DOE PROJECT MANAGEMENT NEWS

Promoting Project Management Excellence

Director's Corner

How time flies! The official end of summer is already upon us, but prime construction season continues, without the oppressive heat.

Speaking of heat, and the economy, the Office of Project Management (PM) has completed its update of the DOE Escalation Model for fiscal year (FY) 2022. With this year's update, given the economy dynamics, PM has refreshed and expanded the model to cover additional DOE/NNSA sites, enable project specific tailoring, and utilize a two-tiered rate structure when warranted. Learn more about the update and model in the article on page 2.

Within the Project Assessment and Reporting System (PARS), unbeknownst to some, the Empower Analytics tool provides Federal Project Directors (FPDs) and project team members with a wide variety of charts and graphs to help visualize project performance. One of these tools, the Bull's Eye Bubble Chart, combines the characteristics of a Bull's Eye Chart with a Bubble Chart. Visualizing actual project performance over time allows the FPD and project team to forecast how the project will likely perform in the future and can provide an early indication of where further analysis is warranted.

Learn more about Empower Analytics and the Bull's Eye Bubble Chart on page 4.

As we continue our series of articles focused on the ten management subprocess areas identified in the Integrated Project/Program Management (IP2M) Maturity and Environment Total Risk Rating (METRR) tool, we focus this month on the Risk Management subprocess area. This subprocess focuses on the identification of risks and opportunities, analysis and integration of risks, and integration of risks into the EVM System, with the goal of effectively identifying risks and opportunities to enable their active management and ultimately, minimize the negative impact risks have on the performance measurement baseline (PMB). You can learn more about this critical subprocess in the article on page 7.

As a reminder, please take a few minutes to complete the PMCDP Training Needs Analysis (TNA) survey to help PMCDP build the FY 2023 Training Schedule. The direct link to the TNA in the Learning Nucleus is FY 2023 Training Needs Analysis.

Have a safe and enjoyable Labor Day weekend and Keep Charging!

Paul Bosco

DOE PM Escalation Model Update

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

The Department of Energy (DOE) Office of Project Management (PM) has updated the DOE escalation model for FY 2022. In 2017, DOE 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 for their independent cost estimates and independent cost reviews (ICE/ICR) and external independent reviews (EIR). With this update, DOE PM has refreshed and expanded the model to cover additional sites, project specific tailoring, and short-term versus long-term rates. The intent is to continue to update and refine the model annually.

DOE PM worked with nine intra- and inter-agency partners to review the model process and outputs. This effort was undertaken to improve the model, identify differences between agencies, and validate analysis. Partners included: National Nuclear Security Administration (NNSA) Acquisition and Project Management (APM), NNSA Management and Budget (MB), NNSA Cost Estimating and Program Evaluation (CEPE), Lawrence Livermore National Laboratory (LLNL), Los Alamos National Laboratory (LANL), National Aeronautics and Space Administration (NASA), Architect of the Capitol (AOC), Office of the Secretary of Defense Cost Assessment and Program Evaluation (OSD CAPE), and United States Army Corps of Engineers (USACE). The outcome of the collaboration was a general acceptance of the analysis and better understanding of the differences between agencies.

Given the current volatility in inflation, DOE PM recommends using the short-term rates from the analysis of the 2-year compound annual growth rate (CAGR) for the next 3 years, FY 2022-FY 2024. Use

**Table 1. FY 2022 DOE PM Recommended Escalation Rates**

Index	2022			
Site	1993-2021	2012-2021	2017-2021	2020-2021
	30 year CAGR	10 year CAGR	5 year CAGR	2 year CAGR
ORNL	4.4%	3.5%	4.5%	8.9%
Y-12	3.8%	3.5%	3.8%	8.3%
SRS	3.7%	3.5%	3.8%	8.2%
Hanford	3.7%	3.5%	3.8%	7.9%
SNL	4.4%	4.1%	4.5%	8.9%
LANL	4.4%	4.1%	4.5%	8.9%
LLNL	4.4%	4.1%	4.5%	8.9%
Pantex	3.7%	3.5%	3.8%	8.2%
Carlsbad	3.8%	3.5%	3.8%	8.1%
Chicago	4.4%	4.1%	4.5%	8.8%
BNL	4.4%	4.2%	4.5%	8.9%
INL	4.4%	4.1%	4.5%	8.8%
Louisiana SPR	3.8%	3.5%	3.6%	7.7%
Texas SPR	3.8%	3.5%	3.7%	7.9%
Nevada	3.4%	3.5%	3.9%	8.4%

the 30-year CAGR for the out years, from FY 2025 and beyond. Table 1 lists the recommended rates for select locations.

The composite calculated escalation rates take into consideration two primary factors: local conditions for labor and materials specific to the project/site, and economic trends. Escalation factors apply for estimates across all major cost category inputs (e.g., craft, non-labor, sub-contracts, materials) associated with the total project cost. In addition, the DOE PM escalation rate is a weighted composite calculation of site-specific indices and economic trends.

Figure 1. DOE PM Escalation Composition
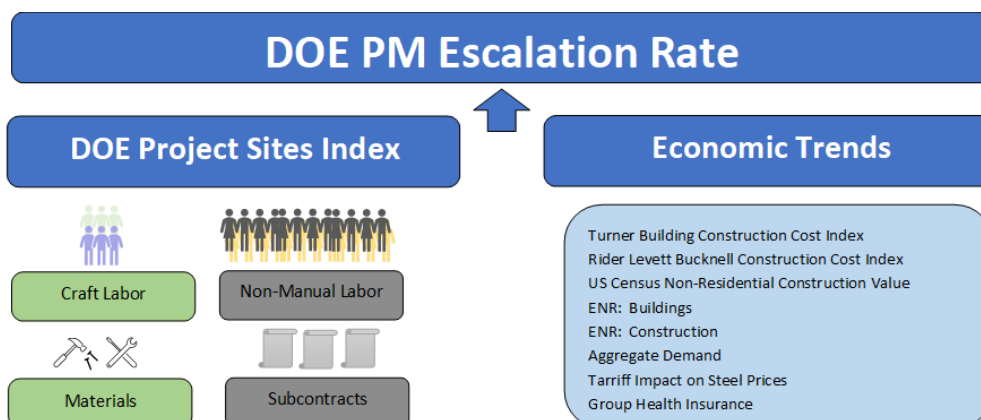
Short & Long-Term Escalation Rates

Given the current market volatility and resulting high inflation in materials, DOE PM recommends utilizing both short-term and long-term escalation rates to capture the current economic environment. The maximum recommended use of the short-term rate is three years with the model updated annually. Applying the short-term rate beyond that is not supported by economic trends or the length of time it takes the economy to react and recover from national policy changes or international economic challenges. Figure 2 predicts that the market will correct and stabilize after 1-3 years. The volatility captured in the 2-year CAGR should not be used for analysis in the long term. DOE PM recommends using the short-term escalation rate for the next three years, FY 2023-2025 and then applying long-term rates in the outyears, FY 2026 and beyond, based on history. The short-term aligns with the execution and planning years in the Future-Years Energy Program (FYEP). The long-term aligns with programming and outyears.

Project Specific Escalation Tailoring

DOE PM recognizes the need for tailoring escalation rates based on the project and its location. The project and review teams should assess the default weights and tailor the weights consistent with the specifications of the project in order to develop a tailored escalation rate.

Conclusion

All general economic trends point to an upward movement of the price level. Based on history, the upward movement is temporary. As such, DOE recommends a prudent approach utilizing both short-term and long-term escalation rates. DOE PM does not recommend using OMB rates as they are well below today's inflation rates. With inflation being a part of escalation, OMB's rates are too low and will result in an inaccurate estimate.

The full report for FY 2022 is available on PM MAX under the 413 Resource Center – Project Management Library at https://community.max.gov/x/v4VUQw.
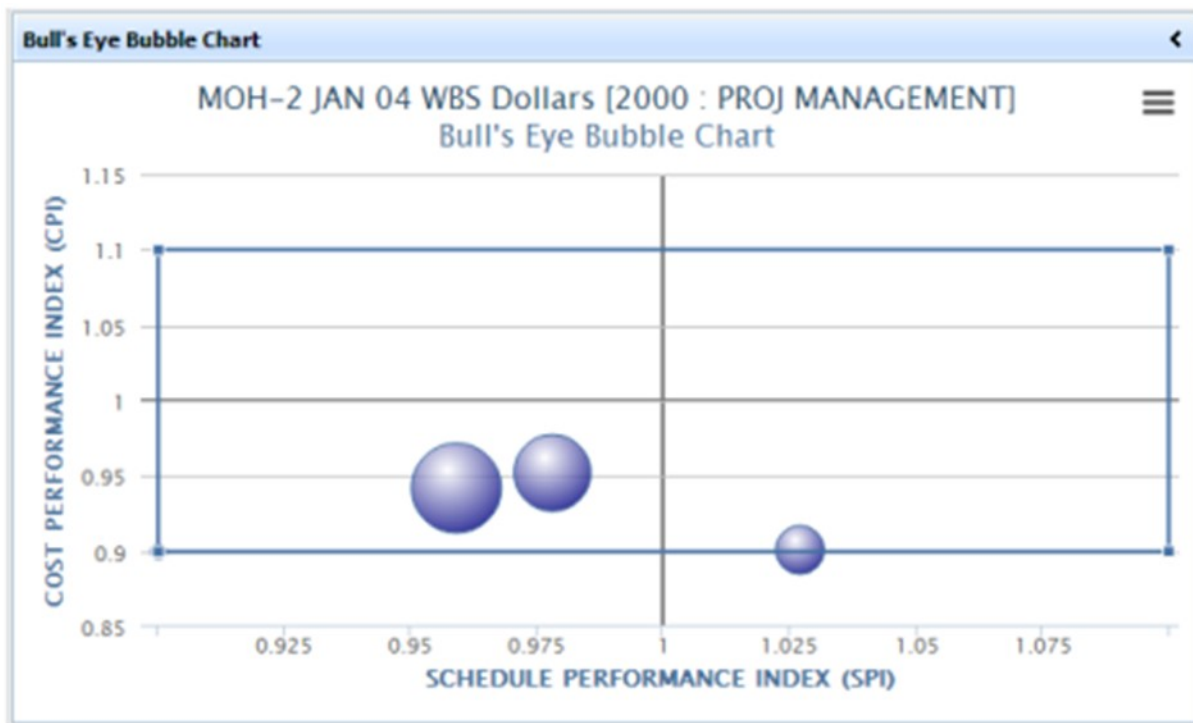
Table 1. FY 2022 DOE PM Recommended Escalation Rates
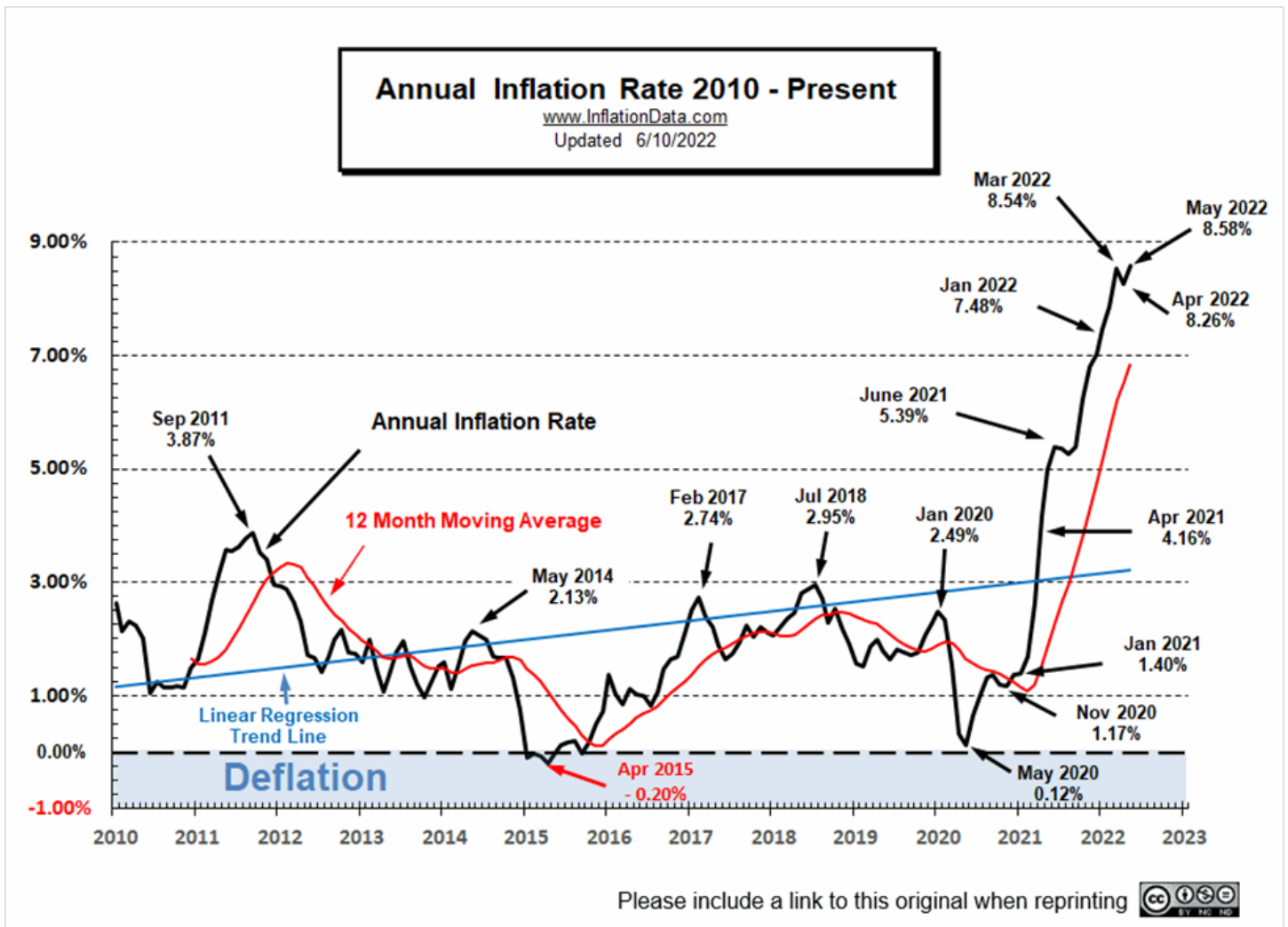
Analyzing Project Performance with the Bull's Eye Bubble Chart (An Empower Analytics Report)

Catherine Donohue, Office of Project Analysis (PM-20) and Matthew Taliaferro, Office of Project Controls (PM-30)

Department of Energy (DOE) Order (O) 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, requires the federal project director (FPD), project manager (PM), and integrated project team (IPT) to monitor and status project performance against established performance parameters, baselines, milestones, and deliverables. This article focuses on one of the tools available to analyze project performance, the Bull's Eye Bubble Chart.

The Bull's Eye Bubble Chart provides the practitioners (FPD, PM, IPT, etc.) with a visual tool to view trends, understand the project progress, and clarify priorities to inform project decisions. The Bull's Eye Bubble Chart combines the characteristics of a Bull's Eye Chart with a Bubble Chart. The Bull's Eye chart gives a view of the cost performance index (CPI) and schedule performance index (SPI) for a contract element in a graphical display vaguely reminiscent of a dartboard. The closer to the bull's eye (SPI = 1.0 and CPI = 1.0), the better the project is performing. The bubble chart is a variation of a scatter plot with the dots represented as a bubble. Combining the information provides a three-dimensional plot in two dimensions.

The three dimensions (variables) are displayed with the first two variables showing the horizontal and vertical axes of the chart (SPI vs. CPI), and the third dimension represented by the area of the bubble (% of contribution to the estimate at completion (EAC)). The earned value (EV) data used to create the Bull's Eye Bubble Chart is reported by the project team to the Project Assessment and Reporting System (PARS) post CD-2, *Approve Performance Baseline*. PARS is DOE's official system of record for capital asset project performance information. The project information and EV data in PARS must accurately reflect current project status and provide acceptable forecasts to facilitate project management and decision-making processes.

Prior to CD-2, and during the project planning phase, the project team is developing the product-oriented work breakdown structure (WBS) with sufficient detail to incorporate all aspects of work scope. The WBS is a key foundational element for every project and is used to develop a reasonable cost estimate (i.e., project budget) and an integrated master schedule (IMS), both in accord with the Government Accountability Office (GAO) best management practice guides *(GAO-20-195g Cost Estimating and Assessment Guide – Best Practices for Developing and Managing Program Costs and GAO-16-89G Schedule Assessment Guide – Best Practices for Project Schedules)*.

Figure 1. DOE Example Bull's Eye Bubble Chart

The IMS provides a window for monitoring and measuring the project's resources, progress, and accomplishment of milestones. When integrated together within the earned value management system (EVMS), the time-phased performance measurement baseline (PMB) is the result.

Empower is used by the practitioner to evaluate the project's EV data against the PMB. Empower charts are a valuable tool in a project team's toolbox that provide actionable insight into a project's trends, progress, and performance. Empower software seamlessly receives and integrates the EV data contained in the contractor's monthly contractor project performance (CPP) upload to PARS. Anyone with a PARS account that is associated with a project can access and use Empower. The PARS/Empower user can analyze the project's performance using standard dashboards, charts and reports or customize reports as desired. Customized dashboard configurations can be saved and routinely used (e.g., every month, etc.).

The user can choose a dashboard and filter to sort the various data fields (white boxes), and, using the drop-down menus, choose the report and chart to get the information needed. Figure 2 shows a display of the Empower tri-paned window, which represents a standard forecast dashboard with a six-period summary report (lower right window) and Bull's Eye Bubble Chart (lower left window).

The Empower dashboards store the formatted combination of charts, reports, and views. Filters narrow down the number of activities that are displayed that meet the threshold conditions entered by the user. Charts are a means to visualize the data analysis. Figure 3 highlights the Bull's Eye Bubble Chart seen in the dashboard in Figure 2.

The Bull's Eye Bubble Chart is one of several Indices and EAC charts in Empower that demonstrates forecasted contractor performance.

Figure 2. PARS Empower Dashboard
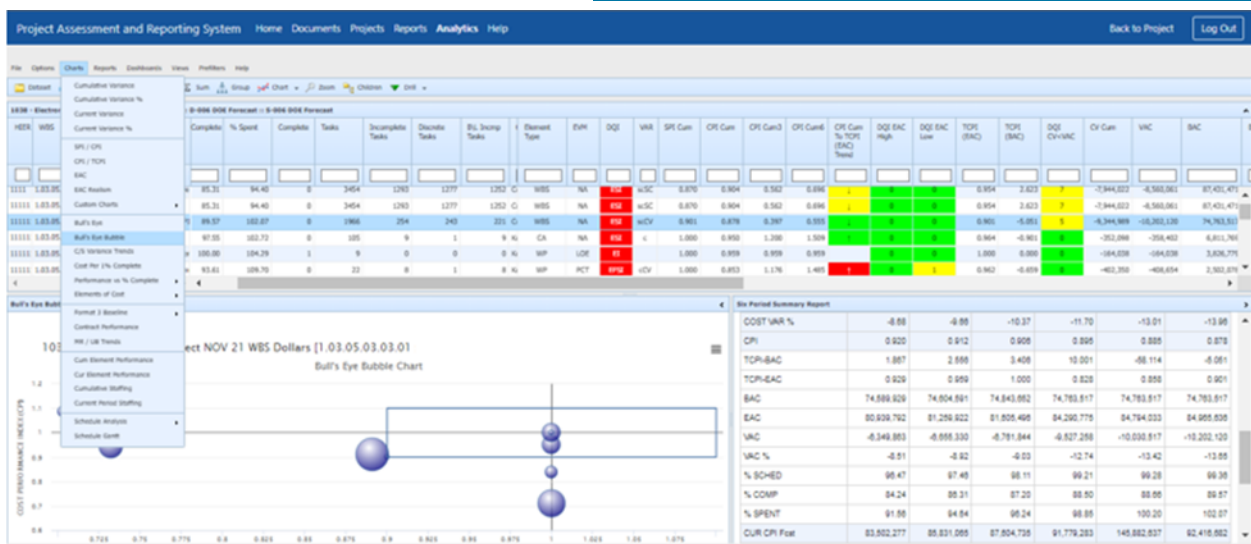
Figure 3. PARS Empower Bull's Eye Bubble Chart
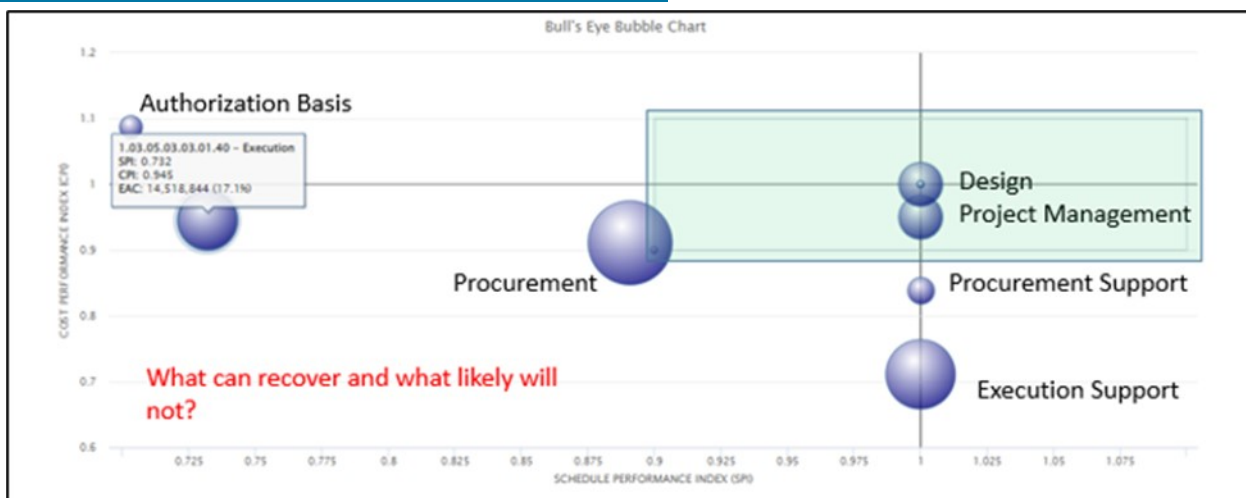
Visualizing current performance over time allows the analyst to forecast how the project will likely perform in the future. The results provide an early indication of where further analysis is warranted to understand the unfavorable performance indicators. The Bull's Eye Bubble Chart is a visual tool to aid in communication of potential project issues. Disciplined use of EV tools, techniques and practices will help the analyst determine whether the reported EAC is reasonable or should be analyzed further for realism and possible adjustment.

The target performance area is seen in the green shaded box of the Bull's Eye Bubble Chart (Figure 3), 0.9 < SPI < 1.1 and 0.9 < CPI < 1.1. This indicates the area where both SPI and CPI are within 10 percent of the nominal values SPI = 1.0 and CPI = 1.0, and gives a measure of whether key SPI and CPI metrics are within tolerance. The bubbles outside the target area (control thresholds) are elements that should be further analyzed first to understand the issues involved and their potential impact on the project. The level of effort (LOE) activities (execution support and procurement support) have an unfavorable cost variance, while authorization basis and execution have unfavorable schedule variances. Procurement is experiencing unfavorable schedule and cost variances. Why are the WBS elements costing more and taking longer than planned? Since this data point is from November 2021, it is probable that some of the cost and schedule impacts are COVID-19 related, but likely not the only cause of these variances. Identifying the root causes of these potential problem areas and execution concerns can be done by drilling down into the data using additional dashboards with the interactive filters and sort functions on the specific WBS element that are presenting as an issue on the Bull's Eye Bubble Chart.

Common findings identified during external independent reviews (EIRs) are overuse of LOE, long duration activities that create high float, and the lack of a product oriented WBS at the proper level of detail to allow for effective project management. These practices may appear to give the contractor more flexibility in managing the project, but they actually limit management's ability to take early project corrective action because early warning indications of looming issues that come from using project control tools such as Empower is severely limited. For example, establishing a product-oriented WBS at an appropriate level of detail ensures that all work scope is accounted for and allows a project to track cost and schedule by defined deliverables.

Use of non-product oriented WBSs (i.e., organizational or funds based) or one without the proper level of detail can lead to the omission of required work and/or performance of unauthorized work. Without the transparent visibility that tools such as Empower offers there is lost opportunity to mitigate risk early on when it has the largest positive impact. As with any tool a practitioner uses, the best outputs come from quality inputs.

The Bull's Eye Bubble Chart is an example of the quality outputs that can be generated from the contractor's monthly CPP upload to PARS. Routinely reviewing the Bull's Eye Bubble Chart along with other Empower reports enables timely project performance analysis and assessment of how the project is performing relative to the PMB. Empower provides a platform to successfully manage a project. The practitioner can analyze data, identify areas of concern, monitor emerging issues, and prepare reports and charts for stakeholder communication. The Bull's Eye Bubble Chart is an excellent tool to help the practitioner present easily understood dashboards and reports.

Want to learn more about Bull's Eye Bubble Charts? Empower on demand e-learning opportunities can be found in the Learning Nucleus by searching for:
- **The PARS User Training - Basic Course** (Learning Nucleus ID: 83618) - 6 hours in one-hour sessions
- **The PARS User Training - Advanced Course** (Learning Nucleus ID: 83619) - 12 hours in eight one-hour sessions
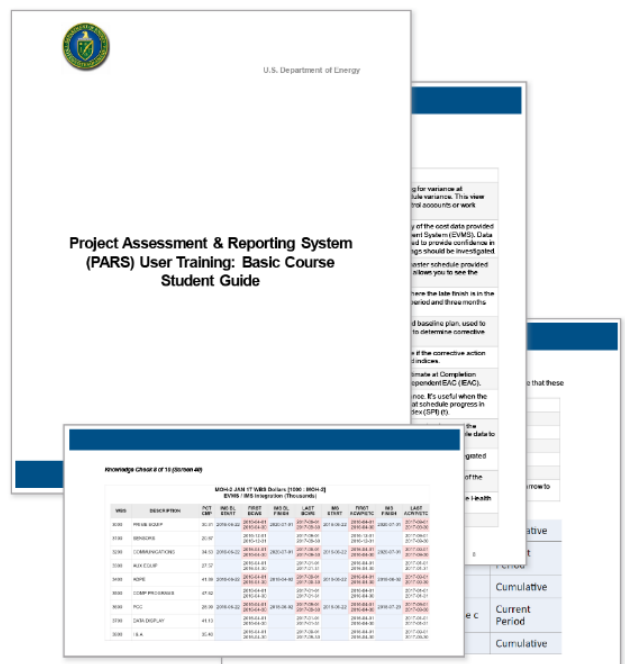
IP2M METRR—Risk Management
*Matthew Taliaferro, Office of Project Controls (PM-30)*

The August 2022 DOE Project Management newsletter included the first in a series of articles focused on the ten management subprocess areas identified in the *Integrated Project/Program Management (IP2M) Maturity and Environment Total Risk Rating (METRR) using EVMS*. The purpose of these articles is to introduce and explore each of the subprocess areas and their respective attributes. This month's article will focus on the Risk Management subprocess area.

The IP2M METRR is an assessment mechanism developed as part of a DOE-sponsored joint research study led by Arizona State University (ASU) and representing 15+ government and industry organizations (https://ip2m.engineering.asu.edu/).

The IP2M METRR defines maturity levels for each of the 56 attributes across the ten management sup-processes to facilitate a consistent method for not only assessing the compliance of an earned value management system (EVMS) with industry standard EIA-748, but also to ensure that project/program participants are working with accurate, timely, and reliable information to manage their work, leading to successful project/program performance.

The risk management subprocess focuses on the identification of risks and opportunities, analysis, and integration of risks into the EVMS. Risk management is among the most important aspects of an integrated project management strategy. The goal of this subprocess is the effective identification of risks and opportunities and active management of each in order to minimize the negative impact risks have on the performance measurement baseline (PMB). The uniqueness of this subprocess is that it permeates the EVMS and informs other key subprocesses and attributes to provide for sound managerial decision-making. As shown in Figure 1, eleven attributes, spanning five subprocesses, integrate with the risk management subprocess for successful risk management. Understanding the types of risks projects are facing enables an effective risk management framework. This allows for the integration of the Risk Management subprocess with managerial decision-making to influence risk in a predicted and controlled way.

Figure 1. Subprocesses Integrating with Risk Management

11 Attributes Coordinated (Maturity Level 3)
and Integrated (Maturity Level 4) with
the Risk Management Process
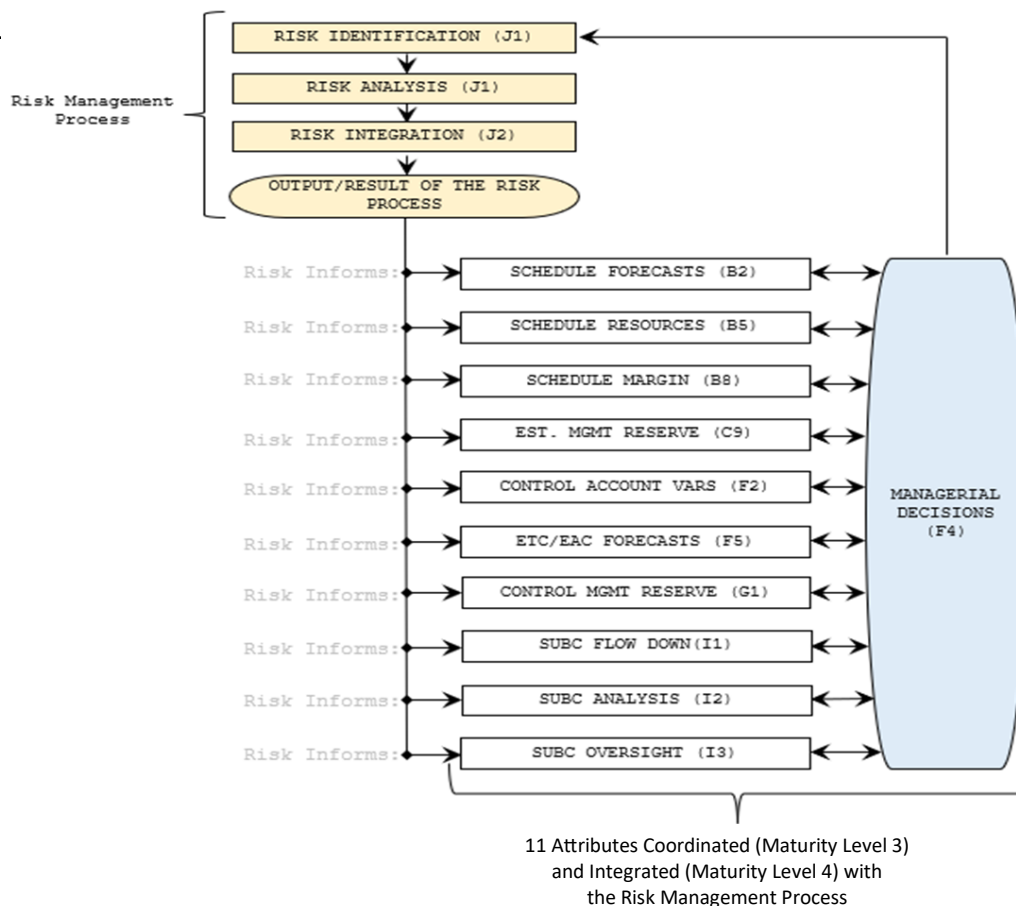
The risk management subprocess is comprised of two attributes: J.1, *Identify and Analyze Risk*, and J.2, *Risk Integration*. Figure 2 below, which shows Attribute J.1, *Identify and Analyze Risk*, highlights six sections containing descriptive information for assessing the maturity of each individual attribute:

1. Identifies the EVMS subprocess.
2. Identifies the attribute that is part of a larger subprocess.
3. Describes the attribute's essential characteristics.
4. Identifies the attribute's maturity ranges from low, (1) not yet started, to high (5) optimized use.
5. Summarizes the maturity at each level to allow for a quick bracketing of the attribute's maturity during an assessment.
6. Explains each maturity level in greater detail to allow for a more fully informed assessment of maturity.

Figure 2. Attribute J.1, Identify and Analyze Risk

The two management attributes in the risk management subprocess collectively account for 60 (or 6%) of the 1,000 possible points of the maturity model at Level 5. Individually, J.1 is weighted at 32 points and J.2 is weighted at 28 points at Level 5. Overall, the two risk management subprocess attributes have the highest weights of all 56 attributes across the ten subprocess, indicating the overall importance of risk within integrated project management. More detailed descriptions are contained in DOE PM's Compliance Assessment Governance (CAG).

The IP2M METRR Risk Management subprocess is complementary to both the *GAO Schedule Assessment Guide: Best Practices for Project Schedules* and the *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Costs* as each embraces the same foundational best practices necessary for successful integrated project management. Risk management can be further explored in detail in DOE G 413.3-7A Chg 2, *Risk Management Guide*.

EVMS Training Snippet of the Month: EVMS Training Snippet 6-3A: Concepts of Management Reserve (MR) vs Contingency and EVMS Training Snippet 6-3B: Management Reserve vs Contingency Scenarios

Click here to view EVMS Training Snippet 6-3A: Concepts of Management Reserve (MR) vs Contingency video.
Click here to view EVMS Training Snippet 6-3A: Concepts of Management Reserve (MR) vs Contingency PowerPoint Slide.

Click here to view EVMS Training Snippet 6-3B: Management Reserve vs Contingency Scenarios video.
Click here to view EVMS Training Snippet 6-3B: Management Reserve vs Contingency Scenarios PowerPoint Slide.

Summary: Snippet 6-3A is a discussion of Management Reserve and Contingency concepts, purposes, and uses. Snippet 6-3B provides detailed scenarios of how normal project changes impact the performance measurement baseline management reserve, projected variances at completion, and DOE contingency. The purpose is to provide a common understanding within DOE and among DOE contractors, and to provide consistency.

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 EVMS Training Snippets and PowerPoint slide downloads at the following links:

https://go.usa.gov/xubjT OR https://go.usa.gov/xubjm

FPDs, Help Us Plan the FY 2023 Training Schedule

Please take a few minutes before the long holiday weekend to complete the PMCDP Training Needs Analysis (TNA) survey to help PMCDP build the FY 2023 Training Schedule. The direct link to the TNA in the Learning Nucleus is FY 2023 Training Needs Analysis (TNA). The survey will remain open through the end of FY 2022.

Click here to take the survey now.

For those of you who already completed the survey, thank you!

SAVE THE DATE

2023 PM Workshop

When: April 11-12, 2023
(with Optional Project Controls Session on April 13, 2023)

Where: Hilton Washington DC National Mall

PMCDP FY 2022 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	LN Code	Dates	CLPs	Details
Advanced Earned Value Management Systems	002689	September 12-15, 2022	24	10:30am-4:30pm EST Webinar Daily
Project Management Simulation	001029	September 19-23, 2022	40	10:30am-4:30pm EST Webinar Daily
Advanced Risk Management	001042	September 26-30, 2022	32	10:30am-4:30pm EST Webinar Daily

Looking Ahead: PMCDP FY 2023 Q1 Training Schedule

Course Title	LN Code	Dates	CLPs	Details
Leadership Through Effective Communication	002366	October 4-6, 2022	24	10:30am-4:30pm EST Webinar Daily
LEED for New Construction and Existing Buildings	001951	October 11-13, 2022	20	10:30am-4:30pm EST Webinar Daily
Cost and Schedule Estimation	001044	October 17-21, 2022	40	10:30am-4:30pm EST Webinar Daily
Negotiation Strategies and Techniques	001047	October 24-November 2, 2022	24	10:30am– 4:30pm EST Mon/Wed, 4 sessions
Capital Planning for DOE O 413.3B	002152	November 7-21, 2022	16	12:00-3:00pm EST Mon/Wed, 5 sessions
Systems Engineering	001049	November 14-17, 2022	24	10:30am-4:30pm EST Webinar Daily

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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://support.pars.doe.gov.

The current PARS reporting schedule is located on 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.