

Minnesota Field Office Technical Guide - Section I Cost Estimates

Site specific cost estimates are generally developed by the producer for the installation costs of their conservation practice/s. Site specific cost estimates may also be developed by the planner for more complex conservation practice installations where the producer requests one or the planner determines a cost estimate is needed. A cost estimate is cost information tailored to the producer's specific site and is based on the best inventory and evaluation (I & E) obtained by an experienced conservation planner.

The purpose of a site specific cost estimate is to assist the producer in making a conservation decision and for cash flow and capital budgeting decisions needed to prepare for the implementation of the conservation system. Site specific cost estimates are developed to answer the question "what is this going to cost?" and are used for the following purposes:

1. The person using the estimate gets information about what their total financial commitment will be for the project.
2. The person can use the estimate as a basis for cost control as they get bids and accept vendors to provide materials and services for the project.
3. The person can compare bills to the estimate for analysis of cost performance for their project.
4. The contingency component can be a guide as to the cost uncertainties for the project.

Cost Estimate Basics

Cost estimates require estimation as accurate as possible at the stage the estimate is being developed. Format and detail varies depending on the producer's needs and what they have requested. The cost estimate should include all costs, but can be limited to just those costs the person using the estimate wants to consider. For example, sometimes the person developing and using the estimate may want to only include things they need to pay for and exclude unpaid labor provided by themselves or others and/or on site equipment in their operation. In that case, the estimate might have an estimate of labor hours or equipment to be used without a cost included for those items.

Steps to developing a cost estimate:

1. Determine Materials, Equipment, Labor Quantities needed.
2. Decide what Mobilization is needed for equipment and delivery of materials
3. Use cost data from available sources and get prices. Note if the price includes delivery to the site.
4. Decide contingency to be applied as well as site conditions that would increase or decrease the uncertainty about the quantities and prices used.
5. Calculate and report the estimate.

Cost estimates can also be used as part of benefit to cost analysis. Most of the time they are used to determine site specific installation costs and further benefit to cost analysis is not completed during the planning process.

The cost estimate process used to develop typical conservation practice costs for the development of program payment rates is different than a site specific cost estimate. The site specific cost estimate is based on the producer's costs so it will include different costs than the costs that are included or eligible for use program payment rates. When developing statewide typical installation cost estimates for program purposes, refer to the guidance in Title 200, Natural Resource

Economics Handbook, Part 613 Developing Cost Data for Conservation Planning, 613.3 Cost Data Worksheet Format and the conservation program rules.

Cost Estimate Component Categories

Cost estimates can be done using a variety of formats and have the various components needed separated into categories. In order to develop cost estimates a database or collection of local costs is needed and generally collected from actual receipts, data collected from a survey of suppliers, and data collected from other local sources. Some data can be purchased such as engineering construction cost data that is gather by companies who sell that data, such as R S Means, Inc. Land Grant Universities also publish reports on average custom rate charges for farm equipment.

Only include the cost that are requested by the producer. It is the producer's option to exclude labor, equipment, etc. available on site that they will not be making a direct cash payment for. Site specific cost estimates are for a producer for planning purposes. The following explains the categories generally used to develop a cost estimate.

Materials: Materials are items purchased to install the practice. Examples of material components are seed, fence posts, sand, concrete, etc.

Equipment Use and Services: Equipment use and service includes charges for equipment and services. Examples are soil test fees, no-till drill rental, custom hire spraying, or charges for a contractor and backhoe. When hiring equipment it can include the operator and would be described in the cost estimate with wording such as "dozer with operator". On farm equipment used may or may not be included based on what the producer wants in the cost estimate.

Labor: Labor includes all the labor needed to install the practice and would include charges for electricians, plumbers, etc. If the operator was not included with the equipment, then the charge for that would be included in labor.

Mobilization: Mobilization and demobilization are fees and charges for contractors bringing equipment to and from a site. It also includes the fee for no-till drill delivery. Some materials may have a separate delivery charge and if so would be included in mobilization.

Other Costs: Other costs include permits, fees, and survey costs. These are charges for soil investigations, state and local permits or other fees the producer needs to pay.

Contingency: Contingency is defined as the amount added to the cost estimate for a project to account for items, conditions, and / or requirements that experience has shown will likely result in additional project costs.

Addressing Contingency in Cost Estimates

Contingency is essential for most cost information and estimates. Some components may have more potential for prices varying over time, so contingency may be best applied by cost category, but can applied to the entire estimate. The order of magnitude for the suggested contingency will vary depending on the cost estimate stage. When there is a short time frame between the planning and installation a contingency close to projected inflation would be adequate. For example a project being planned now for planting next year with an expected inflation rate of 2-3% would only need a contingency of 2-3%. Most NRCS construction planning is in the 10 - 20% range of suggested

contingency and many times is at the 20% preliminary working drawing stage of design. Some points to consider when selecting a contingency rate include:

- A broad across the board contingency applied to the final estimated cost may over or under estimate based on price variability of the components in the estimate.
- There are pros and cons to using contingency at the cost category or the cost item level in a cost estimate. It is more accurate to use by category or item. The downside is it takes more time and effort to include and explain the contingency applied.
- When broad across the board contingency based on intuition, past experience, and/or historical data from previous jobs, it may be difficult to have justification or defensibility of contingency amounts.
- The recipients of cost estimates need to understand the amount of the contingency and where it was applied.
- When contingency is added to both component quantities and prices as well as overall project, the result will be an estimate that errors on the high side. Overly high estimates that vary from the actual costs are poor estimates because they defeat the purpose of the estimate and do not help producers consider financial feasibility or handle cash flow management.

There are various guidelines for setting contingency rates as a percentage of costs. The following are suggested. Other contingency rates may be used. Explaining where and how much contingency was applied is important to the user of the cost estimate so they understand what was included in the cost estimate. Suggested contingencies are:

- 20% at conceptual stage
- 15% at schematic design stage
- 10% at preliminary working drawing stage (design development)
- 3% at final working drawings stage

Other rates may be chosen based on professional judgement and experience. Suggested contingency rates can also be found in engineering professional publications and websites.

Cost Estimate Quality

Cost Estimate Quality is determined by:

1. The quality of the datasets used. Cost Estimate tools are data driven and require gathering and analysis of quantities of data to function correctly. Current tools developed rely on substantial cost data collection at the local level.
2. The knowledge and skill level of the person developing the cost estimate will affect the quality of that estimate. Generally better quality estimates are prepared by producers who know their local suppliers and the local prices.
3. How the estimate is prepared. The time frame, stage of design, and tools to complete estimates varies. Projects in the early stages might not have all the reports needed such as soil borings, at the time of the estimate so that later design changes alter the costs from what was estimated. Projects that wait in the queue for a lengthy period of time between plan and installation have more risk for cost changes.

Cost Estimate Format

Cost estimates can be developed in several formats. Most cost estimate tools are in software applications or spreadsheet formats to facilitate calculations. There are also estimation programs included within various farm bookkeeping software programs used by producers. The planner needs to be able to provide accurate design and installation information to the producers so that they will have all the components and quantities needed in order to get bids or prepare a cost estimate.

