

FREE TOOLS & TIPS

Project Controls Formula Guide

Plain-language formulas for checking project cost, schedule, forecast, and business decisions.

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Core inputs

Input	Meaning
BAC - Budget at Completion	Total approved project budget.
Planned % complete	Budget-weighted value of work planned to be complete at the status date, measured against the approved baseline.
Verified actual % complete	Budget-weighted value earned by completed work at the status date, supported by quantities or another consistent measurement.
AC - Actual Cost	Cost recorded through the same status date.
PV - Planned Value	$BAC \times \text{Planned \% complete}$.
EV - Earned Value	$BAC \times \text{Verified actual \% complete}$.

Before calculating

1. Use the same status date for schedule, progress, and cost.
2. Use the same currency and percentage format throughout.
3. Separate approved changes from pending changes.
4. Do not treat invoicing, hours spent, or money spent as proof of progress.
5. Record the source and date of every input.
6. Leave a result blank when the denominator is zero or an input is unreliable.

Input worksheet

Project: _____

BAC: _____

Verified actual completion: _____

Approved changes included? _____

Status date: _____

Planned completion: _____

AC: _____

Input source or notes: _____

Cost, schedule, and forecast formulas

Measure	Formula	Plain-language meaning
Planned Value	$PV = BAC \times \text{Planned \%}$	Budgeted value of work planned by the status date.
Earned Value	$EV = BAC \times \text{Verified actual \%}$	Budgeted value of work actually completed.
Cost Variance	$CV = EV - AC$	Positive is favorable; negative indicates cost pressure.
Schedule Variance	$SV = EV - PV$	Value-based schedule position, not calendar days. Positive is ahead; negative is behind.
Cost Performance Index	$CPI = EV / AC$	Above 1.00 is favorable; below 1.00 needs attention.
Schedule Performance Index	$SPI = EV / PV$	Above 1.00 is ahead; below 1.00 is behind.
Simple Estimate at Completion	$EAC = BAC / CPI$	Forecast if current cost efficiency continues.
Estimate to Complete	$ETC = EAC - AC$	Forecast cost required to finish.
Variance at Completion	$VAC = BAC - EAC$	Positive is favorable; negative forecasts an overrun.
Required Cost Efficiency	$TCPI = (BAC - EV) / (BAC - AC)$	Efficiency needed on remaining work to finish at BAC.

Interpret carefully: A single metric does not explain the cause. Review scope, quantities, productivity, commitments, change orders, timing, and input quality before acting.

The simplified EAC assumes current cost performance continues and may not fit every project.

Manual project check

BAC: _____
 Planned %: _____
 Verified actual %: _____
 AC: _____

Calculated values

Measure	Calculation	Result
PV	$BAC \times \text{Planned \%}$	
EV	$BAC \times \text{Verified actual \%}$	
CV	$EV - AC$	
SV	$EV - PV$	
CPI	EV / AC	
SPI	EV / PV	
EAC	BAC / CPI	
ETC	$EAC - AC$	
VAC	$BAC - EAC$	
TCPI	$(BAC - EV) / (BAC - AC)$	

Decision notes

What changed? _____

Most likely cause: _____

Evidence: _____

Required action: _____

Owner / due: _____

Forecast update date: _____

- | | | |
|--|--|---|
| 1. Is the scope baseline current? | 2. Are approved changes included? | 3. Are open commitments visible? |
| 4. Does progress match completed work? | 5. Are costs current to the same date? | 6. Is the forecast based on remaining work? |

Build or buy decision check

Compare total cost over the same time period.

Evaluation period (months): _____

Loaded internal hourly rate: _____

Build option	Amount	Buy option	Amount
Setup and development		Vendor setup and implementation	
Internal hours x loaded rate		Subscription x months	
Monthly maintenance x months		Integration and training	
Transition, training, support		Internal administration	
BUILD TOTAL		BUY TOTAL	

Build total = Setup + Internal labor + Maintenance + Transition costs

Buy total = Vendor setup + Subscription + Integration + Internal administration

Cost difference = Build total - Buy total

Break-even months = (Build one-time cost - Buy one-time cost) / (Buy monthly cost - Build monthly cost). Use only when build has the higher one-time cost, buy has the higher recurring monthly cost, both options use the same cost basis, and the denominator is greater than zero. Otherwise this simplified comparison has no positive crossover point.

Do not decide on cost alone - rate each option from 1 to 5

Factor	Build	Buy
Speed to usable result		
Ongoing owner workload		
Reliability and support		
Data control and portability		
Ability to change later		
Total operating fit		

Recommended decision: _____

Key assumption to verify: _____

Decision owner and date: _____