



## Chapter 1

# **Costing, Budgets and Earned Value**

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## Overview

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The ability to track costs in Project is an often overlooked capability. To begin the discussion about costs, this chapter will start with a review of what makes up total task costs. Next, you will learn how to handle unique cost situations for resources, how to use Project as a budgeting tool, and finally what is needed to take advantage of earned value calculations.

## Review of Total Task Costs

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As a review, the total cost for a task consists of all fixed costs plus all resource costs. Fixed costs are entered one time on the task in the fixed cost field.

To enter a fixed cost:

1. Using your preferred method, select **Gantt Chart** view
2. Click the **View** tab
3. Click the drop-down arrow on **Tables** in the Data group
4. Click **Cost**
5. Enter the fixed cost value



The default table for Gantt Chart view is Entry.

Resource costs include all of the following:

- For a work resource - hourly rate multiplied by a number of hours,
- For a material resource – unit rate multiplied by number of units
- For a cost resource – amount entered at the time of the task assignment

- Overtime costs – if resource hours on a task are specifically entered in the overtime field, the hours entered will be multiplied by the overtime rate and the standard rate will be ignored
- Cost per use - if used on a work or material resource, this cost will be added to the task each time the resource is used



Refer to the Managing Projects with Microsoft Project Introduction book for information on how to enter standard resource costs.



Project assumes prorated cost calculations unless otherwise specified so costs are current based on the progress of the task. This will be important for organizations using Project for earned value management.

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## Setting Alternate Rates for Resources

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In this topic, we will cover alternate rate scenarios for resources. Some organizations bill out resources to another company. In those scenarios, you might need a resource that has different rates depending on the job function they are doing or depending on the contract with the other company. For example, you may have a resource with multiple skills who can perform both engineering work and project management work but each skill needs to be charged at a different rate. Project provides work and material resources between one to five different rates. In addition, each rate has the capability to incorporate a rate increase or decrease on a specific date. For example, you may have given a resource a pay raise in which you need to incorporate this new rate.

To set an alternate rate for a resource:

1. Using your preferred method, select **Resource Sheet** view
2. Right-click on the desired resource name and click **Information**
3. Click the **Costs** tab
4. Click the desired rate table and enter the desired rate(s)
5. Click **OK**

**Resource Information**

General Costs Notes Custom Fields

Resource Name: ABC Painting

Cost rate tables

For rates, enter a value or a percentage increase or decrease from the previous rate. For instance, if a resource's Per Use Cost is reduced by 20%, type -20%.

A (Default) B C D E

	Effective Date	Standard Rate	Overtime Rate	Per Use Cost
	--	\$30.00/h	\$0.00/h	\$0.00

Cost accrual: Prorated

Help Details... OK

**Figure 1-1** Costs Tab of Resource Information Dialog Box.



Be sure to apply the alternate rate table to the desired task assignment for Project to apply the new costs.

To apply an alternate rate on a task assignment:

1. Using your preferred method, select **Resource Usage** view
2. Underneath the desired resource, locate the desired task
3. Double-click the task name
4. In **Cost Rate Table**, choose the desired table
5. Click **OK**

The screenshot shows the 'Assignment Information' dialog box with the 'General' tab selected. The dialog has three tabs: 'General', 'Tracking', and 'Notes'. The 'General' tab contains the following fields:

- Task:** Paint bedrooms & Family Room
- Resource:** ABC Painting
- Work:** 34h (with up/down arrows)
- Units:** 100% (with up/down arrows)
- Work contour:** Flat (dropdown menu)
- Start:** Mon 5/2/16 (dropdown menu)
- Booking type:** Committed
- Finish:** Mon 5/16/16 (dropdown menu)
- Cost:** \$1,020.00
- Cost rate table:** A (dropdown menu)
- Assignment Owner:** (empty dropdown menu)

At the bottom right, there are two buttons: 'OK' and 'Cancel'.

**Figure 1-2** General Tab of Assignment Information Dialog Box.

To set a rate change on a specific day:

1. Using your preferred method, select **Resource Sheet** view
2. Right-click on the desired resource name and click **Information**
3. Click the **Costs** tab
4. Optional - In **Cost Rate Table**, choose the desired table
5. In **Effective Date**, choose or enter the desired date and choose or enter the desired rates
6. Click **OK**

Resource Information

General

Costs

Notes

Custom Fields

Resource Name: ABC Painting

Cost rate tables

For rates, enter a value or a percentage increase or decrease from the previous rate. For instance, if a resource's Per Use Cost is reduced by 20%, type -20%.

A (Default)

B

C

D

E

	Effective Date	Standard Rate	Overtime Rate	Per Use Cost
	--	\$30.00/h	\$0.00/h	\$0.00
	Mon 5/9/16	\$35.00/h	\$0.00/h	\$0.00

Cost accrual: Prorated

Help

Details...

OK

Cancel

Figure 1-3 Rate Increase Costs Tab of Resource Information Dialog Box.



Project automatically applies the new rate on tasks but historical information is protected.

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## Creating a Budget Resource

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A budget resource is simply a setting on an existing resource that limits its assignment capabilities to only the Project Summary task. For this reason, it is useful for overall budgeting purposes. Budget resources can be used to budget by cost or by work hours.

To create a budget resource that will be used to create an overall project cost:

1. Using your preferred method, select **Resource Sheet** view
2. Enter a new resource to represent your budget resource (e.g. Budget Cost)
3. In **Type**, choose **Cost**
4. Right-click on the resource name and click **Information**
5. Click **Budget** on the General tab
6. Click **OK**



The image shows a 'Resource Information' dialog box with a 'General' tab selected. The 'Resource name' field contains 'Budget Cost'. The 'Initials' field contains 'B'. The 'Group' field is empty. The 'Code' field is empty. The 'Type' dropdown is set to 'Cost'. The 'Booking type' dropdown is set to 'Committed'. The 'Material label' field is empty. The 'Default Assignment Owner' dropdown is empty. The 'Resource Availability' table has columns 'Available From', 'Available To', and 'Units'. The 'Budget' checkbox is checked, and the 'Generic' and 'Inactive' checkboxes are unchecked. The 'Change Working Time ...' button is visible. At the bottom are 'Help', 'Details...', 'OK', and 'Cancel' buttons.

Available From	Available To	Units

**Figure 1-4** Budget Check Box on General Tab of Resource Information Dialog Box.

To assign a budget resource and enter a cost budget value:

1. Using your preferred method, select **Task Usage** view
2. Click the **Format** tab
3. Click **Project Summary Task** in the Show/Hide group
4. Right-click the task name on Row 0
5. Click **Information**
6. Click the **Resources** tab
7. In **Resource Name** choose **Budget Cost** (or your budget resource name)
8. Click **OK**

- 9. Click the column heading to the right of Task Name
- 10. Click the **Format** tab
- 11. Click **Insert Column** in the Columns group
- 12. Click **Budget Cost**
- 13. Enter the budget value in the Budget Cost field
















FILE		TASK		RESOURCE	REPORT	PROJECT	VIEW	ADD-INS	FORMA		
											
Team Planner ▾		Assign Resources		Resource Pool ▾	Add Resources ▾	Information	Notes	Details	Level Selection	Level Resource	Level All
View		Assignments			Insert	Properties					L
TASK USAGE		Task Mode ▾	Task Name ▾	Budget Cost ▾	Cost ▾	Duration ▾					
	0		▾ Sell my house	\$2,500.00	\$3,060.00	72 days					
			Budget Cost	\$2,500.00							
	1		▾ Fix up house to sell		\$2,420.00	21 days					
	2		▾ Paint bedrooms		\$1,020.00	4.25 days					
			ABC Paintin		\$1,020.00						
			Helper 1		\$0.00						
	3		▾ Replace carpeti		\$1,000.00	8 days					
			XYZ Carpeti		\$1,000.00						
			Helper 1		\$0.00						

Figure 1-5 Budget Cost Resource Assigned to Project Summary Task.



Project automatically spreads the value across the life of the project. If you desire, you could instead zoom in or zoom out the timescale, add the Budget Cost field to the grid, and enter time phased budget values.

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## Creating a Budget Field

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A budget field is using one of Project's open fields to enter budget information. The advantage of using this approach is you can enter a budget at any level of detail desired including summary tasks or detail tasks. You can also choose to enable rollup of budget information to the summary levels. Budget fields can be set to capture either cost or work budget values as desired.

To create a budget field:

1. Using your preferred method, select **Gantt Chart** view
2. Click the **Project** tab
3. Click **Custom Fields** in the Properties group
4. Click the drop-down arrow next to **Type** and click **Cost**
5. Click an available cost field and click **Rename**
6. Enter a friendly name such as **Budget** and click **OK**
7. Optional – choose a **Rollup** option for **Calculation for task and group summary rows**
8. Click **OK**
9. Click a column heading to the right of where you want the budget field to appear
10. Click the **Format** tab
11. Click **Insert Column** in the Columns group
12. Click **Budget** (or your budget field name)
13. Enter the budget value in the Budget field



















FILE		TASK		RESOURCE		REPORT		PROJECT		VIEW		ADD-INS		FORMAT		Signatures					
																					
Team Planner ▾		Assign Resources		Resource Pool ▾		Add Resources ▾		Information		Notes		Details		Level Selection		Level Resource		Level All		Leveling Options ▾	
View		Assignments				Insert				Properties						Level				Clear Leveling ▾	
				Task Mode ▾		Task Name ▾		Duration ▾		Budget ▾		Cost ▾									
0				4 Sell my house		72 days		\$1,400.00		\$3,060.00											
1				4 Fix up house to sell		21 days		\$1,400.00		\$2,420.00											
2				Paint bedrooms & Family Room		4.25 days		\$500.00		\$1,020.00											
3				Replace carpeting		8 days		\$500.00		\$1,000.00											
4				Repair roof		1 day		\$400.00		\$400.00											
5				Fix up completed		0 days		\$0.00		\$0.00											

Figure 1-6 Budget Field Created from Cost1 Custom Field.



Whether you use a budget resource or a budget field approach, both can be used to compare against the total cost or total hours of the project.



If you have captured a baseline, include that field as well to provide information about planned cost/work, budgeted cost/work, and actual cost/work.

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## Earned Value Reporting

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Earned Value analysis is a method for measuring project performance at a specific point in time. It indicates how much of the budget should have been spent in view of the amount of work done so far, and the baseline cost for the task, assignment, or resource. Earned Value is also referred to as budgeted cost of work performed (BCWP). The Status Date in Project provides the “point in time” marker used in Earned Value measurements.

Earned Value analysis in project requires cost-based information to calculate. Cost-based information is typically generated automatically after resources are assigned and other task costs are entered. Although the schedule will be evaluated by cost, that information will be able to determine if the schedule is ahead or behind. Refer to the rest of this chapter for more information.



Project provides you the earned value for the task based on the percent complete which is entered directly during tracking or calculated based on information provided such as actual duration and remaining duration. If your organization prescribes to another project management technique for earning earned value, you will need to add tasks to your project plan so when a percentage is entered you will receive the expected earned value amount.



Project follows the prorated approach for accrual of earned value which means you will receive earned value at every point of task progress 25%, 50%, 100%. You can change this setting for both resources and fixed costs if you desire.

## Setting Earned Value and Calculation Options

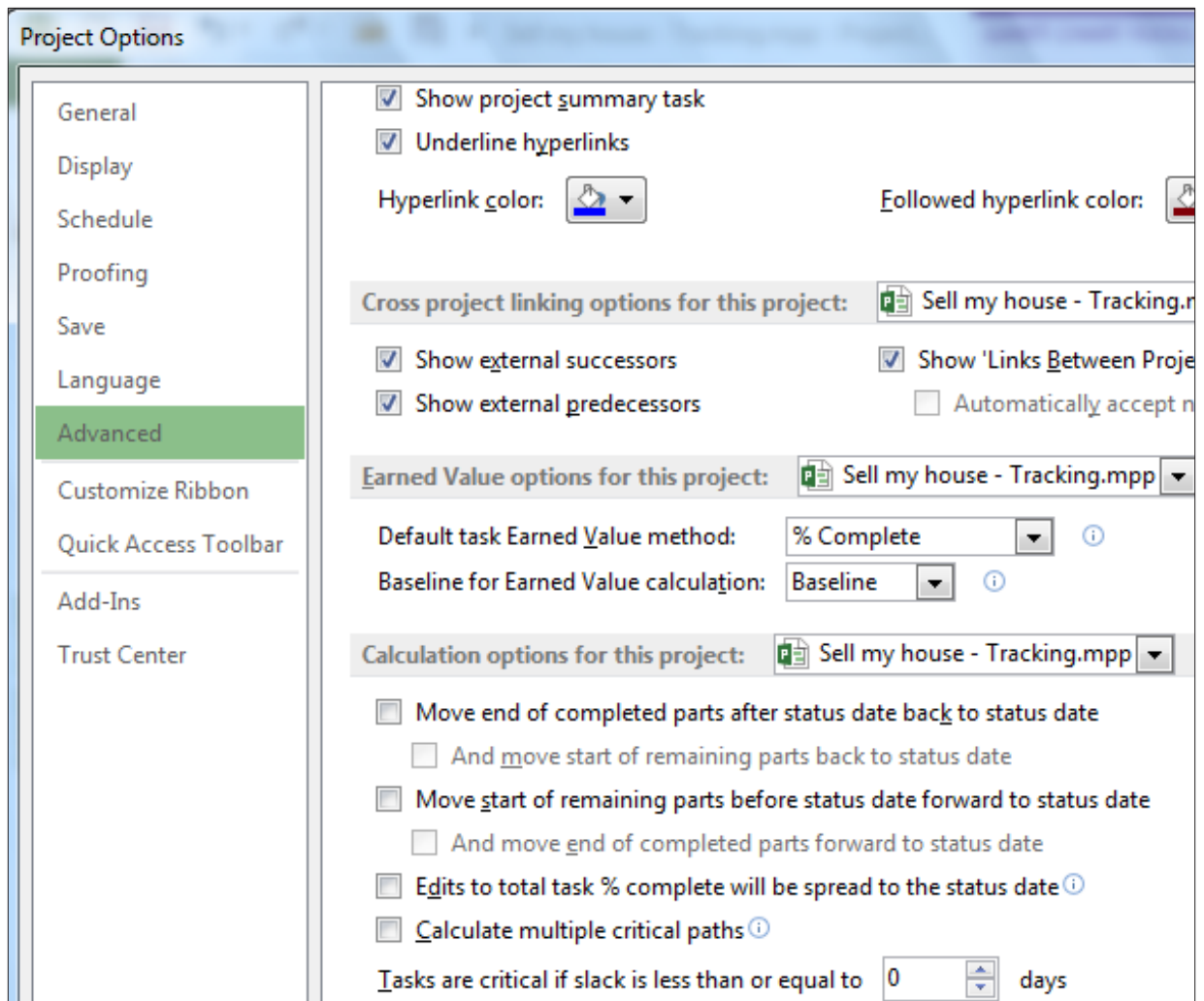
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Options should be set that reflect how you want Project to calculate Earned Value.

To set Earned Value and Calculation Options:

1. Click the **File** tab.
2. Click **Options**.
3. Click **Advanced**.
4. In the **Earned Value options for this project list**, select either **All New Projects** or **Project Name**.
5. In the **Default task Earned Value method** list, select either **% Complete** or **Physical % Complete**.

Since % Complete values are often filled in automatically by Project as a result of other actions, you may prefer to use Physical % Complete so you can enter your own values at any time. Another use for Physical % Complete is that it can be used to keep track of progress on the physical product separate from the task itself (e.g., the task “remodel kitchen” may be listed as 50% complete; however, since the cabinets have not been installed and they are a large component of the kitchen, you may only give a Physical % Complete value of 30%.)



**Figure 1-7** Earned Value Settings on the Advanced Tab of the Project Options Dialog Box.

6. In the **Baseline for Earned Value calculation** list, select the appropriate Baseline value.
7. If you have only set one baseline, use Baseline. If you instead want Project to use an alternate baseline, select the appropriate alternate baseline.
8. In the **Calculation options for this project**, select either **All New Projects** or **Project Name**.

9. Select or clear **Move end of completed parts after status date back to status date**. This means work you completed ahead of schedule will be properly moved to the left of the status date and placed in the past.



You can apply this option later on a task by task basis as desired instead of turning it on here. Refer to *Moving a Task Until a Resource is Available* on page 34.

10. Select or clear **Move start of remaining parts before status date forward to status date**. This means work that is leftover in the past will be properly moved to the right of the status date and placed in the future.



You can apply this option later on a task by task basis as desired instead of turning it on here. Refer to *Moving a Task Until a Resource is Available* on page 34.

11. Click **OK**.



For the **Calculation options for this project** to work properly, you have to ensure **Split in-progress tasks** under **Scheduling options for this project** is selected in the **Schedule** section of **Options**.

## Why Should I Perform Earned Value Analysis?

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When you perform Earned Value analysis, you get reliable answers to key questions such as “Is there enough money left in the budget to complete the project?” and “Is there enough time left in the schedule to finish the project on time?” Earned Value indicators express project progress in terms of cost and schedule. If you want to know whether you’ll run out of



money before work on the project is completed (or have a surprise after it's over) an Earned Value analysis is one way to find the answer.

## How Do I Interpret Earned Value?

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Earned Value indicators that are variances, such as cost variance, can be either positive or negative. A positive variance indicates that you are ahead of schedule or under budget. Positive variances might enable you to reallocate money and resources from tasks or projects with positive variances to tasks or projects with negative variances.

A negative variance indicates that you're behind schedule or over budget, and you need to take action. If a task or project has a negative cost variance (CV), you might have to increase your budget or accept reduced profit margins.

Earned Value indicators that are ratios, such as the cost performance index (CPI) and the schedule performance index (SPI), can be greater than 1 or less than 1. A value that is greater than 1 indicates that the project is ahead of schedule or under budget. A value that is less than 1 indicates that the project is behind schedule or over budget. For example, an SPI of 1.5 means that the project are progressing through the schedule faster than planned and a CPI of 0.8 means that you are spending more money than planned. If both of these conditions exist on the same schedule, this could mean that you are paying a higher rate for more efficient resources who are doing the work faster.

## Which Earned Value Quantities Can I Show in Microsoft Project?

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During tracking you may want to display Earned Value information so you can quickly evaluate if you are on schedule and within budget.

There are three tables that provide Earned Value information:

- Earned Value
- Earned Value Cost Indicators
- Earned Value Schedule Indicators

To change to an Earned Value table, complete the following steps:

1. In the **View** tab, **Data** group, click **Tables**.
2. Click **More Tables** from the drop-down list.
3. Select the desired table.
4. Click **Apply**.

The screenshot shows the Microsoft Project interface with the 'RESOURCE' tab selected. A Gantt chart is visible on the left, listing tasks with their durations. The 'Assign Resources' dialog box is open, showing the task 'Clean up house' and a list of resources. The 'Filter by' section is set to 'Available to work' with a value of 20h. The resource list includes '123 Roofing', 'ABC Painting', 'Curly', 'Garage Sales Express', 'Helper 1', 'Helper 2', and 'Helper 3'.

Task ID	Task Name	Duration
0	Sell my house	72 days
1	Fix up house to sell	21 days
2	Paint bedrooms & Family Room	4.25 days
3	Replace carpeting	8 days
4	Repair roof	1 day
5	Fix up completed	0 days
6	Clean up House	10 days
7	Clean out storage space	5 days
8	Clean up house	5 days
9	Hold garage sale	2 days

Resource Name	R/D	Unit
123 Roofing		
ABC Painting		
Curly		
Garage Sales Express		
Helper 1		
Helper 2		
Helper 3		

Figure 1-8 Earned Value Tables in More Tables Dialog Box.





## Chapter 2

# **Advanced Resource Management**

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## Overview

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Advance resource management includes making decisions about resource assignments, altering those assignments, and evaluating resource demands. It also includes making decisions about what resource are critical to your project and what resources can delay their work efforts.

As a review, a resource assignment is attaching one or many resources to one or many tasks in the project plan. The level of detail you involve yourself in for each assignment can vary. For example, you may simply be interested in who does what task or you may be interested in the hours of work assigned to the resource for each day the task is scheduled. When working with resources that are in limited supply, you may need to fine tune resource assignments to resolve resource overallocations. In this chapter we will explore a variety of options that you can choose to apply to your project plan when managing resources.

## Creating a New Resource Assignment (Review)

1. Using your preferred method, select **Gantt Chart** view
2. Click the **Resource** tab
3. Click **Assign Resources** in the Assignments group
4. Click the desired task(s)
5. Click the desired resource(s)
6. In the Assign Resources dialog box, click **Assign**

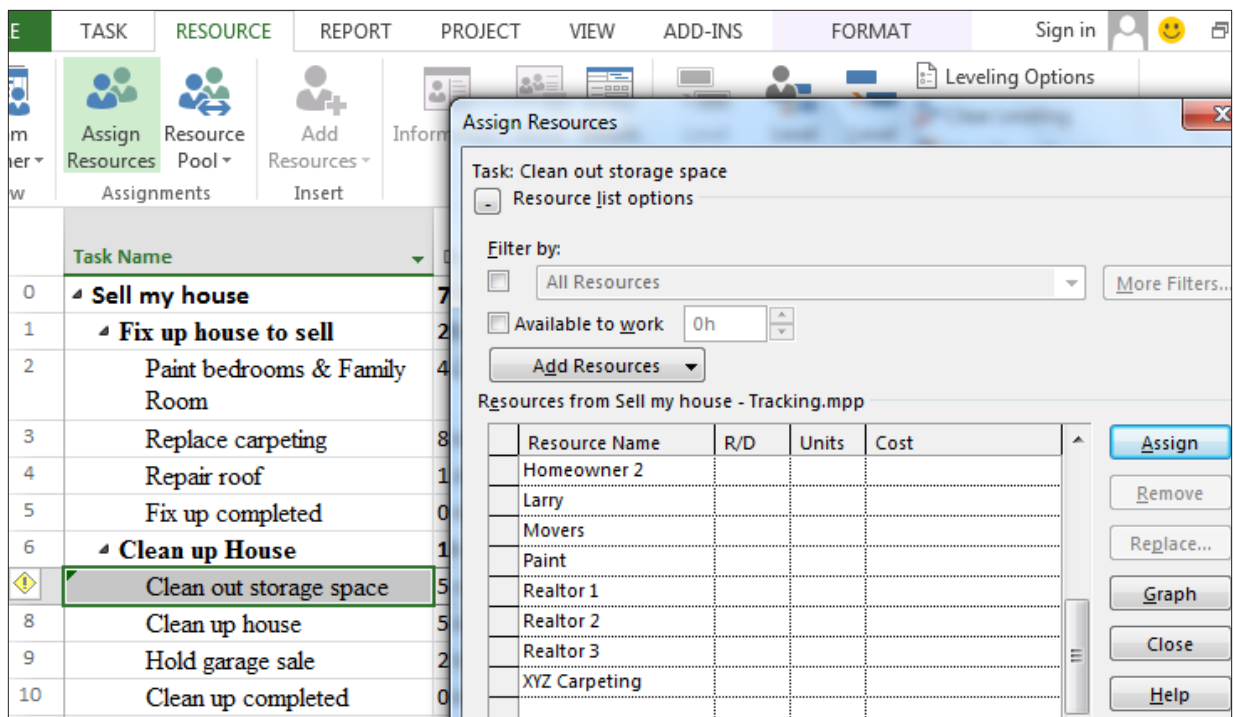


Figure 2-1 Assign Resources Dialog Box New Assignment.

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## Evaluating Resource Availability Before Making an Assignment

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When creating new resource assignments, Project provides a proactive option to evaluate resource availability before you make an assignment. With this option, when you select the task and use the Assign Resources dialog box, Project automatically uses the Start and Finish date of the task as the date range for the availability of the resource you want to evaluate. Simply entering the desired hours will show you if that resource is available or hide the resource name from the list if the resource is unavailable.

1. Using your preferred method, select **Gantt Chart** view
2. Click the **Resource** tab
3. Click **Assign Resources** in the Assignments group
4. Click the desired task
5. In the Assign Resources dialog box, click **Available to Work** and enter the number of hours you need a resource for during the length of the task
6. The resource list will automatically filter and hide work resources that do not have enough capacity during the timeframe of the task



FILE TASK RESOURCE REPORT PROJECT VIEW ADD-INS FORMAT

Team Planner View Assign Resources Assignments Resource Pool Add Resources Insert Information Notes Properties

**GANTT CHART**

	Task Name	Duration
0	▲ Sell my house	72 days
1	▲ Fix up house to sell	21 days
2	Paint bedrooms & Family Room	4.25 days
3	Replace carpeting	8 days
4	Repair roof	1 day
5	Fix up completed	0 days
6	▲ Clean up House	10 days
7	Clean out storage space	5 days
8	Clean up house	5 days
9	Hold garage sale	2 days

**Assign Resources**

Task: Clean up house

Resource list options

Filter by:

☐ All Resources

☒ Available to work 20h

Add Resources

Resources from Sell my house - Tracking...

Resource Name	R/D	Unit
123 Roofing		
ABC Painting		
Curly		
Garage Sales Express		
Helper 1		
Helper 2		
Helper 3		

Figure 2-2 Available to Work Option in Assign Resources Dialog Box.



Already assigned resources will never hide from the list.



Remember to clear the Available to Work option to list all resources in the Assign Resources dialog box for future task assignments.

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## Assigning a Part-Time Resource to a Task

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The current and previous version of Project support alternate approaches for a resource that is available to work part time. You can assign a resource with an alternate assignment units percentage and that will recalculate the task based on the availability (e.g. 50%). You can also assign a resource at 100% and adjust the working hours as needed to reflect a part-time resource.



It is a best practice to choose an approach and remain consistent throughout your schedule to simplify the process of auditing and to make it easier for others to follow your scheduling methodology.

1. Using your preferred method, select **Gantt Chart** view
2. Click the **Resource** tab
3. Click **Assign Resources** in the Assignments group
4. Click the desired task
5. For the desired resource, in **Units**, enter the desired percentage (e.g. 50) or hours (e.g. 4h) and press the **Enter** key

**Assign Resources**

Task: Interview several realtors

☐ Resource list options

Filter by:

☐ All Resources More Filters...

☐ Available to work 20h

Add Resources

Resources from Sell my house - Tracking.mpp

Resource Name	R/D	Units	Cost
Homeowner 2		4h	
Larry			
Moe			
Movers			
Paint			
Realtor 3			
XYZ Carpeting			

Assign  
Remove  
Replace...  
Graph  
Close  
Help

Hold down Ctrl and click to select multiple resources

**Figure 2-3** Entering Specific Hours in Assign Resources Dialog Box.



Project converts hours entered into units automatically in the Assign Resource dialog box.



Entering hours is not recommended for Fixed Work tasks where the task hours have already been provided. An error message may appear.



See Chapter 3, *Advanced Work with Task Types* for more information about controlling calculations in Project.

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## Setting Overtime Hours on a Task Assignment

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If your schedule uses alternate rates for Overtime, Project needs to know when to apply that rate on a task. Also, if you are fast tracking a Fixed Work task, Project needs to know which resource is working overtime hours to get the task done sooner.

1. Using your preferred method, select **Gantt Chart** view
2. Click the **View** tab
3. Click **Details** in the Split View group and ensure Task Form is displayed in the drop-down list
4. On the Task Form, right-click to bring up alternative views and click **Work**
5. For the desired resource, in **Work**, enter the total hours the resource is working that apply to standard time, in **Ovt. Work**, enter the total hours the resource is working that apply to overtime

FILE

TASK

RESOURCE

REPORT

PROJECT

VIEW

ADD-INS

TASK FORM TOOLS

FORMAT

Team Planner

Assign Resources

Resource Pool

Add Resources

Information

Notes

Details

Level Selection

Level Resource

Level All

Leveling Options

Clear Leveling

Next Overallocation

Task Name

Duration

Start

Finish

Predecessors

M

T

W

T

9

Hold garage sale

2 days

Sat 5/21/16

Sun 5/22/16

8

10

Clean up completed

0 days

Sun 5/22/16

Sun 5/22/16

9

11

Hire Realtor

16.5 days

Mon 5/2/16

Tue 5/24/16

12

Interview several realtors

5 days

Mon 5/2/16

Wed 5/18/16

13

Review contract

3 days

Wed 5/18/16

Mon 5/23/16

12

14

Realtor Hired

1 day

Mon 5/23/16

Tue 5/24/16

13

Name: Interview several realtors

Duration: 5 days

Effort driven

Manually Scheduled

OK

Cancel

Start: Mon 5/2/16

Finish: Wed 5/18/16

Task type: Fixed Units

% Complete: 0%

ID

Resource Name

Units

Work

Ovt. Work

Baseline Work

Act. Work

Rem. Work

8

Homeowner 1

100%

30

10

0h

0h

40h

9

Homeowner 2

100%

40h

0h

0h

0h

40h

5

Realtor 1

100%

40h

0h

0h

0h

40h

6

Realtor 2

100%

40h

0h

0h

0h

40h

7

Realtor 3

100%

40h

0h

0h

0h

40h

ENTER

NEW TASKS : AUTO SCHEDULED

Figure 2-4    Task Entry Work Details Option Entering Overtime Work.

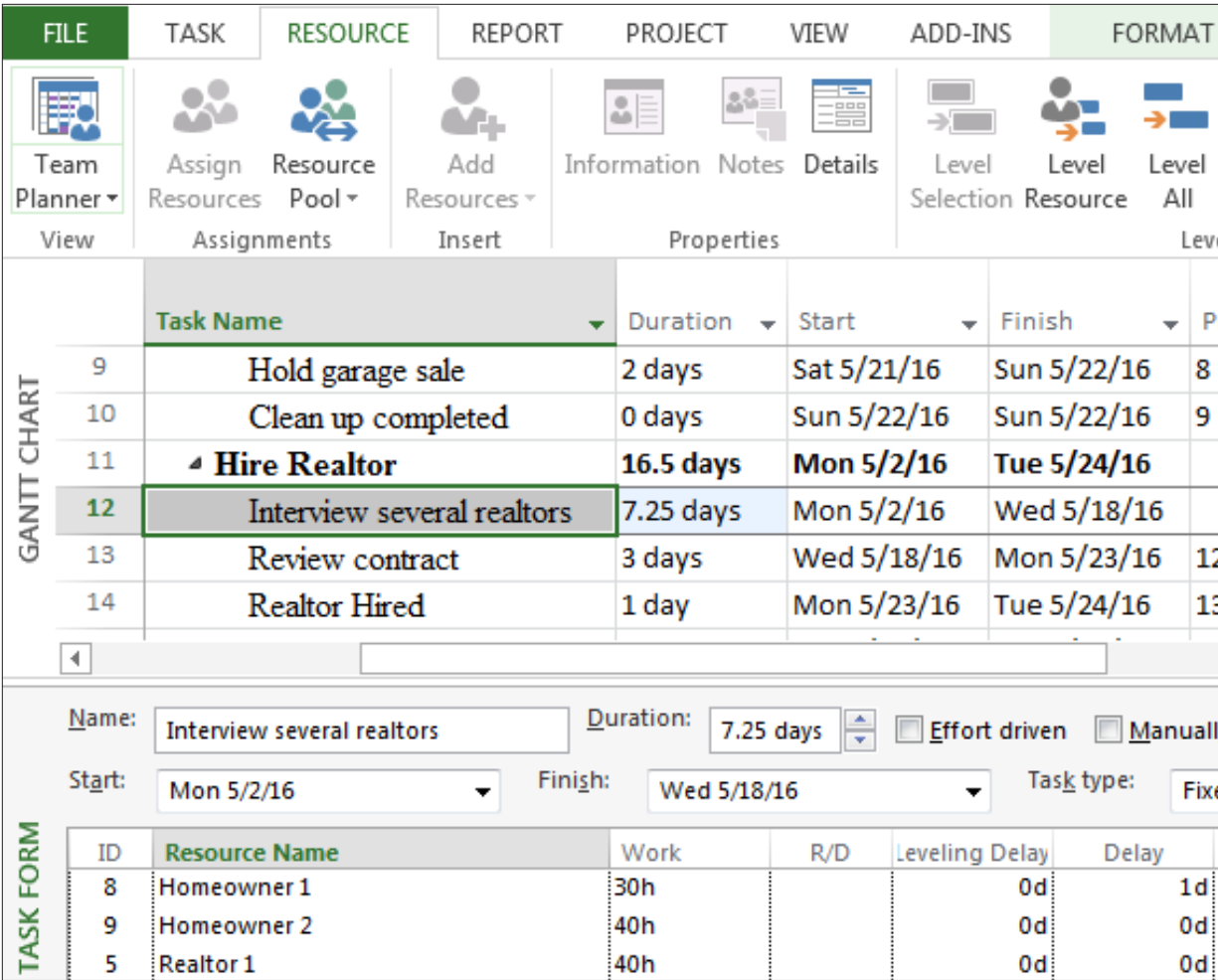
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## Shifting Resource Assignments with Delay

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If multiple resources are working on one task, you may have some resources who have a conflict with another task and are therefore unavailable until the task is in progress. Switching the resource to a part-time resource would not solve this problem since that would assume the resource is available the entire timeframe of the task. However, delaying the start of the resource on a specific task and reducing hours (if needed) will eliminate overallocation problems at the beginning of a task.

1. Using your preferred method, select **Gantt Chart** view
2. Click the **View** tab
3. Click **Details** in the Split View group and ensure Task Form is displayed in the drop-down list
4. On the Task Form, right-click to bring up alternative views and click **Schedule**
5. For the desired resource, in **Work**, enter the new total hours the resource is available to work on the task (optional), in **Delay**, enter the delay time before the resource can start.



**Figure 2-5**    Task Entry Schedule Details Entering Delay.



If you do not reduce the total hours of work for the resource when adding delay time, the length of the task may extend.



See Chapter 3, *Advanced Work with Task Types* for more information about controlling calculations in Project.





You may also decide to create separate tasks to solve this problem.

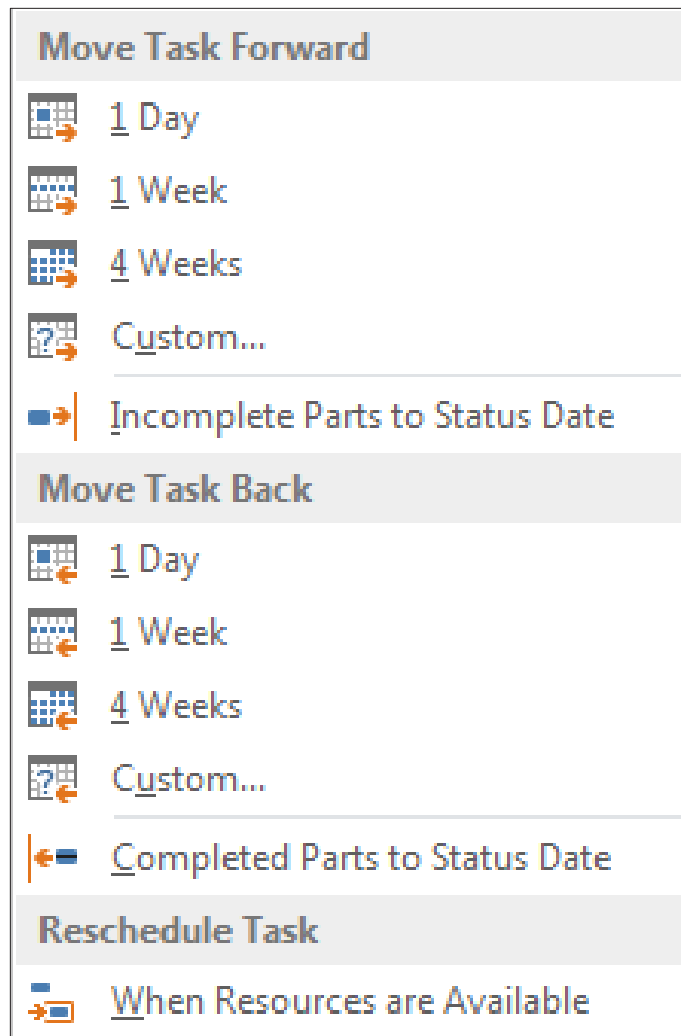
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## Moving a Task Until a Resource is Available

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If a resource is overallocated or assigned to another project, you might be required to move a task to a new time period before it can be worked on. While there are several approaches to this, below are some steps to incorporate very quick changes to your schedule.

1. Using your preferred method, select **Gantt Chart** view
2. Click the **Task** tab
3. Click the desired task
4. Click the drop-down arrow on **Move** in the Tasks group
5. Select the desired move task option.



**Figure 2-6** Move Drop-Down on Task Tab in Tasks Group.



Move Task Forward or Reschedule Task are most popular for this scenario.



These techniques create constraints in your schedule. Apply this only if the resource limitation is truly driving your schedule.



If you prefer, you can drag a task in Team Planner view as well.



Team Planner view moves the work for that resource only not the entire task.

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## Replacing a Resource on a Task in Progress

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Resources often leave a project or have changes in their availability where they can no longer work on a project. A popular scenario is giving remaining work to a new resource. Refer to the following steps to complete this process.

1. Using your preferred method, select **Gantt Chart** view
2. Click the **Resource** tab
3. Click **Assign Resources** in the Assignments group
4. Click the desired task
5. Click the name of the resource that is currently assigned in the Assign Resources dialog box and click **Replace**
6. Click the name of the resource who will be finished the task and click **OK**

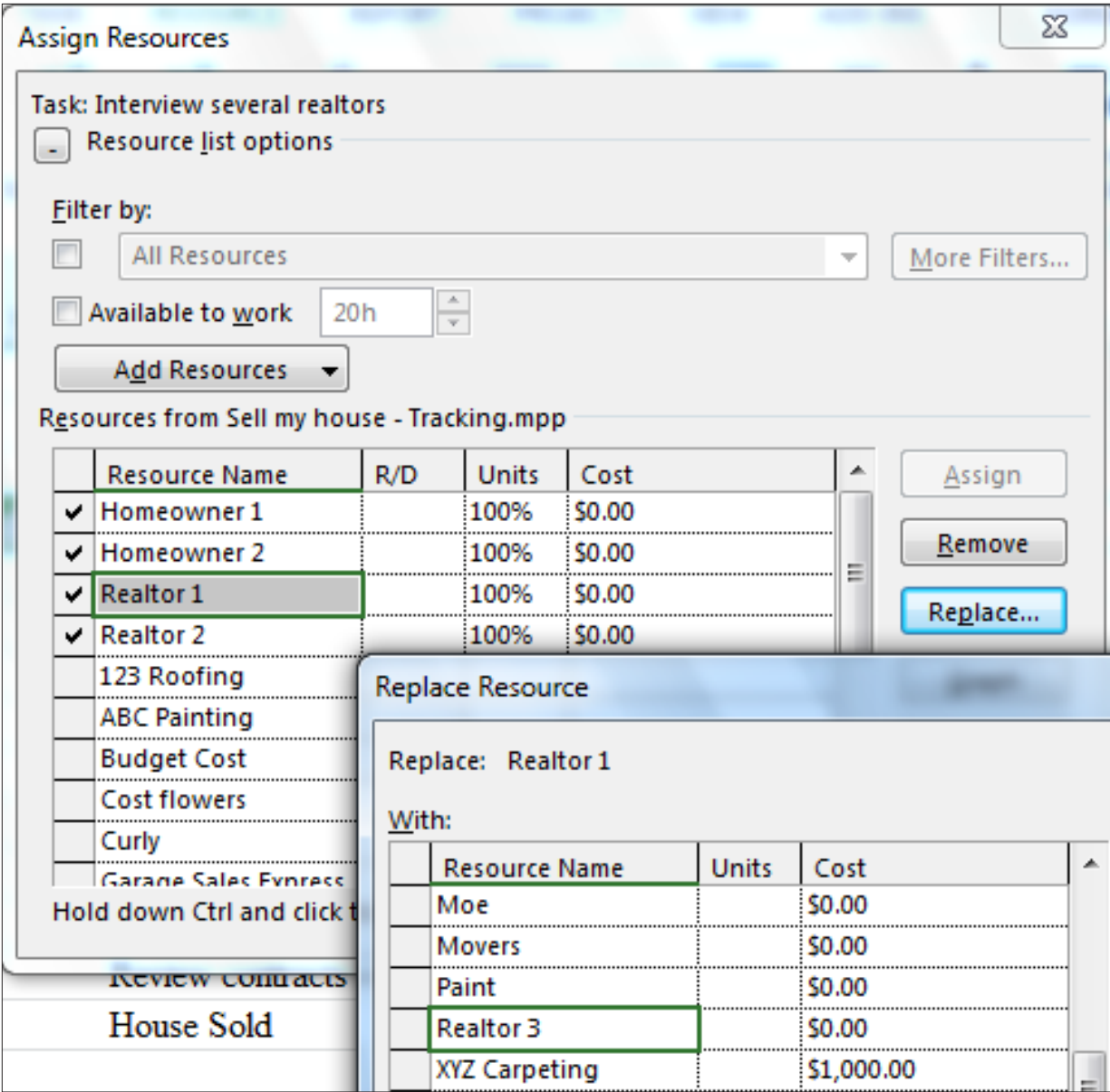


Figure 2-7    Replacing a Resource in the Assign Resources Dialog Box.



If you view the details of the task in Task Usage view, you will notice that it still shows the previous resource for work that is already completed, but the remaining work for the previous resource is now at zero and all remaining work has been shifted to the new resource.



Avoid deleting a resource from an assignment where a task is in progress. You will lose historical information.

## Excluding Tasks From Leveling

Leveling is a Project feature where tasks are delayed due to a resource conflict. Most projects have tasks that cannot be delayed due to restrictions from the project sponsor, customer, or other reasons. In these instances, you should exclude those tasks from leveling.

- 1. Using your preferred method, select **Gantt Chart** view
- 2. Click the **Format** tab
- 3. Click the column heading to the right of where you will be adding a new field
- 4. Click **Insert Column** in the Columns group
- 5. Click **Level Assignments**
- 6. For the desired tasks, change the drop-down option to No to exclude them from leveling

CHART

	Task Name ▼	Level Assignmer ▼	Duration ▼
9	Hold garage sale	Yes	2 days
10	Clean up completed	Yes	0 days
11	▲ Hire Realtor	Yes	16.5 days
12	Interview several realtors	No	7.25 days
13	Review contract	Yes	3 days
14	Realtor Hired	Yes	1 day
15	Realtor Hired Completed	Yes	0 days

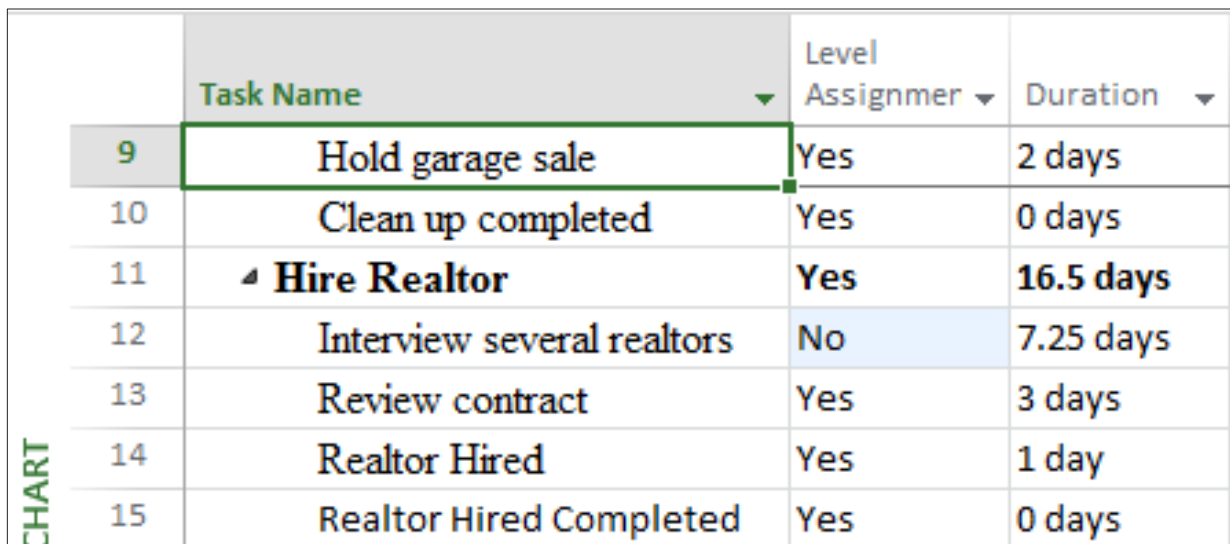
**Figure 2-8**    Level Assignments Column in Gantt Chart View.



## Excluding Resources From Leveling

Even though your project may have resource overallocation issues, you may not want any task work delayed for a particular resource. This could be because you know another resource is being added to your project to assist or because the resource is available more than full time on your project.

1. Using your preferred method, select **Resource Sheet** view
2. Click the **Format** tab
3. Click the column heading to the right of where you will be adding a new field
4. Click **Insert Column** in the Columns group
5. Click **Can Level**
6. For the desired resources, change the drop-down option to No to exclude them from leveling



	Task Name	Level Assigner	Duration
9	Hold garage sale	Yes	2 days
10	Clean up completed	Yes	0 days
11	▲ Hire Realtor	Yes	16.5 days
12	Interview several realtors	No	7.25 days
13	Review contract	Yes	3 days
14	Realtor Hired	Yes	1 day
15	Realtor Hired Completed	Yes	0 days

**Figure 2-9** Can Level Column in Resource Sheet View.

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## Using Task Priorities in Leveling

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For organizations that use leveling, they typically like to fine tune how the leveling feature is applied to specific tasks. Setting task priorities is another way to control leveling which provides a scale of importance for a task over a previous method discussed which involved turning on and off leveling for a task.

1. Using your preferred method, select **Gantt Chart** view
2. Double-click a task
3. Click the **General** tab
4. In **Priority**, choose or enter the desired priority number
5. Click **OK**
6. Repeat as needed for as many tasks as desired.

**Task Information**

General | Predecessors | Resources | Advanced | Notes | Custom Fields

Name: Paint bedrooms & Family Room Duration: 4.25 day ☐ Estimated

Percent complete: 0% Priority: 1000

Schedule Mode: ☐ Manually Scheduled ☒ Auto Scheduled ☐ Inactive

Dates

Start: Mon 5/2/16 Finish: Mon 5/16/16

☐ Display on Timeline  
☐ Hide Bar  
☐ Rollup

Neither Leveling nor Prevent Overallocations mode will move this task because priority is set to 1000.

Help OK Cancel

**Figure 2-10** Changing Priority Number in Task Information Dialog Box.



1000 is highest priority is Project. Choose this option for tasks that should not be moved.



Consider using Priority to set tasks that should be selected first for leveling (1 priority) and tasks that should not be selected for leveling (1000 priority). This should reduce the number of tasks you need to manually set a priority number on since all the remaining tasks will be average priority (500 priority).



Priorities will only be considered first in leveling if you change the Leveling Options setting for Leveling Order to Priority, Standard.

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## Applying a Work Contour

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Project by default applies a flat contour to all resource assignments. This means that work is evenly distributed throughout the life of the task. If a resource is overallocated or to further control resource assignments, you may choose to alter how the hours are spread across the life of a task. A feature called work contouring provides several different options that can be applied to tasks to help alter the work burden on your resources.

- 1. Using your preferred method, select **Resource Usage** view
- 2. Double-click the desired task name
- 3. In **Work Contour**, click the drop-down arrow and choose the desired option
- 4. Click **OK**

The screenshot shows the 'Assignment Information' dialog box with the 'Tracking' tab selected. The 'Task' field is 'Paint bedrooms & Family Room' and the 'Resource' is 'ABC Painting'. The 'Work' field is '34h' and 'Units' is '100%'. The 'Work contour' is set to 'Flat'. The 'Start' date is 'Mon 5/2/16' and 'Finish' is 'Mon 5/16/16'. The 'Booking type' is 'Committed', 'Cost' is '\$1,020.00', and 'Cost rate table' is 'A'. The 'Assignment Owner' field is empty. 'OK' and 'Cancel' buttons are at the bottom right.

Assignment Information	
<b>General   Tracking   Notes</b>	
Task:	Paint bedrooms & Family Room
Resource:	ABC Painting
Work:	34h
Units:	100%
Work contour:	Flat
Start:	Mon 5/2/16
Finish:	Mon 5/16/16
Booking type:	Committed
Cost:	\$1,020.00
Cost rate table:	A
Assignment Owner:	
OK   Cancel	

**Figure 2-11**   Work Contour in Assignment Information Dialog Box.



The name of the contour is supposed to visually remind you of a shape.



Notice you can pause on the indicator symbol to read a note about the contour that has been applied to the task.

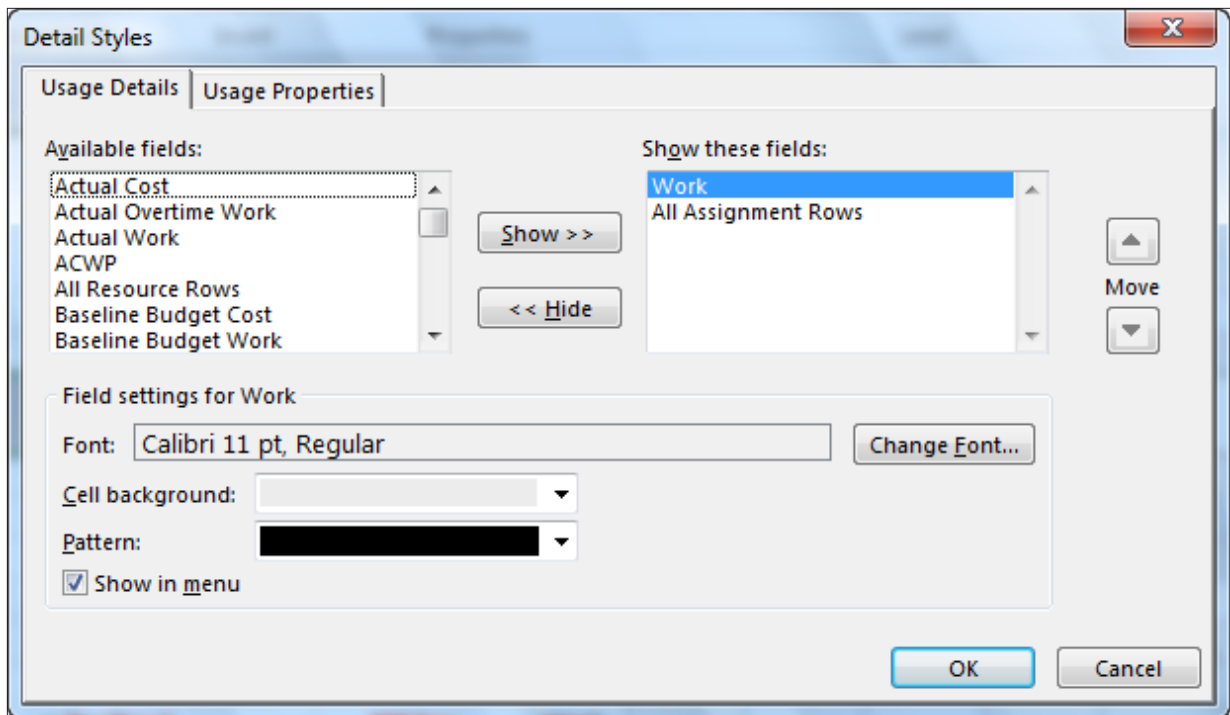
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## Advanced Resource Assignment Analysis

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Project provides a number of fields that can help you make informed decisions about resources. Typically project managers and advanced schedulers use either the Resource Usage view or Task Usage view to perform further analysis because of the ability to add summary fields to the table portion of the view (left-side) and detailed time phased fields to the grid portion of the view (right-side).

1. Using your preferred method, select **Task Usage** view
2. Click the column heading to the right of where you will be adding a new field
3. Click the **Format** tab
4. Click **Insert Column** in the Columns group
5. Click the desired field that you want to display a summary for
6. Repeat as needed until all fields are included
7. Right-click on the grid portion of the view (right side)
8. Click an item in the frequently used fields menu to add or hide it from the view
9. Click **Detail Styles** for more options
10. Click the desired field(s) and click **Show** or **Hide** as desired
11. Click **OK**
12. Repeat as needed until all fields are included



**Figure 2-12** Detail Styles Dialog Box.



Some fields can only be shown in certain views. Also some fields can only be displayed on the left-side or right-side of the screen.

