



# *West Seattle and Ballard Link Extensions*

*Elected Leadership Group | February 1, 2019*

# Agenda

- *Community engagement and collaboration*
- *Level 3 screening process*
- *Level 3 alternatives*
- *Level 3 evaluation results*
- *Potential mix-and-match opportunities*

# Community engagement and collaboration

## WHO IS SOUND TRANSIT?

We plan, build and operate regional transit systems and services to improve mobility in urban areas of King, Pierce and Snohomish counties.



Sounder commuter rail

The Sounder train runs between Everett and Seattle, Pierce County, Snohomish County, Skagit County, and Snohomish County. Sounder provides a convenient and reliable way to travel between Everett and Seattle, Pierce County, Snohomish County, Skagit County, and Snohomish County.



Link light rail

The Link light rail system provides a convenient and reliable way to travel between Everett and Seattle, Pierce County, Snohomish County, Skagit County, and Snohomish County.

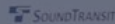


Sound Transit Express

The Sound Transit Express system provides a convenient and reliable way to travel between Everett and Seattle, Pierce County, Snohomish County, Skagit County, and Snohomish County.

**Our Board**  
Sound Transit is governed by an 18-member Board made up of local elected officials and the Secretary of the Washington State Department of Transportation. The Board establishes policies and gives direction and oversight.

**Funding**  
The system plan is paid for with a combination of state-approved bond issues, federal grants, farebox recoveries, local funds and interest earnings. By 2026, system operating costs will be paid for with local taxes, farebox recoveries, interest earnings, private sources and federal operating assistance.



## FUTURE SERVICE

Sound Transit System Expansion will:

- Build a 118-mile light rail network extending from Everett to Tacoma and from Seattle neighborhoods to Redmond and Issaquah.
- Establish Bus Rapid Transit (BRT) to the north, east and south of Lake Washington.
- Expand Sounder south line capacity and service adding two new stations.
- Improve service at existing King stations.



# Community engagement and collaboration



Meeting dates subject to change.



# External Engagement Report

Nov. 2018 – Jan. 24, 2019



99 comments and questions



33 community briefings



2 email update

engaging more than  
4,330 subscribers



2 Stakeholder Advisory Group meetings



3 tabling events

engaging more than  
80 community members

# *Nov-Dec briefings and tabling events*

- ✓ State of SODO 2018 (11/8)
- ✓ Mercer Corridor Stakeholders Committee (11/15)
- ✓ Tiburon Condominiums, Board of Directors (11/15)
- ✓ Evergreen Treatment Center (11/16)
- ✓ Public Stadium Authority and Mariners (11/16)
- ✓ West Seattle JuNO (11/19)
- ✓ Magnolia Community Council (11/20)
- ✓ Recovery Café (11/26)
- ✓ NSIA (11/27)
- ✓ South Lake Union Community Council, Transportation Committee (11/28)
- ✓ City of Seattle Transit Advisory Board (11/28)
- ✓ Marine Exchange of Puget Sound (11/29)
- ✓ Helping Link (12/5)
- ✓ WestSide Baby (12/6)
- ✓ SODO BIA, Transportation Committee (12/7)
- ✓ CenterPoint Properties Trust (12/12)
- ✓ Real Change Vendor Meeting (12/12)
- ✓ GSBA Annual Meeting & Holiday Luncheon (12/12)
- ✓ Pacific Terminals (12/13)
- ✓ City of Seattle Planning Commission (12/13)
- ✓ SCIDpda Residential Property Managers (12/18)

# Jan 1-24, 2019 briefings

- ✓ Coastal Transportation (1/4)
- ✓ South Downtown Stakeholders (1/8)
- ✓ Delridge Community Center (1/9)
- ✓ Meltec Foundry / Young Corp. (1/9)
- ✓ Delta Marine (1/10)
- ✓ Harbor Island Machine Works (1/10)
- ✓ Uwajimaya (1/10)
- ✓ SSA Terminals (1/11)
- ✓ Seattle Maritime Academy (1/15)
- ✓ White Center Community Development Association (1/16)
- ✓ Community Briefing at Youngstown Cultural Arts Center (1/16)
- ✓ Port of Seattle Neighborhood Advisory Committee (1/16)
- ✓ Downtown Seattle Association (1/17)
- ✓ Alliance for Pioneer Square (1/24)
- ✓ Seniors in Action Foundation (1/24)
- ✓ Eastern Hotel Apartments Listening Session (1/29)

# *What we've heard: Nov-Dec 2018*

- Questions about timeline & process for property acquisition
- Request to locate and design stations with accessibility and safety in mind
- Request to be able to mix and match elements from Level 3 alternatives
- Requests to design and build new extensions faster
- Request for frequent bus service to stations for improved access
- Request for additional visualizations of proposed routes
- Questions and comments about freight mobility and industrial land effects



A photograph of a Sound Transit train at a station platform. The train is white with blue accents and has the number '139B' on its side. The text 'SOUND TRANSIT' is visible on the front and side of the train. The train is stopped at a platform with a yellow tactile strip. A metal railing is in the foreground. The background shows a station platform with a digital display board and other infrastructure. The overall scene is dimly lit, suggesting dusk or dawn.

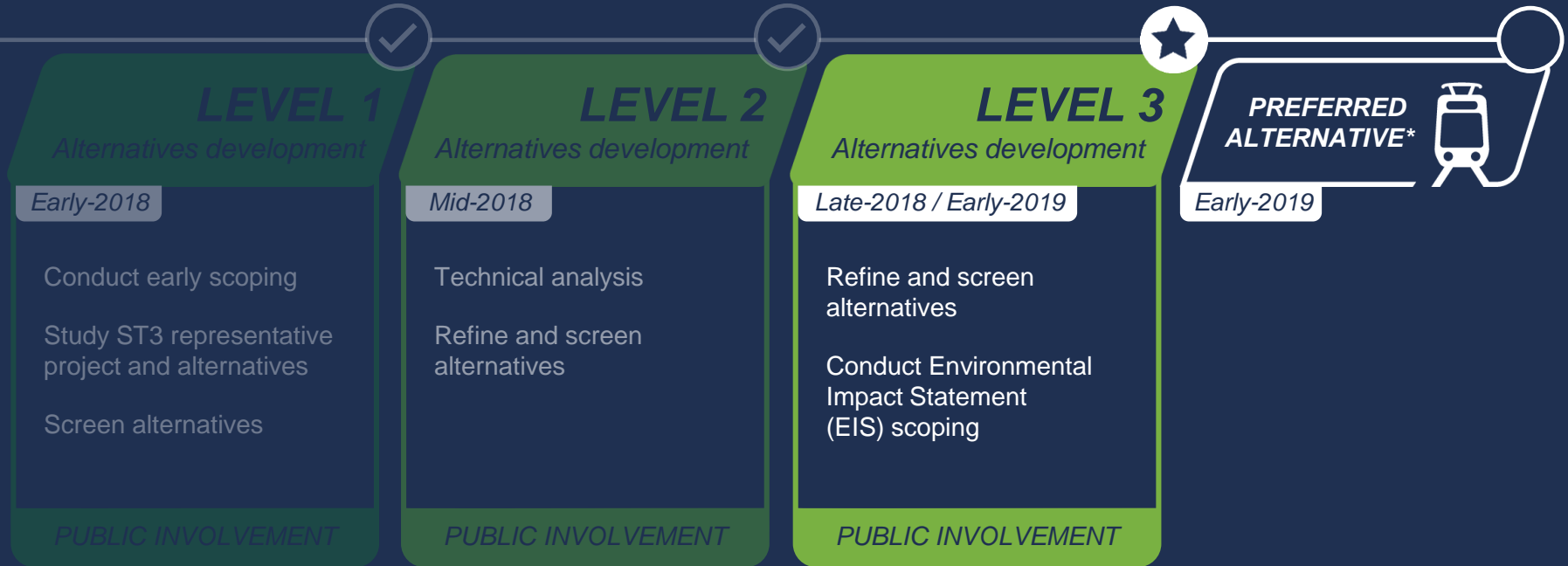
***Level 3 screening  
process***

# Community engagement and collaboration



Meeting dates subject to change.

# Alternatives development process




\*The Sound Transit Board identifies preferred alternatives and other alternatives to study.

# Level 3 alternatives screening

<b>SAG Meeting #12</b>	Jan 30	Level 3 evaluation results
<b>ELG Meeting #6</b>	Feb 1	Level 3 evaluation results
<b>EIS Scoping Open Houses / Neighborhood Forums</b>	Feb/ Mar TBD	Level 3 evaluation results
<b>ELG Meeting #7</b>	March 29	CID station focus
<b>SAG Meeting #13</b>	April TBD	Level 3 recommendations
<b>ELG Meeting #8</b>	April TBD	Level 3 recommendations
<b>Sound Transit Board System Expansion Committee</b>	May 9	Identify preferred alternative (and other EIS alternatives)
<b>Sound Transit Board Full Board</b>	May 23	Identify preferred alternative (and other EIS alternatives)



# Level 3 alternatives screening



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1

### Level 3 alternatives

2

Measures	#13 International District		West Seattle Elevated/C/D 5th Ave/Downtown #13		4th Ave Alaskan		West Seattle Tunnel (C/D) 4th Ave/Downtown 10th Ave/Ballard Terminal		10th Ave Ballard Station	
	Project	West Seattle Elevated/C/D 5th Ave/Downtown #13	4th Ave Alaskan	West Seattle Tunnel (C/D) 4th Ave/Downtown 10th Ave/Ballard Terminal	Project	West Seattle Tunnel (C/D) 4th Ave/Downtown 10th Ave/Ballard Terminal	Project	West Seattle Tunnel (C/D) 4th Ave/Downtown 10th Ave/Ballard Terminal	Project	West Seattle Tunnel (C/D) 4th Ave/Downtown 10th Ave/Ballard Terminal
Reliable and efficient point-to-point rail and transit services to communities in the project corridor defined in #13	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Minimize travel time and improve service reliability and frequency	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Integrate with existing transit services and modes	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Accommodates future LRT extension	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Public growth centers served	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Accommodates future LRT extension	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
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Minimize travel time and improve service reliability and frequency	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

### Level 3 evaluation results



3

### Key considerations

4

Locations	Summary of Findings
Ballard terminus and Downtown tunnel route	<ul style="list-style-type: none"> <li>Bullet point to explain key findings in this segment</li> <li>Another bullet point to explain key findings in this segment</li> </ul>
West Seattle tunnel	<ul style="list-style-type: none"> <li>Bullet point to explain key findings in this segment</li> <li>Another bullet point to explain key findings in this segment</li> </ul>
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### Summary of findings

# Level 3 alternatives screening

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# *What is EIS Scoping?*

- Start of federal environmental review process
- 30-day ***public comment period***
- Seeks public ***feedback on scope of EIS***
  - Range of alternatives
  - Topics to study
  - Purpose and need
- ***Informs Board decision*** on what to study in EIS\*

\* Scope of EIS also subject to Federal Transit Administration (FTA) oversight

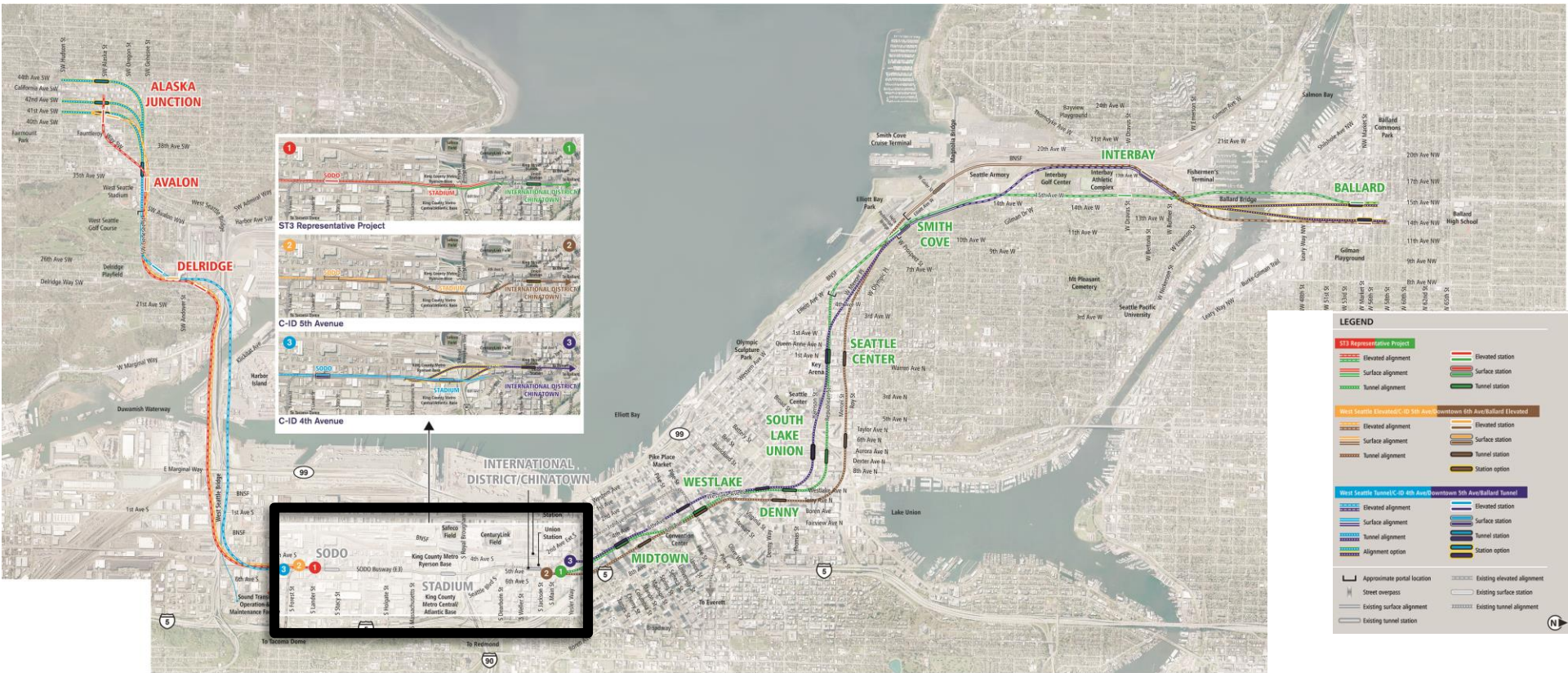


# *How to provide scoping comments*

- At ***open house*** / neighborhood forum
- Via ***online*** open house
- By ***email*** or USPS ***mail*** or voice ***message*** service

# Level 3 alternatives screening

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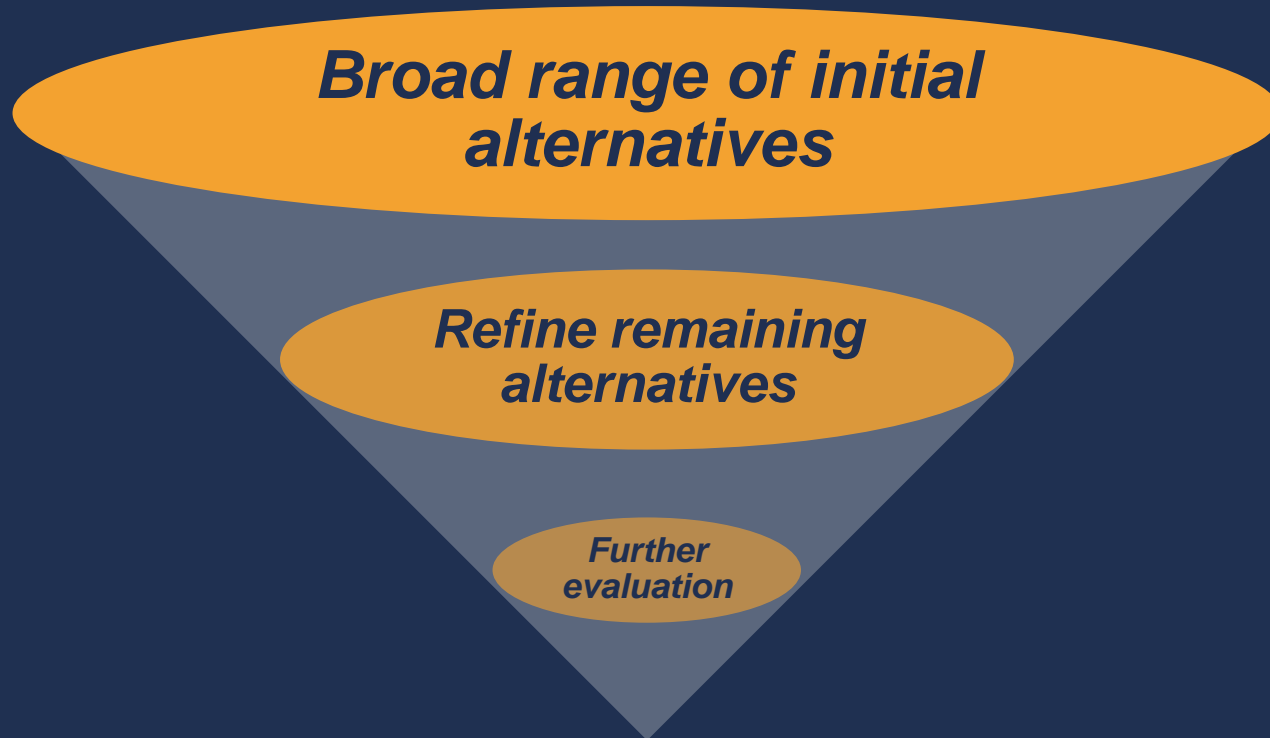
# ELG Meeting #7 – Chinatown/ID

# Level 3 alternatives screening

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# Screening process



***Preferred Alternative and other EIS alternatives***

# Level 3 recommendations

- Interest in **additional scope** items
- Additional scope items **require 3<sup>rd</sup> party funding\***
- Potential **recommendations**:
  - Preferred Alternative #1: If 3<sup>rd</sup> party funding **not** secured
  - Preferred Alternative #2: If 3<sup>rd</sup> party funding **is** secured

# Level 3 recommendations

Informed by:

- Technical **evaluation results**
- **Public feedback** gathered during scoping period and documented throughout the year
- **Racial Equity Toolkit**, including findings from evaluation results and community input

# Level 3 alternatives screening

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A photograph of a modern light rail train station. A blue and white train is stopped at the platform, with the destination "CANTON SEATTLE" visible on its front. Several passengers are waiting on the platform, including a woman in a yellow hijab and white pants in the foreground. The station has a blue and white color scheme and a covered walkway. The text "Level 3 alternatives" is overlaid in white, italicized font across the center of the image.

***Level 3 alternatives***

# *Summary of Level 3 alternatives*

- › **ST3 Representative Project**
- › **West Seattle Elevated/ C-ID 5th Ave/  
Downtown 6th Ave/ Ballard Elevated**
  - C-ID station options: 5th Ave Cut-and-Cover and 5th Ave Mined
- › **West Seattle Tunnel/ C-ID 4th Ave/  
Downtown 5th Ave/ Ballard Tunnel**
  - Junction station options: 41st Ave, 42nd Ave and 44th Ave
  - C-ID station options: 4th Ave Cut-and-Cover and 4th Ave Mined
  - Ballard station options: 14th Ave and 15th Ave





# Level 3 alternatives



# Summary of Level 3 alternatives

## ST3 Representative Project

- **West Seattle Elevated/ C-ID 5th Ave/  
Downtown 6th Ave/ Ballard Elevated**
  - C-ID station options: 5th Ave Cut-and-Cover and 5th Ave Mined
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  - Ballard station options: 14th Ave and 15th Ave



**LEGEND**

	ST3 Representative Project		Elevated station
	Elevated alignment		Surface station
	Surface alignment		Surface alignment
	Tunnel alignment		Tunnel station
	Approximate portal location		Existing elevated alignment
	Street overpass		Existing surface station
	Existing surface alignment		Existing tunnel alignment
	Existing tunnel station		

# ST3 Representative Project

# Summary of Level 3 alternatives

## › ST3 Representative Project

### West Seattle Elevated/ C-ID 5th Ave/ Downtown 6th Ave/ Ballard Elevated

- C-ID station options: 5th Ave Cut-and-Cover and 5th Ave Mined

## › West Seattle Tunnel/ C-ID 4th Ave/ Downtown 5th Ave/ Ballard Tunnel

- Junction station options: 41st Ave, 42nd Ave and 44th Ave
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# West Seattle Elevated/ C-ID 5th Ave/ Downtown 6th Ave/ Ballard Elevated

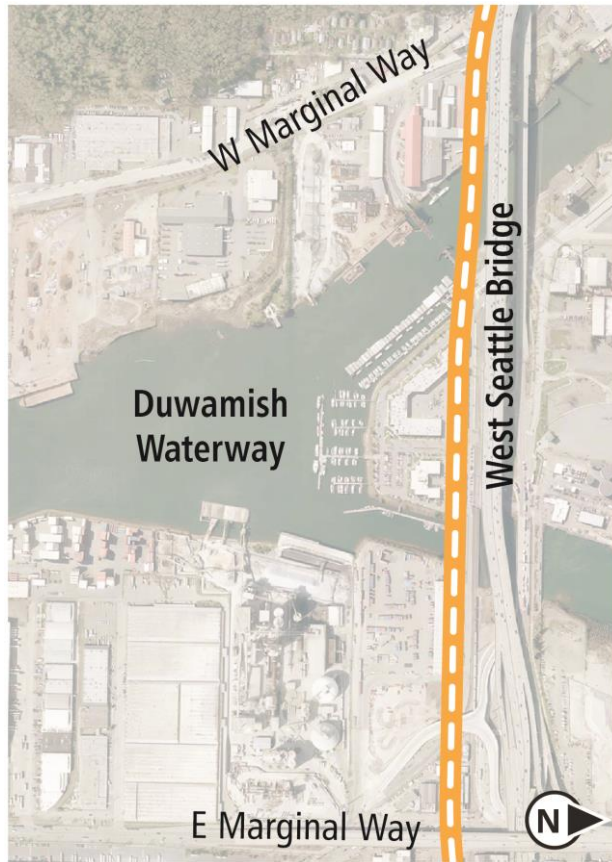


**West Seattle Elevated/ C-ID 5th Ave/ Downtown 6th Ave/  
Ballard Elevated *Alaska Junction* elevated station orientation**



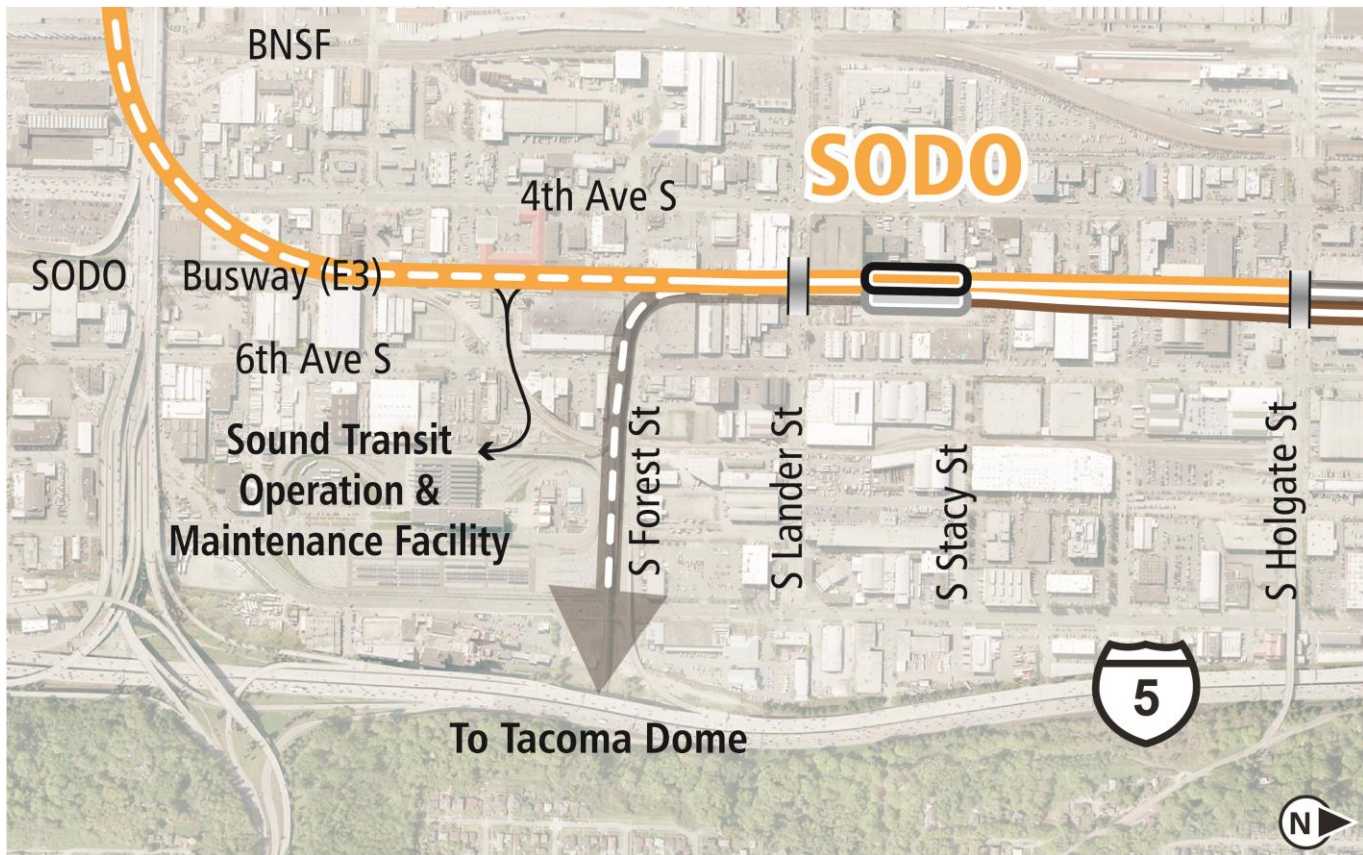
*West Seattle Elevated/ C-ID 5th Ave/ Downtown 6th Ave/  
Ballard Elevated **Delridge Station further south***



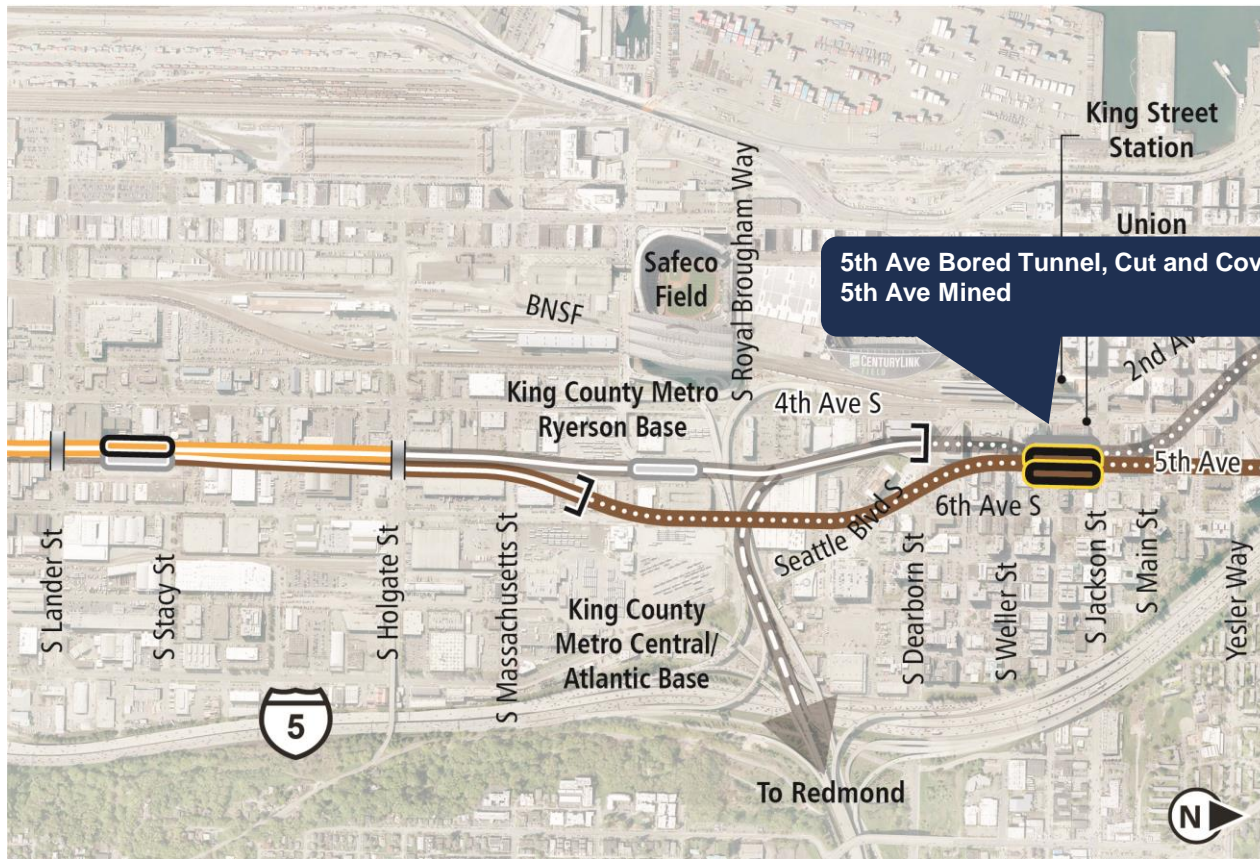


**West Seattle Elevated/ C-ID 5th Ave/ Downtown 6th Ave/  
Ballard Elevated Crossing to south of existing bridge**





**West Seattle Elevated/ C-ID 5th Ave/ Downtown 6th Ave/ Ballard Elevated** **SODO Station and OMF connection**



5th Ave Bored Tunnel, Cut and Cover Station  
5th Ave Mined

**West Seattle Elevated/ C-ID 5th Ave/ Downtown 6th Ave/ Ballard Elevated C-ID Station options (shallow and deep)**





**West Seattle Elevated/ C-ID 5th Ave/ Downtown 6th Ave/ Ballard Elevated 6th Avenue route through downtown**



**West Seattle Elevated/ C-ID 5th Ave/ Downtown 6th Ave/  
Ballard Elevated *Denny Station on Terry Ave***



**West Seattle Elevated/ C-ID 5th Ave/ Downtown 6th Ave/  
Ballard Elevated Terry/Mercer route in South Lake Union**





**West Seattle Elevated/ C-ID 5th Ave/ Downtown 6th Ave/ Ballard Elevated** **Smith Cove Station near Galer St**



*West Seattle Elevated/ C-ID 5th Ave/ Downtown 6th Ave/  
Ballard Elevated **Interbay Station on 17<sup>th</sup> Ave/Thorndyke***





**West Seattle Elevated/ C-ID 5th Ave/ Downtown 6th Ave/  
Ballard Elevated High level fixed bridge at 14<sup>th</sup> Ave**

# Summary of Level 3 alternatives

- › **ST3 Representative Project**
- › **West Seattle Elevated/ C-ID 5th Ave/  
Downtown 6th Ave/ Ballard Elevated**
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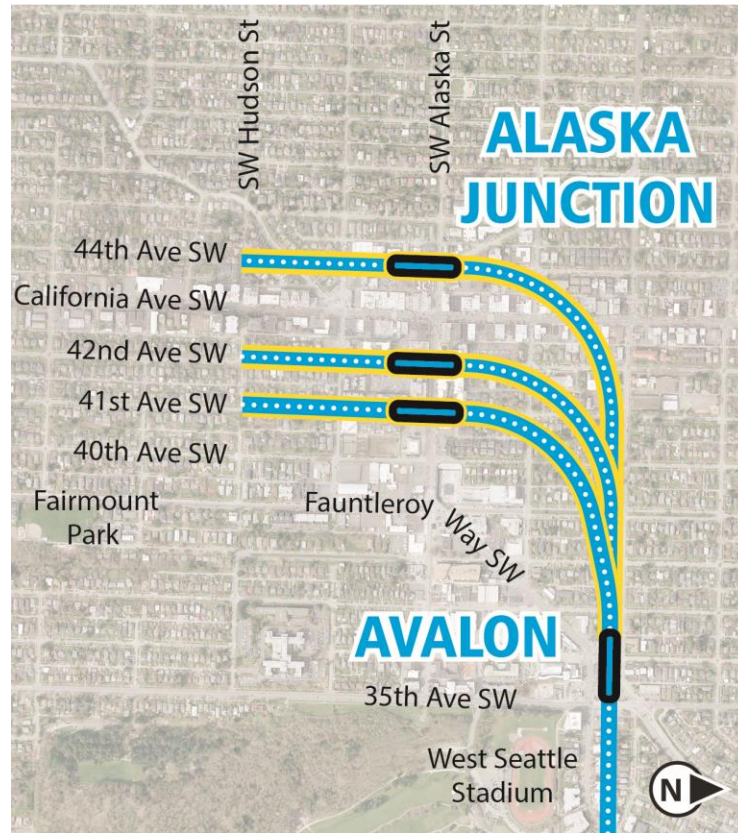
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# West Seattle Tunnel/ C-ID 4th Ave/ Downtown 5th Ave/ Ballard Tunnel





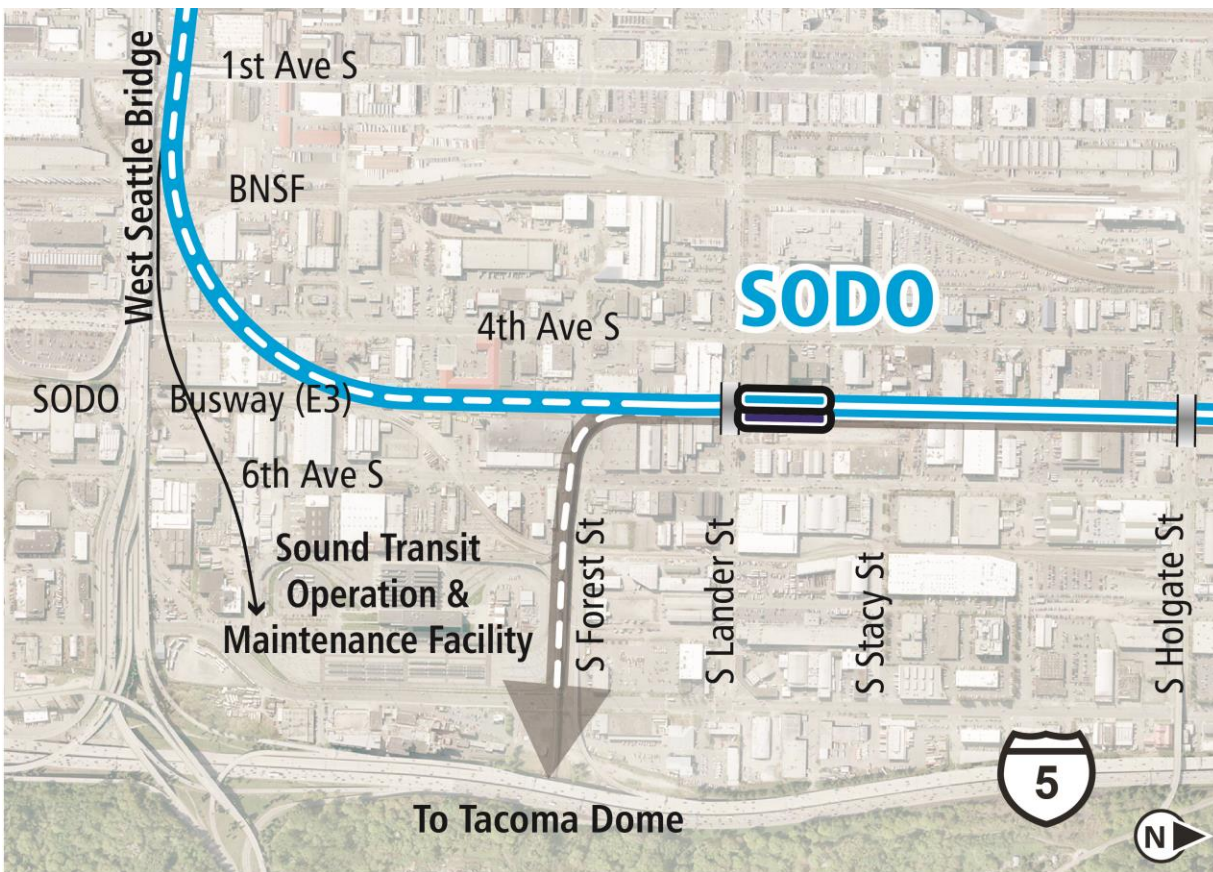
**West Seattle Tunnel/ C-ID 4th Ave/ Downtown 5th Ave/  
Ballard Tunnel *Alaska Junction tunnel station options***



*West Seattle Tunnel/ C-ID 4th Ave/ Downtown 5th Ave/  
Ballard Tunnel Delridge Station further south and west*

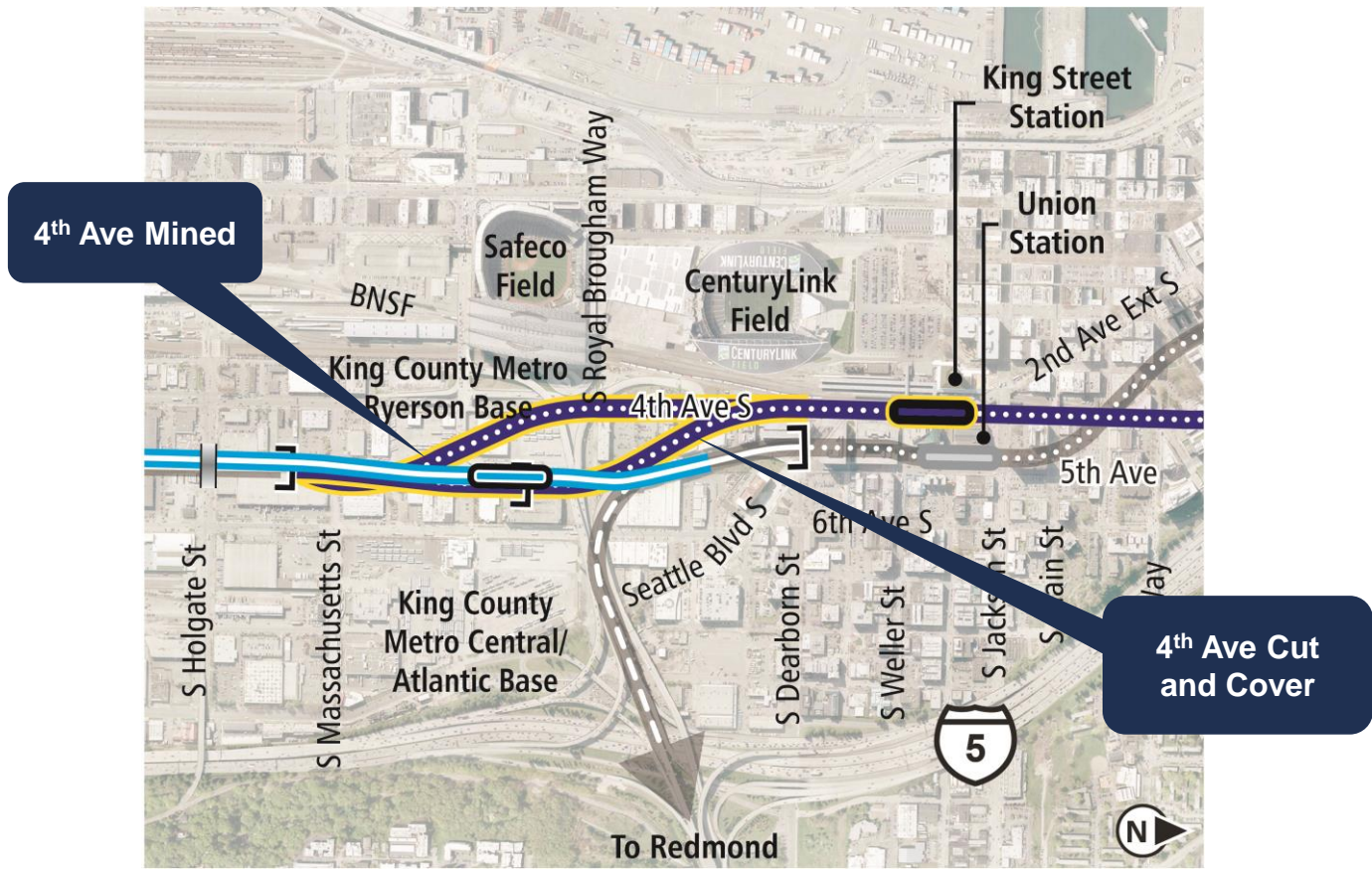


**West Seattle Tunnel/ C-ID 4th Ave/ Downtown 5th Ave/  
Ballard Tunnel Crossing to north of existing bridge**



**West Seattle Tunnel/ C-ID 4th Ave/ Downtown 5th Ave/ Ballard Tunnel** **SODO Station and OMF connection**

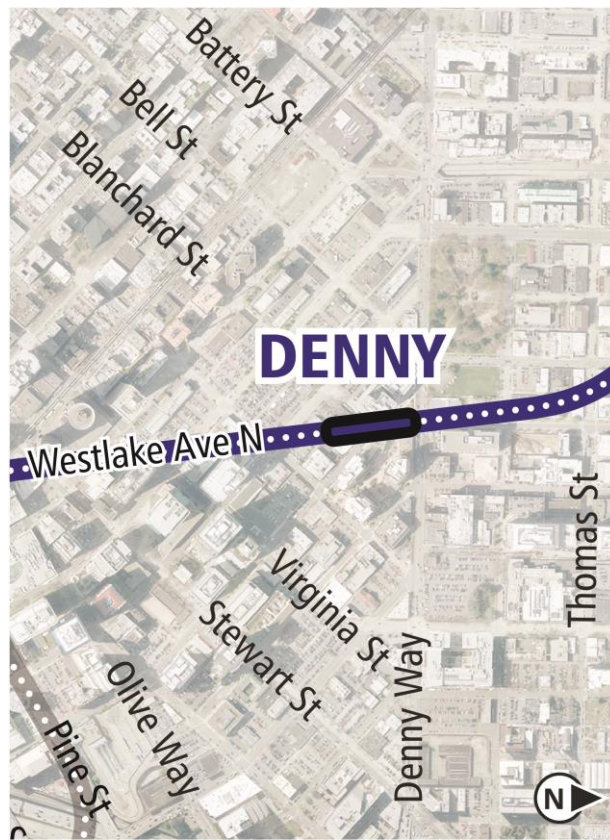




**West Seattle Tunnel/ C-ID 4th Ave/ Downtown 5th Ave/ Ballard Tunnel C-ID Station options (shallow and deep)**



**West Seattle Tunnel/ C-ID 4th Ave/ Downtown 5th Ave/  
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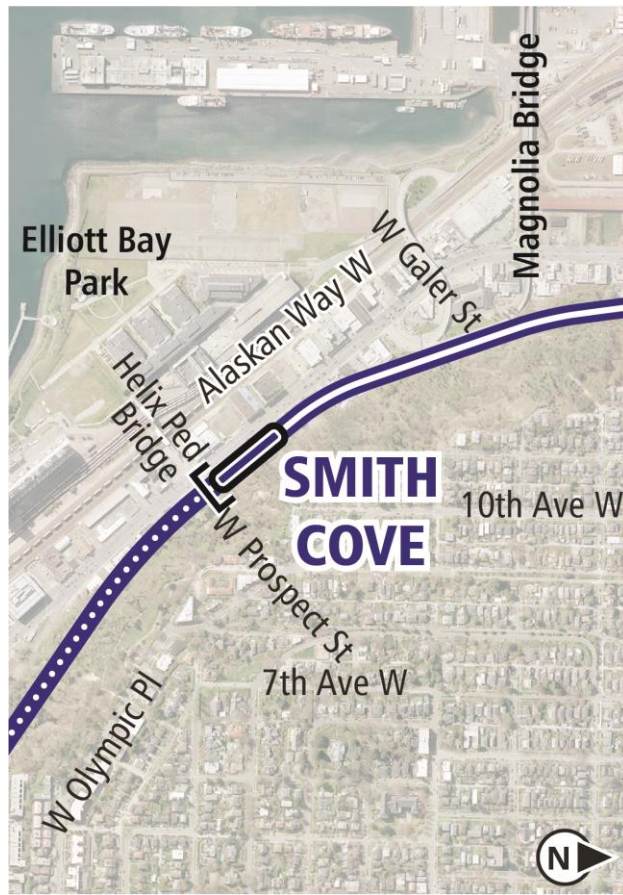


*West Seattle Tunnel/ C-ID 4th Ave/ Downtown 5th Ave/  
Ballard Tunnel **Denny Station on Westlake Ave***





*West Seattle Tunnel/ C-ID 4th Ave/ Downtown 5th Ave/  
Ballard Tunnel **SLU Station on Harrison***

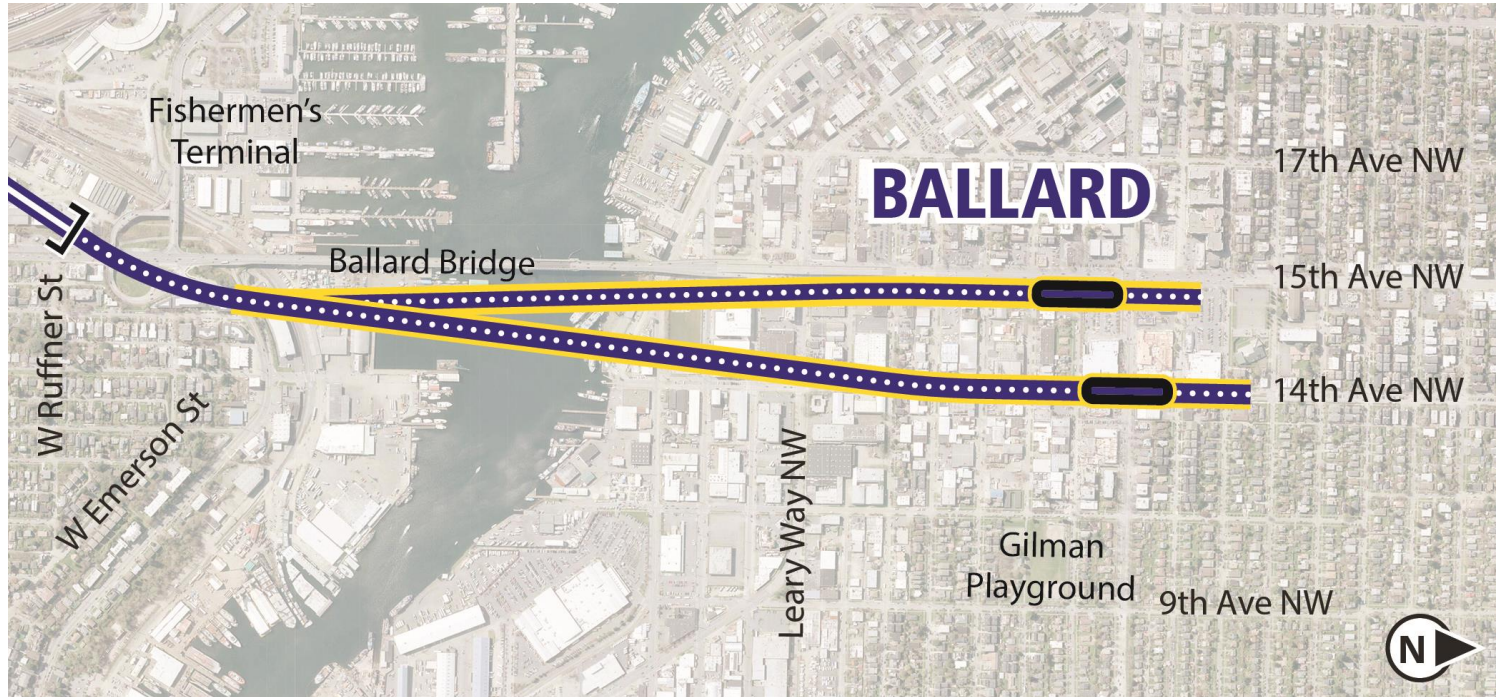


**West Seattle Tunnel/ C-ID 4th Ave/ Downtown 5th Ave/  
Ballard Tunnel *Smith Cove Station near Prospect St***



*West Seattle Tunnel/ C-ID 4th Ave/ Downtown 5th Ave/  
Ballard Tunnel **Interbay Station on 17<sup>th</sup> Ave/Thorndyke***












**West Seattle Tunnel/ C-ID 4th Ave/ Downtown 5th Ave/  
Ballard Tunnel *Ballard tunnel station options***



***Level 3 evaluation  
results***

# Purpose and need

Purpose Statement	Symbol
Provide high quality rapid, reliable, and efficient peak and off-peak LRT service to communities in the project corridors as defined in ST3.	
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet the projected transit demand.	
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's <i>Regional Transit Long-Range Plan</i> .	
Implement a system that is consistent with the <i>ST3 Plan</i> that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.	
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.	
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.	
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.	

# Evaluation criteria

## ➤ *17 criteria consistent in all levels of evaluation*

- Reliable service
- Travel times
- Regional connectivity
- Transit capacity
- Projected transit demand
- Regional centers served
- ST Long-Range Plan consistency
- ST3 consistency
- Technical feasibility
- Financial sustainability
- Historically underserved populations
- Station area land use plan consistency
- Modal integration
- Station area development opportunities
- Environmental effects
- Traffic operations
- Economic effects

# Measures and methods

- › *50+ quantitative and/or qualitative measures*
- › *Ratings for Lower, Medium and Higher performing*
- › *Key differentiators and considerations among alternatives*
- › *Findings focus on key decisions along corridor*

**Lower  
Performing**

**Medium  
Performing**

**Higher  
Performing**

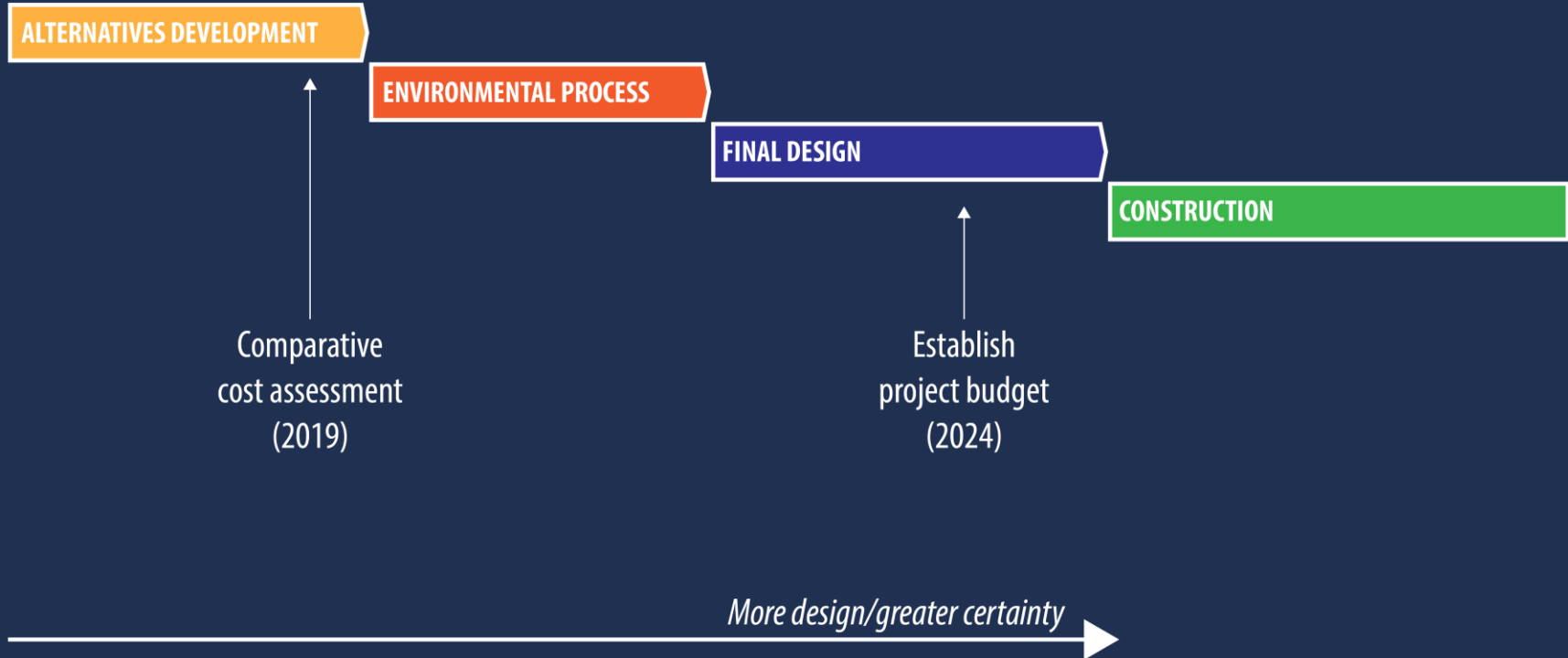


# Cost assessment

- Purpose: To **inform comparison** of Level 3 alternatives
- **Comparative estimates** for end-to-end alternatives
  - Consistent methodology (2018\$; construction, real estate, etc.)
  - Based on limited conceptual design (less than 5% design)
  - Does not establish project budget
- **Project budget** established during final design (~ 2024)



# Project budget



Evaluation Measures	ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel				
	Project	5th Ave Cut-and-Cover International District/Chinatown Station	5th Ave Mined International District/Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard	42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/Chinatown Station	15th Ave Ballard Station
<i>Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.</i>								
At-grade crossings	3	1		1				
Potential service interruptions/recoverability	Lower	Medium		Medium			Lower	Medium
LRT travel times (minutes)	6 to 7 / 13 to 14	6 to 7 / 13 to 14		6 to 7 / 13 to 14				
Transit travel time savings (minutes)	12 to 20	12 to 20		12 to 20				
<i>Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.</i>								
Network integration	Lower	Medium		Higher			Medium	Higher
Passenger carrying capacity	Medium	Medium		Medium				
Average weekday trips on West Seattle/Ballard extensions (2042)	35,000 to 40,000 / 123,000 to 163,000	35,000 to 39,000 / 120,000 to 158,000		35,000 to 41,000 / 125,000 to 165,000				
<i>Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.</i>								
PSRC growth centers served	5	5		5				
Pop/job densities served (2040)	38 / 39	39 / 39		37 / 38 to 39				
Accommodates future LRT extension	Lower	Medium		Higher		Medium	Higher	
<i>Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.</i>								
Mode, route and stations per ST3	Higher	Higher		Higher				
Potential ST3 schedule effects	Higher	Higher	Medium	Lower				
Potential ST3 operating plan effects	Lower	Higher		Higher			Medium	Higher
Engineering constraints	Lower	Medium		Lower				
Constructability issues	Lower	Medium		Lower				
Operational constraints	Lower	Medium	Lower	Higher			Lower	Higher
Capital costs (2018\$)	-	+\$400M	+\$500M	+\$1,900M			+\$2,100M	+\$1,900M
Annual O&M costs on West Seattle/Ballard extensions (2018\$ in millions)	\$25 to \$30 / \$55 to \$60	\$25 to \$30 / \$55 to \$60		\$25 to \$30 / \$55 to \$60				
<i>Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.</i>								
Low-income/minority opportunities (activity nodes/rental units) <sup>(1)</sup>	Medium	Medium		Medium				
	23%	22%		23%				
Low-income population <sup>(1/2)</sup>	32% / 32%	32% / 32%		32% / 31%				
Minority population <sup>(1/2)</sup>	34% / 34%	34% / 35%		34% / 34 to 35%				
Youth population <sup>(1/2)</sup>	7% / 10%	7% / 9%		7% / 9 to 10%				
Elderly population <sup>(1/2)</sup>	14% / 11%	14% / 12%		14% / 11 to 12%				
Limited English Proficiency population <sup>(1/2)</sup>	7% / 8%	7% / 8%		7% / 7 to 8%				
Disabled population <sup>(1/2)</sup>	12% / 11%	12% / 11%		12% / 11%				

(1) Within station walksheds; (2) Within 15 minute ride on connecting high frequency transit

# Level 3 evaluation – Part 1 of 2

## Overview of Key Differentiators

Lower Performing
Medium Performing
Higher Performing

Evaluation Measures	ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel				
	Project	5th Ave Cut-and-Cover International District/Chinatown Station	5th Ave Mined International District/Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard	42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/Chinatown Station	15th Ave Ballard Station
<i>Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.</i>								
Compatibility with Urban Centers/Villages <sup>(1)</sup>	58%		56%				55 to 58%	
Station land use plan consistency	Higher		Higher				Higher	
Activity nodes served <sup>(1)</sup>	302		298				300 to 303	
Passenger transfers	Higher	Higher	Medium		Higher		Medium	Higher
Bus/rail and rail/rail integration <sup>(1)</sup>	Medium		Medium				Medium	
Bicycle infrastructure and accessibility <sup>(1)</sup>	19%		19%				18 to 19%	
Pedestrian/limited mobility accessibility	Higher		Higher				Higher	
Development potential <sup>(1)</sup>	14%		14%				13 to 14%	
Equitable development opportunities	Lower		Medium				Higher	
<i>Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.</i>								
Historic properties/Landmarks <sup>(2)</sup>	40		20				40	
Potential archaeological resource effects <sup>(1)</sup>	Lower		Lower				Lower	
Parks/recreational resource effects (acres)	1.4		5.3				5.7	
Water resource effects (acres)	0.8		0.5				<0.1	
Fish and wildlife habitat effects (acres)	15.0		6.0				15.0	
Hazardous materials sites <sup>(2)</sup>	50		60				40	
Visual effects to sensitive viewers (miles)	2.5		1.7				1.2	
Noise/vibration sensitive receivers <sup>(1)</sup>	Medium		Medium				Medium	
Potentially affected properties	Medium		Lower				Higher	
Residential unit displacements	Medium		Lower				Higher	
Business displacements (square feet)	Higher		Lower				Higher	
Construction impacts	Lower	Lower	Medium		Medium		Lower	Medium
Burden on minority/low-income	Lower		Medium				Lower	
Traffic circulation and access effects	Lower		Medium				Higher	
Effects on transportation facilities	Lower		Medium				Medium	
Effects on freight movement	Lower		Medium				Medium	
Business and commerce effects	Medium		Medium				Medium	

(1) Within station walksheds and/or defined buffer of alignment; (2) On properties that overlap with the project footprint

# Level 3 evaluation – Part 2 of 2

## Overview of Key Differentiators

Lower Performing

Medium Performing

Higher Performing



***Key considerations***



# Key considerations

- › West Seattle stations and guideway
- › Duwamish Waterway crossing
- › SODO and Chinatown/Int'l District
- › Downtown tunnel route
- › Smith Cove-Interbay
- › Salmon Bay crossing
- › Ballard terminus station



# Key considerations

## ST3 Representative Project

- East-west oriented elevated Alaska Junction Station complicates future LRT extension; constrained terminal station on SW Alaska Street
- High guideway on SW Genesee Street
- Park effects may require 4(f) avoidance alternative
- Delridge Station problematic proximity to freeway/Nucor

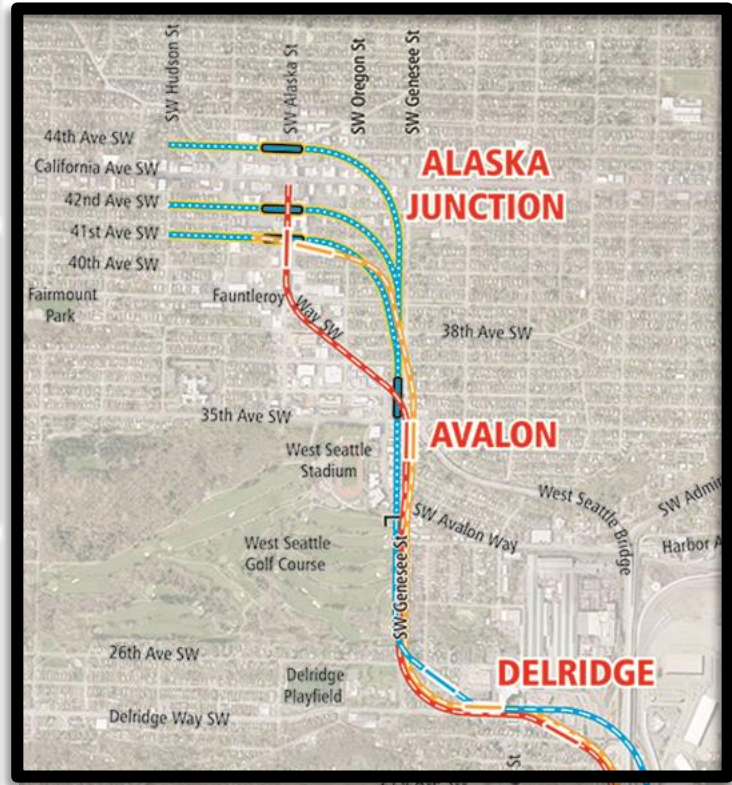
## West Seattle Elevated

- More displacements between Alaska Junction and Avalon stations; similar number of displacements in Delridge
- Greatest disruption to neighborhood around Alaska Junction Station
- High guideway on SW Genesee Street
- Park effects may require 4(f) avoidance alternative

## West Seattle Tunnel

- Fewer displacements w/ tunnel Alaska Junction Station; similar number of displacements in Delridge; Lower Delridge Station in neighborhood
- Tunnel facilitates lower guideway on SW Genesee St, but could increase implementation schedule and require 3rd Party funding
- Park effects may require 4(f) avoidance alternative

## West Seattle Stations



# Key considerations

## West Seattle Stations and Guideway

## ST3 Representative Project

- Engineering constraints with Pigeon Point steep slopes
- Some effects to Duwamish Greenbelt

## West Seattle Elevated

- Engineering constraints with Pigeon Point steep slopes
- Some effects to Duwamish Greenbelt

## West Seattle Tunnel

- North bridge crossing avoids Pigeon Point steep slope and effects to Duwamish Greenbelt
- Affects freight, port terminal facilities especially during construction

## Duwamish Waterway Crossing



# Key considerations

## Duwamish Waterway Crossing



## ST3 Representative Project

- More complex and costly elevated track
- Does not facilitate track interconnections
- Does not grade separate Lander and Holgate roadway crossings
- Infrastructure conflicts with WSDOT ramps

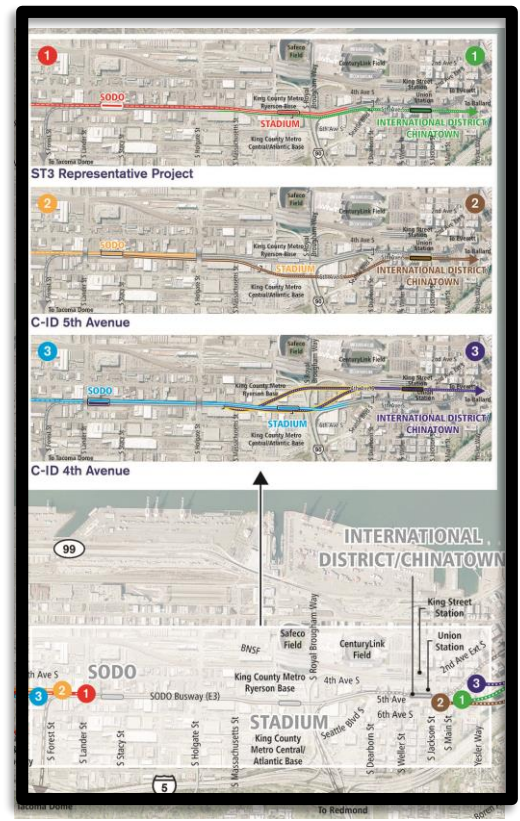
## C-ID 5th Avenue

- At-grade track alignment reduces cost and complexity
- Grade separations of Lander and Holgate improve existing LRT/traffic operations

## C-ID 4th Avenue

- At-grade track alignment reduces cost and complexity
- Grade separations of Lander and Holgate improve existing LRT/traffic operations

# SODO



# Key considerations

SODO and Chinatown/ International District – West Seattle extension



# Chinatown/International District

## ST3 Representative Project

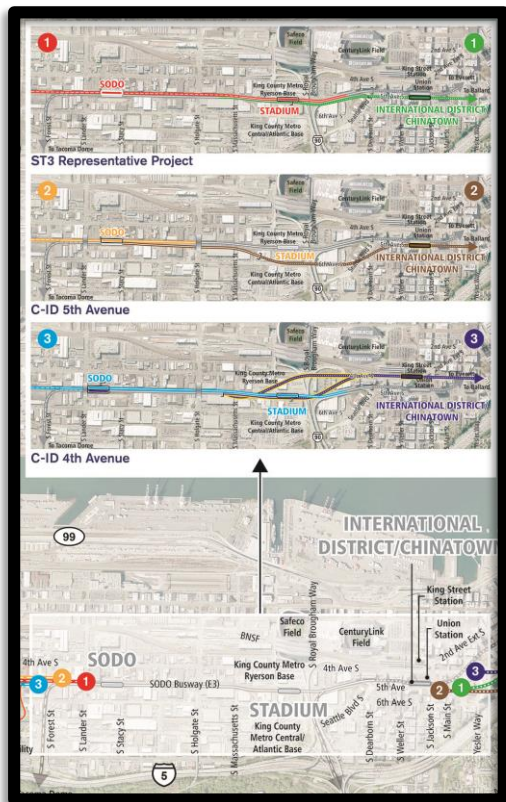
- Cut-and-cover tunnel and station on 5th Ave S results in construction effects in C-ID
- Affects WSDOT ramps/foundations
- Impacts Ryerson bus base

## C-ID 5th Avenue

- Cut-and-cover station on 5th Ave S results in construction effects in C-ID but bored tunnel limits effects
- Mined station has less convenient access, transfers, potential to extend schedule
- Affects future Central base expansion
- Mined station limits train acceleration and track crossovers

## C-ID 4th Avenue

- Viaduct rebuild results in more construction complexity, traffic diversions, schedule delays; requires 3<sup>rd</sup> Party funding
- Mined station option increases traffic effects and has less convenient access, transfers and impacts Ryerson bus base
- Deep mined station does not allow for a pocket track so reduces operability



# Key considerations

SODO and Chinatown/ International District – Ballard extension

# Downtown Tunnel Route



## ST3 Representative Project

- Impacts SR 99 off ramp and requires large sewer relocation
- Constrained right-of-way at Seattle Center Station
- North tunnel portal results in more acquisitions and displacements
- Infrastructure conflicts (sewer under Republican)

## Downtown 6th Ave

- Limited entrance options for Midtown Station
- Wider right-of-way for Seattle Center Station
- North tunnel portal located in poor soil conditions

## Downtown 5th Ave

- Higher ridership potential at South Lake Union Station due to better pedestrian access and bus connections
- Constrained right-of-way at Seattle Center Station
- North tunnel portal impacts SW Queen Anne Greenbelt in landslide hazard area

# Key considerations

## Downtown Tunnel Route

## Smith Cove-Interbay



### ST3 Representative Project

- Affects Elliott/15th Ave W
- Engineering constraints with landslide hazard area
- Affects SW Queen Anne Greenbelt

### Ballard Elevated

- Avoids Elliott/15th Ave W
- Some potential impacts to existing infrastructure
- Park effects may require 4(f) avoidance alternatives

### Ballard Tunnel

- Avoids Elliott/15th Ave W
- Engineering constraints with landslide hazard area
- Most effects to SW Queen Anne Greenbelt
- Park effects may require 4(f) avoidance alternatives

# Key considerations

Smith Cove-Interbay

# Salmon Bay Crossing



## ST3 Representative Project

- Movable bridge has potential service interruptions and most in-water effects
- More effects to Fishermen's Terminal, maritime businesses and vessel navigation

## Ballard Elevated

- Fixed bridge reduces in-water effects and avoids Fishermen's Terminal but has other potential maritime business effects
- Fixed bridge crossing would require high-level structure for navigational clearances

## Ballard Tunnel

- Tunnel avoids columns in water and maritime/navigational effects
- Tunnel crossings add costs; require 3rd Party funding

# Key considerations

## Salmon Bay Crossing



# Ballard Station



## ST3 Representative Project

- Ballard Station on 15th Ave NW closer to Urban Village
- More acquisitions and displacements with elevated guideway, station and tail tracks on 15th Ave NW
- Movable bridge has potential service interruptions

## Ballard Elevated

- Wider 14th Ave NW right-of-way better accommodates elevated guideway, station and tail tracks
- Ballard Station on 14th Ave NW farther from center of Urban Village than 15th Ave NW, but would have similar ridership and potentially better bus integration

## Ballard Tunnel

- Wider 14th Ave NW right-of-way better accommodates station and tail tracks
- Ballard Station on 14th Ave NW farther from center of Urban Village than 15th Ave NW, but would have similar ridership and potentially better bus integration

# Key considerations

## Ballard Terminus Station

Evaluation Measures	ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel				
	Project	5th Ave Cut-and-Cover International District/Chinatown Station	5th Ave Mined International District/Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard	42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/Chinatown Station	15th Ave Ballard Station
<i>Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.</i>								
At-grade crossings	3	1		1				
Potential service interruptions/recoverability	Lower	Medium		Medium			Lower	Medium
<i>Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.</i>								
Network Integration	Lower	Medium		Higher			Medium	Higher
<i>Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.</i>								
Accommodates future LRT extension	Lower	Medium		Higher		Medium	Higher	
<i>Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.</i>								
Potential ST3 schedule effects	Higher	Higher	Medium	Lower				
Potential ST3 operating plan effects	Lower	Higher		Higher			Medium	Higher
Engineering constraints	Lower	Medium		Lower				
Constructability issues	Lower	Medium		Lower				
Operational constraints	Lower	Medium	Lower	Higher			Lower	Higher
Capital costs (2018\$)	-	+\$400M	+\$500M	+\$1,900M			+\$2,100M	+\$1,900M
<i>Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.</i>								
Passenger transfers	Higher	Higher	Medium	Higher			Medium	Higher
Equitable development opportunities	Lower	Medium		Higher				
<i>Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.</i>								
Parks/recreational resource effects (acres)	1.4	5.3		5.7				
Water resource effects (acres)	0.8	0.5		<0.1				
Fish and wildlife habitat effects (acres)	15.0	6.0		15.0				
Hazardous materials sites <sup>(1)</sup>	50	60		40				
Visual effects to sensitive viewers (miles)	2.5	1.7		1.2				
Potentially affected properties	Medium	Lower		Higher				
Residential unit displacements	Medium	Lower		Higher				
Business displacements (square feet)	Higher	Lower		Higher				
Construction impacts	Lower	Lower	Medium	Medium			Lower	Medium
Burden on minority/low-income	Lower	Medium		Lower				
Traffic circulation and access effects	Lower	Medium		Higher			Medium	
Effects on transportation facilities	Lower	Medium		Medium				
Effects on freight movement	Lower	Medium		Medium				

(1) On properties that overlap with the project footprint

Lower Performing

Medium Performing

Higher Performing

# Summary of differentiators

Key Considerations	Summary of Findings
<b>West Seattle stations and guideway</b>	<ul style="list-style-type: none"> <li>• ST3 Representative Project's east-west oriented elevated Alaska Junction Station complicates future LRT extension</li> <li>• Tunnel alternatives could delay opening of West Seattle extension; require 3rd Party funding</li> <li>• Park effects in West Seattle may require 4(f) avoidance alternative</li> </ul>
<b>Duwamish Waterway crossing</b>	<ul style="list-style-type: none"> <li>• North bridge crossing avoids Pigeon Point steep slope and effects to Duwamish Greenbelt; affects freight, port terminal facilities especially during construction</li> </ul>
<b>SODO and Chinatown/International District</b>	<ul style="list-style-type: none"> <li>• ST3 Representative Project has more complex/costly elevated track in SODO; does not facilitate track interconnections</li> <li>• Deep mined C-ID station options (on 4<sup>th</sup> and 5<sup>th</sup> Aves) result in less convenient passenger access/transfers</li> <li>• 4th Ave S viaduct rebuild creates engineering/constructability issues, potential schedule delay, extensive traffic diversions during construction and requires 3rd Party funding</li> </ul>
<b>Downtown tunnel route</b>	<ul style="list-style-type: none"> <li>• ST3 Representative Project on Republican impacts SR 99 off ramp and requires large sewer relocation</li> <li>• Higher ridership potential at South Lake Union Station on Harrison due to better pedestrian access/bus connections</li> </ul>
<b>Smith Cove-Interbay</b>	<ul style="list-style-type: none"> <li>• ST3 Representative Project affects Elliott/15th Ave W</li> <li>• Alignments on east side of Elliott affect landslide hazard area and SW Queen Anne Greenbelt</li> <li>• Park effects in Interbay may require 4(f) avoidance alternative</li> </ul>
<b>Salmon Bay crossing</b>	<ul style="list-style-type: none"> <li>• Movable bridge has potential service interruptions and more in-water effects</li> <li>• Tunnel crossings add costs; require 3rd Party funding</li> </ul>
<b>Ballard terminus station</b>	<ul style="list-style-type: none"> <li>• Wider 14th Ave NW right-of-way better accommodates guideway, station and tail tracks</li> <li>• Ballard Station on 14th Ave NW farther from center of Urban Village than 15th Ave NW, but would have similar ridership and potentially better bus integration</li> </ul>

# Summary of key considerations

A photograph of a light rail train at a station platform. The train is white and blue, with "CANTON SOUTHWEST" written on its front. A group of people, including a woman in a yellow hijab and a woman in a red jacket, are standing on the platform. The platform has blue railings and a blue circular sign. The background shows trees and a clear sky.

***Potential mix-and-match opportunities***



# Summary of Level 3 alternatives

## › ST3 Representative Project

### West Seattle Elevated/ C-ID 5th Ave/ Downtown 6th Ave/ Ballard Elevated

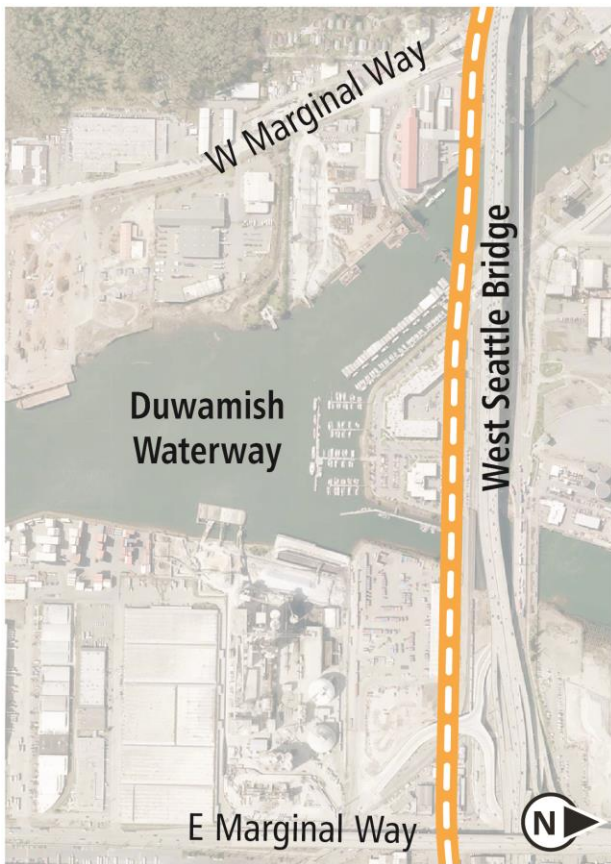
- C-ID station options: 5th Ave Cut-and-Cover and 5th Ave Mined

## › West Seattle Tunnel/ C-ID 4th Ave/ Downtown 5th Ave/ Ballard Tunnel

- Junction station options: 41st Ave, 42nd Ave and 44th Ave
- C-ID station options: 4th Ave Cut-and-Cover and 4th Ave Mined
- Ballard station options: 14th Ave and 15th Ave



# West Seattle Elevated/ C-ID 5th Ave/ Downtown 6th Ave/ Ballard Elevated – Potential mix-and-match opportunities



## Duwamish Crossing:

### Key differentiators

- Engineering constraints
- Fish and wildlife effects
- Property effects
- Freight movement effects
- Business and commerce effects
- Cost

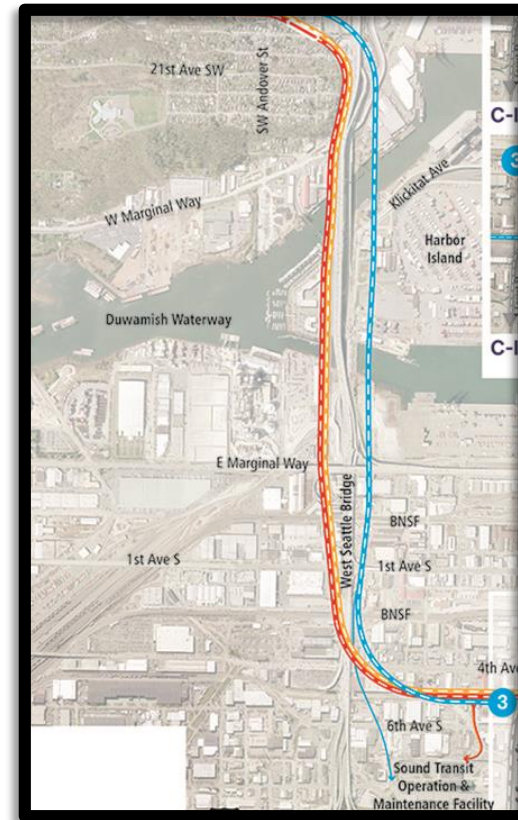


**West Seattle Elevated/ C-ID 5th Ave/ Downtown 6th Ave/  
Ballard Elevated Crossing on north instead of south side**



# Duwamish Crossing

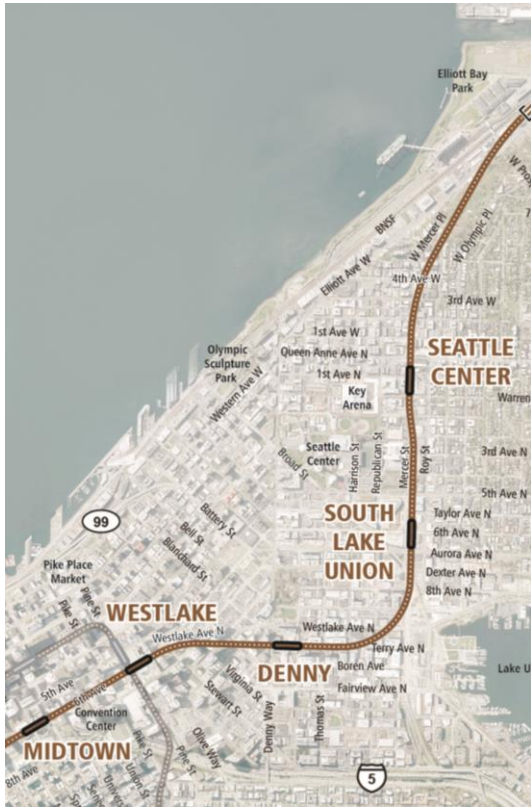
Key Differentiators	South	North
Engineering constraints	Pigeon Point steep slope	Avoids Pigeon Point steep slope
Fish and wildlife effects	Affects West Duwamish Greenbelt	Avoids West Duwamish Greenbelt
Property effects	Similar	Similar
Freight movement	Lessens freight, port terminal effects	Affects freight, port terminal especially during construction
Business and commerce effects	Could displace businesses that support trade	Could displace businesses that support trade; May displace some water-dependent business
Cost (2018\$)*	-	+ \$300M



\*Compared to ST3 Representative Project

**West Seattle Elevated/ C-ID 5th Ave/ Downtown 6th Ave/ Ballard Elevated Crossing on north instead of south side**





## Downtown:

### Key differentiators

- Midtown Station
- SLU Station
- Seattle Center Station
- North tunnel portal
- Cost



**West Seattle Elevated/ C-ID 5th Ave/ Downtown 6th Ave/  
Ballard Elevated 5th/Harrison route instead of 6th/Mercer**

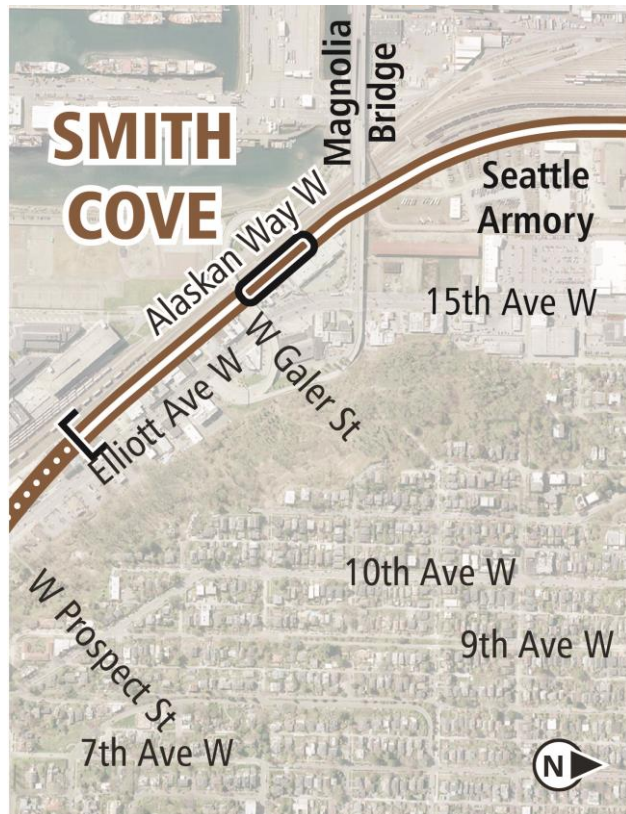
## Downtown

Key Differentiators	6th/Mercer	5th/Harrison
Midtown Station	Limited station entrance options	More station entrance options
South Lake Union Station	Higher ROW cost for off-street station	Higher ridership potential due to better ped and bus access
Seattle Center Station	Wider right-of-way on Mercer	Constrained ROW on Republican
North tunnel portal	Located in poor soil conditions	Affects SW Queen Anne Greenbelt in landslide area
Cost (2018\$)*	+ \$400M	-



\*Compared to ST3 Representative Project

**West Seattle Elevated/ C-ID 5th Ave/ Downtown 6th Ave/ Ballard Elevated 5th/Harrison route instead of 6th/Mercer**



## Smith Cove:

### Key differentiators

- Station location
- Engineering constraints
- Parks, fish and wildlife
- Property effects
- Cost



**West Seattle Elevated/ C-ID 5th Ave/ Downtown 6th Ave/ Ballard Elevated Station near Prospect instead of Galer**



# Smith Cove

Key Differentiators	Station at Galer St	Station at Prospect St
Station Location	West of Elliott Ave Access to Expedia via Galer St overpass	East of Elliott Ave Access to Expedia via Helix pedestrian bridge
Engineering Constraints	Station and guideway in poor soils Affects Interbay Pump Station and portion of existing bridge	Station and guideway in landslide hazard areas
Parks, Fish & Wildlife	Avoids SW Queen Anne Greenbelt	Affects SW Queen Anne Greenbelt
Property Effects	Similar (business displacement outside public right-of-way)	Similar (business displacement outside public right-of-way)
Cost (2018\$)*	+ \$100M	+ \$200M

\*Compared to ST3 Representative Project



**West Seattle Elevated/ C-ID 5th Ave/ Downtown 6th Ave/ Ballard Elevated Station near Prospect instead of Galer**



# Summary of Level 3 alternatives

- › **ST3 Representative Project**
- › **West Seattle Elevated/ C-ID 5th Ave/  
Downtown 6th Ave/ Ballard Elevated**
  - C-ID station options: 5th Ave Cut-and-Cover and 5th Ave Mined



## **West Seattle Tunnel/ C-ID 4th Ave/ Downtown 5th Ave/ Ballard Tunnel**

- Junction station options: 41st Ave, 42nd Ave and 44th Ave
- C-ID station options: 4th Ave Cut-and-Cover and 4th Ave Mined
- Ballard station options: 14th Ave and 15th Ave



# West Seattle Tunnel/ C-ID 4th Ave/ Downtown 5th Ave/ Ballard Tunnel – Potential mix-and-match opportunities



## Alaska Junction:

### Key differentiators

- Station location
- Property effects
- Guideway height in Delridge
- Cost



**West Seattle Tunnel/ C-ID 4th Ave/ Downtown 5th Ave/  
Ballard Tunnel *Elevated instead of tunnel stations***



# West Seattle

Key Differentiators	Elevated 41 <sup>st</sup> South of Alaska	Tunnel 41 <sup>st</sup> /Alaska	Tunnel 42 <sup>nd</sup> /Alaska	Tunnel 44 <sup>th</sup> /Alaska
Station location (Alaska Junction)	Farther away from bus routes on California Ave	Farther away from bus routes on California Ave	Closer to bus routes on California Ave than 41 <sup>st</sup>	Closer to bus routes on California Ave than 41 <sup>st</sup> and 42 <sup>nd</sup>
Property effects* (residential / business displacements)	More / Fewer	Fewer / Fewer	Fewer / Fewer	Fewer / Fewer
Guideway height in Delridge	Higher	Lower	Lower	Lower
Cost (2018\$)*	-	+ \$700M	+ \$700M	+ \$700M



\*Compared to ST3 Representative Project

**West Seattle Tunnel/ C-ID 4th Ave/ Downtown 5th Ave/ Ballard Tunnel** *Elevated instead of tunnel stations*





## SODO and Chinatown-ID:

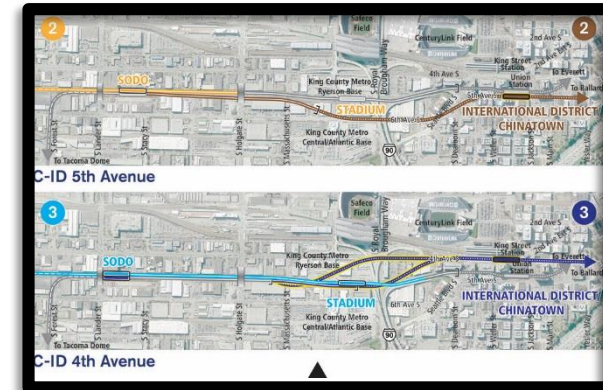
### Key differentiators

- Ease of station access/passenger transfers
- Construction effects in C-ID
- Property effects
- Construction schedule
- Cost

**West Seattle Tunnel/ C-ID 4th Ave/ Downtown 5th Ave/ Ballard Tunnel 5th Ave instead of 4th Ave CID station**

# SODO and Chinatown-ID

Key Differentiators	5th Bored/ Cut-and-Cover	5th Bored/ Mined	4th Cut-and-Cover	4th Bored/ Mined
Ease of station access/transfers	Higher performing	Lower performing	Higher performing	Lower performing
Construction effects in C-ID	More construction effects	Least construction effects	More construction traffic effects	Most construction traffic effects
Property effects	Property effects in SODO at tunnel portal and 5 <sup>th</sup> Ave in C-ID; affects future Central Base expansion	Property effects in SODO at tunnel portal and 5 <sup>th</sup> Ave in C-ID; affects future Central Base expansion	Property effects on 4th Ave; affects Ryerson Base	Property effects on 4 <sup>th</sup> Ave; displaces Ryerson Base
Construction schedule	Meets ST3 schedule	Higher schedule risk	Potential schedule delay	Potential schedule delay
Cost (2018\$)*	- \$200M	-	+ \$300M	+ \$500M**



\*Compared to ST3 Representative Project  
 \*\*Includes higher Downtown cost of \$100M

**West Seattle Tunnel/ C-ID 4th Ave/ Downtown 5th Ave/  
 Ballard Tunnel 5th Ave instead of 4th Ave CID station**



## Salmon Bay Crossing and Ballard Station:

### Key differentiators

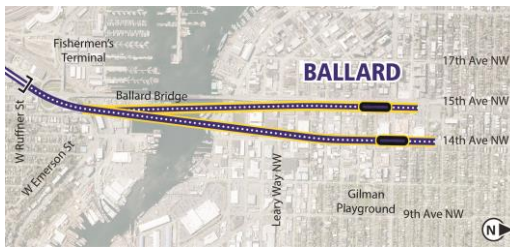
- Station location
- Water resources
- Business and commerce
- Property effects
- Cost

**West Seattle Tunnel/ C-ID 4th Ave/ Downtown 5th Ave/  
Ballard Tunnel *Elevated instead of tunnel Ballard station***



# Salmon Bay Crossing and Ballard Station

Key Differentiators	Fixed bridge crossing / Elevated station at 14th	Tunnel crossing / Tunnel station at 14th	Tunnel crossing / Tunnel station at 15th
Station Location	Straddles Market St Similar ridership, potentially better bus integration	Straddles Market St Similar ridership, potentially better bus integration	South of Market St Similar ridership, closer to center of urban village
Water Resources	Potential in-water effects	Avoids in-water effects	Avoids in-water effects
Business and Commerce	Potential maritime, freight business effects	Avoids maritime business effects	Avoids maritime business effects
Property Effects	Greater property effects south of Salmon Bay (elevated guideway outside public right-of-way)	Fewer property effects in Ballard (cut-and-cover station in 14th Ave right-of-way)	Greater property effects in Ballard (cut-and-cover station outside public right-of-way)
Cost (2018\$)	+ \$100M	+ \$350M	+ \$350M



\*Compared to ST3 Representative Project

**West Seattle Tunnel/ C-ID 4th Ave/ Downtown 5th Ave/ Ballard Tunnel *Elevated instead of tunnel Ballard station***



A light rail train is stopped at a station platform. The train is white with blue and green wavy patterns on the side. A man in a dark shirt and grey pants is standing in the open door of the train. Several people are walking on the platform. A woman in a pink top and black pants is walking towards the camera. A man in a grey t-shirt and khaki pants is walking away from the camera. A woman in a white top and light blue pants is walking away from the camera. A man in a white t-shirt and khaki pants is walking away from the camera. A blue sign with a white train icon is visible in the background. The text "Next steps" is overlaid in the center of the image.

***Next steps***

# Level 3 alternatives screening

<b>SAG Meeting #12</b>	Jan 30	Level 3 evaluation results
<b>ELG Meeting #6</b>	Feb 1	Level 3 evaluation results
<b>EIS Scoping Open Houses / Neighborhood Forums</b>	Feb/ Mar TBD	Level 3 evaluation results
<b>ELG Meeting #7</b>	Mar 29	CID station focus
<b>SAG Meeting #13</b>	Apr TBD	Level 3 recommendations
<b>ELG Meeting #8</b>	Apr TBD	Level 3 recommendations
<b>Sound Transit Board System Expansion Committee</b>	May 9	Identify preferred alternative (and other EIS alternatives)
<b>Sound Transit Board Full Board</b>	May 23	Identify preferred alternative (and other EIS alternatives)

*soundtransit.org/wsblink* 

