

# EVMS Training Snippet Library: PARSII Analysis: EAC Reasonableness and IEAC Development



Office of Acquisition and Project Management (OAPM) MA-60  
U. S. Department of Energy  
July 2014

*Achieving Management and Operational Excellence*

This EVMS Training Snippet, sponsored by the Office of Acquisition and Project Management (OAPM) is one in a series regarding PARS II Analysis reports. PARS II offers direct insight into EVM project data from the contractor's internal systems. The reports were developed with the users in mind, organized and presented in an easy to follow manner, with analysis results and key information to determine the status and health of the project. Snippets will help users understand the specific information provided by each report and what it tells them about project health and/or EVM system health.

This particular snippet focuses on the purpose and use of reports to assist in determining the reasonableness of the contractor's reported Estimate at Completion and how DOE can develop an independent EAC.

# Analysis Reports – Project Analysis SOP



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A screenshot of the PARS II software interface. The top header is blue with the text "PARS II" and "Analysis Reports – Project Analysis SOP". Below the header, there are several navigation tabs: "OVERSIGHT &amp; ASSESSMENT", "PROJECT PERFORMANCE", "ALL REPORTS", and "SSS Reports". The "SSS Reports" tab is selected. To the right of the tabs, there is a sub-header "All monetary values are". Below this, there are "Add" and "Paste" buttons. A "Shared Reports" section is visible, containing a list of folders: "Analysis Reports", "Data Validity Check", "Schedule Health Assessment", "Variance Analysis", "Trend Analysis", "EAC Reasonableness", "Predictive Analysis", and "APM DepSec Monthly Reports".

In PARS II under the SSS Reports selection on the left, there are folders to the right. The reports being discussed are in the Analysis Reports folder. That folder is broken down into various subfolders pertaining to OAPM's EVMS Project Analysis Standard Operating Procedure. This Snippet covers two subfolders, EAC Reasonableness and Predictive Analysis.



- **Analysis Reports**

- Report use further explained in OAPM's EVMS Project Analysis Standard Operating Procedure (EPASOP)
- EAC Reasonableness Subfolder
  - EV Data Validity (WBS Level)
  - CPI vs. TCPI (PMB Level)
  - Performance Index Trends (WBS Level)
- Predictive Analysis Subfolder
  - Funding Status (Monthly at Project Level)
  - IEAC Analysis (WBS Level)

These reports are useful for anyone responsible for project management. The first is EAC reasonableness subfolder and it contains three reports. The first report is the EV Data Validity (WBS Level) Report which identifies  $CV_{CUM}$  more negative than the VAC, where the  $TCPI_{EAC}$  and CPI differ by more than 5%. The second report is the CPI vs. TCPI (PMB Level) for project level views. The third report is the Performance Index Trends (WBS Level) which charts Actual vs. Projected Performance Trends and Performance Index Trends. The other subfolder is Predictive Analysis, and includes two reports: Funding Status (Monthly at Project Level) and IEAC Analysis (WBS Level).

# Estimates at Completion



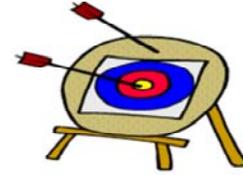
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- **What is the EAC?**

- $ACWP_{cum} + \text{estimate to complete (ETC)} = EAC$

- So what is the first piece of information you need to begin thinking about the ETC?

- Budgeted Cost for Work Performed



- **Understanding the common EAC formulas are important as different formulas are selected based on projected contractor performance**

- Is past contractor performance expected to continue?

- What in the contractor's operations is expected to change and why?

- Is the change for the better or worse?

Before covering the data available in PARS II, we will begin with a quick refresher. The contractor is required to provide an Estimate At Completion (EAC). The contractor starts with actual cost of work performed to date and then provides an estimated cost to complete the work remaining. An accurate EAC is vital to the DOE as it provides a dynamic estimate of the projected funding required to cover the contractor's costs to perform the work in the PMB. *Concerns identified in this area not only apply to Project performance but also to systemic concerns with the contractor's EVMS.*

Here's a 'How it's done' lesson learned: When developing the estimate to complete, do not start with what has been spent to date. The first step in an estimate to complete is to determine the work that remains to be completed. To do that, the work that has been accomplished in terms of the earned value or BCWP must be identified.

Examine the formula for the EAC.  $ACWP + ETC = EAC$ . Where is the most important place to start when determining the ETC? Again – the BCWP! In fact, the ACWP does not enter into the ETC process other than to understand the cost of completed effort. At the end of the ETC process ACWP is added to the ETC to arrive at the EAC.

One last point – we are talking about the contractor's EAC. That means it is developed by the control account managers based on estimates of the work scope for specific tasks. It should not be developed solely based on EAC formulas, referred to as IEACs. IEACs are used by the contractor and the DOE to assess the reasonableness of the CAM's EAC. The contractor should always be able to explain the rationale used and provide supporting documentation to support the estimates associated with the work remaining.

# Using the To Complete Performance Index (TCPI)



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- **TCPI measures the cost efficiency of performance required to achieve the contractor's EAC or BAC**
  - 1.25 means \$1.25 worth of work must be performed for every \$1 spent
  - 0.85 means \$0.85 worth of work must be performed for every \$1 spent
- **Use the TCPI to evaluate reasonableness of a contractor's Estimate at Completion (EAC)**

$$\text{TCPI}_{\text{EAC}} = (\text{BAC} - \text{BCWP}_{\text{CUM}}) / (\text{EAC} - \text{ACWP}_{\text{cum}})$$
$$\text{TCPI}_{\text{EAC}} = \text{work remaining} / \text{ETC}$$

- **What is the likelihood that project will complete within the BAC?**
  - $\text{TCPI}_{\text{BAC}} = \text{work remaining} / (\text{BAC} - \text{ACWP}_{\text{CUM}})$
  - This formula is of no value once ACWP exceeds BAC.

An understanding of the To Complete Performance index, called the TCPI, is also important.

The TCPI is a cost efficiency index of future performance required to achieve the contractor's EAC or BAC.

A 1.25 TCPI means \$1.25 worth of work must be performed for every \$1 spent

A 0.85 TCPI means \$.85 worth of work must be performed for every \$1 spent

The TCPI is also used to evaluate the reasonableness of a contractor's Estimate at Completion (EAC). The TCPI can also be calculated to determine the likelihood that the project will complete within the BAC. The formula is:

$$\text{TCPI}_{\text{BAC}} = \text{work remaining} / (\text{BAC} - \text{ACWP}_{\text{cum}})$$

This formula is of no value if the ACWP exceeds the BAC.

# EV Data Validity Report



		CPI/SPI Thresholds							
		Green	$\leq \pm$	0.10					
		Yellow	$\leq \pm$	0.20					
		Red	$> \pm$	0.20					
Cum CV	Cum SV	Cum CPI	Cum SPI	BAC	EAC	VAC	% Comp	TCPI to EAC	CPI <> TCPI $\pm 0.05$
7,837,731	(8,053,315)	1.15	0.88	78,354,605	89,748,954	(11,394,349)	76.1%	0.49	0.66
1,907,496		1.11	1.00	21,605,095	23,119,989	(1,514,894)	89.8%	0.39	0.72
438,887	(17,992)	1.06	1.00	8,039,240	7,677,082	362,158	95.5%	0.83	0.23



- **TCPI > CPI by 0.05 (5%); EAC may be overly optimistic**
- **TCPI < CPI by 0.05 (5%); EAC may be too pessimistic**
- **Difference of .1 or 10% indicates EAC needs updating**
- **Note: This is a partial view of the full report**

A mathematical difference of plus or minus 0.05 between the CPI and TCPI, that is 5% or greater, is used as an early warning indication that the contractor's forecasted completion cost could possibly be unrealistic, stale, or not updated recently. If the 0.05 threshold has been breached, the PARS II EV Data Validity (WBS Level) Report will indicate this under the column titled 'CPI less than or greater than the TCPI by .05% identified on the slide by a red arrow. It is merely a metric to flag concerns but it is not considered an error because it is possible that the nature of the work has changed, thus making predictions of the future based on past performance unjustified.

The  $TCPI_{EAC}$  forecasts the efficiency at which the remaining work is estimated to be performed. The CPI shows the actual efficiency at which the work completed has been performed. Comparing these two values provides a sanity check of the reported EAC. For instance, if the TCPI were 1.1 and the CPI were 0.8, the projection is that the efficiency to complete the remaining work will increase dramatically. This may not be realistic and the EAC should be questioned.

When the TCPI is greater than the CPI by more than 5%, it may indicate an overly optimistic EAC. In other words, the ETC is based on an increase in cost efficiency by more than 5% for the work remaining in the project. A TCPI less than the CPI by 5% or more may indicate an overly pessimistic EAC. In this case, the ETC is based on an expected decrease in cost performance by 5% or more for the work remaining in the project. This metric is available at the control account to identify individual drivers (see the PARS II Performance Index Trends (WBS Level Report)) or by total project level (see the PARS II CPI vs. TCPI (PMB Level) Report).

The report flags differences between CPI and TCPI that are plus or minus 5% by listing the actual calculated amount. While a 5% difference indicates a questionable EAC, a difference of 10% indicates the EAC is not realistic based on current performance. Studies of major acquisition programs at the Department of Defense validated that 10% is a reasonable threshold at which the EAC should be updated.

As shown by sample data, the CPI to TCPI comparison for all three of the WBS elements indicates unrealistic EACs.

# EV Data Validity Report



		CPI/SPI Thresholds							
		Green	<= ±	0.10					
		Yellow	<= ±	0.20					
		Red	> ±	0.20					
Cum CV	Cum SV	Cum CPI	Cum SPI	BAC	EAC	VAC	% Comp	TCPI to EAC	CV < VAC
(65,944)	(7,052,998)	1.00	0.94	118,817,679	118,837,250	(19,571)	93.0%	1.01	(46,373)
(63,109)	(6,899,981)	1.00	0.94	116,957,205	116,972,860	(15,655)	93.5%	1.01	(47,454)

- Entries in the CV > VAC Column indicate the Cumulative Cost Variance (Cum CV) is more **negative** (smaller number, larger overrun) than the projected cost variance at completion (VAC)
- These two WBS elements are 93% complete; would seem difficult to recover that much variance
- Note: This is a partial view of the full report

When the Cost Variance (CV) to date is more negative than the Variance at Completion (VAC), it may indicate that the EAC has not been updated to reflect the entire overrun. Refer to the last column shown of the PARS II EV Data Validity (WBS Level) Report, entitled CV less than VAC. This means that the cost variance is more negative, that is reflecting a larger overrun, than the projected overrun at completion. This condition is not considered an error but it could indicate an understated EAC. An example shown here is where the CV to date is negative \$65,944; however, the VAC is only negative \$19,571. The data indicates that the Control Account Manager expects this Control Account to recover a significant amount of the overrun. With this Control Account at 93% complete, how is that possible? If the CAM says it is because of mischarges against this Control Account that need to be backed out, the burden of responsibility is on the CAM to take that type of action immediately, within the same reporting month as identified. Also of concern would be a scenario where the cumulative CV is positive to date, yet the VAC indicates an overrun. Why is that? Again, these are questions to ask the contractor.

# CPI vs. TCPI (PMB Level)



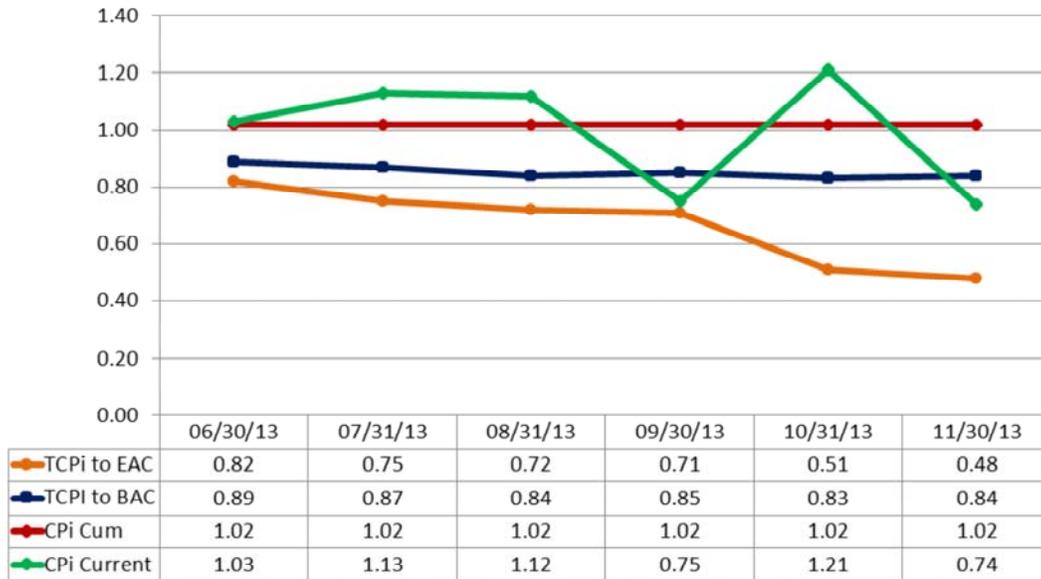
Status Date	Current				Cumulative				BAC	EAC	TCPI - BAC	TCPI - EAC
	BCWS	BCWP	ACWP	CPI	BCWS	BCWP	ACWP	CPI				
06/30/13	5,323,088	3,638,868	3,534,360	1.03	308,711,525	295,442,525	289,597,742	1.02	340,901,465	345,311,276	0.89	0.82
07/31/13	6,051,202	4,410,678	3,905,223	1.13	314,762,727	299,853,203	293,502,964	1.02	341,124,919	348,569,622	0.87	0.75
08/31/13	4,451,319	4,408,850	3,936,963	1.12	319,214,047	304,262,053	297,439,927	1.02	341,161,425	348,440,509	0.84	0.72
09/30/13	3,515,505	3,158,329	4,233,687	0.75	322,729,551	307,420,382	301,673,614	1.02	341,220,958	349,447,145	0.85	0.71
10/31/13	3,434,083	3,460,448	2,854,031	1.21	326,163,634	310,880,830	304,527,645	1.02	341,611,498	364,830,378	0.83	0.51
11/30/13	2,926,603	2,395,948	3,221,512	0.74	329,090,237	313,276,777	307,749,157	1.02	341,688,907	366,403,597	0.84	0.48

- **Purpose:**

- Compare current period and cumulative cost performance index to  $TCPI_{EAC}$  and  $TCPI_{BAC}$

The CPI vs. TCPI Report is at the total performance measurement baseline level. The purpose of the report is to compare to-date and incremental cost performance trends on the project against performance levels needed to complete the project on budget or at estimated cost. While report views of the trends provide raw supporting contractor-reported performance data, the next slide shows the graphical representation of the trends.

# CPI vs. TCPI (PMB Level)



This graph helps to visualize to-date versus needed performance levels to deliver the project at the currently approved budget (BAC) or current estimate at completion (EAC). TCPI indices over 1.00 indicate that efficiency over 100% is required to meet project performance goals (BAC and EAC respectively).

A  $TCPI_{EAC}$  greater than the CPI Cum indicates that the efficiency required to meet the contractor's estimate at completion is greater than performance levels that the contractor was able to achieve to-date. This may be the result of an understated EAC or expected opportunities in the future that will result in better-than-average performance.

A  $TCPI_{EAC}$  less than the CPI Cum indicates that the efficiency required to meet the contractor's estimate at completion is less than performance levels that contractor was able to achieve to-date. This may be the result of overstated EAC or expected/realized risks in the future that will result in worse-than-average performance.

The  $TCPI_{EAC}$  curve trending upwards could indicate declining actual performance requiring better projected performance to meet the EAC. When the CPI Cum curve trends upwards, it indicates improvement in achieved performance to-date.

When the CPI current period curve indicates performance volatility from period to period, it can be used to further validate assumptions made in TCPI to EAC analysis.

# Performance Index Trends (WBS Level) Report



## Report Tab

### Performance Index Trends (WBS Level)

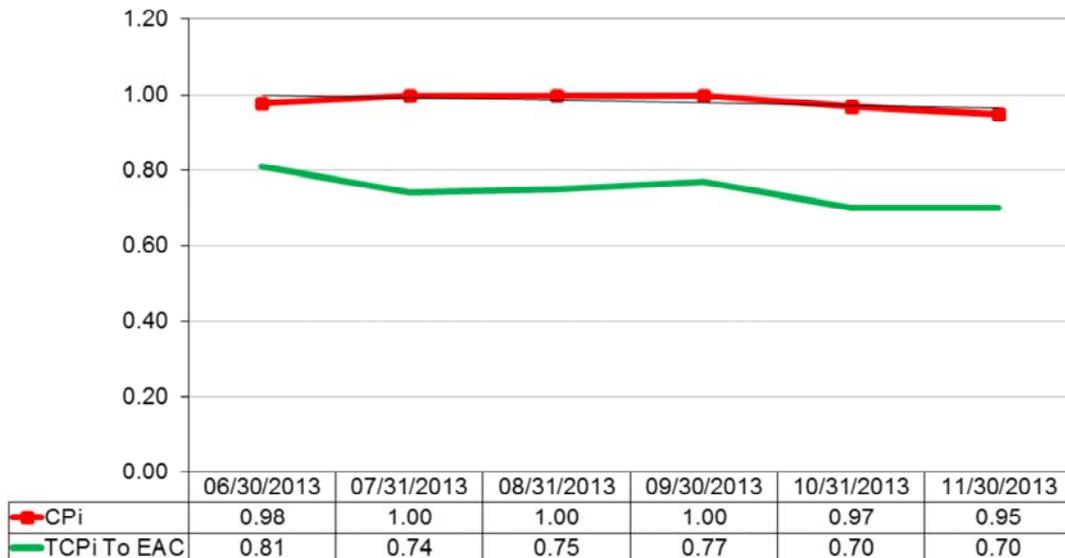
Level	WBS Number	Description	Type	06/30/2013	07/31/2013	08/31/2013	09/30/2013	10/31/2013	11/30/2013
8	01.25.60.01.	OPC CONSTR & STARTUP PH	SPI	0.94	0.92	0.91	0.90	0.89	0.88
		<a href="#">View SPI/CPI Trend Chart</a>	CPI	1.14	1.15	1.17	1.15	1.16	1.15
		<a href="#">View Actual vs. Projected Performance Chart</a>	TCPI To EAC	0.86	0.78	0.76	0.74	0.53	0.49
		<a href="#">View All Indices Trend Chart</a>	TCPI To BAC	0.81	0.78	0.74	0.75	0.71	0.70
9	01.25.60.01.	DA - DESIGN AUTHORITY & TE	SPI	1.00	1.00	1.00	1.00	1.00	1.00
		<a href="#">View SPI/CPI Trend Chart</a>	CPI	1.09	1.10	1.10	1.11	1.11	1.11
		<a href="#">View Actual vs. Projected Performance Chart</a>	TCPI To EAC	0.79	0.68	0.64	0.60	0.42	0.39
		<a href="#">View All Indices Trend Chart</a>	TCPI To BAC	0.74	0.70	0.66	0.61	0.57	0.54
9	01.25.60.01.	SU - TESTING & STARTUP	SPI	0.65	0.58	0.53	0.48	0.44	0.41
		<a href="#">View SPI/CPI Trend Chart</a>							
		<a href="#">View Actual vs. Projected Performance Chart</a>							
		<a href="#">View All Indices Trend Chart</a>							
9	01.25.60.01.	STARTUP MANAGEMENT							
		<a href="#">View SPI/CPI Trend Chart</a>							
		<a href="#">View Actual vs. Projected Performance Chart</a>							
		<a href="#">View All Indices Trend Chart</a>							

Click on the blue hyperlink to view the chart at the WBS level:

- SPI/CPI Trend Chart
- Actuals vs. Projected Performance Chart
- All Indices Trend Chart (a/k/a Performance Index Trends)

Another way to track trends on a WBS level is by viewing graphs in the PARS II Performance Index Trends (WBS Level) Report. Click on the graph you want by selecting the WBS description on the Report tab, and the selected graph will appear on the Chart Tab. When you see trends of SPI or CPI dropping over time, it indicates a negative trend that needs investigating. Remember that all PARS II reports that have "WBS Level" in the name can provide information at the lowest level report. The Analyst can determine the WBS element causing the negative trend.

# Actual vs. Projected Performance Trends

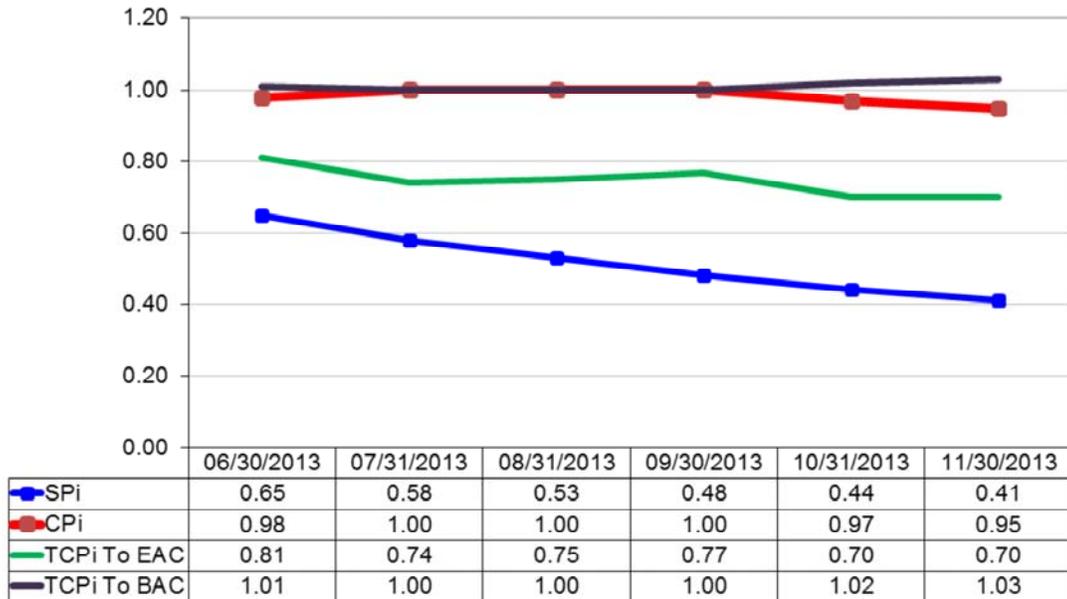


On the Actual vs. Projected Performance Trends chart, the CPI and the TCPI based on the EAC is shown. The trend on this chart is that the TCPI to meet the EAC shows a much lower efficiency required than what is being indicated by the CPI to date. This causes some concerns. Either the EAC is too high – in which case the FPD must have an accurate and realistic EAC in order to plan how much funding will be required to complete the project. Or, the EAC is valid and there is some planned future events that will result in lower future CPIs.

When the TCPI to EAC is showing higher efficiencies than the cumulative CPI, then the question to the contractor would be “how do you plan to improve your cost efficiencies in the future”?

The above scenario differs by much more than 5%, therefore the FPD would need to investigate and understand what is happening on this project.

# All Indices Trend Chart (a/k/a Performance Index Trends)



The Performance Index Trends includes four trend lines, SPI, CPI, TCPI to achieve the EAC, and the TCPI to achieve the BAC. The data reflected on the slide shows some concerns as previously mentioned. The schedule appears to be in trouble, and schedule issues normally cause cost impacts. The CPI appears relatively stable except for the past two months. The TCPI comparison of TCPI to meet the EAC versus the TCPI to meet the BAC is very interesting. As shown, it implies the project will complete slightly over the Budget at Completion but much below the Estimate at Completion. All of this prompts questions for the FPD to ask the contractor!

- **IEAC Analysis (WBS Level)**
  - Not just a project-level formula but information is available from PARSII to make independent assessments at the WBS level
- **Funding Status (Monthly at Project Level)**
  - Is sufficient funding available for predicted cost performance issues?



The next group of PARSII reports are geared toward assisting the FPD in preparing for the future.

The EAC is an important number used by project stakeholders for several reasons. A project office relies on the EAC for securing sufficient funding for the project. Therefore when concerns exist as to the reasonableness of the EAC, other steps must be taken. As covered previously, the contractor should be questioned about the EAC flags that show concern with the EAC reasonableness. Other steps include calculating an Independent EAC to help in ensuring funding is available based on good sound estimates. The IEAC is not just a project-level formula but information is available from PARSII to make independent assessments at the WBS level. The following slide will examine that process deeper and then show how to monitor the funding status and potential funding shortfalls.

# IEAC Analysis (WBS Level) – Report Tab



WBS Number	Description	Lvl	BAC	EAC	IEAC (CPI)	IEAC (CPI x SPI)	IEAC (3 Per Avg)	SPI	CPI	CPI (3 Per Avg)
01.25.60.0	<a href="#">OPC</a>	8	\$78,354,605.07	\$89,748,954.14	\$68,059,554.62	\$70,252,715.00	\$71,152,814.48	0.88	1.15	0.97
01.25.60.0	<a href="#">DA</a>	9	\$21,605,095.11	\$23,119,989.25	\$19,481,754.74	\$19,481,754.74	\$19,327,582.77	1.00	1.11	1.20
01.25.60.0	<a href="#">PR</a>	9	\$8,039,239.55	\$7,677,082.09	\$7,579,492.55	\$7,580,298.79	\$7,910,241.24	1.00	1.06	0.54
01.25.60.0	<a href="#">OP</a>	9	\$4,651,434.67	\$5,725,525.13	\$5,818,694.98	\$7,983,948.12	\$14,293,601.57	0.60	0.80	0.22
01.25.60.0	<a href="#">SU</a>	9	\$6,196,978.07	\$13,614,462.43	\$6,275,526.16	\$6,275,526.16	\$8,762,489.16	1.00	0.99	0.31
01.25.60.0	<a href="#">SU</a>	9	\$8,881,382.46	\$11,453,293.30	\$9,382,357.10	\$17,906,501.01	\$19,466,483.06	0.41	0.95	0.35

- Three formula-based IEACs provided
- Click on WBS Description blue hyperlink to view WBS level graph of data
  - WBS Description “OP” selected; chart on next slide
  - Note: This is a partial view of the full report

An IEAC is an independently calculated forecast of the final total cost of the project. The PARS II IEAC Analysis (WBS Level) Report provides information for analysis and comparison of the contractor EAC to three industry standard calculations of cost estimates, based on contractor-reported data and a variety of performance factors to establish a reasonableness range for at-complete cost of the project. The report has the details and the Chart tab is a bar chart to show the BAC, EAC, cumulative BCWS, BCWP, ACWP, and the three IEAC formulas used to provide a range.

These three IEAC formulas are:

Estimate at Completion based on CPI

Estimate at Completion based on multiplying SPI and CPI, and

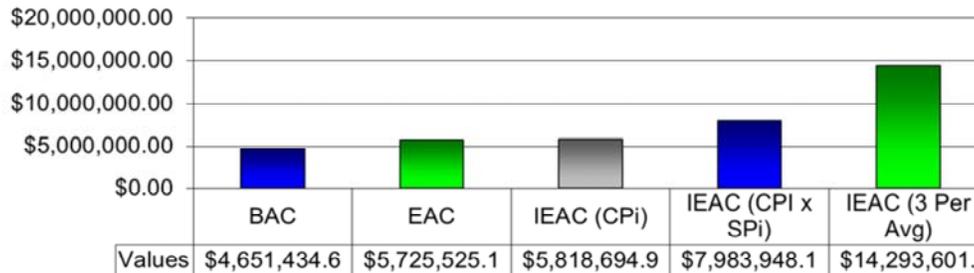
Estimate at Completion based on the CPI 3 Period Cum

Typically the EAC based on  $CPI$  formula provides the most optimistic result, the EAC based on  $SPI \times CPI$  provides the most pessimistic, and the EAC based on 3 period CPI cum provides the most likely based on studies of hundreds of completed projects. The CPI cum and 3 period cum formulas are most accurate when the project is between 15% to 95% complete. The SPI times CPI formula is best between 15% to 50% complete. In the latter stages of the project, SPI trends toward 1.0 distort this formula. Also note the SPI times CPI formula is not the most pessimistic when SPI is above 1.0. Outside of these ranges, the formulas may not provide accurate information.

## IEAC Analysis (WBS Level) – Chart Selected for WBS “OP”



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- **Two reasons to review EACs at the WBS element:**
  - Verification of the reasonableness of the Comprehensive EAC
  - Identify the need for adjustments to the IEAC based on known issues with one or more WBS elements
    - Contractor's EAC appears to be understated for this WBS
    - Too optimistic EACs do not provide accurate projections for funding purposes
    - Too pessimistic EACs may tie up funding that could be used for other purposes

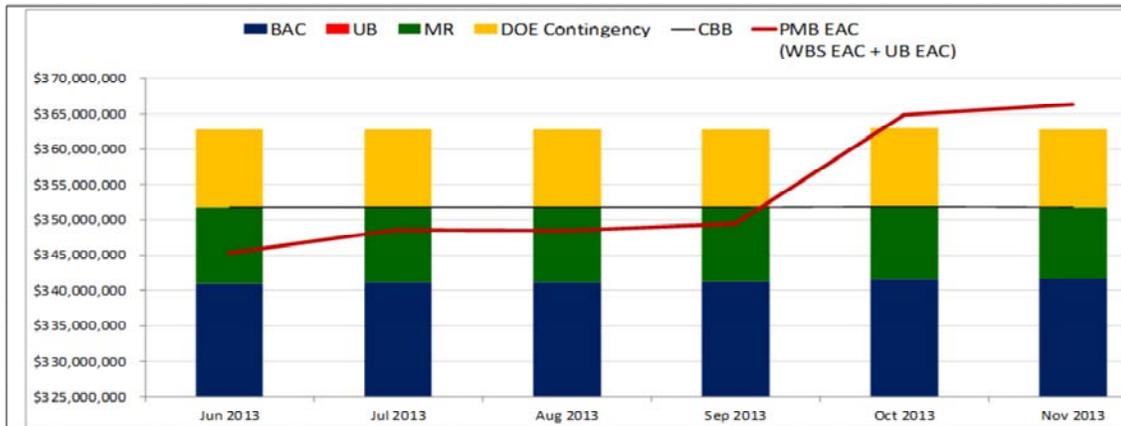
Often not realized or utilized by the FPD and analysts is a feature where adjustments can be made to the formula based IEACs; at the WBS element level this may be warranted. Two reasons to review EACs at the WBS element level is for verification of the reasonableness of the Comprehensive EAC, and identification of the need for adjustments to the IEAC based on known issues with one or more WBS elements. It involves determining the reasonableness of the WBS level estimates with information gained from project surveillance, reviews, and/or site-level input. This is the perfect place to make adjustments if the contractor's EAC does not appear reasonable.

Using the PARS II IEAC Analysis (WBS Level) Report, an analysis graph for the lowest WBS level can be created by clicking the WBS Description link on the Report tab. The chart will then show the comparison of the WBS level graph to the project level graph. Whether using the chart or the detailed information available in the report, it is worthwhile to review the data at the WBS level. It may reveal WBS level EACs that are inconsistent with the indicator.

The analysis should include comparison of the contractor-reported EAC to independent EACs calculated based on the high risk WBS elements to determine if the contractor-reported EAC is valid, reasonable, and current.

Roll up any adjustments made to individual WBS element EACs and any changes made to risks to determine the value of the IEAC. Check the rolled-up value against the two formula values that are most pessimistic and most optimistic. The rolled-up value may fall outside of the statistical formula bounds, but this should be considered a flag. If this occurs, double check your adjustments and ensure they are properly documented.

# PARS II Funding Status (Monthly at Project Level)



	Jun 2013	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013
DOE Cost Contingency	\$11,000,321	\$11,000,321	\$11,000,321	\$11,000,321	\$11,000,321	\$11,000,321
Management Reserve (MR)	\$10,904,847	\$10,681,393	\$10,644,886	\$10,585,353	\$10,365,538	\$10,117,404
Undistributed Budget (UB)	\$0	\$0	\$0	\$0	\$0	\$0
Budget At Complete (BAC)	\$340,901,465	\$341,124,919	\$341,161,425	\$341,220,958	\$341,611,498	\$341,688,907
Contract Budget Base (CBB)	\$351,806,312	\$351,806,312	\$351,806,311	\$351,806,311	\$351,977,036	\$351,806,312
Estimate At Complete (PMB EAC)	\$345,311,276	\$348,569,622	\$348,440,509	\$349,447,145	\$364,830,378	\$366,403,597

The purpose of the PARS II Funding Status (Monthly at Project Level) Report is to show if sufficient funding is available to complete the project. In addition, the report can be used to validate the accuracy of data reporting at the project level. Any significant fluctuations in project cost components and identified anomalies should be noted. Major components of Total Project Cost (TPC) are plotted in a stack column on the Summary tab. This allows the Analyst to identify current balances of each major TPC component - mainly DOE Contingency and Contract Budget Base (CBB). Further analysis should look at how the contractor-reported forecast, i.e. the EAC, is plotted against TPC and if additional funding may be required to complete the project.

Fluctuations in the CBB line without corresponding reverse changes in the DOE Contingency, a significant change in Contingency balance that is not reflected in the CBB line, a decrease in Contingency and an associated increase in MR without any change to BAC, are all indicators that the risk reserves and contractor baseline have not been reported accurately or are being used improperly.

In the example shown on the slide, the DOE contingency is insufficient to cover the anticipated overrun at completion.



- **EAC Reasonableness Analysis**
  - Contractor requirement
    - Estimate based; not IEAC formula based
  - Dynamic estimate of projected funding to 'pay the bill'
  - Reasonableness is vital to DOE
  - Unrealistic EACs
    - Negatively impact project management
    - Non-compliant with ANSI/EIA-748
  - Extensive data available in PARSII to assist the FPD in conducting reasonableness assessment
- **Independent Estimate at Completion**
  - Provides range for determining EAC reasonableness
- **Funding Reports**
  - Assist in revealing potential funding shortfalls

In summary, the contractor is required to provide an Estimate At Completion (EAC). It is expected to be based on valid estimates of work remaining; not formula based. An accurate EAC is vital to DOE as it provides a dynamic estimate of the projected funding required to cover the contractor's costs to perform the work in the PMB. *Concerns in this area not only apply to Project performance but also to systemic concerns with the contractor's EVMS.* There are several data points in PARS II to provide the FPD with the information needed to determine the reasonableness of the contractor's EAC, and to calculate alternative Independent EACs. Funding reports are also available that may reveal potential funding shortfalls.

# DOE OAPM EVM Home Page



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## EARNED VALUE MANAGEMENT

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Earned Value Management (EVM) is a systematic approach to the integration and measurement of cost, schedule, and technical (scope) accomplishments on a project or task. It provides both the government and contractors the ability to examine detailed schedule information, critical program and technical milestones, and cost data.

- EVMS Surveillance Standard Operating Procedure (ESSOP) - 26 Sep 2011 (pdf)
- EV Guideline Assessment Templates - (MS Word)
- DOE EVMS Cross Reference Checklist - (pdf)
- DOE EVMS Risk Assessment Matrix - (MS Word)
- Formulas and Terminology "Gold Card" - Sep 2011 (pdf)
- Slides from the OECM Road Show: Earned Value (EV) Analysis and Project Assessment & Reporting System (PARS II) - May 2012 (pdf)
- DOE EVM Guidance

### EVM TUTORIALS

Module 1 - Introduction to Earned Value (pdf 446.86 kb) July 17, 2003

This module is the introduction to a series of online tutorials designed to enhance your understanding of Earned Value Management. This module's objective is to introduce you to Earned Value and outline the blueprint for the succeeding modules. This module defines Earned Value management. It looks at the differences between Traditional management and Earned Value management, examines how Earned Value management fits into a program and project environment, and defines the framework necessary for proper Earned Value management implementation.

<http://energy.gov/management/office-management/operational-management/project-management/earned-value-management>

- Career Development
- Program
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For information relative to EVMS procedures, templates, helpful references, and training materials, please refer to OAPM's EVM Home page. Check back periodically for updated or new information.