



Internal Audit Report

Budget Process Review during Project Development Audit

Report Number: 2020 - 01 | Report Date: March 19, 2020

Executive Summary

Audit Report No.: 2020 - 01

March 19, 2020

WE AUDITED the cost estimating and project controls systems in order to determine whether systems in place were appropriate to manage and monitor the cost of the project as it progresses forward with design and construction phase activities.

AUDIT OBJECTIVE was to determine whether the agency has effective controls over the 'budget process review during project development' in ensuring compliance with applicable policies and procedures.

Specific objectives included ensuring:

- Complete project budget planning based on an intended project scope.
- Reasonableness and reliability of cost estimates.

The audit examined management controls in place as of September 2019.

WHAT DID WE FIND?

Sound Transit (ST or the agency) capital project budgets are complex, often requiring the agency to maximize resources, ensure long-term affordability, and control project costs against an established budget. Due to the high monetary impact involved, the agency has established a Strategic Plan (dated, 07/23/19) and continues to prioritize spending in achieving a 'cost consciousness' environment for the furtherance of accountability over public funds.

In line with the voter approved transit plan, the agency has authorized the budget for eight projects, estimating \$7.1 billion (B) [or 35%] of the total \$20.4B capital project budget from 2018 through 2020. As of October 2019, construction for system expansion projects was the largest budget cost element, estimating \$1.2B (or 64%) of the total \$1.9B approved budget for 2019.

During the project development phase, cost estimating and the budget are both required in order to develop the 'cost performance baseline' (or baseline budget). The cost performance baseline is used to measure, monitor, and manage cost effectiveness (e.g., cash flow, debt financing, etc.); and is a key performance metric reportable to those in charge with governance for continuous improvement.

Per the agency's Phase Gate process, there is a 'cross functional' effort between Planning, Environment and Project Development (PEPD); Design, Engineering & Construction Management (DECM); and ST consultants to ensure reliable cost estimates are developed during the early phase of a project. Once cost estimates have gone through a rigorous review and are adopted, the project baseline remains unchanged and becomes the basis for measuring project cost/budget performance.

The audit concluded management controls in ensuring complete project budget planning based on an intended project scope; and reasonableness and reliability of cost estimates are reasonably effective.

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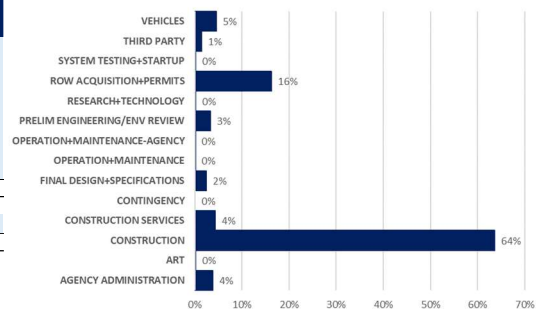
Background

Sound Transit (ST or agency) capital project budgets (≥ \$5 million [M] and overall project duration of ≥ 12 months) are complex, often requiring the agency to maximize resources, ensure long-term affordability, and control project costs against an established budget. Due to the high monetary impact involved, the agency has established a Strategic Plan (dated, 07/23/19) and continues to prioritize spending in achieving a ‘cost consciousness’ environment for the furtherance of accountability over public funds.¹

In line with the voter approved transit plan², the agency has authorized the budget for eight projects, estimating \$7.1 billion (B) [or 35%] of the total \$20.4B capital project budget from 2018 through 2020. As of October 2019, construction for system expansion projects was the largest budget cost element, estimating \$1.2B (or 64%) of the total \$1.9B approved budget for 2019.

Project Name	Baseline	Approved Amt. (as of Sept. 2019)	%
1 LYNNWOOD LINK EXTENSION	May-18	\$ 2,771,622,000	39%
2 FEDERAL WAY LINK EXTENSION	Aug-18	2,451,535,000	34%
3 DOWNTOWN REDMOND LINK EXT	Oct-18	1,530,000,000	21%
4 I-405 BUS RAPID TRANSIT & OMF	Feb-19	258,243,000	4%
5 PUYALLUP STATION IMPROVEMENTS	Feb-19	79,100,000	1%
6 SUMNER STATION IMPROVEMENTS [1]	Jan-20	17,782,135	0.25%
7 KENT STATION IMPROVEMENTS [1]	Mar-20	13,111,000	0.18%
8 SOUNDER MAINTENANCE BASE [1]	Jan-20	12,968,000	0.18%
Sub-total		7,134,361,135	
		7,134,361,135	35%
Total Capital Projects		20,419,536,189	

Source: Phase Gate Status Tracker; Work Breakdown Structure (WBS) Report; and Quarterly Project Financial Status.³



During the project development phase, cost estimating and the budget are both required in order to develop the ‘cost performance baseline’ (or baseline budget). The cost performance baseline is used to measure, monitor, and manage cost effectiveness (e.g., cash flow, debt financing, etc.); and is a key performance metric reportable to those in charge with governance for continuous improvement (i.e., Change Control Board [CCB], Phase Gate Committee, Systems Expansion Committee, etc.). As such, it is imperative that the agency plans and develops quality estimates (a key planning assumption) for ST’s long-range financial plan (LRFP) projections used to determine if the current transit programs remain affordable.

Per the agency’s Phase Gate process,⁴ there is a ‘cross functional’ effort between Planning, Environment and Project Development (PEPD); Design, Engineering & Construction Management (DECM); and ST consultants to ensure reliable cost estimates are developed during the early phase of a project. Within DECM Project Control & Value Engineering (VE) division, the Cost Estimating Group (CEG) along with key members of the project team

¹ Five-Year Strategic Plan: Strategic Priority No. 5 requires the ST to ensure financial stewardship exists in all decision-making to guarantee long-term affordability of the voter-approved plan.

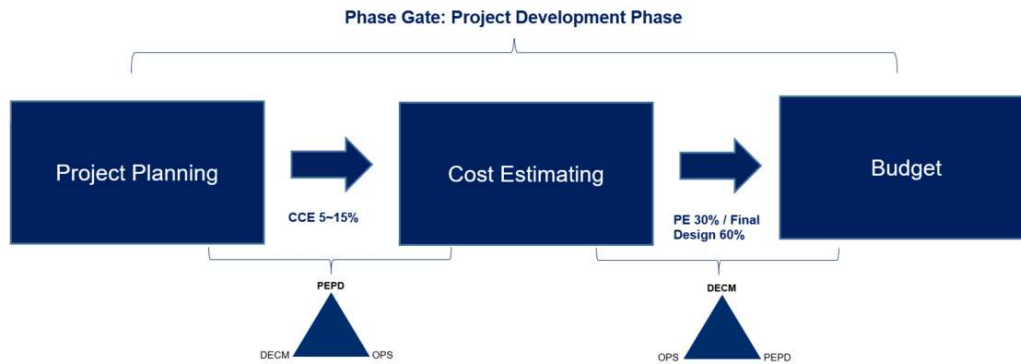
² 2020 Financial Plan & Proposed Budget: Sound Move, ST2, and ST3 are voter-approved segments of the capital project. Each voter-approved project has a cost estimate that originated from one of the three voter-approved plans.

³ Note 1: While the proposed projects identified have been baselined by the joint committee during the scope of our review, they are still pending Board approval pursuant to phase gate policy (dated, 04/27/18). Kent project was initially scheduled to be baselined in 02/20 and was later deferred to 03/20.

⁴ The phase gate process is the agency’s comprehensive project oversight control comprised of a cross-functional team to consider, review, and approve requests for projects to pass through gates.

serves as the agency’s critical support function in performing quality assurance (QA) reviews for construction cost estimates. As the project advances from conceptual to final design,⁵ progressive reviews are updated at engineering milestones to assess the quality of the consultant’s submittals per agency policies and recognized standards (i.e., Association for Advancement of Cost Engineering [AACE]).

Once cost estimates have gone through a rigorous review and are incorporated as part of the proposed budget baseline, they are presented to the Joint Committee (i.e., Phase Gate & CCB) for ‘approval to proceed’ for board consideration. Once adopted, the project baseline remains unchanged and becomes the basis for measuring project cost/budget performance.



Source: Internal Audit prepared.

Moreover, applicable policies and regulations mandate the agency to manage costs through a project management plan (PMP) and sub-plans (e.g. Risk Contingency Management Plan), respectively.⁶ As each project is unique and subjected to a variety of factors affecting cost,⁷ risk mitigation strategies are continuously updated/documentated within each project risk register; and used to assign the recommended levels of allowances and contingencies (to address ‘unknowns’).

Audit Objectives

To determine whether the agency during project development has effective controls in place to ensure:

- Complete project budget planning based on an intended project scope.
- Reasonableness and reliability of cost estimates.

⁵ Design levels: Conceptual cost estimates (CCE or ‘order of magnitude’); Preliminary engineering (PE or ‘bottom-up’); and Final design (baseline cost estimate [BCE] or ‘in-progress’).

⁶ Federal Transit Administration (FTA) guidelines and Project Control Policy & Procedures (PCPP)-21 (rev., 03/27/18) section 4.13, the PMP sets forth the requirements for project expectations and defines control environment (e.g., required deliverables, cost estimating methodologies & data format submittals aligned to ST policies, etc.).

⁷ Risk factors affecting costs include: Project design, unique site characteristics, project delivery methods, general market conditions, political environment, and legal requirements are variables that can affect the costs of a project.

Scope and Methodology

We conducted this performance audit in accordance with the Generally Accepted Government Auditing Standards and International Standards for the Professional Practice of Internal Auditing. Those standards require that we plan and perform the audit to obtain sufficient and appropriate evidence to provide a reasonable basis for our conclusion based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our conclusion based on our audit objectives.

We gained an understanding of the project budget planning and cost estimating process at the agency and department/division level through data analysis, observation, documentation reviews, and personnel interviews. We identified risks in the processes and assessed management controls in place to mitigate those risks. Based on the assessment of management control effectiveness, we determined to focus on controls over project budget planning based on an intended project scope; and reasonableness and reliability of cost estimates.

We examined reports, policies and processes for the period of performance as of September 30, 2019 and current management controls in place.

1. To determine whether the agency has effective controls to ensure complete project budget planning based on an intended project scope.
 - a) Performed detailed reviews for five of 22 PCPPs/policies; and 10 related agency documents (i.e., reports, prior audit coverage, and best practices) to gain a sufficient understanding of the current cost estimating control environment.⁸
 - b) Conducted over 15 interviews and detailed process walkthroughs to determine if controls are working effectively as intended. Individuals interviewed included PEPD Executive Director; PEPD Deputy Director; DECM Director – Estimating, Scheduling, Risk & VE; Project Directors; Project Managers; Project Control Leads; Budget Managers; Budget Analyst; Program Manager – Cost Engineer; Senior Cost Engineers; and Program Manager – Project Transition.
2. To determine whether the agency has effective controls to ensure reasonable and reliable cost estimates.

Selected three projects, totaling \$1.5B of the total \$7B (or 35%) approved budget for the period examined, based on risks assessed, project amount, project relevance (e.g., period of performance as of Sept. 2019, baseline date, etc.), and project complexities.⁹ Specifically, we performed the following:

 - Detailed examination of planning (PMPs, scope of work, etc.), estimate

⁸ Reviewed agency documents to include relevant **(1) policies** (i.e., PCPP-01 WBS [rev. 01, 03/13/18]; PCPP-02 Cost Estimating [rev. 02, 02/27/18]; PCPP-09 CCB [rev. 03, 04/23/19]; PCPP-18 Capital Budget Development/Mod [rev. 01, 03/13/12]; and PCPP-21 Project Baseline [rev. 01, dated 03/27/18]); and System Plan Development (ST3) Capital Cost Estimating Methodology [dated, 08/23/16]); **(2) Agency reports** (i.e., Link Light Rail Program Progress Report, Agency Progress Report, and 2020 Financial Plan & Proposed Budget); internal audits (i.e., Small Capital Projects Audit [dated, 12/14/18]); external audits (i.e., ST Performance Audit: Project Controls during Construction [dated, 02/14/19]; and Cost Estimating Systems Performance Audit [dated, 09/27/01]); **(3) Governance docs.** (i.e., Resolution No. R2018-23 Adopting a Budget Policy [dated 07/26/18]; and Administering Phase Gate [rev. 0, 04/27/18]); and **(4) best practices** (i.e., PMBOK 6th Edition; and Government Accountability Office (GAO) Cost Estimating and Assessment Guide [dated, 03/2009]).

⁹ Projects selected: Downtown Redmond Link Extension (DRLE) [Design Build {DB}] – \$1.5B; Sumner Station Access Improvements (DB) – \$17.8M; and Kent Station Improvements (DB) – \$13M.

submittals (e.g. cost estimate details [CE, PE, and Independent Cost Estimate – as applicable], variance reports, cost estimating methodology reports, and basis of estimates) and supporting documentation (e.g., cost estimate logs, risk registers, correspondences, supplemental analysis, CCB and phase gate packages/board minutes, baseline budget workbooks, and presentations).

- Judgmentally selected and tested 'direct construction costs' (Standard Cost Categories [SCC] 10 to 50, as applicable) derived from the approved engineer's estimates (EE) to the finalized baseline workbook (BCE subtotals), evidencing 'comparison and validation' prior to baselining.
- Attended two joint committee meetings and observed through first-hand knowledge baselining for two of the three projects examined.

Conclusion

Management controls over budget process review during project development are reasonably effective to ensure complete planning based on an intended project scope; and reasonableness & reliability of cost estimates.