

# June 2022 Cost Drivers Memo

June 9, 2022

To:	Kent Keel, Sound Transit Board Chair Claudia Balducci, Sound Transit Board System Expansion Committee Chair Kim Roscoe, Sound Transit Board System Expansion Committee Vice-Chair
Cc:	Sound Transit Board System Expansion Committee (Nancy Backus, David Baker, Cassie Franklin, Bruce Harrell, Joe McDermott and Dave Somers) Brooke Belman, Sound Transit Interim CEO Mary Cummings, Sound Transit Deputy CEO Kimberly Farley, Sound Transit Deputy CEO David Peters, Board Independent Consultant
From:	Eric Beckman, Acting Executive Director, Sound Transit Portfolio Services Office
Subject:	Biannual Program Review - Cost Drivers Report 06/09/2022

## Introduction

In the Final Realigned Plan from August 2021, Resolution R2021-05 (Section 8, Bullet 1) directed staff to report biannually on current and anticipated cost drivers for Sound Transit system expansion capital projects.

This is the first of those reports, which staff will provide to the System Expansion Committee twice a year. The approach of this first report is to provide a comparative analysis between the August 2021 Final Realigned Plan to the current Spring 2022 Financial Plan (as reported in the Annual Program Review published April 2022). Moving forward, staff will continue to monitor and report on changes to these cost drivers every six months.

This work represents a multi-division/department effort within Sound Transit that included inputs from Project Controls (Portfolio Services Office), Construction Management (DECM), Real Property (DECM), Finance and Labor Relations.

## Current and anticipated cost drivers

In this memo, we divide project cost estimate drivers into two types: **current** and **anticipated**.

- **Current drivers** compare estimates between two report periods: the previous report and this period report. For this memo, the previous report is the Final Realigned Plan, issued and shared in August 2021. The current period report is Spring 2022. Studying current cost drivers helps understand the differences in the Financial Plan for Sound Transit capital projects between these two periods.

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- **Anticipated drivers** evaluate trends that are monitored and reported in the construction industry, as well as from direct experiences, that are not yet included in the current cost estimates supporting the Financial Plan.

## ***Project cost estimate categories***

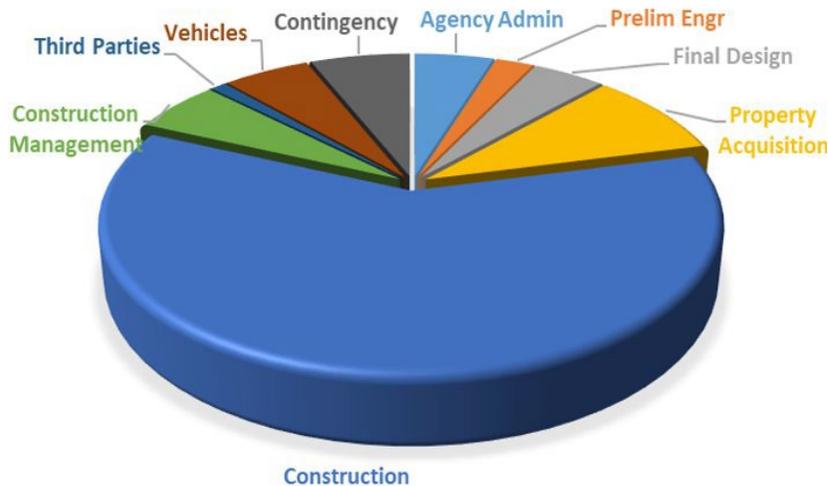
Each system expansion project cost estimate is broken into nine cost element categories, as shown below in Figure 1.

Of these cost estimates, the two largest categories are construction (60%) and property acquisition (9%). In addition, we calculate soft costs (the other six categories not including vehicles) as a percentage of construction in early project cost estimates. Therefore, construction factors have a significant impact on the overall cost estimate. Figure 1 also displays the average share of each category within the total project cost.

For both current and anticipated cost drivers, this memo begins with these significant cost elements (construction, property acquisition and soft costs) within the project cost element.

This report also discusses macroeconomic factors that impact Sound Transit capital projects. On top of the nine cost elements of the project cost estimate, we apply macroeconomic factors to build current-year (or constant dollar) estimates into year-of-expenditure cost estimates so that the Financial Plan better estimates escalation through the full course of the project timeline.

**Figure 1. Cost Estimate Categories**



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## Current cost drivers

Current drivers existing globally and locally will affect all agency projects.

For example, we are seeing Russian and Ukrainian political instability having a compounding effect on basic commodities, which affects supply chain management. This ultimately affects when ST projects can be completed and at what cost. Many suppliers are charging a 30-40% or more surcharge to expedite delivery of goods but are still delayed beyond pre-pandemic delivery times.

Regionally, the recent concrete strike not only caused delays; contractors continue to face headwinds from the unprecedented issues nationwide for ready-mixed concrete, the average price of which jumped 3.2% in February, and 8.2% year-over-year (Associated General Contractors of America; April 5, 2022).

### ***I. Construction, property acquisition and soft cost factors***

It is important to note that staff prepare and receive cost estimates based on critical project milestones and not on a predetermined time basis. As such, there will be periods when no new cost estimates are received and therefore no new current cost drivers would be reported, as they relate to construction, property acquisitions or soft costs.

In this past period, between the Final Realigned Plan and now, there were no new system expansion cost estimates produced that were entered into and impacted the Financial Plan, as seen in the Annual Program Review (April 2022). We will report on this in future issues of this report.

### ***II. Macroeconomic factors***

Sound Transit uses three inflation indices to escalate system expansion project costs over time in the long-range Financial Plan. These forecasts are provided by independent consultants:

- **Consumer Price Index (CPI)** (for All Urban Consumers, Seattle-Tacoma-Bellevue) is applied to operations and maintenance expenses and soft capital costs, excluding construction-related elements and property acquisitions. This forecast is currently provided by Western Washington University.
- **Construction Cost Index (CCI)** is applied to construction-related elements of the capital program (as well as state of good repair), and a Seattle-area forecast of the construction cost index is produced by an independent third party. This forecast is currently provided by WSP global engineering consultants.
- **Right-of-Way Index (ROWI)** forecast is applied to property acquisition costs using an assessed valuation forecast for the Sound Transit District produced by WSP.

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When comparing inflation forecasts from the Spring 2022 financial projections to the 2021 Final Realigned Plan, all three indices are higher, as shown in Table 1 below. Overall, the capital program during the period of 2017-2046 has grown \$2.1 billion in year-of-expenditure (YOE) dollars due to inflation increases.

- **CPI:** In general, prices have been driven up by increased demand following the recovery from the pandemic and supply chain constraints.
- **CCI:** Recent experience in commodity prices, contractor bids, rising transportation costs and general price inflation, exacerbated to some degree by ongoing supply chain challenges, led to higher-than-expected construction cost index inflation in 2021.
- **ROWI:** Residential properties in the Puget Sound region experienced the largest value gains in years throughout 2021. Property values of all sectors of commercial real estate also increased steadily throughout 2021, with especially strong gains seen in industrial properties.

In each case, these indices grew in the current period, as seen in Table 1 below.

**Table 1. Inflation Rates in the Final Realigned Plan compared to Spring 2022**

Inflation Compound Annual Growth Rate, 2017-2046			
Index	Final Realigned Plan	Spring 2022 Update	Difference
CPI	2.44%	2.55%	0.11%
CCI	3.81%	3.94%	0.13%
ROWI	4.21%	4.28%	0.07%

Although the differences may seem small, applying these factors on billions of dollars creates a large difference.

It should be noted that although no new system expansion cost estimates were entered into the Spring 2022 Financial Plan, there were three estimates received in the period that were more than the Final Realigned Financial Plan. Instead of accepting those higher estimates, ST is exploring alternative contracting strategies with the contracting community to see if there are possibilities for reduced costs.

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## Anticipated cost drivers

### I. Construction

Within a typical project cost estimate, construction is the largest cost component, typically representing 50-60% or more of the entire cost estimate. Construction cost comprises several cost components including labor, materials, equipment, subcontractors and indirect costs. On average:

- Labor is the largest component of the construction cost estimate, representing more than 50% of the total estimate.
- Materials are the second-largest component of construction cost estimate, typically representing between 15-25% of the total cost estimate.

It's important to note that in project cost estimates developed prior to 30% design, Sound Transit does not calculate soft costs (the six categories not including construction, property acquisition and vehicles) as detailed estimates. Rather, we estimate total soft costs as a percentage of construction costs, based on historical averages on ST projects over the past 20 years.

Therefore, construction factors can have an outsized influence on the project's overall cost estimate, because when construction costs rise, soft cost estimates rise as well. Together, the construction and soft cost categories make up more than 80% of the total project cost estimate.

### Labor

Construction wages have only moderately increased in the past year. The current Associated General Contractors Master Agreement indicates an additional 3-5% increase, while inflation has risen in the range of 6-8% in the same time period (2021-2022).

Therefore, labor wages have not kept up with inflation, creating a situation where construction workers are effectively receiving a pay cut. Wages may need to be adjusted in upcoming periods to help bridge the gap between inflation and wage increases. As labor is such a large component of the construction cost estimate, this anticipated yet uncertain adjustment could significantly impact overall construction and project costs.

### Materials

Many industry analyses indicate that prices in 2022 may be higher than the rising prices of 2021. Material costs significantly increased through 2021. Although these material cost increases have slowed in first quarter of 2022, they are still increasing above normal averages. This is particularly true for materials significant to ST projects, including:

- **Steel** (structural and rebar): significant (double- and even triple-digit) increases in 2021, still trending toward double-digit increases in 2022.
- **Fuel** (gas, diesel, other): high double-digit increases in 2021, and with current world events we anticipate this to continue to trend high.

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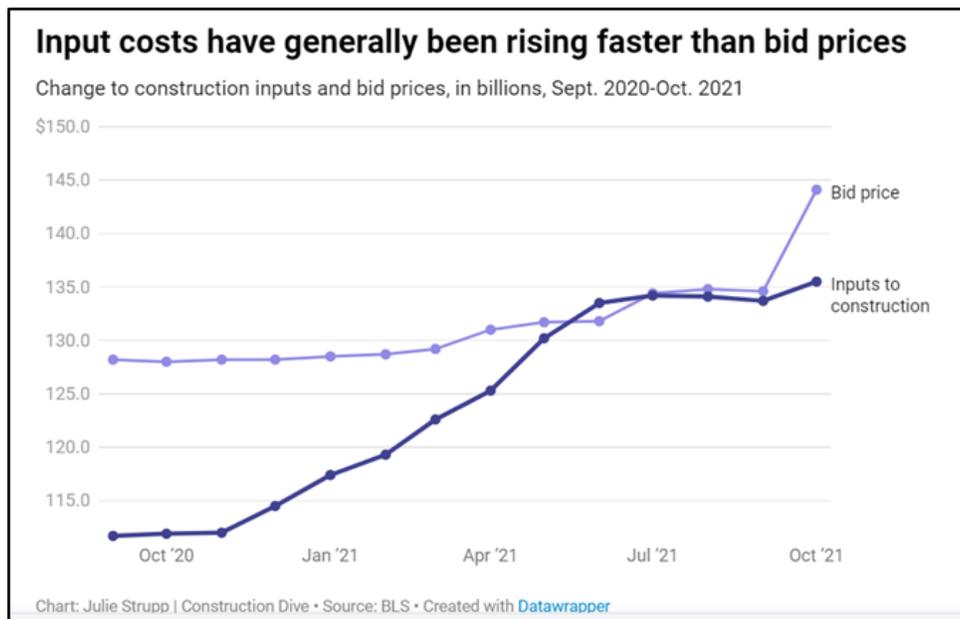
- **Lumber:** prices have been going up and down through 2021 and early 2022, seeing triple-digit increases in early 2021, decreasing prices by the end of 2021, and again increasing slightly in first quarter 2022.
- **Plumbing:** double-digit increases in 2021 and continuing into 2022.

## Market conditions

As material prices have continued to climb steeply in the past year, the bid price of construction projects has not kept pace with the cost it takes to build them (as shown in Figure 2), meaning at times contractors may see low profit margins. Contractors have been unable to pass along the higher project costs for an extended period and often absorb the cost increases to win projects.

We anticipate that contractors are no longer willing to take on the risk of cost escalation and are putting that risk back on owners, through escalation clauses in contracts and in higher bid prices. In Q4 2021, there may have been some movement in bid prices, with 7% increases noted (see Figure 2). As these bid prices begin to rise to meet commodity increases, this will create pressures on construction cost estimates.

**Figure 2. Change in Construction Inputs and Bid Prices**



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## II. Property acquisitions

Table 2 below shows year-over-year value growth rates for the major types of real estate in King County. Since 2013, value increases have significantly exceeded long-term historical trends, with particularly strong appreciation seen in single-family home values, industrial property values, and those multi-family properties outside the Seattle and Bellevue core.

These sectors have experienced average value-appreciation near, or exceeding, 10% annually. Over the most recent period, from Q1 2021 through Q1 2022, the average real estate value growth rates continued to exceed the average across all periods since 2013.

If these trends continue, future estimates of properties could continue to grow at an increased rate.

**Table 2. Historic Annual Real Estate Value Growth Rates**

Historic Annual Real Estate Value Growth Rates										
	Q1 2013 - Q1 2014	Q1 2014 - Q1 2015	Q1 2015 - Q1 2016	Q1 2016 - Q1 2017	Q1 2017 - Q1 2018	Q1 2018 - Q1 2019	Q1 2019 - Q1 2020	Q1 2020 - Q1 2021	Q1 2021 - Q1 2022	Compound Annual Growth Rate Q1 13 - Q1 22
<b>King County</b>										
SFR	9.5%	8.4%	15.9%	10.5%	15.4%	-0.4%	5.8%	12.4%	13.0%	<b>9.9%</b>
Industrial	7.6%	9.1%	10.2%	10.9%	10.6%	13.0%	9.7%	8.8%	14.2%	<b>10.4%</b>
Multifamily	6.0%	11.8%	9.5%	8.4%	5.5%	7.5%	9.2%	1.8%	10.6%	<b>7.8%</b>
Close-In	6.0%	11.9%	8.9%	8.0%	5.1%	6.6%	9.1%	0.6%	9.6%	<b>7.3%</b>
Outer County	6.5%	12.0%	12.3%	9.9%	7.5%	10.7%	9.6%	6.5%	14.3%	<b>9.9%</b>
Office	12.5%	8.9%	8.2%	4.8%	5.7%	5.2%	5.5%	-1.5%	4.2%	<b>5.9%</b>
Retail	4.9%	15.3%	6.4%	4.5%	3.2%	4.5%	6.4%	4.1%	7.3%	<b>6.2%</b>

Sources: Commercial Property Data - CoStar Analytics; Single-Family Residential Property Data - Northwest MLS

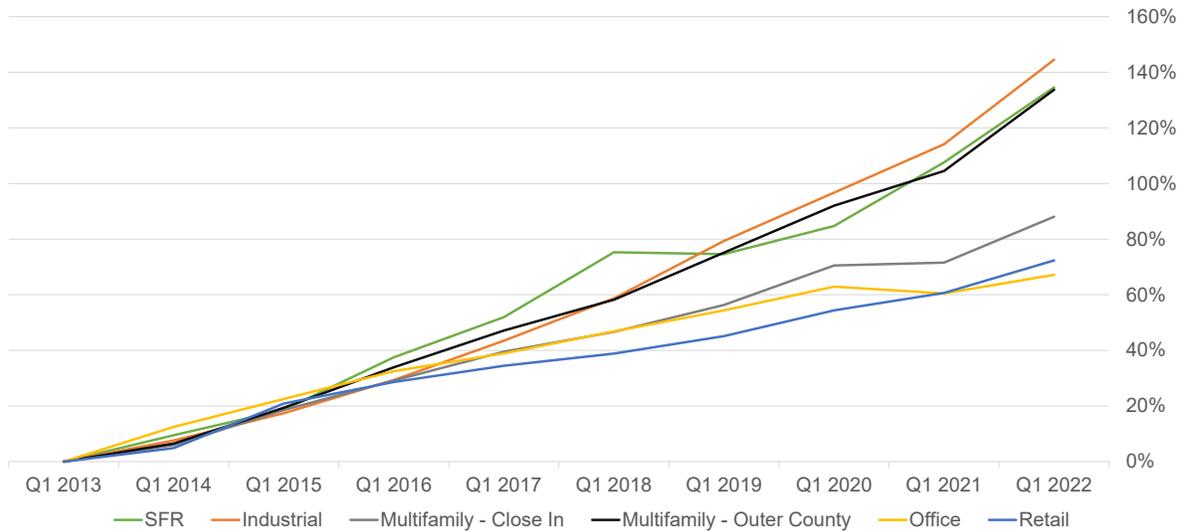
Table 3 (next page) shows total cumulative growth in real estate values over the same time period as Table 2 (from Q1 2013 to Q1 2022).

Depending on sector, average real estate values in King County have increased between approximately 70% and 150%.

In the last two years, the only sector of real estate showing evidence of a slowdown in appreciation is office properties, likely a result of pandemic-induced quarantines and work-from-home mandates. All other sectors have seen continued or accelerating gains.

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**Table 1. Real Estate Value Growth Since Q1 2013, King County**



### III. Anticipated macroeconomic factors

The high inflationary environment experienced since the 2021 Final Realigned Plan and reflected in the Spring 2022 long-range Financial Plan is expected to continue, and the inflation indices will likely be higher than currently projected. This will lead to corresponding capital cost increases in future financial plan updates. Below is a summary of what staff anticipate in the short term for each of the financial plan forecasts.

- **CPI:** High inflation seen in 2021 is likely to continue and increase due to prices driven by high consumer demand and supply chain constraints. The CPI growth rate from 2021 to 2022 is expected to be higher than the growth rate from 2020 to 2021.

Despite general economic consensus that the inflation currently being experienced is transitory and will subside once supply chains straighten out, there is a lot of uncertainty. One risk is that people and businesses may begin to anticipate inflation, preemptively raising prices and causing more inflation, which could cause inflation to rise even more dramatically.

To counter inflation, the Federal Reserve has raised interest rates and is expected to continue doing so. It is expected that inflation will return to historical averages by 2023.

- **CCI:** Construction inflation has been experiencing unprecedented increases due to supply chain disruptions and a tight labor market because of the pandemic. As discussed earlier, materials are increasing at above average rates, which are a component of the CCI. Many national indicators, including the Federal Highway Administration's National Highway Construction Cost Index (NHCCI), and Engineering News-Record's Building Cost Index

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(BCI) and Construction Cost Index (CCI) are all showing sharp increases due to extreme materials cost increases.

The NHCCI showed 10.6% inflation from 2020 Q3 to 2021 Q3. Engineering News-Record's CCI was up 5.8% for all of 2021, and its BCI, which includes a smaller proportion of skilled labor than the CCI, was up 10.0% for all of 2021. Early 2022 data for both Engineering News-Record measures suggest continued upward movement is expected.

- **ROWI:** Residential property value gains seen in 2021 appear to be continuing into 2022. So far increases in interest rates haven't impacted property values in the Puget Sound region, but there is a possibility that with continued interest rate hikes from the Federal Reserve, property value growth could slow or stall.

## Next steps

Staff will continue to monitor anticipated trends and evaluate mitigation strategies during the planning and design process, including looking at:

- Alternative contracting strategies (such as design-build) to come up with design-to-budget alternatives.
- Opportunities to lock in material costs upfront through methods such as early material/equipment procurements and strategic property acquisitions.

Staff will also continue to monitor current and new trends and provide continued reporting to the System Expansion Committee twice a year, at a minimum.