



Title:	EARNED VALUE MANAGEMENT REPORTING GUIDANCE		
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PURPOSE AND SCOPE

Earned Value Management (EVM) is required for IT investments classified as “Major” by OMB Circular-11 guidelines that is development, modernization, and enhancement (DME), and exceeds \$25 Million for the DME part of the life cycle. Updated guidance from Dept. of Commerce, effective December 2007, requires projects to submit monthly reports.

EVM is a project management methodology for overseeing the cost and schedule performance of projects, by comparing "planned" work with "accomplished" work. It is inter-related with Risk Management, because Risk Management mitigates potential project issues that might force a project to deviate from its planned cost and schedule.

When a project has a mixed life cycle, that is some parts DME and others Steady State, EVM is done for the DME portion only. Work that is “Steady State”, technology refresh, operations and maintenance is not a part of EVM.

AUTHORITY

This guidance from the NOAA OCIO, Office of Planning, Policy, and Analysis (OPPA), is mandated by Department of Commerce OCIO IT guidance as essential to IT Capital Planning and Investment Control. Reference the [DOC OCIO website](#) for [DOC IT policy](#) a, specifically reference [IT Investment Performance Measurement and Reporting](#).

INTENDED AUDIENCE

CIOs, Program and Project Managers, OCIO staff, and the project team should understand this guidance.

DESCRIPTION

Earned Value Management is a methodology for determining cost and schedule performance of a project by comparing "planned" work with "accomplished" work in terms of the dollar value assigned to the work. Work is planned, budgeted and scheduled in time-phased increments utilizing a Work Breakdown Structure (WBS) to define tasks and to assign costs to those tasks.



- As work is accomplished, value is "earned" on the same basis it was planned. Comparison of this earned value with the planned value for a specific time period provides an indication of task progress – if more value is planned than is earned for a specified period, then the project is at risk of not meeting its required schedule, unless mitigating action is taken.
- Comparison of the earned value for a task or group of tasks with the "actual" costs required to accomplish the same task(s) provides an indication of task cost performance – if actual costs are greater than planned costs for the accomplished task(s), then the project is experiencing a cost overrun.
- Three quantities form the basis for cost performance measurement using Earned Value Management. They are Budgeted Cost of Work Scheduled (BCWS) or planned value, Budgeted Cost of Work Performed (BCWP) or earned value, and Actual Cost of Work Performed (ACWP) or actual cost of accomplished work. From these three quantities we can determine our total program budget as well as make a determination of schedule and cost performance and provide an estimated cost of the project at its completion.
- A key tenet of EVM is to limit the size of “work packages” so that work can be accomplished in relatively short periods of time, and to define discrete milestones against which work performance can be measured.

Supporting documents:

- (1) The NOAA Master EVM spreadsheet (filename = *NOAA_MASTER_EVMS_reports_yyyymmdd.xls*). LOs use this to report EVM data to NOAA.
- (2) Several EVM-related links on the DOC webpage [IT Investment Performance Measurement and Reporting](#).
- (3) The [NDIA & PMSC Earned Value Management Intent Guide](#), created the National Defense Industry Association (NDIA) Program Management Systems Committee (PMSC) to promote a clearer understanding of the EVM Standard. For each of the 32 guidelines, the Intent Guide provides: the value to management, an intent statement, typical attributes, and examples of objective evidence. {filename = *EVMS_IntentGuide_Nov06.pdf*}
- (4) By the Federal CIO Council, [A Framework for Developing Earned Value Management Systems \(EVMS\) Policy for Information Technology \(IT\) Projects](#). The document was developed to assist Federal Departments and Agencies in moving toward full implementation of EVMS for IT projects, as described in the August 2005 memo from OMB’s Karen Evans. {filename = *Framework_for_Developing_EVMS_Policy_12-5-05.pdf*}

DEFINITIONS

Actual Cost of Work Performed (ACWP), or Actual Cost (AC) of accomplished work – The actual costs incurred in accomplishing the work performed within a given time period. For equitable comparison, ACWP is only recorded for the work performed to date against tasks for which a BCWP is also reported.

Budget at Completion (BAC) – The industry definition of BAC is: the sum of all of the budgets allocated to a program. In addition to the PMB, there generally is an amount of management reserve, which is a portion of the total program budget not allocated to specific work packages and withheld for management control purposes. The BAC consists of the PMB plus all management reserves.

NOAA’s definition of BAC for reporting purposes is derived from totaling three fields in the current Exhibit 300, Summary of Spending Table, working copy in eCPIC. NOAA’s BAC calculation is:

- $BAC = x + y + z$; where
- x = SubTotal Planning and Acquisition, Budgetary Resources, “Total” (for all Years)
- y = Government FTE Costs Budgetary Resources Planning “Total” (for all Years)
- z = Government FTE Costs Budgetary Resources Acquisition “Total” (for all Years)



Budgeted Cost of Work Performed (BCWP), or Earned Value (EV) – The sum of the budgets for completed work packages and completed portions of open work packages.

Budgeted Cost of Work Scheduled (BCWS), or Planned Value (PV) – The sum of budgets for all work packages scheduled to be accomplished within a given time period. See also FAQ, “[How do we analyze Planned Value?](#)”

Cost Performance Index (CPI) – is the ratio (BCWP / ACWP).

Cost Variance (CV) – The difference between the planned cost of work performed (BCWP) and actual cost incurred for the work (ACWP). This is the actual dollar value by which a project is either under- or over-running its estimated cost.

Cost Variance Percent (CV%) – is defined as (BCWP - ACWP) / BCWP.

Estimate at Completion (EAC) – Actual costs incurred by the project to date, plus an estimate of the costs for work remaining. At the start of the project BAC and EAC will be equal. Only as actual costs (ACWP) vary from planned costs (BCWP) will EAC vary from BAC.

Performance Measurement Baseline (PMB) – The sum of all work packages Budgeted Cost of Work Scheduled (BCWS) for each time period, calculated for the total program duration. The PMB forms the time-phased budget plan against which project performance is measured.

Schedule Performance Index (SPI) – is defined as (BCWP / BCWS).

Schedule Variance (SV) – The difference between the work scheduled (BCWS) and the work actually performed (BCWP). The schedule variance is calculated in terms of the difference in dollar value between the amount of work that should have been completed in a given time period and the work actually completed.

Schedule Variance Percent (SV%) – is defined as (BCWP - BCWS) / BCWS.

Work Breakdown Structure (WBS) – A WBS is a hierarchical structured outline of a project into its component elements, grouping work tasks necessary for project accomplishment. The WBS defines both works products that are produced, and the supporting work tasks. The WBS organizes the products and work tasks to allow tasks to be planned, scheduled and tracked.

GUIDANCE

As stated in the above Purpose and Scope section, EVM is required for Major IT investments doing work in part or all DME. Only DME work packages, schedule and costs are considered in EVM methods. Follow these steps to be compliant with NOAA guidance regarding EVM:

Step 1. Establish the project management framework for EVM –

1. Read supporting documents referenced above.
 - From the [NDIA & PMSC Earned Value Management Intent Guide](#), determine the “intent guideline” management scenarios that would provide value to your project.
 - The NDIA intent guideline can be used to validate your project’s compliance with EVM.
2. Ensure contracts that support DME work include contractual clauses to require the contractor to perform EVM and provide the government to oversee compliance with EVM.
3. The Line Office OCIO is responsible to establish the standards for project and program performance monitoring. NOAA OCIO expects LO CIOs and project managers to be maintain records of their monthly EVM variances and status.
 - The LO OCIO is responsible to ensure distribution to and awareness of Project Managers.
 - The LO OCIO should develop a process for periodic and annual performance review that incorporates the EVM.



4. Establish a reliable and accurate WBS, schedule of work, and cost schedule. Incorrect estimates in your planning will be evident in your EVM reporting because your variances will be high.
 - See below FAQ, "[How to validate Planned Value?](#)" for additional information.

Step 2. **Write the EVM report**

1. Every month, the Project Manager gathers cost performance data – BCWS, ACWP, and BCWP – from the previous month.
 - Project managers should ensure they receive this information as soon as it is available.
2. Use the NOAA Master EVM spreadsheet to record your project's EVM data on a monthly basis.
 - The Project Manager or a Line Office EVM specialist maintains the EVM spreadsheet.
 - In the spreadsheet, for each project there is a worksheet, accessible by clicking its named bottom tab.
3. Follow these instructions for EVM spreadsheet.
 - Enter all money amounts in units of \$1000 (K = \$1000).
 - *Required by DOC:* Enter all Planned Value, BCWS, for the entire current Fiscal Year in the 1st Quarter report, in advance of the remaining current FY reporting months.
 - Enter comments and explanations about the EVM performance of a project in the "Comments" worksheet, as needed, in order to embed comments with the spreadsheet rather than putting comments in email or paper reports.
 - Do not change spreadsheet formulas, derived cells, or locked cells without informing OPPA and noting the change in the Comments worksheet.
 - Save the file as a new filename for each reporting period, for version control purposes.

Step 3. **EVM reports from LO to NOAA are due 3 business days before the end of each month**

1. The LO CIO is responsible to review and approve LO EVM reports before sending to NOAA.
 - Conduct internal performance reviews proactively in the LO, to reduce negative visibility at the NOAA or DOC level.
2. LO OCIO should submit reports **three business days before the end of the month**.
 - **Reports must include data through the previous month.**
 - Submit *one* updated EVM spreadsheet per LO, comprising all the major DME projects within a LO.
 - LOs should routinely report each **month** without advance data call prompts from NOAA.
3. NOAA OCIO OPPA staff forward the NOAA EVM reports to DOC the last **business** day of every month.

Step 4. **Action required when variance(s) exceed + or – 10%**

1. When Cost or Schedule Variance Percents exceed plus or minus (+ or –) 10% **the PM, through their LO CIO, will provide the NOAA CIO with a Corrective Action Plan.**

Step 5. **List of NOAA Projects Required to Submit EVM Reports**

NOAA maintains the list of projects required to submit EVMS for the current reporting year (this FY).

- NOAA OCIO will annually update each October the list of EVM projects.
- Line Offices can validate the list, and coordinate with OPPA for any changes.

Below are the Major IT Investments at NOAA, with over \$25M in DME, required to report EVM:

1. NESDIS/ CLASS
2. NESDIS/ ESPC
3. NESDIS/ GOES-R Ground System
4. NESDIS/ NPOESS Data Exploitation (NDE)



NOAA Information Technology Standard

NISN: 3.005

5. NESDIS/ NPOESS Ground System
6. NWS/ AWIPS
7. NWS/ National Air Quality Forecast Capability
8. NWS/ Historical Climate Network (formerly NERON)
9. NWS/ NEXRAD Product Improvement

FREQUENTLY ASKED QUESTIONS (FAQS)

[Q: How can I rebaseline the Budget at Completion \(BAC\)?](#)

[Q: How do we analyze Planned Value?](#)

Q: How do I rebaseline the Budget at Completion (BAC)?

A: Using the definition of BAC provided in the Definitions Section above, the baseline is now linked to the Exhibit 300. It will be readjusted whenever the funding in the Exhibit 300 changes.

Q: How do I analyze validate Planned Value?

A: The Exhibit 300 may be used to cross-check your spending plans. Take the Exhibit 300 Summary of Spending for DME/Planning & Acquisition and DME FTEs for a given year, and break it down into per month spending to validate your Planned Value (PV) or (BCWS). Use the Exhibit 300 to enter your BCWS as system milestones, in Section II.C Table, “*Comparison of Initial Baseline and Current Approved Baseline*”. Tip: Prefix each milestone item, Description of Milestone, with “DME” or “SS” to reflect the life cycle phase for that milestone. The table of milestones should mirror your EVM cost schedule. If so, the milestones list will be in synch with the monthly BCWS as the year progresses. The yearly total for DME milestones will be equal to: the Exhibit 300 Summary of Spending for DME; the annual subtotal BCWS for any year; and an annual PMB.

Comparison of Initial Baseline and Current Approved Baseline

Milestone Number	Description of Milestone	Initial Baseline		Current Baseline				Current Baseline Variance		Percent Complete
		Planned Completion Date	Total Cost (Estimated)	Completion Date		Total Cost		Schedule (# days)	Cost	
				Planned	Actual	Planned	Actual			
01	DME.Parent Milestone 1	01/01/2005	\$1.000	01/01/2006	01/01/2006	\$1.500	\$1.500	0	\$0.000	100%
02	DME.Parent Milestone 2	01/01/2007	\$0.650	01/01/2007	01/01/2006	\$0.500	\$1.500	365	(\$1.000)	100%
03	DME.Parent Milestone 3	08/01/2007	\$1.600	08/01/2007		\$1.600	\$0.400	0	0	25%
04	SS.Milestone 1	07/18/2008	\$1.500	07/18/2008		\$1.500	\$0.000	0		%
Project Totals		07/18/2008	\$4.750	07/18/2008	01/01/2006	\$5.100	\$3.400	365	\$0.001	57.14