



DOCUMENT #	0300-0310-030-C
REVISION #	2.0
TITLE	COST ESTIMATION
EFFECTIVE DATE	06/15/2017

COST ESTIMATION

1.0 SCOPE

This Quality Work Instruction (QWI) defines the Enterprise Project Management Office (EPMO) procedure to develop project cost estimates in a consistent (standardized) manner. The purpose of this QWI is to establish a procedure that improves the accuracy of cost estimates at project baseline, effectiveness of cost management throughout the project life-cycle, as well as minimize cost variances at Project Closeout. The Cost Estimation procedure is initially completed for all IT Projects as part of [0300-0310-005-C PROJECT INITIATION](#) within the [0300-0300-005-B PROJECT MANAGEMENT PROCESS](#), and is updated throughout the project life-cycle.

2.0 OWNER

2.1 This QWI is jointly owned by the Enterprise Project Management Office (EPMO) Manager, and Office of State Budget and Management (OSBM) Information Systems Financial Analyst. No changes, additions or alterations may be made without the owners' written approval.

3.0 REFERENCE DOCUMENTS

DOCUMENT IDENTIFICATION	DOCUMENT TITLE
GAO-09-3SP	GAO Cost Estimating and Assessment Guide, (March, 2009)
OMB Circular A-11	Federal OMB Circular A-11, Supplement 3.0 (July, 2013)
NC G.S. Chapter 147 Article 15	Department of Information Technology
PMBOK	A GUIDE TO THE PROJECT MANAGEMENT BODY OF KNOWLEDGE - 5TH ED
0100-0800-010-B	FORMS AND RECORDS CONTROL
0300-0300-005-B	PROJECT MANAGEMENT PROCESS
0300-0300-005-C	PROJECT INITIATION
0300-0310-015-C	PROJECT FINANCIAL ASSESSMENT
0300-0310-020-C	PROJECT ASSESSMENT TYPE
0300-0310-035-C	BENEFITS ESTIMATION
0300-0320-015-C	PROJECT CONTRACT AWARD
0300-0382-005-C	PROJECT PEER REVIEW

4.0 ASSOCIATED FORMS

FORMS IDENTIFICATION	FORM TITLE
0300-0310-015-D	PROJECT FINANCIAL ASSESSMENT FORM
0300-0310-020-D	PROJECT ASSESSMENT TYPE FORM

5.0 DEFINITIONS

PRINTED COPIES FROM THE ON-LINE SYSTEM ARE CONSIDERED UNCONTROLLED. IT IS THE RESPONSIBILITY OF THE PERSON USING A PRINTED COPY TO VERIFY THE COPY THEY HAVE IS THE LATEST REVISION IN THE ON-LINE SYSTEM.



DOCUMENT #	0300-0310-030-C
REVISION #	2.0
TITLE	COST ESTIMATION
EFFECTIVE DATE	06/15/2017

- **BOTTOM-UP ESTIMATE:** *Link to Glossary of Terms and Definitions*
- **CONSENSUS (Wide Band Delphi) ESTIMATE:** *Link to Glossary of Terms and Definitions*
- **HISTORICAL/ANALOGOUS RELATIONSHIP ESTIMATE:** *Link to Glossary of Terms and Definitions*
- **MONTE CARLO ESTIMATE:** *Link to Glossary of Terms and Definitions*
- **PROGRAM EVALUATION REVIEW TECHNIQUE (PERT):** *Link to Glossary of Terms and Definitions*
- **RATIO or WORK DISTRIBUTION MODELING ESTIMATE:** *Link to Glossary of Terms and Definitions*
- **RISK CONTINGENCY:** *Link to Glossary of Terms and Definitions*
- **TOP-DOWN ESTIMATE:** *Link to Glossary of Terms and Definitions*

6.0 PROCEDURE

The ‘Enterprise’ project requires the initial, refinement and baseline cost estimates to be completed. The ‘Lite’ project only requires the baseline cost estimate.

6.1 Initial Cost Estimate

- 6.1.1 During the Business Concept and Project Initiation phases, the Initial Cost Estimate is developed based on market research and available planning information. At a minimum, the project will develop a Rough Order of Magnitude (ROM) estimate with an accuracy level of -25% / +75%. This estimate is entered into the [0300-0310-015-C PROJECT FINANCIAL ASSESSMENT FORM](#).
- 6.1.2 Top-Down, Ratio/Work Distribution, and Historical methods are the most effective for establishing the Initial Cost Estimate.

6.2 Refinement Cost Estimate

- 6.2.1 Generally, during the Planning and Design phase, the accuracy of the Initial Cost Estimate is further developed into a Refinement Cost Estimate with an accuracy level of -10% / +25%. This must be completed prior to [0300-0320-015-C PROJECT CONTRACT AWARD](#).
- 6.2.2 Project Managers (PMs) and project teams will use Consensus, PERT, and Historical/Analogous methods in conjunction with Risk/Contingency Reserve methods to develop Refinement Cost Estimates. Monte Carlo simulation may also add value to the Refinement Cost Estimate for highly complex and high risk projects.

PRINTED COPIES FROM THE ON-LINE SYSTEM ARE CONSIDERED UNCONTROLLED. IT IS THE RESPONSIBILITY OF THE PERSON USING A PRINTED COPY TO VERIFY THE COPY THEY HAVE IS THE LATEST REVISION IN THE ON-LINE SYSTEM.



DOCUMENT #	0300-0310-030-C
REVISION #	2.0
TITLE	COST ESTIMATION
EFFECTIVE DATE	06/15/2017

6.3 Baseline (Definitive) Cost Estimate

- 6.3.1 PMs shall establish a Baseline (Definitive) Cost Estimate with an accuracy level of -5% / +10% prior to the Execution and Build phase. The EPMO and PM will use the Baseline Cost Estimate for project cost/schedule performance measurement. The PM typically establishes a Baseline (Definitive) Cost Estimate after the vendor is on board, all design work has been completed, and all project costs, requirements and risks are thoroughly scoped and understood. For some projects the Baseline (Definitive) Cost Estimate may be established early in the Planning and Design phase. This is especially true for projects not involving a request for proposal or major procurement. This estimate is entered into the [0300-0310-015-C PROJECT FINANCIAL ASSESSMENT FORM](#).
- 6.3.2 The PM and supporting project team will use a Bottom-Up (from the Work Breakdown Structure (WBS)) along with Risk/Contingency Reserve cost estimation methodology to determine the Baseline Cost Estimate. Monte Carlo simulation may also add value to the Baseline (Definitive) Cost Estimate for highly complex and high risk projects.

6.4 Independent Cost Review and Validation

- 6.4.1 Projects with a total project budget/cost greater than \$10M and identified as “High” risk per [0300-0310-020-C PROJECT ASSESSMENT TYPE](#) **will require** independent review and validation of the cost estimates.
- 6.4.2 All projects requiring independent review and validation of the cost estimates **will use one** of the following methods:
 - 6.4.2.1 Qualified external (third party) contractor.
 - 6.4.2.2 Project Peer Review. This method will include subject matter expertise from OSBM, Enterprise Architecture, Requirements Analysis, Procurement and Strategic Sourcing, and others as appropriate. If selected, the Project Peer Review will be conducted in accordance with [0300-0382-005-C PROJECT PEER REVIEW](#).
- 6.4.3 The Project Management Advisor (PMA) in coordination with the PM and Business Owner will establish a Decision Point and methodology during the Project Initiation phase.

7.0 RECORDS

- 7.1 Unless otherwise specified in this QWI, Records shall be maintained in accordance with **0100-0800-010-B FORMS AND RECORDS CONTROL** procedure.

8.0 REASON FOR CHANGE

PRINTED COPIES FROM THE ON-LINE SYSTEM ARE CONSIDERED UNCONTROLLED. IT IS THE RESPONSIBILITY OF THE PERSON USING A PRINTED COPY TO VERIFY THE COPY THEY HAVE IS THE LATEST REVISION IN THE ON-LINE SYSTEM.



DOCUMENT #	0300-0310-030-C
REVISION #	2.0
TITLE	COST ESTIMATION
EFFECTIVE DATE	06/15/2017

- 8.1 Updated paragraph 6.4.1 to “total project budget/cost greater than \$10M” versus “Total Cost of Ownership (TCO) greater than \$10M”.
- 8.2 Updated General Statutes.
- 8.3 Updated IT Procurement to Procurement and Strategic Sourcing.
- 8.4 Updated Enterprise Solutions to Enterprise Architecture.

PRINTED COPIES FROM THE ON-LINE SYSTEM ARE CONSIDERED UNCONTROLLED. IT IS THE RESPONSIBILITY OF THE PERSON USING A PRINTED COPY TO VERIFY THE COPY THEY HAVE IS THE LATEST REVISION IN THE ON-LINE SYSTEM.