

AACE
INTERNATIONAL
RECOMMENDED
PRACTICE

80R-13

ESTIMATE AT COMPLETION (EAC)

SAMPLE

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ESTIMATE AT COMPLETION (EAC)

TCM Framework: 7.6 – Risk Management
9.1 – Project Cost Accounting
9.2 – Progress and Performance Measurement
10.1 – Project Performance Assessment
10.2 – Forecasting
10.3 – Change Management

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INTRODUCTION

This recommended practice (RP) explains what an estimate at completion (EAC) is, and considerations to use when developing an EAC for both cost and schedule components of the performance measurement baseline (PMB).

This RP is aligned with the *Total Cost Management Framework*, as well as the *American National Standards Institute (ANSI) Electronics Industries Alliance (EIA) - 748 Earned Value Management Systems (EVMS)* guidelines. (Guidelines 27 entirely, and components of Guidelines 22-26)

This document provides additional details that are not included in the ANSI EIA-748 standard such as the use of estimated completion date (ECD) metrics to help compare the schedule completion date against what is shown on a project's working schedule. It also provides some additional aspects of EVM that are not covered in the *TCM Framework*, such as to complete performance index (TCPI) and earned schedule (ES). As with all AAACE International recommended practices, this document is not intended to be a standard, rather it is intended to provide general guidance.

This RP will address the fundamental attributes used to develop an EAC or forecast, both from a cost perspective and from a schedule perspective. It will also address common independent EAC calculations used to compare and validate the EAC provided by the control account managers and/or project management.

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RECOMMENDED PRACTICE**Summary Overview**

The EAC is the result of a periodic appraisal of project status and remaining work; it is an estimate of the total cost at the completion of a project. EACs are developed with varying amounts of detail and supporting information. There are two basic types of EACs:

1. Control account manager's (CAM) monthly EACs associated with schedule status, contract performance reports (CPRs) and variance analysis reports (VARs).
2. Comprehensive "bottoms-up" EACs done at a lesser frequency on all control accounts (CAs) with remaining authorized work. This includes an evaluation of remaining scope.

The EAC should be reviewed monthly by the CAM, on control accounts where cost or schedule variance thresholds have been exceeded, where the trend is pointing towards exceeding the variance threshold, or whenever the CAM knows of a significant change in assumptions or conditions that will cause a future trend requiring adjustment to the EAC. The CAM should evaluate the EAC monthly, to ensure it reflects a valid projection of total costs for their authorized work scope.

A comprehensive EAC is developed for the entire project. Even CAs that have not begun progress will be examined during this comprehensive EAC. This "bottoms-up" EAC is typically a more robust effort and helps to reduce the potential for surprises. ANSI EIA-748 requires a comprehensive EAC be conducted periodically using all available information. A comprehensive EAC is prepared at least once per year or when major changes occur in the project. It may be prepared more frequently. Because of the added effort, time, and cost to conduct, the decision to do a more frequent comprehensive EAC is usually a trade-off between the need for the most accurate EAC and cost.

At the start of a project the approved budget at completion (BAC) and the EAC will typically be identical because work has not begun and the EAC basis has not changed. However in unusual circumstances if an unrealistic management challenge has been issued without a corresponding change to risk assumptions, thereby making the budget unachievable, the CAM may assess the EAC higher than the BAC at the contract start. As the project progresses the EAC will begin to differ from the baseline for several reasons:

- First, performance will continue to be evaluated as the project progresses. Adjustments may be made to cost, schedule and resources as deemed appropriate by the CAMs and/or project management to meet the project objectives within contract requirements.
- Second, even when performance is not a problem, the project team is tasked with identifying and evaluating risks and opportunities and implementing the most cost effective solutions to meet the project objectives.
- Third, forecasting supports the change management process by providing a mechanism to consolidate deviations, trends and change requests together. This makes it possible to consider project changes in an integrated manner as they are identified and approved through the change management process.
- Fourth, the baseline BAC is based on assumptions and estimates about future costs and rates of performance prior to the start of the project. Once the project begins, actual expenditures and performance rates will tend to vary from the rates established in the baseline.

The EAC is updated by the CAM at the control account, work package or planning package level, as appropriate. With significant in-scope EAC changes, the CAM should notify the project manager (PM) via the project's EAC reporting process. Changes in project scope (via the formal owner change management process) that result in changes to EAC should be identified and incorporated into the EAC.

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Development of the project EAC will apply many of the same considerations as were employed in the development of the project baseline. It is important to have a documented basis for how the initial project baseline was developed as well as any subsequent approved changes. EACs are compared to the BAC to generate a variance at completion (VAC). EAC results are summarized and reported to the customer on performance reports and are the basis for funding decisions on the project. EACs are used by management to make project decisions, factor into rate and profit analysis, and control performance.

Techniques selected for developing the EAC may vary based upon project value, project status, risk, and/or complexity. Project team members who are responsible for budget elements of the performance measurement baseline (PMB) and project level allocations for managing risk within their control (See: Recommended Practice 75R-13, *Schedule and Cost Reserves within the Framework of ANSI EIA-748*) should be included in the EAC forecast process, as appropriate.

EAC forecasting procedures typically include the following steps:

1. Develop ground rules, assumptions, and documentation requirements.
2. Develop schedule for comprehensive EAC.
3. Determine rates and factors applicable to the EAC forecast.
4. CAMs develop revised schedule forecasts that are reviewed and approved by the project manager.
5. Conduct a schedule risk assessment.
6. CAMs develop revised cost forecasts consistent with the schedule that are reviewed and approved.
7. Compare the EACs with independent EAC (IEAC), to complete performance index (TCPI)/cost performance index (CPI), estimated completion date (ECD) and earned schedule (ES) analysis and, in the event of significant differences, reconfirm or revise the EAC.
8. Make final EAC adjustments and obtain endorsement by the project manager.
9. Report the comprehensive EAC.

Note: Steps 4-9 are typical of the CAMs model EAC process. Key portions of this process are discussed in more detail below.

Estimate at Completion (EAC)

The EAC is the estimated total cost for the authorized work scope, which is the sum of the actual cost of work performed (AC) to date plus a subjective estimated cost to complete (ETC) the project. The EAC should be time-phased in accordance with the expected completion dates on the working project schedule.

$$EAC = AC + ETC$$

(Equation 1)

The following sections provide a detailed discussion of the steps for determining the EAC:

1. Validating the EAC as Reasonable
2. Collect the Cumulative Actual Costs Through a Given Period
3. Estimate the Schedule Completion Date
4. Earned Schedule (ES) Analysis
5. Estimate the Resources and Costs to Complete the Remaining Authorized Work (ETC)
6. Revise the Estimate at Completion (EAC)