# INDEPENDENT GOVERNMENT COST ESTIMATE HANDBOOK

# FOR PRODUCTS, SERVICES, OR CONSTRUCTION

1. **INTRODUCTION**

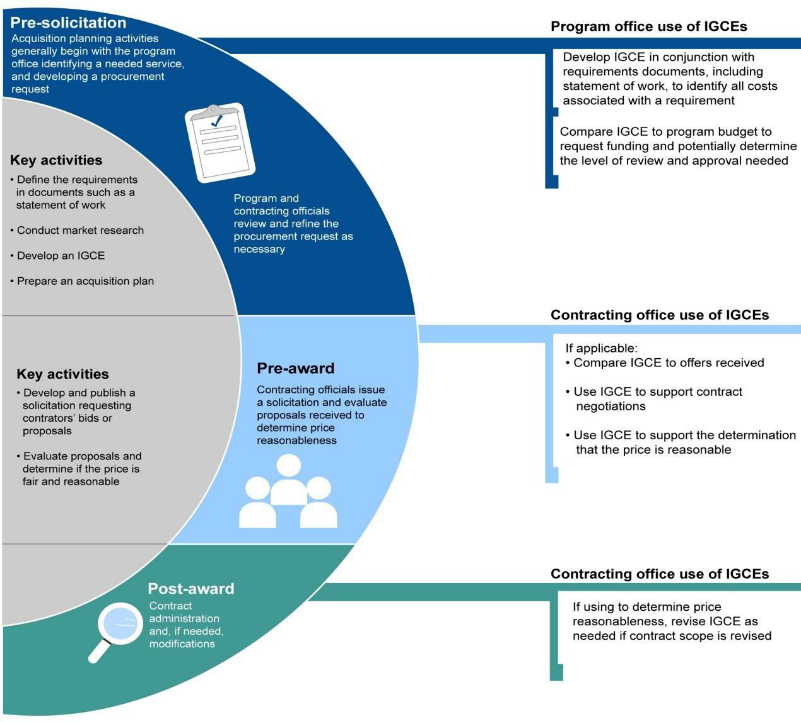
The purpose of this handbook is provide an overview on how to develop an independent government cost estimate (IGCE). An IGCE is used to develop an estimate of the probable cost of services or products being acquired and assist with determining the reasonableness of an Offeror’s proposed costs and understanding of the work. The IGCE describes how much FAA could reasonably expect to pay for needed supplies, systems, services or construction. The IGCE serves as:

* The basis for reserving funds for the procurement action
* Cost and/or price to compare against those proposed by offerors to help gauge the reasonableness of those offers
* An objective basis for determining price reasonableness when only one offer is received in response to a solicitation
* A means of detecting offeror buy-ins and identifying unbalanced prices (AMS Procurement Guidance T3.2.3)

The IGCE is developed by the requiring Service Organization, based on the requirement of the Performance Work Statement (PWS) or Statement of Work (SOW). Per AMS Policy 3.2.1.2.4, an IGCE is required for procurement actions over $150,000) (or for any lower dollar value procurement action when the CO determines it necessary). For additional guidance on IGCE, please refer to AMS Guidance T3.2.3.A.2.

1. **THE IGCE AND SOURCE SELECTION**

FAA is entitled to receive quality supplies and services for a reasonable price. The CO will rely on your IGCE to assist in the determination of the acquisition strategy and estimated cost for the proposed effort. An under-estimated project can result in too little funding, delayed and iterative proposal processes, negotiation difficulties and delays, and other internal administrative problems. The following diagram illustrates the IGCE’s use during source selection.



The CO for your program must ensure, through cost and/or price analysis, that the final price is fair and reasonable for all acquisitions. One of several techniques in performing price analysis is comparison of the proposed prices with an IGCE. The IGCE’s primary objective during source selection is to provide the CO with an unbiased, realistic cost estimate for proposed supplies, services, and construction. As the CO, you are not responsible for preparing the IGCE, but you must understand it and the basis for it.

1. **DEVELOPING A DETAILED COST ESTIMATE**

The IGCE is used during all phases of a program or project to include Life Cycle Costs and Total Costs of a Services project, as well as more limited estimates related to a subset of a current contract or even for a contract option period within an overall period of performance. An IGCE should be independently prepared by a subject matter expert(s). To begin, the estimator should perform a detailed analysis of the requirement. The estimator should be familiar with the market for the item, including prior prices, inflation, market conditions, quantity, existing and emerging technologies, and substitutions.

When developing an IGCE, the preparer should adhere to the following requirements:

* The IGCE must be crossed-referenced to the planned solicitation/contract Schedule of Supplies/Services (Section B) Contract Line Item Number (CLIN) structure of the solicitation/contract and to the Statement of Work (SOW).
* Use an Excel worksheet to avoid computation errors. A MS Word format document may be used only for the narrative portion supporting the basis of estimate.
* The IGCE must document the sources of information for all estimating methods, assumptions, and judgement factors for each cost estimate included. (AMS T3.2.1.4)
* The IGCE must include the FAA preparer’s or approver’s name, organizational code, telephone number, and date.

1. **NARRATIVE**

The IGCE must include a narrative that details and supports the basis of the estimates. The estimator must clearly explain the rationale used to develop the estimate and document the results. Estimates must be supported by substantial evidence that results in a logical conclusion. The estimator must document any assumptions, judgement factors, methodology used, and reference materials and sources of information used in developing the estimate.

In the narrative of the IGCE, the five primary questions to be answered are:

* How was the estimate made?
* What assumptions were made?
* What information/tools were used?
* Where was the information obtained from?
* How did previous estimates compare with prices paid?

1. **COST ESTIMATION – STANDARD ELEMENTS**

The following description of standard cost elements used in a detailed estimate is intended to assist in the preparation of a detailed IGCE. A sample format for a detailed cost estimate for products, services, or construction is in the below Attachment. The IGCE should be tailored to suit the size and complexity of the description of work (PWS/SOW). The IGCE consists of the anticipated costs to include direct costs (labor, products, equipment, travel, and transportation), indirect costs (burden on labor such as fringe benefits and labor overhead), material overhead, general and administrative (G&A) expenses, and profit.

The list below provide an overview standard elements for cost estimation:

* **Allocation Base.** The costs over which the indirect rates are spread (the denominator in the indirect rate calculation). The allocation base and the indirect costs in the associated pool must have a causal/beneficial relationship.
* **Escalation.** Future periods may be estimated by performing a trend analysis of past projects that are similar to the proposed work, or by using escalation factors. Escalation must be substantiated by a recognized source such as IHS Global Insight or the Bureau of Labor Statistics indices (Consumer Price Index or Producer Price Index).
* **Facilities Capital Cost of Money (FCCM).** FCCM is an imputed cost that represents the cost to thecontractor employing capital when investing in facilities or assets under construction that benefit FAA.
* **Fringe Benefit Expenses.** Costs of employee benefits – health insurance, vacation, as well as payroll taxes. These costs may be included in Overhead, rather than being a separate rate.
* **Fringe Benefits Overhead.** Contractors often have a separate pool for fringe benefits. Fringe benefits may include:
  + Vacation leave
  + Sick pay
  + Holidays
  + Health Insurance
  + Payroll taxes
  + Supplemental unemployment benefits
* **General and Administrative (G&A) Expense.** General and administrative costs typically include labor for corporate officers, clerical personnel, accountants, human resources personnel, purchasing agents, and attorneys. It also includes the cost of corporate level equipment, office supplies, utilities, interest expense, and legal costs.

The G&A allocation base one of three groups of costs:

1. Total cost input (TCI) is the preferred base to apply the G&A rate. The total cost input base includes all costs, both direct and indirect (excludes profit). This approach must be used unless there is a reasonable basis to use one of the other approaches.
2. Value-added cost input is total cost minus material and subcontract costs. Value-added is appropriate when the inclusion of material and subcontract costs would distort the G&A allocation. When material and subcontract costs are significant, the use of value-added G&A allocation may be a better measure of G&A expense than total cost input.
3. Single element cost input would use one cost element to allocate G&A expense. For example, the G&A rate would be multiplied by only the direct labor cost. This approach may be used when there are no other significant cost elements, or when other significant elements vary in the same proportion to total costs. This is the least preferred method.

* **Indirect Cost.** Any cost that cannot be directly identified with a single final cost objective (i.e. one contract) but can be identified with multiple final cost objectives (i.e. multiple contracts or the overall business).

When the potential contractor is known (such as in a single source or contract modification situation) forward pricing rate agreements (FPRA) with the federal government (often through FAA or Defense Contract Management Agency (DCMA)) may be available and must be used to support estimated indirect rates.

There may also be a forward pricing rate recommendation (FPRR) available, if no FPRA. This may come from FAA, DCMA, or DCAA. Understanding the composition of each indirect cost or overhead pool is important to ensure proper treatment of costs and to avoid duplication. If a cost estimate contains fully loaded rates, fringe benefits, overhead, G&A, and fee should already be included. Additional overhead should not be applied to avoid over estimating the cost.

* **Indirect Cost Pool.** An indirect cost pool is a logical grouping of incurred costs identified with multiple final cost objectives.
* **Labor Costs.** Costs for labor are typically the most significant part of the IGCE in terms of dollars for either services or construction contracts. Direct labor is the labor directly applied to the performance of the contract requirements. The IGCE should identify the labor categories and the number of hours required to perform the work, known as level of effort, for each category.

1. Evaluating historical actual cost data gathered from FAA contracts for similar goods or services to estimate future requirements. The comparison between past and future items or services can be accomplished at a summary or task level. Many companies keep detailed cost records at the task level, which may be utilized if FAA has access to these records. When using this method consider aberrations that could skew the estimate. Consider also possible reductions in labor hours resulting from improvement from experience. This reduction can be estimated using learning curve theories.
2. Labor standards may be used to estimate labor hours for manufacturing or repetitive functions. Labor standards are developed from data within the company, data published by trade associations, and data gathered from various other reference sources. For example, a company may determine that to produce a widget requires a standard of 12 hours of an engineer’s time. This means that on average 12 engineer hours are needed to produce one widget; the actual time may vary from widget to widget.
3. Estimates based on the professional experience and judgment of engineers and managers may be used to estimate labor hours, but it is the least accurate approach to estimating. Determining the proper mix of labor categories is important to make sure that the type of labor as well as the skill level of workers is appropriate for the work to be performed.
4. Labor hours may vary from year to year depending on the goods or services acquired. Estimated hours should be adjusted when more or less work is anticipated in different years.
5. The productive hours for full-time contractor personnel should account for the anticipated vacations, holidays, sick days, and other administrative days. The number of potential work hours in a year is 2,080 (40 hours per week X 52 weeks per year); from the 2,080 hours estimated hours for vacation time (e.g. 120 hours), holidays (e.g. 80 hours), and sick leave (e.g. 40 hours) should be deducted (2,080 hours – 120 vacation hours – 80 holiday hours – 40 sick leave hours = 1,840 productive or direct hours).

Documenting the methods used to estimate labor hours is essential to support the independent government cost estimate. This information must be included in the IGCE narrative. Maintain copies of all source information.

Estimates for labor rates may be derived from many sources including the following:

1. Historical trends on FAA contracts for similar goods or services (be sure to determine if the labor rates are for direct labor or fully-loaded rates that include overhead, general and administrative, and profit) such as the Electronic FAA Accelerated and Simplified Tasks (eFAST), and the NAS Implementation Support Contract (NISC).
2. Labor rates for similar services from General Services Administration (GSA) Federal Supply Schedules (FSS), Bureau of Labor Statistics (BLS), Office of Personnel Management (OPM) for comparison to federal employee salaries, and private surveys of labor rates may be used. Be sure to determine if the labor rates are for direct labor or fully-loaded rates that include overhead, general and administrative, and profit.
3. Geography may influence labor rates. Work locations should be considered because labor rates vary significantly by location for the same labor skills.
4. When the potential contractor is known (such as in a single source or contract modification situation) forward pricing rate agreements (FPRA) with the federal government (often through FAA or Defense Contract Management Agency (DCMA)) may be available and should be used to support estimated labor rates.
5. In the situation of a known contractor, a comparison of labor rates among FAA contracts should be performed; that is checking the labor rates with the labor rates on other FAA contracts (such as eFAST and NISC) for the same labor categories by the same contractor. This comparison avoids paying higher rates for the same labor categories by the same contractor for similar work.
6. Labor rates for future periods may be estimated by performing a trend analysis of past labor rates on similar projects, or by escalating labor rates. Escalation must be substantiated by a recognized source such as IHS Global Insight (available on the FAA website) or Bureau of Labor Statistics indices (Consumer Price Index or Producer Price Index).
7. Estimates for exempt employees may be estimated for positions performing similar duties covered in Office of Personnel Management (OPM) position descriptions (PD) for general schedule (GS) or wage grade (WG) employees. For example, if an information technology management analyst was required, using OPM’s “position classification” worksheet for a series GS-2210 for an information technology management analyst, following the worksheet instructions, the required analyst may be rated as a GS-14 employee equivalent. The salary tables published by OPM states that a GS-14, at a step 5 earns $106,427 per year (base without locality) or $51.17 per hour. This figure could be used as the basis for estimate.
8. Estimates for non-exempt labor for services and construction are available from the Department of Labor wage determinations provided under the provisions of the Service Contract Labor Standards and the Davis Bacon Act. A non-exempt employee covered by one of these acts must be paid no less than the rate of pay listed in the wage determination. Examining the list may help in determining the appropriate labor categories.

Documenting the methods used to estimate labor rates is essential to support the independent government cost estimate. This information must be included in the IGCE narrative. Maintain copies of all source information.

* **Labor Overhead.** Labor overhead includes:
  + Indirect labor consisting of supervision, inspection, maintenance, custodial, and other personnel whose labor is not charged directly to a production or operation
  + Costs associated with labor such as Social Security, unemployment taxes, and fringe benefits, if not in a separate indirect cost pool
  + Indirect supplies such as small tools and janitorial supplies
  + Fixed charges such as depreciation, insurance, rent, and property taxes
  + Overhead may vary significantly if the work is being performed on-site (contractor’s location) or off-site (government’s location). Off-site work normally is lower because the contractor does not need to maintain a building and avoid costs such as utilities
  + Labor overhead is often separated by labor function such as engineering and manufacturing overhead.
* **Material Costs.** The following approaches could support the estimated cost for materials:

If the contract is a follow-on or is similar to another FAA contract, the purchase history of the costs of materials could be a basis for estimate. The IGCE narrative should explain the similarities between the needed material and the historical basis. The estimate must be supported with accounting records, vendor invoices, bills of material, or other documentation that can support a per unit cost of the items being acquired. Any modification required for the new item being acquired should be estimated and supported.

1. Commercial items and catalog prices could be used to estimate material costs. Examples would include things like security cameras and doors. Copies of the catalogs used to estimate the material cost should be retained.
2. Vendor quotes can be used to estimate material costs. Vendor quotes from similar FAA contracts may be used to estimate material costs for the new acquisition.
3. Prices of some commodities may be regulated by law; in this case a copy of the law listing the particular commodity’s price would support the cost estimate.
4. The Producer Price Index (PPI) is an example of a widely used published index for escalation of material cost. The Bureau of Labor Statistics’ PPI lists products by commodity groups and individual items. Trade and industry publications are other possible sources for obtaining appropriate data for material cost escalation.

* **Material Handling Rate.** Costs associated with ordering, receiving, inspecting, and shipping materials even when purchased for FAA at cost. Costs associated with subcontracts, including subcontract management.

Material Overhead. Material overhead or material handling includes the expenses associated with acquiring, transporting, receiving, inspecting, handling, and storing materials. Different options exist for collecting and allocating indirect material-related costs. Because material costs can vary significantly from contract to contract, a separate pool ensures that overhead costs are charged commensurately with the material cost in the contract. This pool often contains subcontract expenses, as well.

* **Other Direct Costs (ODC).** Other direct costs (ODC) are costs charged directly to the contract that have not been included in proposed material, direct labor, indirect costs, or any other category of costs. Examples of ODC include special tooling, shipping expenses, reproduction costs, royalties, and federal excise taxes. All ODC should be listed in the IGCE, and supporting documentation retained and available for inspection by interested third parties.
* **Overhead Expenses.** Costs benefiting more than one contract, such as supervision, training, and professional membership fees.
* **Profit or Fee.** Profit is the revenue in excess of the costs to perform a firm fixed price contract, and a fee is a flat charge paid in addition to costs on cost reimbursable contracts. The use of several forms may develop an estimated profit by using weighted-averages for different functions. These forms include DOT Form 4220 and DD Form 1547. A simpler approach is to apply a percentage to the total cost, excluding any directly reimbursable items. The percentage will vary according to risk factors, market factors, and location.

* **Travel Costs.** The program office must estimate the number of trips, the origin and destination for each trip, the length of stay, and the number of persons per trip before estimating the cost of travel. The purpose for the trips should be included in the IGCE narrative. Travel costs usually include cost of transportation, lodging, and meals and incidental expenses. The Federal Travel Regulation prescribed by the General Services Administration should be used to estimate lodging, meal and incidental expense, mileage for privately owned vehicles used for official travel, and so forth. Estimates for airfare and car rentals can be obtained using several travel web sites. (Note: make and retain copies of all source information used for travel estimates.)

1. **COST ESTIMATION METHODS**

An IGCE can contain any combination of cost estimation methods as referenced in AMS Guidance T3.2.3.A.2 (k). The primary five cost estimation methods used to develop cost estimates are:

* **Analogy (Top Down)** 
  + Estimates are based on historical data of a similar item/system.
  + Adjusts the known costs by adding or subtracting elements of material, time, and economic or inflationary changes as necessary.
  + Generally less costly and less time-consuming than other methods, but also generally less accurate.
* **Parametric (Statistical)** 
  + Relies on statistical analysis to establish a relationship between a technical characteristic and the cost of the system.
  + When there is a simple mathematical relationship between two tasks/elements, it is known as “Factor” cost estimating. For example, initial set-up is 10% of the operation and maintenance cost.
  + Measurable base units may include man-hours, trips, moves, units, and square feet.
  + Use in early planning stages of a contract service when specific tasks/elements are not yet known.
* **Engineering (Bottom Up)** 
  + Estimates are very detailed, separated into tasks/elements.
  + The cost of individual tasks and elements are estimated to the greatest level of specified detail.
* **Actual Costs (Extrapolation)** 
  + Typically associated with tasks/elements in progress or material items when taking the actual cost of previous production lots.
  + Adjusted for inflation, labor saving, production and technology changes, and other factors.
* **Expert Opinion** 
  + Relies on subject matter experts’ opinion of what something should cost.
  + Typically used as a last-resort method.