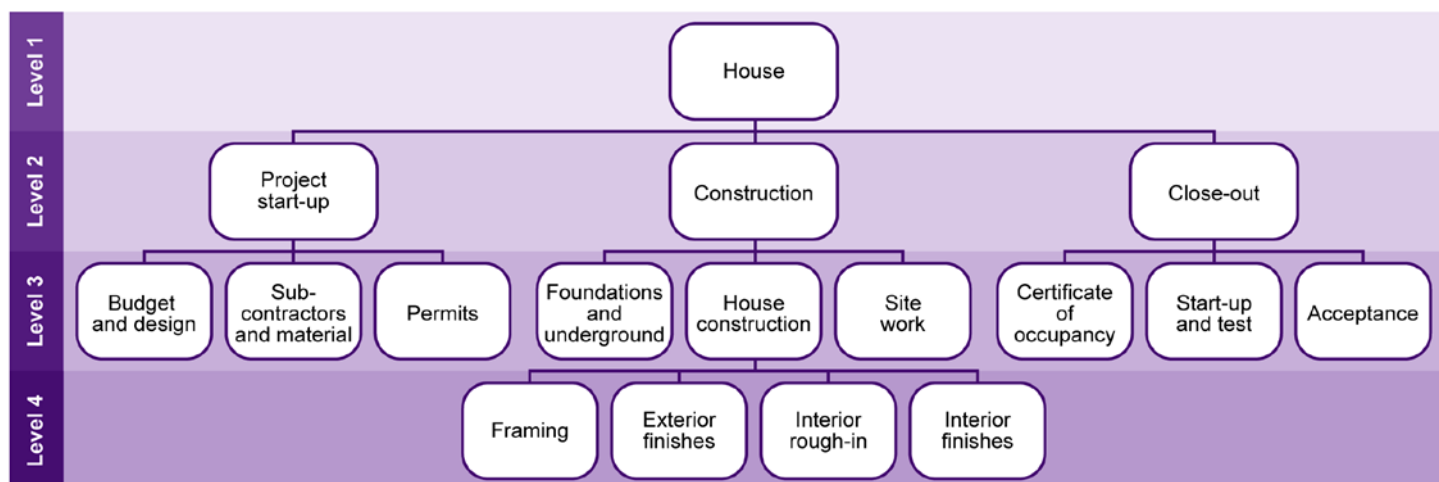
It is critical for WBS product elements identified as high-cost, high-risk, or high technical interest to be defined at lower levels of detail to provide sufficient visibility and enable effective management. In addition to the product-oriented elements, WBS's should also include common elements at the same level in the WBS as the major project products. Examples of common WBS elements in DOE projects include project management, system design and engineering, commissioning and start-up, support equipment and facilities, system test and evaluation, and project closeout. Refer to GAO's *Cost Estimating and Assessment Guide* and DOE's *WBS Handbook* for additional examples of common WBS elements. Figure 1 (page 3) depicts a simple product-oriented WBS.

Project Integration and Reporting

The WBS is the common link which integrates the planning, scheduling, cost estimating, budgeting, contracting, and performance reporting disciplines.

Continued on Page 3.

Figure 1: A Product-Oriented Work Breakdown Structure (Source: GAO | GAO-20-195G)



Because of this it is typically the organizing structure used to summarize performance data (cost, schedule, and technical) for the DOE and provide information on planned, actual, and current status of individual WBS elements and the overall project. An appropriately structured WBS provides the project performance visibility needed to identify problems and implement changes to achieve the desired project outcomes. A product-oriented WBS assists project stakeholders throughout the project's lifecycle by:

- Segregating a project into its components, clarifying the relationship among the components, and clarifying the relationship of the tasks to be completed—to each other and to the end product;
- Facilitating effective planning and assignment of management and technical responsibilities;
- Aiding in status tracking and alignment of technical efforts, risks, resource allocations, expenditures, and cost/schedule/technical performance;
- Providing continuous visibility of project status so the FPD and contractor can identify, coordinate, and implement changes necessary to achieve desired results;
- Furnishing a common thread for earned value (EV) data analysis as part of a contractor earned value management system and the project's resource-loaded schedule, permitting consistency in understanding project cost and schedule performance.

Common WBS Mistakes

The below list of common mistakes is more fully discussed in DOE's WBS Handbook.

Use of elements that are not products

Buildings, ponds, towers, and accelerator systems are examples of products. For DOE projects focused on cleanup activities, the end product is more of an end state. Alternatively, items such as requirements analysis, drawings, surveillance, steel rebar stock, and direct costs are not considered final end products. Requirements analysis is an engineering functional effort, drawings are deliverables associated with low levels of the WBS, surveillance is a project phase, steel rebar stock is a material resource, and direct cost is an accounting classification. None are appropriate WBS elements for capital asset projects.

Use of project acquisition phases

Acquisition phases (such as initiation, definition, and execution), DOE's critical decision (CD) gate phases (such as CD-1, CD-3A, CD-2, and CD-3), and funding sources (such as project engineering and design (PED), construction, other project costs (OPCs), and total estimated cost (TEC)) are inappropriate WBS elements.

Use of cost classifications

Recurring, nonrecurring, direct, indirect, other direct cost, material, labor, OPC, TEC, etc., are all cost classifications or budgets and are not products to be used as WBS elements. Nonrecurring and recurring classifications are elements of cost (such as nonrecurring engineering) rather than product-oriented elements. They are estimated separately to keep one-time nonrecurring costs from distorting the costs for recurring production units.

Continued on Page 4.

Use of project organizations/functions

Functional activities or processes (such as manufacturing, engineering, or quality control) are necessary for supporting a product's development, but the WBS should not be organized around them as they do not reflect cost, schedule, or technical performance for specific products of a project. These functions more closely align to the make-up of the organizational breakdown structure (OBS) which is required in addition to the WBS.

The WBS structure is planned such that control accounts (CAs) are segregations of work scope for which a single control account manager is responsible. The CA is the point where the WBS tasks and OBS responsibility intersect; where a single functional organization or integrated product team has responsibility for the work defined in a single WBS element. The WBS should not reflect specific functional managers, specialties, or activities that may be needed across multiple WBS elements. The key objective is accountability for products.

PROPOSED DOE GUIDE 413.3X PROJECT SCOPE—DEVELOPMENT AND MANAGEMENT OF REQUIREMENTS, KEY PERFORMANCE PARAMETERS, AND WORK BREAKDOWN STRUCTURE

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

Introduction

This article promises to be a little different from most other *PM Newsletter* articles. Rather than discuss an existing publication or delve into an ongoing project management subject, this article will look at an upcoming Department of Energy (DOE) guide on managing project scope. The working title of this new guide is, *Project Scope – Development and Management of Requirements, Key Performance Parameters, and Work Breakdown Structure*. That is right...a new DOE 413 guide will be released in the next few months and here is a sneak peek!

You are likely familiar with DOE Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, currently at change 7 and also known as “the Order”, and how it governs DOE’s capital asset acquisition. You probably are also familiar with the supporting guides, handbooks, and standard operating procedures (SOPs) which comprise the body of knowledge within DOE on capital asset acquisition processes, methodologies, and best practices. While following DOE Order 413.3B is mandatory for DOE capital asset projects, the library of guides, handbooks, and SOPs are meant to identify recommended practices and provide guidance. Although they are not mandatory, they often touch on subjects which are through various references and directives.

Conducting an analysis of alternatives (AoA), having a product-oriented work breakdown structure (WBS), and having a clearly-defined scope of work are all mandatory under the Order, however all are also addressed in guides, handbooks, and SOPs, which documents the Department’s project management best practices and procedures.

This library of guides, handbooks, and SOPs can be found at the Office of Project Management’s (PM) site, PM-Connect, the new website which replaced the now-defunct PM-Max. The PM-Connect link is: <https://community.connect.gov/display/DOEExternal/PM-MAX>

Background

What drove the creation of a new guide? Inherent within the Order is the need for each 413.3B project to have a clearly understood project scope, which is to say, “What is DOE purchasing with the money approved for the project?” Many projects also have key performance parameters (KPPs) which delineate how the project will perform. Typically, the scope is outlined in a statement of work (SOW). The SOW covers the “*What*” and the KPPs cover the “*How will it perform*” aspects of the project.

PM noted in 2023 that existing guides had some specific shortcomings. For instance, one would stress the need for requirements but not address the relationship between requirements and scope.

Continued on Page 5.



Another would provide guidance on assembling a WBS but only as it relates to earned value management (EVM) and without discussing WBS dictionaries and structures. Yet another discussed scope, but only as it relates to contract changes.

PM has two existing handbooks which will be superseded by this new Project Scope Guide. DOE-PM-HBK-02-2012, *Work Breakdown Structure (WBS) Handbook* (from August 2012) and DOE-PM-HBK-04-2014, *SOW and Key Performance Parameters (KPP) Handbook* (from September 2014) are the two Handbooks being replaced. As both are approximately ten years old, this new Guide will provide needed updates and clarifications.

Understanding the Guide

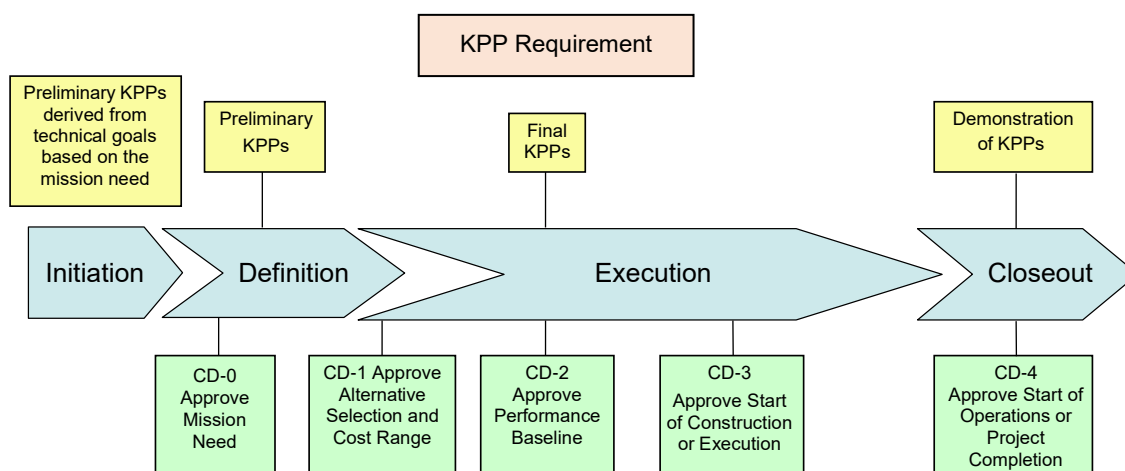
Although the new guide supersedes two handbooks, it does much more than simply bolt them together. It integrates the important work of identifying the requirements, identifying potential alternatives to accomplishing the requirements, defining the scope of work in clear language, identifying how that scope will meet the previously identified requirements, and breaking out the work in an organized, product-oriented WBS. It will carry a lot of important information for the project management professional.

The guide is organized in sections. The first sections lay out the guide's purpose, basis, and background. Section 4 covers roles and responsibilities for all project-related individuals, from the Chief Executive for Project Management through Project Management Executives (PME) and Federal Project Directors (FPD) all the way to the contractors delivering the work.

Section 6 is the primary focus of the new guide. It discusses in detail the various types of scope, the performance baseline, the performance management baseline, and how each differs from the other. The new guide then discusses the process of moving from a mission need statement through the requirements identification process and on through the AoA. In each case, the new guide draws on, and references, the existing guides focused on each of these important topics.

The main emphasis of the new guide is in sections 6.5 and 6.6. This is where the bulk of information incorporated from the two superseded handbooks appears. Section 6.5 is titled "Tools for Baseline Development" and illustrates best practices associated with developing a clear statement of work, identifying KPPs, and ensuring the front-end planning is sufficiently detailed by applying the Project Definition Rating Index process.

The figure below, taken from the new guide, shows the KPP process and how it transitions from preliminary KPPs prior to critical decision 1 (CD-1) to final KPPs at CD-2. The guide also differentiates between threshold KPPs, representing the minimum acceptable performance to satisfy CD-4 requirements, and objective KPPs, which represent the desired performance the project was approved for.



Continued on Page 6.

With some projects, it may take some time to achieve the objective KPPs. No additional scope is needed, but the various elements of the project need time together to reach full performance. Therefore, integrated project teams (IPTs) often set CD-4 requirements at the threshold KPP level, more easily achieved at CD-4. Project funding and successful baseline achievement should always be based on the physical scope of the project, as defined by the approved WBS, and as approved at CD-2 by the PME.

Section 6.6 focuses on WBS development. It references the Government Accountability Office (GAO) *Cost Estimating and Assessment Guide*, which states:

“Establishing a product-oriented WBS is a best practice because it allows a program to track cost and schedule by defined deliverables, such as a hardware or software component. This allows a program manager to more precisely identify which components are causing cost or schedule overruns and to effectively mitigate the root cause of the overruns.”

In keeping with the prior WBS handbook, the new guide defines project, contract, and subcontract WBSs and shows their nested relationships. The WBS is developed, maintained, and improved throughout the project’s life cycle. By keeping the WBS product-oriented, future refinements due to contracts, subcontracts, or a reorganization will not result in a required scope of work being omitted or duplicated.

The final section of the new guide, 6.7, focus on controlling scope and changes during project execution, ensuring unforeseen site conditions and other required changes to the SOW are captured with approved contract changes and updates to the WBS and SOW.

Changes and Updates from the Two Handbooks

There are many updates to terms and concept refinements from the previous two handbooks. One major addition is the discussion of the base work construct (BWC), which is a management framework which time phases common elements of WBSs, such as engineering, procurement, construction, and commissioning. This framework assists IPTs with their initial WBS development by ensuring common elements of all projects are captured and placed in the appropriate time space.

Another major update within the guide is how it clarifies the use of “scope contingency” as not being an appropriate DOE project management best practice.

Some IPTs have adopted the concept of scope contingency as a hedge against project management failures, by planning certain elements of scope to be removed from a project if cost contingency is consumed at too high a rate. Conversely, some IPTs identify additive scope contingency to allow for project enhancements if positive cost performance is achieved. Neither approach is in keeping with the Order’s purpose, as the PME approves a certain cost for a certain scope. If scope is removed or added without PME approval and within the approved total project cost, this would constitute a project management failure.

Implications for Project Management

The new guide combines two handbooks into one document and incorporates elements of other guides and handbooks. While there is some new material, the new guide is not intended to cause a major change to DOE’s project management processes. Rather, it is intended to simplify and codify the important IPT work of capturing the full SOW, placing the complete scope into a product-oriented WBS, and ensuring clarity and transparency on the delivery of the baselined and required scope at project completion.

Conclusion

The forthcoming DOE Guide, *Project Scope – Development and Management of Requirements, Key Performance Parameters, and Work Breakdown Structure*, is an important addition to the DOE O 413.3B library of supporting guides, handbooks, and SOPs. It updates, consolidates, and clarifies many areas of focus for the project management professional. This article is intended to whet your appetite for its release.

If you have any questions on this article, please contact your assigned PM-20 project analyst.



IP2M METRR TRAINING OF THE MONTH

IP2M METRR— SUMMARY, GUIDANCE AND WRAP UP AND COURSE EVALUATION

The Integrated Project/Program Management (IP2M) Maturity and Environment Total Risk Rating (METRR) using EVMS is a novel assessment mechanism developed as part of a DOE-sponsored joint research study led by Arizona State University and representing more than fifteen government and industry organizations.

Click [here](#) to view IP2M METRR – Summary, Guidance and Wrap Up

Click [here](#) to view IP2M METRR – Course Evaluation

Summary: The Summary, Guidance, and Wrap-up session provides a summary of the training and the learning that occurred from previous sessions, as well as guidance and recommendations to practitioners using the tool to assess and improve their projects and programs. The Course Evaluation session (final session) provides a link for participants to conduct a short course evaluation and provide feedback to the instructors.

Continuous Learning Points (CLPS): Reviewing one hour of snippets will equate to one CLP. To receive credit, FPDs can submit a CLP request under the PMCDP menu in their ESS account. All others may send an email (indicating the snippets viewed) through their respective supervisor to [DL-PM-40](#) to receive a certificate with the appropriate CLPs awarded.

You can find additional IP2M METRR Training at the following links:

<https://www.energy.gov/projectmanagement/articles/ip2m-metrr-asu-evms-study>

OR

<https://community.connect.gov/display/DOEExternal/PM+EVMS+IP2M+METRR+Training>

IP2M METRR Publications can be found at <https://ip2m.engineering.asu.edu/publications/>.

CONGRATULATIONS TO OUR NEWLY CERTIFIED FPDs!



Level I

Lin Shi (SC)

Level III

Karen Antizzo (NA)

RATE YOUR EXPERIENCE WITH THE PM NEWSLETTER

Your feedback is valuable to us! Please rate your experience with this edition of the newsletter on a scale of **1 to 5** (rating of 5 stars being highly satisfied and 1 star being highly dissatisfied).



[Click here!](#)



PMCDP FY2024 TRAINING SCHEDULE— QUARTER 2

The training schedule is posted on PM-CONNECT. Save the direct link to the Project Management Career Development Program training schedule to your favorites: <https://community.connect.gov/x/BgZcQw>

Course Title	LN Code	Dates	CLPs	Details
Capital Planning for DOE 413.3B	002152	February 6-20, 2024	16	12-3pm ET Tuesdays/Thursdays
Leadership Through Effective Communication	002366	February 13-15, 2024	24	10:30am-4:30pm ET Webinar Daily
Advanced Earned Value Management Techniques	002689	February 27-March 1, 2024	32	10:30am-4:30pm ET Webinar Daily
Project Management Systems and Practices	001024	March 4-8, 2024	40	10:30am-4:30pm ET Webinar Daily
Project Management Simulation	001029	March 11-15, 2024	40	10:30am-4:30pm ET Webinar Daily
LEED for New Construction and Existing Buildings	001936	March 19-21, 2024	20	10:30am-4:30pm ET Webinar Daily
Strategic Planning	001043	March 26-28, 2024	24	10:30am-4:30pm ET Webinar Daily

Registration Is Open!

Beyond COVID – Re-Baselining Project Management **2024 DOE Project Management Workshop**

April 2-3, 2024*

Washington DC

*** Plus: Optional Project Controls Session April 4, 2024**

More information about the workshop, including the agenda, workshop registration, and hotel booking link, is available online:

[2024 Department of Energy Project Management Workshop | Department of Energy](#)

FIND UP-TO-DATE INFORMATION AND RESOURCES ANYTIME!

All PMCDP Course Descriptions and Course Materials can be found in the Course Catalog on



Save the direct link to your favorites: <https://community.connect.gov/x/UAT3Rw>



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

Have a question, 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 [Support : PARS Support \(doe.gov\)](#). The current PARS reporting schedule is located on PM-Connect at the following link: <https://community.connect.gov/x/m4IIY>

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

Can't put your finger on a document or information you were told is available on PM-CONNECT? Looking for information on DOE Project Management? Submit your questions and queries to: PMWebmaster@doe.gov.

TO REACH THE PROFESSIONAL DEVELOPMENT DIVISION (PM-40) TEAM:



Linda Ott — Division Director for Professional Development, PMCDP Program Manager, FPD Certifications Manager, PM Newsletter Editor, Linda.Ott@hq.doe.gov, 240-474-7721

Sigmond Ceaser — PMCDP Certification and Equivalency Guidelines Lead, PMCDP Curriculum and Content Manager, PMCDP Delivery Platform Advisor, Sigmond.Ceaser@hq.doe.gov



Alda Bryant — PMCDP Training Manager, FPD Certification Maintenance Lead, Alda.Bryant@hq.doe.gov

If you would like to contribute an article to the Newsletter or want to provide feedback, please contact the Editor at [DL-PM-40](#).

