



EFCOG PCWG
April 10, 2023 Meeting
Washington, D.C.

Project Assessment and Reporting System “What’s New”

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Department of Energy / PM-30



PARS September 2020 to Today

- Online Training
- Add Quality checks for OA data
- Add CD-1R, CD-3X, CD-4X capability
- Add additional FPD Tools, support better analysis, & align with CPP
- Provide DIQ reports
- Provide Performance Baseline Contractor tables and graphics
- Provide IP2M METRR
- Provide new reports for programs, ie Base Work Concept
- Incorporate Empower Enhancements



On-Line Training Launched March 2021

- On Learning Nucleus (LN) for federal and contractor employees
- PARS Basic – 6 sessions ~ 6 hours (LN ID: 83618)
- PARS Advanced – 8 sessions ~ 12 hours (LN ID: 83619)*
- Will update in 2024 with newer capabilities, but current lessons remain relevant
- There are checks on learning in the lessons



* The user should take the EVMS 24/7 course in addition to the PARS basic training course or have equivalent training before taking.

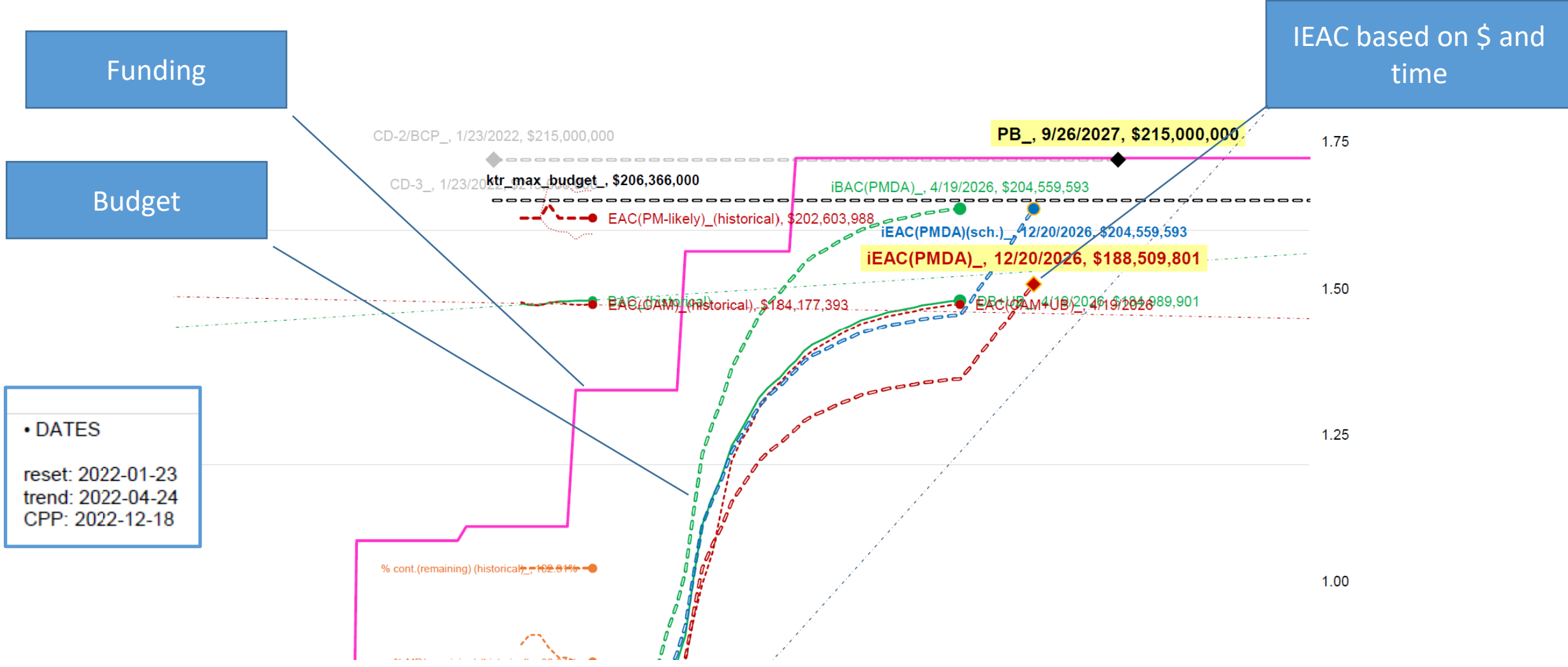


Performance Baseline – Contract (PB-K) Graph / Tables

- Benefit from Overview and Assessment Data and CPP Uploads
- Highlights areas to review
- Provides detailed top-level analysis
- Sets up areas to dig into using Empower
- Combines PMB + MR + Federal to get to TPC/CD-4 and TBN
- Examples follow



PB-K Chart – Provided to Program and on request





PB-K Table – Sent to Program and on request

| MILESTONES | | | | | | | | | | | | | | | | | MILESTONES | | | | | | |
|------------|------------|--------------|---------------|------------|------------|------------|----------------|-------------------|------|-------|-------|------|------|------------|------------|----------|------------|------------|-----|-----|--|--|--|
| forecast | date | approved | | | | | by | forecast, planned | | | | | | | | | | | | | | | |
| | | TPC, low | TPC, high | CD-4, low | CD-4, high | CD-3A cost | | CD-0 | CD-1 | CD-1R | CD-3A | CD-2 | CD-3 | BCP | CD-4 | closeout | ICR | ICE | EIR | PPR | | | |
| CD-0 | 2004-10-04 | | | | | | | | | | | | | 2022-01-06 | 2021-12-31 | | 2027-08-31 | 2028-08-31 | | | | | |
| CD-1 | 2006-06-05 | \$82,000,000 | \$104,000,000 | 2020-12-31 | 2020-12-31 | | Raines, Robert | | | | | | | 2015-02-28 | 2015-02-28 | | | | | | | | |
| CD-1R | | | | | | | | | | | | | | | | | | | | | | | |
| CD-3A | | | | | | | | | | | | | | | | | | | | | | | |
| CD-2 | 2022-01-06 | | \$215,000,000 | | 2027-08-31 | | Jones, Summer | | | | | | | 2022-01-06 | | | | | | | | | |
| CD-3 | 2022-01-06 | | \$215,000,000 | | 2027-08-31 | | Jones, Summer | | | | | | | | | | | | | | | | |
| BCP | | | | | | | | | | | | | | | | | | | | | | | |
| CD-4 | | | | | | | | | | | | | | | | | | | | | | | |
| closeout | | | | | | | | | | | | | | | | | | | | | | | |
| PPR | 2021-05-13 | | | | | | | | | | | | | | | | | | | | | | |

| PERFORMANCE | | | | | | | | | | | | | | | | | PERFORMANCE | | | |
|-------------------|---------------|-----|---------------|---------------|-------|------------|----------|--|-------------|---------------|------------|-------|----------------|--|--|--|-------------|--|--|--|
| 1027 | CD-2 | BCP | prior | current | delta | updated | activity | | inc. | cum. | | calc. | PM-20 override | | | | | | | |
| TPC, app. - calc. | | | (\$9,537,988) | (\$9,537,988) | \$0 | | | | \$2,585,755 | \$67,624,955 | % planned | 36.6% | | | | | | | | |
| TPC, approved | \$215,000,000 | | \$215,000,000 | \$215,000,000 | \$0 | | | | \$2,187,785 | \$63,402,096 | % complete | 34.3% | | | | | | | | |
| TPC, calc. | \$215,000,000 | | \$224,537,988 | \$224,537,988 | \$0 | | | | \$2,162,126 | \$61,949,804 | % spent | 33.5% | | | | | | | | |
|contingency | \$13,000,000 | | \$13,300,000 | \$13,300,000 | \$0 | 2022-01-13 | | | (\$397,970) | (\$4,222,859) | | | | | | | | | | |
|ODC | \$6,000,000 | | \$6,000,000 | \$6,000,000 | \$0 | 2022-01-13 | | | \$25,659 | \$1,452,292 | | | | | | | | | | |
|profit-fee | \$2,634,000 | | \$2,634,000 | \$2,634,000 | \$0 | 2022-01-13 | | | 0.85 | 0.94 | | | | | | | | | | |
|TAB | \$193,366,000 | | \$202,603,988 | \$202,603,988 | \$0 | | | | 1.01 | 1.02 | | | | | | | | | | |
|MR | \$20,400,000 | | \$17,614,087 | \$17,614,087 | \$0 | | | | | | | | | | | | | | | |
|BAC | \$172,966,000 | | \$184,989,901 | \$184,989,901 | \$0 | | | | | | | | | | | | | | | |
|UB | | | | | \$0 | | | | | | | | | | | | | | | |
|DB | | | \$184,989,901 | \$184,989,901 | \$0 | | | | | | | | | | | | | | | |
| ktr max. budget | | | \$206,366,000 | \$206,366,000 | \$0 | | | | | | | | | | | | | | | |

| | EAC(PMB) | | | | % EAC/max. bud. | |
|--------------|---------------|----------------|----|---------------|-----------------|--------|
| | CAM | PM | UB | iEAC(CPI) | CAM | PM |
| worst | | \$208,402,000 | | | | 101.0% |
| likely, base | \$184,112,367 | \$202,603,988 | | \$180,502,320 | 89.2% | 98.2% |
| best | | \$199,186,000 | | | | 96.5% |
| BAC | \$184,989,901 | \$184,989,901 | | | | |
| VAC | \$877,535 | (\$17,614,087) | | | | |

| SUBMITS | | | | | | | | | | | | | | | | | SUBMITS | | | |
|--------------|------------|-----|-----------|---------------|------------|------------|------------|-------|--|--|--|--|--|--|--|--|---------|--|--|--|
| status, type | CPP | csv | RYG | OA | | | | PM-20 | | | | | | | | | | | | |
| | ktr | | | PM, prior | FPD | FPM | PM-20 | | | | | | | | | | | | | |
| required | yes | yes | completed | Green | | | | | | | | | | | | | | | | |
| published | 2022-12-20 | | submitted | | | | | | | | | | | | | | | | | |
| due | 2022-12-31 | | due | | 2023-01-05 | 2023-01-10 | 2023-01-13 | | | | | | | | | | | | | |
| date | 2022-11-20 | | EAC(TPC) | \$215,300,000 | | | | | | | | | | | | | | | | |
| note | | | EAC(CD-4) | 2027-08-31 | | | | | | | | | | | | | | | | |

- 3 pages
- Highlight areas to review



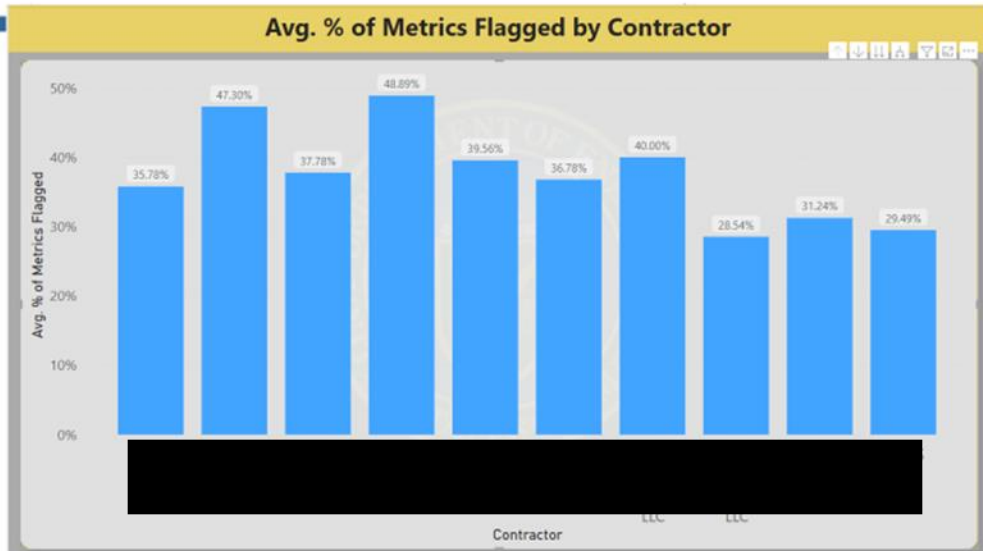
Data Integrity and Quality

- Supports EFCOG goals of Current, Accurate, Complete, Repeatable, Auditable, Compliant Data



Office of Project Management

DIQ Flags – Average % Flags by Contractor



12

- 30% to 50% data issues in 2021 for most contractors
- Stops Upload, Major, Minor
- JSON + DIQ in PARS to help clean up
- Expands on current validation monthly



Data Quality Indicators and Metrics

- DQI / EVMS Compliance Metrics
- Reduced by removing mechanical errors to focus on true compliance issues
- Aligned to IP2M METRR

| DESCRIPTION | U | LVL | % Complete | % Spent | Complete | Tasks | Incomplete Tasks | Concrete Tasks | BI, Incomp Tasks | CAH | Element Type | EVH | DQI | Last | Negative BCWS Cur | Negative BCWP Cur | Negative ACWP Cur | BCWS Cum > BAC | BCWP Cum > BAC | ACWP Cum > EAC | ACWP Cum with no BAC | ACWP Cur with no BAC | BCWP Cum with no ACWP | Completed Work with ETC | Incomplete Work without ETC |
|---------------------------|---|-----|------------|---------|----------|-------|------------------|----------------|------------------|----------------|--------------|-----|------|------|-------------------|-------------------|-------------------|----------------|----------------|----------------|----------------------|----------------------|-----------------------|-------------------------|-----------------------------|
| Y-12 NATIONAL SECUR | 1 | | 98.11 | 127.27 | 0 | 4094 | 266 | 266 | 114 | Robinson, Phil | WBS | NA | EPSE | LCV | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 4 | 9 | 0 |
| Capital Program | 2 | | 98.82 | 128.23 | 0 | 4038 | 257 | 257 | 335 | Robinson, Phil | WBS | NA | EPSE | LCV | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 4 | 9 | 0 |
| Line Item Projects | 3 | | 98.82 | 128.23 | 0 | 4038 | 257 | 257 | 335 | Robinson, Phil | WBS | NA | EPSE | LCV | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 4 | 9 | 0 |
| URANIUM PROCESSING F | 4 | | 98.82 | 128.23 | 0 | 4038 | 257 | 257 | 335 | Robinson, Phil | WBS | NA | EPSE | LCV | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 4 | 9 | 0 |
| URANIUM PROCESSING F | 5 | | 98.82 | 128.23 | 0 | 4038 | 257 | 257 | 335 | Robinson, Phil | WBS | NA | EPSE | LCV | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 4 | 9 | 0 |
| Mechanical/Electrical Sub | 6 | | 98.82 | 128.23 | 0 | 4038 | 257 | 257 | 335 | Robinson, Phil | WBS | NA | EPSE | LCV | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 4 | 9 | 0 |

| Negative BCWS Cur | Negative BCWP Cur | Negative ACWP Cur | BCWS Cum > BAC | BCWP Cum > BAC | ACWP Cum > EAC | ACWP Cum with no BAC | ACWP Cur with no BAC | BCWP Cum with no ACWP | Completed Work with ETC | Incomplete Work without ETC |
|-------------------|-------------------|-------------------|----------------|----------------|----------------|----------------------|----------------------|-----------------------|-------------------------|-----------------------------|
| 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 4 | 9 | 0 |
| 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 4 | 9 | 0 |
| 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 4 | 9 | 0 |
| 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 4 | 9 | 0 |
| 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 4 | 9 | 0 |
| 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 4 | 9 | 0 |



PARS DIQ – Ongoing

Submit request to PM-30 (Zac)
For project specific reports

| | B DS ID | K Conditions | N Integration Check (DIQ) |
|----|-------------|--|---|
| 1 | | <ol style="list-style-type: none"> 1. Null or blank - major warning 2. Single OBS used on all WBS elements - major warning | warning |
| 11 | DS01.OBS_ID | | |
| 12 | DS01.CAM | Schema criteria: CAM must exist or reject. Then DIQ checks that WP CAM is CA CAM. DIQ: <ol style="list-style-type: none"> 1. CA CAM and all descendants CAM are not the same - major warning 2. All WBS above CA and any SLPP should have the PM (same name check for internal DS01 check. DIQ integration check to verify PM name against OA). If not, flag - major warning 3. If DS01.type WP, PP, CA; then must be entry in DS01.CAM | <ol style="list-style-type: none"> 1. If exists, then must match CAM in DS04. (this flag |
| 13 | DS01.WPM | DIQ: <ol style="list-style-type: none"> 1. Flag when WPM=CAM - minor warning 2. If exists, WBS_type is WP/PP - major warning | |

| Test | Seve | SP Name | DIQ UID |
|--|------|---|---------|
| Narrative should not be blank on WP/PP/CA | 2 | DS01_WBS_IsNarrativeMissing | 1010021 |
| BWC should not exist for type CA or WBS | 1 | DS01_WBS_IsBWCOnCAorWBS | 1010013 |
| Single CAM used across all WBS elements | 2 | DS01_WBS_DoesOnlyOneCAMExistAcrossWBS | 1010005 |
| type in (CA,WP,PP) & CAM = null/blank | 2 | DS01_WBS_IsCAMMissing | 1010015 |
| Any type = WBS above CAs and any SLPP should all have the same name in CAM | 2 | DS01_WBS_IsPMNameInconsistent | 1010028 |
| CA and its descendents should not have different CAMs | 2 | DS01_WBS_IsCAMInconsistentInCABranch | 1010014 |
| CAM != DS04.CAM | 2 | DS01_WBS_DoesCAMDifferFromDS04CAM | 9010004 |
| Exit Criteria is null or blank | 2 | DS01_WBS_IsExitCriteriaMissing | 1010018 |
| Count(Level 1) > 1 | 3 | DS01_WBS_IsWBSRootRepeated | 1010034 |
| WPs or PPs cannot be at Level 1 or 2 | 3 | DS01_WBS_IsWPorPPATLevelOneOrTwo | 1010036 |
| Level 1 is not Type = 'WBS' | 3 | DS01_WBS_IsWBSRootNotTypeWBS | 1010033 |
| Parent Level >= Child Level | 3 | DS01_WBS_IsParentLowerInWBSHierarchyThanChild | 1010025 |
| Levels must be contiguous, e.g. if there is no Level 3, there can be no Level 4) | 3 | DS01_WBS_AreWBSLevelsNonContiguous | 1010002 |
| CA or SLPP should not be at a Lower level than a WP (within the same branch) | 3 | DS01_WBS_IsCAorSLPPATLowerLevelThanWP | 1010016 |
| No rows where EOC = Overhead and BCWSi_dollars/ftes/hours > 0 | 2 | DS01_WBS_IsOverheadBCWSMissingFromProject | 9010024 |
| Narrative should not equal the Title (Error Msg: This should be your scope paragraph from your WBS Dictionary) | 2 | DS01_WBS_IsNarrativeEqualToTitle | 1010020 |
| OBS ID should not missing | 2 | DS01_WBS_IsOBSIDMissing | 1010022 |
| Single OBS ID used across all WBS Elements | 2 | DS01_WBS_DoesOnlyOneOBSExistAcrossWBS | 1010006 |
| OBS_ID not in DS02.OBS_ID | 2 | DS01_WBS_IsOBSIDMissingInDS02OBSIDList | 9010023 |
| Parent_WBS_ID cannot be null or blank (Excludes WBS at Level 1) | 3 | DS01_WBS_IsParentMissing | 1010026 |
| Parent WBS ID not found in the WBS field | 3 | DS01_WBS_IsParentWBSIDMissingFromChildWBSID | 1010027 |
| subproject_ID required if external=Y | 2 | DS01_WBS_IsExternalMissingSubprojectID | 1010015 |
| subproject_ID not in DS04.subproject_ID where type in (WP,PP,SLPP) | 1 | DS01_WBS_IsSubprojectIDMissingInDS04 | 9010025 |
| Title not unique | 2 | DS01_WBS_IsTitleRepeated | 1010030 |
| Title should not contain the WBS ID | 1 | DS01_WBS_DoesTitleContainWBSID | 1010008 |
| Type = CA or WBS without child | 2 | DS01_WBS_IsCAorWBSElementMissingChild | 1010017 |

- Used by contactors as provided by PMDA now.
- Available to PM monthly with concerns pointed out when identified at monthly PM-20/30 tag ups
- Moving to automated reports in PARS along with JSON Uploads.



DIQ Cross-walked to Metrics

| A | E | G | AU |
|-----------|---------------|---|---|
| metric_ID | metric_method | metric_description_short | DIQ ID |
| A.04.03 | automated | start or finish dates by EOC, FC IMS <=> EVMS cost tool | NL_DS04.AS_date_INT_01; NL_DS04.AF_date_INT_01; NL_DS04.AS_date_DIQ_02; NL_DS04.AF_date_DIQ_03 |
| A.04.04 | automated | start or finish dates, EVMS cost tool <=> WAD | NL_DS08.POP_start_date_INT_03; NL_DS08.POP_start_date_INT_04; NL_DS08.POP_finish_date_INT_03; NL_DS08.POP_finish_date_INT_04 |
| A.04.05 | automated | DB, EVMS cost tool <=> WAD | NL_DS08.budget_labor_dollars_INT_02 |
| A.04.08 | automated | DB, cost tool <=> IPMR F1 | automated/manual check against IPMR PDF at the CA level |
| A.04.09 | automated | WBS identifier in BL IMS not in EVMS cost tool | NL_DS04.WBS_ID_INT_04 - BL & FC |
| A.05.02 | automated | CA does not have just 1 responsible organization | NL_DS01.OBS_ID_DIQ_02 - DIQ is at all WBS levels while metric is CA level only, to confirm DS01._WBS&OBS = unique |
| A.05.03 | automated | CA is not assigned just 1 WBS in EVMS cost tool | None - recommend uniqueness check on all I |
| A.05.05 | automated | CA does not have just 1 CAM assigned | NL_DS01.CAM_DIQ_01 |
| A.05.06 | automated | CAM or DB, WAD <=> dollarized RAM | NL_DS08.CAM_INT_01 - CAM NL_DS08.budget<5 EOC>_dollars_INT_01 - DB by EOC |
| A.05.07 | automated | CA with 3 consecutive SV or CV threshold trips | None |

EVMS compliance to a contractors system description is analyzed periodically and monthly when data is loaded to PARS

1. Used for all EVMS Reviews and EIRS
2. Monthly Report by Contractor with their notes (starting – highlight Portsmouth)
3. Available to PM-30 and 20 analysts monthly
4. All JSON datasets are aligned to support this analysis
5. DIQ is being set up to allow for less compliance metrics. Taking out mechanical/automatable issues to focus on the impactful compliance metrics



Metrics Aligned to IP2M METRR

A. ORGANIZING

- A.1. Product-Oriented Work Breakdown Structure (WBS)
- A.2. Work Breakdown Structure (WBS) Hierarchy
- A.3. Organizational Breakdown Structure (OBS)
- A.4. Integrated System with Common Structures
- A.5. Control Account (CA) to Organizational Element

B. PLANNING AND SCHEDULING

- B.1. Authorized, Time-Phased Work Scope
- B.2. Schedule Provides Current Status
- B.3. Horizontal Integration
- B.4. Vertical Integration
- B.5. Integrated Master Schedule (IMS) Resources
- B.6. Schedule Detail
- B.7. Critical Path and Float
- B.8. Schedule Margin (SM)
- B.9. Progress Measures and Indicators
- B.10. Time-Phased Performance Measurement Baseline (PMB)

C. BUDGETING AND WORK AUTHORIZATION

- C.1. Scope, Schedule and Budget Alignment
- C.2. Summary Level Planning Packages (SLPPs)
- C.3. Work Authorization Documents (WADs)
- C.4. Work Authorization Prior to Performance
- C.5. Budgeting by Elements of Cost (EOC)
- C.6. Work Package Planning, Distinguishability, and Duration
- C.7. Measurable Units and Budget Substantiation
- C.8. Appropriate Assignment of Earned Value Techniques (EVTs)
- C.9. Identify and Control Level of Effort (LOE) Work Scope
- C.10. Identify Management Reserve (MR) Budget
- C.11. Undistributed Budget (UB)
- C.12. Reconcile to Target Cost Goal

D. ACCOUNTING CONSIDERATIONS

- D.1. Direct Costs
- D.2. Actual Cost Reconciliation
- D.3. Recording Direct Costs to Control Accounts (CAs) and/or Work Packages (WPs)
- D.4. Direct Cost Breakdown Summary

E. INDIRECT BUDGET AND COST MANAGEMENT

- E.1. Indirect Account Organization Structure
- E.2. Indirect Budget Management
- E.3. Record/Allocate Indirect Costs
- E.4. Indirect Variance Analysis

F. ANALYSIS AND MANAGEMENT REPORTING

- F.1. Calculating Variances
- F.2. Variances to Control Accounts (CAs)
- F.3. Performance Measurement Information
- F.4. Management Analysis and Corrective Actions
- F.5. Estimates at Completion (EAC)

G. CHANGE CONTROL

- G.1. Controlling Management Reserve (MR) and Undistributed Budget (UB)
- G.2. Incorporate Customer Directed Changes in a Timely Manner
- G.3. Baseline Changes Reconciliation
- G.4. Control of Retroactive Changes
- G.5. Preventing Unauthorized Revisions to the Contract Budget Base (CBB)/ Project Budget Base (PBB)
- G.6. Over Target Baseline (OTB) Authorization/ Over Target Schedule (OTS) Authorization

H. MATERIAL MANAGEMENT

- H.1. Recording Actual Material Costs
- H.2. Material Performance
- H.3. Residual Material
- H.4. Material Price/Usage Variance
- H.5. Identification of Unit Costs and Lot Costs

I. SUBCONTRACT MANAGEMENT

- I.1. Subcontract Identification and Requirements Flow Down
- I.2. Subcontractor Integration and Analysis
- I.3. Subcontract Oversight

J. RISK MANAGEMENT

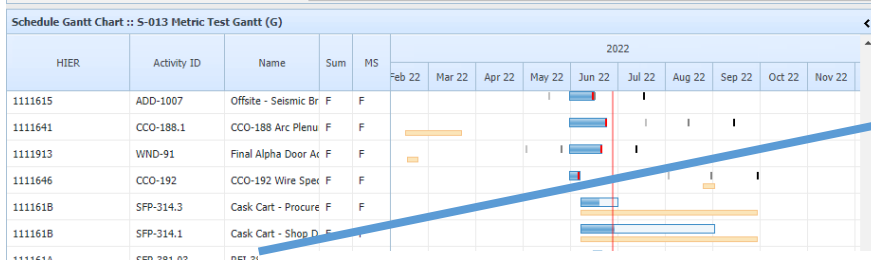
- J.1. Identify, Analyze and Manage Risk
- J.2. Risk Integration



DOE Metrics v 4 – Based on ASU Study

File Options Charts Reports Dashboards Views Prefilters Help
 Dataset Layout Clear Lowest Sum Group Chart Zoom Children Drill Filter Scale Links Critical Milestone Detail

| HIER | WBS | DESCRIPTION | LL | LVL | % Complete | % Spent | Complete | Tasks | Incomplete Tasks | Discrete Tasks | B/L Incmp Tasks | CAM | Element Type | EVM | DQI | VAR | No Logic | No Predecessor | No Successor | Out of Sequence Logic | Float<0 | High Float | High Duration | AF>Status | Hard Constraint | AS>Status | FForAF>BF | FF<Status | FS<Status | Lag | Lead | AF+Incmp | NoAF+Cmp | Finish-Finish Relationship | Start-Finish Relationship | |
|------|-----|----------------------------|----|-----|------------|---------|----------|-------|------------------|----------------|-----------------|---------------|--------------|-----|------|-----|----------|----------------|--------------|-----------------------|---------|------------|---------------|-----------|-----------------|-----------|-----------|-----------|-----------|-----|------|----------|----------|----------------------------|---------------------------|---|
| 1 | C | [REDACTED] | | 1 | 57.85 | 58.49 | 0 | 2257 | 777 | 564 | 777 | Orchard Brady | WBS | NA | EFSI | s | 1 | 0 | 1 | 2 | 286 | 380 | 74 | 0 | 3 | 0 | 416 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 143 | 0 |
| 11 | C.2 | Transition Testing Program | | 2 | 60.94 | 61.63 | 0 | 2255 | 775 | 562 | 775 | Orchard Brady | WBS | NA | ESI | s | 1 | 0 | 1 | 2 | 286 | 380 | 72 | 0 | 3 | 0 | 416 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 143 | 0 |



| Attribute | Metric | Test | M | Value | Total | Percent | Goal | Note |
|-----------|--------|---|---|-------|-------|---------|------|------|
| A.01. | 01 | WBS failed to be product-oriented and does not align with WBS narrative | * | * | * | * | = 0% | |
| | 02 | Number of CA/SLPP where WBS dictionary scope does not match WAD scope | * | * | * | * | = 0% | |
| | 04 | Number of CAs in the RAM where RAM CA DB <> IPMR F1 CA BAC DB | * | * | * | * | = 0% | |
| | 05 | Number of WP/PP/SLPP where WBS code in EVMS <> BL IMS | | 27 | 177 | 15.3% | = 0% | |
| | | | | | | | | |

| Attribute | Metric | Test | M | Value | Total | Percent | Goal | Note |
|-----------|--------|--|---|-------|-------|---------|-------|------------|
| A.01. | 01 | WBS failed to be product-oriented and does not align with WBS narrative | * | * | * | * | = 0% | |
| | 02 | Number of CA/SLPP where WBS dictionary scope does not match WAD scope | * | * | * | * | = 0% | 6.5% <= 5% |
| | 04 | Number of CAs in the RAM where RAM CA DB <> IPMR F1 CA BAC DB | * | * | * | * | = 0% | 6.5% <= 0% |
| | 05 | Number of WP/PP/SLPP where WBS code in EVMS <> BL IMS | | 27 | 177 | 15.3% | = 0% | 9.6% <= 5% |
| | | | | | | | | |
| A.02. | 01 | Number of prior month CA and SLPPs where CA and SLPP WBS or DB in prior month <> CA WBS or DB in current month | * | * | * | * | = 0% | |
| | 02 | Number of WBS identifiers where products/deliverables have not been decomposed into logical parent and child relationships | * | * | * | * | = 0% | |
| A.03. | 01 | Number of CA WBSs in the RAM where RAM CA CAM <> WBS index CAM or RAM CA DB <> IPMR F1 DB or RAM OBS DB <> IPMR F2 DB | * | * | * | * | = 0% | |
| | | | | | | | | |
| A.04. | 01 | Number of incomplete WPs in the FC IMS where Labor Hour IMS % complete <> Labor Hour EVMS % complete | | 18 | 68 | 26.5% | <= 5% | |
| | 02 | Number of incomplete WP/PP where BL IMS start or finish do not align with EVMS BCWS | | 35 | 96 | 36.5% | = 0% | |
| | 03 | Number of incomplete WP/PP where FC IMS start or finish do not align with ACWPCum/ETC (3) | | 38 | 96 | 39.6% | = 0% | |
| | 04 | Number of incomplete CAs where EVMS BL start/finish does not align to WAD start/finish | * | * | * | * | <= 5% | |
| | 05 | Number of incomplete CAs in EVMS where BL BAC in WAD does not align to CA BAC | * | * | * | * | <= 5% | |

Feedback

Audit Val



MDB to CSV to JSON – Definitions

Data Structure Definitions

- MDB – Microsoft Access Database of which our format is based on Access 2003 which Microsoft obsoleted in 2007. We have kept it alive too long. It is also limited in our design to CA level of reporting on the cost side. This format is limited in size and the tool we built to build it does not work on 64-bit computers. Your laptop from DOE is a 64-bit computer. There are security risks in forcing old computers
- CSV – Comma Separate Values is our current format. This format is hard for tool vendors to use to write to as it has a lot of quirks. One being that a stray comma in a narrative can damage the data set. Igor took us that way as UNCEFAC, XML, and JSON were not good options at the time. Biggest issue with JSON was that you could not read the data table in a standard tool, like Excel until two years ago.
- JSON – Java Script Object Notation is a lightweight standard format to transmit data. We use it now between our servers and with Excel now reading it, it is a better way to move data.

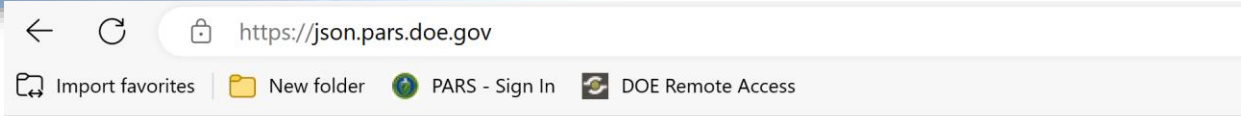


MDB to CSV to JSON Timeline

- MDB – PARS End of Life - **December 2022 data (working with select sites to move to CSV now (17 to go))**
- CSV – Comma Separate Values – Target PARS End of Life in – **January 2024**
- JSON – Java Script Object Notation – Initial in PARS – **July 2023**
 - **Deltek** – Testing now for Cobra – Target Release Date July 2023. Acumen looking to incorporate further.
 - **Oracle** – Testing now for P6 – Released with update April and October 2023
 - Released initial capability December 2022
 - Plan to release full capability version April 2023 for EPPM version of P6
 - Plan to release full capability version October 2023 for EPPM and PPM version of P6
 - **Decision Edge** – Develop and Test with CNS between March – August 2023
 - **Encore Analytics** – Develop ability to read DOE JSON format – Summer 2023
 - **PARS** – Testing Now to end of June 2023. Start moving contractors in July 2023 depending on software vendors.
- Meetings this week with Deltek (Tues), Oracle (Wed), and Empower (Wed /Thurs) at PM workshop for followup questions and comments



JSON Schema Site – json.pars.doe.gov



PARS CPP JSON Schema v4-0-0

Type: object

Key Links:

- Official pdf specification: [DOE CPP Upload Requirements including DID](#)
- JSON Schema file for technical implementation: [DOE CPP Upload Requirements including DID](#)
- JSON Schema Validator to test files: [JSON Validator](#)
- [How to view a PARS JSON File in Excel](#)

Purpose

This schema provides a practical framework to facilitate creating a data file that meets the PARS CPP upload requirements per DOE O 413.3B and the CRD. This JSON Schema provides a machine-readable implementation of the PARS CPP Upload DID suitable for software development, a human readable DID that data quality checks take place within the PARS application.

Summary

A JSON Schema is a document that describes the layout, shape, and data contents of a JSON data file. This JSON Schema describes how to format cost, schedule, and other data. This schema is managed by the PARS Support Team who are responsible for the technical ingestion of PARS uploads. Please contact the PARS Support Team if you have any questions.

How to use this document

- The webpage you are currently reading is automatically generated from the JSON schema file and serves as an easy-to-read reference to the data structure.

Update Notes

- ADDITIONS denote that the new schema will accept all previously valid data.
- REVISIONS denote that the new schema will accept some previously accepted data but may introduce incompatibilities in some cases.
- MODELS are fully backwards-incompatible changes and previously valid data will not be accepted. Please see [SchemaVer](#) for more details and examples. Release notes can be found [here](#).

No Additional Properties

Human readable specification for Data Sets

JSON specification for Data Sets – Technical Specification – not easy to read

JSON Validator



Human Readable vs JSON

DOE CPP Upload Requirements including DID



| field name | req'd | description | JSON data type |
|------------------------|-------|--|---|
| | | unique field identifier (primary & calculated) | example |
| DS00 header | | | |
| description | | <p>This JSON data submission should be populated with the project (not contract) data. A valid JSON submission contains the header data documented on this page, and one or more data sets specified in the following pages.</p> <p>A complete monthly PARS submission may consist of several JSON files, and include DS00 to DS20.</p> <p>Summary of the 2022-09-22 memo "CPP data uploads to PARS" and meetings.</p> <ul style="list-style-type: none"> • CSV CPP format will be discontinued by 2023-03/04 and replaced by JSON format. • MDB CPP format will be discontinued by 2022-12 and replaced by JSON format. • Projects not scheduled to obtain CD-4 by 2023-01 should work to move to JSON format by 2023-03/04. • To support this effort, some schedule and cost tool vendors are working to provide some key data sets in JSON format. <p>Technical documentation of the PARS JSON Schema format can be found here. Valid data sets documented in this DID include:</p> <ul style="list-style-type: none"> • DS00 header • DS01 WBS • DS02 OBS • DS03 cost • DS04 schedule • DS05 schedule_logic • DS06 schedule_resources • DS07 IPMR_header • DS08 WAD • DS08 CC_log • DS10 CC_log_detail • DS11 variance • DS12 variance_CAL • DS13 subK • DS14 HDV_CI • DS15 risk_register • DS16 risk_register_tasks • DS17 WBS_EU • DS18 schedule_EU • DS19 schedule_calendar_std • DS20 schedule_calendar_exception • DS21 rates • DS22 forward_pricing | |
| PARS_ID | X | PARS identifier for the project for which data is submitted. | string, maxLength: 4, numerical |
| | | PARS_ID | 3021 |
| CPP_status_date | X | Contractor data-as-of-date. | string, must be date as YYYY-MM-DD |
| | | CPP_status_date | 2022-08-21 |
| | | CPP-1.CPP_status_date = prior CPP_status_date CPP-2.CPP_status_date = prior 2nd CPP_status_date CPP-5.CPP_status_date = prior 5th CPP_status_date CPP+1.CPP_status_date = next CPP_status_date CPP-12.CPP_status_date = prior 12th CPP_status_date | |
| \$schema | X | Specify the version of the JSON schema against which this data submission was prepared. | string, URL of PARS JSON Schema Version |
| | | \$schema | https://pars.doe.gov/schema/pars-cpp- |

```

https://json.pars.doe.gov/pars-cpp-json-schema-v4-0-0-0...
Import favorites | New folder | PARS - Sign In | DOE Remote Access

{
  "sid": "https://json.pars.doe.gov/pars-cpp-json-schema-v4-0-0.json",
  "$schema": "https://json-schema.org/draft/2020-12/schema",
  "title": "PARS CPP JSON Schema v4-0-0",
  "$comment": "Note to developers reading this file - strings in this file are often presented in Markdown so they render nicely on the html doc page. Consider using that page or the PDF DID as your primary reference source.",
  "description": "##Key Links:##\n\n - Official pdf specification: [DOE CPP Upload Requirements including DID](https://json.pars.doe.gov/DID_V04_00_2023-03-09.pdf)\n\n - JSON Schema file for technical implementation: [DOE CPP Upload Requirements including DID](https://json.pars.doe.gov/pars-cpp-json-schema-v4-0-0.json)\n\n - JSON Schema Validator: to test files: [JSON Validator](https://json-tools.pars.doe.gov/)\n\n - [How to view a PARS JSON File in Excel] (https://json.pars.doe.gov/view_json_in_excel.html)\n\n\n##Purpose##\n\nThis schema provides a practical framework to facilitate creating a data file that meets the PARS CPP upload requirements per DOE O 413.3B and the CRD.\n\nThis JSON Schema provides a machine-readable implementation of the PARS CPP Upload DID suitable for software development, a human readable DID that is formally approved by PM is also available. This schema is the same one used to validate JSON files uploaded into PARS, but additional data quality checks take place within the PARS application.\n\n\n##Summary##\n\nA JSON Schema is a document that describes the layout, shape, and data contents of a JSON data file. This JSON Schema describes how to format cost, schedule, and other EVMS data for upload into PARS. JSON data uploaded into PARS is required to validate against this Schema.\n\nThis schema is managed by the PARS Support Team who are responsible for the technical ingestion of PARS uploads. Please contact the PARS Support Team at support@pars.doe.gov if you have any questions.\n\n\n##How to use this document##\n\n - The webpage you are currently reading is automatically generated from the JSON schema file and serves as an easy-to-read reference to the data structures and validation requirements.\n\n\n##Update Notes##\n\n - ADDITIONS denote that the new schema will accept all previously valid data.\n\n - REVISIONS denote that the new schema will accept some previously accepted data but may introduce incompatibilities in some cases.\n\n - MODELS are fully backwards-incompatible changes and previously valid data will not be accepted.\n\n Please see [SchemaVer] (https://snowplowanalytics.com/blog/2014/05/13/introducing-schemaver-for-semantic-versioning-of-schemas/) for more details and examples.\n\n Release notes can be found [here](https://pars-cpp-json.releasenotes.io/).",
  "type": "object",
  "properties": {
    "$schema": {
      "type": "string",
      "description": "The JSON schema for this object. This should always be set to the ID of this schema document.",
      "default": "https://json.pars.doe.gov/pars-cpp-json-schema-v4-0-0.json"
    },
    "PARSID": {
      "type": "string",
      "key": true,
      "description": "PARS identifier for the project for which data is submitted. Should look like a 1-4 digit integer, but is a string."
    },
    "CPP_status_date": {
      "type": "string",
      "key": true,
      "description": "Contractor data-as-of-date.",
      "format": "date",
      "examples": ["2020-01-01", "2019-02-026", "2020-10-14"],
      "notes": "CPP-1.CPP_status_date = prior CPP_status_date\nCPP-2.CPP_status_date = prior 2nd CPP_status_date\nCPP-5.CPP_status_date = prior 5th CPP_status_date\nCPP+1.CPP_status_date = next CPP_status_date"
    },
    "DS01": {
      "type": "array",
      "title": "WBS",
      "description": "This data set should be populated with the project's contractor WBS identifiers for the entire span of the project (not the contract).\n\n Provide the contractor WBS identifiers in a hierarchical structure from the project (not the contract) level to the CA WBS level and to the WP and PP WBS levels. The data set should include all WBS identifiers in all other DSs in the same format.",
      "minItems": 1,
      "items": {
        "type": "object",
        "description": "This object represents a single WBS record for a project",
        "properties": {
          "WBS_ID": {
            "type": "string",
            "key": true,
            "description": "Unique contractor WBS identifier.",
            "minLength": 1,
            "maxLength": 150,
            "examples": ["W001.42.27.02"],
            "$comment": "WBS ID is has a max length of 50 for all new projects. Max length of 150 is enforced here to support specific legacy projects only."
          }
        }
      }
    }
  }
}

```




JSON Data Sets vs CSV Flat Files

- Incorporate Lessons Learned from 2018 to now
 - Removed several Flat Files / Duplicate Data
 - Added data needed to improve quality and compliance checks
- In general, remove delimiter structure – error prone i.e. a stray comma

• The following is the list of FFs:

- FF01 WBS
- FF02 OBS
- FF03 cost
- FF04 schedule
- FF05 schedule_logic
- FF06 schedule_resource
- FF07 IPMR_header
- ~~• FF08 IPMR_F1~~
- ~~• FF09 IPMR_F2~~
- ~~• FF10 IPMR_F3~~
- FF11 CC_log
- FF12 CC_log_detail
- FF13 WAD
- FF14 CAM_VAR
- FF15 VAR_CA_log
- FF16 subKor_perf
- ~~• FF17 IPMR_F4~~
- ~~• FF18 IPMR_F5~~
- FF19 risk_log
- FF20 rates
- FF21 forward_pricing
- ~~• FF22 reserved for WBS_dictionary~~
- FF23 HDV-CI

Technical documentation of the PARS JSON Schema format [can be found here](#).

Valid data sets documented in this DID include:

- DS00 header
- DS01 WBS
- DS02 OBS
- DS03 cost
- DS04 schedule
- DS05 schedule_logic
- DS06 schedule_resources
- DS07 IPMR_header
- DS08 WAD
- DS09 CC_log
- DS10 CC_log_detail
- DS11 variance
- DS12 variance_CAL
- DS13 subK
- DS14 HDV_CI
- DS15 risk_register
- DS16 risk_register_tasks
- DS17 WBS_EU
- DS18 schedule_EU
- DS19 schedule_calendar_std
- DS20 schedule_calendar_exception
- DS21 rates

DS 00 to 07, 19 &20 from
Cost / Schedule Tools

Others can be JSON or
Excel like template

DS 08 to 18, 21 Also work
to remove PDFs and
make data searchable
and automatable



EFCOG PCWG Partnership

Testing right now is key in JSON roll out!

Thanks



Dates:

- JSON Dataset Review Started = September 2022
- Locked JSON datasets 00-07 in January 2023 with minor updates. EFCOG input was included
- Locked JSON datasets 08-21 in March 2023
- Commitment to Vendors and PARS team to maintain lock
- Last update to EFCOG was April 10, 2023
- Tools best practices meetings regularly



Project Assessment and Reporting System (PARS)

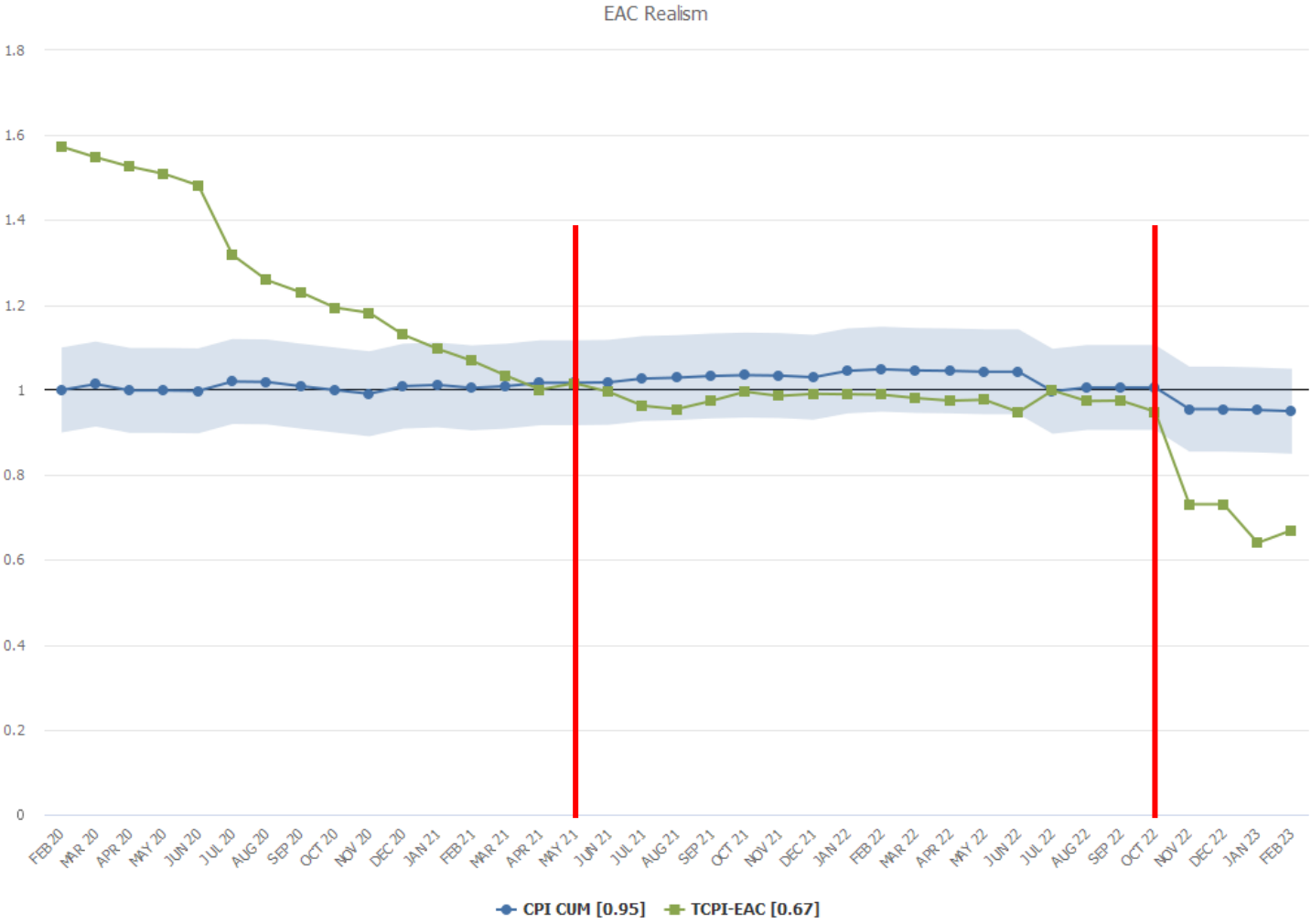
The screenshot shows the PARS website interface. At the top left is the U.S. Department of Energy logo and the text "U.S. DEPARTMENT OF ENERGY PROJECT ASSESSMENT AND REPORTING SYSTEM". Below this is a navigation bar with links for "Project Assessment and Reporting System", "Home", "Documents", "Projects", "Reports", "Analytics", and "Help". On the right side of the navigation bar, it displays the user "WESTMAT - West, Matthew Z." and options for "Admin", "Register PIV", "Updates", and "Logout". The main content area features a large banner for "Empower" with the tagline "Actionable insight for complex projects". Below the banner are three columns of content: "Document Management" (with a "Review Documents" button), "Oversight and Assessment" (with a "Find a Project" button), and "Reports and Analytics" (with "View Reports" and "View Analytics" buttons). At the bottom of the page, there are sections for "ACCESSIBILITY/SECTION 508", "FEEDBACK", and "CONTACT US".

Empower Improvements

- Schedule in the Sort View – can search, filter, and sort
- Compliance Metrics Views – Aligned to IP2M METRR
- NRO Schedule Execution Metrics (Navy Postgraduate School Effort)
 - Baseline Realism Index
 - Forecast Realism Index
 - Workoff Burden
- Earned Value / Earn Schedule
- Continuous Improvements



EAC Realism – Key point of an EVMS system



This project is heading to a BCP now.

CD-2/3 was June 2021

October 2022 – not realistic

EAC Analysis

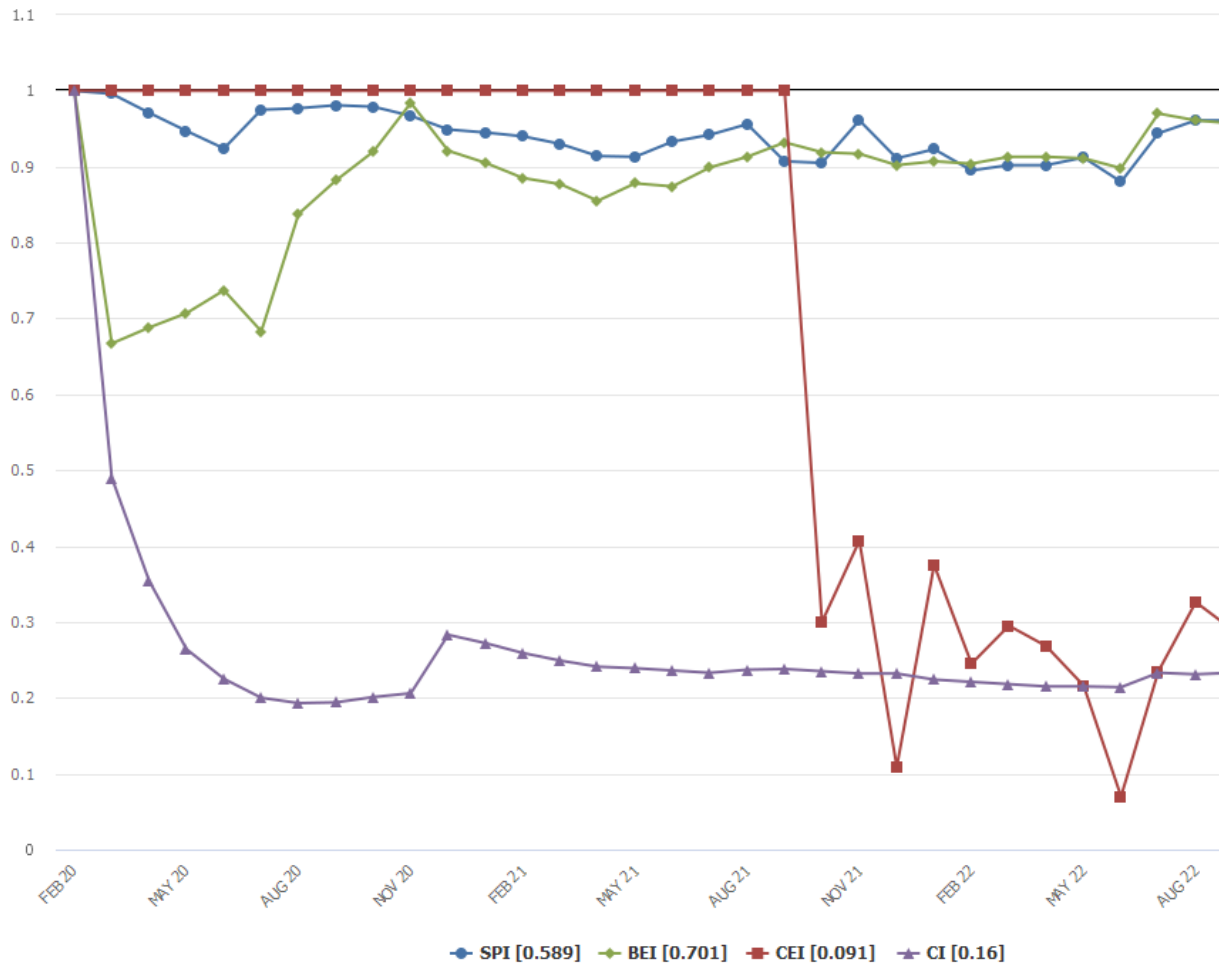
- The EAC appears to be overly pessimistic:
- Comparing the TCPI-EAC of 0.670 with the CPI of 0.950 indicates that the efficiency will drop by 29.5% on work remaining to achieve the EAC



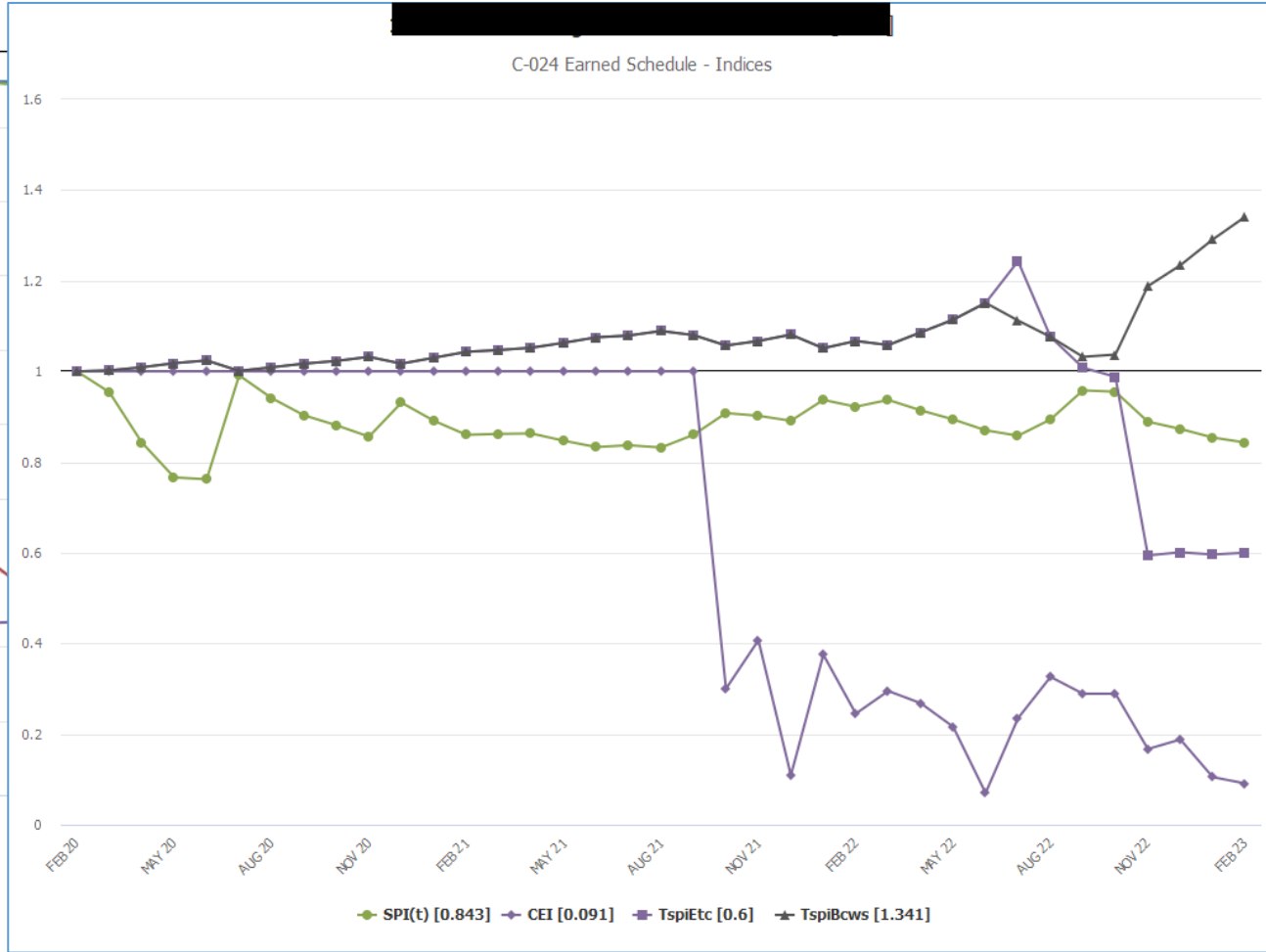
Schedule Indices – EV and ES

Schedule Execution Indexes

39% Complete – Early for ES



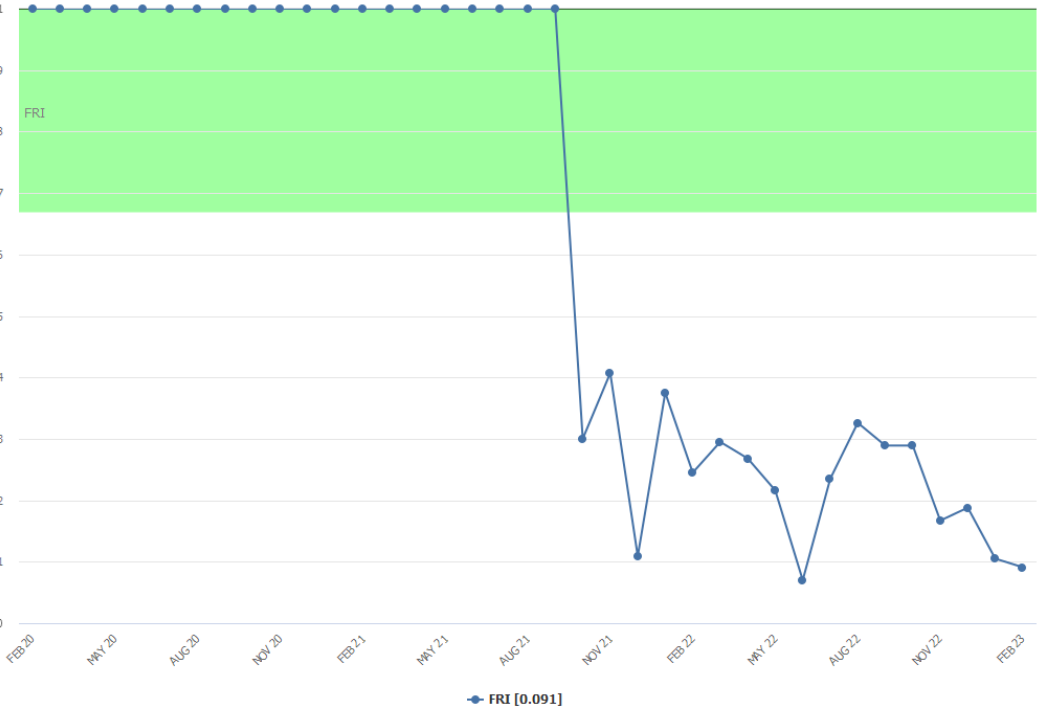
C-024 Earned Schedule - Indices





NRO Analysis / Graphics in Empower (Simple View)

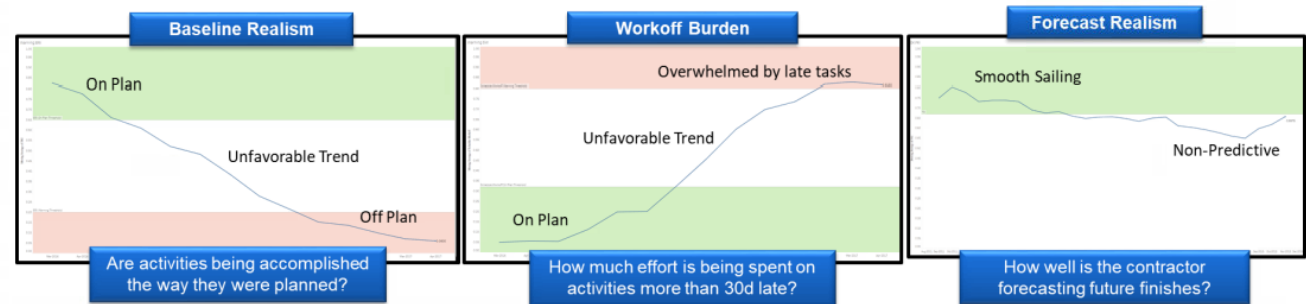
Forecast Realism Index



- Forecast Realism Index – 6 month moving average
- Percentage of forecasted events that actually finished in the forecast period.
 - This is an indicator of how well the contractor is accomplishing the forecast for the period.

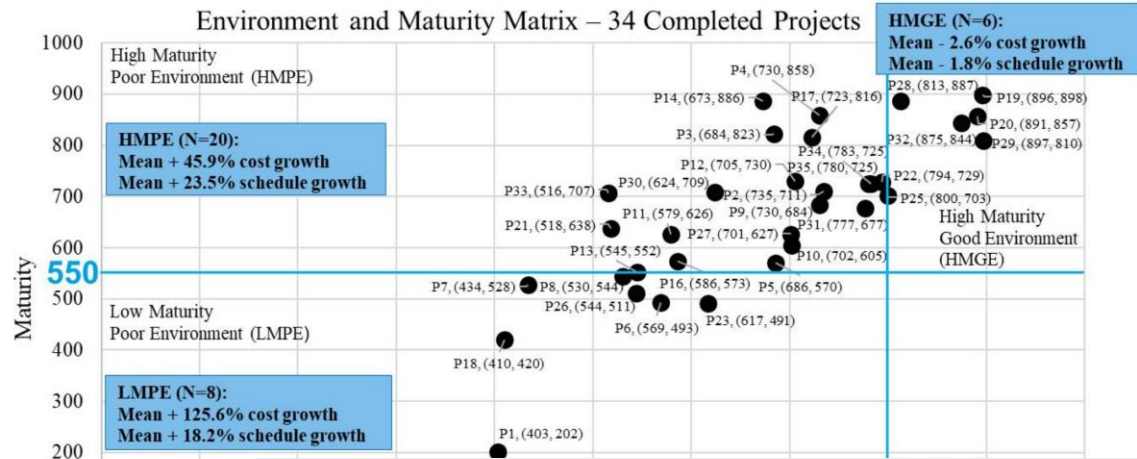


Applying the Study Results, NRO Uses These Benchmarked Schedule Execution Metrics to Analyze Contract Schedule Performance





IP2M METRR in PARS



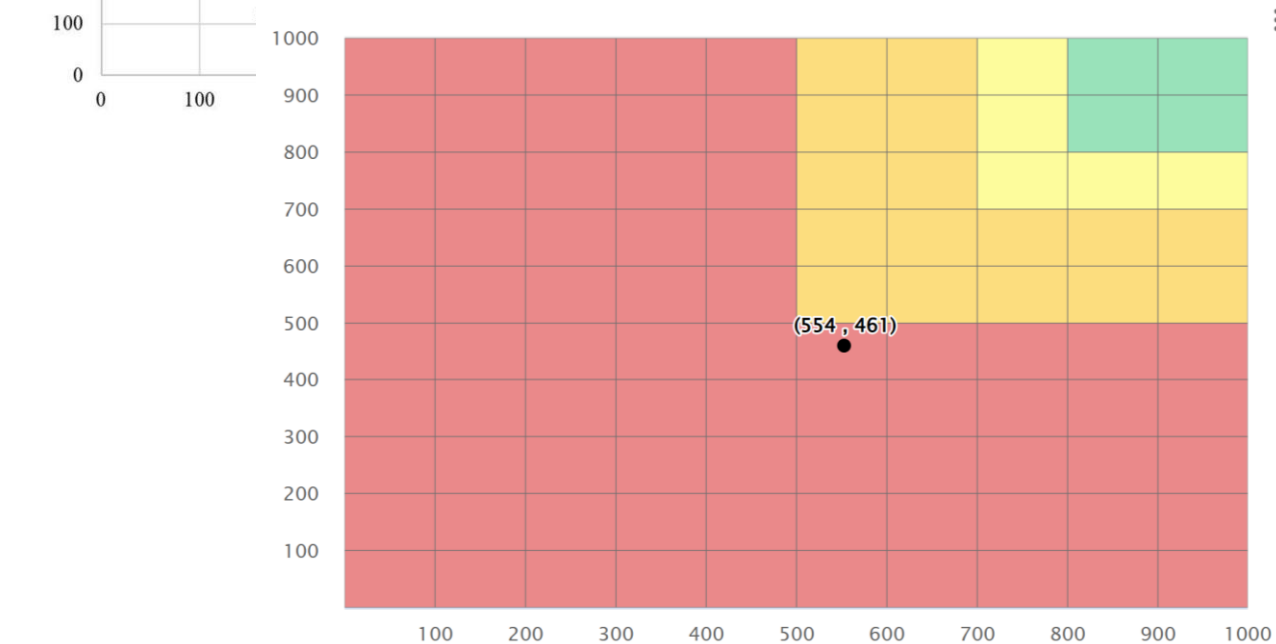
| GREEN (>800) | |
|-----------------------|-------|
| N: | 5 |
| Mean Cost Growth: | -0.3% |
| Mean Schedule Growth: | -5.9% |

| YELLOW (700-799) | |
|-----------------------|--------|
| N: | 7 |
| Mean Cost Growth: | +13.7% |
| Mean Schedule Growth: | +3.8% |

| ORANGE (500-699) | |
|-----------------------|--------|
| N: | 15 |
| Mean Cost Growth: | +48.2% |
| Mean Schedule Growth: | +26.9% |

| RED (<500) | |
|-----------------------|--------|
| N: | 6 |
| Mean Cost Growth: | +92.3% |
| Mean Schedule Growth: | +24.3% |

Figure 5.3. Cost Growth and Schedule Growth Performance Across the Heat Map (N=33)



| GREEN (>800) | |
|---------------------------------|------|
| N: | 5 |
| Compliance with EIA-748-D: | 100% |
| Meet Business Objectives: | 5.0 |
| Customer Satisfaction: | 5.0 |
| EVMS Helped Proactively Manage: | 4.0 |

| YELLOW (700-799) | |
|---------------------------------|------|
| N: | 8 |
| Compliance with EIA-748-D: | 100% |
| Meet Business Objectives: | 4.4 |
| Customer Satisfaction: | 4.4 |
| EVMS Helped Proactively Manage: | 3.9 |

| ORANGE (500-699) | |
|---------------------------------|-------|
| N: | 16 |
| Compliance with EIA-748-D: | 62.5% |
| Meet Business Objectives: | 4.3 |
| Customer Satisfaction: | 4.3 |
| EVMS Helped Proactively Manage: | 3.5 |

| RED (<500) | |
|---------------------------------|-------|
| N: | 6 |
| Compliance with EIA-748-D: | 16.7% |
| Meet Business Objectives: | 2.7 |
| Customer Satisfaction: | 2.7 |
| EVMS Helped Proactively Manage: | 2.7 |

Figure 5.4. Additional Key Performance Metrics Across the Heat Map (N=35)



New Reports

- Projects
- CR
- EERE
- EM
- FECM
- NA**
- NE
- OE
- RW
- SC
- AU
- PM Monthly
- PM-20
- PM Audit
- DEV

Refresh all NA Reports

| Download | Filename | Report Type |
|--------------------------|------------------------------------|-------------|
| Download | NA EV Cost 12 Month.xlsx | XLSX |
| Download | NA PARS Assigned Contacts.xlsx | XLSX |
| Download | NA Portfolio.xlsx | XLSX |
| Download | NNSA Assessment Change Report.xlsx | XLSX |
| Download | NNSA Assigned FPDs.xlsx | XLSX |
| Download | NNSA PARS Data Issues List.docx | DOCX |
| Download | NNSA PARS Data Issues Table.xlsx | XLSX |
| Download | SPAE NNSA Projects Table.xlsx | XLSX |



PARS Data Issues Report

- Purpose: To identify, describe, and mitigate potential data issues in the PARS Oversight and Assessment (OA) module and Contractor Project Performance (CPP) reports.
- Expectation: Programs are asked to leverage the below report and other resources, such as the Performance Baseline Contractor (PB-K) table, to mitigate stated data issues and prevent recurring issues. Programs should work with DOE contractors and DOE-PM to resolve listed issues. If an issue is identified that is not applicable, the program should communicate with the below “Points of Contact” or associated DOE-PM Project Assessment Division (PM-20) analyst to provide explanation for why the stated item is not applicable.
- Authority: DOE Order 413.3B, Program and Project Management for the Acquisition of Capital Assets
- Item of note: This report does not yet cover all data issues across PARS Oversight and Assessment module or CPP reports. This report will continue to expand to additional data fields.



PARS Data Issues Report

[Redacted]

Current CD: CD-3

Major Issues

- The project's assigned FPD, [Redacted], is not PMCDP certified at the appropriate level. The FPD must be certified at Level 3 for projects with a TPC greater than or equal to \$100M and less than \$400M.
- The FPD failed to provide the April Monthly FPD Assessment Narrative.
 - ACTION: The FPD must provide a Monthly Assessment Narrative for all projects following CD-0 approval.
- The FPD failed to provide the April Monthly FPD Assessment RYG.
 - ACTION: The FPD must provide a Monthly Assessment RYG for all projects following CD-2 approval.
- The FPD failed to provide the April Monthly FPD Assessment Forecast for TPC (\$).
 - ACTION: The FPD must provide a Monthly Assessment Forecast for TPC (\$) for all projects following CD-2 approval.
- The FPD failed to provide the April Monthly FPD Assessment Forecast Completion date.
 - ACTION: The FPD must provide a Monthly Assessment Forecast Completion date for all projects following CD-2 approval.
- The contractor failed to submit a Contractor Performance Report (CPR) Format 5 Explanations and Problem Analysis report for the current month CPP upload.
 - ACTION: The contractor must provide a CPR Format 5 Explanations and Problem Analysis report in PARS DMS for the current month CPP upload as required by DOE Order 413.3B Attachment 1 Contractor Requirements Document.

Minor Issues

- The contractor failed to submit all Contractor Performance Reports (CPR) Format 1 Work Breakdown Structure, Format 2 Organizational Breakdown Structure (OBS), Format 3 Baseline, Format 4 Staffing reports for the current month CPP upload.
 - ACTION: The contractor must provide all CPR Format 1 Work Breakdown Structure, Format 2 Organizational Breakdown Structure (OBS), Format 3 Baseline, Format 4 Staffing reports reports in PARS DMS for the current month CPP upload as required by DOE Order 413.3B Attachment 1 Contractor Requirements Document.

- Issue and Action format
- Work to clear all Major then Minor and consider all warnings
- Available in an Excel workbook as well
- Improve all data quality



Future

- DIQ on upload
- PB-K automated and designed with more utility
- Metrics aligned to V5
 - Primary, Secondary
 - Reduce compliance metrics
- More R reports
- More Empower capabilities
- Continuous improvements aligned with EFCOG's
- External Evaluation of PARS