EARNED VALUE MANAGEMENT (EVM) GOLD CARD

May 2025

This document outlines key earned-value concepts for managing U.S. National Science Foundation-funded projects that require earned value management. It helps measure project performance in terms of cost, schedule and scope, allowing stakeholders and NSF to effectively monitor and control projects, ensuring adherence to established project goals.

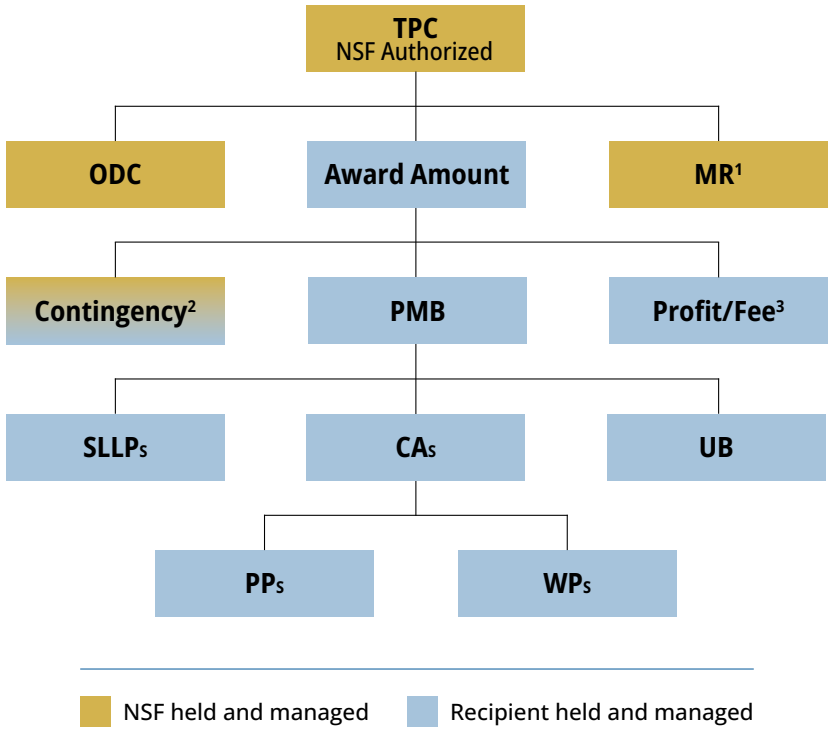

Figure 1: Diagram depicting the components comprising the Total Project Cost and whether the component is NSF held and managed, recipient held and managed, or both.

COMPONENTS

- **CA:** Control Account = WPs + PPs
- **MR:** Management Reserve
- **ODC:** Other Direct Costs (including service or equipment provided by others)
- **PMB:** Performance Measurement Baseline = CAs + UB + SLPPs = BAC
- **PP:** Planning Package (far-term activities within a control account)
- **SLPP:** Summary Level Planning Package
- **TPC:** Total Project Cost
- **UB:** Undistributed Budget (activities not yet distributed to control account)
- **WP:** Work Package (near-term, detail-planned activities within a control account)

[1] If authorized as part of the Total Project Cost. MR is held by NSF.
[2] During execution, contingency moves into the PMB, per change control process.
[3] If authorized as part of the Total Project Cost.

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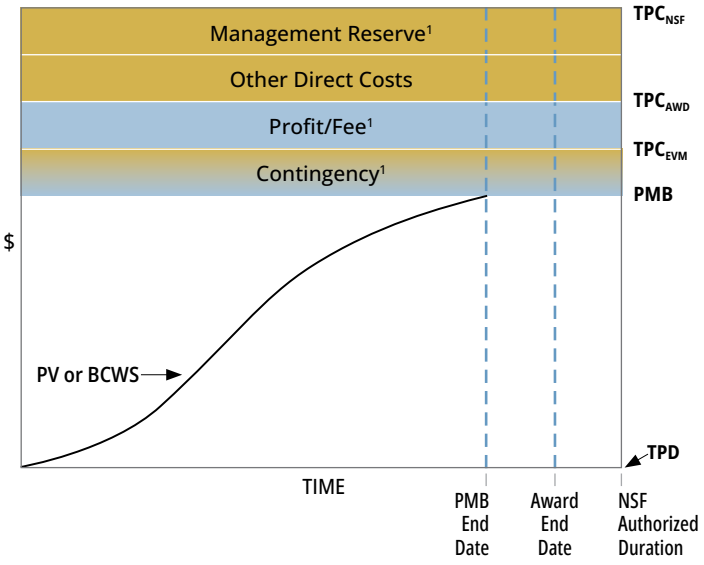
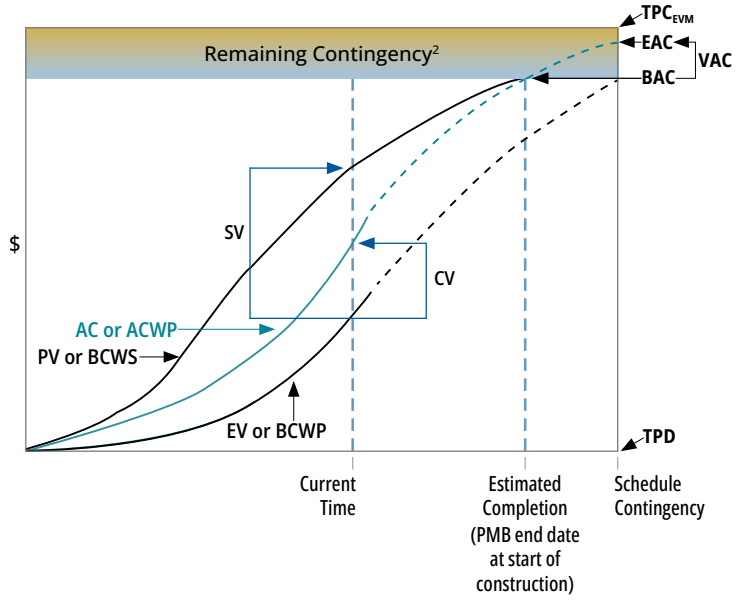
AT START OF CONSTRUCTION STAGE



DURING CONSTRUCTION STAGE



TOTAL PROJECT DURATION

- **TPD** = Total Project Duration (PMB schedule + schedule contingency)
- **PMB Schedule** = PMB end date (estimated completion)
- **Schedule Contingency** = Duration based on schedule impacts of risks

TOTAL PROJECT COST

- **TPC_{NSF}** = Total Project Cost (NSF authorized)
- **TPC_{AWD}** = Award Amount to Awardee (PMB + contingency + profit/fee)
- **TPC_{EVM}** = Total Project Cost managed by Awardee (PMB + contingency)

EVM BASIC COMPONENTS

- **AC** = Actual Cost = **ACWP** = Actual Cost of Work Performed
- **BAC** = Budget at Completion = **∑BCWS** = Sum of Budgeted Cost for Work Scheduled
- **EAC** = Estimate at Completion = ACWP + ETC
- **ETC** = Estimate(d) to Complete = Estimated Cost of Work Remaining (**WR**)
- **EV** = Earned Value = **BCWP** = Budgeted Cost for Work Performed
- **PV** = Planned Value = **BCWS** = Budgeted Cost for Work Scheduled

PERFORMANCE INDICES

Favorable is >1.0, unfavorable is <1.0.

- **CPI** = EV/AC = BCWP/ACWP = Cost performance index
- **SPI** = EV/PV = BCWP/BCWS = Schedule performance index
- **$TCPI_{EAC}$** = WR/(EAC–AC_{cum}) = EAC-based to complete performance index

VARIANCES

- **CV**[3] = EV–AC = BCWP–ACWP = Cost variance
- **SV**[3] = EV–PV = BCWP–BCWS = Schedule variance
- **CV%** = (EV–AC)/EV = (BCWP– ACWP)/BCWP = Cost variance %
- **SV%** = (EV–PV)/PV = (BCWP–BCWS)/BCWS = Schedule variance %
- **VAC** = BAC–EAC = Variance at completion

OVERALL STATUS

- **% scheduled** = PV_{cum}/BAC = $BCWS_{cum}$/BAC
- **% complete** = EV_{cum}/BAC = $BCWP_{cum}$/BAC
- **% budget spent** = AC_{cum}/BAC = $ACWP_{cum}$/BAC
- **Work remaining (WR)** = BAC–EV_{cum} = BAC–$BCWP_{cum}$

ESTIMATE-AT-COMPLETION FORMULAE

- **EAC** = BAC/CPI_{cum} = Estimate at completion (general)
- **EAC** = AC_{cum} + ETC = Estimate at completion (general)
- **EAC_{CPIcum}** = AC_{cum} + WR/CPI_{cum} = Estimate at completion (CPI)
- **$EAC_{composite}$** = AC_{cum} + WR/(CPI_{cum} *SPI_{cum}) = Estimate at completion (composite)
- **RAEAC** = AC_{cum} + ETC + risk exposure = Risk-adjusted estimate at completion (general)
- **RAEAC** = EAC + risk exposure = Risk-adjusted estimate at completion (general)

Notes

[1] If authorized as part of TPC.
[2] During execution, contingency moves into the PMB per change control process.
[3] Favorable > 0, Unfavorable < 0.

cum = cumulative

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