



# Earned Value Management (EVM)

Efficiency Notes – Project Controls Series

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## What It Is

A project management technique that measures project performance and progress by combining scope, schedule and costs into a single integrated system of monitoring and reporting.

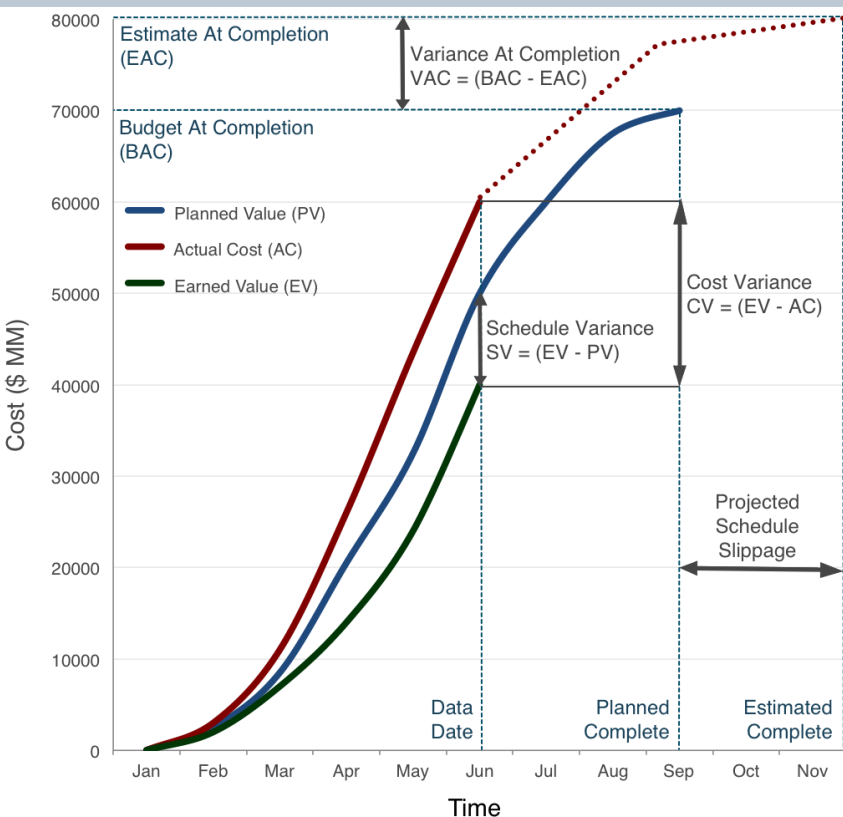
## Why You Need It

**EVM is the industry standard method of tracking project progress on capital projects.** It improves communication, reduces project risk, provides better forecasting, better progress tracking and better project visibility.

## What You Need

1. A Project Plan  
(schedule, scope, costs)
2. What you plan to spend and what you expect to have done for the \$\$\$ spent  
*X Activities Done by Y Date will cost \$MM*
3. Metrics to quantify work % complete  
*X Activities of equal effort or weighted*
4. Method to track work execution on Activities  
Actual % Complete      Actual Costs  
Actual Hours Spent      Actual Start / Finish
5. Formulas to calculate EV, CV and SV  
See back of page
6. Reports on \$ Expenditure vs. Time  
Planned, Actual, Earned, Variances

## Reading an S-Curve Report



### Data Date

When is this project data as of?

### Planned Value > Earned Value

We are behind schedule

### Actual Cost > Earned Value

We are over budget

### $VAC = BAC - EAC$ (Negative Value)

How far over budget do we expect to be?

### Estimated Complete Date vs. Planned Complete Date

When do we expect to finish?





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## Primary Data Points and Calculations

<b>BAC</b>	Budget At Completion What you plan to spend for 100% complete	$BAC = \text{Total Planned Cost}$
<b>PV</b>	Planned Value What you plan to spend on what you plan to be completed	$PV = BAC \times (\% \text{ Completed Planned})$
<b>AC</b>	Actual Cost Actual cost of work performed	$AC = \text{SUM}(\text{Cost})$
<b>EV</b>	Earned Value What you planned to spend on what's actually done	$EV = BAC \times (\% \text{ Complete Actual})$

## Variances and Calculations

<b>CV</b>	Cost Variance How far over or under budget am I?	$CV = EV - AC$ (-) = over    (+) = under
<b>CV%</b>	Cost Variance % How far over or under budget expressed as a %	$CV\% = (CV) / (EV)$ (-) = over    (+) = under
<b>SV</b>	Schedule Variance How far ahead or behind schedule am I?	$SV = EV - PV$ (-) = behind    (+) = ahead
<b>SV%</b>	Schedule Variance % How far ahead or behind schedule expressed as a %	$SV\% = (SV) / (PV)$ (-) = behind    (+) = ahead
<b>VAC</b>	Variance At Completion Variance of total actual cost and expected cost	$VAC = BAC - EAC$

## Performance Indices

<b>CPI</b>	Cost Performance Index Ratio of planned spend on what's actually done to what's actually spent for the work delivered by reporting date	$CPI = (EV) / (AC)$ > 1 typically good (cost < plan) < 1 bad (cost > plan) = 1 good (cost = plan)
<b>SPI</b>	Schedule Performance Index Ratio of planned spend on what's actually done to planned spend on what you planned to have done by reporting date	$SPI = (EV) / (PV)$ > 1 typically good (ahead vs. plan) < 1 bad (behind vs. plan) = 1 good (on plan)

## Forecasts

<b>EAC</b>	Estimate At Completion Expected TOTAL cost for 100% complete] Atypical - assumes similar variances seen will not occur in future	$EAC = AC + ((BAC - EV) / CPI)$ (typical) $EAC = AC + (BAC - EV)$ (atypical)
<b>ETC</b>	Estimate to Complete Expected cost to finish REMAINING work	$ETC = EAC - AC$

