

Earned Value Management System

Measuring Performance in PMCP

Earned Value in PMCP

- PMCP reads several activity data items from the P3 forecast schedule to calculate the Earned Value...

Activity ID	Activity Description	Early Start	Early Finish	FY						
				E	O	N	D	J	F	M
01.02.01.01 MV Closure Hydrologic Isolation										
01.02.01.01.10.45 Remedial Action - Balance of MV Caps										
R105BURN15	DOE (UT/B) PROVIDE FIRE WATCH - HAUL ROADS	13OCT03A	19FEB04	[Gantt Chart]						
R1EAREA006	REA Allowance Remedial Action - MV HI FY06	03APR06	01MAY06							
R1OSRA0010	Subcontr Oversight Remedial Action -MV HI (FY04)	01DEC03	30SEP04							
R1OSRA0011	Subcontr Oversight Remedial Action-MV HI (Outyr)	01OCT04	01MAY06							
R1OSRARENB	Resident Engineer - MV-HI (Outyr)	14OCT04	29NOV05							

Budget Codes Constr Cost Custom Dates Log Pred Res Succ WBS Help												
ID	R105BURN15 DOE (UT/B) PROVIDE FIRE WATCH - HAUL ROADS											
OD	14	Pct	67.2	Cal	1	<input checked="" type="checkbox"/> AS	13OCT03	<input type="checkbox"/> EF	19FEB04	TF: 4		
RD	58	Type	Task	LF	25FEB04	FF: 0						
Mvl	Type	Mtyp	Chrg	Bfyr	Itie	Etie	Resp	Rcat	Wtyp	Ttyp	Gfsf	Cc
			KTR114JX	2004			UTB		RA	FW		KTCD5HRD
Code Sort Path Sum1												
01.02.01.01.10.45												
WBS												

Activity Percent Complete

Charge Code

WBS Element

Earned Value in PMCP

- PMCP also reads the resource budget values for each of the activities...

Activity ID	Activity Description	Early Start	Early Finish	FY							
				E	O	N	D	J	F	M	
01.02.01.01	MV Closure Hydrologic Isolation										
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Budget Summary

WA24312

Resource	Cost Acct/Category	Driving	Curve
WA24312		<input type="checkbox"/>	0

33420

	Units	Cost
Units per day	0.00	
Res Lag/Duration	0	
% Complete/Expended		100.5
Budgeted amount	0	33420
Planned value	0	0
Earned value	0	22458
Actual to date	0	33584
To complete	0	16416
At completion	0	50000
Variance	0	-16580

Each activity can have one or more resources... and a budget for that resource.

Resource

Resource Budget (BCWS)

Note - the budget can differ from the Estimate at Complete (EAC).

Earned Value in PMCP

- PMCP collects all of the resource budget values from all activities with the same WBS element and charge code...

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				E	O	N	D	J	F	M
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R1OSRARENB	Resident Engineer - MV-HI (Outyr)	14OCT04	29NOV05							

Budget Summary

Resource: 41LABOR

Resource	Cost Acct/Category	Driving	Curve
41LABOR		<input type="checkbox"/>	0
52LABOR		<input type="checkbox"/>	0
53LABOR		<input type="checkbox"/>	0
58LABOR		<input type="checkbox"/>	0

3456

	Units	Cost
Units per day	16.30	
Res Lag/Duration	0	
% Complete/Expended		0.0
Budgeted amount	3456	478010
Planned value	264	28162
Earned value	0	0
Actual to date	32	0
To complete	3424	478010
At completion	3456	478010
Variance	0	0

First Activity...
Second Activity...
Third Activity

Resource ~~41LABOR~~

Budget \$345,600 (hrs)
(PMCP converts hours to dollars for labor resources.)

Earned Value in PMCP

- PMCP summarizes and reports the Earned Value to the WBS and Charge Code level.

Performance - WBS [01.02.01.01]

Reporting FY/Period: 2004 - December

WBS No	Charge Code	Total BCWS	Cumulative BCWS	Cumulative BCWP	Current BCWS	Current BCWP	LOE	Source
Total		66,131,200	4,334,822	1,908,889	1,711,215	0		
01.02.01.01.04.10	KTR1A421	210,436	49,465	31,860	17,605	0	<input checked="" type="checkbox"/>	
01.02.01.01.10.10	KTR1P421	3,967,479	301,360	192,737	108,622	0	<input checked="" type="checkbox"/>	
01.02.01.01.10.25	KTR1P34F	168,052	22,238	0	22,238	0	<input type="checkbox"/>	
01.02.01.01.10.40	KTR1H44B	1,118,373	237,357	103,449	105,462	0	<input type="checkbox"/>	
01.02.01.01.10.45	KTR1C4JX	709,737	62,981	40,564	22,417	0	<input checked="" type="checkbox"/>	
01.02.01.01.10.45	KTR1I4JX	59,957,123	3,661,422	1,540,279	1,434,871	0	<input type="checkbox"/>	

Note - the Total BCWS (Budget at Completion - BAC) is the value from the approved *baseline* schedule, and ties to our contract requirements.

OK Cancel

Earned Value in PMCP

- The formula used by PMCP to calculate performance is...

$$BCWP_{\text{charge_code}_x} = BAC_{\text{charge_code}_x} * \frac{\sum_{\text{Activity}_i}^{\text{Activity}_n} \text{Activity_Value} * \text{Activity_}\% _ \text{Complete}}{\sum_{\text{Activity}_i}^{\text{Activity}_n} \text{Activity_Value}}$$

where...

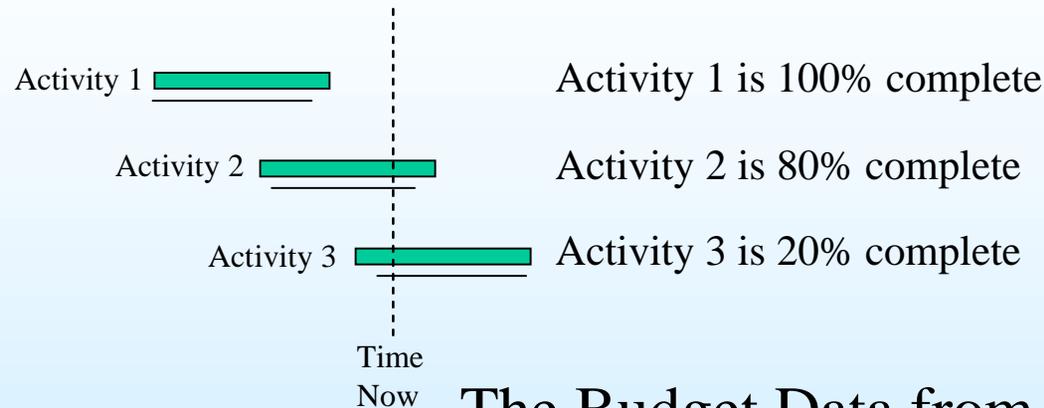
$$\text{Activity_Value} = \sum_{\text{Resource}_i}^{\text{Resource}_j} \{ \text{Budgeted_Cost } or \text{ Budgeted_Quantity} * \text{Baseline_Labor_Rate} \}$$

and

$BAC_{\text{charge_code}_x}$ = The approved budget at completion (Total BCWS) stored in PMCP for the given charge code.

Earned Value in PMCP

- A simple example of how PMCP calculates BCWP...



From the approved baseline schedule and estimate, the total BAC for this given scope of work is \$5,000.

The Budget Data from the P3 schedule is...

Activity	Resource	Budget	Rate	Total Value	Pct Complete	P3 Earned Value
1	WA12345	\$1,000	NA	\$1,000	100%	\$1,000
2	21LABOR	10 (hrs)	\$50/hr	\$500	80%	\$400
3	SC12345	\$3,000	NA	\$3000	20%	\$600
3	41LABOR	10 (hrs)	\$40/hr	\$400	20%	\$80
Total				\$4,900		\$2,080

BCWP is calculated as equal to $\$2,080 / \$4,900 * \$5,000 = \$2,122$

Earned Value in PMCP

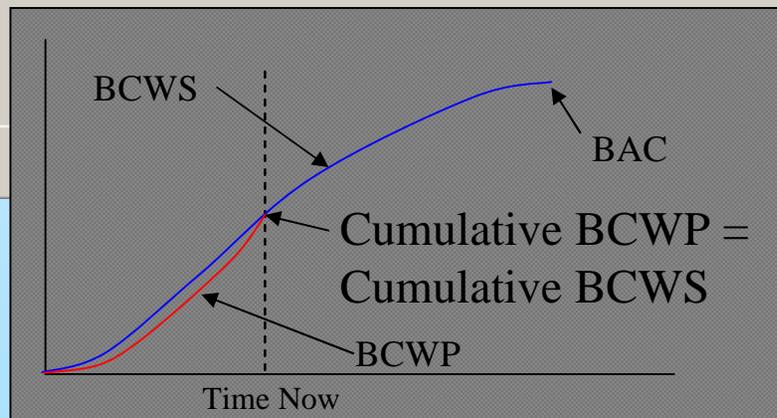
- If a charge code is flagged Level of Effort (LOE) in PMCP...
then cumulative BCWP is set to the cumulative BCWS to date.

Performance - WBS [01.02.01.01]

Reporting FY/Period: 2004 - December

WBS No	Charge Code	Total BCWS	Cumulative BCWS	Cumulative BCWP	Current BCWS	Current BCWP	LOE	Source
Total		66,131,200	4,334,822	2,057,533	1,711,215	148,644		
01.02.01.01.04.10	KTR1A421	210,436	49,465	49,465	17,605	17,605	<input checked="" type="checkbox"/>	Baseline
01.02.01.01.10.10	KTR1P421	3,967,479	301,360	301,360	108,622	108,622	<input checked="" type="checkbox"/>	Baseline
01.02.01.01.10.25	KTR1P34F	168,052	22,238	0	22,238	0	<input type="checkbox"/>	
01.02.01.01.10.40	KTR1H44B	1,118,373	237,357	103,449	105,462	0	<input type="checkbox"/>	
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01.02.01.01.10.45	KTR114JX	59,957,123	3,661,422	1,540,279	1,434,871	0	<input type="checkbox"/>	

OK Cancel



Earned Value in PMCP

- PMCP insures that...
 - Performance can never exceed the baseline Budget at Completion. (BCWP is always less than or equal to BAC.)
 - Performance can be taken only for scope that is approved in the baseline schedule and estimate. No performance can be taken for scope outside of the baseline.
 - There will be no change to the baseline that affects the Total Contract Scope of Work, Target Cost, Target Schedule Completion dates, Gold Chart metrics, FFA milestones, and PBS milestones without DOE approval.