



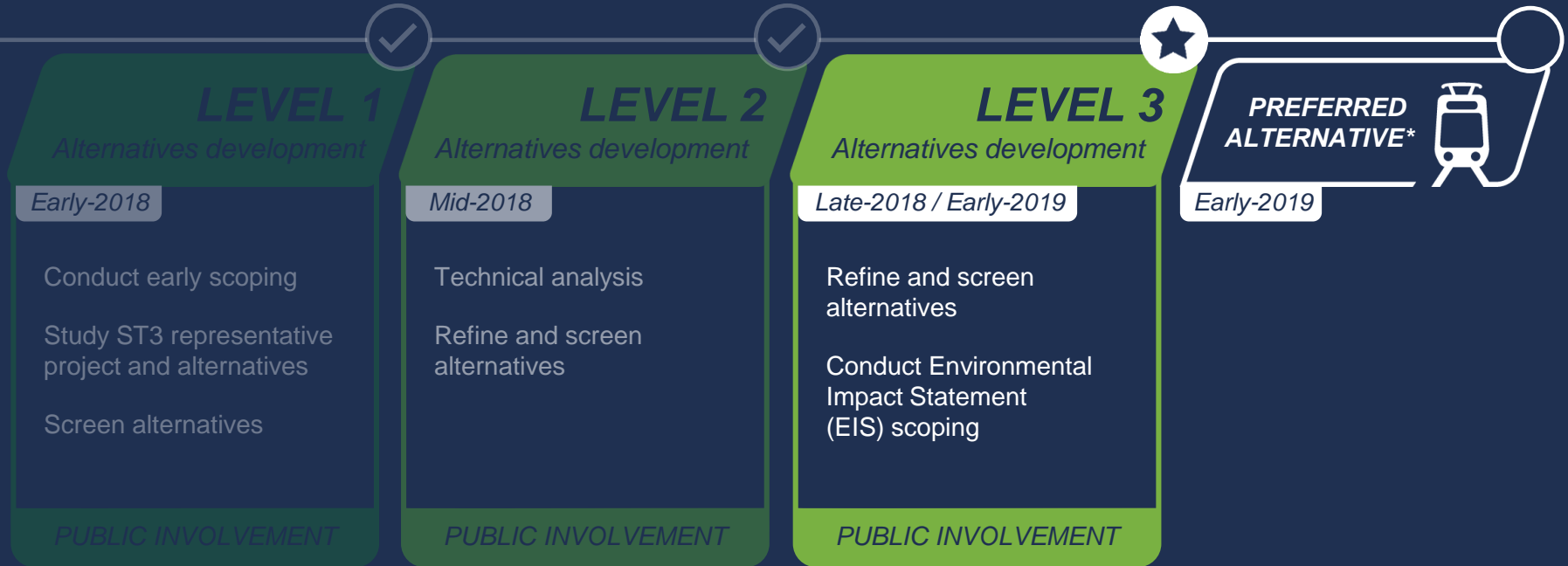
# *West Seattle and Ballard Link Extensions*

*System Expansion Committee | February 14, 2019*

# Agenda

- *Alternatives development process*
- *Level 3 alternatives*
- *Level 3 evaluation results*
- *Potential mix-and-match opportunities*

# Alternatives development process



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

# Community engagement and collaboration



Meeting dates subject to change.

# 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 27, 28 & March 7	Level 3 evaluation results
<b>ELG Meeting #7</b>	March 29	CID station focus
<b>SAG Meeting #13</b>	April 17 or 18	Level 3 recommendations
<b>ELG Meeting #8</b>	April 26	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)

# *What is EIS Scoping?*

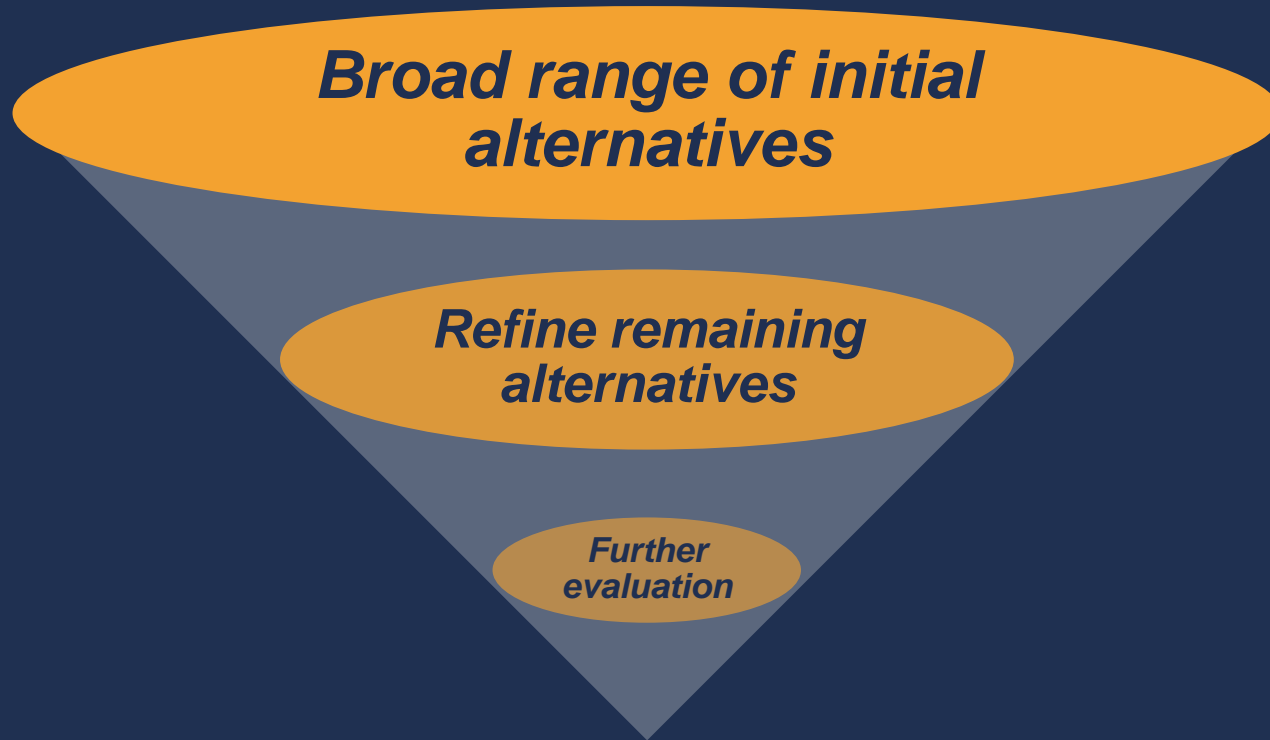
- Start of federal environmental review process
- 30-day **public comment period** begins **February 15**
- Seeking public **feedback on scope of EIS**
  - Range of alternatives
  - Topics to study
  - Purpose and need
- **Informs Board decision** on what to study in EIS\*

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

# *How to provide scoping comments*

- **Attend an open house:**
  - West Seattle on Wednesday, Feb. 27, 6 – 8:30 p.m. at [Alki Masonic Center](#)
  - Ballard/Interbay on Thursday, Feb. 28, 6 – 8:30 p.m. at [Ballard High School](#)
  - Downtown on Thursday, March 7, 5 – 7:30 p.m. at [Union Station](#)
- **Comment online:** [wsblink.participate.online](https://wsblink.participate.online)
- **Email us:** [wsbscopingcomments@soundtransit.org](mailto:wsbscopingcomments@soundtransit.org)
- **Leave a voicemail:** 833-972-2666
- **Mail us:**
  - West Seattle and Ballard Link Extensions, c/o Lauren Swift, Sound Transit, 401 S. Jackson St., Seattle, WA 98104

# 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 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



# 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
- 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

# 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



***Level 3 evaluation  
results***

# 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

Lower  
Performing

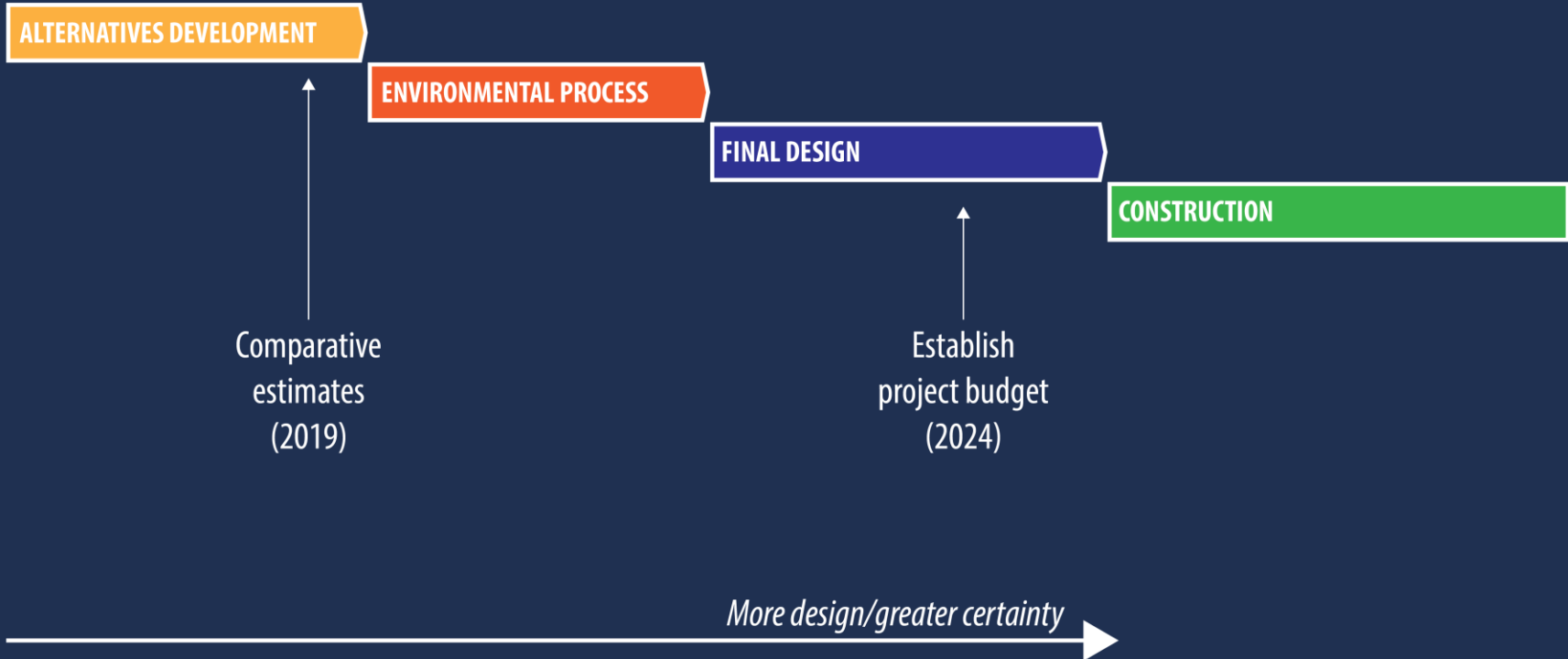
Medium  
Performing

Higher  
Performing

# Comparative estimates

- 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



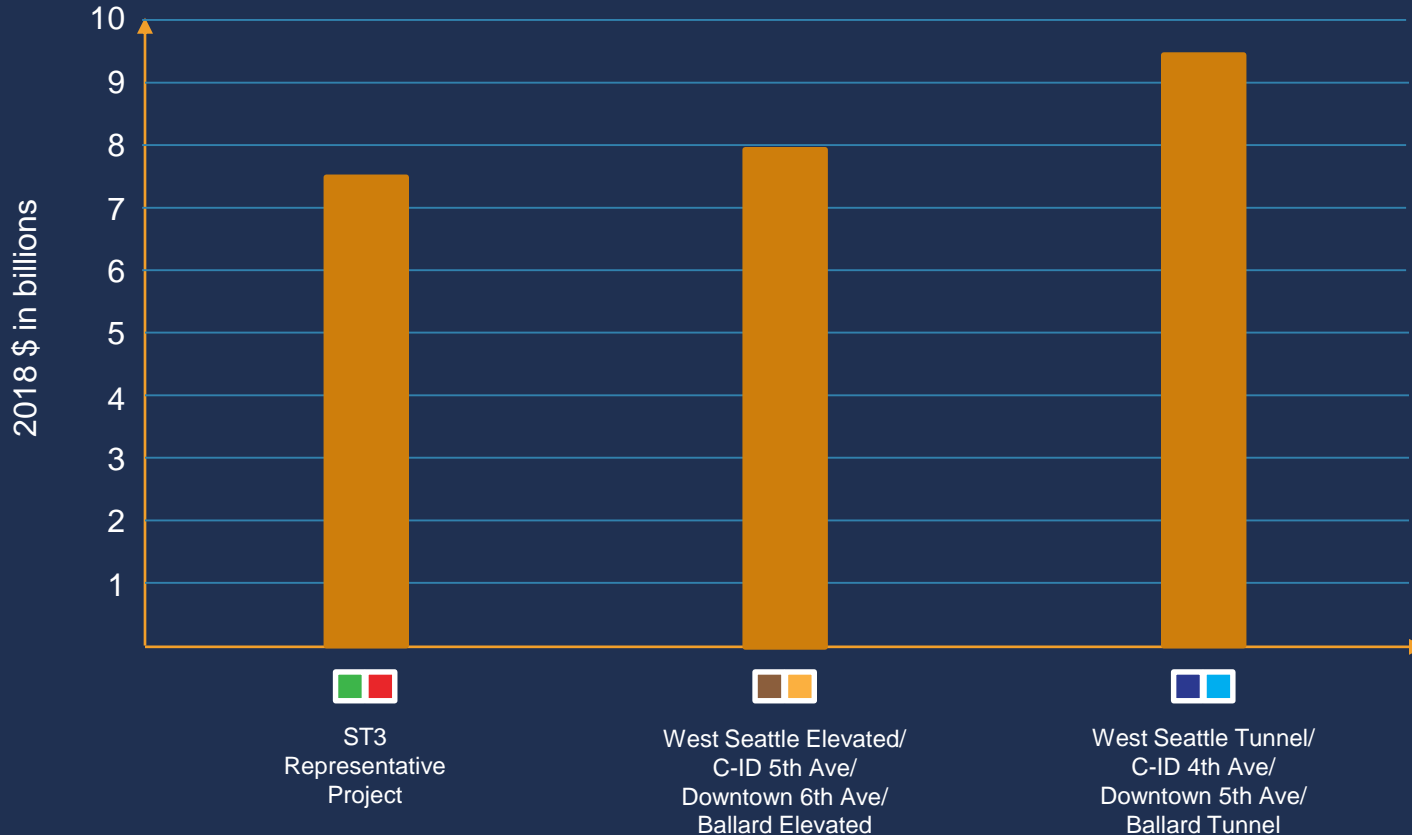
Evaluation Measures	ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel				
	Project	5th Ave Cut-and-Cover International District/Chinatown Station	5th Ave Mined International District/Chinatown Station	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
<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				
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

# Comparative estimates



Estimates based on limited conceptual design for the purpose of comparing alternatives only. Project budget established during final design (~2024).



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 a woman in a red jacket. The station has a blue metal railing and a blue circular sign. The background shows green 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
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# West Seattle Elevated/ C-ID 5th Ave/ Downtown 6th Ave/ Ballard Elevated – 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
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- Ballard station options: 14th Ave and 15th Ave



**Elevated (instead of tunnel) Alaska Junction and Avalon stations**

**5th Ave (instead of 4th Ave) Chinatown/ID station**

**Elevated (instead of tunnel) Ballard station**

**LEGEND**

	West Seattle Tunnel/ C-ID 4th Ave/Downtown 5th Ave/ Ballard Tunnel		Elevated station
	Elevated alignment		Surface station
	Surface alignment		Tunnel station
	Tunnel alignment		Station option
	Alignment option		
	Approximate portal location		Existing elevated alignment
	Street overpass		Existing surface station
	Existing surface alignment		Existing tunnel alignment
	Existing tunnel station		

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

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 on the platform. The background shows a city street with buildings and trees.

***Next steps***

# Next steps

<b>SAG Meeting #12</b>	Jan 30	Level 3 evaluation results
<b>ELG Meeting #6</b>	Feb 1	Level 3 evaluation results
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*soundtransit.org/wsblink* 





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				
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<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