

5.10: Contingencies

Once the cost of each activity is estimated, it is possible to determine how much money is needed for each activity and component, and the whole project. The process of subtotaling costs by category or activity is called cost aggregation. PMBOK Guide Sixth Edition defines this process as “Determine Budget” which is a process of aggregating the estimated costs of individual activities or work packages to establish an authorized cost baseline^[1]. This baseline is a time-phased budget that can be used to measure and monitor cost performance after it has been approved by the key project stakeholders. The aggregated budget is integrated with the project schedule in order to produce the time-phased budget. Costs are associated with tasks, and since each task has a start date and a duration period, it is possible to calculate how much money will be spent by any particular date during the project. Recognizing that all the money required to deliver the project is not needed upfront, allows the cash flow needs of the project to be effectively managed. For smaller organizations facing cash flow challenges, this can result in significant savings as the money required to pay for resources can be transferred to the project account shortly before it is needed.

Figure 5.9 illustrates the project budget components. While estimating the costs, the project team should take into account the uncertainties that may affect the costs. This requires a reserve analysis which is conducted in line with risk management. Therefore, cost estimates are accompanied by contingency reserves for each activity and work package, if applicable. As can be seen in Figure 5.9, contingency reserve is included within the cost baseline. Therefore, these reserves must be incorporated into the baseline that ensures the monitoring and controlling of the project cost performance.

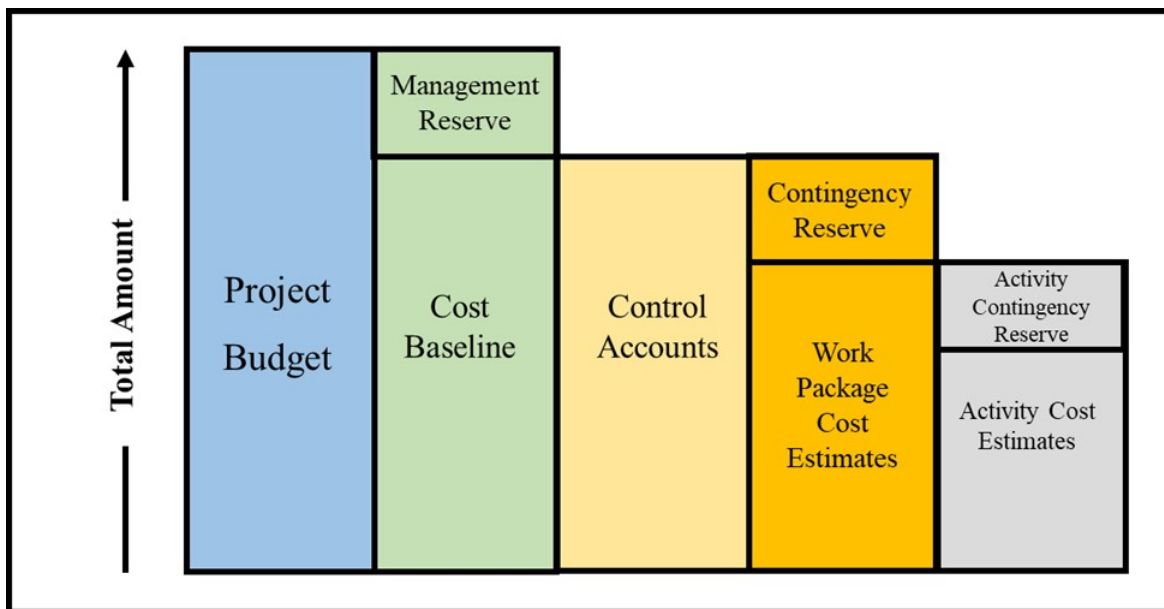


Figure 5.9: Project Budget Components. Adapted from PMBOK Guide Sixth Edition

In addition to creating the project plan, you need to create a **contingency plan**, which is a plan for addressing key possible obstacles to project success. A contingency plan defines alternate paths for the project in case various risks are realized.

A contingency plan typically includes a **contingency fund**, which is an amount of resources set aside to cover unanticipated costs. Contingency plans and funds are necessary because even the most seasoned project planner sometimes succumbs to excessive optimism, assuming everything will go well and that all resources will be available when needed. Also, no matter how thoroughly you plan a project, you will inevitably miss at least a few small issues.

Examples of issues that might necessitate the use of a contingency fund:

- Inadequate initial estimates
- Small items not covered in planning
- Errors in initial estimates
- Small deviations due to inevitable delays

Note that a contingency fund is not designed to manage major deviations or scope changes.

A simple and effective form of contingency planning is setting aside a contingency fund consisting of a fixed percentage of all resources (time, money, people) in addition to the amounts spelled out in the final budget. Ten percent is a typical amount, but that can vary depending on the size and type of project, as well as the type of industry.

One of the chief difficulties of contingency planning is getting people to agree on exactly what is and is not covered by a contingency fund, and how it applies in specific circumstances. A considerable amount of research has been done on this topic, but there is still no clear consensus. For that reason, before launching a major project, you would be wise to investigate the ins and outs of contingency planning at your organization in particular, and in your industry in general.

Contingency planning is closely related to risk management. When you are working on small projects of limited complexity, you can probably assume that a fixed percentage contingency plan will cover most risks. However, for highly complex, technically challenging projects, it's important to distinguish between generic budget planning contingencies (using a fixed percentage) and the more sophisticated modeling of risk for uncertainty.

If money is not available from other sources, then cost overruns typically result in a change in the project's scope or a reduction in overall quality. To prevent this, organizations build contingency funds into their budgets. Technically, a contingency fund is a financial reserve that is allocated for identified risks that are accepted and for which contingent or mitigating responses are developed. The exact amount of a contingency is typically 10% to 15% of the total budget.

Contingency funds are often available to pay for an agreed-upon scope change. However, some project managers make a practice of treating a contingency fund as a "Get Out of Jail Free" card that they can use to escape any cost limitations. Some, as a practical matter, will artificially inflate a contingency fund to ensure that they have plenty of resources to draw to manage any unforeseen future risks. But that is never a good idea because if you wind up with a large contingency fund that you ultimately don't spend, you have essentially held that money hostage (i.e., lost opportunity costs) from the rest of the enterprise. That can be as damaging to your organization's mission as a cost overrun that prevents you from finishing a project.

As explained, contingency funds are a form of risk management. They are a necessary tool for dealing with uncertainty. Unfortunately, as necessary as they are, it's not always possible to build them into your approved budget. For example, if you are competitively bidding on a contract that will be awarded at the lowest cost, then including a contingency fund in your estimate will almost certainly guarantee that your company won't win the contract. It is simply not practical to include a contingency fund in a lump sum contract.

The amount of a contingency reserve for each activity or a higher WBS level is determined after the risks and the strategies are identified and detailed (see Chapter 10). For instance, if an activity to test a website's functions and security is estimated to cost \$10,000, the project team can put an additional budget of \$2,000 to ensure an effective response to the security gaps if occurs. Then, the cost baseline of this activity becomes \$12,000 (\$10,000 + \$2,000). It can be adjusted when more information becomes available as time passes and activities are conducted and completed. It is also possible that new risks may emerge which has not been forecasted while the project management plans were being prepared. This is why project teams have regular meetings at which all the project components, issues, and risks are reviewed, which allows the team to take timely actions.

Let's assume that the project team agreed on contingency reserves for three activities as shown in Table 5.4. Therefore, the cost baseline increases from \$23,920 to \$24,920.

Table 5.4: Cost Estimates and Contingency Reserves for "Scope" component

WBS	Activity Name	Cost	Contingency Reserve	Cost Baseline
1.1	Clarify project purpose and determine project scope	\$4,000.00	\$300.00	\$4,300.00
1.2	Secure project sponsorship	\$0.00	\$0.00	\$0.00
1.3	Preparation of project charter	\$7,920.00	\$0.00	\$7,920.00
1.3.1	Develop high-level scope	\$960.00	\$0.00	\$960.00
1.3.2	Identify main resources and develop a high-level budget	\$1,200.00	\$0.00	\$1,200.00
1.3.3	Develop high-level schedule	\$1,440.00	\$0.00	\$1,440.00

1.3.4	Identify main resources and develop a high-level budget	\$960.00	\$400.00	\$1,360.00
1.3.5	Identify key stakeholders and project team member roles	\$2,160.00	\$300.00	\$2,460.00
1.3.6	Develop project approval requirements and project exit criteria	\$1,200.00	\$0.00	\$1,200.00
1.4	Approval of project charter by the sponsor	\$0.00	\$0.00	\$0.00
1.5	Secure core resources	\$0.00	\$0.00	\$0.00
1.6	Initiation stage complete	\$0.00	\$0.00	\$0.00
	Project Manager's Salary	\$12,000.00	\$0.00	\$12,000.00
	TOTAL COST OF SCOPE	\$23,920.00	1,000.00	\$24,920.00

1. Project Management Institute. (2017). A guide to the Project Management Body of Knowledge (PMBOK guide) (6th ed.). Project Management Institute. ↩

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