Crosswind Success Series: PMP® Exam Bootcamp Manual

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Figure 12-4: Cost Funnel depicts a "rough order of magnitude estimate" and a "**definitive** estimate," sometimes referenced as a "**control** estimate."

$100K Estimate

$75K Low Tolerance	**Rough Order of Magnitude Estimate - 25% to +75%**

$175K High Tolerance

$95K Low Tolerance

Definitive Estimate -5% to +10%
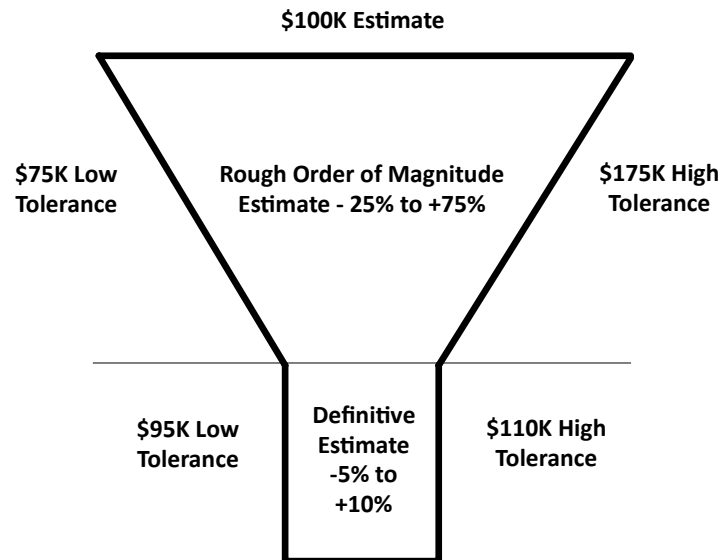
$110K High Tolerance

Figure 12-4: Cost Funnel

The rough order of magnitude estimate occurs at the start, or the top of, the project. It has the widest tolerance. The final definitive (or control) estimate occurs at the end, or the bottom, of the project. It has the least tolerance.

If a project has a $100,000 estimate (assuming it didn't change as it went through the estimating process), the rough order of magnitude tolerance is $75,000 to $175,000. The definitive (or control) estimate tolerance is $95,000 to $110,000.
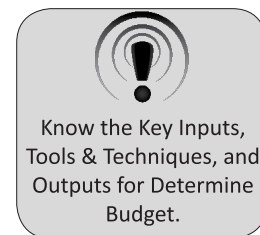
The source for the above text is the Project Management Institute, *A Guide to the Project Management Body of Knowledge*, (*PMBOK® Guide*) – Sixth Edition, Project Management Institute Inc., 2017, Pages 240-247

12.13.   Determine Budget (Planning Process Group)

During the Determine Budget process, the primary activity is rolling up the cost estimates for the activities or work packages to create a total project budget amount that will serve as the cost baseline.

A detailed estimate of the project cost, as well as its individual pieces, is the result of this process.

The cost baseline created at this point should include a time-based approach to determine project cost needs as time passes. It establishes the basis for measuring, monitoring, and controlling project cost.
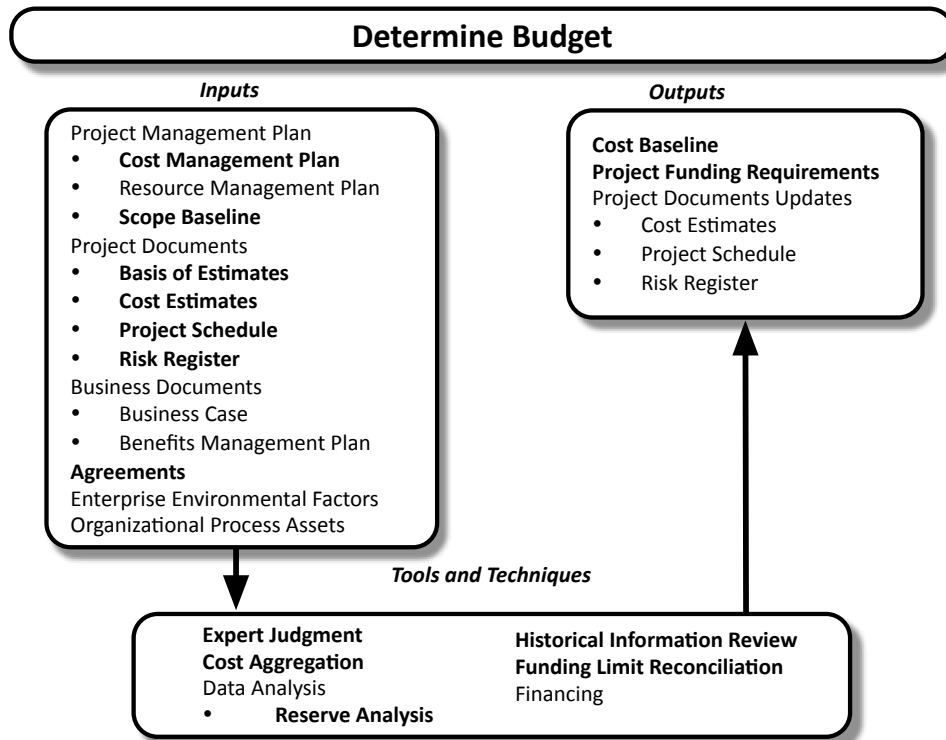
Know the Key Inputs, Tools & Techniques, and Outputs for Determine Budget.

Chapter 12 Cost

Determine Budget

Inputs

Project Management Plan
- **Cost Management Plan**
- Resource Management Plan
- **Scope Baseline**

Project Documents
- **Basis of Estimates**
- **Cost Estimates**
- **Project Schedule**
- **Risk Register**

Business Documents
- Business Case
- Benefits Management Plan

Agreements

Enterprise Environmental Factors

Organizational Process Assets

Outputs

Cost Baseline
Project Funding Requirements
Project Documents Updates
- Cost Estimates
- Project Schedule
- Risk Register

Tools and Techniques

Expert Judgment
Cost Aggregation
Data Analysis
- **Reserve Analysis**

Historical Information Review
Funding Limit Reconciliation
Financing

Figure 12-5: Determine Budget Data Flow Diagram
The source for the above figure is the Project Management Institute, *A Guide to the Project Management Body of Knowledge*, (*PMBOK® Guide*) – Sixth Edition, Project Management Institute Inc., 2017, Figure 7-6, Page 248

Determine Budget (Planning)		
Key Inputs	Cost Management Plan	The cost management plan is a component of the project management plan that details the manner in which project costs are planned, configured, controlled, and structured into the budget. It documents the processes and tools that will be used to manage project costs. Typically, it addresses metrics, the establishment of earned value management techniques, the junctures in the work breakdown structure (WBS) used to measure control accounts, acceptable cost performance variances, reporting configurations, satisfactory levels of accuracy (range) and precision (rounding), and the unique codes that associate the control accounts to the organization's accounting system.

Determine Budget (Continued)		
Key Inputs (Cont.)	Scope Baseline	The scope baseline is the authorized version of project scope. It contains the project scope statement, the work breakdown structure (WBS), the work package, one or more planning packages, and the WBS dictionary. It describes the work the project is trying to complete. The baseline is subject to change management and is a component of the project management plan.
	Basis of Estimates	The basis of estimates for costs includes documentation that delineates the manner in which the estimates were determined, lists all assumptions (including those associated with the inclusion or exclusion of indirect costs in the budget) and constraints, identifies the range of estimates used and the degree of certainty associated with those estimates, and details individual project risks that impacted those estimates.
	Cost Estimates	Cost estimates include quantitative estimates of work completion costs, contingency reserves for identified risks, and management reserves for unidentified work. The estimates consider all resources involved including direct labor, equipment, material, facilities, exchange rates, information technology, financing costs, inflation allowance, and/or a cost contingency reserve. Note that estimates for each activity in a work package are totaled to determine the cost estimate for the work package.
	Project Schedule	The project schedule is the product of a schedule model containing linked activities and their planned dates, durations, milestones, and resources. The schedule data can be used to determine costs that will be incurred during a specific calendar period.
	Risk Register	The risk register documents identified project risks. The volume of documentation varies in accordance with the size and complexity of the project. Typically the risk register includes the list of risks sufficiently described to ensure clear-cut understanding, the risk owner for each risk, and the response(s) for each risk. The register, along with any updates, should be considered to determine the total costs related to risk responses.

Determine Budget (Continued)		
Key Inputs (Cont.)	Agreements	Agreements define project intentions and can be written (such as letters of agreements, contracts, memorandum of understanding, service level agreements, and email) or verbal. For work to be performed by an external source, a contract between buyer and seller is typically used. The related costs are determined for aggregation into the budget.
Key Tools & Techniques	Expert Judgment	Expert judgment is judgment based on expertise acquired in a specific area. It is often more significant and accurate than the best modeling tools available and can be provided by stakeholders, organizational personnel external to the project, professional organizations or groups, and consultants. It is important to consider expertise related to financing principals, funding requirements, funding sources, and similar projects.
	Cost Aggregation	Cost aggregation is the process of collecting individual cost estimates into a whole. Specifically, cost estimates are aggregated by work packages, then into higher components (typically monitored by control accounts) of the work breakdown structure (WBS), and then for the entire project.
	Reserve Analysis	Reserve analysis is used to determine the amount of contingency and management reserves required for the project. By analyzing the known unknowns (identified risks, typically with mitigation plans), contingency reserves can be determined to account for budget uncertainties and are included in the cost baseline and project funding requirements. Management reserves are budget reserves set aside to account for unknown unknowns (unforeseen work within the scope of the project). They are part of the overall project budget and are considered in the funding requirements. Funds in the management reserve are not included in the cost baseline until they are used for unforeseen work.
	Historical Information Review	Review of historical information can be used to develop parametric or analogous estimates. Historical information may include project characteristics to evolve mathematical models to forecast total project costs. The models may be simple or complex with varied cost and accuracy. The most reliable models depend on the accuracy of the historical data, easily quantifiable parameters, and scalable (applicable to any project size or phase) models.

Determine Budget (Continued)		
Key Tools & Techniques (Cont.)	Funding Limit Reconciliation	Funding limit reconciliation consists of accommodating the expenditure of funds to established funding limits for a specific period of time. Any variances between expenditures and funding limits can result in rescheduling work. To prevent this, any date constraints for work should be included in the work schedule.
Key Outputs	Cost Baseline	The cost baseline is the authorized version of the time-phased budget for the project, excluding management reserves, and is subject to change control. It is evolved from a summation of approved budgets for specific schedule activities. Cost estimates are aggregated by work packages, then into higher components of the work breakdown structure (WBS), and then for the entire project. Because the cost estimates included in the cost baseline are linked to schedule activities, a time-phased view of the cost baseline is enabled. It is usually depicted as an S-curve. If the project uses earned value management (EVM), the cost baseline is known as the performance measurement baseline. The budget consists of the cost baseline plus the management reserves.
	Project Funding Requirements	Project funding requirements, both total and periodic, are extrapolated from the cost baseline (forecasted costs plus expected liabilities). Funding sources may also be documented. Total funds required are determined by adding the funds included in the cost baseline to the management reserves.

Situational Question and Real World Application
Failure to effectively execute the Determine Budget process is likely to result in cost overruns. An alternate possibility is that the project could be delayed due to a lack of funds needed to acquire equipment or materials necessary for the project.

12.13.1. Chart of Accounts

A chart of accounts is a list of accounts used by the organization's accounting and/or project management system to establish and track budgets associated with work packages, projects, and other efforts that require defining a cost baseline and tracking actual cost against it. The Determine Budget process uses the chart of accounts to show where funds are allocated for the estimated work.