

AACE
INTERNATIONAL
**RECOMMENDED
PRACTICE**

75R-13

**SCHEDULE AND COST RESERVES
WITHIN THE FRAMEWORK OF
EIA-748**

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AAACE® International Recommended Practice No. 75R-13

SCHEDULE AND COST RESERVES WITHIN THE FRAMEWORK OF EIA-748

TCM Framework: 7.3 – Cost Estimating and Budgeting

7.6 – Risk Management

9.1 – Project Cost Accounting

10.3 – Change Management

Rev. November 19, 2020

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1. INTRODUCTION

1.1. Scope

This recommended practice (RP) of AACE International describes the definition, purpose, management, and control of schedule and cost reserves on projects being implemented under *Electronics Industries Alliance (EIA) - 748 Earned Value Management Systems (EVMS)* guidelines [1] with a focus on Federal Acquisition Regulation (FAR), required for projects funded by the United States government.¹ This includes contingency, management reserve (MR), schedule margin (SM), undistributed budget (UB), and authorized unpriced work (AUW). Overall use of management reserve for programs and portfolios are not within the scope of this document. This document elaborates and provides additional detail that is consistent with, however not included in the EIA-748 standard. This recommended practice is intended to provide guidelines from the owner and contractor perspectives and not intended to be a standard.

1.2. Purpose

This RP specifically provides guidance regarding the management and use of management reserve and undistributed budget on projects executed using earned value management (EVM) techniques consistent with the EIA-748 standard. This RP defines the non-time-phased components of the contract budget baseline (CBB) and may be used when project management consistent with EVM tenets is implemented and practiced in a disciplined manner.

In this RP, the cost contingencies are mitigated through the use of management reserve and schedule contingencies in schedule margin. Also, undistributed budget is defined as the amount of the budget of the performance measurement baseline that has yet to be allocated either to control accounts or to summary level planning packages.

This RP covers the scope of *EIA-748* Guidelines 14 and 15 entirely and components of *EIA-748* Guidelines 8, 28, 29, 30 and 32 regarding revisions and change control (as listed in the *National Defense Industries Association (NDIA) Integrated Program Management Division (IPMD) Earned Value Management Systems Intent Guide*). [2]

2. RECOMMENDED PRACTICE

2. 1. Terminology within the RP

The terms *management reserve* and *contingency* are used in different context in different communities and industries. This can create significant confusion in discussion of ownership and use. This RP will be used in the context of EIA-748 terminology which is a requirement for many projects; especially high cost projects including those funded by the United States government. [3] Specifically, owner level cost reserve for the management of project uncertainties is referred to as contingency and the contractor's cost reserve is referred to as management reserve. It should also be noted that for projects that are not required to comply with EIA-748, common industry nomenclature may be used as shown in Table 1.

¹ Note there is a threshold for United States government projects which varies from agency to agency (for example projects estimated with a TPC less than \$20 M for the United States Department of Energy).

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Level/Type of Cost	Terms Used in EIA-748/Capital Programming Guide Reference	Terms Used in Common Commercial Practice
Owner Cost Contingency	Contingency	Management Reserve
Owner Schedule Contingency	Contingency	Schedule Contingency
Contractor Cost Contingency	Management Reserve	Cost Contingency
Contractor Schedule Contingency	Schedule Margin	Schedule Contingency

Table 1 - Comparisons of terms for schedule and budget reserves created and managed on the contractor and owner level for project uncertainties (this may vary by Industry)

It should be noted that for EIA-748 compliant EVMS, contingency belongs to and is managed by the owner². Allocations of contingency become contract modifications typically approved by the owner and contractor. MR and SM are the responsibility of the contractor.

The illustration, shown below in Figure 1, is a simplified representation of typical project cost and price structure that follow the Federal Acquisition Regulation (FAR), the Capital Programming Guide [3], and EIA-748 terminology with boxes representing which components of the project cost are controlled by the owner and which are controlled at the contractor level: The boxes with a light blue background indicate management at the owner level and boxes with a purple background indicate management at the contractor level. Management reserve and contingency are highlighted (circled). It should also be noted that the specifics for the management of fee are beyond the scope of this document. Unearned fee is held by the owner until the contractor completes the required activities to earn profit and/or fee. It should be noted that earned value management is handled at the cost level, starting at the negotiated contract cost (NCC), which does not include profit or fee. Further discussion of profit and/or fee is beyond the scope of this RP.

² Note: This requirement for contingency is derived from Federal Acquisition Streamlining Act 1994 Title 5, which requires all major acquisition projects to be achieved within 90% of goals before requiring more authorization.

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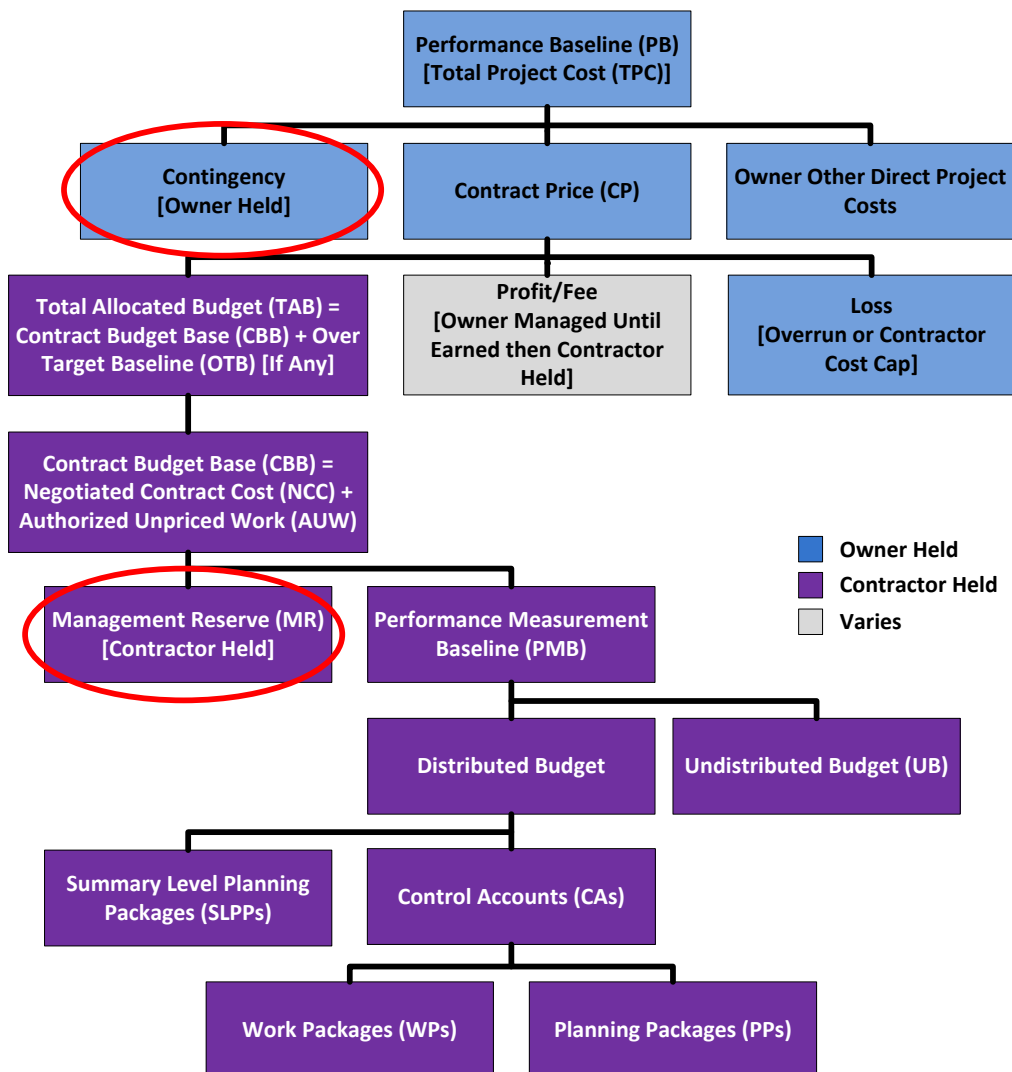


Figure 1 – An Illustration of a typical project cost and price structure for a project performance baseline, based upon the EIA-748 Standard as well as the United States government. [3] Management reserve and contingency are highlighted.

Notes to Figure 1:

- (1) Since this figure represents a cost and price structure, schedule reserves and schedule margin are not illustrated.
- (2) Boxes that are colored blue indicate cost and price components that are managed at the owner level while boxes that are colored purple represent costs are managed at the contractor level.
- (3) For this (simplified) illustration fee is listed as managed by the owner until earned by the contractor; EVMS is managed starting with the NCC and does not manage price (which includes fee). Discussions of profit/fee are beyond the scope of this RP.

2.2. Contingency and Management Reserve within the TCM Framework

Contingency is defined in RP 10S-90, *Cost Engineering Terminology*. [4] Broadly, it is defined as an amount of either schedule or cost added for the management of unknown events at any estimated level. Management reserve and schedule reserve are specialized cases of contingency applicable with earned value. They are all held as single

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accounts, which are managed by strict change control. They also meet the basic definition of contingency in RP 10S-90, *Cost Engineering Terminology* and are typically determined by the methods consistent with RP 40R-08, *Contingency Estimating – General Principles*. [5] However, there are significant differences in the development and use of contingency with earned value when considered within the context of EIA-748.

The unique aspects for the handling of risk in an earned value environment are as follows:

- All unbudgeted (and budgeted) risks are typically tracked in a risk register.
- The performance measurement baseline (PMB) does not have an associated risk budget. Risk funding is handled through the use of management reserve and contingency, which are held separately.
- The United States government defines the term “contingency” as schedule or cost reserves above the contractor level held by the owner. An allocation of contingency in this context is a change to the contract value that is not part of the contract target cost but is held in reserve by the owner (government) for future contract modifications or cost growth. The contingency is for both contract scope growth and cost growth.

2.3. Management Reserve within an EIA-748 Application

Management reserve, as described in EIA-748, is a part of the contract budget baseline that, by definition, is held outside the PMB and used to address undefined project risks that are within the scope of the project. MR is part of a contractor’s strategy for managing overall project cost and schedule risk; however, it is distinct from the project risk register in so far that it has no specifically defined risks or scope. MR is calculated as part of the risk-adjusted estimate, but is usually not recognized as a separate component of the bid. Once the contract is awarded, the project manager generally withholds an amount of budget from the PMB to address potential risks within the project scope. The initial project risk assessment typically includes a schedule risk assessment. Management reserve (as described in EIA-748) is distinct from the project contingency in so far that it has not been formally identified or allocated to a specific project scope element, control account, etc. (this is discussed in more detail later in this document.)

Overall, EIA-748 does not require the creation of MR, but the owner will generally expect to see it included when reviewing the contractor’s baseline. Removing too much budget from the PMB for inclusion in MR (provided the cost and schedule estimate is good) will generally increase risk.

Mathematically, management reserve is defined by contract budget base less performance measurement baseline.

$$MR = CBB - PMB$$

Note: when an over target baseline (OTB) has been implemented the formula becomes:

$$PMB + MR = \text{total allocated budget (TAB)}.$$

There are two types of cost and schedule reserves.

1. Budgeted MR. This has no defined scope and is held for future realized risks or risk mitigation that impacts control account level scope. It is budgeted and subject to change control. It is not directly tied with the risk register in a one to one relationship. The risk register represents risks that are known and tracked for potential.
2. Schedule margin (schedule reserve) is contingency in the duration units of the schedule, typically days. Schedule margin is typically associated with the critical path and therefore linked with the time phased baseline. An accepted technique is to link schedule margin as predecessors to project intermediate milestones earlier than the final completion milestone; thus, providing opportunities to mitigate the impact of risks to key milestone activities along the project critical path.

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2.3.1. Estimating MR

There is no prescribed method established to determine a project's MR. For example, a major development, such as aircraft production with significant technical and schedule risks should have a larger reserve than a labor maintenance type contract that has no schedule risk. MR is initially created as a separate amount to address potential unforeseen changes within the original project scope. However, the MR is kept separate from the PMB as a challenge to the control account manager (CAM) to manage potential risks by completing the project activities quicker and for less cost than originally negotiated.

The process to establish a specific MR may be different depending on the specifics of each project. All of these assessments should be based upon an understanding the project's cost estimate and risk management documentation. Examples of some common processes include:

1. Percentage reductions equal across the WBS structure. For example, a 5% cut of each WBS would be reasonable to create an overall 5% MR amount. This is not a recommended practice, due to being arbitrary, and not tied to an evaluation of risk. [6]
2. By target area(s); a weighted amount determined from specific budgets of the project may be used to obtain the overall target percentage of the performance measurement baseline that will be held as MR. The weighted amounts are based on the risk assessment for that specific WBS element. This weighted amount can be determined for the specific WBS element through the use of expected Value: where the probability of the risk for the WBS element is estimated as well as its cost impact, should that risk be realized, then the expected value is the product of the specific risk's impact and its probability is the expected value, (discussed in detail in RP 44R-08, *Risk Analysis and Contingency Determination Using Expected Value*). [7]
For example:

a. Hardware estimate	5% reduction
b. Software estimate	15% reduction
c. Total MR	8% of PMB
3. Through the difference of two project estimates with different probabilities: since a project estimate can be quantified to a specific probability for success using Monte-Carlo (as discussed in RP 57R-09, *Integrated Cost and Schedule Risk Analyses Using Monte Carlo Simulation of a CPM Model*). [8] As an example, management reserve and schedule margin may be considered as the difference between a higher and lower probability value for cost and schedule success. The difference in cost and schedule becomes MR and schedule margin respectively

The determination of an adequate amount of cost and schedule reserves is negotiated between owner and contractor therefore varying significantly for each project.

There is a balance between the need to have overall MR for project uncertainties and the CAMs need to have a valid execution baseline at the lower level. For example, if the contract has inadequate reserves there is more of a tendency to overrun when the first unknown problem or unforeseen risk is realized. From the CAM perspective they had a risk adjusted bid that is now being reduced to create MR. If their original project budget is reduced too much, they will manage to a different baseline than originally planned. Within the broad EVM community, to balance the two perspectives for a development type project the consensus is generally a recommendation of no more than 10% MR (of the CAM budget) should be placed in MR. Regardless, CAMs should document a complete set of their project estimates and changes to risks as a result of the MR reduction.

This concept is a bit difficult to understand from both owner and contractor perspectives. Projects are bid based on risk adjusted estimates and then MR is created when a portion of the risk adjusted bid is reduced. The reason is that both perspectives are valid. Projects with a duration over six months will have risks; it is more difficult to plan effectively as the planning horizon is further into the future. In addition to the difficulty of planning into the future, a project design has uncertainty and there may be indirect cost rate uncertainty.

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2.3.2. MR and the Project Risk Register

The project risk register contains the scope, schedule, and/or budget risks for the project. Generally, risks may be assumed, mitigated, transferred, or monitored. MR is allocated for realized risks and for activities that arise that were not specifically part of the original project plan, but are part of the required overall project scope.

The reason for the difference in definition has to do with the EVM definition that the PMB has scope, schedule, and budget integration at all times. The risks identified in the register do not fulfill this requirement since, by definition, they may or may not occur. Therefore, MR cannot be linked to specific risks in the risk register which are not fully integrated into the PMB. It must be for non-specified events within the project scope as defined by the definition in the NDIA Intent Guide, unique to an EIA-748 implementation. Risk realization is also different. Risks may be realized or retired in the risk register. Risks that are realized may have a resultant scope, schedule, or budget impact within the project scope which allows for MR to be used. Other risks may not have scope. An example of a risk realization not allowed to use MR: A realization of a risk that the schedule might not achieve 50% probability but rather 75% probability. In that case, the realized risk MR is not available; the schedule growth is tracked as a variance. Also, there is a distinction between authorized activities within the PMB dedicated to risk mitigation and the use of MR for risk mitigation efforts for newly realized risks which may result in scope, schedule, and budget impacts. Risk mitigation that impacts scope may use MR.

MR has the following characteristics:

- It has no specified scope and is not time-phased.
- It is for changes within project level scope. It is not used to "absorb the cost" of new and/or out-of-scope work at the project level.
- It is often related to overall project risk, but is not linked to individual tasks or activities within the project.
- It should be present on any project in which there is inherent cost risk.
- It is managed and reported at the total project level.
- Is owned by the contractor's manager and allocated with authorization to the control account (CA).
- It is not mandatory, although the use of MR is an established best practice. Certain owners may assess the project as higher risk if adequate MR is not established by the contractor (s).
- Is used to address realized scope risks at the CA level (refer to Table 2 for an example of the contract specification not being met).
- Allocation of MR requires changes to the CA scope documentation [MR is only used with scope, budget, and schedule changes at the CA or summary level planning package (SLPP) level].
- Is available to cover estimate at completion (EAC) growth at the total contract level (remaining MR); however, it is never allocated to a specific individual control account(s) to remove cost overruns of in-work or completed efforts. So, from a cost standpoint, MR may offset a cost variance; however, MR may not be allocated to remove a cost variance.
- The value of MR may vary over the life of a project, but can never be negative.
- It is expected to be allocated or used to offset during the life of the project. It is never spent, so unallocated MR at the end of the project, if any, is an additional budget underrun that may offset cost growth.
- MR allocation and balance are reported in owner's reports.

2.3.3. MR Allocations

MR is allocated to specific control accounts scope based on approved changes that are consistent within the existing authorized project scope. Stated differently, it is the change within the total project scope yet out of scope of the individual control accounts. The scope, schedule, and budget must always remain integrated within the PMB. This aligns with the meaning of variance analysis. Some examples can be seen in Table 2.

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CA Scope	MR Allocation Allowance Yes or No
Contractor's original scope was to build two widgets to meet contract specifications.	A third widget is required to meet the original contract level required specification. The original assumption was inadequate and the performance specifications required another unit: a necessary, yet unplanned, third widget. This example could use MR since at the CA level scope was limited to two units.
Scope is limited to performing two performance tests.	A third performance test was needed due to a failed initial test that was not anticipated. MR is available due to the scope change.
Conduct performance tests.	Scope does not specify the number of performance tests that are required for the project. Scope was unclear; therefore, any additional performance tests are in-scope and MR is not available.

Table 2 – Examples of when allocation of MR is available

As described in Table 2, the scope determines the allowed use of MR for technical changes. In the first two examples, scope is defined by quantity. It is an in-scope scope change if the design or manufacturing now requires additional work products or tests that were not a result of adding new work within the control account (prior scope). In the third example, "all performance tests" is so broadly defined that the actual number of tests are not a change in scope and therefore MR cannot be allocated. Therefore, in general, the valid allowance of MR allocation is directly related to the quality and description of control account scope.

It is important to understand the allocation of MR is to evaluate its change to work authorization scope. If control account level scope is modified, (but it is still within project scope), MR may be used. If control account level scope is not modified, the use of MR is disallowed, and the cost overrun has to be reported. A change in published direct or indirect rates consistent with the published disclosure statement if applicable are common examples allowing the use of MR, except when prohibited by control account level scope. For example, the scope may state that the (CAM) is responsible for all costs including indirect allocations. In this limited case, indirect rate changes would not be a valid use of MR. In summary, if the work authorization scope is changed, it is typically a valid use of MR.

New work is also typically planned as new schedule activities and new work packages. Changes in work authorization scope or indirect rates may be typically applied in the current period. Other uses of MR typically cannot be applied to the current period, instead are applied in the future include:

- Work completed that needs to be changed – also known as rework that is not due to failure to perform or inaccurate status. Examples of rework that should be tracked as a variance, is work that fails initial or unit test to meet the design requirements.
- Work not yet started (e.g. subcontractor original negotiated price changes).
- A change in basis of estimate or assumptions for planning packages.
- Major events outside the project's control that will not be submitted to the owner for reimbursement are candidates to use MR (e.g., a shutdown due to unforeseen weather events).
- Realized risks that are scope based.

The MR required to complete the project should be re-evaluated at certain milestones during the project, like the start of construction, the completion of engineering design, and similar triggers. This allows for earlier assessment to establish whether there will be a shortfall or surplus of MR at the end of the project. There is also an expected drawdown curve established and the actual EAC (including the Estimate to Complete (ETC) reported each period against this curve. [9] [10]

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2.3.4. Components of MR

There are two components of MR: Budgeted MR and remaining MR. Budgeted MR is related to the original budget and is allocated to increase scope at the CA level. The remaining MR changes reflect the project's progress and are related to the EAC.

Remaining management reserve may be used to offset overruns at the total performance measurement baseline level with the owner's approval. Projected overruns are measured by contract budget base less estimate at completion (CBB – EAC), or total allocated budget less estimate at completion (TAB-EAC) if an over target baseline has been implemented. Since MR is below the CBB level, the remaining MR, if any, may be used to offset EAC variances at the PMB level with the owner's approval. It should be noted that remaining MR is always reviewed at the CBB level.

The term *offset* is used to distinguish between allocation and reporting. Offset is used to imply a reporting calculation only. Likewise, the term *remaining* is used to indicate the MR that is not being used to offset cost growth.

2.3.5. Documenting MR

The allocation and balance of MR is tracked within the contract budget baseline log (CBBL) or the equivalent. All budget transactions in and out of the MR log are documented through the approved change control process. Documentation should include the scope and reasoning behind the transfer, the account (CA, etc.) receiving the MR allocation, the date, and the authorization throughout the project's life-cycle.

2.3.6. Increasing MR

The original MR may be increased if new scope is added to the project at the contract level. This usually follows the same process described earlier as a total percentage or risk-based process. Additionally, it may be increased by removed scope at the control account level. Cost variances, at the completion of control accounts, are not individually transferred to MR. Management reserve should never be used to cover cost overruns in control accounts for poor performance as this would tend to mask performance issues and undermine the integrity of the project reporting. All increases in MR must come from new project scope or removal of scope at the control account level.

2.4. Owner Held Cost and Schedule Reserves

The owner may require cost and schedule contingency above the project level (or outside the contract). This is very typical with large owners such as government entities. This is not to be confused with project level MR or schedule margin. Owner contingency has the same components as MR (budget and remaining) but is held outside the project scope, schedule, and budget negotiated values (i.e., contract). Owner contingency is the source for future contract changes or for covering owner approved overruns (depending on type of contract) and scope increases. Remaining contingency from the owner perspective is sometimes referred to as the *funding* available for the contract. Contingency funding can never be less than zero. Contingency is allocated to the contractor through a contract modification.

2.5. Schedule Margin (Schedule Reserve)

Schedule margin, schedule reserve, or schedule contingency are interchangeable terms meaning duration units added to create a schedule activity to allow for the probability of possible or unforeseen events (or with a constraint

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to model the same - see Figures 2 and 3). It is typically based on a schedule risk assessment and is measured in the duration units (typically days). For EVM, schedule margin is usually limited to logical end points within the schedule.

Schedule margin acts as a buffer between the projected end date of baseline activities and the project end date. It may be considered MR in time units. A good example of schedule margin may be seen in Figures 2 which illustrate a series of activities from a simple project. Figure 2 shows the use of schedule margin of 15 days between the scheduled completion of activities and the contract due date. For further discussion on schedule contingency attributes and principles, refer to AACE International Recommended Practice 70R-12 *Principles of Schedule Contingency Management as Applied in Engineering, Procurement, and Construction*. [11]

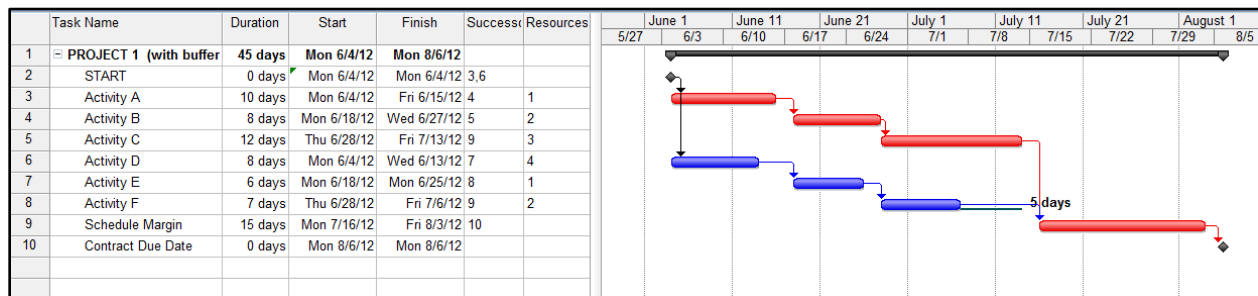


Figure 2 – A simple project with two delivery milestones (one internal, one external) with a visible schedule margin activity.

(Figure adopted from *Leveraging the Power of Schedule Margin* [12].)

Like MR, the characteristics of schedule margin (SM) include the following:

- It is owned and managed by the contractor project manager.
- Its use should be accounted for in external reports.
- It has no specific scope.
- It usually is not allocated budget (because it has no specified scope).
- It has both a duration (time budget) and remaining component (usually measured in days) and in the schedule this is called the baseline and forecast duration.
- It is typically placed just in front of the project end date or may be placed before major project intermediate milestones where schedule risks typically exist. Schedule margin should be established any time a project has schedule risk.
- It is specifically identified as schedule margin in the schedule.
- It is always on the project critical path.

There is a difference between the use of MR and SM. The schedule calculates float in the forecast only. The baseline duration for schedule margin is not changed unless there is an approved in-scope change similar to MR budget allocation.

Schedule risk may be calculated by dividing the remaining forecasted schedule margin duration by the remaining project duration and comparing that to the original baseline SM duration divided by the original project duration.

$$(\text{original baseline SM duration}) / (\text{original project duration}) = 10\%$$

$$(\text{forecast SM duration}) / (\text{remaining project duration}) = 5\%$$

In this example the schedule margin has been used at a faster rate than expected; schedule risk is therefore increasing on the project. Expected schedule performance is generally tracked linearly, meaning at 10% project completion we would expect about 10% of the schedule margin to be consumed. As with rapidly depleting MR, if a negative trend is discovered during analysis; further investigation is recommended to determine the root cause.

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2.6. Undistributed Budget (UB)

Undistributed budget is within the PMB and not time-phased, even though a cost estimate and a specific budget for a PMB may have been established. At any given point during the execution of the PMB, the distribution of the budgeted value of the PMB to specific control accounts may not have been fully completed. The provision for UB is made because it is realized that temporary situations may exist where it is impractical to define work and distribute budget in detail. This may be due to a variety of reasons: the most common reason for budget residing within UB is that new scope and its associated budget from the owner is introduced into the CBB as a change order or as authorized, unpriced work (AUW). Due to the timing of the change (near the end of a reporting period where time does not permit budget to be allocated prior to the reporting cutoff date³), it may not be possible to allocate budget to the appropriate control accounts within the same accounting month. In those cases, the UB serves as the temporary holding account where the budget is kept until distributed to control accounts before the next reporting period or within 30 to 60 days. New work for this project (executed by an authorized contract change) or remaining unallocated work for an existing contract may be represented by UB.

It should be stressed that the provision for UB is to accommodate temporary situations where there is insufficient time or information for detailed budget planning. The UB should be designated for the effort which will require that specific budget and not be used for other work. UB is not MR, nor is it to be construed as a contingency fund. An UB log or some other method should be used to identify the amount of UB that exists, and, ultimately, the WBS element to which it is distributed.

2.6.1. UB Characteristics

- Retains original assigned scope content.
- Movement is tracked within CBBL and controlled via the documented EVM process requirements.
- The remainder of UB is tracked by change order(s) in the CBBL as it is distributed (see Table 1).
- It is part of the PMB.
- It is associated with specific scope which is not changed when allocated; UB is tied to its associated scope and must move together to the same account.
- It can be reduced to zero but is never less than zero (negative UB is not acceptable).
- It is allocated within two accounting periods towards completing its associated scope.
- It's allocation and balance are periodically reported to the owner.

2.6.2. Tracking UB

The balance of the UB is tracked in a change control log by change order; additions and subtractions are shown independently. An example is shown in Table 3.

UB Log	Date	Amount	Note
UB Balance (End of 2012)	12/31/2012	\$1,000K	
Change 1	1/1/2013	\$450K	ECP 001b
Change 2	1/13/2013	\$900K	ECP 002
Allocation to WBS X, WBS Y	2/13/2013	(\$500K)	ECP 002 Subtask 1
Net UB Balance		\$1,850K	

Table 3 – Sample change log for tracking UB

Note: ECP = engineering change proposal

³ Note that it is prudent to authorize changes with sufficient time to allow for proper planning (e.g., at the beginning of the reporting period).

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2.6.3. Long Term UB Situations

The exception to the short-term use of UB is for owner-held authorization amounts given to the contractor within contract budgets. They still require owner authorization to use. Examples include:

- Special studies that are customer directed at unknown intervals
- Bid and proposal preparation amounts not yet directed (costs negotiated to prepare future proposals at the direction of the owner).

In these situations, the balance remains in UB until the task order or study is subsequently authorized. This remaining balance is reported separately from the remainder of UB.

2.6.4. Authorized Unpriced Work and UB

Authorized unpriced work (AUW) is a change in scope that has been authorized by the owner; however, the value of the work has not yet been negotiated and agreed to by both parties and incorporated within the contract documentation. Typically, there is at least an order of magnitude (Class 5) estimate associated with the change. When AUW is approved, it may be placed in UB or partially allocated to control accounts to begin near term work depending on the work period of performance. Because the value of the AUW has not been formally negotiated in the contract, only the contractor's estimated value of the work is used to add to the UB balance. This estimated value of AUW is incrementally distributed to control accounts to initiate the near-term work (e.g. rolling wave planning) until the price agreement is formalized. The remainder of AUW not planned for near term work is typically carried in UB until formal negotiation is completed and a contract modification is issued.

The amount of AUW depends on the authorized scope rather than the not-to-exceed (NTE) value. The cost of its scope may be greater than the NTE value, which is a reflection of the original planned work and does not reflect the current funding restrictions. The amount of AUW and the justification for the amount is typically reported to the owner.

2.7. Reduction of Scope and the Effect on MR or UB

It is possible that the owner may reduce the scope of the contract yet to be accomplished: this is known as a de-scope. In this situation, neither UB nor MR reflect the project de-scope until the work is removed from the time phased PMB.

The unique aspect of this situation is that scope has been removed which is already allocated to control accounts or SLPPs within the time-phased PMB. The same scope should not be assigned in UB/MR and the control account level at the same time. Also, MR and UB should never be less than zero. It is recommended to update the PMB for these events using a three-step process:

1. The value of the de-scope must be removed from the future time phased PMB. The amount removed is typically the difference between budget at completion and cumulative EV, also known as, "work remaining (BAC - EV)."
2. The value of the work remaining is removed from the CA or SLPP budget at completion. It is then placed in UB at the same value.
3. When the negotiated de-scope value is removed from the contract statement of work; UB and the CBB are reduced by the same amount.

During this process, take care to see if the reduction in scope triggers a significant increase to indirect costs/rates. This needs to be accounted for when estimating the total value of the de-scoped work and would potentially reduce the amount removed from the CBB.

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2.8. MR and UB Summary

To summarize, management reserve and undistributed budget can be described as shown in Table 4.

Characteristic	Management Reserve	Undistributed Budget
Scope	No specific scope; within scope at the project level	Added by change order or pool, has scope at all times
Allocations of Balance	To CA level for work within scope of project, but new to CA (and is tracked in the MR log)	By change order scope (and is tracked in the UB log)
New Amounts	Transfer of allocated CA scope or challenges on new contractual scope	Optional, new change order authorizations or through AUW if unable to accomplish within reporting period. De-scoped work.

Table 4 - Comparisons of MR and UB

The following relationships are always maintained:

$$\text{CBB} = \text{MR} + \text{PMB.}$$

(PMB – UB) is the time-phased budget baseline for the program (i.e., the distributed budget)

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