

Capital Budget Process, Stage Gating, Estimating and Contingency, and, Risk Management Update

Background

Previous direction received from City Council in the last update report (PFC2016-0853) presented on 2016 December 13 was for Administration to continue implementation of a capital budgeting process that is aligned to The City of Calgary's Corporate Project Management Framework (CPMF) Stage Gating, Project Risk Management and Estimation, Contingency and Schedule Standards. Council as well sought clarification on the approval process in relation to cost estimates, contingencies and scope changes.

This document provides an update on progress and supports a recommendation to continue these efforts.

Capital Budget Process

While work to align the capital budget process with the Corporate Project Management Framework (CPMF) Stage Gating, Project Risk Management and Estimation, Contingency and Schedule Standards is not complete, it is underway and continues.

This work incorporates the following elements:

- capital investments to be aligned to municipal services;
- perform a review and update criteria used to rank capital projects;
- align with stage gating including clarification of associated decision-making and approvals; and,
- quantify and incorporate operating cost of capital.

Going forward, the effort related to updating the capital budget process to address the elements listed above will be led by Infrastructure Calgary, in conjunction with the One Calgary team and in partnership with Finance and the Corporate Project Management Centre. As business planning and budgeting for the next business cycle moves forward with the significant shift to the service-based model, it is an optimal time to undertake this work.

In parallel with the work underway regarding the capital budget process, Infrastructure Calgary has increased focus on capital management. This has resulted in The City investing \$1.6B in the community in 2016. This is an increase of \$400M in investment value from the average annual investment of \$1.2B. While 2017 results will not be finalized until the year is complete, it is anticipated that increased investment will be realized again in 2017. In addition, through the Infrastructure Calgary facilitated recast and reallocation of budget and funding to additional projects.

In summary, while additional work is needed to complete the work related to Council's direction regarding the capital budget process, this work is well positioned to move forward in parallel with One Calgary.

The sections that follow speak specifically to stage gating, project risk management and estimating and contingency and progress that has been made since the last update. Points specific to how they relate to the capital budgeting process are included in the discussion where applicable.

While the Stage Gating, Project Risk Management, and, Estimation, Contingency and Schedule Standards can stand alone, their true value is realized in their collective use as a strong foundation for capital investment planning, budgeting and management.

Stage Gating

Stage gating is a structured decision-making model where a proposal, project or program is divided into stages separated by gates. At each gate, from early concept through to post implementation, careful consideration is given to the decision for advancement of the proposal, project or program to the next stage. Use of the stage gate model enables the following:

- ensuring alignment of proposals, projects, programs or services with strategic objectives;
- management of portfolios;
- corporate accountability; and,
- transparency for The City's investments.

Since the last update report, the Corporate Project Management Framework Stage Gating Standard was released and implemented as of 2017 October 2. The table that follows describes the stage gate model in more detail.

Stage Name	Gate Number	Gate Objective/Content
Identify Potential Projects	1	Objective: To ensure a business need or opportunity is valid and to authorize advancement to the next stage. Gate Participant(s) submit summary document which includes, but is not limited to, the following: • Business need or opportunity description • Strategic alignment • Anticipated start date and duration • Known impact to dependent stakeholders • Resource requirement for next stage activities
Assess Potential Projects and Select	2	Objective: To ensure the business case provides information that establishes this as the right project at the right time for the business and to authorize advancement to the next stage. Gate Participant(s) submit a complete business case or summary document which includes, but is not limited to, the following: • Business need or opportunity description • Options analysis summary or recommendation statement • Strategic alignment • Risk summary of recommended alternative • Preliminary schedule • Financial summary, including ○ Cost estimate and class of estimate ○ Spend profile ○ Potential funding source • Expected benefits summary • Impact to identified stakeholders

		Resource requirement for next stage activities
Plan and Design Project	3	Objective: To ensure that a project has been sufficiently developed and to authorize advancement to the next stage. Gate Participant(s) submit project/program summary documents which include, but is not limited to, updates or changes to the following: - Strategic alignment - Scope of work summary - Schedule summary - Financial summary, including: - Cost estimate and class of estimate - Spend profile - Funding source - Risk analysis summary - Delivery plan summary - Benefits analysis summary - Stakeholder engagement summary - Resource requirement for next Stage activities
Execute Project	4	Objective: To verify the project has been delivered according to plan and to confirm readiness for advancement to next stage. Gate Participant(s) submit a stage summary document which includes, but is not limited to, actual values for the following: - Work completed summary - Financial summary, including: - Expenditures and commitments - Unused contingency - Residual risk analysis summary - Delivery performance assessment - Plan for transition to operations or ongoing service summary - Resource requirement for next Stage activities
Evaluate Project Success	5	Objective: To confirm project completion, assess the extent which the project achieved its objectives identified and conduct lessons learned. Gate Participant(s) submit a project close out document which includes, but is not limited to, the following: - Benefits evaluation summary - Budget close out - Confirmation of archiving of project documentation - Completion of contractual obligations - Capture of lessons learned

The value of stage gating is realized through improvements to capital management and accountability. Stage gating presents an opportunity to facilitate clarity and consistency with respect to information presented to City Council.

Next steps regarding stage gating are to monitor post-implementation activities of the stage gating standard within Administration and provide support where it is needed. As One Calgary and the capital budget process move forward, stage gating will be integrated. In support of One Calgary these efforts will be led by Infrastructure Calgary with assistance from the Corporate Project Centre and Finance teams.

Estimating and Contingency

Following the last update report, the Corporate Project Management Framework Estimation, Contingency and Schedule Standard was reviewed and updated. The revised standard was released in 2017 January and went live as of 2017 April 3.

The following key components have been included in the approved and implemented standard:

- Project contingency for cost estimates shall be based on project risk assessment in accordance with the Project Risk Management Standard and the result should be represented as a percentage of the total cost estimate.
- Contingency shall be designated at Class 3 to Class 1 estimates.
- Unused contingency dollars shall be released at an appropriate time as identified in the Project Plan.
- Projects shall not use contingency dollars to address project changes as defined in the Project Change Control Standard.

The following table describes the five-level estimating model that was approved as part of the estimating & contingency standard.

Class	Description
Class 5 Order of Magnitude	• Generally prepared based on very limited information and often based on judgment and/or experience • Expected variance is -50% to +100% • Developed to understand the magnitude of the costs involved in achieving the project
Class 4 Conceptual Design	• Generally prepared based on conceptual or feasibility studies, considering project options and known constraints • Expected variance is -30% to +50% • Developed to aid in defining the detailed project scope
Class 3 Preliminary Design	• Generally prepared based on preliminary design information. At this stage project assumptions and constraints have been defined and detailed design is underway • Expected variance is -20% to +30% • Developed to verify project scope and establish the basis for project cost/schedule control
Class 2 Detailed Design	• Generally prepared based on detailed design information. At this stage detailed design has advanced • Expected variance is -15% to +20% • Developed to verify project scope and establish the basis for detailed project cost/schedule control
Class 1 Final Design / Pre- Tender	• Generally prepared based on final design information. At this stage detailed design is complete • Expected variance is -10% to +10% • Developed based on finalized project scope, to confirm the sufficiency of funding for the project prior to tender and/or project execution • Provides the basis/background necessary for detailed negotiation and cost reconciliation with any bidder and/or contractor

With respect to next steps, the revised Estimation, Contingency and Schedule Standard will be taken into consideration and integrated into the capital budget process, where applicable, as it moves forward. Infrastructure Calgary will lead this effort in conjunction with One Calgary and in collaboration with the Corporate Project Management Centre and Finance teams.

Risk Management

As with the Estimation, Contingency and Schedule Standard, the Project Risk Management Standard was reviewed, revised and released in 2017 January. The revised Standard was implemented as of 2017 April 3.

The Project Risk Management Standard requires that projects shall have a risk management plan and a risk register. Minimum components of a Risk Management Plan were defined and a Risk Assessment Model was included.

A key idea that directly relates to project estimates and contingency is risk response strategy. There are different ways to address an identified risk, but, there are two that warrant discussion as they tie in to project estimates and allocation of contingency.

- **Accept Risk:** An acceptance risk response strategy indicates that the project team has decided not to change the project management plan to deal with a risk, or is unable to identify any other suitable response strategy.

A common acceptance strategy is to recognize the risk still exists and to include a contingency, including time, money, and/or resources to address the risk. The amount of contingency is determined based on the likelihood and impact of the risk event.

- **Mitigate Risk:** Mitigation risk responses are actions to reduce the probability of occurrence or impact of a risk to an acceptable level. Risk mitigation activities would be included in the program or project budget and may require resources, funds and/or time.

It is important to note that despite undertaking mitigation activities, there may be residual risk since mitigation of risk is not the same as elimination of risk. It is for this residual risk that a contingency is included in project and program budgets.

In both cases, contingency for programs and projects remains in place until the overall risk level is reduced to the point that the contingency is no longer required. At that time, contingency is released. Ongoing risk management throughout the project or program lifecycle is essential for ensuring project and program outcomes are preserved. This includes creating and maintaining a risk register along with regular reviews to address any changes in risks or overall risk profile.

Next steps with risk management include ensuring that the revised Project Risk Management Standard is considered, and integrated along with the Estimation, Contingency and Schedule Standard, as the capital budget process is updated. Infrastructure Calgary will lead this effort in conjunction with One Calgary and in collaboration with the Corporate Project Management Centre and Finance teams.