

# **Case Study: Phase 2**

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#### WHAT'S COVERED

This tutorial will focus on Phase Two of the project life cycle, planning the project, through a case study on building an energy efficient house, specifically demonstrating:

# 1. Phase Two: Planning a Project

As a reminder, the case study we're using is the development and construction of an energy-efficient home for a couple.

Once the stakeholders have been identified and the project scope documented in Phase One, it's time to create the various plans that will help a project manager oversee the project.

#### 1a. Work Breakdown Structure

In this step, we will use the project scope to define the work breakdown structure (WBS). For this project, we must identify the major activities and the sequence in which they must be completed in order to produce the deliverable, which is an energy-efficient house.

The major activities in this house construction are:

- Create the Foundation
- Build the External Structure
- Install the Internal System

Activities in a WBS are often given whole numbers such as 1.0, 2.0, etc. Then, under each activity, we would document the major tasks. Tasks in the WBS are numbered based on the activity they fall under.

Activities		
1.0 Create the Foundation		
2.0 Build the External Structure		
2.1 Frame Walls		
2.2 Spray Foam Insulation Inside		
2.3 Install Insulated Foamboard Outside		
3.0 Install the Internal System		

Let's look further at the second activity, building the external structure. In order to be energy-efficient, the home must have well-insulated walls in the external structure. Under this activity, there would be the following tasks such as frame walls, spray foam insulation inside, and install insulated foam board outside. Note how these tasks would then be numbered 2.1, 2.2, and 2.3, which associate them with the second activity.

All the activities are documented and tasks in this manner. Once the WBS is created, work begins on the remaining plan documents.

#### **1b. Project Schedule**

The project manager takes all the activities and tasks from the WBS and places them in a schedule that outlines how long the project will take.

When one task must be completed before another can start, this is known as a dependency. All dependencies must be documented in the schedule. For example, framing must be completed before the drywall can be placed onto the walls, so this is noted in the schedule.



#### **Project Schedule**

This helps a project manager plan when resources must be available to work on specific days. The project manager also assigns people as resources to each task, then gathers estimates from that personnel on the time or effort needed to complete the work.

Once the estimates are in the schedule and the schedule is complete, the project manager baselines the schedule.

## 1c. Resource Plan

Person resources that are used in the schedule must be documented in a resource plan. Non-person resources, such as the high efficiency heat pump that will be used to warm the house, must also be documented in the resource plan.

The project manager must make sure all tasks and deliverables can be handled by the resources available. If not, the project manager must procure the necessary resources.

## 1d. Project budget

Using the schedule and the resource plan, the project manager can then construct the budget.

The budget should include:

• Real project costs that are paid for out of the project budget

- Overhead costs paid for by the organization
- Person and non-person resources that will be used for the project.

For this house project, there are no overhead costs to include.

From Phase One, you know that the homeowners wish their project budget to be no greater than 15% more than the average house. This is the stage where that goal is checked against the reality of the actual project budget. If the actual budget is too high then reductions in the scope may need to occur.

The budget for this project might look like this:

	Person	Non-Person
Create the Foundation	\$17,000	\$6,000
Build the External Structure	\$27,000	\$32,000
Install the Internal Systems	\$52,000	\$31,000
Sub Total	\$96,000	\$69,000
Total	\$165,000	
Target	\$160,000	
	\$100,000	
Difference	-\$5,000	

Here we can see that the budget for this project was too high, so the project manager requested a change to different kitchen cabinets to lower the price. The homeowners and the architect approved the change request, and the project scope was changed.

#### 1e. Risk Management Plan

The risk management plan is also documented during this phase. Each risk is categorized using the risk matrix, which identifies the risk along two axes:

- The probability that the risk will occur
- The impact the risk will have on the project.

On each axis, risks are given a value of high, medium, or low. Any risk with a high probability or high impact rating must have a contingency documented in the risk management plan. The contingency should describe the actions that will be taken if the risk triggers.

The risk matrix for this project might look like this:



#### Probability

As you can see, one risk in this project would be changes made to the project by the homeowners after major work has occurred. This risk has a medium probability with a high impact, so it needs a contingency documented. The project manager chooses to lower the chance of the risk by adding tasks to the schedule, including the creation of multiple prototypes (both electronic and physical) for the homeowners to review.

# 1f. Communication plan

Communication is a key skill for a project manager, and all available methods should be used. In this project, the architect and the homeowners will be communicating often. However, the project manager should also make sure that both of those stakeholders are aware of the work progressing on the project and any issues encountered during the work.

The stakeholders must be immediately notified of any schedule or budget overruns. For this project, the project manager sets up a simple online version of the schedule on which the homeowners can check and provide feedback at any time. The project manager must still make sure that email and phone calls are another methods for stakeholder feedback.

# 1g. Decision Log

To document the history of a project, a decision log is kept of all changes, including the change to kitchen cabinets noted earlier.

This log will prove helpful should any disagreements over decisions arise later in the project. Once these planning documents are created, the project manager presents them to the homeowners and the architect for approval. When approval is granted, the project can move on to phase three, managing the work.





In Phase 2: Planning a Project, the following planning documents will be created:

• Work Breakdown Schedule

- Project Schedule
- Resource Plan
- Project Budget
- Risk Management
- Communication Plan
- Decision Log

#### SUMMARY

This tutorial discussed a **case study: phase 2 Planning the Project** and covered areas such as a risk matrix and decision log. Now you know that a project manager takes all the activities and tasks from the WBS and places them in a project schedule.

Source: this work is adapted from sophia author jeff carroll.