

# STATE AUDITOR'S OFFICE PERFORMANCE AUDIT

## Sound Transit: Performance Audit of the Citizen Oversight Panel, Adjustments to Planned Investments, Construction Management and Ridership Forecasts

October 25, 2012

Report No. 1008277



WASHINGTON  
**BRIAN SONNTAG**  
STATE AUDITOR

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# A message to the citizens of Washington

October 25, 2012

Dear Citizens:

When you passed Initiative 900, granting the State Auditor's Office performance audit authority, you contemplated that we would aggressively pursue the "largest, costliest governmental entities first."

In doing so, we released our first performance audit of Sound Transit, focused on its construction management practices, in 2008.

Today, we are releasing a second audit of Sound Transit, whose \$17.9 billion ST2 program includes Sound Transit's Link light rail project, the largest local government public works in the state's history. Its current estimated cost is comparable to the combined construction outlay for baseball and football stadiums in Seattle, the Port of Seattle's third runway project at Seattle-Tacoma International Airport and King County's Brightwater wastewater treatment system.

Sound Transit estimates it will take more than a decade to build out the light rail system as currently envisioned. For projects of this duration that will assess taxes throughout their life, it is critical to have strong oversight; transparency to citizens; sound ridership, cost and revenue forecasting; and contingency plans that will allow project planners to respond to the many ways actual costs, funding and financing could play out.

We began an audit in January 2012 focusing on these areas of Sound Transit operations:

1. The role of the Citizen Oversight Panel (COP) and the Sound Transit's Board of Directors' actions to address the panel's concerns and recommendations.
2. Adjustments to the original plan contained in the ST2 ballot measure in response to declining tax revenue.
3. Management of the capital program to enable it to complete the promised ST2 plan on time and on budget and the Agency's response to recommendations in our previous performance audit of its construction management practices.
4. The reliability of ridership forecasts for Link Light Rail.

## Our audit found:

1. The Sound Transit Board has not always taken action to fully address COP concerns. We question some practices related to COP selection and whether COP members fully understand their watchdog role. We found transparency to the public regarding the COP's work can be improved.
2. Sound Transit's initial adjustments to its original ST2 plan were sufficient and appropriate. However, it now has a smaller than recommended contingency to cover possible cost overruns.



## The State Auditor's Office Mission

**The State Auditor's Office independently serves the citizens of Washington by promoting accountability, fiscal integrity and openness in state and local government. Working with these governments and with citizens, we strive to ensure the efficient and effective use of public resources.**

3. Except for its need to increase its ST2 project contingency, Sound Transit has an organizational structure, policies and procedures, expertise, and other resources in place to successfully accomplish most of the adjusted ST2 plan within budget. It has positively responded to previous audit recommendations.
4. Sound Transit's ST2 forecast requires a growth rate for Link light rail ridership through 2030 that appears to be challenging. Economic and employment forecasts indicate questions about its reliability. Sound Transit should adjust ridership assumptions that no longer are valid.

We wish to thank the Sound Transit Board, management staff, and the Citizen Oversight Panel for their outstanding cooperation during this audit, most of which was performed under a contract with TKW, a nationally known audit and consulting firm with deep expertise in public sector construction.

Sincerely,

A handwritten signature in black ink, appearing to read "Brian Sonntag". The signature is fluid and cursive, with a large initial "B" and "S".

**BRIAN SONNTAG, CGFM**

WASHINGTON STATE AUDITOR

# Executive Summary

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## Why We Did This Audit

**A**t \$17.9 billion<sup>1</sup>, Sound Transit's ST2 project list includes the largest local government construction program in our state's history. Project funding consists primarily of bonds, grants from the Federal Transit Administration (FTA), and Sound Move and ST2 sales, use and motor vehicle excise taxes. Sound Transit will use its tax revenues to pay the debt service on the bonds. Once it is fully constructed, Sound Transit plans on fares charged to riders to cover 40 percent of its Link light rail's operating costs.

Future ridership is one factor the FTA uses when it determines whether to fund a light rail project. Low ridership forecasts can adversely affect future FTA awards. Lower than forecasted ridership also affects an entity's ability to pay for the operations of the built system.

Construction of a fully built Sound Transit light rail system is planned to take more than a decade. For projects that take this long, it is critical to have sound cost and revenue forecasting as well as contingency plans that account for the many different ways actual costs, funding and financing may play out.

The stakes are even higher with Sound Transit's possible future ST3 tax proposal. Approved as part of ST2, Sound Transit's recent \$13.8 million purchase of railroad easement for a Renton-Woodinville passenger line precedes possible future tax proposals. In April 2012, Sound Transit purchased 37 miles of easements along this Eastside rail corridor from the Port of Seattle. It also received rights to access the rail corridor located within Redmond's city limits. This purchase was anticipated in the voter-approved ST2 project list. It was also discussed in a January 2009 feasibility study, in which Sound Transit and the Puget Sound Regional Council concluded:

- The estimated capital cost for a fully improved pedestrian/bike trail parallel to the rail line ranges from **\$297 million to \$432 million**.
- The capital cost of passenger rail on the entire corridor is estimated at between **\$1.0 billion and \$1.3 billion**.

According to Sound Transit, if future taxes are proposed and approved by voters, these easements will be used to construct a future commuter rail between Renton and Woodinville.

In November 2008, Sound Transit estimated the Federal Way extension would cost approximately \$2 billion and that revenue from South King County would cover that cost. However, Sound Transit now anticipates South King County's revenue will come in 32 percent less than planned. Consequently, Sound Transit now plans to pay for that extension with a combination of ST2 and possible new ST3 taxes. As part of a possible ST3 proposal, Sound Transit is studying potential street car additions in Seattle.

Sound Transit officials indicate future investments may include parking facilities for light rail users.

Although the details and cost of a future ST3 proposal have not been determined, Sound Transit officials have indicated the agency's available debt capacity as it nears 2023 is projected to total up to \$2 billion.

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<sup>1</sup> Year of expenditure dollars.

**Given the size and duration of the ST2 and possible ST3 projects, and the need to carefully select those possible ST3 projects,** the State Auditor's Office decided to examine Sound Transit's cost, revenue and ridership forecasts as well as its contingency plans for outcomes that may differ from those planned. As its Citizen Oversight Panel makes recommendations in these same areas, we also wanted to see how Sound Transit has addressed these recommendations.

# Introduction

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## **Audit overview**

Sound Transit's light rail project is the largest local government construction program in the state. For this reason, in 2007 we examined the organization's construction management practices. This audit examines the agency's response to recommendations made in that audit. It also examines Sound Transit's ridership, cost and revenue forecasts and how it has modified its construction program in response to changes in those areas. It also looks at how Sound Transit responds to recommendations by the Citizen Oversight Panel.

## **Program background**

In 2007 the Auditor's Office conducted its first performance audit of Sound Transit. The audit focused on the agency's construction management practices related to the original Sound Move program (approved by voters in 1996), which included the Link Light Rail Line. It concluded Sound Transit was unable to complete the Link Light Rail Line within the cost and timeframes communicated to voters in 1996 partly because it initially lacked procedures for land acquisition, environmental compliance, permitting, and construction management. Approximately \$2 billion of remaining Sound Move projects, primarily the Link light rail extension to the University of Washington, will occur between 2012 and 2016.

In November 2008, voters approved an additional \$17.9 billion program known as ST2. Its updated 2012 long-term construction plan indicates that in response to declining tax revenues, the agency has modified the original \$17.9 billion program by eliminating program reserves, reducing contingencies for non-construction elements and reducing or delaying funding for certain programs.

Sound Transit's 2012 Financial Plan predicts tax revenues through 2023 will be \$4 billion short of the 2008 forecast on which the ST2 plan was based.

## **Citizen Oversight Panel**

To assure accountability, voters established a Citizen Oversight Panel (COP). The Sound Transit Board is responsible for evaluating and appointing the most qualified applicants to serve on the Citizen Oversight Panel. Each COP member can serve up to two four-year terms. Per Sound Transit Motion No. 18, the COP is charged with reviewing Sound Transit's performance against its commitments to the public to provide services and facilities on time and on budget.

## Audit Scope and Objectives

We conducted this audit to answer the following questions.

1. Since the adoption of ST2, has Sound Transit's Board of Directors taken appropriate actions to address the concerns and recommendations of the Citizen Oversight Panel? If not, why?
2. Considering the decline in local tax revenues, how effective has Sound Transit been at meeting the promises made in its ST2 ballot measure in 2008? Were Sound Transit's adjustments to its original ST2 plan sufficient and appropriate given the subsequent changes in circumstances? Could Sound Transit have anticipated those changes (by building contingencies, for example)? If so, how? If not, why?
- 3 a) Does Sound Transit effectively manage its capital program to enable it to complete the promised ST2 plan on time and on budget? If not, how can it improve its capital program?
- 3 b) Has Sound Transit implemented the State Auditor's recommendations from the prior performance audit in time to benefit Sound Transit 2, which was approved by voters on November 4, 2008? If not, how was ST2 affected?
4. How reliable are the underlying assumptions driving Sound Transit's ST2 ridership model for Link Light Rail, Sounder Commuter Rail and the ST Express Bus? If not, how can Sound Transit improve their reliability?

## Methodology and Audit Authority

We conducted this audit under the authority of state law (RCW 43.09.470), approved as Initiative 900 by Washington voters in 2005, and in accordance with generally accepted government auditing standards, prescribed by U.S. Government Accountability Office. Those standards require that we plan and obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

**Appendix A** describes the provisions of Initiative 900 and how the audit addresses the law's specific elements. Further description of our audit methodology is included under the results section for each of our four audit objectives.

## Audit Results Outline

**Objective 1** Since the adoption of ST2, has Sound Transit's Board of Directors taken appropriate actions to address the concerns and recommendations of the Citizen Oversight Panel? If not, why?

Our audit found the Board has not always taken action to fully address some COP concerns. Some of those concerns are long-standing. We attribute this lack of action to several factors. See **Issues No. 1, 5.A, and 6.B.**

A preliminary step in answering this objective was to obtain an understanding of the law and Board motions that establish the COP's purpose, authorities and responsibilities and Sound Transit's obligations to support the COP in its efforts. We also looked at procedures designed to help the COP meet its purpose and responsibilities. Our audit found:

- The Board's recruitment, selection and orientation processes do not ensure COP members are free of bias, conflicts of interest and clearly committed to the oversight role approved by voters. The processes also do not ensure Sound Transit's five subareas are equitably represented on the COP. See **Issue No. 2.**
- As a result of the conditions described in Issue No. 2, and contrary to verbal guidance provided by Sound Transit's General Counsel, CEO and Board Chair, our audit found the actions of some COP members indicate they prefer a different role. This leads to the COP acting at times as an advisory body, rather than an oversight body. **See Issue No. 3.**
- A chief example of the effect of some COP members not fully embracing the COP's role as an oversight body is that it offered no written assurance as to the soundness of the 2008 ST2 financial plan to the public or the Board before the election. **See Issue No. 4.**
- Along with correcting those factors discussed above, providing the COP with formal authorities, access to outside experts and a sufficient budget would make it a more effective oversight body. **See Issue No. 5.**
- Sound Transit is one of few transit agencies that have a COP. Given the COP carries out its important role on behalf of citizens, transparency is imperative. However, our audit found transparency to the public regarding the COP's work, and Sound Transit's response to it, can be improved. **See Issue No. 6.**

Sound Transit was established in 1996 with an initial 10-year, \$3.9 billion budget. As it concludes the final project from that 10-year budget, it is also implementing its newer 15-year, \$17.9 billion budget that was approved in 2008. This is the largest capital and one of the largest operating budgets among the state's local governments. To oversee this budget and potentially a future ST3 budget, Sound Transit has an 18-member Board that consists mostly of county executives, city mayors and city and county council members appointed by the various counties within its boundaries. The Board appoints the citizen oversight panel.

Although having various municipal interests reflected on Sound Transit's Board has benefits, the downfall recognized by a former Board member and some state legislators is its members are not elected to **directly serve Sound Transit.** Instead, they are elected to serve individual cities and counties within Sound Transit's borders. When citizens cast their votes for most of these city and county officials, they have no way of knowing whether they will one day serve on Sound Transit's Board, or the positions they may take if appointed.

Most local governments, including those with the citizen oversight committees that are referenced in this report, are governed by an elected board. However, Sound Transit voters have no say regarding who will represent them and limited recourse if they are dissatisfied with the decisions of Sound Transit's Board. For this reason it is critical to have an objective and empowered COP that is focused on the citizens' interests. *However, this report's findings raise questions about the COP's objectivity, effectiveness and focus.*

**Because of these questions, the growing size and complexity of Sound Transit, and the absence of a publicly elected Board, we offer three options to consider regarding the COP:**

- Preserve the existing model, but improve the process for selecting COP members and give them the funding and authorities necessary for effective oversight.
- The Sound Transit Board could have an outside organization conduct the application, screening and appointment process to ensure COP members' interests and experience closely align with the COP's mission and that a wide range of interest groups, including businesses and taxpayer advocacy groups are represented.
- Alternatively, **the state Legislature** could consider establishing a non-partisan COP whose members are elected by voters in each of Sound Transit's five subareas, ensuring each subarea has equal representation on the Panel. If it does so, the **Legislature should also examine COP authorities, funding and transparency as discussed at Issues 5 and 6.**

**The 10 issues** discussed under **Objective 1** contain further recommendations for **Sound Transit's Board. Recommendations for Issues 2.A. through 2.C, 5.A. and 5.B. are not applicable if the state legislature establishes an elected COP as described in the first bullet above.** Otherwise, all recommendations related to these issues are applicable whether the COP is elected, appointed by an outside organization or appointed by the Sound Transit Board.

We recommend the Board follow all applicable recommendations to strengthen the COP's effectiveness at monitoring Sound Transit's performance against its commitments to the public to provide services and facilities on time and on budget, including the following:

- Ensure COP members are reminded of the importance of fulfilling the oversight role that voters approved. The Board should allocate sufficient resources to allow the COP to effectively function in that role.
- Take action to address COP concerns or explain why it has not done so. During our audit, Sound Transit representatives stated it does not have to do so, reinforcing the idea that the COP acts in an advisory capacity.
- Work with the COP to ensure the Panel's actions, recommendations and the Board's responses are transparent to the public.

**Objective 2** Considering the decline in local tax revenues, how effective has Sound Transit been at meeting the promises made in its ST2 ballot measure in 2008? Were Sound Transit's adjustments to its original ST2 plan sufficient and appropriate given the subsequent changes in circumstances? Could Sound Transit have anticipated those changes (by building contingencies, for example)? If so, how could it have done so? If not, why?

Sound Transit's original ST2 project plan was established using revenue and costs assumptions that were based on professional third-party forecasts. At the time the Agency was finalizing its original ST2 plan, these forecasts did not anticipate a prolonged recession. Fortunately, the original ST2 plan included a sizeable contingency to address the risks of lower than expected revenues or higher than expected construction costs. Such contingencies are a standard practice for dealing with the uncertainties that exist on long-term capital projects. However, because the recession and lower than anticipated revenues have continued longer than was expected, Sound Transit has had to defer and reduce the scope of its planned ST2 investments.

Sound Transit made these deferrals and reductions using a methodical and transparent process that adheres to ST2 requirements. They were less severe than they may have been because of the significant size of Sound Transit's original contingency.

However, Sound Transit has extensively reduced that contingency, which is now lower than what is recommended for dealing with the uncertainties that exist with large, long-term capital projects. Although these uncertainties diminish as a capital program nears completion, Sound Transit's ST2 program is in its early stages.

In fact, Sound Transit has stated it believes its financial forecasts remain vulnerable to periods of economic recession and/or "spikes" in the cost of labor or construction materials. Consequently, Sound Transit should increase its contingency. However, doing so may require further deferrals or reductions to planned investments.

**Objectives 3a and 3b** Did Sound Transit effectively manage its capital program to enable it to complete the promised ST2 plan on time and on budget? If not, how can it improve its capital program? Has Sound Transit implemented the State Auditor's recommendations from the prior performance audit in time to benefit Sound Transit 2, which was approved by voters on November 4, 2008? If not, how was ST2 affected?

Except for its need to increase its ST2 project contingency, Sound Transit has an organizational structure, policies and procedures, expertise, and other resources in place to successfully accomplish most of the adjusted ST2 plan within budget.

Its implementation of the prior audit recommendations and its use of the Phase Gate Process, life cycle costing, and additional value management and engineering approaches should greatly assist Sound Transit with these efforts.

**Objective 4** How reliable are the underlying assumptions driving the ST2 ridership model for Link Light Rail, Sounder Commuter Rail and the ST Express Bus? If not, how can Sound Transit improve their reliability?

Sound Transit's ST2 forecast requires a growth rate for Link light rail ridership through 2030 that appears to be challenging because:

- It exceeds the growth rates achieved by most transit investments in the United States.
- It is composed of individual assumptions that have proven to be unreliable. Recent economic and employment forecasts indicate continued questions about their reliability. Sound Transit should reassess whether these assumptions still are valid, adjust those that are not, and produce a new, more accurate ridership forecast.
- In estimating ridership growth, Sound Transit relies on a single-point forecast rather than on a range of ridership possibilities. Using a range of forecasts would allow Sound Transit to better address the uncertainties associated with long-range planning.

# Issues: Objective 1

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## **Objective 1 – Since the adoption of ST2, has Sound Transit’s Board of Directors taken appropriate actions to address the concerns and recommendations of the Citizen Oversight Panel? If not, why?**

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### **Overarching conclusion**

Our audit found the Board has not always taken action to address some COP concerns. Some of those concerns are long-standing. We attribute this lack of action to several factors. **See Issues No. 1, 5a, and 6b.**

A preliminary step in answering this objective was to obtain an understanding of the law and Board motions that establish the COP’s purpose, authorities and responsibilities and Sound Transit’s obligations to support the COP in its efforts. We also looked at procedures designed to help the COP meet its purpose and responsibilities. Our audit found:

- The Board’s recruitment, selection and orientation processes do not ensure COP members are free of bias, conflicts of interest and clearly committed to the oversight role approved by voters. The processes also do not ensure Sound Transit’s five subareas are equitably represented on the COP. **See Issue 2.**
- As a result of the conditions described in Issue No. 2, and contrary to verbal guidance provided by Sound Transit’s General Counsel, CEO and Board Chair, our audit found the actions of some COP members indicate they prefer a different role. This leads to the COP acting at times as an advisory body, rather than an oversight body. **See Issue 3.**
- A chief example of the effect of some COP members not fully embracing the COP’s role as an oversight body is that it offered no written assurance as to the soundness of the 2008 ST2 financial plan to the public or the Board before the election. **See Issue 4.**
- Other factors contributing to the COP not being as effective as it can be include not having all the resources it needs, in terms of staff, budget and authority to effectively function as an oversight body. **See Issue 5.**
- Sound Transit is one of few transit agencies that have a COP. Given the COP carries out its important role on behalf of citizens, transparency is imperative. However, our audit found transparency to the public regarding the COP’s work, and Sound Transit’s response to it, can be improved. **See Issue 6.**

### **Approach**

To accomplish this objective, we interviewed the following key individuals:

- All current members of the COP and four former COP members.
- The staff person who works for the COP.
- Sound Transit’s Board Chair, one of its Vice Chairs and Board Administrator.
- Sound Transit’s CEO, General Counsel and CFO.

To determine whether Sound Transit has effectively addressed COP concerns, we:

- Asked current and former COP members to assess Sound Transit’s management and Board members support of their oversight role.

- Asked current and former COP members to identify those concerns they believed had been fully addressed and those that Sound Transit had not fully addressed.
- Reviewed seven years of annual COP reports to identify how Sound Transit has addressed longstanding COP concerns.

To determine how Sound Transit selects COP members and to understand the COP's role and responsibilities, we:

- Asked the Sound Transit Board Chair, Vice Chair, Board Administrator, the COP staff person, the CEO and the Executive Program Advisor about the COP selection process.
- Reviewed voter approved ballot measures and Sound Transit resolutions that established the COP and its purpose.
- Asked the CEO, General Counsel, CFO, the COP and its staff person, and the Board Administrator about the COP's role and focus.

We also compared the design and structure of Sound Transit's COP with other oversight panels around the country that are considered to use leading practices. In conducting our research, we noted that transit agencies typically operate with citizen advisory panels. As discussed later in the report, citizen advisory panels and citizen oversight panels are different. However, school districts often have citizen oversight panels to review construction programs similar to the COP for Sound Transit. For this reason, the leading practices cited in this report most often are those at school districts.

A preliminary step in answering this question was to obtain an understanding of the laws that establish the Citizen Oversight Panel's purpose, authorities and responsibilities as well as Sound Transit's obligations to support the COP in its efforts. We also looked at procedures in place that help the COP meet its purpose and responsibilities.

**Appendix B** describes our audit criteria in detail.

### **Issue 1. The COP is pleased with Sound Transit's initial efforts to address most of its concerns.**

COP members generally were pleased with Sound Transit's actions to address the Panel's concerns. Interviews and COP year-end reports indicate panel members believe the following agency actions have mostly or partly addressed some key COP concerns:

- Established a sound construction management program, including how it incorporates lessons learned from work that has been completed.
- Initiated efforts to control the growth in operating costs, although these efforts are ongoing and more effort is needed. See the **longstanding concerns below**.
- Improved budget versus actual reporting for ST2 capital projects. Though some confusion still exists, the improved reports now show changes in historical project budgets.
- Successfully struck an agreement with the City of Bellevue on how to proceed with a light rail tunnel to the eastside. The lack of an agreement during 2008, 2009 and 2010 had stalled Sound Transit's planning efforts, and risked stalling construction of the east link segment or putting the project significantly over budget.

COP members do not believe Sound Transit's actions have been sufficient to address the following **longstanding concerns**:

- For four years, the COP has recommended that Sound Transit improve its reporting to better show the growth in budgeted and actual operating costs. For example, COP members want budget and financial reports to clearly distinguish cost and personnel increases related to continuing services, versus those related to new services. The COP believes that controlling the agency's escalating costs requires more specific information on where those escalations are occurring.
- For seven years, COP members have communicated that Sound Transit has high operating costs and that costs are growing at a concerning rate. They also have communicated that the Board needs to do more to reduce the cost of services purchased from Metro, Pierce and Community Transit. Some COP members believe that politics and the local economy, which has put additional financial pressures on its partner agencies, have limited Sound Transit's efforts to do more.
- Although the COP is generally pleased with Sound Transit's improved budget versus actual reporting for ST2 capital projects, members were dissatisfied that Sound Transit had not extended its improved reporting to the remaining Sound Move projects, such as the \$1.9 billion University Link extension. The COP has included this recommendation in its last three year-end reports.

During interviews, current and recently retired COP members shared more recent concerns the Sound Transit board should address:

- When asked to rank the Board's support of the COP's oversight role on a scale of 1 – 10, most gave it a 7, 8 or 9. However, five COP members scored the Board in the 3 to 4 range or declined to give it a score. When asked why, all five members indicated that although the COP reports to the Board, the two bodies do not communicate or do not communicate frequently enough to know whether the COP's work helps the Board. At least one board member also believes the two bodies need to communicate more frequently. Some COP members who scored the Board closer to an 8 made similar comments. For comparison purposes, most COP members gave management a score of 9 or 10.
- Under the results for **Objective 2**, see discussion about Sound Transit's low ST2 project contingency reserves and the COP's concerns about those reserves.

The process used by Sound Transit to respond to COP concerns is discussed at **Issue 6b**.

### **Recommendation No. 1**

**We recommend the Board:**

- **Communicate to the COP and the public the reasons it has not done more to renegotiate with partnering transit agencies.**
- **Work with the COP to establish a frequency and format for greater communication.**

**We also recommend management do more to address COP concerns about how its reports can better explain the growth in operating costs and better show the changes to budgeted project costs.**

Issues 2a–2e. The Board process and requirements for selecting COP members do not ensure those members are the most qualified and committed to the voter-approved oversight role, equally represent the five subareas, and are impartial. The COP must do more to maintain its objectivity.

**Sound Transit’s recruitment, selection and orientation processes need improvement and the COP must maintain objectivity**

### Background

In 1996, Sound Transit Motion No. 18 established the Citizen Oversight Panel to examine and report on the agency’s accountability for meeting its commitments to the public to deliver services and facilities on time and on budget:

“...[The Board] reiterates its commitment to assuring public accountability in... its...carrying out the commitments of the ten-year plan, including effective citizen involvement in major capital investments...The...Board will [establish a] citizen oversight panel...an independent body, charged to review [Sound Transit’s] performance against its commitments to the public to deliver services and facilities...on time and within budget”

### Issue 2a. The Board lacks a sufficient and systematic process for selecting COP members that are most qualified and committed for the COP’s oversight role.

Large organizations typically standardize their employee selection process to assure they hire the person who can best serve the role and responsibilities of the position being filled. In the same way it benefits the selection of qualified employees, a standardized process that includes the following elements would also benefit the board’s selection of COP members:

- Pre-established qualifications and criteria for selection.
- A systematic process for identifying potential candidates.
- A system for scoring candidates against pre-established qualifications and criteria, and hiring the best candidate based on group interviews and group assessments of multiple candidates.

### The Board has pre-established qualifications and a system to identify candidates.

Sound Transit established COP qualifications in the 1990s. Board members and executive staff solicit letters from interested candidates through Sound Transit’s website, newspapers and word-of-mouth. Executive staff instructs applicants to use these letters to discuss why they want to serve on the panel, and their qualifications, experience and expertise. Executive staff receives these letters, reviews them against the desired qualifications, and shares them with the Board.

**However, the Board lacks a sufficient and systematic process for scoring and selecting candidates.** The Board makes appointments **without** interviewing COP applicants, scoring them, ranking them or deliberating about why it should choose one candidate over another. It has no written guidelines or process for making these choices.

Before being appointed, a COP applicant usually is sponsored **or nominated** by a Board member, typically from the same subarea as the candidate. Before offering this sponsorship, the Board member may speak to Sound Transit’s CEO. If a candidate has been sponsored, the Board typically appoints the candidate to the COP without question.

Consequently, the Board risks selecting COP members who lack the qualifications or focus to effectively serve the COP’s oversight role or forgoing others who would be effective:

- None of the letters submitted by current COP members indicated an interest in overseeing Sound Transit’s commitments to deliver services and facilities on time and on budget.

- As discussed at **Issue 3**, a key COP responsibility is the required annual review of Sound Transit's financial plan. However, as discussed at **Issue 4**, Sound Transit's CEO questioned whether most COP members have the specific expertise needed to have reviewed the 2008 ST2 plan.
- Subject to a screening process as described under **Issue 2.C**, candidates who represent business and taxpayer advocacy groups may have the expertise and disposition towards fulfilling this oversight role. For example, the citizen oversight committees for the Transportation Authority of Marin County, the Los Angeles, San Mateo Union High and Sacramento school districts and the San Bernardino Community College District all include such members on their citizen oversight committees. Sound Transit's Board does not seek members from such groups when it makes appointments to the COP.

**The orientation process that follows the selection of new COP members needs improvement.** Once selected, the Board defers orientation of new COP members to COP and Sound Transit staff. Along with the Sound Move and ST2 plans and appendixes, budget documents, the transit improvement and service improvement plans, agency progress reports, copies of COP reports and minutes, and a meeting to discuss the COP's history, **that orientation includes providing new COP members with a copy of the COP's Governing Principles.** These principles can be found in **Appendix G.** As discussed at **Issue 3**, these **Governing Principles increase the risk that members will not focus on the COP's oversight role.**

## **Recommendation No. 2**

**We recommend the Sound Transit Board:**

- **Establish criteria and process that result in the selection of COP members who have a desire to focus on Sound Transit's on time and on budget commitments. It should ensure the criteria and process results in a selection of candidates with sufficient qualifications to perform COP oversight duties, including an annual review of the agency's financial plan.**
- **Subject to a screening process as described at Issue 2.C, consider soliciting candidates who represent business and taxpayer advocacy groups as they may have strong qualifications and disposition towards fulfilling this oversight role.**

## **Issue 2b. Unequal COP representation across the five subareas.**

The U.S. Government Accountability Office (GAO) is a federal audit agency that is tasked with improving the federal government's performance and ensuring its accountability for the benefit of the American people. In its Yellow Book, GAO discusses how management and elected officials are responsible for assuring that public functions are carried out equitably.

"1.01. The concept of accountability for use of public resources and government authority is key to our nation's governing processes. Management and officials entrusted with public resources are responsible for carrying out public functions...equitably..."

Five subareas are within Sound Transit's taxing boundaries: Pierce County, South King County, East King County, North King County and Snohomish County. With equity in mind, Sound Transit requires each subarea to benefit from the agency's investments

in proportion to the sales taxes each generates. This equity is missing from the Board's selection of COP members. As the COP is a 15-member body, equal representation across the five subareas would result in three COP members from each. However, Sound Transit Motion 18 requires two COP members from each subarea plus five more that the Board may select from any subarea. As summarized below, and as shown at **Appendix F**, the consequence of this requirement has been unequal representation:

- Since 2007, South King County is the only subarea that has never had more than two representatives. Although South King County and East King County have similar populations, East King County has twice the representation.
- Although Pierce County and North King County have similar populations, North King County has twice the COP representation.

Sound Transit is actively seeking COP representation from South King County and Pierce County. Officials believe they have a harder time recruiting COP members from these subareas because they contain more working class families who must drive longer distances, and have difficulty getting time away from work to attend COP meetings that occur during work-day mornings. However, another possibility is the four-year terms that Sound Transit's COP members serve. For most citizen oversight committees we researched, members typically serve two-year terms. Examples include: San Mateo Union High, the Los Angeles, Sacramento, and Las Vegas school districts, Orange County Florida Public Schools, and the San Bernardino Community College District. The bylaws for most of these oversight committees allowed members to serve two or more terms.

### **Recommendation No. 3**

**We recommend the Board:**

- **Require equal COP representation across all subareas.**
- **Require the COP meet in the evening to make it easier for those who work to participate.** *Doing so would also increase the public's ability to attend COP meetings.*
- **Reduce the term served by COP members from four years to two. By allowing for four consecutive two-year terms, the Board still would allow the existing limit of eight years of total service.**

### **Issue 2c. Board lacks a process to screen COP candidates for potential conflicts of interest, potentially raising questions about COP objectivity.**

To fill vacant COP positions, board members and executive staff solicit letters from interested candidates through Sound Transit's website, newspapers and word-of-mouth. Before sharing the letters of interest with the Board, the Board Administrator reviews them and may identify potential financial conflicts of interest. However, Sound Transit has no process to screen for financial or non-financial conflicts.

The COP's **ethics policy** reads "Panel members agree that the appearance of impartiality and objective oversight is critical to [the COP's] success..." Like Sound Transit's COP, auditors are expected to conduct their work impartially and free from bias. As shown at **Appendix E**, GAO indicates objectivity and impartiality are critical to the auditor's credibility. Appendix E also discusses situations that place the auditor's credibility at risk. Although the COP is not legally subject to GAO audit standards, these same situations can impair the COP's credibility.

A selection process that screens COP applicants for the financial and non-financial conflicts shown at Appendix E is critical to an objective and impartial COP. Because this process is missing, we observed the following:

- A current COP member and a recently retired member served as Sound Transit Board Members in the 1990s.
- One COP member owned or co-owned companies that did more than \$15 million in business with Sound Transit from the late 1990s through 2008.
- Seven COP members submitted letters of interest that focused on their belief in the mission of Sound Transit rather than on their interest in fulfilling the role of the COP.

The Board Administrator indicated these letters should probably focus on the applicant's qualifications. A former COP Chair indicated Sound Transit should instruct applicants to withhold these types of statements and make other changes to the selection process to assure an objective oversight body. Possibilities include:

- √ The Transportation Authority of Marin County, and the Sacramento and Los Angeles school districts use outside organizations to select citizen oversight committee members. The districts do this so the public has confidence in the committees' objectivity. The Consultant for the Los Angeles District oversight committee, which oversees a \$27 billion construction program, said the following about this approach:  
"Without the independence [of the] Citizens Oversight Committee that came from the independent nomination of its Members, the [Committee] would have never had the ability to insist on provisions that...protect the interests of the taxpayers, voters, students...parents...and other interest groups..."
- √ San Mateo Union High School District's board asks candidates on a standardized application form whether they are aware of any reason or conflicts of interest that would impair their ability to serve on the committee.

#### **Recommendation No. 4**

**We recommend the Board:**

- **Instruct future COP applicants to focus their letters of interest on their qualifications for fulfilling the role of the COP.**
- **Establish a standardized application form that asks COP candidates to identify potential financial and non-financial conflicts of interest that would impair their ability to objectively serve.**
- **Decline COP applicants who have outside affiliations that may interfere with their objective oversight.**
- **Decline COP applicants who have formerly worked for Sound Transit as employees, board members or owners of businesses that contract with Sound Transit.**

#### **Issue 2d. COP members should publicly remain neutral on ballot proposals that affect Sound Transit.**

When COP members publicly take sides on proposals for higher taxes or other measures that impact Sound Transit, the public's confidence in the COP's objectivity is compromised.

In its September 6, 2007, COP meeting, members discussed whether the COP should make public statements relating to the ST2 campaign. One COP member said it was important that the COP not get visibly involved because it could risk the COP's independence. Another said the COP was the public's watchdog over Sound Transit and should only report its observations of the agency's performance. However, minutes of COP meetings leading up to the 2007 ST2<sup>2</sup> and 2008 ST2 elections show some members visibly took sides on measures that affected Sound Transit:

- March 15 2007: One COP member reported she was drafting an opinion piece for an Everett newspaper in response to an editorial on the ST2 package. Another COP member said he had prepared a similar opinion piece for a Seattle newspaper.
- October 4, 2007: One COP member disclosed he was speaking on behalf of the 2007 ST2 campaign although he did not plan to identify his position on the COP.
- October 18, 2007: One member reported he wrote an opinion piece in support of the 2007 ST2 for a local newspaper.
- October 2, 2008: One COP member said he debated a proponent of Initiative 985 on the radio. This initiative would have opened HOV lanes to general purpose traffic during early morning and late evening hours.
- October 16, 2008: One COP member reported he had co-authored an opinion piece for a Seattle newspaper and debated a proponent of Initiative 985 on the radio.
- November 16, 2008: One COP member said he had actively opposed Initiative 985 and was very happy it was defeated.

These highly visible political activities raise questions about the COP's ability to perform objective oversight of Sound Transit. Moreover, by referencing these efforts in a COP meeting, the public may view these political positions as the COP's, which may violate Sound Transit's Ethic policy, which reads:

"[Sound Transit] officers and employees may not...Use any official authority or influence for the purpose of interfering with an election..."

One COP member agreed these types of activities may raise questions about the COP's objectivity.

Of the members discussed above, two were serving or had served as officers of a pro-transit non-profit that championed environmental causes. **The activities related to one of these are discussed at Issue 2e.** This member and a third served on Sound Transit's Board in the late 1990s.

When COP members have previously championed transit causes or served as officials of Sound Transit, they may be biased or too familiar with those they oversee. In fact, a former COP member questioned whether the COP's close relationship with management put its objectivity at risk. GAO warns against such risks in Sections 3.14.c and 3.14.d of its Yellow Book. See **Appendix E**.

These examples demonstrate a need for the COP to strengthen its ethics policy.

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<sup>2</sup> The 2007 ST2 plan was part of Proposition No. 1, also known as the "Roads and Transit" plan.

## **Recommendation No. 5**

We recommend the COP amend its ethics policy to prohibit members from publicly taking sides on proposals for higher taxes or other ballot measures that impact Sound Transit and from using the COP meetings as a place to express their positions on such measures.

### **Issue 2e. COP's Chair and members should better regulate outside interests to avoid conflicts.**

One COP member serves on the board of a non-profit, which along with another pro-transit nonprofit, supported 2009 legislation that would have required high-density transit-oriented development (TOD) along Sound Transit's light rail. This legislation, which did not become law, would have resulted in increased ridership and fare revenue for Sound Transit.

Serving with that COP member on the nonprofit's board is the senior vice president for a consulting firm that helps Sound Transit with its ridership forecasts and construction management. This same firm developed the original Sound Move plan, contributed to the 2008 ST2 proposition, and donates to the other nonprofit. From 2007 through 2011, Sound Transit paid this firm more than \$44.5 million. The COP member's relationship with the senior vice president raises questions about whether he can objectively oversee Sound Transit's performance related to ridership forecasts and construction management. Because this COP member serves on the board of a nonprofit, which promoted 2009 legislation to increase TOD, it's also questionable whether he should have participated on a 2010 task force that reported on ways that Sound Transit could increase transit-oriented development.

A current COP member and a former COP Chair both stated the public may see these outside affiliations as conflicting with the objective oversight of Sound Transit. In fact, two former COP members stepped down in 2005 because they became directors of the previously mentioned nonprofits. As directors, each planned to advocate for ST2, which increased taxes paid to Sound Transit. These efforts were perceived as conflicting with the COP's oversight role. A third COP member appointed in 2003 resigned in 2008 to promote the 2009 TOD legislation as Policy Director for one of the nonprofits.

The former Chair was surprised the current member's role with the nonprofit had not been identified as a potential conflict. In fact the COP's ethics policy suggests the Chair had a responsibility to consider whether it was appropriate for this COP member to participate on the 2010 task force that reported on ways that Sound Transit could increase transit-oriented development. That policy reads:

"At the request of the Panel Chair, Panel members who may have an appearance of conflict will refrain from participating in Panel discussions or actions."

During the last five years, Sound Transit made payments to the nonprofits totaling more than \$160,000. Sound Transit made one of these payments while one COP member served on the Board of one of the nonprofits.

An additional COP member retired from a construction company with pension benefits in 2004 and was appointed to the COP in March 2011. In late 2011, this company obtained an initial \$564,000 contract for preconstruction services for the planned Capitol Hill Station, part of Sound Transit's underground light rail extension to the University of Washington. The company is expected to receive an additional \$6.5 million in contracts to manage this nearly \$100 million project.

To ensure this member continues to serve without any conflicts of interest, or the perception of them, the COP member should consult with the COP Chair to assess whether the member should recuse himself from oversight activities related this contract.

**Recommendation No. 6**

We recommend the COP Ethics Policy be revised to:

- Prohibit COP members from promoting legislation in areas that affect Sound Transit while serving on the COP, or from acting in other ways that may represent an apparent or actual conflict of interest that would impair the COP member’s objectivity.
- Establish requirements that COP members conduct their oversight free from their own personal bias.
- Incorporate elements of GAO Yellow Book Chapter 3, as shown at Appendix E.

We also recommend the COP Chair meet with those COP members discussed in this section and instruct them to refrain from panel discussions or task force participation that may create an actual or apparent conflict of interest.

**Issue 3. Our audit found that as a result of Issue 2, the actions of some COP members indicate they prefer a different role. This leads to the COP at times acting as an advisory committee rather than an oversight committee.**

**Conflict over Proper Role – Advisory vs. Oversight**

COP’s overarching purpose is *oversight* of Sound Transit’s construction program.

Sound Transit Motion No. 18 charges the COP as follows:

“...the citizen oversight panel will be an independent body, charged to review [Sound Transit’s] performance against its commitments to the public *to deliver the services and facilities of Sound Move on time and within budget...*”

Consistent with its overarching purpose, Sound Transit’s Financial Policies and voter approved resolutions limit the COP’s lifespan to the Sound Move and ST2 construction periods, scheduled to end in 2016 and sometime after 2023, respectively.

To ensure Sound Transit develops and implements the construction program in accordance with its Financial Policies, these voter-approved resolutions require the COP to conduct annual reviews of Sound Transit’s financial plan. Consistent with Resolution 75 and 2008-11, Sound Transit’s attorney indicated the COP’s reports should speak to its review of the financial plan’s components and requirements:

“...The original reason for [the] COP’s creation was a concern about how taxes would be used across subareas. The founders wanted a watchdog on specific enumerated issues that included subareas, debt management, system-wide spending, and adherence to financial policies. When COP writes its reports, it should address those areas...”

Despite its voter-approved oversight role, some COP members have pushed for a policy *advisory* role.

Despite its charge to oversee Sound Transit’s performance in meetings its commitments to provide services and facilities on time and on budget, the COP occasionally acts more as an advisory committee than an oversight panel. **Exhibit 1** shows the two have different roles.

<b>Exhibit 1</b>	
<b>Definitions – Citizen Oversight Committee versus Citizen Advisory Committee</b>	
<i>Citizen Oversight of Public School Construction Programs</i> published in 2003 by the 21st Century School Fund	<i>Effective Use of Advisory Committees for Transit Planning and Operations</i> published in 2011 by the Transit Cooperative Research Program
<b>Citizen oversight committees</b> are a cost-effective and politically important method for supplementing a [board] in its monitoring and oversight... the committee acts as a means of engaging the public to increase <b>accountability</b> , meeting the public’s desire to ensure taxpayer dollars are used effectively, efficiently and equitably.	<b>Citizen advisory committees</b> are a commonly used tool for involving the public in making decisions about transit planning and operations...they are aimed at creating informed stakeholders, are a sounding board for ideas, and benefit from clearly communicated expectations about authority, goals and protocols.

Although most COP members acknowledge these roles differ, some have pushed for more of a public policy advisory role as shown in the COP meeting minutes below:

- On May 15, 2008, the COP acknowledged its long-standing tension among oversight, advocacy and policy roles. In response, Sound Transit’s CEO indicated “[The] COP’s role has clearly been oversight and if members want to change that in ST2, they can recommend it, however, there is the danger of losing [the] COP’s perceived independence.

Although Sound Transit’s attorney indicates this change did *not* impact the COP’s role, ST2 now refers to the COP as an “advisory citizen oversight committee” whereas Sound Move refers to the COP as “a citizen oversight committee.”

- On January 5, 2012, the COP asked Sound Transit’s attorney “[whether] the role of COP is to monitor existing activities or to also suggest changes... [Sound Transit’s attorney] said the [COP’s] role is to ensure that ST complies with [its] financial policies...”

Sound Transit’s attorney later clarified to our auditors that his reference to the COP’s role should have been a reference to *the COP’s core responsibilities*.

- In March 2012, the COP asked the Board Chair for her views on “[the] COP weighing in on policy issues... [The Board Chair] said she would caution [the] COP to [not get] too far outside its purview...On the roles of monitoring versus advising, [the Board Chair] said she tended toward the monitoring end of that spectrum...One member offered that [the] COP has had many discussions on its proper role and sometimes had gone out [of that role] to make policy suggestions.”

Some COP members, Sound Transit's CFO and Sound Transit's attorney acknowledged the COP sometimes makes recommendations in policy areas that exceed or fall outside the COP's intended oversight role. Below are examples of such COP recommendations, some of which suggest Sound Transit should revise its commitments to the public.

- In recent years, the COP has made ongoing recommendations to promote cities' support of transit-oriented development so that more riders use light rail. For example, a 2010 COP report recommended the Board provide local governments with financial incentives to increase residential density near transit stations. Three members acknowledged disagreement as to whether making such a recommendation is part of the COP's role. A fourth believes the COP should question Sound Transit's spending to promote such development.
- The COP's 2007 year-end report encouraged Sound Transit to use incentives to reward contractors to operate in an environmentally sustainable manner.
- The COP's 2005 and 2006 year-end reports and a June 24, 2008 letter encouraged the Board to revise the subarea requirements approved under Sound Move. COP members saw these requirements as bad public policy that would restrict necessary investments for a strong regional system. However, these requirements were nonetheless a commitment that was made to the public in 1996. As the COP is tasked with monitoring Sound Transit's adherence to its commitments, it's questionable to recommend the Board revise them.
- In 1996, voters approved Resolution No. 75. In exchange for higher taxes, Sound Transit promised annual comprehensive performance audits. However, rather than monitoring Sound Transit's adherence to this commitment, in a March 25, 2008, letter to the Board, *the COP challenged it*. "The recent Washington State performance audit of Link Light Rail recommended that Sound Transit initiate annual comprehensive performance audits, and further that this Citizen Oversight Panel ensure [these audits] are conducted... We believe that... performance audits on specific, well-defined topics may be helpful to the agency from time to time... *We do not believe that additional routine, annual, comprehensive audits are necessary or appropriate.*"

### **Reasons for COP's occasional shift to a public policy advisor**

The following reasons explain why the COP sometimes goes into areas that contradict or lie outside of its oversight role:

- **Some members are interested in Sound Transit's public policy and believe they have the freedom and authority to focus on public policy.** This belief is reinforced by the public policy experience that Sound Transit seeks when filling COP vacancies. Because Sound Transit solicits such qualifications, this has likely contributed to the COP's belief that its role includes informing the Board on its policy decisions. In fact, the COP's Goals and Objectives, shown in **Appendix G**, indicate this has occurred. "...The Panel **acts to ensure that...Board policy decisions** are made with full consideration of due process, sound technical information and the full range of appropriate perspectives..."

- **The COP’s Governing Principles, Mission, Goals, and Objectives do not identify citizens as the COP’s primary customer.** Bylaws for the oversight committees of the San Mateo Union High and Sacramento school districts, the San Bernardino Community College District and the Transportation Authority for Marin County all indicate these committees’ first responsibility is to inform the public on how the local government has spent project funds. However, **Issue 6c** discusses how the COP has frequently communicated written concerns to the board that have not been posted to the COP webpage.
- **Some COP members believe the agency’s success is tied to increased ridership,** which is central to Sound Transit’s mission statement. So it is appropriate to focus on ways to make this happen.
- **Some current and former COP members believe Sound Transit and other government agencies should do more to address the public’s impact on the environment.** Current and former COP members have served with non-profits that are politically active in championing environmental causes.
- **As the COP is unelected, it may focus its oversight on areas that differ from those approved by the voters and do so without risk of being replaced by the voters.**
- As **Exhibit 2** shows below, Sound Transit Motion No. 18 indicates the COP’s charge is to review Sound Transit’s performance against its commitments to deliver services and facilities on time and within budget. Conversely, **the COP Mission Statement does not specifically reference Sound Transit’s “on time and within budget” commitments.**

<b>Exhibit 2</b>	
<b>Comparison of COP charge per Sound Transit Motion No. 18 versus COP Mission Statement</b>	
<i>COP’s Charge – Sound Transit Motion No. 18</i>	<i>Mission Statement As Drafted by the COP</i>
<p>“...the citizen oversight panel will be an independent body, <b>charged to review [Sound Transit’s] performance against its commitments to the public to deliver the services and facilities... on time and within budget.</b> The citizen oversight panel will report to the board.</p>	<p>It is the mission of the Citizen Oversight Panel <b>to ensure that Sound Transit meets its commitments to the public</b> by monitoring its performance, reporting to the Board on potential areas for improvement, and evaluating the response in making change. Areas to be monitored will address...</p> <ul style="list-style-type: none"> <li>• discipline in management of schedules and budgets...</li> </ul>

**Effects**

When voters approved tax increases to pay for Sound Move and ST2 investments, they did so with assurance that the COP would regularly review the soundness of Sound Transit’s financial plan and its adherence to commitments to provide services and facilities on time and on budget. The COP has occasionally treated Sound Transit’s commitments as policy areas that should be revised versus promises that should be kept. Moreover, when the COP focuses on areas that fall outside of its board and voter-approved oversight role, it risks overlooking those areas that lie within it. **See Issue 4 below for related discussion.**

However, when the COP has focused on areas that fall within its board and voter-approved oversight role, it has identified significant issues as shown at **Issue 1**. One of the more recent issues the COP identified was Sound Transit’s significantly reduced ST2 project contingency. As discussed under the results for Objective 2, our audit also raises questions about Sound Transit’s significantly reduced ST2 project contingency.

**Recommendation No. 7**

We recommend the COP:

- Focus its oversight on areas intended by the board and voters.
- Revise its Mission and its Goals and Objectives to more closely focus its oversight on its charge to review Sound Transit’s performance against its commitments to provide services and facilities on time and within budget. The COP should also define the roles of the COP Chair and its members to align with its revised Mission, Goals and Objectives.
- Revise the COP’s Governing Principles to identify citizens as the COP’s primary customer.
- Once the Mission, Goals and Objectives have been properly revised, meet annually with Sound Transit’s attorney, as it did in January 2012, to affirm the intended role of the COP.
- Assure its recommendations do not go contrary to Sound Transit’s commitments to the public.

**Issue 4. A chief example of the effect of the COP not fully embracing its important role as an oversight board is that it offered no written analysis to the public or the Sound Transit Board as to the soundness of the 2008 ST2 financial plan before the election.**

**COP gave no written assessment to voters or to the Board before the 2008 ST2 election**

Sound Transit’s financial plan contains the agency’s 15-year revenue, cost and ridership forecasts, the identification of specific projects, project costs, project financing, debt management and its compliance with subarea requirements. Sound Transit revises the plan annually. Consistent with these annual revisions, Sound Transit’s Financial Policies and Resolutions No. 75 and 2008-11 require the COP to review Sound Transit’s financial plan annually. The COP acknowledged this obligation in its 2009 and 2010 Year End COP reports:

“One of this panel’s chief mandates as required by its authorizing legislation is to monitor and report on Sound Transit’s financial soundness ...”

At the COP’s January 5, 2012, meeting, Sound Transit’s attorney indicated that the COP’s annual report should address areas contained in the agency’s financial plan.

“...The original reason for [the] COP’s creation was a concern about how taxes would be used across subareas. The founders wanted a watchdog on specific enumerated issues that included subareas, debt management, system-wide spending, and adherence to financial policies. *When [the] COP writes its reports, it should address those areas...*”

Prior to the 2007 ST2 election, the COP issued an April 5, 2007, report on its assessment of a draft ST2 plan the Board had adopted in January 2007. This report can be found on the COP’s website. Despite the COP’s recommendation against a bigger proposal, the Board increased the size of the 2007 ST2 plan in May 2007. Voters rejected that ST2 plan<sup>3</sup> in November 2007.

3 The 2007 ST2 plan was part of Proposition No. 1, also known as the “Roads and Transit” plan.

**Voters approved a new version of the ST2 plan in 2008 without the benefit of the COP's written assessment.**

The Board approved a version of the ST2 plan that was 23 percent smaller on July 24, 2008. Voters approved it in November 2008. It is reasonable to conclude the public would have expected the COP to assess whether the cost and funding projections were financially sound before the November 2008 election, but it did not.

The July 17, 2008 meeting minutes indicated the following:

"[One COP member indicated] the [2008] ST2 plan was sound both in the benefits offered and in its financial plan. He suggested COP should say so in a letter to the Board. [Another COP member responded]...It might be an overstatement to say the substance of the plan is sound. [The] COP has not reviewed the technical work in great detail."

A state-appointed Expert Review Panel (ERP) reviewed both the 2007 and 2008 ST2 plans. The purpose of the ERP, as directed by state law (RCW 81.104.101) was to provide independent review during the development of the 2007 and 2008 ST2 plans so that critical questions were posed and assessed; to guide the preparation of the plans through the ERP's review of its methodologies and assumptions; and to ensure those assumptions were appropriate and reasonable.

Sound Transit posted the ERP's final assessment of its **2007 ST2 plan** to its website months before the November 6, 2007 election. However, the ERP did not report its final assessment of Sound Transit's July 24, 2008, ST2 financial plan until **October 30, 2008**, just days before the November 4 election. Moreover, Sound Transit never posted the ERP's final assessment of its **2008 ST2 plan**, which contained the following concerns that also were **never shared with the public prior to the November 2008 election**.

**"Forecasts and Economic Considerations** – Since the July 2008 Panel meeting, the global economy has continued to suffer from fiscal shocks, unprecedented in their...magnitude and impact. The...economy has also begun to show weakness, evidenced by the largely negative forecast released in September 2008 by the Washington State Economic and Revenue Forecast Council. Sound Transit has elected not to update its forecasts of sales and motor vehicle excise tax revenues from its independent consultant...although the agency believes that the forecast might be aggressive in the near-term. The 2008 ST2 Plan continues to assume average annual growth rates through 2023 of 4.76 percent for sales and use taxes and 4.55 percent for motor vehicle excise taxes (MVET).

The Panel agrees with the agency's decision not to revise its forecasts just prior to the November 2008 election, as all the materials being presented are predicated on the June 2008 forecasts and changing this now would be, at best, confusing to voters. In addition, the forecasts are appropriately based on a 15-year horizon, not the peaks and valleys of any one or two-year period... " \*

\* *The ERP issued a draft report containing its initial review of Sound Transit's ST2 Plan on July 23, 2008. A similar section of that report, titled "Economic Factors", has been presented for comparative purposes in **Appendix D**.*

In July 2008 Sound Transit reduced the revenue forecasts contained in its 2008 ST2 financial plan to 4.6 percent for sales tax and 4.4 percent for MVET taxes, lower than the 5.2 percent and 5.3 percent used in the 2007 ST2 plan. It also had a large contingency built into the 2008 ST2 plan to cover potential revenue shortfalls or higher than expected cost escalations.

The COP met with Sound Transit's CFO in July 2008 to hear about these revisions. As it had extensively reviewed the 2007 ST2 plan, and had met with the ERP as the ERP reviewed the 2008 ST2 plan, the COP was well-equipped to assess these revisions. However, the COP never communicated its assessment of the 2008 ST2 plan in writing as it had done on the 2007 ST2 plan.

As to why it had not done so, the COP staff person indicated the COP had already communicated its concerns in its April 5, 2007 report on the 2007 ST2 plan. In a March 10, 2008 letter, it reminded the Board of these concerns as it was considering the possible size and cost of the 2008 ST2 plan.

**Management did not believe it was COP's role to review the 2008 ST2 plan.**

To further explain why the COP did not review the 2008 ST2 plan, *Sound Transit's CEO, CFO, and Board Administrator all indicated it was the ERP's responsibility to review the 2008 ST2 plan, not the COP's.* Although the COP is required to review Sound Transit's financial plan annually and did so for the 2007 ST2 plan, the CFO indicated it was unreasonable to expect unpaid COP volunteers to have reviewed the 2008 ST2 plan. Sound Transit's CEO added that the ERP had expertise to review the 2008 ST2 plan, but most COP members did not have this specific expertise.

The public would have benefited from a timely COP assessment of the 2008 ST2 plan as the Expert Review Panel's October 30, 2008, assessment was untimely, given it was issued only a few days before the election (see timeline in **Appendix C**).

One COP member with an extensive audit and financial background agreed the 2008 ST2 financial plan was probably the biggest event of the last five years, and the COP probably should have done more to review that plan. This COP member and other members also indicated the COP should produce some sort of annual written report that captures the results of its reviews.

**Sound Transit and COP actions following the voters' approval of the 2008 ST2 plan.**

Eleven months after the 2008 election, and in response to further declines tax revenues, Sound Transit significantly reduced its planned ST2 investments. The COP reviewed the revised plan, and in its 2009 Year End report, concluded that the assumptions for growth in capital costs, operating costs, and fare revenues were reasonable. Although subsequent COP year end reports contained some discussion about how cost or revenue trends varied from the financial plan, they did not provide similar assessments as to the soundness of the financial plan.

**Recommendation No. 8**

**We recommend the COP:**

- **Consistently prepare an annual written report that describes its yearly review of Sound Transit's financial plan, and its assessment as to the soundness of that plan.**
- **Should Sound Transit decide to ask voters for additional taxes to pay for ST3 investments, the COP should work with outside experts to review the ST3 plan and report to the Board and public as to the soundness of that plan at least one month before the election. Issue 5b contains related discussion.**

**We recommend Sound Transit's CEO, CFO and the Board all acknowledge the COP's obligation to review the agency's financial plan annually, including those plans that will be reviewed by the ERP and submitted to voters for their approval.**

**Issues 5a-b. In addition to those changes discussed above, providing the COP with formal authorities, access to outside experts and a sufficient budget would make it a more effective oversight body.**

**The COP requires more formal authority and resources to be effective**

**Issue 5a. Sound Transit should establish COP authorities and management's obligation to support the COP.**

Although Sound Transit legislation clearly defines the COP's purpose, and provides it with access to auditors, the Board has not formally provided the COP with many of the authorities other agencies have provided their citizen oversight bodies to assure effective and ongoing oversight. Examples include the COP's right to:

- Access agency staff and records without restriction.
- Conduct audits or contract for and obtain expert advice (see **Issue 5b**).
- Conduct investigations, visit agency facilities and construction sites, and research matters subject to its oversight.
- Receive annual reports from management on its actions to address COP concerns. See **Issue 6b**.

Additionally, although COP members universally stated they had unrestricted access to staff and records, no official agreement is in place regarding the types of records, reports and other information Sound Transit must provide the COP on a monthly, quarterly and annual basis.

Most COP members acknowledged that the Board, the COP and Sound Transit executive management will change in the future, and more formalized authorities would provide assurance that future COP members will receive the information and cooperation they need to conduct effective oversight.

The few who opposed the Board naming specific COP authorities or formalizing the information that Sound Transit provides the COP indicated that doing so was unnecessary and could impair the COP's constructive working relationship with management.

**However**, Sound Transit's attorney indicated that although management has always cooperated with the COP's requests for access to staff and records, it does not have an unlimited legal obligation to do so. He also indicated that Sound Transit Motion No. 18 does not give the COP the authority to hire outside experts.

### **Recommendation No. 9**

**We recommend the Board establish specific COP authorities and management obligations to fully support the COP's access to records, reports and staff. We recommend Sound Transit and the COP establish a documented understanding of the specific records, reports and other information that Sound Transit must provide the COP on a monthly, quarterly and annual basis so it can fulfill its oversight role.**

**Issue 5b. COP should consider greater use of outside experts and the Board should budget for those experts.**

Many COP members indicated they could drop by at anytime to speak with the CEO or CFO. Many COP members indicated they have a very positive relationship with the CEO and Sound Transit managers, which results in very open conversations that better inform the COP.

Yet a former COP Chair questioned whether the COP was too close to management. When asked what he would change with the COP, this former Chair indicated he would increase the COP’s budget so it could hire outside expertise. He indicated he sometimes felt the COP was too dependent on information from management, **which could increase the risk that COP assessments are based on incomplete or inaccurate information.** As mentioned at Issue 5a, the COP has no authority or budget to hire outside experts.

The Los Angeles School District has a \$27 billion capital program comparable in size to Sound Transit’s capital program. **Exhibit 3** shows the Citizen Oversight Committee for the District’s capital program has the following annual budget:

<b>Exhibit 3</b>	
<b>Los Angeles School District Citizen Oversight Committee Budget 2012</b>	
<i>Two District employees, salary and benefits</i>	\$225,000
<i>Consultant/outside contractors</i>	\$169,000
<i>Independent legal counsel</i>	\$96,000
<i>Supplies, broadcast of monthly meetings, etc</i>	\$30,000
<i>Miscellaneous and contingency</i>	\$27,000
<b>Total</b>	<b>\$547,000</b>

*Source: Los Angeles School District.*

Although Sound Transit’s COP oversees a \$20 billion capital program, **Exhibit 4** shows it has significantly fewer resources than its counterpart with the School District.

<b>Exhibit 4</b>				
<b>Sound Transit’s Annual COP Budget</b>				
2008 through 2011				
<b>Sound Transit’s COP Budget</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
<i>Staff</i>	\$90,000	\$100,000	\$67,200	67,200
<i>Local travel and meetings</i>	\$0	\$4,000	\$3,500	\$3,400
<b>Total</b>	<b>90,000</b>	<b>\$104,000</b>	<b>\$70,700</b>	<b>\$70,600</b>

*Source: Sound Transit COP.*

As discussed at **Issue 4**, the COP did not perform an extensive review of the 2008 ST2 financial plan prior to the election. If the COP had been given the budget and authority to hire outside experts and auditors, it may have been able to better review that plan.

When we questioned whether it was reasonable to conclude that the COP had an obligation to review the 2008 ST2 financial plan that was submitted to the voters, Sound Transit’s CEO indicated that although the COP brings a strong mix of qualifications,

most COP members lack the specific expertise necessary. Sound Transit’s CFO and the COP staff person indicated it would have been unreasonable to expect them to do this since they are only volunteers. These comments suggest the COP needs the budget to pay for outside experts to help it meet its oversight obligations.

**Recommendation No. 10**

To help ensure the COP has the capacity to review Sound Transit’s financial plan annually and to avoid over-reliance on Sound Transit for the information that is necessary to conduct its oversight, we recommend the COP periodically consider the use of outside experts. For the COP to pay for such experts, we recommend the Board provide the COP with adequate resources.

**Issues 6a-c. Because the COP provides oversight of Sound Transit on behalf of citizens, transparency regarding its actions is imperative. Our audit found this transparency can be improved.**

**Issue 6a.** The COP webpage is not easily found from the Sound Transit website. The page does not include important information such as COP work plans, agendas, meeting minutes and the time and location of meetings.

The COP’s webpage is linked from the “About Sound Transit” section of the Agency’s main website. Information on the COP webpage is limited to COP annual and other reports; information on how to apply for the panel; a list of present and past COP members; and a list of Panel responsibilities.

Consequently, interested parties would have difficulty learning of COP efforts to oversee Sound Transit’s financial plan and the agency’s performance in providing services and facilities on time and on budget.

The public also does not have electronic access to the COP’s annual work-plan, meeting minutes and materials and presentations the COP receives from Sound Transit staff. Most COP members support Sound Transit placing the COP meeting minutes onto the agency’s website.

**Recommendation No. 11**

We recommend Sound Transit:

- Make it clear from its website how to easily find information on the COP.
- Improve the content of the COP webpage to include the Panel’s annual work-plan, information on meetings, meeting minutes and all information received by the COP, the annual year-end report from Sound Transit as described below and other information that may be relevant to the public.

**Issue 6b. Sound Transit should post a year-end report on the COP webpage that discloses its actions to address COP concerns.**

At the start of each year, the COP provides a written report to the Board, which contains its concerns and recommendations to improve Sound Transit’s performance. Shortly thereafter, the agency responds with its own report, which describes *how it plans to address* COP concerns. These reports are posted

**Greater transparency is needed for the COP to properly inform the public of its work**

to Sound Transit's website. Although scheduled presentations and other informal communications to the COP occur throughout the year, management does not formally report back to the COP or the Board to disclose *how it has addressed* COP recommendations.

State law (RCW 43.09.470) obligates local governments to the following in response to a performance audit by the Washington State Auditor's Office:

"An annual report will be submitted by the legislative body by July 1st of each year detailing the status of the legislative implementation of the state auditor's recommendations. Justification must be provided for recommendations not implemented. Details of other corrective action must be provided as well."

To demonstrate further use of such a requirement, the Charter for the LA School District's Bond Citizen Oversight Committee places the following obligation on the District's management:

"The District agrees to track all recommendations made by the Committee and to report to the Committee at each Committee meeting: (i) that the recommendation has been adopted by the District; (ii) that the recommendation has been rejected by the District; or (iii) the status of the District's consideration of the recommendation."

Most COP members thought such formal reporting would likely benefit the public, the Board and/or the COP by providing greater transparency around Sound Transit's actions to address COP recommendations.

Other members believed the benefit of greater transparency was marginal since the public does not show much interest in the COP's work. These and other COP members who were indifferent or opposed such reporting also believed such a requirement may result in needless public criticism of Sound Transit, would cause COP tensions with management or was simply unnecessary.

A few who opposed such a requirement indicated that if the public wants to know more about Sound Transit's efforts to address COP recommendations, they could attend the meetings or request meeting minutes.

To demonstrate the need for such formal reporting, for seven years the COP has made annual recommendations to the Board to negotiate lower contract costs with its partnering transit agencies (Metro, Pierce and Community Transit). For six years, COP reports have made little mention of progress on the issue or explained the lack of progress. Nor has the Board or management communicated in writing why they have not done more to address these recommendations. As a second example, interviews of COP members and the COP staff person indicate that although the COP informally tracks Sound Transit's efforts to address its concerns, it does not always discuss all these efforts in its annual reports.

### **Recommendation No. 12**

**We recommend Sound Transit management:**

- **Report back to the Board and the COP each December on its efforts to address COP recommendations. This report should clearly indicate whether COP recommendations have been fully addressed, are in progress, or if no actions have been taken, the reasons for not doing so.**
- **Post this report on a COP webpage for the public to read.**

**Issue 6c. Sound Transit should post all COP letters to the Board onto the COP webpage.**

Although COP reports to the board are posted on the COP webpage, the COP chooses to communicate some of its concerns informally during the year by letter. These letters are not posted to the COP webpage.

As part of our audit, we asked Sound Transit for all letters and correspondence from the COP to the Board. We received seven letters and one email that discussed the following topics:

- March 10, 2008 Letter - Concerns About 2008 ST2 Planning Process
- June 24, 2008 Letter - Observations on 2008 ST2 Planning Process
- March 4, 2010 Letter – Observations on Board’s Restructured Committees
- March 10, 2008 Letter – Recognitions on Improved Capital Procurement Process
- March 25, 2008 Letter – Recommendation to Forgo Annual Performance Audits
- January 12, 2009 Letter - Concerns about Smart Cards
- August 20, 2009 – Concerns about Sound Transit’s Growing Operating Costs
- August 13, 2010 Email – Concerns about Customer Service Communications

As acknowledged by Sound Transit and most COP members, the COP works for the benefit of the citizens and for the purpose of promoting Sound Transit’s accountability to the public. However, because none of these communications can be found on the COP webpage, the public cannot easily obtain them or learn of all COP concerns.

**Recommendation No. 13**

**We recommend that Sound Transit post all COP letters and all COP reports onto a COP website for the public to see.**

## Objective 2 – ST2 and Sound Transit’s Response to the Revenue Shortfall

### Overarching conclusion

Sound Transit’s original ST2 project plan was established using revenue and costs assumptions that were based on professional third-party forecasts. At the time the Agency was finalizing its original ST2 plan, these forecasts did not anticipate a prolonged recession. Fortunately, the original ST2 plan included a sizeable contingency to address the risks of lower than expected revenues or higher than expected construction costs. Such contingencies are a standard practice for dealing with the uncertainties that exist on long-term capital projects. However, because the recession and lower than anticipated revenues have continued longer than was expected, Sound Transit has had to defer and reduce the scope of its planned ST2 investments.

Sound Transit made these deferrals and reductions using a methodical and transparent process that adheres to ST2 requirements. They were less severe than they may have been because of the significant size of Sound Transit’s original contingency.

However, Sound Transit has extensively reduced that contingency, which is now lower than what is recommended for dealing with the uncertainties that exist with large, long-term capital projects. Although these uncertainties diminish as a capital program nears completion, Sound Transit’s ST2 program is in its early stages.

In fact, Sound Transit has stated it believes its financial forecasts remain vulnerable to periods of economic recession and/or “spikes” in the cost of labor or construction materials. Consequently, Sound Transit should increase its contingency. However, doing so may require further deferrals or reductions to planned investments.

### Approach

To accomplish each of the defined objectives, we gained a comprehensive understanding of the process Sound Transit used to:

- Initially develop its ST2 cost estimates.
- Identify required adjustments to the original ST2 plan.
- Develop the methodology to make those adjustments.
- Report and solicit input regarding anticipated adjustments.
- Ensure the successful implementation of the adjusted plan.

We gained our understanding through interviews with Sound Transit employees in numerous departments including: Planning Environment & Project Development (PEPD), Design, Engineering and Construction Management (DECM), and Finance & Information Technology. We also evaluated numerous documents and files. We also reviewed information relevant to the initial ballot measure; preliminary and updated tax base forecasts; Sound Transit budgets; Sound Transit’s Transit Improvement Plan; readjustment plans; information provided to interest groups; and other relevant documents.

**Considering the decline in local tax revenues, how effective has Sound Transit been at meeting the promises made in its ST2 ballot measure in 2008?**

**Were Sound Transit’s adjustments to its original ST2 plan sufficient and appropriate given the subsequent changes in circumstances?**

**Could Sound Transit have anticipated those changes (by building contingencies, for example)? If so, how? If not, why?**

## Background

In November 2008, voters approved Sound Transit 2 (ST2), an estimated \$17.9 billion<sup>4</sup> investment in the regional high-capacity transportation system that included Link light rail, Sounder commuter rail, and ST Express bus service. Sound Transit expected funding for ST2 to come primarily from ST2 taxes, bonds, federal grants and Sound Move surpluses. The amounts of these and other sources are shown in **Appendix H**. A timeline of the events discussed in this section, from November 2008 to December 2010, is shown in **Exhibit 5**.

As the vote on the project neared, revenue projections began to show the effects of the economic recession. As of November 2008, actual revenues compared to estimates were down 5 percent. Early in 2009, Sound Transit comprehensively reviewed its entire capital program to determine how best to get started on the ST2 program. The Citizen Oversight Panel’s review of these projections during 2008 and 2009 is discussed under **Objective 1**.

In February 2009, an update to its forecast showed that Sound Transit revenues likely would be 15 percent below the original estimates for the 15-year plan. In April, the Agency’s Board of Directors met to review the situation and discuss program priorities. At that time, the Board directed staff to:

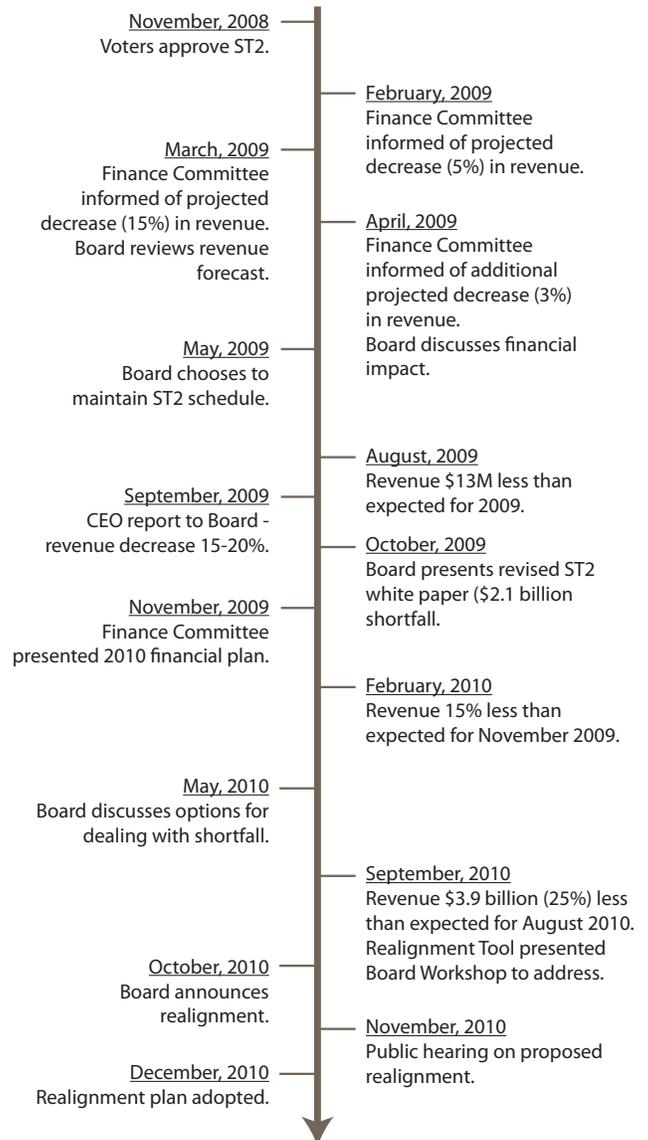
- Maintain the Board’s flexibility to respond to changing conditions over time.
- Maintain the 15-year timeframe to complete all new ST2 investments and show steady progress on delivery over that period.
- Maintain subarea equity principles.
- Provide the Board with full context and multiple options when facing key policy decisions that affect Sound Transit’s ability to carry out the plan.

In October 2009, management developed a discussion paper<sup>5</sup> to advise the Board about how to best begin implementation of the ST2 program and to identify potential opportunities and risks. The paper was developed in response to revised forecasts that projected that Sound Transit would collect \$3.1 billion (20 percent) less in local tax revenues than had been forecast in June 2008. The paper also forecasted lower growth of service, construction, and right-of-way costs because of weakening economic conditions. The lower costs were expected to result in lower bids for design and project construction that would partially offset the decline in local tax revenues.

4 Year of expenditure dollars.

5 ST2/Sound Move Integration and Implementation White Paper, October 2009.

### Exhibit 5 Chronology of Sound Transit response to revenue reductions and realignment (2008-2010)



Source: Compiled by TKW from Sound Transit information.

The paper also proposed "Implementation Principles" to manage Sound Transit resources in order to meet planned projects with lower revenues. These principles (presented at **Appendix I**) are summarized as follows:

- Save operating dollars whenever and wherever possible.
- Gain early knowledge about capital projects.
- Manage to low end of capital cost estimates.
- Optimize project phasing to save dollars.

Revenue forecasts in 2010 identified additional shortfalls. In September, Sound Transit staff presented the Board with an updated forecast that predicted a decline in tax revenues over 2009-2023 of \$3.9 billion or 25 percent less than the Agency's July 2008 forecast on which the ST2 plan was based. Sound Transit's Chief Executive Officer proposed a program realignment the Board had discussed at a workshop. The realignment was based on specific language within the ST2 plan that directs the Board to take one or more of the following actions in the event that actual or projected expenditures exceed a subarea's revenues by more than 5 percent:

- Correct the shortfall through use of such subarea's uncommitted funds and/or bonding capacity which is available to the subarea.
- Scale back the subarea plan or projects within the plan to match a revised budget.
- Extend the time period of completion of the subarea plan.
- Seek legislative authorization and voter approval for additional resources.

Using this guidance, the proposed realignment identified specific color-coded categories that allowed for easy identification of proposed changes. After a public hearing on the proposed realignment, the Board adopted it in December 2010. It can be seen in **Appendix J**.

Sound Transit's 2011 budget and accompanying Transit Improvement Plan (published in December 2010) finalized the Agency's adjustments to the original ST2 plan based on the 25 percent decrease in anticipated revenue. These documents identified projected capital and operating expenditures for the construction and operating of the Sound Transit regional transit system using the Board approved realignment plan. **Appendix K** summarizes those changes as well as Sound Transit's forecasts.

Sound Transit extensively communicated its realignment plan to interest groups through media briefings; its website; public meetings; meetings with elected officials, and partner agencies; and distribution of information at transportation forums, open houses, and community meetings, fairs and festivals.

## Results

**Issue 1. Due to the decline in tax revenue, Sound Transit will not be able to complete the entire ST2 program within the original 15-year time period. However, its current projections indicate the vast majority of identified projects will be constructed.**

In response to the 25 percent reduction in projected revenue, Sound Transit conducted a comprehensive review of the initial ST2 plan. The resulting realignment focused on how the Agency could move forward with the voter-approved plan with fewer resources. The realignment plan identified that the Agency would no longer be able to meet the original 15-year time frame but would be able to make progress on most projects. Sound Transit expects to address the 25 percent revenue reduction by eliminating plan reserves (18 percent) and deferring, re-phasing, and/or re-scoping projects.

Sound Transit management and the Board believe the Agency has the resources to complete the majority of the ST2 plan within the 15 year period. It continuously updates a detailed financial plan. The plan is based on financial forecasts from 2009 through 2023 and uses a number of assumptions and projections of key variables such as cost inflation, revenue growth, interest rates and availability of federal funds.

**Issue 2. Sound Transit's initial adjustments to its original ST2 plan were sufficient and appropriate given the subsequent changes in circumstances. However, it now has a smaller than recommended contingency to cover possible cost overruns.**

Sound Transit has taken a very informed, thorough approach to realigning the ST2 plan. Using established guidelines and comments solicited from interested parties, most of the initial commitments established by the ST2 ballot measure should essentially be completed, although not within the 15-year timeframe.

Since learning of the effect the recession would have on ST2, the Agency's Board and management have developed a revised plan using established guidelines and prioritized expenditures to best achieve the goals stated in the voter-approved approved plan, to complete projects under way or near completion, and to ensure the maintenance of current assets. This methodology appeared to be sound and appropriate given the need to reduce total costs.

Sound Transit's initial ST2 project cost estimates were provided as a range, with a high-end and low-end estimate. Both estimates included contingency, the level of which was established based on assessed project risk. The Agency was very diligent in initially identifying the need for a strong 26 percent contingency given the potential for unanticipated costs, cost overruns, etc. and included an additional reserve of approximately 18 percent in the high-end estimate. During the realignment, that reserve and much of the contingency were eliminated.

Although the Agency believes it can meet all anticipated financial obligations, it has very little room for error. Any additional revenue decreases or increases in actual construction costs could adversely affect projects. The Agency itself has stated it believes its financial forecasts are vulnerable to periods of economic recession and/or "spikes" in labor and/or construction materials costs.

### Early Initial Segment Contingency Experience

Before we assess the sufficiency of Sound Transit’s ST2 project contingencies, it is helpful to look at how its past contingencies have performed. For the Link Light Rail Initial Segment, Sound Transit established a \$245.7 million contingency (15 percent). It also established an additional \$128 million in project reserves. During construction, factors such as unanticipated site conditions and incomplete and inaccurate designs, required the use of the contingency and \$32 million of the reserves.

### Contingencies for the University Link Project

Using the lessons learned from the Initial Segment, Sound Transit focused on improving its construction practices to manage costs. For example, the Agency developed a risk assessment program to identify project scope, schedule, and budget risks for its \$1.9 billion Sound Move University Link (U-link) project. Results of the risk assessment were used to establish appropriate schedule and budget contingencies. U-Link contingencies were developed in the design phase to address potential cost impacts of scope elements that were not well defined and quantified at the time Sound Transit set a base-line cost for the project. The contingencies were established to address unforeseen conditions encountered as the work was done. Additionally,

<b>Exhibit 6</b>		
<b>Sound Transit’s Sound Move U-link Contingencies</b>		
Dollars in millions, as of August 2012		
<b>Contingency type</b>	<b>At baseline</b>	<b>Current balance</b>
Design allowance	\$104	\$5
Allocated contingency	\$264	\$306
Unallocated contingency	\$54	\$54
<b>Total</b>	<b>\$422</b>	<b>\$365</b>

*Source: Sound Transit.*

Sound Transit created an unallocated contingency to address general project cost risks and to resolve cost variances. The various contingency amounts are shown in **Exhibit 6** below.

The recession did have one positive effect on U-Link construction activities. Favorable market conditions and motivated contractors resulted in construction bids and property acquisition costs being lower than estimated in the baseline cost estimate. As the previous illustration indicates, the difference between the cost estimate and the bid prices was assigned to allocated contingency. However, as construction commences, the potential for additional project costs will continue.

### Recommended Industry Contingencies

Sound Transit has improved project estimating, monitoring, and change management processes since the 2007 performance audit. These changes will help the Agency effectively manage ST2. However, unforeseeable costs and the use of contingencies are a normal component of construction projects. An adequate contingency is an integral component of the total estimated cost of a project. It is used to pay for these unforeseeable costs, which can result from incomplete design, unforeseen and unpredictable conditions, or uncertainties within the defined project scope. The amount of the contingency depends on the status of design, procurement, construction and the complexity and uncertainties of the project components. Contingency is not a substitution for making an accurate assessment of expected cost.

Contingency amounts vary based on the type and phase of projects. Suggested contingencies generally average from 15 percent to 25 percent. The Association for the Advancement of Cost Engineering (AACE)<sup>6</sup> has established the following general guidelines shown in **Exhibit 7** below:

<b>Exhibit 7</b>		
<b>General Guidelines for Contingencies</b>		
Amounts expressed as percentage of definitions		
<b>Definition</b>	<b>Level of project definition</b>	<b>Suggested contingency</b>
Study/simplified estimate	1% to 15%	30%-50 %
Budget, authorization or control/preliminary estimate	1% to 15%	15%-30%
Control or bid/detailed estimate	30% to 70%	10%-20%
Check estimate or bid/ finalized estimated	50% to 100%	5%-10%

*Source: Association for the Advancement of Cost Engineering.*

Other public agencies have also established specific contingency guidelines. The Los Angeles County Metropolitan Transportation Authority (Metro) has recommended the amounts shown in **Exhibit 8**.

<b>Exhibit 8</b>	
<b>Los Angeles County Metropolitan Transportation Authority (Metro)</b>	
Amounts expressed as percentage of definitions	
<b>Definition</b>	<b>Suggested contingency</b>
Entry into Preliminary Engineering	25% to 35%
Entry into Final Design -	15% to 25%
Project Adoption or Award of an FFGA -	15% to 20%
At construction contract(s) award -	10% to 15%
50% construction has been completed -	5% to 10%
Construction is substantially completed -	1 % to 3%

*Source: Metro.*

**Contingencies for ST2 Projects**

Sound Transit’s current financial plan reflects adequate cash flow, cash reserves, and debt coverage to meet its financial obligations as they currently exist. Although a risk-based contingency was established, the table below shows that ST2 project contingencies are now eleven percent versus suggested contingencies of 15 percent to 25 percent or the contingencies noted above for the Sound Move U-link project. Although uncertainties diminish as a capital program nears completion, the ST2 program is in its early stages. A slower economic recovery or inaccurate construction cost estimates could quickly result in additional ST2 project suspensions, delays or rescoping. **Exhibit 9** on the next page shows Sound Transit’s original ST2 contingency and reserves with amounts current at December 2010.

<sup>6</sup> AACE International serves cost management professionals in project management, estimating, risk management, and claims worldwide.

<b>Exhibit 9</b>				
<b>Sound Transit’s original and current ST2 contingencies by project</b>				
Current as of December 2010; Dollars in millions adjusted to 2007 dollars				
<b>Planned ST2 projects</b>	<b>Original contingency</b>	<b>Original reserves</b>	<b>Current reserves</b>	<b>Current unallocated contingency</b>
East Link	\$514.5	\$355.7	0	\$127.4
Kent/Des Moines Road to S. 272nd	\$92.8	\$60.9	0	\$22.2
Lakewood Station Access	\$2.7	\$4.8	0	\$2.6
Link Maintenance and Storage	\$51.9	\$33.6	0	\$12.8
North Corridor HCT - Northgate to Lynnwood	\$299.9	\$180.2	0	\$74.5
North Link UW to Northgate	\$275.3	\$130.5	0	\$261.5
Platform Extensions – South King/Pierce	\$1.7	\$8.0	0	\$1.6
Puyallup Station Access	\$4.3	\$7.4	0	\$4.1
Reservation Junction Track and Signal	\$4.7	\$8.2	0	\$4.4
S. 200th to Kent/Des Moines Rd	\$86.2	\$56.4	0	\$20.1
SeaTac to S. 200th	\$52.0	\$43.8	0	\$49.4
Seattle to Lakewood Expanded Service	-	\$26.0	0	-
Souder Yard and Shop	\$5.0	\$18.7	0	\$4.8
ST Express Capital Reserve	-	\$24.5	0	-
Sumner Station Access	\$3.0	\$5.4	0	\$2.9
Auburn Station Access	\$2.3	\$4.2	0	\$2.2
Kent Station Access	\$2.0	\$4.0	0	\$1.9
Mukilteo Station Access	\$0.8	\$0.7	0	\$0.8
South Tacoma Station Access	\$2.6	\$4.5	0	\$2.5
Tacoma Dome Station Access	\$1.0	\$1.7	0	\$0.9
Tacoma Link Alternatives Analysis	\$ 18.1	\$10.8	0	\$3.9
<b>Total</b>	<b>\$1,420.7</b>	<b>\$989.9</b>	<b>\$0</b>	<b>\$600.4</b>
<b>Unallocated reserve/contingency as a percent of base estimate</b>	<b>26.2%</b>	<b>18.3%</b>	<b>0%</b>	<b>11.1%*</b>
<b>Suggested contingency</b>				<b>15-25%</b>
<i>Note: * Sound Transit’s allocated contingency as of December 2010 totals 14.3% of the original base estimate.</i>				
<i>Source: This table prepared using project information provided by Sound Transit.</i>				

The COP also expressed concern regarding the Agency’s “cushion for additional revenue losses.” In its Performance Report on Sound Transit (February 2, 2012), the COP urged Sound Transit to continue to conduct periodic “what-if” scenario testing and to report explicit results to the Board and to the public. The COP further expressed its concern that, although the realignment included a cushion for potential additional revenue losses, “the cushion may be disappearing and urged continued monitoring and candid reporting of economic trends and their likely impact on the ST program.”

Reduced revenues or increases in costs could require the Agency to again realign its construction program. Current projects could see timeframes extended, modified, or eliminated entirely.

### **Recommendation No. 1**

We recommend Sound Transit:

- Re-establish ST2 project contingencies that are in line with industry standards to pay for potential cost overruns. It is possible the Agency may complete its U-Link project without using all assigned contingency, and it may be inclined to consider these amounts when it re-establishes its ST2 contingency. If it does so, we recommend it also consider the uncertainties that still exist with the U-Link project as it is complicated and far from complete.
- Revise its ST2 plan to identify options for responding to decreases in available construction revenue or higher than expected costs.

### **Issue 3. Sound Transit followed sound practices in its initial ST2 projections.**

Sound Transit historically has relied on an independent forecast of its tax base<sup>7</sup>. The July 2008 forecast reported that the long-term growth rate had been lowered significantly to reflect the increasing pessimism among analysts over the national economy's ability to grow at its historical rate. Although the forecast did not specifically see a recession in the short-term, it did predict lower growth. As a result, the Agency revised its budget based on a less than normal growth model. Subsequent forecasts identified a clearer picture of the recession and formed the basis for the Agency's realignment plan.

Sound Transit used valid revenue and inflation forecasts, program cost estimates, and other key assumptions developing its initial plan.

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<sup>7</sup> Prepared by Dick Conway & Associates, Seattle, WA.

## Objective 3 - Sound Transit's management of its capital program and implementation of prior audit recommendations

### Overarching conclusion

Except for its need to increase its ST2 project contingency, Sound Transit has an organizational structure, policies and procedures, expertise, and other resources in place to successfully accomplish most of the adjusted ST2 plan within budget.

Its implementation of the prior audit recommendations and its use of the Phase Gate Process, life cycle costing, and additional value management and engineering approaches should greatly assist Sound Transit with these efforts.

### Introduction

In October 2007, the Washington State Auditor Office's issued a performance audit report focused on Sound Transit's construction management practices. The audit concluded that the Agency faced challenges in delivering capital construction contracts for the initial segment of the Link Light Rail Project. Throughout the course of initially planning, designing, and building the system, the Agency experienced delays and cost overruns. As a result, it was unable to complete the Link Light Rail Line at the cost and within timeframes communicated to voters in 1996.

The audit found that in the five years prior to the 2007 report, Sound Transit had responded to these challenges by improving its construction planning and management processes and by using "best industry practices." It also found the Agency's Project Controls unit diligently reviewed proposed change orders. From its inception in 1996, the Agency had gradually improved its structure to manage projects and developed construction management techniques, and project controls and procedures. It developed standardized guidelines on cost estimating, change and cost management, project management, and risk assessments.

Although Sound Transit had made great strides in improving its project delivery practices, the 2007 audit report made 20 recommendations to further assist the Agency in its continuous improvement.

Part of our current audit assessed how Sound Transit responded to these recommendations. We also sought to determine whether Sound Transit was effectively managing its capital program in other areas so it can accomplish its ST2 projects on time and on budget. During the current audit's preliminary survey, we identified four additional areas that warranted further review:

- Organizational Structure Changes.
- Use of the Phase Gate Process.
- Life Cycle Costing.
- Value Engineering.

We determined changes in each of these areas could have a major effect on Sound Transit's construction practices and, ultimately on its ability to effectively complete ST2.

**Does Sound Transit effectively manage its capital program to enable it to complete the promised ST2 plan on time and on budget? If not, how can it improve its capital program?**

**Has Sound Transit implemented the State Auditor's recommendations from the prior performance audit in time to benefit Sound Transit 2, which was approved by voters on November 4, 2008? If not, how was ST2 affected?**

## Approach

To determine the status of each of the previous recommendations, we asked Sound Transit to identify specific steps taken and/or processes and practices developed to address recommendations we made in 2007. If the Agency met the intent of the recommendation, we did a detailed assessment of Sound Transit's actions through interviews with key personnel and a review of established policies and procedures, construction documents, contracts, internal reports and evaluations, external assessments, and other applicable information. Additionally, as appropriate, we compared processes to specific criteria and established best practices.

To gain a comprehensive understanding of the four additional areas detailed later in this report, we interviewed individuals in Sound Transit departments including Procurement & Contracts, Design, Engineering, & Construction Management, Planning, Environment & Project Development, and Finance & Information Technology.

We also evaluated documents and files relevant to program operations, specific goals, objectives, and expectations, organizational charts, job descriptions, project plans and specifications, national publications, and other relevant information.

### **Issue 1. Sound Transit has developed a capital construction program along with policies, procedures, and practices that should provide it with the ability to complete most of the adjusted ST2 plan within budget.**

From its inception in 1996, Sound Transit has continuously improved its structure to manage projects and has standardized guidelines on cost estimating, change and cost management, project management, and risk assessments. The Agency has responded to a number of challenges through improvements in construction planning and management processes and the use of "best industry practices." It has successfully constructed the Initial Segment between downtown Seattle and Seattle-Tacoma Airport. It appears to be on track with construction of the University Link.

The 2007 performance audit of the Link Light Rail Project found that Sound Transit had made great improvements in its project delivery practices. It also identified a number of opportunities to further the efficiency and effectiveness of those practices. Our follow up on Sound Transit's response to specific recommendations found that the Agency had implemented all recommendations. Additionally, lessons learned from the Initial Segment and University Link will help the Agency in the construction of ST2 projects.

It appears that Sound Transit has an organizational structure, policies and procedures, expertise and other resources in place to successfully accomplish most of its ST2 projects. Its response to the prior audit recommendations and its use of the Phase Gate Process, life-cycle costing and additional value engineering approaches will help Sound Transit effectively manage and complete its ST2 projects on time and on budget. However, as identified previously, Sound Transit has extensively reduced its ST2 contingencies and has stated that it believes its financial forecasts remain vulnerable to periods of economic recession and/or "spikes" in the cost of labor or construction materials.

**Below are the detailed results of our audit.**

**Issue 2. Sound Transit has made outstanding progress following recommendations from the prior performance audit.**

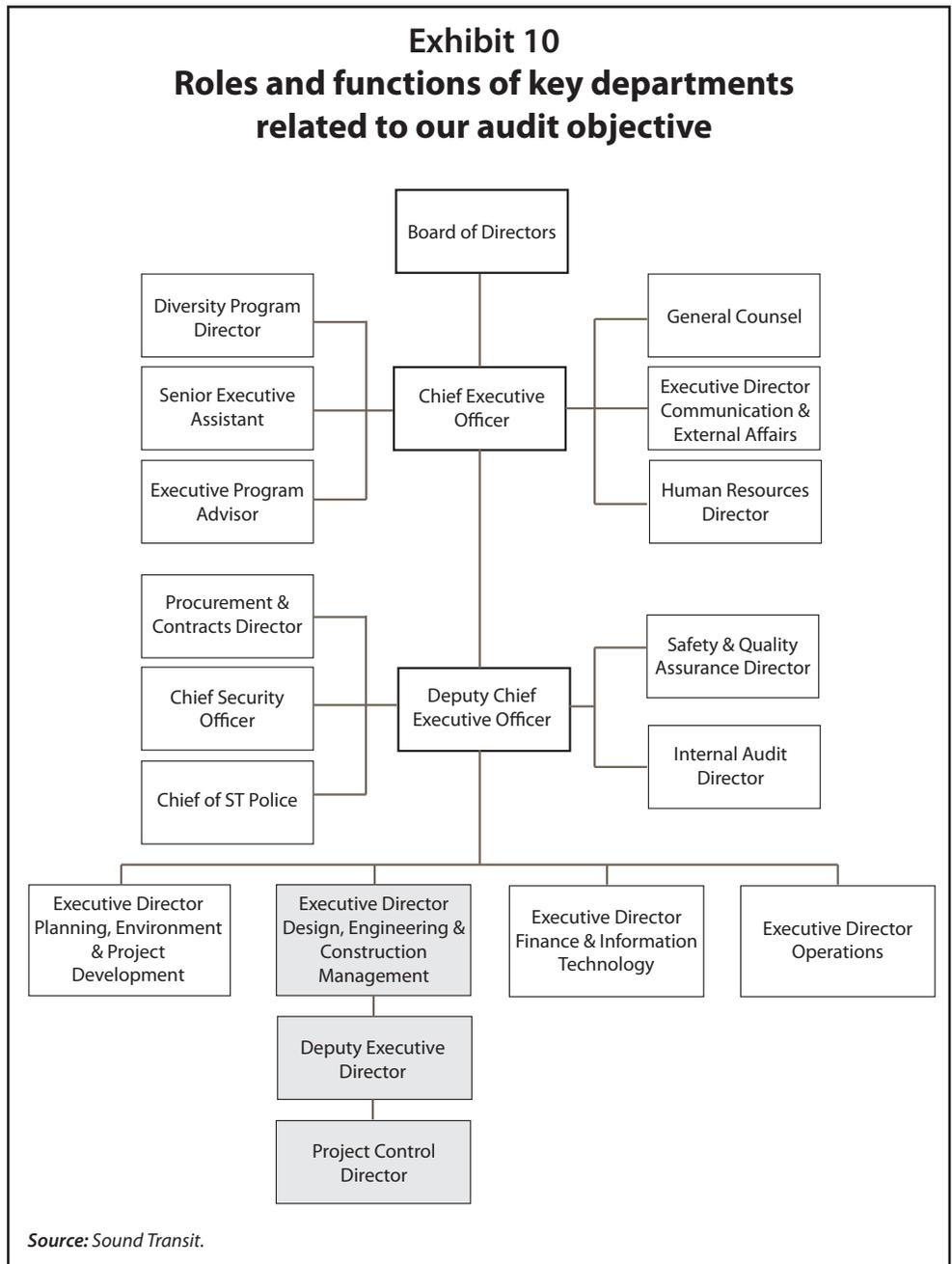
Our review of Sound Transit’s actions to address the 2007 audit report recommendations found that all were put in place in some form. This included the development of new or revised policies and procedures, process modifications, reallocations of resources or additional emphasis on specific activities. The details of our work along with a few new recommendations are shown at Appendix L.

**Organizational Structure Changes**

**Issue 3. Following our audit inquiries, Sound Transit’s Project Controls Division now reports to the Executive Director of Design, Engineering and Construction Management.**

**Background**

Sound Transit modified its organizational structure in 2009 to focus on the Agency’s primary lines of business: Link, Sounder, and Regional Express. Planning, Environment, and Project Development (PEPD), Design, Engineering and Construction Management (DECM), and Operations were functionally aligned to respond to the Agency’s role as a transit operator and with the onset of the ST2 capital expansion program. Its 2009 organization chart (abbreviated) is shown in Exhibit 10.



## **Roles and Functions of Key Departments Related to our Audit Objective**

### ***Planning, Environment, and Project Development (PEPD)***

PEPD is responsible for system planning related to ST2; project-level planning including alternatives analysis and conceptual and preliminary engineering; and environmental planning pursuant to state and national environmental laws.

Once project development is complete and project scopes are defined, lead project management responsibility shifts to Design, Engineering, and Construction Management (DECM).

### ***Design, Engineering, and Construction Management***

DECM oversees final design and construction of all major capital investments. From inception to completion of each capital project, DECM provides project engineering; project and construction management; project control (discussed below); community outreach; and real property management (property appraisal, acquisition, management, and disposition).

### ***Operations***

Operations is responsible for service delivery for all types of transit; maintenance of parking, customer, and administrative facilities; and purchasing vehicles and equipment. Operations provide information to PEPD and DECM with respect to facilities design.

### **Initial Assessment**

At the inception of this performance audit, we reviewed Sound Transit's current organizational chart to identify its reporting structure, relationships, and how different parts of the organization interacted. The new organizational structure appears to facilitate cohesiveness, communications, and clarity of roles and responsibilities. Interviews indicated that the structure focuses on ensuring staff from both Operations and DECM participate on the project team during the project development phase. Sound Transit staff believes DECM's engagement during the planning phase (as projects progress from conceptual to preliminary engineering) helps ensure effective cost engineering and constructability, including risk management. Staff also believes that the structure encourages departments to collaborate.

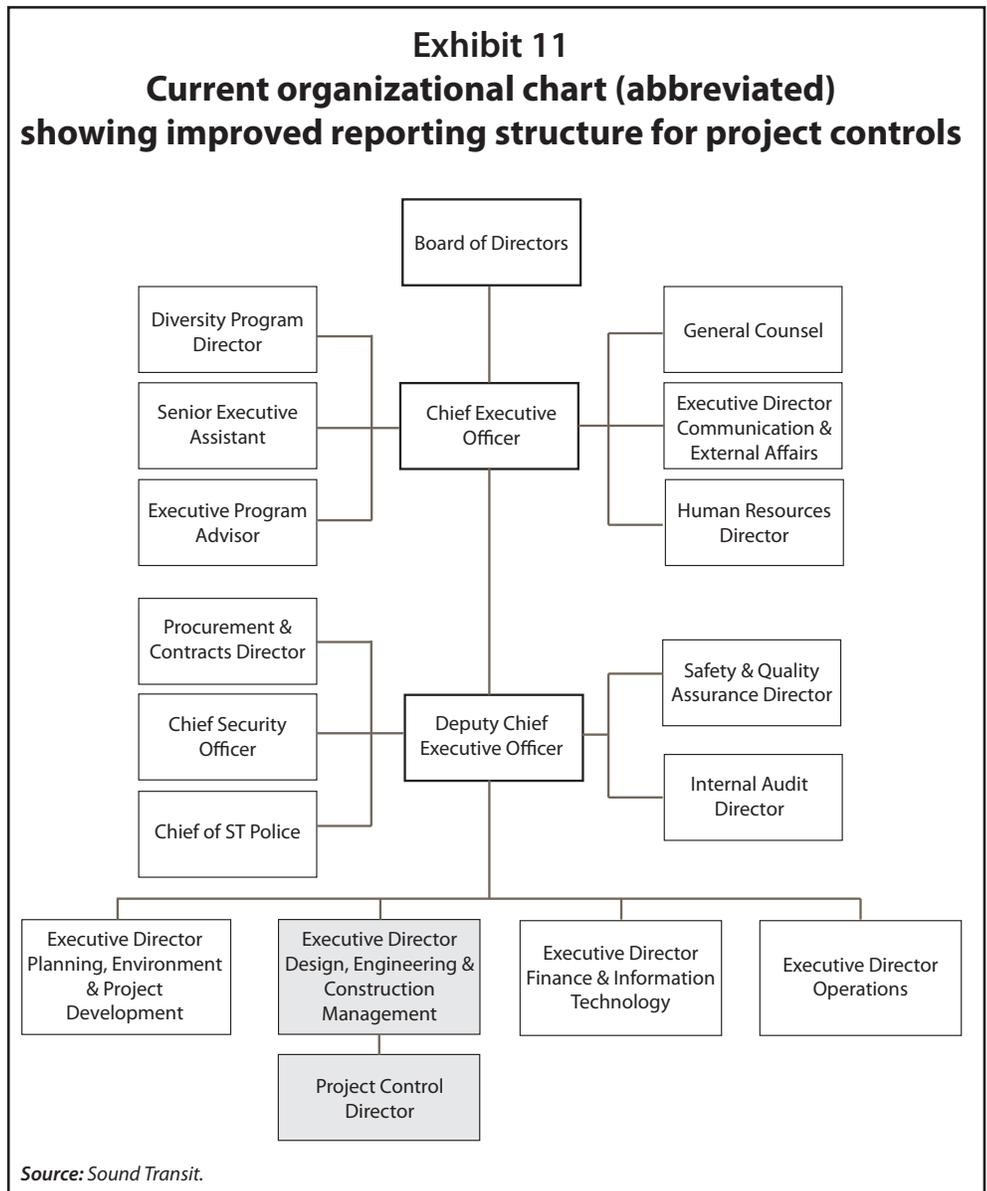
However, as shown in the 2009 organization chart in Exhibit 10 above, our review also found that the Project Controls division was placed under the Deputy Executive Director for Business Services, who in turn reports to the Executive Director of DECM. By placing the function of project controls deeper in the structure, we saw potential for a loss of independence and effectiveness.

Project Controls include planning, scheduling, and project reporting; earned value analysis and management; cost engineering and estimating; change management and controls; and risk assessment and management. Project Controls encompass the people, processes and tools used to plan, manage, and mitigate cost and schedule issues and any risk events that may affect a project. Sound Transit's project controls function is integral to successful construction projects. The successful performance of a project requires a strong project plan and effective schedule control. It is widely recognized that poor planning and monitoring are a major cause of project failures. The Project Management Institute, a recognized industry source, emphasizes the importance of project control through planning and all other project phases .

**Conclusion**

Project Controls provides organizational consistency and communication through the Phase Gate Process (see Issue 4), the Lessons Learned Program and in the planning, procurement, contract, design and construction phases.<sup>8</sup>

In response to initial audit inquiries as to the positioning of Project Controls, as of May 1, 2012, Sound Transit again re-organized. As shown in its current organization chart in Exhibit 11 below, the function now reports directly to the Executive Director of DECM. Because of its new reporting structure, Project Controls can now perform both functions in a more effective and independent manner.



8 Project Management Institute: A Guide to the Project Management’s Body of Knowledge (PMBOK Guide); Fourth Edition.

## Use of the Phase Gate Process

**Issue 4. Recognized as a leading practice, Sound Transit's Phase Gate Process should contribute to the communications and approvals that are necessary for a successful ST2 program, but it can also cause delays if not properly managed.**

### Background

Sound Transit established the Phase Gate Process in July 2005 through its Administrative Policies & Procedures (APP No. 24). The process conceptualizes capital projects as a series of phases and gates. Phases represent logical groups of activities carried out within the confines of the project while gates represent key transition and/or decision points along the project's progression. Gates undergo multidisciplinary project review meetings to determine organizational readiness and financial affordability to decide if the project is ready to advance. Each requires all departments to sign off on the project at certain milestones. Board approval is required to select project alternatives and the final scope of the project as well as to authorize project budgets in stages.

The Phase Gate process, driven by Finance, is the Agency's management oversight and budget approval tool that engages the Board in key project decisions, especially scope, budget and schedule issues. The intent of the process is to build accountability and transparency while providing a forum for checks and balances and communications.

The eight gate process includes:

- Gate 1 - Enter Project Development
- Gate 2 - Identify Alternatives
- Gate 3 - Identify Preferred Alternative
- Gate 4 - Enter Final Design
- Gate 5 - Establish Baseline
- Gate 6 - Proceed to Construction
- Gate 7 - Transition to Operations
- Gate 8 - Close-out Project

### Initial Assessment

The Project Management Institute recognizes the use of a Phase Gate system to manage and monitor capital projects as an industry best practice. "Project phases are divisions with a project where extra control is needed to effectively manage the completion of a major deliverable. The phase structure allows the project to be segmented into logical subsets for ease of management, planning and control."<sup>9</sup>

### Conclusion

The Phase Gate process Sound Transit uses is a proven tool for management of capital programs. As the Agency prepares for increased ST2 project activity, it will be necessary to ensure it follows the process without delaying or negatively affecting project schedules and budgets.

APP No. 24, section 11.0, identifies circumstances that allow for some flexibility and exceptions to not unnecessarily burden the process. That said, the volume of projects will inevitably increase pressure on the Phase Gate process. It will be important for Sound Transit to track and quantify the time it takes for capital projects to move through the process, as well as make provisions for fast-tracking as needed. Additionally, we advise Sound Transit's Board to be ready and highly responsive when Board actions are required to facilitate the success of the process.

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<sup>9</sup> Project Management Institute: A Guide to the Project Management's Body of Knowledge (PMBOK Guide).

## Life Cycle Costing

**Issue 5. A broader and more structured Life-Cycle Cost Analysis would likely yield sizeable savings.**

### Background

Life-cycle cost analysis quantifies the costs of alternative investment options for a given project. The financial impact of a project is evaluated based on an analysis of all initial costs and discounted future costs throughout the life of an alternative. By taking into account all costs that would occur throughout the life of each option, life-cycle costing helps identify the lowest cost alternative and provides other critical information for project decision-making.

The Federal Highway Administration (FHWA) promotes life-cycle costing as a useful tool. The FHWA believes that this analysis can help transportation agencies choose the most cost-effective project alternatives and communicate the value of those choices to the public. Life-cycle cost analysis can be used to study new construction projects or to examine preservation strategies for existing transportation assets.<sup>10</sup>

It helps determine which design alternative results in the lowest total cost to the agency over the life of the project. Through the estimation of future costs in constant dollars and discounting these costs to a "present" value, the alternative with the lowest life-cycle cost is viewed as having the lowest financial effect even if it has higher initial costs.

Agencies may apply life-cycle costing to a wide variety of investment-related decisions to get the best return on the dollar. They should conduct it as early in the project development cycle as possible using time horizons that are sufficient to reflect long-term cost differences.

### Initial Assessment

Sound Transit's current Procurement and Contract Administration Manual contains no reference to adopting life-cycle costing techniques or procedures within contracts to require their use. Its 2011 Design Criteria Manual (DCM) currently does not use life cycle costing on specific projects. However, as a part of the Sound Transit's Sustainability Initiative, the Agency intends to develop a Total Cost of Ownership (TCO) policy and procedure. TCO includes financial analysis that evaluates the cost of a product from purchase to disposal including direct costs such as operating costs and general maintenance over the life of a product and appropriate indirect costs associated with staff or contractor productivity, social considerations and environmental impacts.

While the development and implementation of Sound Transit's policy and procedure is on-going, its DCM Manual has been updated to include a chapter on sustainability that addresses Total Cost of Ownership. The chapter requires that a TCO analysis be performed for design decisions associated with specific measures. The extent of the TCO analysis depends on the final design budget and SOW for final design.

Sound Transit has indicated it intends to perform life cycle cost analysis during the design of a project. Two examples were identified that showed a lifecycle cost analysis on elements of projects that were being designed;

- Lighting systems in the South Link Airport to S. 200th Street parking structure
- Lighting systems in the tunnel segments of the North Link – University of Washington to Northgate project

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<sup>10</sup> FHWA – Improving Transportation Investment Decisions Through Life-Cycle Cost Analysis.

However, its use of Total Cost of Ownership focuses only on an element associated with sustainable design measures within a project – not all elements and costs as recommended by the FHWA. Moreover, Sound Transit has quantified the differential costs of alternative investments at just one point in the element's life cycle. A risk associated with this single point quantification is that the financial outcomes could change if the external factors used in calculating those outcomes change. Additionally, our review of two Sound Transit exercises relating to life-cycle costing and Total Cost of Ownership found the agency's contracts did not require the use of life-cycle costing analysis. However, Lessons Learned processes have identified potential life-cycle costing issues such as specifications for bonding agents based on the performance of previous installations.

The DCM should state the parameters and scope of the life-cost analysis/total cost of ownership approach to any given project. The scope should apply beyond the design phase and onto construction and operation.

Examples of the benefits obtained by other project owners who used life-cycle costing analysis include:

- An analysis on alternative concrete bridge deck designs compared a conventional steel expansion joint system (A) to a link slab bridge deck design (B). It found that the total life cycle cost of option "A" was \$35.7 million compared to \$22.6 million for option "B". Analyzing initial design and construction costs, maintenance and repair, environmental indicators and social costs revealed the best alternative.
- A comparison of the life-cycle costs of LED street lights with normal incandescent lamps and high pressure sodium street lights with the same brightness found that use of LED lights would result in annual savings of \$1,389,500 (incandescent) and \$637,000 (sodium).

Although it is difficult to extrapolate these benefits to Sound Transit projects, the success of other organizations using these approaches indicate potential savings. The development and use of them should lead to more efficient and sustainable design choices. These choices should not be driven only by costs but should consider all aspects and benefits of the project and its users.

#### **Recommendation No. 1**

**We recommend Sound Transit develop a formal policy and procedure for all construction projects focusing on a structured approach to life cycle costing techniques and a whole life cost approach.**

## **Value Engineering**

### **Issue 6. Sound Transit should consider additional value engineering approaches for greater savings and/or value**

#### **Background**

Value Engineering is a technique for analyzing the functions of an item or process to determine best value, or the best relationship between worth and cost. It is commonly used to lower costs while maintaining necessary quality. It is a systematic review and analysis of a project during the concept and design phases, by a multidisciplinary team of persons not involved in the project to provide recommendations for:

- Providing needed functions safely, reliably, efficiently, and at the lowest overall cost

- Improving the value and quality of the project
- Reducing the time to complete the project

Because costs are measurable, cost reduction is often thought of as the sole criterion for a Value Engineering application. Although cost reduction is primary goal, the ultimate objective is value improvement, which may not result in an immediate cost reduction.

Value Engineering originated in the industrial community and is used in all levels of government. The federal government's application of value engineering to projects, processes, and products has demonstrated tremendous success. Annually the Department of Defense reports savings of approximately \$1 billion<sup>11</sup>.

### **Initial Assessment**

In late 2011, Sound Transit initiated a performance audit of its value engineering program. The audit report, released in March 2012, identified a number of recommendations to help improve the Agency's approach to value engineering. The authors of the report used best practices recommended by SAVE International, an organization focused on value engineering. While recommendations in that report offer a number of benefits and procedures that Sound Transit is considering, it should also consider similar approaches such as those promoted by experts in the field and recognized by other international bodies such as the Royal Institution of Chartered Surveyors.

That Institution has adopted a Value Management approach to construction projects. Although very similar to Value Engineering, Value Management is concerned with defining value within a particular context, agreeing a clear statement of objectives and ensuring that solutions are consistent with those objectives. Value Engineering is concerned with achieving defined functions at minimum cost (or whole life cost). Where Value Management addresses the "why" questions - such as why is the project or process needed, Value Engineering is concerned with "how." Also, Value Management is not a single method, but a framework where many methods are systematically brought together to identify better value from projects and services. In this context, VE is regarded as a sub set of VM. The basic methodology for a Value Management and a Value Engineering study are similar.

Value Management has provided substantial cost savings. A 2009 study on the effect of Value Management in Malaysia identified that construction projects that applied the concept had recorded savings on the initial project cost by between 10 percent and 30 percent. The London South Wimbledon Refurbishment Project was commissioned to enhance the passenger environment and improve operational functionality. An intensive value management workshop developed a project plan that achieved many of the originally identified key benefits while it reduced the funds required by almost half.

### **Recommendation No. 2**

**As mentioned previously, Sound Transit has adopted a Value Engineering process to help ensure value and cost reduction. However, we recommend the Agency also consider other proven techniques to determine if they benefit the Agency's projects and operations.**

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<sup>11</sup> Institute for Defense Analyses, DOD Value Engineering Program.

# Issues: Objective 4

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## **Objective 4 - How reliable are the underlying assumptions driving Sound Transit's ST2 ridership model for Link Light Rail, Sounder Commuter Rail and the ST Express Bus? If not, how can Sound Transit improve their reliability?**

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### **Overarching conclusion**

Sound Transit's ST2 forecast requires a growth rate for Link light rail ridership through 2030 that appears to be challenging because:

- It exceeds the growth rates achieved by most transit investments in the United States.
- It is composed of individual assumptions that have proven to be unreliable. Recent economic and employment forecasts indicate continued questions about their reliability. Sound Transit should reassess whether these assumptions still are valid, adjust those that are not, and produce a new, more accurate ridership forecast.
- In estimating ridership growth, Sound Transit relies on a single-point forecast rather than on a range of ridership possibilities. Using a range of forecasts would allow Sound Transit to better address the uncertainties associated with long-range planning.

However, the audit also found ridership forecasts for Sound Transit's Sounder Commuter Rail and Express Bus are substantially on track.

### **Recommendation in brief**

This audit recommends ways Sound Transit can improve ridership forecasting. It also recommends the Agency update its forecasts more frequently to reflect current conditions and to better inform future investment choices.

### **Audit scope and approach**

To accomplish this audit objective, we gained a comprehensive understanding of the process Sound Transit uses to develop its ridership forecasts and to monitor actual ridership, compare it to forecasts, and update those forecasts.

We interviewed Sound Transit employees and asked officials from the Puget Sound Regional Council to explain how they develop regional economic forecasts. We also asked the Federal Transit Administration (FTA) for information on forecasting practices it requires and allows. We evaluated numerous documents and files from Sound Transit, the Regional Council<sup>12</sup>, the state Department of Transportation (WSDOT)<sup>13</sup> and the FTA.

Although many of the issues this audit identifies apply to Sound Transit's ridership forecasting across all types of service, the audit focused heavily on **Sound Transit's Link light rail ridership** forecasting. We chose this focus due to Sound Transit's originally planned \$11.8 billion-plus capital investment in light rail and its forecast that indicate the majority of Sound Transit's ridership in 2030 (and growth through 2030) will consist of **light rail riders**. Sound Transit has indicated further light rail investments are possible.

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<sup>12</sup> The PSRC, composed of central Puget Sound counties, cities, towns, ports, tribes, transit agencies and the state, plan for regional transportation, growth management and economic development.

<sup>13</sup> WSDOT convened an Expert Review Panel to review the ST2 financial plan, including its ridership forecasts.

Our review of the Sound Transit's underlying assumptions driving its ridership model **does not:**

- Review the justification for any transportation infrastructure investments that have been made, are under construction, or are being planned or designed.
- Address whether Sound Transit can or should modify its operations.
- Review the accuracy of Sound Transit's actual ridership numbers.

## Background

### Ridership Modeling

Accurate ridership forecasts are necessary for the planning and operation of transit services and to provide accountability and transparency to citizens and to partner funding agencies, such as the Federal Transit Administration, who have helped pay for Link light rail.

Ridership forecasts contain short-term and long-term components:

- Short-term forecasts are used to plan the most immediate operations and include establishing annual budgets, planning for service changes and tracking ridership performance.
- Long-term forecasts provide the basis for selecting and designing systems that will have sufficient capacity to meet future ridership patterns, while avoiding excess capacity.

Our audit focused on long-term ridership forecasts, specifically for the Link light rail system, because they establish the foundation for designing the transit system and planning the cost of its construction and operation. Nearly two-thirds of Sound Transit's \$17.9 billion in ST2 investment is in the Link light rail system.

### Sound Transit's ridership forecasting.

Based on modeling techniques that factor in socioeconomic and demographic assumptions, Sound Transit conducted its original Link light rail ridership forecasts in 1999 and 2002. These forecasts predicted ridership from the initial opening of Link light rail through 2011 and onto 2020.

Link light rail began operating in summer of 2009. As required by the FTA, Sound Transit recently completed a draft *Before and After*<sup>14</sup> study on how its **actual fall 2011 ridership compared to the 2002 forecasts**. That draft report identifies assumptions that explain why ridership is less than what was forecasted and why these assumptions were inaccurate. Because Sound Transit uses many of these same assumptions and modeling techniques for its 2030 forecast, we analyzed how they performed in 2011.

Most economists did a poor job of predicting the severity of the economic recession of 2007-2009 and the subsequent tepid recovery. Consequently, transportation planners across the nation, PSRC and Sound Transit included, found their forecasts to be severely undermined.

Although Sound Transit could not have predicted the recession, **the audit concludes that other assumptions and some modeling techniques used to forecast 2011 ridership made those forecasts vulnerable to overestimation**. The audit further concludes these same vulnerabilities are present in Sound Transit's forecasts of future ridership. As a gauge, the audit compares the growth required in Sound Transit's ridership to meet its 2030 ST2 forecasts to that achieved by other transit systems. This audit concludes it will be challenging for Sound Transit to meet its 2030 ST2 forecast.

14 The FTA has not completed its review of the draft study or accepted it.

In its *2008 Mass Transit Guide* prepared in advance of the ST2 vote, Sound Transit forecast that 358,000 daily riders would use its services after all ST2 projects had been completed in 2030.

Inherent in Sound Transit’s overall ridership projection is that almost half of the region’s transit riders would use Sound Transit’s services, rather than local agencies’ services (mostly buses). **Sound Transit forecast that Link light rail would carry 86.5 million annual boardings or 280,000 of Sound Transit’s 358,000 daily riders in 2030.** This represents nearly 80 percent of Sound Transit’s total riders and 35 percent of the region’s transit riders.

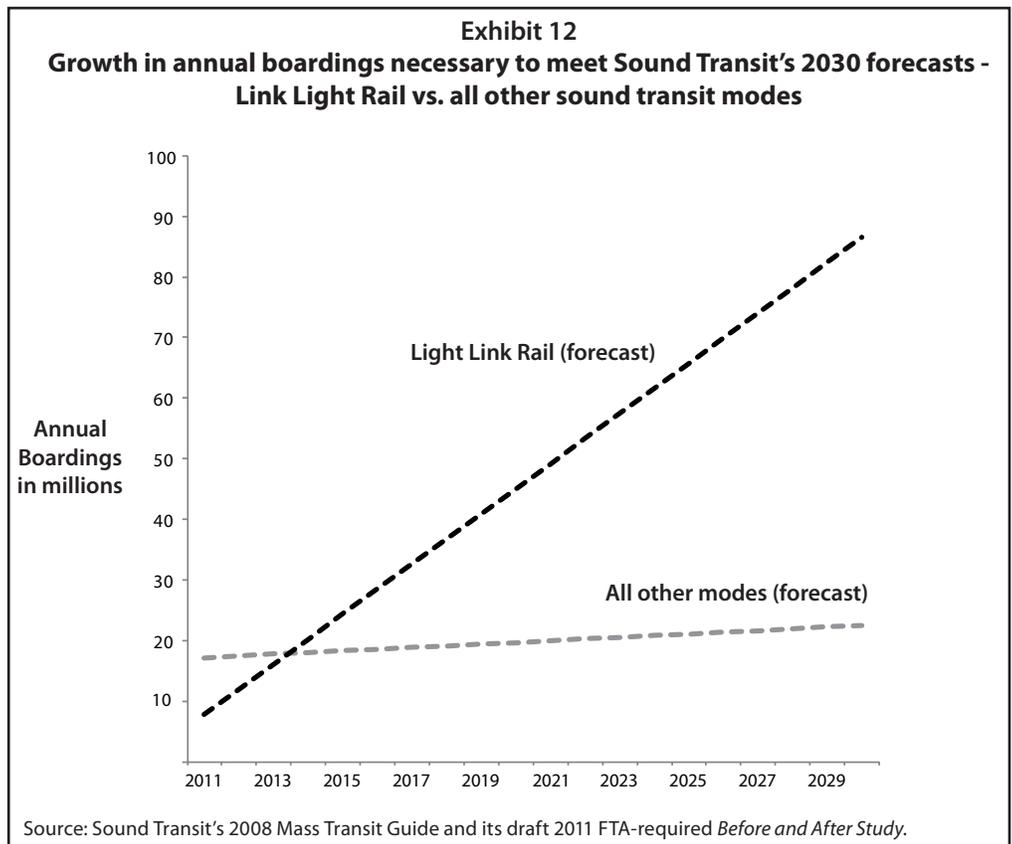
## Overarching Issue

**Sound Transit’s ST2 2030 Link light rail ridership forecast requires a growth rate that exceeds the growth rates achieved by most transit investments in other areas of the United States.**

Given the long lead times associated with planning, designing, and constructing transportation infrastructure (and operational safety testing, in the case of rail), ridership forecasts are prepared many years before service begins. For the initial segment of Central Link light rail, which began operation in July 2009, ridership forecasts were made in 2002. Ridership forecasts were made in 1999 for a more extensive initial segment that included the University District.

**Appendix M** shows scheduled openings for planned and operational segments of light rail that have been funded by Sound Move and ST2<sup>15</sup>. **The current operational segment** of light rail between Westlake and SeaTac Airport **accounts for approximately one-third of funded system miles and stations.**

For Sound Transit to meet its ST2 forecast of 86.5 million annual boardings in 2030, 2011 boardings for Link light rail (7.8 million) must grow at an annual rate of 13.5 percent for the next 19 years, as shown in **Exhibit 12** right. This rate is based on ridership forecast assumptions made in 2008 and discussed at **Issue 1**, below.



15 Light rail segments for which construction funding sources have not yet been approved - to Everett, Redmond, and Tacoma – are not included.

The 2023 completion of all Sound Move and ST2 extensions will expand Sound Transit's current Link light rail system by 36.7 miles or 235 percent. Even with this expansion, the comparisons below show that Sound Transit's required 13.5 percent growth rate is challenging<sup>16</sup>.

**Sound Transit's required growth rate exceeds the growth rates that most U.S. transit investments have achieved.**

We are aware of only two U.S. transit systems that have achieved a 13.5 percent growth rate. These and other agencies that have come closest are as follows:

- Largely through a 504 percent increase in system mileage<sup>17</sup>, the San Diego Trolley system grew its ridership by a compound annual growth rate of 11.4 percent between 1983 and 2001. San Diego's 11.4 percent growth rate was achieved over an 18-year period, which is most comparable to the 19-years that fall between 2011 and Sound Transit's forecast of 2030 ridership.
- Also by way of system expansions, other light rail systems (Denver, San Jose, Portland, and Los Angeles Metro) have grown by slightly higher rates (14.4 percent, 13.6 percent, 12.2 percent, and 11.7 percent respectively), but over shorter durations (6 to 13 years).

**Overarching Recommendation:**

Sound Transit should revise its forecasts using a range of more realistic growth rates. To do so, it will need to adjust its underlying assumptions and its ridership forecasting (modeling) approach as discussed further in the report.

## Results

**Issue 1. Assumptions used to support 2011 forecasts have proven unreliable, and if not adjusted, some may cause Sound Transit to overestimate future ridership.**

**Link light rail ridership to date has been less than what Sound Transit forecasted in 1999 and 2002.**

Use of Sound Transit's services has been increasing since 2006. Excluding Link light rail, combined ridership for all other Sound Transit modes already totals more than three quarters of the 2030 forecast. However, ridership for Link light rail's Westlake to SeaTac segment has more ground to cover. Below is the gap between projected Link light rail ridership and actual ridership as of fall 2011:

- **Link light rail's weekday boardings of 23,900 were 32 percent lower than predicted in 2002 (35,200).**
- **Link light rail's annual boardings of 7.8 million were 27 percent lower than predicted in 2002 (10.7 million).**

Sound Transit's 2012 Service Implementation Plan indicates the agency expects to achieve the predicted 2011 weekday and annual boardings in 2016.

**Forecasts for 2011 Link light rail ridership were based on assumptions that have proven to be unreliable.**

The initial segment of the Central Link light rail system opened in July 2009 with an extension to SeaTac Airport in December of that year. Because the FTA funded more than \$500 million of this \$2.7 billion segment, it required Sound Transit to conduct

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<sup>16</sup> Sound Transit's 2012 Financial Plan contains a 2030 forecast of 83.9 million annual boardings, which requires a 13.33 percent annual growth rate versus the 13.5 percent rate cited above.

<sup>17</sup> Ridership Trends of New Start Rail Projects, CUTR, August 2003 <http://www.nctr.usf.edu/pdf/350-11.pdf>

what is called a Before and After study. Sound Transit provided a draft of this study in late July 2012. It includes an analysis of ridership for the first two years of service. The FTA is reviewing the study and it is subject to change until it is finalized. However, it compares the 2011 forecast made in 2002 to the actual 2011 ridership shown above and provides a comprehensive summary of the factors that affected the accuracy of the assumptions that drove the ridership forecast.

In its draft *Before and After Study*, Sound Transit discusses eight forecast assumptions that explain most of the ridership shortfall. In the chart and narrative below, we **examine only those assumptions that likely will lead to an overestimate of future ridership** if Sound Transit does not adjust them. During the audit, we suggested to Sound Transit that it may wish to re-run its ridership model using the actual outcomes as listed in the column entitled “Reality” in the table below. This would help to validate the model’s overall reliability. Because of the extensive amount of time required to do this, the Agency determined it could not meet this request. Consequently, and in discussion with Sound Transit, we made our own qualitative assessment of the relative effect of the accuracy of each assumption on the overall ridership forecast.

**Exhibit 13** below summarizes the assumptions that resulted in an overestimate of 2011 ridership and that likely will cause an overestimate of future ridership if current forecasts are not adjusted.

<b>Exhibit 13</b>		
<b>Assumptions made in Sound Transit’s draft Before and After Study</b>		
<b>Assumption</b>	<b>Reality</b>	<b>Relative effect on forecasts of future ridership if not adjusted</b>
<p><b>A.</b> Economic growth is consistent with historic trends. PSRC employment forecasts for Downtown Seattle, made in 2006 remain accurate.</p>	<p>Still recovering from the recession. 79,000 fewer jobs in 2010 compared to 2002 forecast. Long-term forecasts for downtown Seattle jobs are lower than those used in 2008 to forecast 2030 ridership.</p>	<p>Major reduction; reduces overall demand for travel. Employment forecasts are a major component of the ridership forecasts. Sound Transit believes these items explain 75 percent of the 2011 ridership shortfall.</p>
<p><b>B.</b> Adoption of new transit Service in Rainier Valley Corridor is complete by 2011. Adoption of the ORCA Card is also complete by 2011. Metro Transit Services are integrated with light rail by 2011.</p>	<p>Adoption is occurring at a slower rate than expected. Integration is occurring at a slower rate than expected.</p>	<p>Moderate reduction; Sound Transit believes these items partly explain 10 percent to 15 percent of the 2011 ridership shortfall.</p>

Sound Transit’s factors A and B are discussed in detail on the following pages. Their explanations are accompanied by our assessment of each. The quotes in the boxes that follow are taken directly from Sound Transit’s draft *Before and After Study*.

### **A. Effects of economic recession and lower than expected employment in downtown Seattle**

The Puget Sound region, along with national and global economies, experienced a major economic recession starting in 2008 and was still recovering in 2011. The recession affected transit ridership. In King County, Metro experienced an 8% decline in ridership between 2008 and 2010 before ridership increased about 3% from 2010 to 2011. Higher unemployment affected large economic sectors in downtown Seattle, such as government and banking. It is anticipated the local economy will continue its recovery and return to a healthy growth level between 2012 and 2014.”

“Sound Transit’s ridership model uses economic forecast information provided by [the Puget Sound Regional Council], including employment forecasts. In 2010 there were an estimated 79,000 fewer jobs in downtown Seattle than forecasted by the PSRC...the employment forecast for downtown Seattle in 2010 was 210,000 jobs. In May 2012 PSRC published an updated total for 2010 employment in downtown Seattle of 131,000 jobs.”

– Sound Transit draft Before and After Study

**For reasons discussed below, Sound Transit should use updated PSRC assumptions about regional economic growth and employment or it may continue to overestimate future Link light rail ridership.**

**Economic modeling does not typically assume prolonged recessions with slow recoveries.**

When Sound Transit developed its 2002 ridership forecasts as a condition of obtaining FTA funding, the United States had emerged from a brief economic recession. Recessions are not explicitly modeled in the economic and demographic data generated by the PSRC and used by Sound Transit for long-term ridership forecasts. Most forecasters assume that over a period of decades, the economic effects of recessions will smooth out. However, an economic recession that is harsher or lasts longer than normal will undermine this assumption.

**For the following reasons, the recent recession and slow recovery undermined typical economic assumptions as used by Sound Transit in its forecasts of 2011 and 2030 ridership.**

- Greater than expected decline in United States Gross Domestic Product.
- Slower recovery, compounded by the ongoing risks of new recessions in Europe and elsewhere.
- Ongoing uncertainty regarding global oil supply, leading to an elevated cost of crude oil, which in increases costs for transportation and transportation-dependent industries.

In fact, the Puget Sound Regional Council recently lowered its forecast for the region’s economic activity through 2020 and 2040. Its 2012 forecast assumes that the economic activity supporting future sales and fuel tax will be approximately 3.8 percent and 8.1 percent (2020 and 2040) lower than what its 2006 forecast assumed<sup>20</sup>.

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18 Pages 16 and 17 of the Puget Sound Regional Council’s TRANSPORTATION 2040 2012 Action Strategy per <http://psrc.org/assets/8514/2012ActionStrategyFINAL.pdf>

**Assumptions about downtown Seattle employment, used in Sound Transit's forecasts of 2011 and 2030 ridership, were too high. PSRC now indicates that lower employment across the broader Puget Sound Region will likely persist for several years.**

In the draft *Before and After* study, Sound Transit indicates its fall 2011 average weekday ridership was 32 percent lower than its 2002 prediction of 35,200. To explain why ridership came in lower than predicted, Sound Transit indicates there were nearly 38 percent fewer jobs in downtown Seattle in 2010 than what was estimated in its forecast. Although the shortfall in jobs appears to explain most of the shortfall in ridership, the study does not address that this trend may continue across the broader Puget Sound region for several years.

The PSRC is updating the region's long-term employment and economic forecasts. Its draft 2012 forecast for 2020, 2030 and 2040 indicates employment in downtown Seattle and the Bellevue Central Business District could be significantly lower than the 2006 forecast. In net, the 2006 and 2012 forecasts are not that different for 2020, 2030 and 2040 employment across Northgate, SeaTac and the University of Washington. However, the PSRC indicates that preliminary estimates of future employment for these five areas<sup>19</sup> could change as it finalizes its 2012 forecasts. Conversely, it does not anticipate significant changes to its preliminary estimates of 2020 and 2030 employment for the broader Puget Sound region once forecasts are finalized in late 2012.

The PSRC's draft 2012 forecast<sup>20</sup> assumes the region's future employment will be lower than the 2006 forecast as follows:

- 2012's forecast of 2020 employment is expected to be 5.7 percent lower than forecast in 2006
- 2012's forecast of 2030 employment is expected to be 7.2 percent lower than forecast in 2006.

### **Recommendation No. 1**

**Sound Transit should lower its long-term ridership forecasts to reflect:**

- **Lower assumed economic activity for the future that is consistent with the slow economic recovery and the PSRC's lower 2012 forecasts.**
- **A lower level of assumed employment that is consistent with the PSRC's lower 2012 forecast. Sound Transit will also need to review the PSRC's area-specific employment forecasts for downtown Seattle, the Bellevue Central Business District and other service locations once those forecasts are finalized at the end of 2012.**

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<sup>19</sup> These five planned and present Link light rail service areas are shown at **Appendix N**.

<sup>20</sup> As of August 2012.

**B. Rainer Valley residents have been slow to adopt light rail in part because of Sound Transit's recently adopted ORCA card and slower than expected service integration among transit agencies, which Sound Transit indicates could take another 10 years.**

"Major transit-dependent populations in the Rainier Valley have not yet fully adopted Link as a transit option. Outreach efforts have shown reluctance by many low income and non-English speaking populations in the Beacon Hill and Rainier Valley neighborhoods to change long-established travel patterns of using local bus routes...

"The region's transit agencies, including Sound Transit, launched a new electronic fare payment system in June 2009, one month before Central Link opened for service. Sound Transit also adopted a policy that requires an ORCA card in order to transfer between buses and trains without having to pay twice. However, Metro adopted a policy to continue distributing free paper transfers for cash-paying riders, which may have reduced the use of ORCA cards for...low income and non-English speaking riders. Riders without an ORCA card face a stiff fare penalty when transferring between local buses and Central Link, because they must pay the full cash fare for each service.

"Transit network changes feeding the light rail stations have been implemented incrementally. Some competing transit services were left in place after Central Link opened for service. Route 7 Express, for example, still operates between Rainier Valley and downtown Seattle, and Route 106 continues to operate to downtown Seattle via Rainier Beach. There is a lack of frequent feeder bus routes that connect neighborhoods to light rail stations, especially at Mount Baker, Columbia City, and Rainier Beach Stations. New feeder routes are still being implemented and will continue to change over time. For example, Metro has recently adopted a new route 50 to begin service in fall 2012, with higher service levels connecting nearby neighborhoods to Columbia City and Othello Stations. The estimated length of time it will take to fully modify the route network to support the 2020 ridership forecast could be about 10 years."

– Sound Transit draft Before and After Study

**For reasons discussed below, Sound Transit should use more realistic assumptions about the timing and extent by which Rainer Valley bus riders will transfer to Link light rail or its forecast may continue to overestimate future ridership.**

**It is plausible that socioeconomic factors are contributing to transit users' reluctance to use Link light rail in the Rainer Valley.**

According to the FTA, a reluctance to use light rail has also been observed in Washington D.C. **While the reasons for the D.C. observation have not been determined,** Sound Transit's experiences in the Rainier Valley lead the FTA to consider it plausible that both situations may be associated with the socioeconomic and demographic characteristics of the local communities. Sound Transit indicates its subsequent forecasts will extend the Rainer Valley adaption period from two years after the initial opening to seven. For reasons cited below, the reluctance seen to date could last even longer.

**Reluctance to use Sound Transit's ORCA Card likely has limited Link Light Rail ridership to date.**

Sound Transit has adopted ORCA Card technology as its sole payment system for Link light rail transfers. ORCA cards can be attractive to users because of their flexibility, ease of use and security features. However, maximizing the use of any new technology depends on a combination of education, understanding and willingness to change. This may be especially true for individuals who are unfamiliar or uncomfortable with electronic banking systems. A recently published FDIC survey indicated that 8.2 percent of all US households do not have checking or savings accounts. This rises to up to 28.2 percent for select demographic groups such as minorities, foreign born non-citizens, and low income households. While the lack of a banking account does not prevent use of an ORCA card, it may indicate a leaning towards cash payments.

In contrast to Sound Transit's payment approach, King County Metro acted to ensure the long-standing system of free paper transfers was retained after ORCA Card technology was deployed. This has likely contributed to the ongoing reluctance of Rainer Valley residents to use light rail services. For travelers who can continue to pay fares in cash and to use paper transfers without penalty, adoption rates will likely be lower.

Sound Transit considers the ORCA card's overall effect on ridership to be relatively minor. Sound Transit anticipates the ORCA card will have an even smaller effect in other parts of the region as light rail services expand.

**Forecasts assumed King County Metro would adjust its bus service more quickly to accommodate Link light rail. Sound Transit indicates delays in integration may continue for 10 more years.**

Although planners for the respective agencies discussed in 2002 how bus services could be modified to complement light rail services, King County Metro was not obligated to make these modifications when Sound Transit opened its Link light rail service in 2009.

An extensive list of bus service changes that were expected to occur in the 2002 forecast has been provided in the draft Before and After study, together with a list of changes that actually occurred. It shows that overall service hours for buses in the corridor were slightly higher in 2011 than in 2008. In response to concerns from local communities, King County retained some bus services that were originally planned to be discontinued. These factors have likely contributed to the ongoing reluctance of Rainer Valley residents to use light rail services.

Although changes to bus services are planned for September 2012 and are expected to encourage more transfers between bus and light rail services, these changes still are less than the optimal integrated bus service reorganization Sound Transit's current forecasts assume. Final authority for such bus service reorganizations rests with the partner agency, and those reorganizations may not be complete until many years after light rail is operational. For the initial Link light rail segment, Sound Transit indicates it may take 10 more years for all changes to occur.

**Recommendation No. 2:**

**Sound Transit should update its forecasts to incorporate assumptions that acknowledge:**

- **Riders' reluctance to use Link light rail in the Rainer Valley.**
- **The slower than expected service changes being made by its partner transit agencies.**

**Issues 2a-b. Some of its modeling techniques make Sound Transit's near-term and long-term ridership forecasting more vulnerable to uncertainty.**

Short-term ridership forecasts are used as the basis for establishing annual budgets, planning for service changes and tracking ridership performance. Unlike its approach to long-term forecasts, which incorporates various economic and demographic assumptions, Sound Transit establishes its short-term forecasts by applying a growth factor to the most recent year's ridership totals.

Short-term forecasts are made annually for the coming six years, primarily based on expected changes to service levels. Sound Transit recently has refined its approach to short-term forecasting by using a third-party expert to advise it on current and expected socioeconomic factors. It remains to be seen whether this results in more reliable short-term forecasts.

For example, one area of concern relates to short-range forecasts for the Central Link segment. Light rail did not operate prior to 2009. This gives Sound Transit insufficient ridership history on which to forecast anything more than a "best guess." The Agency is expecting a large increase in light rail ridership when University Link becomes operational, scheduled in 2016. This will be followed by other extensions through the early 2020s.

The Agency's uses a single point for both long-term and short-term forecasts, rather than ranges. Our audit found Sound Transit could better address long-term and near-term uncertainties if it adopted range forecasts. Sound Transit's use of synthetic modeling could help establish those ranges.

**Issue 2a. Sound Transit's use of synthetic modeling should benefit its system-wide Link light rail ridership forecasting.**

Sound Transit has a long history of using transportation models for its ridership forecasting. In developing forecasts for the Sound Move and ST2 projects, the Agency opted for the development and use of a ridership forecasting model partially based on the PSRC's regional, long-range travel demand model.

**Differences between synthetic and incremental forecasting models.**

A synthetic model typically develops ridership forecasts from the ground up on the basis of components previously identified (travel behavior/demand and transportation system infrastructure and service). In contrast, an incremental model uses an existing observed level of ridership to build future ridership increments on the basis of demographic changes, highway congestion changes, and/or transit service changes. Because the latter forecasting process starts with observations of existing levels of ridership, incremental models are suitable for developing ridership forecasts for the expansion of existing transit system services. Synthetic models, on the other hand, are not constrained by the need for ridership observations as their basis and can be used to develop forecasts for new transit systems and services.

**Stages of Sound Transit's incremental ridership forecasting model.**

Sound Transit's incremental model for ridership forecasting performs calculations in three stages:

- Stage 1 estimates overall growth in travel related to population and employment growth, based on PSRC's economic forecasts.
- Stage 2 estimates ridership changes related to changes in highway congestion and costs, using PSRC's regional highway model.

- Stage 3 estimates ridership changes related to transit service changes, including fares.

**Sound Transit use of synthetic ridership modeling along with its incremental modeling should prove beneficial for new light rail projects.**

The exclusive use of an incremental model for forecasting ridership for new light rail projects has these limitations:

- The incremental model typically is more applicable to existing transit systems and services.
- Uncertainty as to what extent any highway congestion relief, due to new transit service, has been properly considered, including the longer term equilibrium between highway and transit travel demand.

However, Sound Transit continues to embrace the use of synthetic modeling alongside its incremental model to more fully address the regional transportation effects of future systems expansions. This has the potential to strengthen or validate future ridership forecasts associated with Sound Transit's more immediate Sound Move and ST2 investments and also may help:

- Develop forecasts for any possible future ST3 investments.
- Inform Sound Transit about how all planned investments may interact with one another and the broader inter-modal transportation system. Such information may help Sound Transit select any future ST3 investments with the greatest value.

**Recommendation No. 3:**

**Sound Transit should continue its use of incremental and synthetic modeling for forecasting ridership related to future transportation investments. For major regional road and transit investments in the future, the Agency should discuss the proper mix and use of models with the Federal Transit Administration, the Puget Sound Regional Council, the state Department of Transportation and its local transportation partners.**

**Issue 2b. Given the uncertainty associated with transportation forecasting, Sound Transit can improve risk management and heighten public awareness through the use of forecast ranges.**

Sensitivity testing is a traditional technique employed by transportation planners and others who work in the field of forecasting. Uncertainty typically increases as the forecast period extends into the future. Sensitivity testing is used to gain an understanding of how sensitive a forecasting model is to the data that is entered into it.

Transportation planners typically express forecast in single points, such as 50,000 riders per day in 2015. Single-point forecasts are exceedingly definitive but usually inaccurate. The level of uncertainty associated with predicting the actual number is extremely high and increases as time frames are extended. If the actual number of riders turns out to be 40,000 per day, the forecast of 50,000 riders will likely result in scrutiny and a loss of credibility.

### **Sound Transit does not use ranges in its forecasting.**

Consistent with typical transit industry practice, Sound Transit does not use ranges in its forecasts. Sound Transit reports its agency-wide ridership forecasts, which are incorporated into its annual Service Implementation Plan, and those for its planned light rail extensions, as single-point forecasts. This occurs although the time horizon for the former may be for as little as one year and the latter several decades into the future. There are several reasons for this approach:

- Forecast ranges require more analysis, such as revenue estimates, than single-point forecasts.
- Applications for federal funding typically require only single-point forecasts.
- For environmental impact studies, Sound Transit generally assumes the case with the greatest environmental effect, so forecasting a low estimate could complicate environmental reviews.

### **Use of range forecasting would help Sound Transit manage risk.**

Given the uncertainty associated with transportation forecasting, Sound Transit should use forecast ranges. At a minimum, it should do so for long-term forecasting associated with major expansions. Doing so would also assist Sound Transit in planning for any possible future ST3 investment package.

While Sound Transit cannot influence the timing, scale, or direction of economic trends, it can address the influence each has on its ridership forecasts. Ranges and other established modeling techniques can be used to address these uncertainties in long term ridership forecasts. High and low estimates also can help Sound Transit plan for contingencies regarding investment or operations. Such techniques also can be used to address what might happen in the aftermath of certain events, such as a large-scale natural disaster.

### **Using forecast ranges will have immediate benefits:**

- Enhanced risk management regarding fare-box revenue forecasts.
- Improved public awareness of the uncertainty associated with long- and short-range ridership forecasts. This is especially important in situations in which the uncertainty around a single or 'best' forecast is large.

It will cost more to generate forecast ranges. However, the Puget Sound Regional Council is now using ranges in its forecasting to address uncertainty. Sound Transit uses PSRC's forecasts as data for its ridership forecasts.

Using a range of forecasts that reflect the uncertainty in long-term trends will increase the strength of Sound Transit's ridership forecasts, and highlight the uncertainty associated with them. Given Sound Transit's long-term ridership forecasts are partially dependent on the PSRC forecasts – its use of ranges will ensure consistency in how the two agencies approach uncertainty.

### **Sound Transit could use forecasting ranges to make a more complete case to the FTA when seeking grant money. Use of ranges has benefits that are recognized by the FTA.**

FTA's evaluation of Sound Transit's future funding applications may also be affected by more complete information. The FTA notes its own internal challenges with forecast ranges, but recognizes they enable a more reliable analysis of ridership and related benefits compared to single-point forecasts.

Under some circumstances, FTA's rating of a funding application may differ depending on whether it uses the low or high end of the forecast ridership range. This could be beneficial if it indicates at the low end of the forecast range that the New Starts application does not represent a good return on investment. In effect, this would compel Sound Transit to refine its application before federal and local funds are committed to the project. The FTA has acknowledged that ridership forecasts for new rail projects (not specifically Sound Transit) have a history of proving to be "optimistic".

**Recommendation No. 4:**

**Sound Transit should:**

- **Modify its approach to forecasting for major infrastructure expansions through the use of forecast ranges, including a low-end estimate. As part of these efforts, Sound Transit should address how sudden economic downturns and/or other unanticipated events and/or long periods of economic strength and weakness could affect its ridership forecasts. Sound Transit also should consider the implications that different forecasts would have for its capital and operating plans.**
- **Encourage the PSRC to continue to develop forecasts that reflect a broader range of possible outcomes for future planning updates.**

Both recommendations are consistent with the FTA's desire for reliable ridership forecasts.

**Issues 3a-f. Additional ridership information, considerations and updates to its forecasting model are necessary if Sound Transit is planning a future ST3 investment proposal.**

**Issue 3a. Sound Transit is not taking advantage of ridership information in its ORCA System.**

ORCA Card technology is a key feature of the light rail payment system. ORCA can provide detailed data on passenger-travel patterns by time of day, day of week, month to month, and over a period of years. Other major transit systems use this technology. ORCA-type systems are attractive to transit users because of their ease of use and security features. These systems also allow fare collection through automated payments, reducing labor costs and reducing fare losses.

Sound Transit has not taken advantage of this data-rich system to support performance monitoring, targeted outreach, and to better understand how riders use transit services across the region. Such understanding could assist Sound Transit as it plans for any possible ST3 investment package.

**Recommendation 5:**

**Sound Transit should use information in its ORCA system to enhance its research on factors that determine how and why people use its services and other transit services across the region.**

**Issue 2b. Sound Transit should determine what additional information it needs for ridership forecasting so it can better assess potential costs and benefits of any possible future ST3 investments.**

One of the challenges associated with this performance audit has been the difficulty of assessing ridership forecasts at the station and segment levels, and whether light rail riders are new transit users or are transferring from buses, automobiles, or another form of transportation. This information would assist Sound Transit in assessing the cost-benefit of each type of transit investment as it considers any potential ST3 investment package.

**Recommendation 6:**

**Sound Transit should enhance the information gathered on its ridership so it can better assess the cost-benefits of any possible future ST3 investments.**

**Issue 2c. Uncertainty around the reluctance to use light rail highlights the value of the Before and After study and the need to regularly do similar studies so assumptions that affect future forecasts can be adjusted.**

As discussed at **Issue 1b above**, Sound Transit's draft *Before and After* study does not conclusively identify how the socioeconomic and demographic characteristic of light rail riders resulted in lower than expected ridership. This data was unavailable to Sound Transit in its original forecasts and was not collected for the draft *Before and After* study.

Transit-dependent populations in the Rainier Valley have continued to use local bus services even in situations in which light rail may be faster. Sound Transit has identified the need to better understand the reluctance to use light rail in the Rainier Valley, and has taken initial steps to address this.

While Sound Transit is required to prepare only one Before and After study for each FTA New Starts grant, routine monitoring of ridership trends would provide a basis for the timely refining and enhancing the Agency's ridership model. Sound Transit has recently established a Ridership Committee to identify opportunities to enhance ridership. This committee has the potential to assist with such an initiative.

**Recommendation No. 7:**

**Working with its Ridership Committee, Sound Transit should:**

- **Initiate a program to more frequently compare forecasts and actual ridership to assess whether assumptions supporting those forecasts need to be updated.**

**Issue 2d. Sound Transit's modeling assumptions based on the decisions of partnering agencies are uncertain, and outside of Sound Transit's control. More interagency communication is needed to affirm or adjust them.**

**Sound Transit's modeling of bus service reorganizations to synchronize with light rail extensions depends on the decisions of its partner agencies.**

Sound Transit's current forecasts assume optimal complementary bus service reorganizations when a new light rail service becomes operational. However, the fact that today's bus services in the Rainier Valley slightly exceed the levels that operated prior to the commencement of Link light rail highlights a challenge facing Sound Transit's planners. While Sound Transit operates Link, King County Metro decides the level and nature of bus services in the Rainier Valley.

Sound Transit can generally determine the scope and extent of how its own services are reorganized. Through discussions with its local partners, especially Metro, Sound Transit planners also can support the development of complementary bus services operated by those partners. However, final authority for such bus service reorganizations rests with the partner agency and those reorganizations may not be in place until many years after light rail services become available. **For the initial segment** of Link light rail, Sound Transit indicates it may take 10 more years for all bus service reorganization to occur.

**Recommendation No. 8:**

Sound Transit should communicate more with its partner agencies to:

- **Develop ridership forecasts with a range of assumptions regarding the rate and degree by which such reorganizations are adopted.**
- **Through greater inter-agency communication, synchronize its light rail ridership forecast with the transit services its partnering agencies are planning.**

Future operations in the Downtown Seattle Transit Tunnel must be jointly decided, and those decisions are pending.

Sound Transit understands that the tunnel will be used exclusively by light rail in 2021, after the Northgate Extension opens. Prior to this, light rail and bus services may continue to share the tunnel, albeit with a different mix to current arrangements. The mix of Sound Transit and King County services in the tunnel determines how the tunnel's operating costs are shared between the agencies.

While Sound Transit and King County Metro have developed a preliminary agreement on how they will decide which services will operate in the Downtown Seattle Transit Tunnel starting in 2016, they may not finalize those decisions until 2015. Those decisions will determine the extent to which bus services continue in the tunnel once the University Link extension is complete. The uncertainty about this decision may influence the level of future ridership, at least in the near-term.

**Recommendation No. 9:**

Sound Transit should:

**Proactively work with King County Metro regarding future operations in the Downtown Seattle Transit Tunnel.**

**Issue 2e. Sound Transit needs to consider that its ridership appears to consist heavily of former King County Metro riders.**

As Sound Transit indicates in its draft *Before and After* study, the recent economic recession has affected local and national transit ridership similarly. Sound Transit and Metro's combined ridership in 2010 was almost 2 percent lower than 2008 levels, versus the 3 percent reduction seen nationally. However, the study does not discuss how Sound Transit's experience differs from King County Metro's during this period. While Sound Transit's overall ridership increased by nearly 42 percent, Metro's fell by almost 8 percent. And while Sound Transit's **light rail** boardings increased by 6.9 million, Metro bus boardings declined by 8.8 million. **The net decline in total ridership suggests a large number of former Metro bus riders may now use Sound Transit's light rail services**<sup>21</sup>. In fact, Sound Transit acknowledges in its draft *Before and After* study that the number of riders on corridor buses in 2011 dropped from 2008 and that some former bus riders have shifted to Link light rail.

Metro provided slightly more bus services in 2011 than in 2008, even though fewer riders used them.

**Recommendation No. 10:**

The Board should assess whether this suggestion is valid before it considers a future ST3 proposal to the voters.

**Issue 2f. Lower than expected downtown Seattle employment may require a process for adjusting the allocation of capital costs to the various sub-areas.**

Five subareas are within Sound Transit's taxing boundaries: Pierce County, South King County, East King County, North King County and Snohomish County. With equity in mind, Sound Transit's Financial Policies require each subarea to benefit from the Agency's investments in proportion to the sales taxes each generates.

**Issue 1a** above discusses how Sound Transit may need to reduce its employment and future ridership assumptions for downtown Seattle and Bellevue's Central Business District. This may affect what Sound Transit must do to comply with its Financial Policies, which require the Agency to allocate capital costs across the five sub-areas based on the benefits that each receives from those investments. As Sound Transit uses ridership forecasts by subarea to make these allocations, it may require a process for adjusting these allocations if actual ridership trends do not closely follow forecasts.

**Recommendation No. 11:**

Sound Transit should develop a process for adjusting allocations of capital costs across the five subareas when actual ridership differs from the forecasts those allocations were based on.

# Agency Response



October 12, 2012

The Honorable Brian Sonntag  
State Auditor  
PO Box 40021  
Olympia, WA 98504-0021

Dear Mr. Sonntag:

Thank you for the opportunity to provide these responses to the performance audit that was conducted of Sound Transit. As a relatively new and maturing public agency, Sound Transit has a culture of continuous improvement and a strong record of utilizing “lessons learned” as we continue to plan, build and operate the three-county regional transit system approved by the voters via Sound Move in 1996 and Sound Transit 2 (ST2) in 2008. Our governance structure, authorities and actions are in compliance with our underlying statutes, the voter-approved plans and Sound Transit Board adopted policies. It is through our lens of continuous improvement and the above authorities that we offer our response. Our intent is to correct and clarify the audit statements where necessary and to outline Sound Transit’s planned response actions.

## Comments on the audit’s introduction section

Before addressing the analysis and recommendations on the four major objectives, we would like to respond to a number of statements in the introduction.

The introduction’s fourth paragraph rightly notes that the issues explored in the audit are not only relevant to delivering the ST2 ballot measure but to a potential ST3 measure. However, the main example of an ST3 project, discussed in a considerable level of detail, refers to a potential future passenger rail service on the Eastside rail corridor recently sold by BNSF. There is no presumption that an ST3 measure would include such investments. Sound Transit’s property transaction with the Port of Seattle primarily focused on securing land needed for construction of East Link as part of ST2. We were able to secure long-term easements for the rest of the corridor as a significant additional benefit. The ST2 measure included provisions for potential limited agency funding to support a possible public-private partnership for rail service on the corridor, although no parties expressed interest.

The second example mentioned of a potential ST3 project is streetcar extensions in Seattle. While ST2 funded studies of potential high-capacity transit (HCT) investments in several corridors, there is no plan or presumption that an ST3 measure would incorporate streetcar projects. Depending on how they are configured, streetcars may or may not meet the definition of HCT under state law.

Finally, in discussing the importance of the Sound Transit Citizen Oversight Panel (COP) on Page 5, the audit states that “Sound Transit voters have no say regarding who will represent them and limited recourse if they are dissatisfied with the decisions of the Sound Transit Board.” This is inaccurate and fails to relay the Legislature’s intent in establishing Sound Transit’s federated governance structure.

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**Joni Earl**

Sound Transit’s enabling legislation set the stage for an unprecedented new type of regional government in this state spanning the urban portions of three counties and more than 50 cities. The Legislature recognized the important relationship of local land uses and local transit services to creating an effective regional transit system. To promote cooperation, coordination, and integration, the legislation dictates the makeup of the Board. Board members must be elected officials within the counties and cities in the Sound Transit district, plus the state Secretary of Transportation. Members are appointed by their respective county executives and confirmed by their county councils. At least half of the members from each county are required to serve on a board of its local transit agency. These agencies — Community Transit, King County Metro Transit, and Pierce Transit — are vital Sound Transit partners. The Sound Transit Board maintains a strong commitment to public involvement, and the agency’s projects are approved by public vote.

### **Objective 1: Agency responsiveness to the Citizen Oversight Panel**

We view the COP as a highly effective body. It provides tremendous value to the region’s residents by closely monitoring the agency’s work to deliver voter-approved transit investments. Since its inception the COP has consistently provided in-depth reviews of the agency’s work. Nearly 60 citizens have served on the panel. The group brings together people with a wide variety of backgrounds and expertise, in both the public and private sectors. The Board-appointed members serve for up to two four-year terms. The COP has logged nearly 300 meetings. The panel regularly meets with senior management and staff to receive briefings on capital projects, transit services and other Sound Transit programs. The COP’s chair serves on the agency’s Audit and Reporting Committee, which meets quarterly to review agency audits and financial results. In addition, the COP has helped to shape the agency’s procedures for the independent auditors, who review the agency’s compliance with its subarea equity policy.

The original audit scope and objectives related to the COP stated: “Since the adoption of ST2, has Sound Transit’s Board of Directors taken appropriate actions to address the concerns and recommendations of the Citizen Oversight Panel?” The Sound Transit Board continually expresses its strong support for the work and dedication of the citizen volunteers who form the COP. We appreciate the auditors’ recognition that the COP is generally pleased with Sound Transit’s actions to address its concerns. While it is accurate to state “the Board has not *always* (emphasis added) taken action to full address some COP concerns,” it is important to point out that Sound Transit has taken action on the vast majority of the issues and recommendations provided. We provide regular, numerous and prompt formal and informal responses to the COP’s reports, for which we always express our appreciation.

The audit summarizes several specific areas where COP members have expressed their desire for greater responsiveness by the Board. These relate to managing operating costs, improving financial reporting and addressing the impact of the national recession on contingency funds for capital projects (Page 10). We wish to emphasize that each of these areas is a focus of active and ongoing work by the staff and Board. The 2010 formation of the Sound Transit Board’s Operations and Administration Committee was based in significant part on supporting intensified focus in the first two of these areas.

Consistent with the audit recommendations, staff will improve online accessibility of COP materials, including postings of COP reports, agency responses, meeting notices, meeting minutes and other resources. In coordination with the COP, we will also review other options for expanding the accessibility and transparency of information.

### **Recommendations beyond the original audit objective**

We appreciate the auditors’ explicit recognition that Sound Transit is a rare exception among the nation’s public transit agencies in having a citizen oversight body, and we are proud of this fact. Although the audit

reports positively on the agency's responsiveness to the COP, the majority of the COP-related audit recommendations go beyond the original audit objectives to recommend major changes to the COP's structure.

Staff will facilitate Board review of these recommendations. However, we would like to address a number of these findings in this initial response. Based on our experience working with the COP and with the Board on appointments, we are not persuaded that it would be helpful or reasonable to try to require non-paid citizen volunteers to assume types and levels of responsibility that are typically assigned to salaried professionals. Our most significant concerns and clarifications are as follows:

### **COP structure as defined by the Sound Transit Board**

As the audit reflects, the COP was defined by the Board as "an independent body, charged to review [Sound Transit's] performance against its commitments to the public to deliver the services and facilities...on time and within budget. The citizen oversight panel will report to the board."

Over the years the Sound Transit staff and Board have acknowledged the COP's broad and independent discretion to interpret its mandate and choose issues it wishes to explore. The members decide what they want to focus on, and the staff fields inquiries in an open and responsive fashion. Attachment A lists the topics the COP has reviewed in 2011, 2012 to-date, and planned agenda items for the balance of 2012. The COP meets twice per month, for about 2-1/2 to 3 hours per meeting. It is clear from this list of topics that the COP is, in fact, focusing their energies on Sound Transit's work to deliver the services and projects approved by the voters. The members evaluate the information they collect and develop the recommendations to the Board that they deem appropriate. The audit puts significant focus on seeking to define the term "oversight" and, not finding examples within the transit sector, advocates for a model that has experienced limited application in public education. However, the Sound Transit Board and COP have consciously defined the COP's oversight functions in a broad fashion. While subject to refinement, the structure has generally served the region well.

### **Proposed duplication of oversight functions**

Sound Transit has extensive internal and external controls in place and operates under a higher level of independent review and oversight than any other local or regional government in the state. Over the past 15 years, Sound Transit has been subjected to more than 100 external audits and reviews, in addition to annual independent financial statement audits and annual reviews of the agency's compliance with subarea equity, specifically under the guidance of the COP. The latter are conducted by an internationally recognized independent accounting firm. Sound Transit also undergoes close scrutiny by the Federal Transit Administration, including formal quarterly meetings to review our progress. These essential efforts entail significant investments in consultant services as well as staff resources.

Our independent audits, which are carried out in compliance with Generally Accepted Government Auditing Standards (GAGAS), are required by the very same Sound Move documents that envisioned the COP. It is not reasonable to interpret Sound Transit's enabling legislation as envisioning duplication of these functions by citizen volunteers. The legislation clearly intended the COP to monitor whether these other accountability functions were carried out rather than the COP itself performing or directing them. In fact, in support of this important role by the COP, the Sound Transit Board intentionally made the chair of the COP a member of the Board's Audit and Reporting Committee.

The report cites the lack of a written analysis of the 2008 ST2 Financial Plan as a chief example of a claimed failure of the COP to embrace its role as an oversight body. We disagree. The COP was not required by the Sound Transit enabling legislation to provide such a written assessment. This function was specifically designated to be the responsibility of an independent Expert Review Panel appointed by the state. The legislation also requires review of system expansion plans by the Puget Sound Regional Council to ensure consistency with regional transportation plans and the comprehensive planning efforts of local jurisdictions.

### **Independence and objectivity**

The GAGAS standards cited in the report are applicable to auditors working in a professional capacity for independent firms, with the responsibility to provide their professional opinion. As discussed above, the audit suggests citizen volunteers should be placed in quasi-auditor roles as opposed to oversight roles, and to act essentially as creators of audits as opposed to reviewers of audits and other information they independently deem relevant.

Many past and current COP members volunteered to be panel members based on a high level of personal interest in public transportation. It would be unrealistic to expect uncompensated volunteers to make an intense level of time commitment without such personal interests. As the audit acknowledges, recruitment of COP members from every subarea is already a significant challenge within the current model, under which COP members are free to operate with broad independence and discretion, and in which Board appointments have placed value on applicants' past and current professional experiences and expertise, and their personal interests and involvements. Such involvements have been open and transparent. We are not aware of situations where COP members have sought to advance personal agendas or have compromised their judgment. It is important to note that no one member can shape the COP's agenda or findings, as these ultimately are decided by the full COP.

Members of the Board and COP have both expressed strong views that a diversity of personal experiences and involvements is an asset rather than a detriment. The list of past and current members included as Attachment B to this response reflects the depth and breadth of the knowledge and experience underlying their appointments. Their backgrounds span many fields including public transportation, construction, engineering, business, finance and labor.

It is noteworthy that the GAGAS standards cited by the auditor exist in significant part to enable professional auditors to indemnify themselves from charges of failure to diligently perform their work against established standards. It would be unusual to apply the same criteria to citizen volunteers who have no professional liability. It is also noteworthy that, by our review, none of the other jurisdictions or organizations with oversight bodies that the audit describes as maintaining leading practices has ethics or conflict of interest policies that approximate the degree of restriction proposed by the audit.

### **Objective 2: ST2 and Sound Transit's response to the revenue shortfall**

The 2008 Recession created major fiscal challenges for the federal government and all state and local governments. We are pleased that the auditor found that the agency "had taken a very informed, thorough approach to realigning the ST2 Plan" with a significantly lower post-recession revenue base. As part of the 2013 budget process that began last month, the Sound Transit Board is taking steps to address a forecasted 30 percent reduction in ST2 revenues through 2023. With the region's slower-than-expected pace of economic recovery, this current forecast is worse than last year's forecast of a 25 percent cumulative impact.

Sound Transit responded in 2010 by instituting a program realignment under which it reduced administrative costs, found operational efficiencies and suspended some capital programs. The ST2 capital project cost estimates were developed within industry standards with normally allocated and unallocated contingency levels. The final ST2 plan added further contingencies of 10 percent to 15 percent to identify “high end” cost estimates. As a result of the recession, the agency removed these additional “high end” contingencies and is now committed to managing capital projects to the “low end” range. Contingencies are further discussed below.

As the audit notes, this approach leaves “very little room for error” and will require continued evaluation, value engineering and careful scope and schedule control to complete the agency’s complex projects within these budgets. During the design stage of each project, a risk assessment is performed to evaluate whether the project contingencies are sufficient to complete the project with a relatively high degree of certainty. In addition, Sound Transit will continue to closely monitor and make timely updates to its revenue forecasts and contingency levels. We will continue to keep the public informed and involved in agency decisions as ST2 project designs are finalized and the realignment process continues.

### **Objective 3: Sound Transit’s management of its capital program and implementation of prior audit recommendations**

Sound Transit appreciates the audit’s recognition that Sound Transit’s organizational structure, policies, procedures, expertise and other resources put the agency in a strong position to accomplish planned elements of our ST2 capital program. We continuously strive to achieve cost-effectiveness while working closely with our funding partners, external stakeholders and third party jurisdictions.

We took to heart the recommendations of the 2007 performance audit and are pleased the auditor found we successfully implemented all recommendations and incorporated lessons learned from completed capital projects in our work going forward. We would like to offer the below clarifications to the report.

#### **Program contingencies**

The audit’s contention that we have reduced ST2 program contingencies to less than industry guidelines understates the contingency levels within the projects. As discussed with the auditor, in developing cost estimates for ST2, Sound Transit’s initial estimates included reserves, allocated contingency and unallocated contingency. In response to the national recession, Sound Transit revised ST2 project estimates in 2010, eliminating the project reserves and a percentage of soft costs, but maintaining the allocated and unallocated contingencies. The SAO correctly indicated that programmatically the unallocated contingency included in the ST2 cost estimates (in 2007 dollars) after the program realignment is 11.1 percent. However, an additional allocated contingency of 14.3 percent remains in the ST2 cost estimates for a total available contingency of 21 percent.

This contingency level falls in the middle of the contingency guidelines established by the Association for the Advancement of Cost Engineers (AACE) and is within the recommended 15-30 percent range.

#### **Phase Gate process**

As ST2 activity progresses, we will continue to follow the Phase Gate process in a manner that does not delay or negatively affect project schedules and budgets. We have built flexibility into the program that allows tailoring of the Phase Gate process to meet the requirements of successful project delivery. Further, we understand the need to track and quantify the time required to advance through the Phase Gate process and, where appropriate, to allow fast-tracking.

The region's recovery from the economic recession continues to be slower than projected by forecasters. This increases the pressure on Sound Transit to continue looking for opportunities to improve the cost-effectiveness of implementing the ST2 program. We concur with the auditor that life-cycle costing may provide an avenue for getting the best return on our investments, and that life-cycle costing efforts need to be completed as early as possible in the project development cycle.

We also concur with the auditor that value engineering offers additional opportunities for improving cost-effectiveness, and that our program should evolve with a true "Value Management" approach. To that end, our 2009 agency reorganization centralized the risk management, contingency management and value engineering staff and functions within a group reporting to the Director of Project Control. In addition, we recently developed a Value Management procedure that outlines requirements for value engineering that are fully integrated with our risk analysis procedures.

### **Responses to the 2007 Performance Audit**

Sound Transit appreciates the auditor's efforts to thoroughly review our work in response to the 2007 performance audit (Appendix L). Recommendations made by the auditor offer valid opportunities to enhance these programs and will facilitate Sound Transit's overall success in delivering ST2. We will closely evaluate the recommendations and offer a detailed response.

### **Objective 4: Reliability of Sound Transit's ridership modeling**

From inception, Sound Transit has recognized the importance of maintaining and advancing best practices in the use of modeling techniques to forecast the number of riders who will take advantage of transit investments. Sound Transit's long-range forecasting methods draw extensively on Puget Sound Regional Council (PSRC) population and transportation system data and apply assumptions for many variables including: current and predicted population and employment densities by small areas; costs of competing transportation modes, including auto parking operation costs and congestion; and travel times and reliability of proposed transit investments.

Sound Transit's ridership forecasting methods have undergone extensive review by third parties with tremendous expertise. These include the FTA and the Expert Review Panel appointed by the governor to review the assumptions underlying the ST2 package. Sound Transit's approaches have consistently met with approval from independent reviewers.

### **Roles of ridership forecasting**

Sound Transit employs ridership forecasting for three primary purposes:

1. **Comparing the merits of multiple transit investment options**, including carrying out environmental impact studies that focus on comprehensive evaluation of long-range costs, benefits and impacts of options.
2. **Competing for federal funding** by using modeling that meets FTA standards. FTA goals include the accuracy of forecasts as well as standardization of forecasting approaches to promote fair and objective evaluation of competing proposals. Meeting the FTA's rigorous standards has been critical to Sound Transit winning more than \$1.3 billion in New Starts funding to date.
3. **Operational planning and budgeting**. It is important to address a misconception that could arise from reading portions of the audit. Sound Transit does not use the long-range modeling

techniques that are the focus of the audit to plan or budget near term for operations of services that are already up and running. Rather, these functions are based on the agency's monitoring of actual ridership figures and a much less complex process that the audit did not evaluate.

Sound Transit expects to see the accuracy of our long-range modeling borne out as we get closer to the 2020 and 2030 horizons. It is important to point out, however, that the results will not have much bearing on developing the agency's annual operating budgets and Service Implementation Plans. The agency's ongoing work to refine its long-range modeling approaches will primarily benefit future applications in the first two areas.

### **Audit's focus on a single 2002 forecast**

The audit's focus on Sound Transit ridership modeling states as its objective, "How reliable are the underlying assumptions driving Sound Transit's ST2 ridership model for Link Light Rail, Sounder Commuter Rail and the ST Express Bus? If not, how can Sound Transit improve their reliability?"

Despite the fact Sound Transit has produced dozens of ridership forecasts over the years, the audit put its primary focus on a single forecast for the Central Link Initial Segment that was produced in 2002, seven years before the line began operation, and well after the Board decided to build it. It must be noted that the Board determined it was necessary to build this segment before the highest-ridership portion of the light rail line that voters approved in 1996 was constructed. Initial light rail ridership would be much higher if it had not been necessary to push back service to Seattle's Capitol Hill and the University of Washington, some of the most densely populated areas of the West Coast north of San Francisco. These two additional stations alone are expected to generate more than 50,000 daily riders. The Sound Transit Board was not convinced at the time it could complete a tunnel to the UW, so it decided to build the southern segment to the airport first. From an industry standpoint, it was unusual to start with the less productive segment.

The 2002 forecast focused on predicting ridership in 2011, two years after the 2009 opening of the system, to satisfy guidelines of a Before-and-After Study required by the FTA.

In essence, the audit makes the assumption that because the Central Link Initial Segment did not achieve the ridership total that was predicted for 2011, there were weaknesses in the techniques that were used in 2002. The same general type of model is used for current long-range forecasting on the 2030 horizon, so the auditor concluded there are vulnerabilities in those forecasts. Most of the audit's recommendations flow from this core assumption, which is inconsistent with a number of facts that the audit did not address or de-emphasized.

- The forecast for 2011 was based on a 1992 model version applied in 2002 with a model structure and basis no longer used by Sound Transit. The current models we use are not referenced in the report and do not appear to have been reviewed.
- The report ignores a more important Central Link ridership forecast for the year 2020 that was also made in 2002 to support Sound Transit's New Starts grant application, through which we earned a \$500 million FTA grant. This forecast was for 12.9 million riders in 2020. If current Central Link trends continue, this total will be achieved by 2020, even without the extension to UW scheduled to open in 2016.
- The draft Before-and-After Study Final Report, which is undergoing FTA review, was cited extensively in the audit. The draft study concludes the primary error in the 2002 forecast was the choice of horizon year, i.e., an assumption that the ridership response to the initial light rail line

from downtown to the airport would be mature within two years of opening day, rather than over a somewhat longer period. The maturity period for Link is clearly longer. Since opening in July 2009, annual growth rates for every quarter over the same quarter of the preceding year have been in excess of 10 percent. The 2012 year-to-date growth rate compared to 2011 is still a very healthy 11 percent, and the third quarter 2012 growth rate was 13 percent. It is likely that the old 2002 Central Link forecast for 2011 of 10.7 million riders will be achieved well before the University Link extension opens in 2016.

Sound Transit does not assume a two-year ridership maturity period on new investments. Long-range forecasts for light rail extensions scheduled to be open in 2023 have been made for 2030, allowing for a longer seven-year maturity period.

### **Issues related to modeling assumptions**

The audit's analysis does not adequately distinguish between modeling techniques and modeling assumptions or inputs. It puts particular focus on two assumptions made in 2002, noting that the PSRC was not able to predict the national recession, and that the plans King County Metro provided for changes to its bus services following the opening of light rail have not been borne out to date. It is not reasonable to conclude that techniques were fundamentally flawed based on issues related to key inputs that the agency obtained from the appropriate partners. We concur that the accuracy of key inputs is a vital factor.

The audit points out that a high rate of ridership growth is required to meet long-range forecasts. It is important to note that this rate of assumed growth is based on building a 55-mile regional light rail system that serves a dozen of the region's major cities, whereas today, we have a 16-mile system that serves three cities. It is also based on expected regional population growth of more than a third by 2040, and how this will impact traffic congestion in a region where congestion consistently ranks among the nation's worst. The audit's comparisons to other systems' growth rates do not take into account the unique nature of each region and the many variables involved. Comparisons are only relevant to the extent that other systems' levels of service expansion and transit demand were similar. It is important to clarify that Sound Transit's long-range modeling methods do not use ridership growth assumptions as inputs.

The audit recommends that Sound Transit use the latest PSRC economic growth forecasts in all future forecasting. We concur with this, as Sound Transit already uses the latest approved PSRC economic forecasts. Currently we are awaiting new forecasts that could be available as early as January 2013.

### **Highest-potential corridors for rail investment**

The report states that Sound Transit should consider that many riders on light rail lines will be former bus riders. In fact, for many years FTA has focused its cost/effectiveness measure for comparing proposed transit investments on Transit User Benefits. FTA has always emphasized that the primary benefit of most transit investments accrues to existing transit riders, and that measurement of those benefits is the best surrogate for estimation of the overall benefits of a transit investment. Sound Transit's mission is to invest in high capacity transit in high-demand corridors. It is natural that corridors with high existing bus demand are the best corridors for investment. This strategy, used by transit agencies around the globe, can free up bus resources for use on other corridors.

### **Proposed use of ranges in ridership forecasting**

The report recommends that Sound Transit should express future ridership forecasts in ranges. It is important to emphasize that, historically, this has not been an accepted practice for FTA funding applications, and it remains inconsistent with National Environmental Policy Act (NEPA) and State Environmental Policy Act (SEPA) requirements. However, Sound Transit will explore accommodating

this recommendation. Ongoing forecast work for the Lynnwood Link Extension and the Federal Way Transit Extension already includes extensive sensitivity testing sufficient to support the reporting of ridership ranges. Single future estimates will still be necessary, however, for environmental impact analysis and proposed mitigations under NEPA and SEPA. One of the advantages is that NEPA and SEPA compare the merits of multiple project options, and thus help the public understand the choices under consideration by the Sound Transit Board of Directors.

### **ORCA smart card technology**

The audit also touches on the Before-and-After Study's discussion of issues related to transit riders' adjustment to the ORCA smart card system introduced right before light rail operation began in 2009. Public understanding and use of ORCA is increasing over time. While the unfamiliarity of the system was a factor present during the first two years of Link operations, we do not view ORCA as a major issue related to meeting long-range ridership forecasts. Sound Transit will continue to make use of ORCA data in planning and efforts to forecast as well as promote transit ridership.

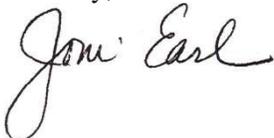
### **FTA comments on ST modeling were not reflected**

During the course of the audit, the auditors talked to the staff member at the FTA's national headquarters who is responsible for reviewing agencies' transit ridership forecasting approaches. The auditors' notes on this conference call reflect that the FTA staff member offered positive comments on Sound Transit's work. While it is not reflected in the report, the auditor's notes characterized the comments as follows: "ST's approach is sound. The model has been tested against reality. FTA considers ST's incremental model can handle new light rail forecasts based upon combined transit flows."

### **Conclusion**

This concludes the agency's initial responses to the audit. We again thank the auditors for their extensive work. We will continue to evaluate the report and in the months ahead will provide further responses to the recommendations per the provisions of Initiative 900.

Sincerely,



Joni Earl  
Chief Executive Officer

**Attachment A: Citizen Oversight Panel 2011-2012 Work Plan**

**2011**

<b>Date</b>	<b>Topics</b>
Jan 6	North Corridor HCT Alternatives Analysis Sound Transit Art Program
Jan 20	Subarea reporting and tracking State's role in public transportation (Legislative study)
Feb 3	Project Controls overview Information Technology update
Feb 17	Regional transit ridership trends Procurement and contracting
March 3	King County Metro response to the recession Transit Security update
March 17	Conversation with the Deputy CEO Tacoma Link Extension
April 7	Customer satisfaction surveys Internal Audit Program
April 21	University Link construction update North Link update North Corridor HCT planning
May 5	Communications & Marketing Real Estate & Property Management
May 19	Legislative session report South Corridor planning update
June 2	East Link update Sunder yard & STX bus barn siting studies
June 16	Sunder Capital Projects update Beacon Hill voids remediation
July 7	Operations Department mid-year update Community Transit response to the recession
July 21	Transit-Oriented Development Program briefing Regional Express Capital Projects update
August 4	Tour of University Link construction
September 1	Conversation with the CEO Sustainability Strategic Plan
September 15	Ridership trends report Ridership Development Initiative
October 6	2012 Finance Plan update Draft 2012 Budget Overview
October 20	Draft 2012 Budget detail & trends Transit Operations cost & metrics Agency administrative costs Staff cost management
November 3	Draft 2012 Service Implementation Plan Draft 2012 Transit Improvement Plan
November 17	North Corridor Alternatives Analysis City of Bellevue Memorandum of Understanding

December 1	I-90 Expansion Joints Track Bridge Central Link Noise Abatement Program
December 15	Update on D to M Track & Signal Project 2011 Year-End review

**2012**

<b>Date</b>	<b>Topics</b>
Jan 5	COP retreat
Feb 2	Project Labor Agreement study Parking Management at ST facilities
Feb 16	ORCA Joint Operations status report University Link update
March 1	North Link update Conversation with the Board Chair
March 15	Access & Demand Study East Link update
April 19	Pierce Transit response to the recession Legislative session report
May 3	East Link cost savings concepts WA State Public Works Law / Contracting & GCCM
May 17	South Link update Internal Audit Program report
June 7	Sounder Lakewood Extension & Rail Activation Conversation with the CEO
June 21	Asset Management system implementation Subarea Equity update
July 19	Parking and System Access update Baselining the Northgate Extension
August 2	Operations Department mid-year report Conversation with the Deputy CEO
August 16	Tour of Sounder Lakewood Extension
September 6	Link O&M Facility Siting study North Shore Alternatives Task Force draft report
September 20	ORCA Operations & Financial overview Capitol Hill TOD plans and term sheet
October 4	Sustainability Progress Report Conversation with the CEO
October 18	I-90 Two-Way Transit project overview & update Draft 2013 Budget
November 1	University Link update 2013 Finance Plan
November 15	Draft 2013 TIP Draft 2013 SIP
December 6	Northgate Link update East Link update
December 20	2012 Year-End review

**Attachment B: Roster of past and current COP members and experience**

The following list of past and current COP members reflects the breadth and depth of panel members' experience. (Source: COP staff.)

1. **Bruce Agnew.** Edmonds, served 1997-1999. Transportation Policy
2. **Annette P. Bailes.** Kent, served 2011-present. Facilities Management
3. **Anoop Batra.** Federal Way, served 1997. Engineering
4. **Josh Benaloh, Ph.D.** Redmond, served 2008- present. Technology, Transportation Policy
5. **Patsy Tsui Bonincontri.** Bellevue, served 2004-2008. Architecture, Elected Office
6. **Diane Carlson.** Tacoma, served 1997-1999. Transportation Policy, Public Sector Executive Management
7. **Arlington W. (Art) Carter Jr.** Seattle, served 1997-2004, served as chair 2001-2003. Engineering, Private Sector Executive Management
8. **Richard U. Chapin.** Bellevue, served 2003-2011, served as chair 2007-2009. Law, Transportation Policy, Elected Office
9. **Darrell Chapman.** Snohomish County, served 2002-2003. Labor, Construction Industry
10. **Marcus Courtney.** Seattle, served 2003-2004. Labor, Technology
11. **Allan B. Darr.** Everett, served 1997-2001. Labor, Construction Industry
12. **Aubrey Davis.** Mercer Island/Seattle, served 2004-present. Transportation Policy, Public & Private Sector Executive Management, Elected Office
13. **Bertha Eades.** Redmond, served 1998-2007. Transportation Policy
14. **Claudia B. Ellsworth.** Tacoma, served 1999-2001. Public Sector Executive Management
15. **Chris Elwell.** Burien, served, 2007- 2011. Labor, Construction Industry, Elected Office
16. **Steven M. Goldblatt.** Seattle, served 1997-2003, served as chair 1997-1999. Engineering, Construction Industry
17. **Robert Miguel Goldstein.** Seattle, served 2007-present. Finance, Public Sector Executive Management
18. **Ramon J. Gould.** Edmonds, served 2000-2004. Engineering, Elected Office
19. **Donald L. Green.** Lakewood, served 2005-2008. Transportation Policy, Public Sector Executive Management
20. **Kevin J. Grossman.** Shoreline, served 2004. Real Estate, Transportation Policy, Elected Office
21. **Virginia Gunby.** Seattle, served 1997-2004. Transportation Policy
22. **Lynn A. Guttmann.** Seattle, served 2006. Engineering, Public Sector Executive Management
23. **Rea Hagan.** Tacoma, served 2001-2005. Engineering, Construction Industry
24. **Frederick M. Hart.** Seattle, served 1997-2003. Small Business Owner
25. **Miriam Helgeland.** Federal Way, served 2003-2011. Transportation Policy
26. **Robert B. Hitchcock.** Tacoma, served 2006-2009. Private Sector Executive Management
27. **Michael A. (Tony) Hudson.** Tacoma, served 1998-2000.
28. **Bill LaBorde.** Tacoma, served 2003-2008. Transportation Policy
29. **Philip B. Lovell.** Edmonds, served 2011-present. Engineering, Construction Industry, Private Sector Executive Management
30. **Terry Lukens.** Bellevue, served 1997-1999. Law, Transportation Policy, Elected Office
31. **Thomas M. Luthy.** Bellevue, served 1997-2003. Finance, Private Sector Executive Management
32. **Kristi A. Mandt.** Seattle, served 1997-2001. Finance, Small Business Owner
33. **Karen J. Mask.** Bellevue, served 2011-2012. Construction Industry, Private Sector Executive Management
34. **Paul W. Masten.** Lynnwood, served 2004-2008. Planning, Engineering, Construction Industry
35. **Mary McCumber.** Seattle, served 2004-2005. Planning, Transportation Policy, Public Sector Executive Management

36. **Karen Miller.** Mountlake Terrace, served 2003-2011, served as chair 2005-2007. Transportation Policy, Elected Office
37. **Michael W. Murphy.** Seattle, served, 2008-2011. Engineering, Elected Office
38. **John Murtha.** Seattle, served 2005. Finance
39. **David Osaki.** Federal Way, served 1997-2003. Planning
40. **C.T. Purdom.** Federal Way, served 2006. Education, Public Sector Executive Management
41. **Andrew Reay-Ellers.** Lake Forest Park, served 2007-2008. Transportation Policy
42. **Katherine Rose.** Tacoma, served 1997-1998.
43. **David A. Russell, Ph.D.** Kirkland, served 2007-present. Engineering, Transportation Policy, Elected Office
44. **Donald L. Russell.** Seattle, served 2003. Engineering, Construction Industry
45. **Thomas R. Ryan.** Puyallup, served 2005-2007. Small Business Owner
46. **Stuart R. Scheuerman.** Sumner, served 2008-present. Engineering, Elected Office
47. **Jessyn Schor.** Seattle, served 2004-2005. Transportation Policy
48. **Bruce W. Seiber.** University Place, served 2008-present. Public Sector Executive Management
49. **Larry E. Shannon.** Bellevue, served 1999-2007, served as chair 2003-2005. Engineering, Public Sector Executive Management
50. **Reid Shockey.** Everett, served 1997-2003, served as chair 1999-2001. Planning, Transportation Policy, Private & Public Sector Executive Management
51. **Virendra (Vic) K. Sood.** Mountlake Terrace, served 2008-present. Transportation Policy, Public Sector Executive Management
52. **Al Stipe.** Federal Way, served 1997-2005. Finance
53. **Stephen C. Wambach.** Tacoma, served 2001-2005. Public Sector Executive Management
54. **Stephanie Weber.** Kirkland, served 1997-98. Planning, Transportation Policy
55. **JD Wessling.** Seattle, served 2007-present. Finance, Private Sector Executive Management
56. **Paul J. Wiesner, MD.** Seattle, served 2005-present, served as Chair 2009-2011. Public Health, Public Sector Executive Management
57. **Harold R. Wirch.** Brier, served 2011-present. Engineering
58. **Phillip TK Yin.** Seattle, served 2001-03. Media & Communication

# Concluding comments by the State Auditor's Office

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The State Auditor's Office provides the following comments to accompany Sound Transit's response above.

## Objective 1

### Sound Transit's response concerning the audit's conclusion that the COP offered no written assessment of the 2008 ST2 plan

The report cites the lack of a written analysis of the 2008 ST2 Financial Plan as a chief example of a claimed failure of the COP to embrace its role as an oversight body. We disagree. The COP was not required by the Sound Transit enabling legislation to provide such a written assessment. This function was specifically designated to be the responsibility of an independent Expert Review Panel appointed by the state. The legislation also requires review of system expansion plans by the Puget Sound Regional Council to ensure consistency with regional transportation plans and the comprehensive planning efforts of local jurisdictions.

#### SAO's response

The COP acknowledges that its authorizing legislation obligates it to review Sound Transit's financial plan annually and to report on the financial soundness of that plan. Although the COP did so in 2007 and in 2009, it did not do so in 2008, the year voters were asked to approve the 2008 ST2 plan. Sound Transit indicates it was the Expert Review Panel's responsibility to review the 2008 ST2 plan, not the COP's. While we acknowledge the ERP had a legal obligation to review the 2008 ST2 plan, we do not believe this eliminated the COP's unique role in making sure the public was provided with timely and objective information on the soundness of that plan before they were asked to vote on it.

### Sound Transit's response concerning the audit's use of auditing standards as a framework for assessing risks to COP objectivity and for protecting that objectivity

The GAGAS standards cited in the report are applicable to auditors working in a professional capacity for independent firms, with the responsibility to provide their professional opinion. As discussed above, the audit suggests citizen volunteers should be placed in quasi-auditor roles as opposed to oversight roles, and to act essentially as creators of audits as opposed to reviewers of audits and other information they independently deem relevant.

#### SAO's response:

Members of the public are best served when those who provide oversight on their behalf do so objectively and impartially. Consistent with this principle, the COP Ethics Guidelines acknowledge that impartiality is critical to the COP successfully meeting its mission. Similarly, the auditing standards cited in the report indicate that impartial auditors are critical to an audit's credibility and how that credibility is perceived by the public and other users. Because of this similarity, it is appropriate to cite the conditions those standards indicate may raise questions about impartiality. We do so not to imply that COP members are professional auditors, but to reference a framework that may be used by the COP to assure the public is best served.

## Objective 2

### Sound Transit's response concerning the audit's conclusion that Sound Transit should increase its ST2 project contingencies

The audit's contention that we have reduced ST2 program contingencies to less than industry guidelines understates the contingency levels within the projects. As discussed with the auditor, in developing cost estimates for ST2, Sound Transit's initial estimates included reserves, allocated contingency and unallocated contingency. In response to the national recession, Sound Transit revised ST2 project estimates in 2010, eliminating the project reserves and a percentage of soft costs, but maintaining the allocated and unallocated contingencies. The SAO correctly indicated that programmatically the unallocated contingency included in the ST2 cost estimates (in 2007 dollars) after the program realignment is 11.1 percent. However, an additional allocated contingency of 14.3 percent remains in the ST2 cost estimates for a total available contingency of 21 percent

**SAO's response:**

Contingency is allocated to specific project segments as more is known about the risks and anticipated costs associated with those segments. Once allocated, it is less likely these amounts will be available to address unforeseen costs. For these reasons, the benchmarks cited in the report are best compared to the non-allocated contingency. Based on such a comparison, Sound Transit's contingency is lower than recommended.

## Appendix A: Initiative 900

Initiative 900, approved by Washington voters in 2005 and enacted into state law in 2006, authorized the State Auditor’s Office to conduct independent, comprehensive performance audits of state and local governments.

Specifically, the law directs the Auditor’s Office to “review and analyze the economy, efficiency, and effectiveness of the policies, management, fiscal affairs, and operations of state and local governments, agencies, programs, and accounts.” Performance audits are to be conducted according to U.S. General Accountability Office government auditing standards.

In addition, the law identifies nine elements that are to be considered within the scope of each performance audit. The State Auditor’s Office evaluates the relevance of all nine elements to each audit. The table below indicates which elements are addressed in the audit. Specific issues are discussed in the Results and Recommendations section of this report.

I-900 Element	Addressed in the audit
1. Identification of cost savings	Yes. The audit identifies the potential for significant savings related to Sound Transit’s capital program, though amounts cannot be estimated. It also identifies likely savings that resulted from the Sound Transit’s implementation of recommendations from the previous SAO performance audit.
2. Identification of services that can be reduced or eliminated	No. The audit did not identify and areas where services that can be reduced or eliminated.
3. Identification of programs or services that can be transferred to the private sector	No. The audit did not identify and areas where programs or services could be transferred to the private sector.
4. Analysis of gaps or overlaps in programs or services and recommendations to correct gaps or overlaps	Yes. The audit identifies gaps: <ul style="list-style-type: none"> <li>• In how the Board selects COP members, how the COP fulfills its oversight role, and how it regulates its own objectivity.</li> <li>• With Sound Transit’s ST2 capital program and its lower than recommended contingency for unforeseen events or unexpected cost increases.</li> <li>• In Sound Transit’s forecasts of future ridership and its forecasting practices, including the need to better address the risks associated with those forecasts and communicate more with its partner agencies in developing them.</li> </ul>
5. Feasibility of pooling information technology systems within the department	No. The audit makes no recommendations to pool information technology systems, though it does recommend better use of information on its ORCA card system.
6. Analysis of the roles and functions of the department, and recommendations to change or eliminate departmental roles or functions	Yes. The audit recommends the Citizen Oversight Panel should focus its oversight on areas intended by the voters and limit it in other areas.

<p>7. Recommendations for statutory or regulatory changes that may be necessary for the department to properly carry out its functions</p>	<p>Yes. The audit recommends the state Legislature consider establishing a non-partisan COP whose members are elected by voters in each of Sound Transit’s five subareas, ensuring each subarea has equal representation on the Panel. It further recommends the state legislature should establish the elected COP with the authorities, funding and transparency that are discussed at Issues 5 and 6. The audit also recommends Sound Transit’s Board provide the COP with specific authorities and additional funding so it can more effectively conduct its oversight.</p>
<p>8. Analysis of departmental performance, data performance measures, and self-assessment systems</p>	<p>Yes – The audit recommends Sound Transit obtain additional information on its Link light rail ridership, monitor that ridership in relation to its forecasted ridership, and update those forecasts accordingly on a continuous basis.</p> <p>In addition, our prior performance audit did make such recommendations. Our review of Sound Transit’s efforts to implement those recommendations showed the agency has improved its performance data, performance measurers and self-assessment systems. Sound Transit now:</p> <ul style="list-style-type: none"> <li>• Evaluates consultant performance quarterly</li> <li>• Tracks response times for contractors’ Request For Information against internally established benchmarks</li> </ul>
<p>9. Identification of best practices</p>	<p>Yes. The audit identifies leading practices for Sound Transit to improve its construction management, ridership forecasts and how it selects and empowers its Citizen Oversight Panel.</p>

# Appendix B: Audit Criteria

## Audit criteria for Objective 1

To obtain and understanding of the controls that should be in place to support an effective citizen oversight panel (COP), we researched other municipalities with citizen oversight bodies. We looked at:

- How the bodies were established to assure independent and objective oversight.
- How members of the oversight body were selected.
- The authority that was given to these oversight bodies so they could successfully perform their oversight role.
- The types of reports and information that were given to these oversight bodies so they could perform their oversight functions, and how these types of reports and information were established.
- The types of obligations the municipalities had to report back to the oversight body to show how its concerns were addressed.

We determined that the criteria, shown in the table below, were necessary in order for municipalities to establish an independent oversight body, to effectively address the concerns of the oversight body, and for that oversight body to have the authority, information and records necessary for it to be effective.

### Criteria for assuring that COP concerns and recommendations are effectively addressed

- To establish an independent oversight committee, members selected will be free of financial and non-financial conflicts of interests.
- Agency legislation defines expectations for agency managers and board members to support the COP role and to address COP concerns and recommendations. Agency managers and board members embrace the COP role as defined by legislation.
- Agency legislation delineates the COP's right to access agency records, staff and information.
- COP charter or bylaws establish how much time the board and agency administration have to respond to COP requests for information.
- COP has access to funds to conduct audits and/or obtain expert advice.
- COP and agency have a documented understanding of the information and monthly reporting the agency must provide the COP so it can (1) fulfill its oversight role [i.e.; the identification of significant schedule and budget variances, plan revisions, and new estimates for cost and completion] and (2) know whether its concerns and recommendations have been addressed.
- COP has defined authority to conduct research, interviews, onsite inspections, and/or investigations necessary to fulfill its oversight role. This COP authority is not limited by the board or ST administration.
- Agency has a designated liaison committed to providing the COP with requested records and information.
- The COP makes recommendations and ensures its recommendations are acted upon so agency controls are constantly improving. In turn, the agency tracks all recommendations made by the committee and reports to the committee on whether its recommendation have been (i) adopted, (ii) rejected, or (iii) the status of the agency's efforts to adopt the recommendation.
- Agency managers and consultants attend COP meetings, if requested, to answer and report to the COP on the status of projects.
- Board member or board representative attends COP meetings if requested.
- COP has access to agency's external and internal auditors.
- COP members must understand they are not a citizen advisory committee, which serve a different purpose.

## Appendix C: Timelines for COP Review of ST2 Plans

### Timelines associated with Citizen Oversight Panel's and Expert Review Panel's review of 2007 and 2008 ST2 plans: Objective 1, Issue 4

The table below should be read in combination with **Issue 4**. The table shows that Sound Transit's citizens were not given the same level of timely and accessible information heading into the November 2008 ST2 election as they received heading into the November 2007 ST2 election. Issue 4 discusses how the COP should have done more to provide this information to the citizens.

<b>Key dates</b>	<b>2007 Election</b>	<b>2008 Election</b>
ST2 Election date	11/6/2007	11/4/2008
Number of days to review ERP's final report before voting	<b>More than 50</b>	5
Sound Transit posts Expert Review Panel's final review on its website	09/13/2007	<b>Not done</b>
Expert Review Panel issues final report on its review of ST2 Package	09/12/2007	10/30/2008
Deadline for submitting ballot language to County Elections departments (84 days before election)	08/15/2007	08/13/2008
Sound Transit Board approves final ST2 Package	07/12/2007	07/24/2008
Citizen Oversight Panel issues report on its review of ST2 Package	04/05/2007	<b>Not done</b>
Expert Review Panel issues initial reports	01/08/07, 03/23/07 and 04/12/07	07/23/2008

# Appendix D: Expert Review Panel Discussions on ST2 Plan

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## **Expert Review Panel's Discussion on ST2 Revenue Forecasts – Initial 07/23/08 Discussion versus Final 10/30/08 Discussion:**

### **Objective 1, Issue 4**

As discussed at **Issue 4** and as shown below, the State Expert Review Panel's October 31, 2008 report on Sound Transit's 2008 ST2 financial plan contains statements that acknowledge Sound Transit's near-term concerns about the worsening economy. These statements of concern were not included in that Panel's draft July 23, 2008 report, which was issued one day before the ST2 plan was approved by Sound Transit's Board.

### **Per Expert Review Panel's 07/23/2008 Review of Sound Transit's Final ST2 Plan**

[http://www.wsdot.wa.gov/partners/erp/panel\\_ltr072308.pdf](http://www.wsdot.wa.gov/partners/erp/panel_ltr072308.pdf)

"Within the past six to nine months, the national economy has faltered. Washington's economy has also begun to slow, although more slowly than the national pace. Sound Transit has received updated forecasts of sales and motor vehicle excise taxes revenues from its independent consultant, Conway Pederson Economics, Inc. Based on the new forecasts the ST2 plan assumes average growth rates through 2023 of 4.76% for sales taxes and 4.55% for motor vehicle taxes (MVET). These are reductions in the prior version of the ST2 plan, namely 5.2% for sales taxes and 5.3% for MVET."

### **Per Expert Review Panel's 10/30/2008 Review of Sound Transit's Final ST2 Plan**

[http://www.wsdot.wa.gov/partners/erp/panel\\_final\\_ltr103008.pdf](http://www.wsdot.wa.gov/partners/erp/panel_final_ltr103008.pdf)

"Since the July 2008 Panel meeting, the global economy has continued to suffer from fiscal shocks, unprecedented in their...magnitude and impact. The...economy has also begun to show weakness, evidenced by the largely negative forecast released in September 2008 by the Washington State Economic and Revenue Forecast Council. *Sound Transit has elected not to update its forecasts of sales and motor vehicle excise tax revenues from its independent consultant...although the agency believes that the forecast might be aggressive in the near-term.* The 2008 ST2 Plan continues to assume average annual growth rates through 2023 of 4.76 percent for sales and use taxes and 4.55 percent for motor vehicle excise taxes (MVET).

*"The Panel agrees with the agency's decision not to revise its forecasts just prior to the November 2008 election, as all the materials being presented are predicated on the June 2008 forecasts and changing this now would be, at best, confusing to voters. In addition, the forecasts are appropriately based on a 15-year horizon, not the peaks and valleys of any one or two-year period..."*

# Appendix E: Yellow Book Auditing Standards on Objectivity

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## Sections from the Government Accountability Office's Yellow Book on the Importance of Auditor Objectivity and Impartiality to the Auditor's Credibility: Objective 1, Issues 2c-e

In its Yellow Book, the Government Accountability Office (GAO) discusses why objectivity and impartiality are critical to the auditor's credibility. The excerpts below also discuss situations that place the auditor's credibility at risk. These same situations can also impair the COP's credibility as discussed at **Issues 2c, 2d and 2e**.

"3.04. Auditors...maintain independence so that their opinions, findings, conclusions, judgments, and recommendations will be impartial and viewed as impartial by reasonable and informed third parties. Auditors should avoid situations that could lead reasonable and informed third parties to conclude that the auditors are not independent and thus are not capable of exercising objective and impartial judgment on all issues associated with conducting the audit and reporting on the work."

GAO discusses two conditions that are critical to the auditor's credibility.

"3.03. a. Independence of Mind: The state of mind that permits the performance of an audit without being affected by influences that compromise professional judgment, thereby allowing an individual to act with integrity and exercise objectivity and professional skepticism..."

"3.03. b. Independence in Appearance: The absence of circumstances that would cause a reasonable and informed third party, having knowledge of the relevant information, to reasonably conclude that the integrity, objectivity, or professional skepticism of an audit organization or member of the audit team had been compromised."

GAO also discusses situations where the auditor's objectivity may come under question.

"3.14. Threats to independence may be created by a wide range of relationships and circumstances. Auditors should evaluate the following broad categories of threats to independence..."

"a. Self-interest threat – the threat that a financial or *other interest* will inappropriately influence an auditor's judgment or behavior..."

"c. Bias threat – the threat that an auditor will, as a result of political, ideological, social, or other convictions, take a position that is not objective..."

"d. Familiarity threat – the threat that aspects of a relationship with management or personnel of an audited entity, such as a close or long relationship...will lead an auditor to take a position that is not objective..."

# Appendix F: COP Representation Count by Subarea

## Objective 1, Issue 2b

As discussed at **Issue 2b**, the table below shows that the distribution of COP members has consistently underrepresented South King County and overrepresented North King County. Since 2007, South King County is the only subarea that has never had more than two representatives.

The table also shows that although North King County and Pierce County (both shaded yellow) have similar populations, North King County has twice the COP representation. Similarly, although South King County and East King County (both shaded gray) have similar populations, East King County has more than twice the representation.

Number of COP Representatives by Subarea on the date indicated							
Sub-area	09/1/07	09/1/08	09/1/09	09/1/10	09/1/11	09/1/12	Population
Snohomish County	2	2	2	2	3	3	419,642
East King County	4	4	4	4	3	3	516,483
South King County	2	2	2	2	1	1	511,163
North King County	4	4	4	4	4	4	674,189
Pierce County	3	3	2	2	2	2	668,372
<b>Total</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>13</b>	<b>13</b>	

# Appendix G: COP's Governing Principles

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## Citizen Oversight Panel's Governing Principles: Objective 1

### Sound Transit

#### Citizen Oversight Panel

(Adopted March 15, 2001, Amended March 17, 2005, Amended November 8, 2007)

#### Mission

It is the mission of the Citizen Oversight Panel to ensure that Sound Transit meets its commitments to the public by monitoring its performance, reporting to the Board on potential areas for improvement, and evaluating the response in making change. Areas to be monitored will address:

- Sound Transit's adherence to its public commitments;
- the open and timely involvement of citizens in the Sound Transit district in decisions affecting local communities and the district as a whole;
- the process of evaluating project alternatives;
- the capital and operating budgets and finance plans;
- equity in subarea budgets and reporting;
- discipline in management of schedules and budgets; and
- review of agency performance audits.

#### Goals and Objectives

The Panel's goal is *to act in an oversight capacity* to the Sound Transit Board, *to comment on and provide feedback on Sound Transit's performance*. The Panel acts to ensure that Sound Transit Board policy decisions are made with full consideration of due process, sound technical information and the full range of appropriate perspectives. The Panel at all times seeks to be:

**Knowledgeable.** The Citizen Oversight Panel will seek to achieve and maintain a high degree of understanding and knowledge of Sound Transit's actions and plans in order to fully execute its mission as a monitoring body.

**Representative.** The Citizen Oversight Panel will seek to represent the geographic, demographic and interest perspectives of the Sound Transit district and, in that role, will listen to and reach out to communities of interest whenever possible and relay those community perspectives to the Board.

**Credible.** Panel members commit to maintaining a high degree of credibility and integrity in their role by their actions, speech and demeanor, including adherence to Sound Transit's ethics policy and full disclosure of any potential conflicts of interest.

#### Governance Principles

##### Sound Transit Board-Provided Governance Principles

**Through Motions No. 18 and 2002-87 and an adopted selection process, the Sound Transit Board has provided the following framework for the Panel:**

**Membership.** The Citizen Oversight Panel shall consist of fifteen volunteer members, of whom at least two shall live or work in each of the five Sound Transit district subareas. Panel members shall broadly represent the demographic make-up of the Sound Transit district and shall include as wide an array as possible of skills and experiences necessary to perform its function.

**Qualifications.** Citizen Oversight Panel members must live or work in the Sound Transit district and be registered voters within the district.

**Terms.** Initially, Panel members were appointed for either a two-year or a three-year term with a provision allowing re-appointments up to a maximum of six years. By Motion M2002-87, adopted on July 11, 2002, a four-year term was established for COP members appointed after February 27, 1997 and the beginning date of the term was set as the date of Board appointment. Members were limited to two four-year terms.

**Geographic perspective.** Members will provide a subarea(s) perspective, for the subarea in which he or she lives and/or works, as well as a district-wide perspective whenever issues of the good of the whole may arise.

**Ethics Policy.** All panel members agree to abide by the Sound Transit Board's ethics policy, adopted as Resolution No. 81 on February 27, 1997.

**Vacancies.** Nominations to fill vacancies are made by the Sound Transit Board. Sound Transit Board members will nominate candidates for consideration by Sound Transit Board's Executive Committee. The Executive Committee will provide the Sound Transit Board with a recommendation for Sound Transit Board adoption. When a vacancy arises on the panel, every attempt will be made to fill it with an individual whose skills, experience and demographic characteristics maintain the panel's geographic balance and diversity.

### **Panel-Adopted Governance Principles**

**Officers.** Panel members shall elect a chair and a vice chair (and/or other officers) to serve one-year terms, subject to re-election to additional terms at the will of the panel. The chair's role will be to preside at meetings, to act as the designated spokesperson for the panel and to act as the designated liaison with Sound Transit staff. The vice chair will serve in that capacity in the chair's absence.

**Actions as a Whole.** The Panel shall strive to act as a body in all circumstances, except when a matter comes before the panel that requires more detailed review or more frequent meetings. In such cases, the panel may choose to appoint a smaller task force to study such a matter and report back to the full body.

**Voting.** It is the intent of the Panel that all decisions be reached by consensus whenever possible, consensus being defined as a decision that all members can live with and abide by as the prevailing view. When differences of opinion arise among panel members and consensus is not possible, the panel will vote and the majority will prevail. Minority opinions and discussion of issues on which there are differences will be reflected in the reports and in the minutes of meetings.

### **Operating Principles**

**Open meetings.** The meetings of the Citizen Oversight Panel are open to the public, provided, however, the Chair may close the meeting to the public in the following circumstances:

1. To interview prospective candidates for a staff position for the Citizen Oversight Panel;
2. To evaluate qualifications of an applicant for a staff position for the Citizen Oversight Panel;
3. To discuss, review and approve strategic focus areas and draft evaluation reports of the Citizen Oversight Panel.

At the time the Chair closes the meeting to the public, the Chair shall publicly announce the purpose for excluding the public from the meeting.

**Quorum.** Fifty percent of Panel members must be present to conduct meetings.

**Participation.** Citizen Oversight Panel members are expected to attend all meetings unless excused by the chair. If a member is absent from two or more consecutive meetings or otherwise fails to participate in good faith in the deliberations of the Panel, the Chair will confer with the member and the member may be asked to resign.

**Frequency of meetings.** The Panel shall meet at least bi-monthly or as often as members feel is necessary to conduct the Panel's business. Every attempt shall be made to set meeting times in advance.

**Staffing.** Staffing shall be provided to the Panel by an independent staff person selected by Panel members and retained by Sound Transit. Staffing shall include responsibility for coordinating with the chair, preparing all meeting materials, mailing meeting notices, organizing meeting agendas and presentations, and acting as liaison between the panel and Sound Transit staff and Board. Additionally, the Panel can request that Sound Transit provide the services of other independent experts as needed.

**Meeting materials.** The individual responsible for staffing the Panel shall maintain a record of all meeting materials provided to the Panel and shall prepare written meeting summaries for the record. Every attempt will be made to mail meeting materials to members in advance.

**Task forces.** The Panel may, at its discretion, form task forces to look into particular issues in greater detail than regular meetings allow. It is the intent of the Panel that such task forces should be ad hoc in nature and not become standing committees. Task forces shall be appointed by the chair and given a specific charge to fulfill within an assigned time frame, after which they disband.

**Communication among Panel members.** Panel members agree to speak openly and frankly among themselves and to maintain at all times the courtesy, respect and general tone that will foster an atmosphere of dialogue and acknowledgment of diverse views. Panel members will communicate with the Chair, with the staff facilitator or with each other as needed to ensure their views have been fully considered.

**Communications and reports to the Sound Transit board.** Summaries of each meeting of the Citizen Oversight Panel shall be sent to the Sound Transit Board for information. The Panel will make a formal presentation of its findings to the Board at least twice each year or more often at the request of the Board or at the Panel's own discretion. The presentation of findings will take the form of observations on Sound Transit's performance in the seven areas within the panel's mission. If performance is found to be inadequate in any area, the Panel will make recommendations for improvement. Formal findings and annual report will be issued by consensus, or if by vote, by two-thirds majority vote of the members present. In addition to the formal presentation of findings, the Panel's chair may ask for time on the Board's meeting agenda at any time to make a report on any matter. Evaluation reports prepared by the Citizen Oversight Panel, whether in a draft or final version, shall not be released to the public prior to the time they are delivered to the Board of Sound Transit.

**Communication with the public.** Inquiries and comments from the public shall be directed to Panel members through Sound Transit. Personal phone numbers and addresses shall not be released to the public unless explicitly permitted by the Panel member in a particular instance. In general, the Panel will not take formal public testimony or conduct formal hearings, although Panel members will seek to be informed of citizen views in their own subarea as well as the district as a whole.

Inquiries from the press about the work of the COP will generally be referred to the chair or vice chair, although Panel members may speak as individuals especially with respect to issues in their subareas. Sound Transit staff may be called on as a resource to assist in developing themes or talking points when formal reports are being issued.

**Public participation.** Panel members are encouraged to participate in Sound Transit and other public meetings and events whenever possible to remain informed of emerging issues and citizen views. Panel members may speak and make public appearances as individual panel members, however, should be careful not to speak on behalf of the Panel unless the Panel has made and released to the public a formal finding and members have been asked to speak to the finding by the chair. In their oversight capacity to the Board, Panel members will not make public statements that have not first been made to the Board.

**Ethics policy and guidelines.** Panel members agree that the appearance of impartiality and objective oversight is critical to its success in meeting its mission. Panel members agree to the following clarifying guidelines to the formal ethics policy:

- Any appearance that a Panel member may be personally or professionally benefited by participation in Panel discussions or actions shall be disclosed. At the request of the Panel Chair, Panel members who may have an appearance of conflict will refrain from participating in Panel discussions or actions. An appearance of conflict or a potential for conflict requiring disclosure includes examples such as the following: a COP member is married to someone or has a relative who is seeking a contract with Sound Transit; a member has a direct contractual relationship with someone who is seeking a contract with Sound Transit; a member is working for an organization that is engaged in direct negotiation with Sound Transit over a permit, a regulatory interpretation, or a contract with Sound Transit, to the extent the member is employed in a position or department having a direct role in the negotiation. When in doubt, Panel members should err on the side of disclosure.
- The following situations constitute an appearance of personal or professional benefit and require the Panel member to recuse himself or herself from COP discussions: the Panel member personally is seeking paid employment or contracts with Sound Transit; is responding to an RFQ or RFP issued by Sound Transit, either

• Appendix G • Sound Transit •

directly or as a subcontractor; has been offered or awarded employment or contracts with Sound Transit or one of its contractors; or the Panel member's employer is engaged in the foregoing.

- The following situations constitute an actual conflict of interest and require the Panel member to resign from the COP: the Panel member as an individual or business entity has been notified of selection for employment or for a contract with Sound Transit; or the Panel member's employer is engaged in a contractual relationship with Sound Transit and the Panel member is in a position having a direct role in the performance or oversight of the contract.

# Appendix H: Originally Planned ST2 Funding Sources

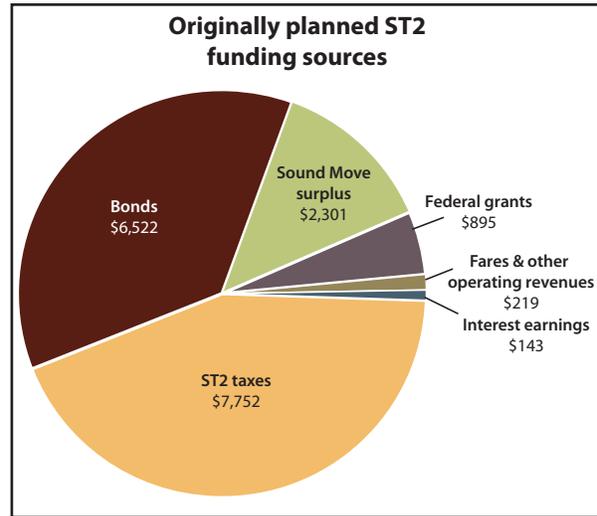
## Originally Planned ST2 Funding Sources: Background section of Objective 2

### Background

In November 2008, voters approved Sound Transit 2 (ST2), an estimated \$17.8 billion investment in the regional high-capacity transportation system - Link light rail, Sounder commuter rail, and ST Express bus service. Funding for ST2 was expected to come from the sources shown in the chart at right and the narrative below.

### Funding sources

**Sound Move surplus:** Sound Transit's existing Sound Move tax revenues (.4 of 1 percent sales and use tax and three-tenths of 1 percent motor vehicle excise tax), will be used in addition to grants, fares, and other miscellaneous sources. The Sound Move surplus that was available to cover the ST2 program was estimated to be \$2.3 billion.



**ST2 Sales and Use Tax:** Voter approval was sought to raise the local sales and use tax an additional five-tenths of one percent. Sound Transit estimated the additional tax will generate \$7.8 billion in revenue through 2023.

**Federal support:** The ST2 Plan assumed an additional \$895 million in federal grants to build out the system, supplementing local resources. These amounts included Federal Transit Administration formula grants and full funding grant agreements. No state or local grants were assumed for implementing the ST2 Plan.

**Bonding:** The ST2 Plan included an estimated \$6.5 billion in bond financing from 2009-2023.

**Fares:** Sound Transit collects fare revenues from passengers using its system. As the ST2 system is constructed, the Agency will continue to collect fares and other operating revenue. The ST2 related fares and other operating revenues were estimated to be \$219 million from 2009-2023.

**Interest Earnings:** The ST2 related interest earnings on net cash balances were estimated to be \$143 million from 2009-2023. Financial policies attributed those revenues to fund system-wide costs.

### Expenditures

The approved plan also included the following costs:

**Sounder Commuter Rail:** \$1.1 billion for additional track space leases, locomotives and coach cars, maintenance facilities, and stations and improvements.

**ST Express Bus:** \$344 million for expanded park-and rides, transit centers, station access improvements, bus fleet, and maintenance facilities.

**Link Light Rail:** \$11.8 billion for approximately 36 miles of light rail to extend service to Lynnwood, the Overlake Transit Center area of Redmond, and Redondo/Star Lake. The light rail cost estimate included the First Hill streetcar connector, Tacoma Link extension partnership funds and the Eastside rail corridor partnership.

**Transit Operations and Maintenance:** \$730 million through 2023 for new light rail, commuter rail, and regional bus services. Although the ST2 Plan funds transit operations indefinitely, the costs estimated in the ballot measure were for the first 15 years of ST2 transit operations through 2023.

**System-Wide Expenditures:** \$1.3 billion through 2023, including the Agency’s research and technology and fares programs, future phase planning, administration and other expenditures that were believed to be necessary to maintain and plan for regional transit consistent with the voter-approved system plan.

**Debt Service:** \$1.8 billion through 2023. The ST2 Plan anticipated the issuance of 30-year bonds to finance ST2 projects. The \$1.8 billion reflected the 2009–2023 debt service costs for these ST2 project bonds. Debt service is planned to continue until the final bonds are retired.

**Reserves:** \$708 million through 2023. The plan funded estimated bond reserves and a two month operations and maintenance reserve.

<b>Sound Transit Budgeted Expenditures</b>	
Dollars in millions	
<b>Cost areas</b>	<b>Budgeted expenditure</b>
Souder Commuter Rail Capital	\$1,101
ST Express Bus Capital	\$344
Link Light Rail Capital	\$11,821
System-wide Capital	\$153
Souder Commuter Rail Operations & Maintenance	\$232
ST Express Bus Operations & Maintenance	\$206
Link Light Rail Operations & Maintenance	\$292
System-wide Operations & Maintenance	\$1,141
Debt Service	\$1,835
Contribution to reserves	\$708
<b>Total</b>	<b>\$17,833</b>

*Source: Sound Transit 2: A Mass Transit Guide; The Regional Transit System Plan for Central Puget Sound, July 2008.*

# Appendix I: October 2009 ST2 Implementation Principles

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## **October 2009 Implementation Principles for Responding to Lower ST2 Revenues: Background section of Objective 2.**

In October 2009, management developed a discussion paper to advise the Board of Directors about how to best begin implementation of the ST2 program and to identify potential opportunities and risks. It was developed in response to revised forecasts that projected that Sound Transit would collect \$3.1 billion (20 percent) less local tax revenues than was forecast in June 2008. However, it also forecasted lower growth of service, construction, and right-of-way costs because of weakening economic conditions. The lower forecast prices were expected to result in lower bids for design and project construction that would partially offset the decline in local tax revenues.

The paper proposed the following "Implementation Principles" to manage Sound Transit resources in meeting planned projects with lower revenues:

### **Save Operating Dollars Whenever and Wherever Possible.**

- Advance capital projects that provide operating savings only if those savings more than offset the costs of spending capital dollars earlier.
- Refine long-term fleet procurement and maintenance facility requirements.
- Implement Transit Operations Task Force recommendations.

### **Gain Early Knowledge About Capital Projects.**

- Prepare alternatives analysis, environmental documentation and/or preliminary engineering for some ST2 light rail extensions earlier in the program to increase certainty, reduce risks and compete for grants.

### **Manage To Low End of Capital Cost Estimates.**

- Review the ST2 project cost estimates and determine areas that could be economized now, before the Board adopts project budgets.
- Strengthen scope control policy direction from the Board to help Sound Transit better maintain scope, schedule and budget commitments.
- Identify inter-local and inter-governmental agreements that will be needed to successfully implement the ST2 Plan.

### **Optimize Project Phasing to Save Dollars.**

- Continually monitor schedule.
- Advance projects that are necessary to maintain the project delivery schedules of ST2 commitments.
- Re-phase project schedules that a) are dependent on unfulfilled funding contributions from other agencies, or b) have discretionary schedules under the ST2 Plan.
- Consolidate some individual projects in larger programs encompassing similar work to provide more financial, contracting and scheduling flexibility.
- Consider repackaging some light rail project development activities to create projects with better economies of scale.

# Appendix J: December 2010 ST2 Program Realignment Approach

## December 2010 Program Realignment Approach for Responding to Lower ST2 Revenues: Background section of Objective 2.

Sound Transit’s revenue forecasts in 2010 continued to identify additional shortfalls. In September 2010, the Board was presented with an updated revenue forecast that predicted a decline in tax revenues over 2009-2023 of \$3.9 billion or 25 percent compared to the Agency’s July 2008 forecast on which the ST2 plan was based. Sound Transit’s CEO proposed a Program Realignment that was discussed at a Board workshop. The realignment was based on specific language within the ST2 plan that directs the Board to take one or more of the following actions in the event that actual or projected expenditures exceed a subarea’s revenues by more than five percent:

- Correct the shortfall through use of such subarea’s uncommitted funds and/or bonding capacity which is available to the subarea; and/or
- Scale back the subarea plan or projects within the plan to match a revised budget; and/or
- Extend the time period of completion of the subarea plan; and/or
- Seek legislative authorization and voter approval for additional resources.”

Using this guidance, the proposed realignment identified specific color-coded categories that allowed for easy identification of proposed changes. After a public hearing on the proposed realignment, it was adopted in December 2010:

Selected Capital Project Recommendations					
	Snohomish	North King	East King	South King	Pierce
<b>Design and Construct as Planned</b> (projects in construction and under contract)	Mountlake Terrace Freeway Station Edmonds Permanent Station	University Link UW to Northgate (one year delay)	Kirkland Transit Center I-90 2Way Trans & HOV Phase 1-3	Souder Easements Burien Parking Garage	M Street – Lakewood Track and Signal D Street – M Street Track and Signal Lakewood to Seattle Expansion
<b>Keep Moving</b> as planned (monitor and evaluate project until revenue uncertainties are resolved)	Northgate to Lynnwood Mukilteo Station -South Maintenance Facility Souder Yard/Shops	Northgate to Lynnwood Maintenance Facility	East Link (Seattle to Overlake)	SeaTac to S 200th Tukwila Station Maintenance Facility Souder Yard/Shops	Tacoma Track and Signal Tacoma Link Expansion Station Access Program
<b>Retain Limited Funding</b> to develop options; funding could be restored as revenue uncertainties are resolved			Seattle to Overlake Maintenance Facility	South 200th to South 272nd	PE and right-of-way from South 272nd to Tacoma Dome
<b>Suspend</b> - no activity, defund from finance plan	Edmonds Station (ST2)		Overlake to Redmond PE BNSF Corridor Renton HOV access Bothell Transit Center	Souder Platform Extension	Souder Platform Extension
<b>Delete from the ST2 Program</b>					
<ul style="list-style-type: none"> <li>• Project and Program Reserves: System Access Program</li> </ul>					
<b>Proposed service changes</b>					
<ul style="list-style-type: none"> <li>• ST2 envisioned overall increase of 100,000 new ST Express annual service hours; 78,000 will be implemented.</li> <li>• 2011 will see an increase in ST Express of 17,000 hours, or 2.5%</li> <li>• Route changes, restructuring and reductions will be based on most efficient use of resources</li> <li>• Four new Souder round trips to be added as part of Sound Transit 2 will each be delayed one year.</li> </ul>					
<b>System-Wide Savings</b>					
Cuts to agency administration, research & technology, fare integration, insurance, and planning for future phase.					
Source: Sound Transit Realignment Tracking Sheet.					

# Appendix K: December 2010 Adjustments to ST2 Plan

## **December 2010 Adjustments to ST2 Plan in Response to Lower Revenues: Background section of Objective 2.**

Sound Transit's 2011 budget and the accompanying Transit Improvement Plan (published in December 2010) finalized the Agency's adjustments to the Original ST2 plan based on a 25 percent decrease in anticipated revenue. These documents identified projected capital and operating expenditures for the construction and operating of the Sound Transit regional transit system using a Board approved realignment plan. The following summarizes those changes as well as Sound Transit's forecasts.

### **Revenues are received from the following sources.**

**Taxes:** Funded primarily by three sources:

- Sales and Use Tax of 9/10 of one percent ,
- Motor Vehicle Excise Tax of 3/10 of one percent tax levied on the value of motor vehicles
- Rental Car Tax of 8/10 of one percent levied on the rental value of vehicles.

Total expected revenue: \$11.9 billion over the period 2009 – 2023, \$3.9 billion or twenty-five (25%) below the revenue forecast for the Sound Transit 2 (ST2) plan approved by voters in 2008 as a result of the recession.

**Federal Grants:** From 1997 - 2023, Sound Transit is projecting \$3.2 billion in federal grant awards for Sound Move and ST2 projects including:

- Three Full Funding Grant Agreements:
- \$500 million for the Initial Segment/Airport Link.
- \$813 million for the University Link.
- \$600 million for an ST2 project that has yet to be decided.

**Fare-box:** Fares from ST Express bus service, Central Link light rail service, and Sounder commuter rail service. Fare increases for ST Express bus and Central Link light rail took effect in June 2010 with a follow-on increase in June 2011.

**Interest Earnings:** Interest earnings are invested in accordance with Washington State law and the Asset/Liability Management policy approved by Sound Transit's Board of Directors.

**Miscellaneous Revenue:** Advertising on rail and bus fleets along with rental income from Sound Transit properties.

### **Stated Response to Decreased Projected Revenue.**

- Decline in tax revenues over 2009 – 2023 of \$3.9 billion, 25 percent, compared to the Agency's July 2008 forecast on which the ST2 plan was based.
- No longer to complete the entire ST2 program within the original 15-year time period.
- CEO directed staff to undertake a comprehensive review of the Agency's capital and operating plans to realign them with projected revenues.
- Results presented to Board through the fall of 2010.
- Adopted 2011 Budget and the 2011 TIP reflects the Sound Transit Board's decisions on how to implement the ST2 Plan with fewer resources.
- 2011 TIP includes prioritized expenditures in order to meet capital and operating program goals within available resources.

The Agency's financial policies provide that if actual or projected expenditures exceed a subarea's revenues by more than five percent, the Board "shall take one or more of the following actions:

- Correct the shortfall through use of such subarea's uncommitted funds and/or bonding capacity which is available to the subarea; and/or
- Scale back the subarea plan or projects within the plan to match a revised budget; and/or
- Extend the time period of completion of the subarea plan; and/or
- Seek legislative authorization and voter approval for additional resources."

2011 TIP gave priority to projects and services that:

- Best achieve the stated goals of the voter-approved Sound Move and ST2 regional transit plans;
- Are necessary to maintain the existing system in a state of good repair; and
- Are already under or near construction.

### **Adjustments**

**North Corridor:** The North King and Snohomish subareas are forecasted to experience a 16 percent and 28 percent revenue reduction, respectively. The 2011 TIP recommended maintaining full funding for all capital investments currently under advanced development, including:

- University Link construction
- North Link – UW to Northgate final design
- North Corridor – Northgate to Lynnwood High Capacity Transit alternatives analysis and PE/ Environmental
- Mountlake Terrace Freeway station construction
- Edmonds Permanent Station construction
- Mukilteo Station improvements
- First Hill Street Car engineering and design.

The 2011 TIP recommended reviewing the following projects for possible savings and/or efficiencies that could help align the program with forecasted revenues:

- Souder yard and shop projects;
- Light rail operations and maintenance facilities;
- Bus operations and maintenance facilities; and
- Light rail, commuter rail, and bus fleet procurements.

The 2011 TIP also:

- Suspended further funding of Edmonds Station beyond the permanent station under construction
- Moved the revenue service date for the UW to Northgate segment from 2020 to 2021 due to design and construction challenges (final schedule will be base-lined at sixty percent (60 percent) design); and
- Deleted program reserves for projects at or near completion.

**East Corridor:** The corridor encompasses the East King County subarea, and is forecasted to experience a 26 percent revenue reduction as a result of the recession. The 2011 TIP recommended full funding for many of the capital investments under development, including:

- East Link environmental engineering and design; and
- I-90 Two-Way HOV design and construction.

In addition, the 2011 TIP directed staff to review the following projects for possible additional savings and/or efficiencies that could help align the program with revenues:

- Light rail operations and maintenance facilities;
- Bus operations and maintenance facilities; and
- Light rail and bus fleet procurements.

In order to align the program with available resources in the corridor, the 2011 TIP also suspended the following:

- Potential passenger rail partnership funding on the Eastside Rail Corridor;
- Overlake – Redmond preliminary engineering;
- Bothell Transit Center partnership funds; and
- Renton HOV access project due to funding shortfall on related third party projects.

**South Corridor:** The South King and Pierce county subareas are forecasted to experience a thirty-one and twenty-six percent revenue reduction as a result of the recession. The 2011 TIP recommended funding certain capital investments and service expansions currently under development:

- Sounder Tacoma-to-Lakewood construction;
- Tacoma Link Extension alternatives analysis;
- Sounder commuter rail service extension from Lakewood to Tacoma;
- Airport – South 200th Link extension additional engineering;
- South 200th – South 272th Link alternatives analysis;
- Burien Transit Center parking expansion preliminary engineering;
- ST2 Sounder additional round-trips; purchase of additional easements; and
- Tukwila Sounder Station construction.

In addition, the 2011 TIP directed staff to review the following projects for possible additional savings and/or efficiencies that could help align the program with revenues:

- Sounder yard and shop projects;
- Light rail operations and maintenance facilities;
- Bus operations and maintenance facilities;
- Sounder Reservation Junction double-tracking;
- Sounder station improvements in Pierce County; and
- Bus, light rail, and commuter rail fleet procurement.

In order to align the program with available resources in this corridor, the 2011 TIP also recommended suspending the following:

- Link light rail extensions south of South 200th for funding beyond initial engineering studies;
- South 272nd to the Tacoma Dome funding for preliminary engineering and right of way acquisition;
- Sounder station improvements in South King County; and
- Sounder platform extensions in Pierce and South King Counties.

# Appendix L: Sound Transit’s Implementation of Prior Recommendations

## Details for Sound Transit’s Implementation of Recommendations from Prior Performance Audit: Objective 3, Issue 2

### Status of Recommendation Implementation (Detailed discussion follows table)

Original recommendation	Status	Additional recommendations
1a Initiate annual performance audits.	Implemented	
1b COP ensures annual performance audits are conducted and reported.	Implemented	
2 Require formal documenting and sharing of lessons learned.	Implemented	Sound Transit should: <ul style="list-style-type: none"> <li>• Develop specific timeframes</li> <li>• Allow consultants to initiate lessons learned</li> <li>• Improve Initiation Form</li> <li>• Communicate changes</li> </ul>
3 Proactively address all lessons learned associated with its Real Estate Division.	Implemented	
4 Ensure that all consultants’ declarations of non-conflict are obtained.	Implemented	
5 Implement quarterly consultant/supplier performance evaluations.	Implemented	Sound Transit should: <ul style="list-style-type: none"> <li>• Provide clear instructions/training to evaluators</li> <li>• Identify and evaluate trends, summarize rankings</li> <li>• Integrate into lessons learned</li> </ul>
6 Incorporate metrics into construction management procedures for tracking and responding to RFIs.	Implemented	
7 Ensure risk assessment is updated and managed as appropriate.	Implemented	Sound Transit should: <ul style="list-style-type: none"> <li>• Incorporate risk and contingency management plans into Value Management/Engineering policy (See also original Recommendation 12, below)</li> </ul>
8 Continue to use “second-opinion” cost estimates for high risk/complex projects.	Implemented	
9 Improve requirements for change order Independent Cost Estimates.	Implemented	
10 Ensure that the Best Practice guidelines are followed to ensure that information can easily be obtained.	Implemented	
11 Improve scope verification processes prior to finalizing Bid documents.	Implemented	
12 Improve quantification of risk items included in contracts as Provisional Sums.	Implemented	Sound Transit should: <ul style="list-style-type: none"> <li>• Incorporate risk and contingency management plans into Value Management/Engineering policy (See also original Recommendation 7)</li> </ul>
13 Implement a process to classify change order sources	Implemented	Sound Transit should: <ul style="list-style-type: none"> <li>• Update PCAM to include detailed procedure for the administration of change orders</li> <li>• Develop a standard change order summary sheet within the PCPP that requires agreed values for:               <ul style="list-style-type: none"> <li>• the independent cost estimate, contractors’ cost estimate and the negotiated change order total</li> <li>• the contractor’s indirect costs and allowances for overheads &amp; profit compared to markups specified in the contract</li> </ul> </li> </ul>

Original recommendation	Status	Additional recommendations
14a Modify current contracting requirements to allow performance based contracting as appropriate.	Implemented	
14b Consider the use of alternative project delivery methods.	Implemented	
15 Use a milestone payment strategy on future contracts.	Implemented	
16-1 Ensure access to structures/properties for due diligence inspection and testing is negotiated early in the real estate acquisition process.	Implemented	
16-2 Ensure the investigation and sampling plan is designed to obtain a comprehensive and representative materials sampling.	Implemented	
16-3 Ensure adequate time for testing, data compilation, and reporting of findings is factored into project schedule.	Implemented	
16-4 Ensure available survey findings and volume estimates are incorporated into bid documents.	Implemented	
16-5 Obtain screening level subsurface data from as many commercial properties along a planned route as possible.	Implemented	Sound Transit should create a protocol for performing screening assessments
16-6 Consider investigation techniques that require minimal access issues and site disruption.	Implemented	
16-7 Conduct subsurface investigations of public right of way adjacent to known or suspected contaminated sites.	Implemented	
16-8 Conduct additional remedial investigations of known contaminated sites after properties are acquired.	Implemented	
16-9 Assure Clean-up Action Plans provided to the contractor provide estimated limits and volumes of contaminated soil and excavation boundaries.	Implemented	
17 Ensure unit prices paid are consistent with industry standards.	Implemented	
18 Ensure each construction team includes an appropriate number of Hazmat-trained individuals and a contingency response plan which defines the roles, responsibilities, and standard procedures to be implemented is in place.	Implemented	
19 Develop a contingency plan to allow work to continue when suspected contamination is encountered and ensure that health and safety monitoring is available.	Implemented	
20 Implement a plan to require contractors to co-sign on stormwater permits.	Implemented	

**Recommendation 1: Use performance audits to improve Sound Transit’s construction program.**

**Original Finding**

Sound Transit has not commissioned annual, independent, comprehensive performance audits limiting the ability to identify and address budget, schedule, and scope issues:

**Original Recommendation(s)**

- 1a: Sound Transit should initiate annual comprehensive performance audits, incorporating a process of review and reporting on the status of actions and progress on previous report recommendations.
- 1b: We recommend the Citizen Oversight Panel ensure annual comprehensive performance audits are conducted and reported to the public and the Board when they have been performed.

**Status per Sound Transit**

- 1a: ST2 financial policies adopted an annual performance audit program. Internal Audit Chartered in 2011 requires annual planning, performance and reporting of performance audit program.
- 1b: The COP is provided a briefing on the performance audit program. The COP chair is a member of the Audit & Reporting Committee, and in that capacity provides input regarding performance audit scope.

**Current Findings**

- 1a: Sound Transit has adopted an annual performance audit program. In 2011, it established an Internal Audit Function and currently requires annual planning, performance, and reporting of the program. The Function is staffed by an Audit Director and two auditors and reports directly to the Deputy Chief Executive Officer. The Function has used an Agency-wide Risk Assessment completed in late 2009 as a basis for audit area selection.  
The Function completed its first audit of IT Procurement and Contracting in 2010 and, most recently, a contract audit of the Agency’s Value Engineering.
- 1b: The COP is provided a briefing on the performance audit program. The COP chair is a member of the Audit & Reporting Committee, and in that capacity provides input regarding performance audit scope.

**Conclusion**

Based on Sound Transit’s actions to date, the Agency has:

- 1a: Met the intent of the audit recommendation to initiate annual comprehensive performance audits.
- 1b: Met the intent of the audit recommendation to ensure performance audits are conducted and reported to the public and the Board.

**Recommendation 2: Incorporate Lessons Learned into cost and schedule management practices.**

**Original Finding**

Sound Transit has not fully implemented a formal knowledge management procedure and database increasing risk in the future of higher costs, decreased efficiency, and missed timelines.

**Original Recommendation**

Sound Transit should require formal documenting and sharing of lessons learned within the agency and implement appropriate procedures.

**Status per Sound Transit**

Sound Transit agreed with the prior audit recommendation and that the identification and sharing of

lessons learned is critical to the success of Sound Transit. The Agency was in the process of completing the following:

- Forming a Contract Documents Review Committee to work closely with the Construction Manager, the five Resident Engineers, design managers, and project managers to gather information on lessons learned by capturing the actual experience of these key team members responsible for the implementation of the Initial Segment from final design through construction and start-up activities.
- Holding regular brown bag training sessions and other meetings with construction management personnel for cross-training of information on successes and challenges.
- As part of the U-Link Final Design work, the Contract General Provisions, Special Provisions, and Technical Specifications of the Initial Segment were being reviewed and revised in light of the lessons learned from the Initial Segment. Similarly documents for other projects are updated based on lessons learned from University Link.
- Link Engineering approved an engineering procedure for lessons learned that will be utilized to formally implement the process.

### **Current Findings**

In the fall of 2008, the agency initiated a Lessons Learned program that applies to all agency business activities; capital construction, transit operations and administration. Lessons may be initiated by any employee. Following development and review the lessons are archived electronically in a SharePoint site that is available to agency staff.

In February 2009, the Finance Department began coordinating its Lessons Learned program. A user guide and a Lessons Learned Log were created and policies and procedures developed. A Budget Manager has been given the responsibility to manage the program and a Lessons Learned Coordinator was assigned to administer it.

The policy indicates that project managers should review their projects for Lessons Learned at major phases and project closeout. It also suggests that department directors and division managers are responsible for ensuring the Lessons Learned program is incorporated.

### **Conclusion**

Sound Transit has initiated a Lessons Learned program that requires formal documenting and sharing of lessons learned within the Agency and implemented procedures as recommended in the prior audit. The 2011 Year End report indicated seventy-two (72) projects, seven (7) administration, one (1) operations (with several pending); one hundred (100) IT, and sixty-four (64) FTA lessons learned have been identified.

Below are additional opportunities to strengthen the process:

#### *Timeliness of Lessons Learned*

Sound Transit's policy states that the originator has thirty (30) days to complete the project initiation form. No other timeframes are identified. The Lessons Learned Program provides a process for improving the accuracy and efficiency of how Sound Transit does its work. As a repository for knowledge and experience gained from project activities, it is to be used to benefit current and future projects by improving procedures and work products or eliminating non-value added activities and repeating activities and approaches that prove beneficial. It also identifies areas to improve cost and schedule performance. Without specified time frames to write, review, and publish lessons learned, the ability to benefit other projects is diminished.

#### *Lessons Learned Log*

The lessons Learned Log is incomplete. A review of actual lessons learned for 72 projects published on Sound Transit's SharePoint site showed that 24 were not included on the Lessons Learned Log.

To ensure that all lessons learned are identified, their status defined, and each is published, the Agency should have a method for tracking and accounting for lessons learned.

### *Lessons Learned Initiation Form*

The Lessons Learned Program developed an Initiation Form to help ensure information provided is complete and accurate. As noted in the Agency's year-end report, its 2012 goals include improving this template. However, the current form does not provide contributors with a clear understanding of how to develop compelling, relevant, and helpful information regarding lessons learned for continual improvement. These lessons learned are helpful in identifying what worked well, what Sound Transit should replicate, and what could be improved or prevented.

To ensure the capture of all pertinent information, the Lessons Learned Initiation Form should include links to the Agency's Policy and User Guide as well as short instructions for each item, how to submit the Form, and the deadlines for doing so. As the template is improved, the simplicity of the form should be maintained to ensure it is not difficult to use. Additionally, a date should be included on the form.

### *Implementation*

We found examples of Sound Transit informally integrating lessons learned. Project managers and meeting agendas indicate that lessons learned have affected training. Additionally, lessons learned from the Initial Segment project have resulted in Sound Transit hiring a Single Civil/Architectural Designer and Single CMC, as well as packaging the construction work to take advantage of the expertise of the prime contractors.

However, the Lessons Learned Program is not completely and formally integrated into Agency practices. The Agency has no process to decide which lessons must be acted on or to assure they result in improvements to Sound Transit's policies and processes.

Although the Category Committee reviews each lesson learned to determine if it is ready to publish, the Committee does not track the use of these lessons or whether they have formally affected processes or triggered training. Using some, but not all lessons learned, limits the benefit to future projects.

### *Initiation*

Currently, only Sound Transit employees initiate lessons learned. However, the Agency extensively uses consultants who have broad experience and first hand-knowledge of best practices. If this information is not captured, the Agency is foregoing improvement opportunities.

### **New recommendation:**

Sound Transit should:

- Develop specific timeframes for writing, reviewing, and publishing lessons learned
- Modify its policy to allow consultants to initiate lessons learned.
- Extrapolate and publish any lessons learned/best practices unearthed from Consultant Performance Evaluations.
- Clarify its current Initiation Form to ensure compelling, value-added information regarding lessons learned is provided.
- Communicate the improvements that have resulted from sharing lessons learned to reinforce the importance of continual improvements.

### **Recommendation 3: Incorporate Real Estate Lessons Learned into cost and schedule management practices.**

#### **Original Finding**

Sound Transit's Real Estate Division should continue to proactively address all lessons learned as identified in 2006 to increase its effectiveness and mitigate potential cost and schedule impacts in the future.

#### **Original Recommendation**

Sound Transit should continue to proactively address all lessons learned associated with its Real Estate Division to ensure that there is no repetition of previous issues that can result in negative budget and schedule ramifications.

### **Status per Sound Transit**

Sound Transit has assigned Senior Real Property Representatives to each Link, Regional Express, and Sounder project. These representatives regularly interact with project teams to ensure Real Estate input and participation, which ensures all acquisitions are completed within the project schedule and budget. Additionally, Real Estate now works closely with the Deputy Director for Business Services to ensure compliance with agency policies and guidelines. Items for presentation to the Board are also coordinated through DECM administration to ensure consistency and accuracy. In the area of environmental due diligence, Real Estate retains on-call contractors to complete environmental investigations and coordinates the results of these investigations with Sound Transit's Senior Environmental Analyst.

### **Current Findings**

In July 2002, Sound Transit developed its Real Property Acquisition and Relocation Policy, Procedures and Guidelines, which define accountability, acquisition, appraisals, notices, expenses/payments, recordkeeping, negotiations and required state and federal certifications. In August 2007, Sound Transit developed a Property Acquisition & Relocation Plan specifically for University Link. Its Real Estate Division is also engaged in the Phase Gate process (described at Objective 3, Issue 4) that is used to identify and mitigate risks in Right of Way acquisition costs.

### **Conclusion**

Our review of the policies and procedures indicates the Agency has addressed the concerns identified in the previous audit. A list of on-call contractors has been established and each investigation results in a written report to the Senior Environmental Analyst. These investigations, lessons learned from these investigations and bid and contract documents are shared with other Agency personnel.

### **Recommendation 4: Identify conflicts of interest with potential consultants.**

#### **Original Finding**

The review of a consultant contract found a \$734,000 change order to manage a \$95 million construction contract that could be perceived conflict of interest.

#### **Original Recommendation**

Sound Transit should ensure that all declarations of non-conflict are obtained from any consultants being considered to provide dispute evaluation, assessment and negotiation of services, or other services which are of a sensitive nature.

#### **Status per Sound Transit**

Sound Transit established specific controls associated with conflict of interest. It currently requires all proposers to complete and submit Submittal Form 2, Certification Regarding Conflicts of Interest. Contract Specialists verify forms have been received prior to issuing notice of award.

#### **Current Findings**

A review of the Procurement and Contract Administration Manual indicated that it does identify specific compliance and management controls under section 5.0 Conflict of Interest. It clearly defines personal and organizational conflict issues and the procedures for dealing with each.

Additionally, a review of a current contract identified specific requirements focused on any potential conflict of interest from contractors and their consultants. These requirements included:

“Sound Transit may request that the Contractor submit a Non-Conflict of Interest Certification”

“The contractor shall not offer or confer any interest in the contract to anyone within ST or associated agencies.”

“Conflict of Interest clause outlines the restrictions imposed on the contractor.”

“Restrictions to lobbying activities”

### **Conclusion**

Sound Transit has met the intent of the audit recommendation by ensuring that all declarations of non-conflict are obtained from any consultants being considered to provide dispute evaluations, assessments, negotiations, or other sensitive services.

### **Recommendation 5: Evaluate consultant performance quarterly.**

#### **Original Finding**

Sound Transit has no Formal Procedures for Evaluation of Consultant Performance Potentially Resulting in Risk of Delays in Construction and Added Costs

#### **Original Recommendation**

Sound Transit should implement quarterly consultant/supplier performance evaluations into the management of consultant contracts and follow-up to ensure expectations of contracts are met.

#### **Status per Sound Transit**

Sound Transit has developed and implemented a consultant performance evaluation policy and procedure. Sound Transit’s PCPP-17, defines the purpose of the Consultant Performance Evaluation Program, in part, as to, “Provide Sound Transit with a basis for determining a consultant’s capacity, capability and expertise for a contract performance.” Sound Transit’s Project Controls Division oversees the program.

#### **Current Findings**

The Executive Director of the Design Engineering and Construction Department reviews quarterly reports of active contracts to determine the need for initiating the next performance evaluations. These reports also are distributed to contract managers to trigger their initiation of the evaluation process.

Sound Transit has nine performance evaluation criteria (Schedule, Cost Management, Scope Management, Quality, Contract Administration, Cooperation, Safety, Environmental Management, and Small Business/Disadvantaged Business Enterprise Participation). Each is reviewed based on five performance levels from “unsatisfactory, marginal, acceptable, good, and superior.”

Evaluation is based predominantly on contract milestones, not calendar dates, for Architect & Engineering and Professional Services Contracts with values of \$1 million or greater. Sound Transit indicated it had initially developed a quarterly, highly quantitative performance consultant evaluation policy for all consultants but determined the methodology and frequency was excessive and cumbersome.

Frequency of evaluations is currently as follows:

- Any time deemed necessary by the contract/Contract Manager or Project Director
- For contracts involving a single facility design – at contract specific milestones (e.g., 30 percent, 60 percent, 90 percent design completion and following design support during construction)
- For contracts involving multiple facility designs, following completion of six months of scheduled level of effort and annually thereafter
- For construction management contracts, at completion of 10 percent of construction and following substantial completion of construction
- For planning contracts, at completion of major deliverables such as Alternatives Analyses or a Draft Environmental Impact Statement
- For non-design related on-call contracts, e.g., environmental permitting, project review services, etc., following six months of performance and annually thereafter;
- All contracts prior to Board action exercising contract options.

## Conclusion

Sound Transit is using a consultant performance evaluation policy and procedure as documented in its Project Control Policies and Procedures. To date, it has completed 38 evaluations. Procurement & Contracts uses these in the RFP process to assist in assessing the qualifications of consultants.

These evaluations do not include a summary of rankings that show the ranges, trends, or overall performance of Sound Transit consultants. Although Sound Transit has used Consultant Performance Evaluations in the procurement process, it has no policy directing Procurement to review past evaluations. While the policy provides an opportunity for consultants to request a follow up on an evaluation, none have been requested.

## New Recommendation:

To leverage additional value from the Consultant Performance Evaluations, Sound Transit should:

- Provide clear instructions and training to evaluators to ensure consistency in ranking performance levels. Standardized definitions and interpretations of the rankings (unsatisfactory, good, etc.) would help prevent inconsistency, subjectivity, and potentially insignificant feedback.
- Identify and evaluate trends and summary of rankings to understand overall performance and to unearth any unintended biases. A summary of rankings would show the ranges, trends, and overall performance of Sound Transit consultants. Without this information, Sound Transit has an incomplete understanding of the consultant's performance.
- Integrate into the Lessons Learned program, those issues, best practices, risks, inefficiencies, ineffectiveness, or other subjects that were learned as a result of the evaluations.

## Recommendation 6: Establish and track response times for contractors' requests for information (RFI's).

### Original Finding

Sound Transit has not formalized the tracking of RFI response times in the Link Construction Manual resulting in risk of project delays and claims.

### Original Recommendation

Sound Transit should incorporate metrics into construction management procedures for tracking of response times for RFIs.

### Status per Sound Transit

Sound Transit has successfully incorporated metrics into its construction management procedures for the tracking of response times for RFIs. RFI status reporting is included in weekly Resident Engineer reports for the major capital programs. RFI status is also a standing agenda item at weekly construction meetings.

### Current Findings

Sound Transit's construction management procedures now track response times for RFIs. RFI status reporting is included in weekly Resident Engineer reports for major capital programs and is a standing agenda item at weekly construction meetings. Statistical summary analyses information is included within these reports.

The expected normal turnaround time for Sound Transit to respond to a design or construction RFI is within 20 days. The designer/contractor can note if an RFI is a priority, indicating that it has the potential to impact the project's critical path schedule.

## Conclusion

Sound Transit has met the intent of the audit recommendation by establishing and tracking the response times for RFIs.

## **Recommendation 7: Assess cost and schedule risks and plan for them**

### **Recommendation 12: Quantify cost and schedule risk Items**

#### **Original Findings**

**No. 7:** Sound Transit should continue to follow a Risk Management Plan (RMP) to assure cost probabilities are not exceeded.

**No. 12:** Sound Transit has provided inadequate provisional sums for known risk items resulting in larger than expected costs

#### **Original Recommendations**

**No. 7:** Sound Transit should ensure risk management planning for the University Link is followed and the risk assessment is updated and managed as appropriate.

**No. 12:** Sound Transit should improve quantification of risk items included in contracts as Provisional Sums to reduce potential impacts for delays and cost increases.

#### **Status per Sound Transit**

Sound Transit has:

**No. 7:** Developed a University Link Risk Management Plan (updated and revised September 2011) that included the risk management approach that was in place for the project. The plan includes risk-based schedule and budget contingencies and the development and maintenance of a Risk Register that is updated quarterly. The risk management approach for University Link has been incorporated into PCPP- 13 Project Risk Management. This procedure provides a complete and uniform approach for identifying, analyzing, and developing appropriate responses for monitoring and managing project risks throughout the life of a project. It applies to all capital projects and associated design, construction, professional services, and materials and equipment contracts.

**No. 12:** Adopted and formally implemented a risk assessment process for each of its major capital programs (PCPP-13 Risk Management.) The process is designed to identify and quantify the impact of project uncertainties so that cost and schedule implications can be determined. In practice where a risk associated with a project element impacts project costs, Sound Transit either budgets additional contingency or establishes a Provisional Sum for that element.

#### **Current Findings**

Both the University Link Risk Management Plan and Contingency Management Plan are detailed and contain defined procedures and recommendations. The Contingency Management Plan requires regular identification, monitoring, and reporting of project contingency balances. In addition, Sound Transit allocates contingencies to individual contracts and maintains unallocated contingency amounts at the project phase level. Internal reporting is used to track contingency levels by utilizing Cost Tracking Reports, which are reviewed at regular intervals.

Although the Agency has not conducted formalized contingency workshops, contingency amounts are evaluated as part of the quarterly updates to the Risk Register. Each project is allocated a Risk Manager who is responsible for coordinating risk issues as required by the Risk Management Plan.

Risk workshops develop the risk register at an early stage, which is updated quarterly. These updates are also issued to the FTA for their review and comment. Minutes from a Risk Assessment Report Update meeting confirmed that the workshop purpose, attendance, and dates are identified and agreed upon in advance. Detailed discussions occur regarding the various risk items under consideration.

Quarterly Risk Mitigation review meetings track and monitor previously identified risks and report on their current status. The Risk Management Plan defines procedures for closing out identified risks and these quarterly reviews identify all current and closed risks. The Risk Register is also reviewed at these meetings.

## Conclusion

Risks are now categorized, with the largest budget and schedule effect items identified as top priorities. Sound Transit assesses the potential effect of these risks and provides mitigating measures quarterly, including the effect on the Contingency Management Plan.

Sound Transit's procedures and management plans address the benefits of implementing a value management process. However, it is unclear how Sound Transit's contingency management processes, risk management processes, and value management strategy fit together. As recognized in *Value and Risk Management; A Guide to Best Practices*<sup>23</sup>, contingency, risk, and value management should be managed as a combined approach.

## New Recommendation:

As it continues to draft its detailed policies and procedures on Value Management/ Engineering, Sound Transit should incorporate its Risk and Contingency management plans and their interconnecting functions and processes.

## **Recommendation 8: Use second opinion cost estimates for project budgeting, contract bidding and change order negotiations.**

### Original Finding

Sound Transit does not stipulate the frequency and format of "second opinion" cost estimates, decreasing the ability to compare and validate cost predictions.

### Original Recommendation

Sound Transit should continue to utilize "second opinion" cost estimates for high risk and complex projects and refine the process to allow for clear comparison and validation against capital cost predictions.

### Status per Sound Transit

Sound Transit issued an updated Cost Estimating Project Control Policy and Procedure (PCPP-02) in September 2010. The procedure sets forth requirements for completing independent "second opinion" cost estimates at the 30 percent, 60 percent, 90 percent and 100 percent design milestones. The second opinion cost estimates reviews the cost estimating methodology used by the design consultants as well as design information including contract packaging and phasing and makes a determination of the reasonableness and appropriateness of estimated quantities and unit rates.

### Current Findings

Our review of the Cost Estimating Project Control Policy and Procedure (PCPP-02) found processes to allow for clear comparison and validation against capital projects as well as change order negotiation. These assessments are prepared by the Construction Management Consultant team, the Project/Design Manager, or Sound Transit Project Control.

A review of the Procurement and Contract Administration Manual identified procedures for Independent Cost Estimates (ICE). Section 6.0, Independent Cost Estimate, outlines the purpose and implementation of ICEs. ICEs are used in advance of receiving a bid or change order within a contract.

Change Orders for the U250 contract were reviewed to identify consistency in accordance with PCPP-02. Of the 19 change orders reviewed, each had an associated ICE with the exception of Change Order 19<sup>24</sup>.

A detailed review of Change Order 10 identified that the ICE followed procedures recommended in the PCPP: appropriate review and signatures and detailed breakdown of values including mark-ups and fees.

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<sup>23</sup> Published in 2006 on behalf of the Chartered Institute of Building.

## Conclusion

Sound Transit has met the intent of the audit recommendation by continuing to utilize “second opinion” cost estimates for high risk and complex projects and by refining its process to allow for clear comparison and validation against capital cost predictions.

## **Recommendation 9: Improve requirements for change order independent cost estimates and provide an estimating framework.**

### Original Finding

Sound Transit has not consistently applied estimating guidelines resulting in variations in quality and content of independent cost estimates for change orders.

### Original Recommendation

Sound Transit should improve its requirements for change order independent cost estimates and provide an estimating framework.

### Status per Sound Transit

The September 2010 Cost Estimating Project Control Policy and Procedure (PCPP-02) sets forth the requirements for change order independent cost estimates and provides an estimating framework that ensures consistency and uniformity in formats and enhances fair evaluation of equity adjustments to a contract. PCPP-02 applies to all capital projects

### Current Findings

Sound Transit’s Procurement and Contract Administration Manual includes administration guidelines for change order administration. The PCAM outlines various best practices, including independent cost estimates, change order “don’ts”, and change order cost/price analysis. References provide guidance for preparing the cost or price analysis of a change order and are identified through the Change Order Cost/Price Analysis. The procedures are continuously updated and incorporate various FTA guidelines.

## Conclusion

Nineteen change orders were analyzed to determine whether Sound Transit followed standard procedures and had proper documentation. Our analysis found no exceptions, and that initial cost estimates averaged within 4 percent of the contractor’s change order estimate and the negotiated total, which is acceptable and consistent with best practices.

## **Recommendation 10: Follow best-practice guidelines to assure that information can easily be obtained.**

### Original Finding

Sound Transit’s documentation and presentation of change order data/information did not follow best practices and limited the ability to demonstrate fully the receipt of fair market value.

### Original Recommendation

To assure that effective budget control, change order review, and increased accessibility to accurate historical data occur, Sound Transit should follow best-practice guidelines.

### Status per Sound Transit

Sound Transit’s Procurement and Contract Administration Manual (PCAM), previously updated in March

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24 CO19 was cancelled.

2010, is in the process of again being updated. The current manual is consistent with Sound Transit procurement and contracting policies, applicable state and federal procurement regulations, Federal Transit Administration (FTA) Circulars and FTA Best Procurement Practices Manual (BPPM). This manual was used as a basis for the development of the August 2010 Change Order and Change Notice PCPP-08, which sets forth change management procedures for planning, design, engineering, construction and construction management contracts.

### **Current Findings**

Project Controls Policies and Procedures define and describe standard practices, provide guidelines, and assigns responsibilities for the documentation and approval of change orders and change notices. It also includes a Change Order Responsibility Matrix, a checklist, and standard documents to be included in each change order.

### **Conclusion**

Nineteen change orders were analyzed to determine whether Sound Transit followed standard procedures and had proper documentation. Our analysis found no exceptions, and that initial cost estimates averaged within 4 percent of the contractor's change order estimate and the negotiated total, which is acceptable and consistent with best practices.

Each change order was signed and approved by the Project Lead & Construction Manager prior to issue to the Contractor. The Project Director, Director of Project Control, Executive Director, and Chief Executive Officer also sign and approve each change order as applicable given the actual cost of the change<sup>25</sup>.

### **Recommendation 11: Verify scope to assure required approvals and competitive pricing on added work.**

#### **Original Finding**

In two identified instances, known scope omitted from Sound Transit contract documents minimized competitive pricing.

#### **Original Recommendation**

Improve scope verification procedures and processes prior to finalizing information for bid documents.

#### **Status per Sound Transit**

Sound Transit has used lessons learned on the Central Link and University Link projects to improve its scope verification prior to finalizing the Invitation for Bid documents. For example, the Agency has established the position of Civil/Systems Integration Manager with responsibility for ensuring that facility/system elements for major capital projects are integrated. It has also established a number of policies and procedures which contain guidance on scope establishment and verification.

### **Current Findings**

Current Project Control Policies and Procedures require the Project Manager (PM) to develop a scope of work and provide it to the Project Control Lead (PCL). If the contract's independent cost estimate exceeds \$150,000 (including contingency), approval by the Change Control Board is required. However, the Policy does not state that the scope of work relating to the contract has to be verified.

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<sup>25</sup> If the change order is within the total board authorized contract value (including contingency), the approvals are: Executive Director \$250K; Change-order Control Board up to \$1million, CEO greater than \$1million up to the maximum Board-authorized contract value. If the change order exceeds the Board authorized contract value, it must be brought back to the Board for approval (capital committee up to \$5million, Full Board above \$5million.)

Resolution No.R2009-24 states that the Sound Transit Board is required to encourage prudent management of project scope. It further states that Board approval is required to expand or enhance project scope once Sound Transit project scopes are established. Application and adherence to this policy document is not limited to projects for which scope conflict or budget challenge has been identified. However, it does not define those projects.

The initial project scope is defined and established by the “project templates” that supported the ST2 planning process.

### **Conclusion**

Our review of PCPPs and initial project scopes and interviews with applicable Sound Transit personnel found that scope verification procedures and processes are appropriate and occur prior to finalizing information for bid documents.

### **Recommendation 13: Classify change order sources to acquire performance measurement data and a basis for understanding changes on all projects.**

#### **Original Finding**

Sound Transit’s classification of change order sources is not to FTA guidelines and may limit the ability to effectively assess changes to contract scope.

#### **Original Recommendation**

Sound Transit should implement a process to classify change order sources to acquire performance measurement data and a basis for understanding changes on all projects.

#### **Status per Sound Transit**

Sound Transit has fully adopted and implemented this recommendation. Policies and procedures setting forth requirements for classifying change orders have been incorporated into the August 2010 Change Order and Change Notice PCPP-08. In accordance with PCPP-08 and consistent with FTA guidelines, change orders are classified as attributable to one of the following:

- Agency’s action
- Differing site conditions
- Errors or Omissions in design plans and specifications
- Contractor’s proposed Value Engineering (VE), and
- Contractor’s Action

#### **Current Findings**

Project Controls Policies and Procedures define and describe standard practices, provide guidelines, and assigns responsibilities for the documentation and approval of change orders and change notices. It also includes a Change Order Responsibility Matrix, a checklist, and standard documents to be included in each change order instructed.

### **Conclusion**

Sound Transit uses a classification summary identified on its Change Order Summary sheet. Each change order must be classified into one of six categories. Whenever a change order is classified as an “error & omission”, a Justification Memo must be prepared and signed by the Director of Civil and Structural Engineering.

Although the Agency has achieved extensive improvement in managing change orders and has focused on ensuring it meets FTA guidelines, it could further that progress by addressing the following areas:

Although each step in the PCPP-08 procedures is clearly defined, it does not:

- Contain a standardized summary of the three different cost elements<sup>26</sup> for each change order. A standardized summary sheet will make it easier to review these costs elements.
- Require staff to reconcile the independent cost estimate to the contractors cost estimate, and the agreed change order cost.
- Require the markups for agreed change orders to be identified and compared to the contract.
- Have a responsibility matrix that identifies the roles and persons responsible for administering change orders.

### **New Recommendation**

Sound Transit should:

- Update the PCAM to include a detailed procedure for the administration of change orders in line with the PCPP and include the responsibility matrix defined in the PCPP.
- Develop a standard summary sheet within the PCPP which is attached to the change order documents. This change order summary sheet should require the responsible engineer to:
  - Review and agree the independent cost estimate, the contractor's cost estimate and the agreed change order cost so these three values can be easily referred to when signing off on the change order.
  - Compare the markups for the contractor's indirect costs and allowances for overhead & profit to those specified in the contract.

### **Recommendation 14: Use alternative project delivery methods to reduce risk and increase value**

#### **Original Finding**

Current Washington State Law limits Sound Transit's current procurement strategies, which many include best value, increase project risk and soft costs, and result in longer delays.

#### **Original Recommendations**

- 14a:** The Washington State Legislature should modify current contracting requirements to allow performance based contracting, as appropriate.
- 14b:** Sound Transit, if permitted by changes instituted by the Legislature, should consider the use of alternative project delivery methods.

#### **Status per Sound Transit**

- 14a:** Sound Transit actively monitors Washington State Legislative developments relating to contracting to ensure that our contracting strategies are consistent with Legislative Requirements.
- 14b:** With the concurrence of the Washington State Capital Projects Advisory Review Board (CPARB), Sound Transit is:
- Employing alternative project delivery methods for the University and South Link projects.
  - Employing General Contractor/ Construction Management (GC/GM) project delivery for construction of the Capitol Hill and University of Washington Stations and the track and systems project elements.

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<sup>26</sup> ICE, Contractor's Estimate and Agreed to Change Order Cost.

- Delivering the South Link project through a design/build process. Alternative contracting strategies will continue to be identified, reviewed, and implemented with the concurrence of CPARB, when appropriate for future capital projects.

### **Current Findings**

Sound Transit has secured approval from the Legislature to use alternative project delivery strategies (GC/CM, Design-Build). It is employing alternative contracting for Station Finishes at the University Link University of Washington and Capitol Hill Stations. Because of the Agency's limited experience with GC/CM contracting, it has initiated a GC/CM roundtable group that meets every two months. Lessons learned and other pertinent topics are discussed. These meetings are attended by the Design Consultant as well as the Resident Engineering team.

The Agency's justification for the selection of these specific methods was thoroughly documented and showed:

- Why the method was chosen
- The circumstances were correct for using this procurement method
- The Agency had staff that were familiar with managing the contracting method
- The Agency was integrating the contracting method into its Performance Evaluation process.

### **Conclusion**

Sound Transit has met the intent of the audit recommendation by pursuing Legislative approval and using, as appropriate, alternative project delivery methods.

### **Recommendation 15: Use milestone payments as incentives for timely contract completion.**

#### **Original Finding**

Sound Transit does not use milestone payment incentives resulting in the potential risk of higher administrative costs and limiting contractor performance opportunities.

#### **Original Recommendation**

As appropriate, use a milestone payment strategy on future contracts, particularly those that significantly impact public access and traffic flow.

#### **Status per Sound Transit**

Sound Transit has indicated that it uses milestone payment strategies that are evaluated on a contract by contract basis.

### **Current Findings**

Sound Transit has established specific procedures that identify processes for authorizing progress payments (PCPP-07, Progress Payments and Invoices), department reporting processes and responsibilities (PCPP-10, Progress Reporting), and ensuring cost estimates and schedules are complete, accurate, and based on well-defined scopes (PCPP-21 Project Base-lining).

PCPP-07 defines steps to follow for progress payment applications received and focuses on approval and review requirements while PCPP-10 requires the Master Project Schedule to be maintained and updated by the Project Controls Scheduling and Estimating Division on a monthly basis to reflect the progress toward achieving scheduling project milestones. PCPP-21 establishes a credible scope, schedule, and budget for a project and provides a basis against which to measure project progress.

In addition, the PCL (Project Control Lead) performs a cost analysis and prepares a Contract Cost Status Memo which accompanies each progress payment application being considered for approval.

## Conclusion

Sound Transit has established specific milestone payment strategies and accompanying procedures. A review of contracts showed each calculated the contractor's progress payment as a percentage of the total unit quantities completed for each item in the Schedule of Values.

## **Recommendation 16: Establish procedures to identify and respond to environmental hazards for cost and schedule benefits.**

### Original Finding

Sound Transit's environmental assessment strategy did not fully estimate the number and extent of hazardous and contaminated sites and materials resulting in unnecessary/underestimated costs.

### Original Recommendations

1. Ensure access to structures and properties for due diligence inspection and testing is negotiated early in the real estate acquisition process
2. Ensure the investigation and sampling plan is designed to obtain a comprehensive and representative sampling of materials to allow quantification of hazardous materials/contamination requiring abatement
3. Ensure adequate time for testing, data compilation, and reporting of findings is factored into the project schedule.
4. Ensure available survey findings and volume estimates are incorporated into bid documents and made available to the successful bidder immediately following contract award.
5. Attempt to obtain screening level subsurface data from as many commercial properties along a planned route segment as possible.
6. Consider investigation techniques that require minimal access issues and site disruption.
7. Conduct subsurface investigations of public right-of-way adjacent to known or suspected contaminated sites during the design phase of projects in order to have a better understanding of the potential presence, nature and extent of contamination.
8. Conduct additional remedial investigations of known contaminated sites after properties are acquired and prior to the initiation of the RFB process. Incorporate the information gained into Cleanup Action Plans and Contract documents.
9. Assure Clean-up Action Plans provided to the contractor provide estimated limits and volumes of contaminated soil and excavation boundaries, including recommended setbacks from structures and utilities.

### Status per Sound Transit

Sound Transit:

1. Performs due diligence inspection and testing as part of the property appraisal process. As an appraisal is one of the first requirements for property acquisition, we generally gain property access for such testing well in advance of acquiring a property. There have been instances where we were unable to obtain ready access to a property for due diligence testing and inspections; in these cases we have proceeded under the assumption that we will use every means possible, including legal action as necessary to gain property access rights.
2. Adheres to sampling and testing protocols established by the ASTM (for all Phase II Environmental Site Assessments) and the Washington State Department of Ecology (for sampling and testing of potentially hazardous building materials). Investigation plans are designed to obtain the maximum amount of information given the constraints imposed by schedule and available access to the parcels in question.

3. Acquires property in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act (42 USC §61) adhering to the notice provisions and acquisition timelines required by the Act. For scheduling purposes we generally allow two years for property acquisition activities; that is property acquisition is scheduled to begin two years prior to the anticipated advertisement date for construction. In general this allows for adequate time for environmental testing, assessment and reporting. In addition, the schedule for a project is thoroughly evaluated during the project risk assessment to ensure that there is adequate time for all project elements, including property acquisition. There have been instances however where acquisition of additional property becomes necessary or where issues related to the acquisition impact the schedule for acquiring the property. In these instances acquisition activities may be performed concurrently with environmental assessments.
4. Incorporates all environmental documents from environmental surveys, inspections and testing into the contract documents at the time of bid, either as part of the Invitation For Bids (IFB) package, or in a “bidder’s library” available for inspection and review at Sound Transit’s offices.
5. Has incorporated the preparation of “Potential Contamination Screening Reports” as part of the environmental due diligence process for all projects with a significant amount of at-grade route segments. Based on the results of the screening-level investigation, additional subsurface investigations are often initiated.
6. Uses environmental consulting firms to conduct environmental due diligence investigations employ state-of-the-art investigation and sampling techniques, including the use of probe samplers as opposed to full-size drilling equipment and the use of geophysical testing equipment where feasible and appropriate.
7. Routinely conducts subsurface investigations when required to work within a public right-of-way where contamination is suspected and when Sound Transit assumes environmental contamination cleanup liability.
8. Makes decisions on whether to perform additional investigations of known contaminated sites on a project by project basis. On low risk projects, Sound Transit has elected to have the contractor develop and implement Cleanup Action Plans. In other instances Sound Transit has tasked the consultant that performed initial environmental studies to develop Cleanup Action Plans and cost estimates for site remediation, which are then incorporated into Contract documents.
9. Provides Clean-up Action Plans to the contractors as part of contract document packages routinely provide an estimate of anticipated limits and volumes of contaminated soil and water.

### Current Findings

#### Sound Transit:

1. Established a reasonable and diligent real estate acquisition plan, and includes due diligence inspection and testing as part of the property appraisal process.
2. Based on our review of selected projects, adheres to sampling and testing protocols established by the American Society for Testing and Materials (for all Phase II Environmental Site Assessments) and the Washington State Department of Ecology (for sampling and testing of potentially hazardous building materials).
3. Acquires property in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act (42 USC §61) adhering to the notice provisions and acquisition timelines required by the Act. The Agency’s general acquisition policy ensures adequate time to address most potential on-site environmental contamination.
4. Incorporates all environmental documents from environmental surveys, inspections and testing into the contract documents at the time of bid, either as part of the Invitation For Bid package, or in a “bidder’s library” available for inspection and review at Sound Transit’s offices. Our review of the practices implemented by Sound Transit and the D2M bid documents, indicate the Agency has met the intent of the recommendation.
5. Has initially implemented the recommendation.

6. Based on a review of selected site investigations, uses techniques that minimized access issues and site disruptions, including the use of probe samplers and geophysical testing equipment where feasible and appropriate. Our review indicates the initial recommendation has been implemented.
7. Established contract specifications for unknown and hazardous substances. Each detailed Sound Transit's responsibilities regarding contaminated materials during development of the initial segment of the Link Light rail system.
- 8/9. Based on our review of its cleanup action plan, conducts additional remedial investigations of known contaminated sites after properties are acquired but before the Invitations for Bid. Low risk projects however, do not necessarily contain action plans.

### Conclusion

Sound Transit's practices have met the intent of the previous recommendations. Our review however, has identified two opportunities to further strengthen those practices:

- Screening level subsurface data. Sound Transit lacks a generic protocol for screening sampling which can be easily modified for site specific conditions.
- 8/9. Cleanup Action Plan. Sound Transit lacks a relatively generic cleanup action protocol for low risk projects that can be easily modified for site specific conditions. This would allow for a more consistent methodology for low risk clean-up action plans. Consistent with the International Standards Organization's ISO 14000 Environmental Management Standards, a more consistent methodology generally is considered better practice.

### New Recommendation

Sound Transit should:

- a) Implement a generic protocol for screening sampling. As partners with the Washington Department of Ecology (DOE) Toxic Cleanup Program, the Agency should also request a review and assessment of the protocol.
- b) Develop a cleanup action protocol for low risk projects.

### **Recommendation 17: Ensure unit prices paid do not exceed industry standards.**

#### Original Finding

Sound Transit's unit prices paid were higher than typical industry-wide costs.

#### Original Recommendations

1. Ensure that unit prices paid are consistent with industry standards.
2. Ensure that for unit cost pay items, a rate for segregation and handling of uncontaminated soil is provided.

#### Status per Sound Transit

1. Project cost estimates are thoroughly reviewed internally by Agency cost estimators. This review includes verification of unit rates with published indices. Discrepancies are noted and where appropriate negotiated to within industry standards.
2. The need for a unit cost for segregation and handling of uncontaminated soil is determined on a contract specific basis. A unit rate is established where it is determined to be appropriate and in the best interest of Sound Transit.

#### Current Findings

Agency cost estimators review Sound Transit's project cost estimates to verify unit rates are within published indices. Discrepancies are noted and where appropriate negotiated to within industry standards. Unit rates are employed when soil conditions are unsuited as foundation materials and require removal or when unanticipated hazardous or contaminated soil is encountered."

## Conclusion

Sound Transit has met the intent of the audit recommendation to ensure that unit prices paid are consistent with industry standards and that for unit cost pay items, a rate for segregation and handling of uncontaminated soil is provided.

## **Recommendation 18: Ensure construction teams include an appropriate number of Hazmat-trained individuals to help control costs and schedule.**

### Original Finding

Cleanup procedures for unanticipated soil contamination were insufficient resulting in additional costs.

### Original Recommendations

1. Ensure that each construction team includes an appropriate number of Hazmat-trained individuals to allow work to continue when contamination is encountered.
2. Put in place a contingency response plan which defines the roles, responsibilities, and standard procedures to be implemented is.

### Status per Sound Transit

1. Guide Specifications outlining job related requirements are used in the development of construction contracts. The following Guide Specifications address site health and safety requirements related to the encounter of contaminated materials:

- 01 35 29.10 HSS and Emergency Response Procedures
- 01 35 30 Contaminated Substance Health and Safety Program
- 01 35 43.15 Unknown Hazardous and Contaminated Substances
- 01 35 43.20 Hazardous and Contaminated Substances Air Monitoring

In addition, on projects requiring extensive environmental remediation, Sound Transit typically retains an independent environmental oversight consultant to supplement Sound Transit resources in ensuring that contaminated soil management is in accordance with approved cleanup action plans.

Guide Specification 01 35 43. 15 requires the contractor to develop a Contaminated Substance Health and Safety Plan (CS-HASP), Contaminated Substance Screening and Handling Plan (CS-SHP) and Hazardous and Contaminated Substances Screening Plan (HCSSP). The CS-HASP is required prior to start of construction and it outlines the roles and responsibilities to minimize the risks to workers and the general public with potential exposure to hazardous materials. The CS-SHP and the HCSSP are required upon encounter of unanticipated contamination.

Guide Specifications identify a number of contractor submittals for environmental response actions including but not limited to the following: Contaminated Material Handling Plan; b. Pollution Control Plan; c. Environmental Compliance Plan; d. Air Monitoring Plan; and e. Hazardous and Contaminated Health and Safety Plan. These submittals establish roles, responsibilities, and standard operating procedures to be followed for addressing known and unknown contaminated materials.

### Current Findings

Sound Transit has developed Guide Specifications outlining job related requirements and each are used in the development of construction contracts. The Guide Specifications address site health and safety requirements related to the encounter of contaminated materials. Specifications also identify a number of contractor submittals for environmental response actions including but not limited to the following:

- Contaminated Material Handling Plan
- Pollution Control Plan
- Environmental Compliance Plan
- Air Monitoring Plan
- Hazardous and Contaminated Health and Safety Plan.

Our review found that roles, responsibilities, and standard operating procedures were followed for addressing known and unknown contaminated materials.

### Conclusion

Sound Transit has met the intent of the audit recommendation by ensuring that:

- Each construction team includes an appropriate number of Hazmat-trained individuals to allow work to continue when contamination is encountered, and
- Its contingency response plan defines the roles, responsibilities and standard procedures to be implemented and is in place.

### **Recommendation 19: Ensure regulatory clean-up levels are properly determined to avoid unnecessary costs.**

#### Original Finding

Regulatory cleanup levels were improperly determined, resulting in unnecessary costs.

#### Original Recommendations

1. Develop a contingency plan to allow work to continue when suspected contamination is encountered in the right of way.
2. Ensure that health and safety monitoring is available to evaluate and ensure that construction workers are adequately protected during excavation of suspected contaminated soil.

#### Status per Sound Transit

1. Where there is a potential to encounter contamination, all Sound Transit contracts, require environmental contingency plans contract submittals. Work cannot proceed until these submittals have been reviewed and approved by Sound Transit.
2. Guide Specification 01 35 30 Contaminated Substance Health and Safety Program requires the development of a Contaminated Substance Health and Safety Plan (CS-HASP). Health and safety monitoring protocols to protect construction workers and the general public from contaminant exposures are included in the CS-HASP. It is the Resident Engineer's responsibility to ensure that protocols in the CS-HASP are carried out. Verification of health and safety monitoring is also reviewed by internal Construction Safety staff.

#### Current Findings

Our review of selected projects indicates Sound Transit has developed a contingency plan to allow work to continue when suspected contamination is encountered in the right of way.

### Conclusion

Sound Transit has met the intent of the audit recommendation by developing a contingency plan that:

- Allows work to continue when suspected contamination is encountered in the right of way.
- Ensures that health and safety monitoring is available to evaluate and ensure that construction workers are adequately protected during excavation of suspected contaminated soil.

**Recommendation 20: Require contractors to sign on permits (has resulted in likely savings).**

**Original Finding**

Limited Contractor liability resulted in stormwater pollution fines to Sound Transit.

**Original Recommendation**

1. Establish and follow a plan to require contractors on future phases of construction to co-sign on stormwater permits.
2. Continue efforts to educate contractors and raise awareness of stormwater compliance issues using independent technical consultants and the ongoing program of joint weekly compliance inspections.

**Status per Sound Transit**

1. The requirement for contractors to co-sign on Stormwater Permits has been included in the Guide Specifications (Section 01 41 26 Permits) that are used as a basis for all construction contracts.
2. Sound Transit has made contractors aware of stormwater management requirements by incorporating the permit into the contract specifications. In addition, Sound Transit consultants do a daily environmental inspection of the appropriateness, adequacy and condition of the stormwater in accordance with best management practices.

**Current Findings**

A review of selected contracts found that Sound Transit requires contractors to co-sign on storm-water permits. Incorporating the permit into the contract specifications further assures all contractors are informed of storm-water management requirements. We found Sound Transit consultants performed a daily environmental inspection that includes the appropriateness, adequacy, and condition of the stormwater best management practices.

Under the new practice, Notices of Violation (NOV) have significantly decreased. Over 665 of these notices were filed from 2002-2009 (during construction of the Initial Segment) while only thirteen were filed from 2009-2012 (for University Link). Notices for the Initial Segment resulted in penalties totaling approximately \$175,000. Only one notice has been issued for the University Link, totaling \$6,000. It was later rescinded upon appeal by the contractor.

**Conclusion**

Sound Transit has met the intent of the audit recommendation by:

- Implementing a plan to require contractors on future phases of construction to co-sign on storm-water permits
- Continued efforts to educate contractors and raise awareness of stormwater compliance issues using independent technical consultants and the ongoing program of joint weekly compliance inspections.

# Appendix M: Scheduled Openings for Link Light Rail

## Scheduled Openings for Link Light Rail: Objective 4

The following table shows scheduled openings for planned and operational segments of light rail that have been funded by Sound Move (highlighted) and ST2<sup>27</sup>.

### Planned openings for Link Light Rail (from North to South/East)

Segment	Opening	Length (miles)	Additional Light Rail Stations
Lynnwood to Northgate	2023	8.2	Lynnwood, Mountlake Terrace, Shoreline, Jackson Park (4)
Northgate to University of Washington	2021	4.3	Northgate, Roosevelt, Brooklyn (3)
University of Washington to Westlake	2016	3.1	University of Washington, Capitol Hill (2)
Westlake to Tukwila International (Initial Segment)	July 2009	13.9	Westlake, University Street, Pioneer Square, International District, Stadium, Sodo, Beacon Hill, Mount Baker, Columbia City, Othello, Rainier Beach, Tukwila International (12)
Tukwila International to SeaTac Airport	December 2009	1.7	SeaTac Airport (1)
SeaTac Airport to S. 200th Street	2016	2.0	S. 200th Street (1)
S. 200th Street to Highline	2023	2.3	Highline Community College (1)
Highline to Redondo/Star Lake	Deferred	2.5	Redondo/Star Lake (1)
International District to Downtown Bellevue/Overlake Hospital	2023	10.8	Rainier Avenue, Mercer Island, South Bellevue, Downtown Bellevue (1-2 stations), Overlake Hospital (5-6)
Downtown Bellevue/Overlake Hospital to Overlake Transit Center	2023	3.5	Bellevue/Redmond Road corridor, Overlake Village, Overlake Transit Center (3)

Source: Sound Transit.

The current operational segment of light rail between Westlake and SeaTac Airport accounts for approximately one third of funded system miles and stations. A picture of these segments when fully completed is presented at **Appendix N**.

<sup>27</sup> Light rail segments for which construction funding sources have not yet been approved - to Everett, Redmond, and Tacoma – are not included.



# Appendix O: Table of recommendations to Sound Transit

**Recommendation ..... Page**  
**Objective 1**

**Recommendation No. 1..... 14**

We recommend the Board:

- Communicate to the COP and the public the reasons it has not done more to renegotiate with partnering transit agencies.
- Work with the COP to establish a frequency and format for greater communication.
- We also recommend management do more to address COP concerns about how its reports can better explain the growth in operating costs and better show the changes to budgeted project costs.

**Recommendation No. 2..... 16**

We recommend the Sound Transit Board:

- Establish criteria and process that result in the selection of COP members who have a desire to focus on Sound Transit’s on time and on budget commitments. It should ensure the criteria and process results in a selection of candidates with sufficient qualifications to perform COP oversight duties, including an annual review of the agency’s financial plan.
- Subject to a screening process as described at Issue 2.C, consider soliciting candidates who represent business and taxpayer advocacy groups as they may have strong qualifications and disposition towards fulfilling this oversight role.

**Recommendation No. 3..... 17**

We recommend the Board:

- Require equal COP representation across all subareas.
- Require the COP meet in the evening to make it easier for those who work to participate. *Doing so would also increase the public’s ability to attend COP meetings.*
- Reduce the term served by COP members from four years to two. By allowing for four consecutive two-year terms, the Board still would allow the existing limit of eight years of total service.

**Recommendation No. 4..... 18**

We recommend the Board:

- Instruct future COP applicants to focus their letters of interest on their qualifications for fulfilling the role of the COP.
- Establish a standardized application form that asks COP candidates to identify potential financial and non-financial conflicts of interest that would impair their ability to objectively serve.
- Decline COP applicants who have outside affiliations that may interfere with their objective oversight.
- Decline COP applicants who have formerly worked for Sound Transit as employees, board members or owners of businesses that contract with Sound Transit.

**Recommendation ..... Page**  
**Recommendation No. 5..... 20**

- We recommend the COP amend its ethics policy to prohibit members from publicly taking sides on proposals for higher taxes or other ballot measures that impact Sound Transit and from using the COP meetings as a place to express their positions on such measures.

**Recommendation No. 6.....21**

We recommend the COP Ethics Policy be revised to:

- Prohibit COP members from promoting legislation in areas that affect Sound Transit while serving on the COP, or from acting in other ways that may represent an apparent or actual conflict of interest that would impair the COP member’s objectivity.
- Establish requirements that COP members conduct their oversight free from their own personal bias.
- Incorporate elements of GAO Yellow Book Chapter 3, as shown at Appendix E.

We also recommend the COP Chair meet with those COP members discussed in this section and instruct them to refrain from panel discussions or task force participation that may create an actual or apparent conflict of interest.

**Recommendation No. 7..... 25**

We recommend the COP:

- Focus its oversight on areas intended by the board and voters.
- Revise its Mission and its Goals and Objectives to more closely focus its oversight on its charge to review Sound Transit’s performance against its commitments to provide services and facilities on time and within budget. The COP should also define the roles of the COP Chair and its members to align with its revised Mission, Goals and Objectives.
- Revise the COP’s Governing Principles to identify citizens as the COP’s primary customer.
- Once the Mission, Goals and Objectives have been properly revised, meet annually with Sound Transit’s attorney, as it did in January 2012, to affirm the intended role of the COP.
- Assure its recommendations do not go contrary to Sound Transit’s commitments to the public.

**Recommendation No. 8.....27**

We recommend the COP:

- Consistently prepare an annual written report that describes its yearly review of Sound Transit’s financial plan, and its assessment as to the soundness of that plan.
- Should Sound Transit decide to ask voters for additional taxes to pay for ST3 investments, the COP should work with outside experts to review the ST3 plan and report to the Board and public as to the soundness of that plan at least one month before the election. Issue 5b contains related discussion.

**Recommendation ..... Page**

We recommend Sound Transit’s CEO, CFO and the Board all acknowledge the COP’s obligation to review the agency’s financial plan annually, including those plans that will be reviewed by the ERP and submitted to voters for their approval.

**Recommendation No. 9..... 28**

We recommend the Board:

Establish specific COP authorities and management obligations to fully support the COP’s access to records, reports and staff. We recommend Sound Transit and the COP establish a documented understanding of the specific records, reports and other information that Sound Transit must provide the COP on a monthly, quarterly and annual basis so it can fulfill its oversight role.

**Recommendation No. 10 ..... 30**

To help ensure the COP has the capacity to review Sound Transit’s financial plan annually and to avoid over-reliance on Sound Transit for the information that is necessary to conduct its oversight, we recommend the COP periodically consider the use of outside experts. For the COP to pay for such experts, we recommend the Board provide the COP with adequate resources.

**Recommendation No. 11..... 30**

We recommend Sound Transit:

- Make it clear from its website how to easily find information on the COP.
- Improve the content of the COP webpage to include the Panel’s annual work-plan, information on meetings, meeting minutes and all information received by the COP, the annual year-end report from Sound Transit as described below and other information that may be relevant to the public.

**Recommendation No. 12.....31**

We recommend Sound Transit management:

- Report back to the Board and the COP each December on its efforts to address COP recommendations. This report should clearly indicate whether COP recommendations have been fully addressed, are in progress, or if no actions have been taken, the reasons for not doing so.
- Post this report on a COP webpage for the public to read.

**Recommendation No. 13 .....32**

We recommend that Sound Transit post all COP letters and all COP reports onto a COP website for the public to see.

**Recommendation ..... Page**

**Objective 2**

**Recommendation No. 1..... 40**

We recommend Sound Transit:

- Re-establish ST2 project contingencies that are in line with industry standards to pay for potential cost overruns. It is possible the Agency may complete its U-Link project without using all assigned contingency, and it may be inclined to consider these amounts when it re-establishes its ST2 contingency. If it does so, we recommend it also consider the uncertainties that still exist with the U-Link project as it is complicated and far from complete.
- Revise its ST2 plan to identify options for responding to decreases in available construction revenue or higher than expected costs.

**Objective 3**

**Recommendation No. 1..... 48**

We recommend Sound Transit develop a formal policy and procedure for all construction projects focusing on a structured approach to life cycle costing techniques and a whole life cost approach.

**Recommendation No. 2.....49**

As mentioned previously, Sound Transit has adopted a Value Engineering process to help ensure value and cost reduction. However, we recommend the Agency also consider other proven techniques to determine if they benefit the Agency’s projects and operations.

**Objective 4**

**Recommendation No. 1..... 56**

Sound Transit should lower its long-term ridership forecasts to reflect:

- Lower assumed economic activity for the future that is consistent with the slow economic recovery and the PSRC’s lower 2012 forecasts.
- A lower level of assumed employment that is consistent with the PSRC’s lower 2012 forecast. Sound Transit will also need to review the PSRC’s area-specific employment forecasts for downtown Seattle, the Bellevue Central Business District and other service locations once those forecasts are finalized at the end of 2012.

**Recommendation No. 2:..... 58**

Sound Transit should update its forecasts to incorporate assumptions that acknowledge:

- Riders’ reluctance to use Link light rail in the Rainer Valley.
- The slower than expected service changes being made by its partner transit agencies.

**Recommendation ..... Page**

**Recommendation No. 3:..... 60**

Sound Transit should continue its use of incremental and synthetic modeling for forecasting ridership related to future transportation investments. For major regional road and transit investments in the future, the Agency should discuss the proper mix and use of models with the Federal Transit Administration, the Puget Sound Regional Council, the state Department of Transportation and its local transportation partners.

**Recommendation No. 4:.....62**

Sound Transit should:

- Modify its approach to forecasting for major infrastructure expansions through the use of forecast ranges, including a low-end estimate. As part of these efforts, Sound Transit should address how sudden economic downturns and/or other unanticipated events and/or long periods of economic strength and weakness could affect its ridership forecasts. Sound Transit also should consider the implications that different forecasts would have for its capital and operating plans.
- Encourage the PSRC to continue to develop forecasts that reflect a broader range of possible outcomes for future planning updates.

**Recommendation No. 5:.....62**

Sound Transit should use information in its ORCA system to enhance its research on factors that determine how and why people use its services and other transit services across the region.

**Recommendation No. 6:.....63**

Sound Transit should enhance the information gathered on its ridership so it can better assess the cost-benefits of any possible future ST3 investments.

**Recommendation ..... Page**

**Recommendation No. 7:.....63**

Working with its Ridership Committee, Sound Transit should initiate a program to more frequently compare forecasts and actual ridership to assess whether assumptions supporting those forecasts need to be updated.

**Recommendation No. 8: ..... 64**

Sound Transit should communicate more with its partner agencies to:

- Develop ridership forecasts with a range of assumptions regarding the rate and degree by which such reorganizations are adopted.
- Through greater inter-agency communication, synchronize its light rail ridership forecast with the transit services its partnering agencies are planning.

**Recommendation No. 9: ..... 64**

Sound Transit should proactively work with King County Metro regarding future operations in the Downtown Seattle Transit Tunnel.

**Recommendation No. 10: .....65**

The Board should assess whether this suggestion is valid before it considers a future ST3 proposal to the voters.

**Recommendation No. 11 .....65**

Sound Transit should develop a process for adjusting allocations of capital costs across the five subareas when actual ridership differs from the forecasts those allocations were based on.

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