Earned value fields in MSP

- ACWP fields
- Baseline Cost (BAC) fields
- BCWP fields
- BCWS fields
- CPI fields
- CV fields
- CV% fields
- EAC (task field)
- Earned Value Method (task field)
- Physical Percent (%) Complete (task field)
- SPI fields
- SV fields
- SV Percent (%) fields
- TCPI (task field)
- VAC fields

ACWP fields

The ACWP (actual cost of work performed) <u>fields</u> show costs incurred for <u>work</u> already done on a task, up to the project <u>status date</u> or today's date.

How Calculated   When a task is first created, the ACWP field contains 0.00. As progress (percentage of completion or actual work) is reported on the task, Microsoft Office Project calculates the actual cost of work performed (ACWP). This is the cost of actual work plus any <u>fixed costs</u> for the task to date. By default, how and when ACWP is calculated depends on the assigned resources' Standard Rate, Overtime Rate, Per Use Cost, and Cost accrual settings in the **Resource Information** dialog box, as well as the actual work reported, fixed costs for tasks, and the status date or today's date. Project can calculate ACWP even if you do not have resources assigned. In this case, the calculations are based on progress (percentage of completion or actual work) and fixed costs to date for the task. If you prefer, you can have ACWP calculated based on your entries in the Actual Cost (timephased) field. On the **Tools** menu, click **Options**, and then click the **Calculation** tab. Clear the **Actual costs are always calculated by Microsoft Office Project** check box.

Best Uses   Use the ACWP field in conjunction with the BCWP (budgeted cost of work performed) field to compare actual to budgeted assignment costs. Use the CV (earned value cost variance) field to see the difference between the two fields. Add any or all of these fields to a task view to display the resulting expense of a task based on actual work and the hourly rates of the assigned resources, along with any other costs incurred up to the status date or today's date.

Example   You need to report on ACWP as of last Friday. You enter Friday's date as the status date, and then review the costs on a task that has a 10-hour duration. The assigned resources earn $20 per hour, and they have reported five hours of actual work as of last Friday, and another five hours as of today. Using the status date, Project calculates that the ACWP up to last Friday is $100. If you used today's date as the status date, the ACWP would be calculated as $200.

Remarks   Because the ACWP information is maintained on a <u>timephased</u> basis, ACWP is calculated from the first actual cost entry to the status date or today's date.

Baseline Cost fields

The Baseline Cost fields show the total planned cost for a task, a resource for all assigned tasks, or for work to be performed by a resource on a task. Baseline cost is also referred to as budget at completion (BAC), an earned value field. The timephased versions of these fields show values distributed over time.

How Calculated   The baseline cost is calculated as the sum of the planned costs of all the assigned resources plus any fixed costs associated with the task. This is the same as the contents of the Cost field when the baseline is saved. Baseline Cost = (Work * Standard Rate) + (Overtime Work * Overtime Rate) + Resource Per Use Cost + Task Fixed Cost

Best Uses   The baseline cost information becomes available when you set cost information for the assigned resources and set the baseline for the task. Add the Baseline Cost field to a task sheet when you want to review total planned costs for tasks. You can review the baseline cost for the task to help set your budget for the task and the project. You can compare the values in the Baseline Cost and Cost fields to determine whether the task is still on track within your budget. The Cost Variance field compares these two fields.

Example   You have a task with a 10-hour duration and a single resource assigned at $20 per hour. The baseline cost for the task would be $200. When the task is 50 percent complete, the Actual Cost field will be calculated at $100.
Remarks   The Baseline Cost field contains 0.00 until you set a baseline for the project, which you can do even after the project has been started. You set a baseline in the **Set Baseline** dialog box.

If you edit the contents of the Baseline Cost field, it does not affect any baseline task cost calculations, nor any timephased baseline costs for the task. If you save another baseline after editing baseline costs, your edits are overwritten by the new baseline values.
The baseline cost does not change after it has been saved, even if work values change.

BCWS fields

The BCWS (budgeted cost of work scheduled) fields contain the cumulative timephased baseline costs up to the status date or today's date. The timephased versions of these fields show values distributed over time.

How Calculated   To calculate BCWS for a task, Microsoft Office Project adds the timephased baseline costs of the task up to the status date.

Best Uses   Add the BCWS field to a task sheet to review how much of the budget should have been spent on a task to date, according to the task's baseline cost.

Example   The baseline cost for a task is $500 and is evenly distributed over its duration. The baseline start for the task is June 1, and the baseline finish is August 1. If today's date is July 1, then the BCWS for the task is $250, since the task should be half done.

Remarks   You can compare the BCWS to the BCWP (budgeted cost of work performed) field to determine whether the task is behind or ahead of schedule in terms of cost. The SV (earned value schedule variance) field shows the comparison of these fields over time.

2

CPI fields

The CPI (cost performance index) fields show the ratio of budgeted (or baseline) costs of work performed to actual costs of work performed, up to the project status date or today's date. The timephased version of this field shows values distributed over time.

How Calculated   CPI is the ratio of BCWP (budgeted cost of work performed) to ACWP (actual cost of work performed):

CPI = BCWP / ACWP

Best Uses   Add the CPI field to a task view to see the ratio of budgeted to actual costs. This value indicates whether you are over or under budget as of the status date.

Example   You expected that after two days, 50 percent of a four-day task would cost $60, the BCWP. This task actually incurs a total cost of $70 for the first two days. The task's CPI is about .85, or 85 percent.

CV fields

The CV (earned value cost variance) fields show the difference between how much it should have cost and how much it has actually cost to achieve the current level of completion up to the status date or today's date. The timephased versions of these fields show values distributed over time.

How Calculated   CV is the difference between the task's BCWP (budgeted cost of work performed) and ACWP (actual cost of work performed). Microsoft Office Project calculates the CV for a task as follows:

CV = BCWP - ACWP

Best Uses   Add the CV field to a task sheet when you want to see whether you're under, over, or exactly within your budget for a task. You might find this useful when assessing budgetary performance in the project to date.

Example   Your BCWP for an assignment is $500 and your ACWP is $400. Your CV is $100, meaning you're $100 under budget.

Remarks   If the cost variance is positive, the cost for the task is currently under the budgeted, or baseline, amount, and your actual costs are less than your baseline costs for the current level of completion on the task. If the cost variance is negative, the cost for the assignment is currently over budget, and your actual costs are more than your baseline costs for the current level of completion on the task.

CV% fields

The CV% (cost variance percent) fields show the ratio of cost variance (CV) to budgeted cost of work performed (BCWP), expressed as a percentage. This indicates the variance between how much it should have cost to how much it has actually cost to achieve the current level of completion up to the status date or today's date.

How Calculated   CV% is the percentage of the cost variance (CV) divided by BCWP (budgeted cost of work performed). Project calculates the CV% for a task as follows:

CV% = [(BCWP - ACWP) / BCWP] * 100

Best Uses   Add the CV% field to a task view when you want to see a percentage of how much you're under, over, or exactly on budget for the level of completion on tasks.

Example   Your BCWP for a task is $500 and your ACWP is $400. Your CV% for the task is therefore 20%, meaning you're 20 percent under budget for the current level of completion.

Remarks   If the CV% is a positive percentage, the task is under budget. If it's 0 percent, the task is right on target. If it's a negative percentage, the task is over budget.

The CV% field is available by default on the Earned Value Cost Indicators table. You can apply it from the **More Tables** dialog box.

EAC (task field)

Description   The EAC (estimate at completion) field shows the expected total cost of a task based on performance up to the status date. EAC is also called forecast at completion (FAC).

How Calculated   In previous versions of Project, EAC was equivalent to the scheduled Cost field. However, now EAC is calculated as:

EAC = ACWP + (Baseline cost X - BCWP) / CPI

When a task is created, resources are assigned, and a baseline saved, EAC is the same as scheduled cost, which is the total work value multiplied by the resource cost rate. As actual work or actual cost is reported on the task, Project calculates EAC according to this formula.

Best Uses   Add the EAC field to a task view to display or filter for the expected total cost for the task, based on performance up to the status date.

Example   A task consists of 10 hours for two resources with rates of $20 per hour. At the start of the task, the cost is $200. As the resources report actual work, this figure is adjusted based on actual costs, budgeted or baseline costs, and the cost performance index. You add the EAC field to the Gantt Chart to see the expected total cost for this task.

Remarks   The EAC field is available by default on the Earned Value and Earned Value Cost Indicators tables. You can set one of these tables, with a task sheet displayed, in the **More Tables** dialog box.

Earned Value Method (task field)

Description   The Earned Value Method field provides choices for whether the % Complete or Physical % Complete field is to be used to calculate budgeted cost of work performed (BCWP).

Best Uses   Add the Earned Value Method field to a task view when you need to change the basis of earned value for a set of tasks. If a task's earned value should be based on real accomplished work rather than the effort in terms of percent complete, set this field to Physical % Complete.

Example   Most of the tasks in your project use % Complete as the earned value method for calculating BCWP. There are about ten tasks, however, that must use Physical % Complete as the earned value method. You add the Earned Value Method field to the Gantt Chart, and then change the method for those tasks to Physical % Complete.

Remarks   The default setting for the Earned Value Method field is % Complete.

Budgeted cost of work scheduled (BCWS) is not affected by the setting in the Earned Value Method field because it is calculated using the status date and baseline cost values.

You can also set the earned value method for a task in the **Task Information** dialog box.

You can set the default earned value method for all new tasks in the **Project Options** dialog box. You can also use this dialog box to choose which of the 11 available baselines should be used for earned value calculations.

Physical Percent (%) Complete (task field)

Description   The Physical % Complete field shows an entered percent complete value that can be used as an alternative for calculating budgeted cost of work performed (BCWP). This field is also known as Earned Value % Complete.

Best Uses   Add the Physical % Complete field to a task view and enter values when the calculated percent complete would not be an accurate measure of real work performed or measured. Unlike the % Complete field, the Physical % Complete field is independent of the total duration or actual duration values used by the % Complete field to calculate BCWP.

Example   A project of building a stone wall consists of 100 stones stacked five high. The first row of 20 stones can be laid in 20 minutes, but the second row takes 25 minutes because now you have to lift the stones up one row higher, so it takes a little longer. The third row would take 30 minutes, the fourth 35 minutes, and the last row takes 40 minutes to lay—150 minutes total. After laying the first three rows, the project could be said to be 60 percent physically complete (you laid 60 of 100 stones). However, you only spent 75 of 150 minutes, so in terms of duration, the job is only 50 percent complete. You add the Physical % Complete field to the Gantt Chart view to enter and track progress for this task.

Depending on how you get paid for the work or how the value is earned (by the stone, or by the hour), you can choose the percent complete value or the physical percent complete value to properly reflect this in the earned value analysis.

Remarks   While the default earned value method field is % Complete, you can change it to Physical % Complete for any tasks that apply.

You can also set the earned value method for a task in the **Task Information** dialog box.

You can set the default earned value method for all new tasks in the **Project Options** dialog box. You can also choose which of the 11 available baselines should be used for earned value calculations.

The Physical % Complete field is available by default on the Tracking table.

SPI fields

The SPI (schedule performance index) field shows the ratio of the budgeted cost of work performed to the budgeted cost of work scheduled (BCWP/BCWS). SPI is often used to estimate the project completion date. The timephased version of this field shows values distributed over time.

SPI = BCWP / BCWS

Best Uses   Add the SPI field to a task view to display or filter for the ratio of work performed to work scheduled. This information can help you see how far ahead or behind schedule tasks are.

Example   You have a four-day task, and its total planned budget is $100. After two days, the budgeted cost of work scheduled (BCWS) is $50. However, after two days of actual work, 60 percent of the work has been completed, for a cost of $60. The SPI is 1.2, indicating that you're ahead of schedule.

Remarks   An SPI ratio greater than 1 indicates that you're ahead of schedule. Likewise, an SPI ratio less than 1 indicates that you're behind schedule. For example, an SPI of 1.5 means that you've taken only 67 percent of the planned time to complete a portion of a task in a given time period. An SPI of 0.8 means that you've spent 25 percent more time on a task than was planned.

The SPI field is available by default on the Earned Value Schedule Indicators table. With a task sheet view displayed, open the **More Tables** dialog box and apply the Earned Value Schedule Indicators table.

SV fields

The SV (earned value schedule variance) field shows the difference in cost terms between the current progress and the baseline plan of a task, all assigned tasks of a resource, or for an assignment up to the status date or today's date. You can use SV to check costs to determine whether tasks or assignments are on schedule. The timephased versions of these fields show values distributed over time.

How Calculated   SV is the difference between budgeted cost of work performed (BCWP) and budgeted cost of work scheduled (BCWS). Microsoft Office Project calculates the SV as follows:

SV = BCWP - BCWS

Best Uses   Add the SV field to a task sheet to determine whether the task is behind or ahead of its baseline schedule in cost terms.

Example   The baseline plan for the "Write proposal" task had the task scheduled to complete 50 hours of work (at a cost of $500) by June 1. However, on June 1, the percent complete on the task was only 80 percent. The BCWP for this task is $400 (80 percent of $500). The BCWS is $500. Therefore, the SV is -$100, indicating in cost terms how much the task is behind the baseline plan.

Remarks   If the SV is positive, the task is currently ahead of schedule in cost terms. If the SV is negative, the task is currently behind schedule in cost terms. SV is expressed in currency units, the same units used in the CV (earned value cost variance) field. This makes it easy to plot SV and CV on the same graph.

SV Percent (%) fields

The SV% (schedule variance percent) field shows the ratio of schedule variance (SV) to budgeted cost of work scheduled (BCWS), expressed as a percentage. The timephased version of this field shows values distributed over time.

SV% = (SV / BCWS) * 100

Best Uses   Add the SV% field to a task view when you want to see a percentage of how much you're under, over, or exactly on target with your schedule for the current level of completion on tasks.

Example   The schedule variance for a task (the difference between budgeted cost of work performed and scheduled) is $50. The budgeted cost of work scheduled is $500. Your SV% is 10 percent, meaning you're 10 percent ahead of schedule for the current level of completion on this task.

Remarks   If the SV% is a positive percentage, the task is ahead of schedule. If it's 0 percent, the task is right on target. If it's a negative percentage, the task is behind schedule.

The SV% field is available by default on the Earned Value Schedule Indicators table. With the Task Sheet view displayed, you can apply the Earned Value Schedule Indicators table in the **More Tables** dialog box.

TCPI (task field)

Description   The TCPI (to complete performance index) field shows the ratio of the work remaining to be done to funds remaining to be spent, as of the status date.

How Calculated   Microsoft Office Project calculates TCPI as:

TCPI = (BAC - BCWP) / (BAC - ACWP)

Best Uses   Add the TCPI field to a task view to display or filter for the ratio of remaining available budget to be spent to remaining scheduled cost. This can help you see whether you're likely to have excess funds for the task, run out of money, or be right on target.

Example   You have a task with a baseline cost (BAC) of $200, BCWP of $125, and ACWP of $150. The TCPI is 1.5, indicating poor performance up to the status date. This means that to complete the project within budget, performance will need to improve.

Remarks   A TCPI value greater than 1 indicates a need for increased performance for the remaining work of the project in order to stay within budget (so you may need to give up some quality); less than 1 indicates performance can decrease to stay within budget, thus creating opportunities to increase quality or profit.

VAC fields

The VAC (Variance At Completion) field shows the difference between the BAC (Budgeted At Completion) or baseline cost and EAC (Estimated At Completion) for a task, resource, or assignment on a task.

How Calculated   When a baseline is set, the VAC field for the task contains $0. The scheduled cost for the task and the budgeted cost for the task at this point are the same, so the variance is $0. As changes to the plan are made, or as progress is reported on the task, Microsoft Office Project calculates the VAC for the task. This includes the cost of actual work plus any per-use costs for the task to date. Project calculates VAC as follows:

VAC = Budgeted At Completion (baseline cost) - Estimated At Completion

Best Uses   Add the VAC field to a task sheet view when you want to see whether you're probably going to be under, over, or exactly within your budget when the task is completed.

Example   The budgeted cost for a task is $500 because you had originally estimated that it would take the assigned $50-per-hour resource 10 hours to complete. If the resource takes only five hours to complete the task, the budgeted cost is $500 and the estimated cost is updated to $250. Therefore, the VAC shows $250, indicating that you're projected to be under budget on the task by $250 at the completion of the task.

Remarks   If the VAC is negative, the projected cost for the task is currently over the budgeted, or baseline, amount. In this case, you might consider changing the amount of remaining work or assigning another resource with a lower cost rate for remaining work on the task. If the VAC is positive, the projected cost for the task is currently under budget.