

**AACE**  
INTERNATIONAL  
**RECOMMENDED  
PRACTICE**

**111R-20**

**ESTIMATING FOR LONG RANGE  
PLANNING – AS APPLIED FOR THE  
PUBLIC SECTOR**

**SAMPLE**

**AACE**  
INTERNATIONAL



AAACE® International Recommended Practice No. 111R-20

## ESTIMATING FOR LONG RANGE PLANNING – AS APPLIED FOR THE PUBLIC SECTOR

TCM Framework 2.2 – Strategic Asset Planning

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## 1. INTRODUCTION

### 1.1. Scope

This recommended practice (RP) of AACE International identifies special considerations that apply when estimating project costs for long-range strategic asset planning, including documenting and communicating the estimate basis. The strategic asset planning that is specifically addressed by this RP supports long-range planning for public sector organizations or similar entities that is required in order for them to better accomplish their objectives. This includes estimating as well as communicating needs and concepts that may pre-date the creation, existence, or emergence of an asset by many years, such as planning for future capacity/infrastructure. These estimates are prepared as planning-level predictions for facilities that may be constructed 10-50+ years in the future. These extreme front-end predictions are necessary for public sector organizations to determine their financial and capital strategies often decades in advance.

These highly conceptual estimates may be revisited periodically during the extended planning-level process. There is often an anchoring effect, i.e., decision-makers are biased towards initial cost estimates prepared at the beginning of a long-range planning estimating process. Subsequent cost analyses are often based on and compared to the initially prepared long-range planning estimate, sometimes ignoring significant changes in scope or strategies, and without adequate consideration of technology change and escalation over time.

These long-range planning estimates are differentiated from traditional AACE International Class 5 estimates for a near-term project where the accuracy range of -20/-50 percent to +30/+100 percent may be sufficient. Long-range planning estimates are prepared for potential facilities within a 10-50+ year strategic asset planning timeframe. It must be acknowledged that the long-range planning estimate is unlikely to be accurate, and the original scope may not be representative of the final solution and associated costs. Unpredictable scope and risk challenges over the extended long-range planning timeframe include economic, technology, availability of resources, critical infrastructure, population dynamics, regulatory, organizational and asset resiliency, climate, energy, and natural influences. Clearly, costs are affected by many factors in addition to escalation.

This RP will identify special considerations and define the required project documentation and management communication necessary to provide stakeholders and end-users with clear understanding of costs and associated risks at any point of estimating process in long-range planning in order to convey the story of scope progression and corresponding costs and risks. It will examine estimating for long-range asset planning not at a point in time but as a developing portfolio of costs best identified as an AACE International Unclassified / Class 10 estimate.

### 1.2. Purpose

This RP is intended to provide guidelines (i.e., not a standard) for long-range planning estimates applied to the public sector. This examines communication to management, taxpayers, ratepayers, and applicable stakeholders that most practitioners would consider to be good practices that can be relied on and considered for use where applicable.

Public sector organizations routinely face long-range planning decisions around future capacity requirements resulting from growth, compliance, and regulatory mandates. In order to ensure that these responsibilities are met, public sector comprehensive planning units continuously engage to identify future system, capacity, technology needs, and requirements. These needs along with potential solutions must often be communicated to management, stakeholders, public officials, taxpayers, and ratepayers' decades in advance in order to garner support; identify and compete for scarce financial resources; and then eventually design, procure, and implement the solution. Developing and communicating scope and cost information so far in advance for large scale projects is a daunting task for planners, engineers, and cost professionals. Cost estimates are prepared with traditional methods utilizing all

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information that is known at the time, while fully realizing that over time, scope will change as well as the methods of execution.

The following scenario illustrates the difficulty both private- and public-sector organizations routinely face in long-range system planning:

*Planning has determined that several decades in the future the volume of wastewater flows produced by the region is projected to be significantly greater than the utility's existing capacity. Expanding services to accommodate the increase in capacity will require significant public works projects. Despite the fact that these future capacity needs are decades away and the agency can only speculate as to what future solutions might ultimately entail, the agency must develop and publish scope and cost information to address the problem and place probable programs and projects into its capital improvement portfolio and rate structure.*

A public sector's capital portfolio is a compilation of small to large, complex engineering, and construction projects that maintain existing infrastructure; add new capacity; and address safety, operations and maintenance, and regulatory requirements. These projects are non-recurring and typically involve construction or renovation of such things as: transportation corridors, underground utilities, plants, supporting facilities, pipelines, transmission systems, etc. The reality of these projects is that final, actual costs tend to greatly exceed comprehensive long-range planning-level estimates. After-the-fact comparisons of end-product actual costs to early estimates are generally critical to key stakeholders, management, public officials, taxpayers, and ratepayers. In reality, the early cost estimate was likely within the Class 5 range associated with such estimates if the base scope had not changed.

Criticism of the early estimate often derives from poor communication and/or anchoring bias. Poor communication is a factor when an adequate basis of estimate, including all assumptions and discussion of uncertainty, is not prepared. Anchoring bias is a factor as it is a normal reaction to "anchor" to the first estimate value, compare against it, and make judgments based upon its initial, albeit outdated premise.

Initial estimates would have been prepared without knowing an exact location, capacity, or process. In reality, the only practical way to prepare such estimates is to apply a real-time solution to the problem that would be available at the time of estimate preparation, and then develop pricing around that hypothetical solution. Additional challenges that face planners, engineers, and cost professionals are the inability to predict advances in technology, public/stakeholder involvement, economic conditions, political environment, changes to regulations, building codes, life cycle costs, and so on. Another complicating notion and common misconception by many are that the fore mentioned factors are somehow covered by escalation. Both the uncertainty of escalation and any additional future uncertainty must be clearly communicated. These are just some of the causes of uncertainty that affect the scope and cost of the end product. To address these challenges, this RP will address a long-range planning estimate methodology for communication of conceptual costs that focuses on understanding costs early in the project life cycle with limited scope definition.

Target audience: estimators, cost modelers, and risk analysts; primary decision makers/executive management; planners; external influencing stakeholders; portfolio managers; program/project managers.

### 1.3. Background

This RP provides an understanding of project communication for estimate costs developed during strategic long-range planning. Often there is great disconnect when comparing initial conceptual project costs to final costs over long-time horizons such as 10 to 50+ years.

Need requirements and external conditions will change. Management, stakeholders, public officials, and ratepayers are interested in costs to satisfy and deliver those needs. The defining characteristic is the time horizon in which



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anticipated needs and requirements must be satisfied. Near-term solutions, with the assumption of known scope, have more certainty in line with the series of AACE Classification RPs. Where solutions are far off in the future, and the assumption of known scope no longer applies, uncertainty increase and is less predictable.

As discussed in the Purpose section, long-range time horizons present a challenge for capital investment planners. Although new needs are continuously emerging, there is often little clarity of concept, cost, or duration to satisfy the need and meet demand. When timelines extend beyond a five-year time horizon, the economics and dynamics of the business case become further challenged. Uncertainty becomes more pronounced the further the conceptual time horizon. This is reinforced by AACE International RP 62R-11 [2].

The five estimate classes espoused in the AACE International estimate classification RPs do not cover the breadth of the longer-term and address the dynamic nature of conceptual estimates for long-range system planning, such as those associated with the public sector, without clear assumptions of known business scope. The question is, “What is the appropriate estimate class to use for strategic long-range planning?”

The concept of an AACE International Unclassified / Class 10 long-range planning estimate originated from the fact that long-range planning is not addressed by traditional phase-gate capital project decision making processes. Unclassified / Class 10 is associated with costs estimates prepared for long-term planning needs, where specific project definition is primarily supported by the description of an identified future need, but not a specific project scope. Long-range planning (i.e., Class 10) estimating involves developing a specific scope scenario that works at the present time but will likely change at the point where investment enters traditional phase-gate capital planning (i.e., Class 5).

Over the extended long-range planning duration, various Unclassified / Class 10 cost estimates may be prepared or revised that will be documented and communicated so that key stakeholders, management, public officials, taxpayers and ratepayers will have a clear understanding around what has changed over the 10-50+ year timeframe of the long-range plan regarding scope evolution and resulting costs.

## 2. COMMUNICATION

### 2.1. Unclassified / Class 10 Long-Range Planning Estimate

The Unclassified / Class 10 long-range planning estimate represents a class of estimate type that addresses the challenges of developing and communicating long-term system planning costs. This type of estimate is highly conceptual, with limited scope definition, and often based on parametric or analogous assumptions. Specific engineering information and project development details are typically lacking, even more so than for a Class 5 estimate. At this early stage, there is no explicit substance to the means and methods of delivery or how exactly such a need would be fulfilled, only that the need exists and must eventually be satisfied.

A long-range planning estimate is intended for early concepts with limited scoping information, the need is emerging or under development, and where detailed concepts may not be developed for years or decades to come. The degree of scope definition and any semblance of a technically developed and detailed concept is lacking. Specific location factors and technical engineering details are not yet known as is the nature of long-range system planning. While needs and anticipated demands are forecasted (i.e., scope is assumed for purposes of estimating), specific solutions that satisfy those needs cannot yet be identified for a considerable length of time.

Communicating the uncertainty of anticipated conceptual costs is needed to communicate that scope and costs for future capital investment are dynamic. A highly conceptual long-term estimate classification is needed to understand relative costs and plan for future capital expenditures. In this sense, the long-range planning estimate has a longer-