

Project estimating is one of the most critical components of PM. Done well, an accurate estimate helps to ensure project success. Done poorly, or not at all and the project can incur significant impacts. As important as Total Installed Cost (TIC) is to the success of a project, there are areas that are often overlooked in the estimates. What are these overlooked items, and how can you avoid these pitfalls?

At the beginning of a project, the PMT will need to estimate how long the project will take, how much it will cost and what resources will be needed. The first step is to gain a complete and comprehensive understanding of the project scope. This is essential to accurately base your estimate. Next, internal project cost must be estimated. It is all too easy to underestimate the internal charges. How many people will it take to complete this project? Will you need to reallocate any consultants to focus on this project? If so, how does that cost figure into your estimate? How long will it take each person to complete their tasks? Each project role must be identified, along with a breakdown of responsibilities and the time it will take for completion.

Contingency/risk values are often overlooked as well. Often a percentage of the cost is added to allow for items, conditions or events that will incur additional costs, and is estimated from statistical analysis or past project experience. This method is neither accurate nor correct. Project risk factors must be identified, analyzed and the impacts estimated, setting contingency after mitigation, then monitoring and controlling the risk during the project life cycle. Ideally, contingency estimating should be modeled and document as to how the risk drivers affect the cost outcomes. The cost impact for each risk driver and/or events are then estimated for each event or driver.

Market conditions are yet another overlooked factor in estimating. Market conditions for a project may be influenced by several factors, which must be documented and strategies proposed when preparing the estimates. Fluctuations in vendor pricing, equipment costs, changes material costs, etc. all have an impact on the project estimates. When using historical data without increasing values to current market conditions, your estimate will be skewed.

So with all of the potential estimating pitfalls, what are the qualities for an accurate project estimate:

1. Clear definition of the estimate's purpose and schedule. This will identify the estimate's purpose, level of detail required, the parties to receive the estimate and the overall scope of the estimate.
2. Develop the estimating plan or process. Who will be responsible for the cost estimate? Outline the estimating approach and timeline. Clearly map out the team's master schedule.
3. Obtain your data and information. Create a data collection plan with emphasis on current and relevant data, risk data, etc. Make sure that your data is normalized for cost accounting, inflation, learning and quantity adjustments. Analyze information for cost drivers and trends. Compare the results to any historical data.
4. Identify constraints and assumptions. Clearly define what is included and excluded from the estimate. Spell out the project life cycle cost assumptions, schedules by phase and any constraints for schedule or budget. Account for the assumption on escalation or inflation.

5. Determine the estimating approach. This will include the Work Breakdown Structure (WBS) and the best estimating method for each item in the WBS. Line item a cost estimating checklist.
6. Conduct a Risk Analysis. Determine the amount of risk associated with the cost, schedule and technical aspects of each WBS element. Analyze each risk for its severity and probability. Both the minimum and maximum impact should be identified. Identify the amount of contingency funding and internal resource reserves to determine the risk adjusted estimate. Recommend a risk management plan to track and control risk and the impacts upon the project.
7. Draft Basis of Estimate Document (BOE). This outlines the estimate constraints and assumptions and documents all steps used to develop the estimate so that it can be easily shared with cost analysts and project team members. It will identify each project detail and estimate, including auditable and traceable data sources for each element. Finally, this document will describe the estimating methodologies and how the data sources were normalized.
8. Perform QA/QC and Peer reviews to avoid errors and omissions, validate policies and procedures that were used and that all estimating goals have been achieved.
9. Check and update the estimate to reflect actual cost data and conduct analysis on variances. Include any changes to project scope or assumptions, replace estimates with actual costs and assess variances.