

AACE
INTERNATIONAL
RECOMMENDED
PRACTICE

101R-19

**ROLES AND RESPONSIBILITIES OF A
COST ESTIMATING PRACTITIONER**

SAMPLE

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ROLES AND RESPONSIBILITIES OF A COST ESTIMATING PRACTITIONER

TCM Framework: 7.2 Cost Estimating and Budgeting

Rev. July 17, 2019 (Ed. Rev. May 17, 2023)

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Any terms found in AAACE International Recommended Practice 105-90, *Cost Engineering Terminology*, supersede terms defined in other AAACE work products, including but not limited to, other recommended practices, the *Total Cost Management Framework*, and *Skills & Knowledge of Cost Engineering*.

Contributors:

Disclaimer: The content provided by the contributors to this recommended practice is their own and does not necessarily reflect that of their employers, unless otherwise stated.

Jeffery J. Borowicz, CCP CEP PSP FAACE
(Primary Contributor)

Peter R. Bredehoeft, Jr. CEP FAACE (Primary Contributor)

Larry R. Dysert, CCP CEP DRMP FAACE Hon. Life
(Primary Contributor)

John K. Hollmann, PE CCP CEP DRMP FAACE Hon. Life

Kul B. Uppal, PE CEP DRMP FAACE Hon. Life

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1. INTRODUCTION

This recommended practice (RP) is intended to serve as a guideline, not a standard. As a recommended practice of AACE International, the intent of the guideline is to define the required roles and responsibilities of a project cost estimator.

This RP also outlines the career progression of a cost estimating practitioner applicable to various industries. It describes the roles and responsibilities of a cost estimator during the various phases of project planning and budget development, management, and control. Typically, most cost estimators begin as junior estimators with a limited focus depending upon the industry in which they are employed. For example, in construction, they may develop their skills around a specific trade or discipline of work (e.g., civil, structural, architectural, mechanical, electrical, etc.). As the estimator develops their skills, they progress to a senior estimator position and may be considered subject matter experts (SMEs) in multiple areas of estimating (e.g., multiple disciplines of work, quantity takeoff, pricing, bidding and analysis, change orders, life cycle analysis, value engineering, etc.). After mastering many areas within the estimating fields, the seasoned estimator may become the chief estimator of an estimating department or organization. Chief estimators may have company management duties such as: developing estimating standards and guidelines, training, and other management roles.

Project cost estimating requires knowledge of all elements of cost from project conception to completion (i.e. for all estimate classes). These may include direct material and labor costs, indirect costs, general administration costs, profit, finance costs, owner's costs, startup costs, etc. For conceptual estimating the estimator must have historical knowledge and experience of the working asset, process, facility, or function of the item being constructed or manufactured. The project estimator should have a strong knowledge of risk quantification and analysis [1, p. Chapter 7.6]. Project estimators may also be responsible for estimating operations and maintenance costs in support of life-cycle cost analysis. These skills and knowledge relate to various roles and responsibilities as the estimator progresses through their career. The estimator may progress from an entry level position to a chief estimator or estimating manager. It should be noted that estimators do not necessarily have to achieve the title of chief estimator or estimating manager, this is typically a management role, and some senior estimators may choose to remain in an estimating role without management oversight.

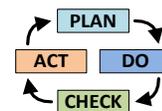
This RP outlines the roles and responsibilities of a cost estimator, based upon the knowledge, skill levels and years of experience as a cost estimating practitioner. This RP will outline the following:

- Core estimating competency areas
- Educational and/or experience levels
- Communication and interpersonal skills
- Cost component knowledge
- Cost engineering knowledge
- Computer and software skills and knowledge

In the *Total Cost Management Framework*, section 7.3.1 cost estimating is defined as: "Cost estimating is the predictive process used to quantify, cost, and price the resources required by the scope of an investment option, activity, or project." [1] The cost estimating roles and responsibilities need to be closely aligned with the cost estimate process outlined in *Figure 7.3-1 Process Map for Cost Estimating and Budgeting* of the *TCM Framework*. [1]

The cost estimating process includes the following activities:

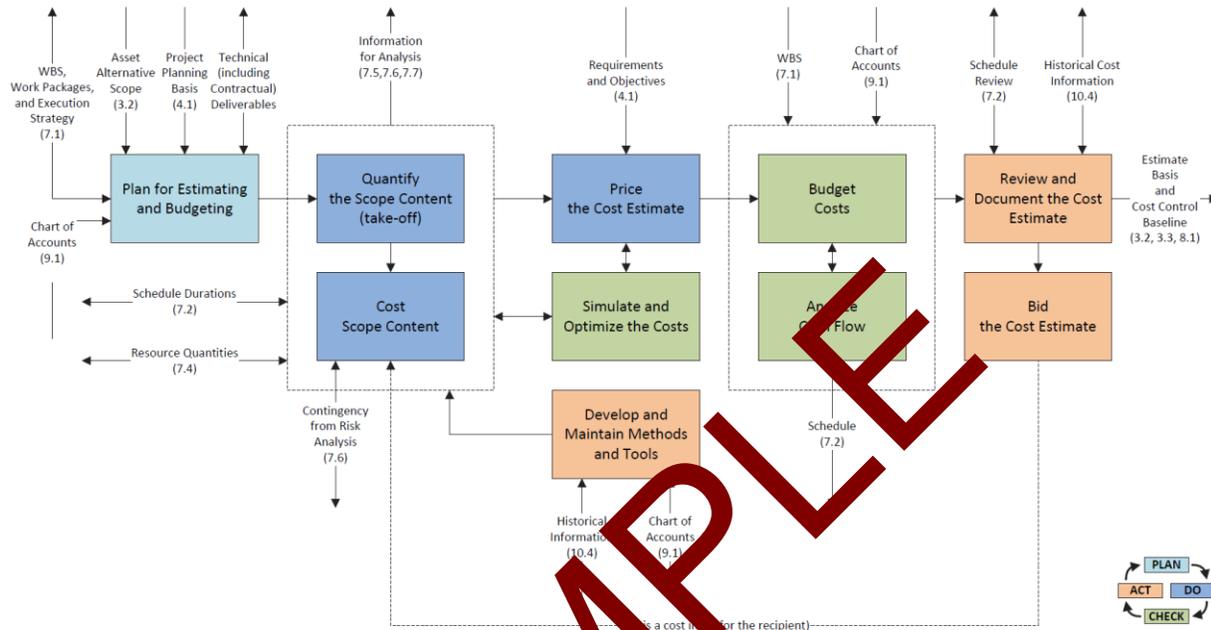
- | | |
|-------|--|
| PLAN | <ul style="list-style-type: none"> • Plan for estimating and budgeting |
| DO | <ul style="list-style-type: none"> • Quantify the scope content (take-off) • Cost the scope content • Price the cost estimate |
| CHECK | <ul style="list-style-type: none"> • Simulate and optimize the costs • Budget the costs • Analyze the cash flow |
| ACT | <ul style="list-style-type: none"> • Review and document the cost estimate |



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- Bid or submit the cost estimate
- Develop and maintain methods and tools

The *Total Cost Management Framework* identifies the cost estimating function in chapter 7.3 *Cost Estimating and Budgeting*. The following process map shows the cost estimating and budgeting process:



This RP is in alignment with Recommended Practice 46R-11, *Required Skills and Knowledge of Cost Estimating*. [2]
 This RP is also in alignment with Recommended Practice 101R-88, *Required Skills and Knowledge of Cost Engineering*. [3]

2. RECOMMENDED PRACTICE

This recommended practice outlines six levels of roles and responsibilities for the cost estimating function. In general, this RP relates to cost estimating across all industries. This RP will outline the supporting skills and knowledge in addition to the levels of education, years of practical experience, estimating skills, interpersonal skills, computer skills, and cost engineering knowledge.

The following are typical levels of estimator roles and responsibilities:

- Entry level (junior) estimator
- Mid-level estimator
- Senior level estimator
- Chief estimator
- Principal estimator
- Estimating manager or director

2.1. Cost Estimating Competency Areas

The core cost estimating areas of competencies are outlined in RP 46R-11, *Required Skills and Knowledge of Cost Estimating* [2]. These apply across the following roles: owner estimator, engineering consultant estimator, or

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construction contractor estimator. The level of skills and competency increases as the estimator progresses throughout their career, gaining experience. See table 1 for more information.

2.2. Education and/or Experience Levels

As a cost estimator progresses throughout their career, they will achieve various milestones, with progressively more responsibilities and grow with greater skills, knowledge and estimating experience. These levels of maturity progress based upon ranges of years of cost estimating experience. College or university education is desirable. Construction field experience and practical experience are equivalent attributes and achievements in the development of cost estimating. A combination or blend of both formal education and practical field experience is desirable. AACE certification as a Certified Estimating Professional (CEP) or Certified Cost Professional (CCP) is recommended.

2.3. Communication and Interpersonal Skills

The cost estimating profession requires strong communication, interaction and interpersonal skills. The ability to clearly write and document a basis of estimate document [4] is a major function of a cost estimator. These skills become of greater importance as a cost estimator progresses into more leadership and management roles.

These communication skills should grow and mature as experience levels and managerial skills increase as the estimator progresses throughout their career. The following are strong communication skills that a cost estimating professional should know and understand:

- Being a good listener, practice active listening
- Nonverbal communication, body language, good eye contact
- Clarity and conciseness – don't talk too much or too little
- Friendliness and tone
- Empathy – respect the viewpoints of others
- Open-mindedness
- Feedback – request and listen
- Communicate via correct medium – written, email, phone or face to face – knowing when to choose the correct medium for the situation

2.4. Cost Component Knowledge

The knowledge of project cost elements increases as the roles and experience levels mature. For example, in construction these core cost components may include:

- Home office costs
- Field direct costs
- Field indirect costs
- Other project costs

2.5. Cost Engineering Knowledge

Cost estimating is one of many roles within cost engineering, as defined in the *TCM Framework*. [1] Cost estimators are part of a larger project team with members such as: designers, planners, cost controllers, construction managers, construction inspectors, project managers, etc. Cost estimators help guide scope and plan development in engineering, procurement, construction, and other areas by leveraging their broad cost engineering knowledge.

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The knowledge of core areas within cost engineering increases as the roles and experience levels mature. These knowledge areas may include:

- Budgets, cost control and forecasting
- Planning and scheduling
- Physical progressing and earned value
- Change management
- Contingency and risk management
- Claims preparation
- Asset planning

2.6. Computer and Software Skills and Knowledge

Cost estimators must have good computer and software skills, and the knowledge and ability to use these tools. These skills change as the roles and experience levels change or mature. These skills areas include the use of:

- General off-the-shelf software (non-estimating)
- Company proprietary software
- Estimating software (quantity takeoff, BIM, estimating, etc.)

2.7. Lead Estimator

The lead estimator is a specific designation when a team of estimators are working together to produce a cost estimate. The lead estimator shall be responsible for the overall estimate production, quality of the estimate, estimating methodology and overall coordination of the estimate with other estimating team members. Typically, this is a senior estimator, or the most experienced estimator given the specific type of project estimate. The following are the specific responsibilities, functions, skills and knowledge of a lead estimator:

- Coordination of the cost estimate
- Contact person for estimate client or requestor
- Contact or interface person with engineering, procurement and construction staff as required
- Assesses the estimating methodology and appropriate level of detail, given the level of design maturity
- Ensures estimate methodology in alignment with project milestone or phase gate process
- Coordination of estimating quantity takeoff and allowances
- Coordination of estimating work breakdown structure or estimating reporting structure
- Coordination of estimating cost and pricing structure
- Coordination of the applicable labor and equipment rate structures
- Coordination of the estimate template structure and format
- Coordination of estimate indirect costs, including field indirect costs
- Coordination of the estimate basis of estimate
- Coordination of quantification of the risk elements (e.g., contingency, escalation, reserves, etc.)
- Coordination of internal and external estimate reviews and validations
- Ensures cost estimate is in alignment with project scope information, bid or proposal information
- Responsible for the overall quality of the cost estimate and deliverables
- Coordination of the integration between the estimate, the schedule, and cost control
- Coordination of final estimate submittal to client or requestor
- Coordination of final estimate closeout or estimate archive

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2.8. Ethics

AACE publishes a *Canons of Ethics*. It is expected that all estimators should read and follow the AACE *Canons of Ethics*. The latest version can be found on the AACE website at: web.aacei.org

3. COST ESTIMATING COMPETENCY AREAS

The following table outlines the roles and responsibilities which supports the skills and knowledge for cost estimating, which is in alignment AACE International Recommended Practice 46R-11, *Required Skills and Knowledge of Cost Estimating*: [2]

Legend:

G = General Understanding

R = Recommended Competent Understanding

COST ESTIMATING COMPETENCY AREAS		Entry Level (Junior) Estimator	Mid-Level Estimator	Senior Level Estimator	Chief Estimator	Principal Estimator	Estimating Manager or Director
1.0	Supporting Skills and Knowledge						
1.1	Elements of Cost						
1.1.1	Cost	R	R	R	R	R	R
1.1.2	Cost dimensions	R	R	R	R	R	R
1.1.3	Cost classifications	R	R	R	R	R	R
1.1.4	Cost types	R	R	R	R	R	R
1.1.5	Pricing	R	R	R	R	R	R
1.2	Elements of Analysis						
1.2.1	Statistics and probability		G	R	R	R	R
1.2.2	Economic and financial analysis			R	R	R	R
1.2.3	Optimization			R	R	R	R
1.2.4	Physical measurements		G	R	R	R	R
1.3	Enabling Knowledge						
1.3.1	Enterprise in society			G	R	R	R
1.3.2	People in organizations and enterprises			G	R	R	R
1.3.3	Information management			G	R	R	R
1.3.4	Quality management			G	R	R	R
1.3.5	Value management			G	R	R	R
1.3.6	Environment, health, safety and security (EHS)			G	R	R	R
2.0	Cost Estimating Skills and Knowledge						
2.1	General Estimating Concepts						
2.1.1	Cost estimating terminology (see [5])	R	R	R	R	R	R
2.1.2	Cost estimate classification	R	R	R	R	R	R
2.1.3	Estimate variability	G	G	R	R	R	R
2.1.4	Uncertainty		G	R	R	R	R
2.1.5	Estimating algorithms		G	R	R	R	R
2.1.6	Code of accounts		G	R	R	R	R
2.1.7	Historical data		G	R	R	R	R