



West Seattle and Ballard Link Extensions

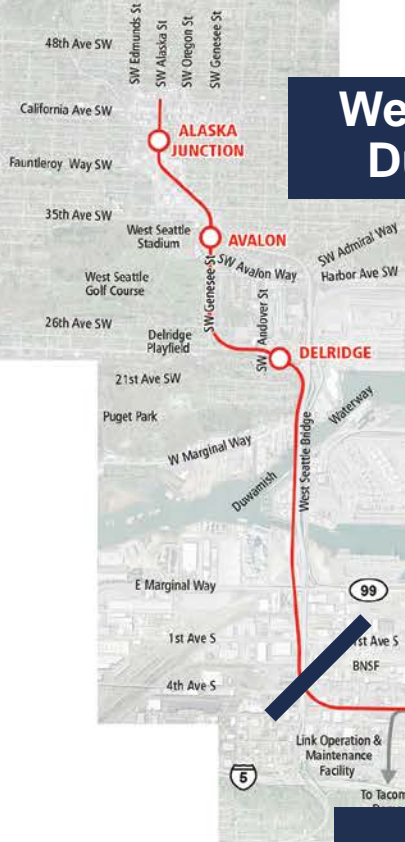
Sound Transit Board Briefing | May 24, 2018

Community engagement and collaboration



Meeting dates subject to change.

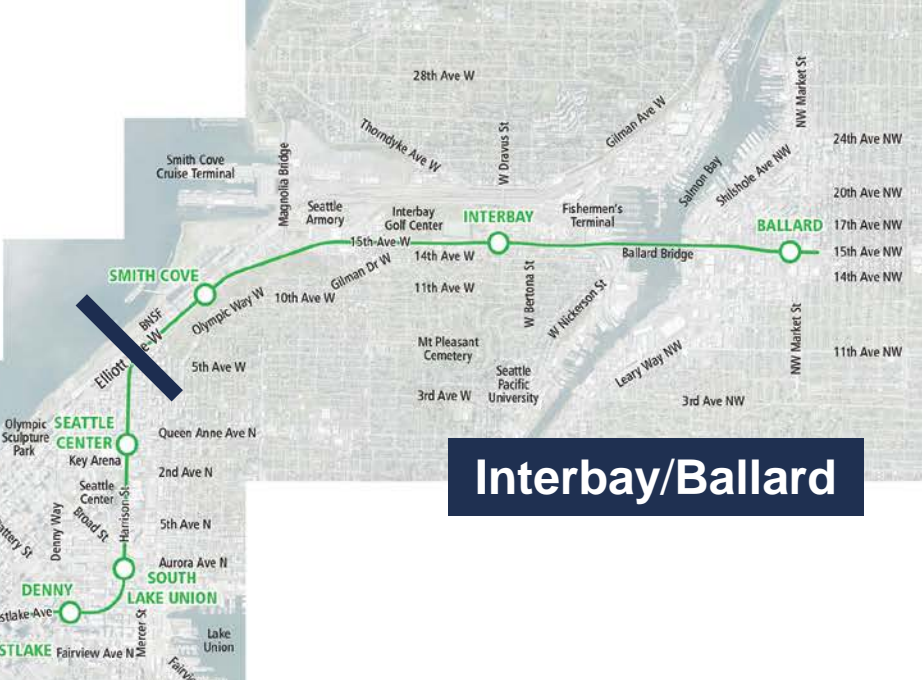
West Seattle/ Duwamish



SODO & Chinatown/ID




Downtown



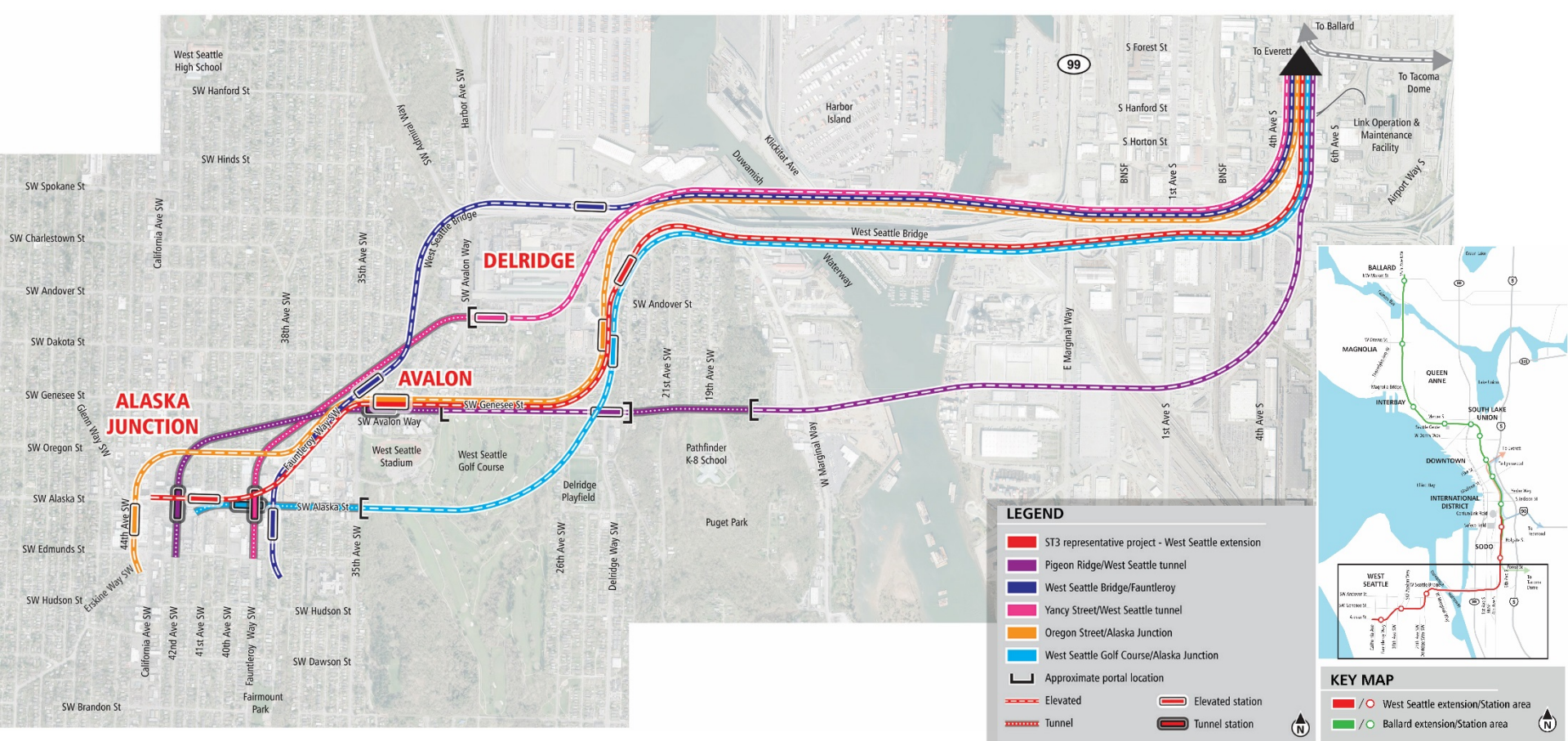
Interbay/Ballard

KEY MAP

- Red line / Red circle: West Seattle extension/Station area
- Green line / Green circle: Ballard extension/Station area
- Grey line / Grey circle: Existing Link/Station area









ST3 Representative project



West Seattle / Duwamish – Level 1 alternatives

West Seattle/Duwamish – ELG recommendations

	Alternative		Carry forward?	Do not carry forward?	Notes/Comments
Alternatives with more potential	ST3 Representative Project				
	Oregon Street/Alaska Junction		✓		Explore elevated and tunnel options; explore crossing on south side of West Seattle bridge
	West Seattle Bridge/Fauntleroy			✓	
	Pigeon Ridge/West Seattle Tunnel		✓		
Alternatives with greater challenges	Yancy Street/West Seattle Tunnel			✓	
	West Seattle Golf Course/Alaska Junction (Tunnel)		✓		Explore refined version that avoids 4(f) impacts
Not practical suggestions	Tunnel under Duwamish			✓	
	West Seattle Bridge			✓	
	Gondola, rail/bus bridge			✓	
	Extensions to Alki, Admiral, etc.			✓	



KEY MAP

- West Seattle extension/Station area
- Ballard extension/Station area




LEGEND

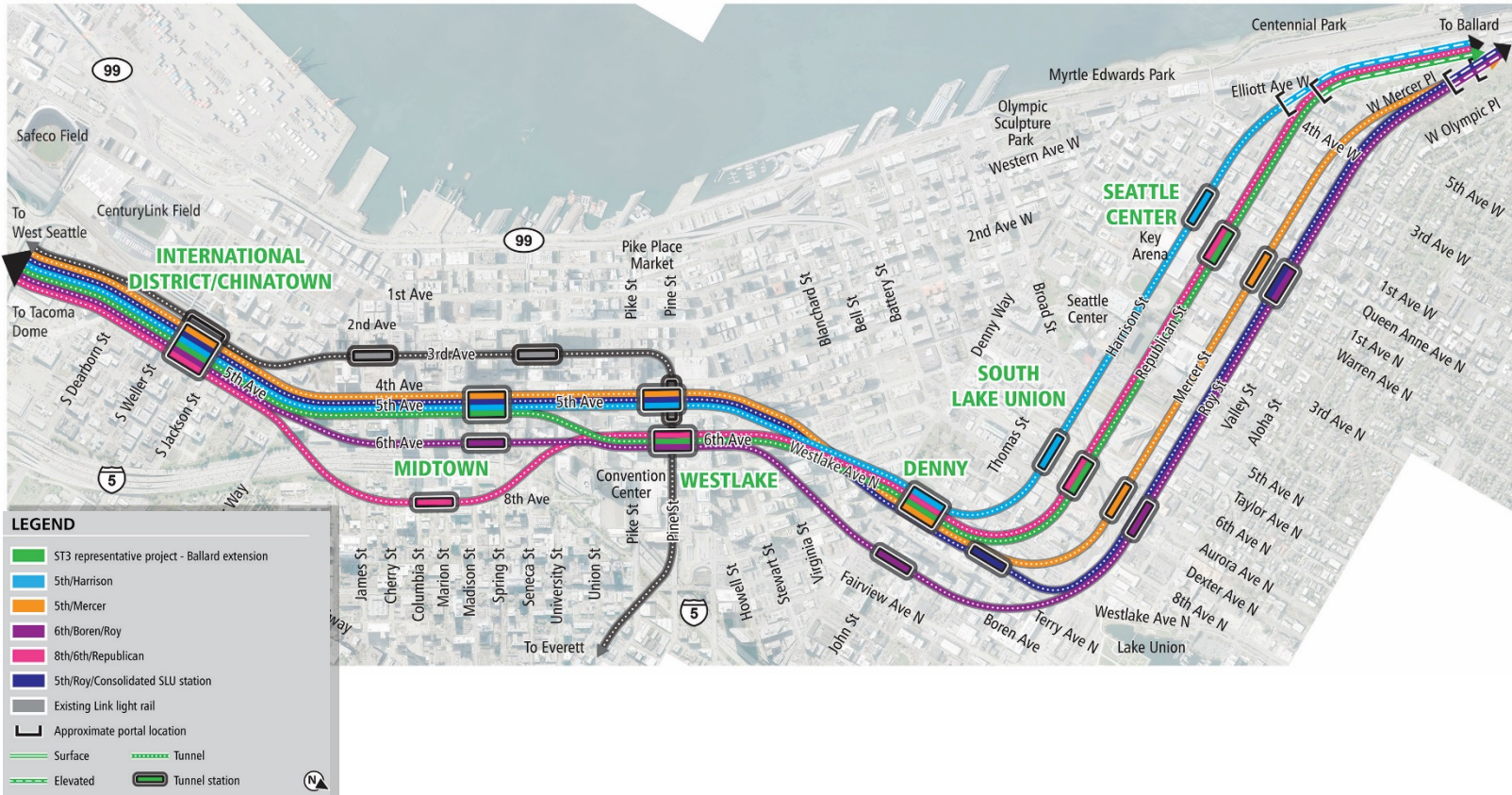
- ST3 representative project - West Seattle extension/Ballard extension
- Massachusetts tunnel portal - West Seattle extension/Ballard extension
- Surface E-3 - West Seattle extension/Ballard extension
- Existing Link light rail
- Approximate portal location
- New roadway overcrossing
- Surface
- Elevated guideway
- Tunnel
- Surface station
- Elevated station



SODO & Chinatown/ID – Level 1 alternatives







SODO & Chinatown/ID – ELG recommendations

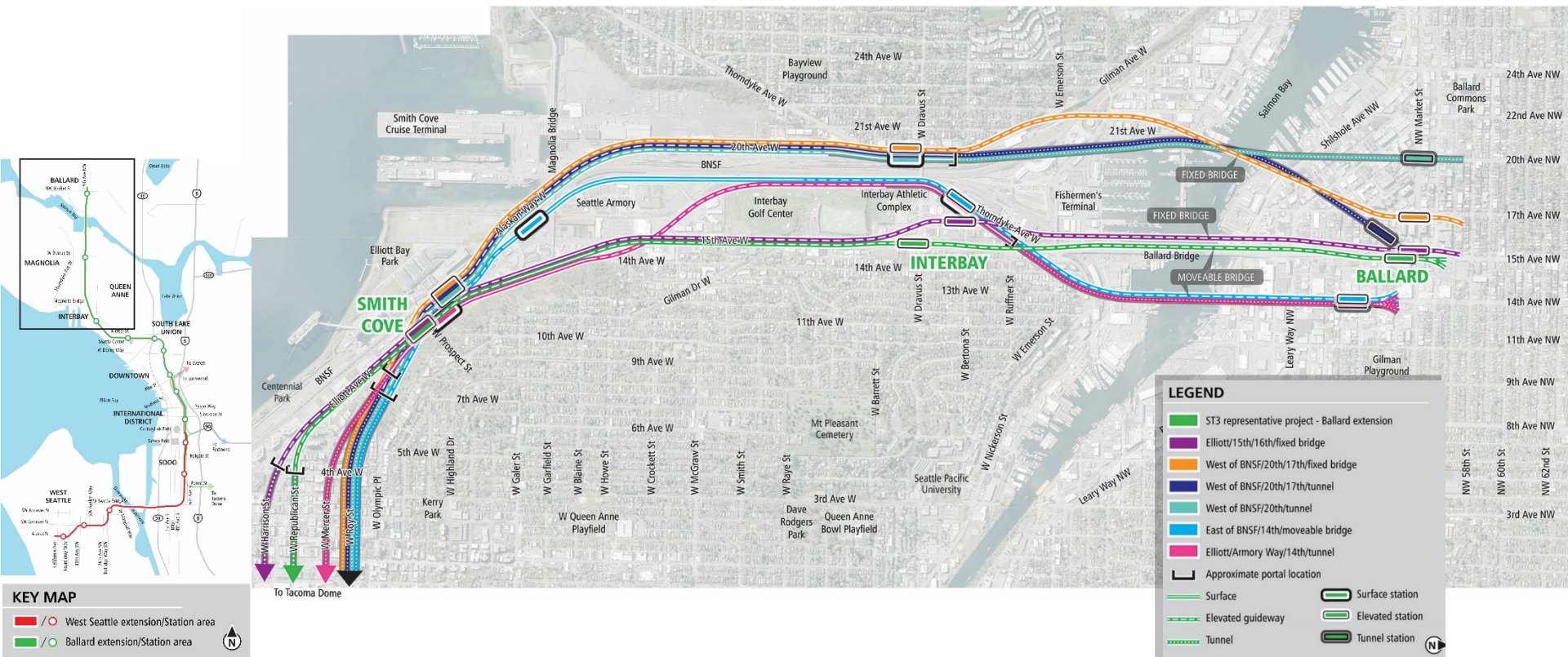
	Alternative	Carry forward?	Do not carry forward?	Notes/Comments
Alternatives with more potential	ST3 Representative Project 			
	Surface E-3 	✓		
	Massachusetts Tunnel Portal 	✓		
Not practical suggestions	Maintain buses on E-3		✓	
	First Ave alignment	✓		Explore alignments further west of ST3 Representative Project
	Design for potential extension south to Georgetown		✓	
New suggestion	Alternative station location	✓		Consider 4 th Ave location for Chinatown/ID station



Downtown — Level 1 alternatives








Downtown – ELG recommendations

	Alternative		Carry forward?	Do not carry forward?	Notes/Comments
Alternatives with more potential	ST3 Representative Project				
	5th/Harrison		✓		
	6th/Boren/Roy		✓		
Alternatives with greater challenges	5th/Mercer			✓	Explore availability of city-owned properties
	5th/Roy/Consolidated SLU Station			✓	
	8th/6th/Republican (First Hill)			✓	Address ridership needs for First Hill neighborhood (Madison BRT)
Not practical suggestions	Use Downtown Seattle Transit Tunnel (DSTT)			✓	
	Design for potential extensions to north and/or east			✓	



Interbay / Ballard – Level 1 alternatives

Interbay/Ballard – ELG recommendations

	Alternative		Carry forward?	Do not carry forward?	Notes/Comments
Alternatives with more potential	ST3 Representative Project				
	Elliott/15 th /16 th /Fixed Bridge		✓		
	West of BNSF/20 th /17 th /Fixed Bridge		✓		
	East of BNSF/14 th /Movable Bridge		✓		
	West of BNSF/20 th /17 th Tunnel		✓		
	Elliott/Armory Way/14 th /Tunnel		✓		
Alternatives with greater challenges	West of BNSF/20 th /Tunnel			✓	
Not practical suggestions	Tunnel through Queen Anne/Interbay			✓	
	Extensions to 65 th , 85 th , Northgate			✓	
	Multi-modal Salmon Bay bridge			✓	
	Eliminate or add stations			✓	



Next steps

Community engagement and collaboration



Meeting dates subject to change.



soundtransit.org/wsblink 

 **SOUNDTRANSIT**

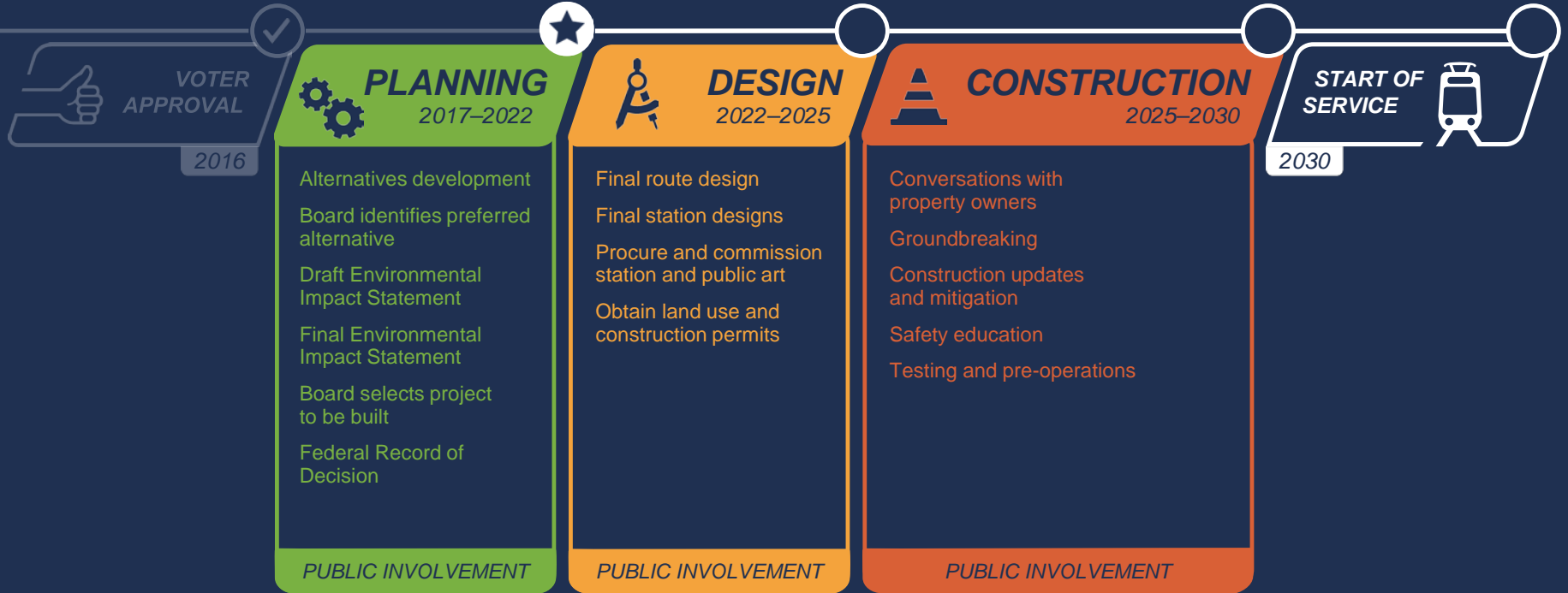
Backup slides



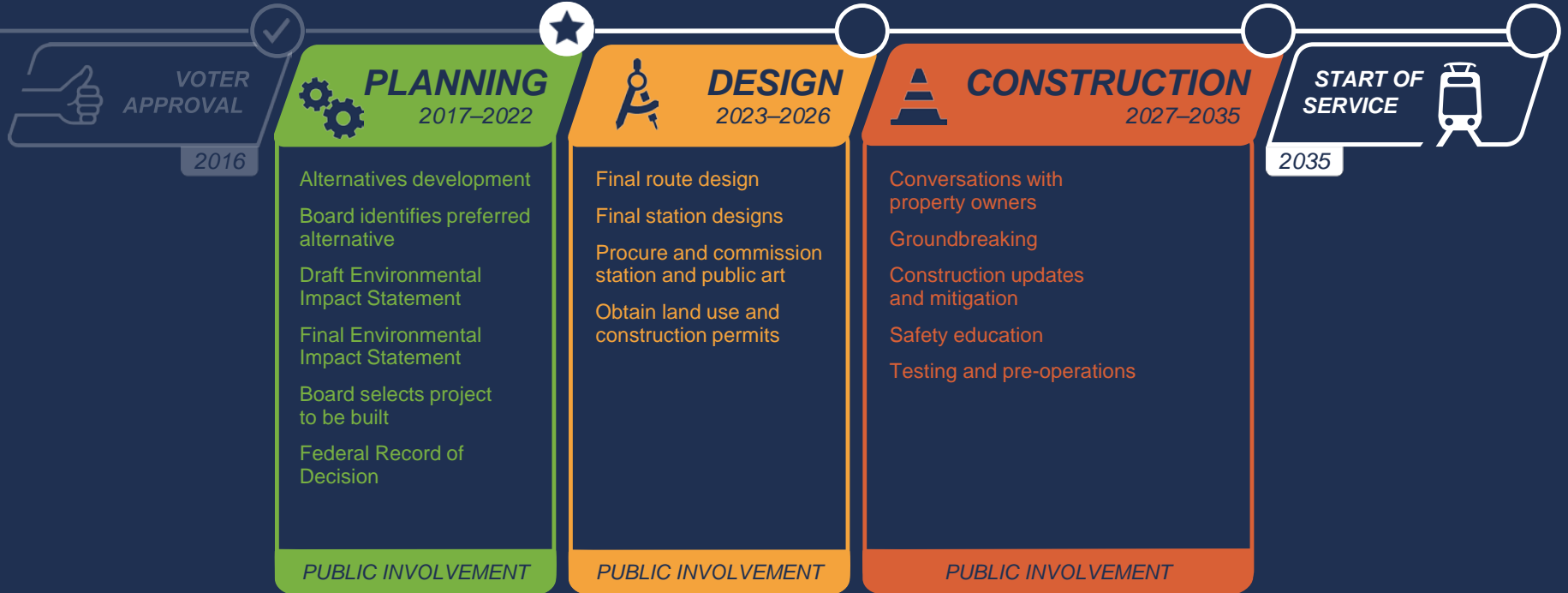
ST3 Representative project

- Identifies mode, corridor, number of stations, general station locations
- Informs cost, schedule, operating needs

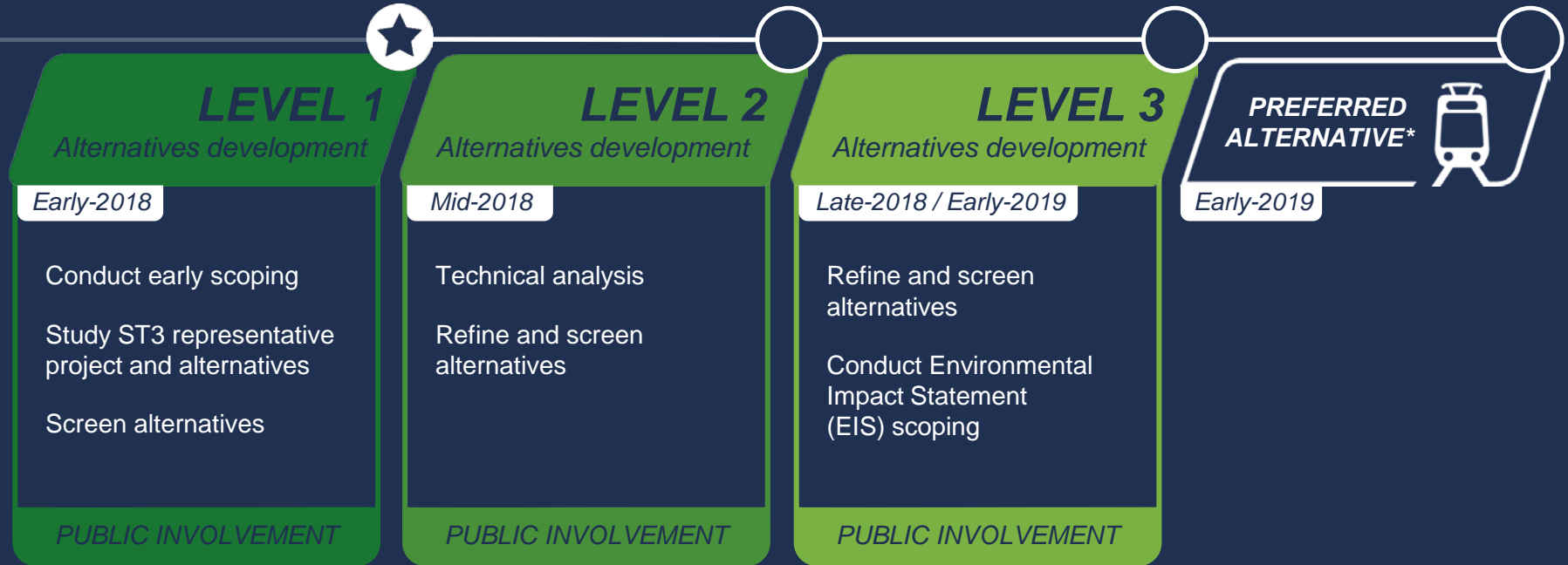
West Seattle project timeline



Ballard project timeline



Alternatives development process



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

***Broad range of initial
alternatives***

***Refine remaining
alternatives***

***Further
evaluation***

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



West Seattle and Ballard

Link Extensions

Early Scoping Summary
Report

April 2018

Early Scoping

- Early scoping: Feb. 2 – March 5
- 3 public meetings, 1 agency meeting and online open house
- 2,800+ total comments received via meetings and other methods
- All comments captured in *Early Scoping Summary Report*



Neighborhood forums

- **4/21:** Chinatown / Int'l District
- **4/23:** Denny / SLU / Seattle Center
- **5/2:** Midtown / Westlake
- **5/5:** Delridge / Avalon / Alaska Junction
- **5/9:** SODO / Stadium
- **5/12:** Ballard / Interbay / Smith Cove

1



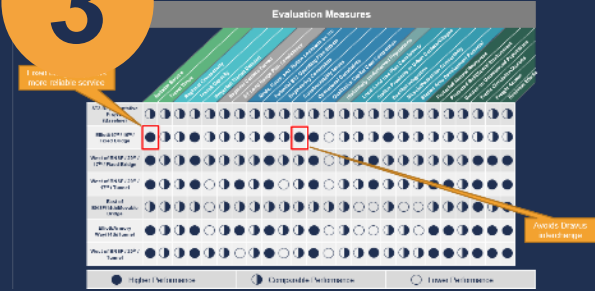
Early Scoping feedback

2



Map of segment alternatives

3



Evaluation measures

4



Neighborhood forums feedback

5

Category	Alternative	Key Findings
Alternatives with more potential	ST3 Representative Project	• Baseline for comparison
	Elliott/15th/16th Fixed Bridge	• Avoids 16th Ave/Dravus interchange • Supports more reliable service (no bridge openings)
Alternatives with greater challenges	Alternative	• Key findings
	Alternative	• Key findings
Not practical suggestions	Alternative	• Key findings
	Alternative	• Key findings

Segment summary

6



SAG recommendations

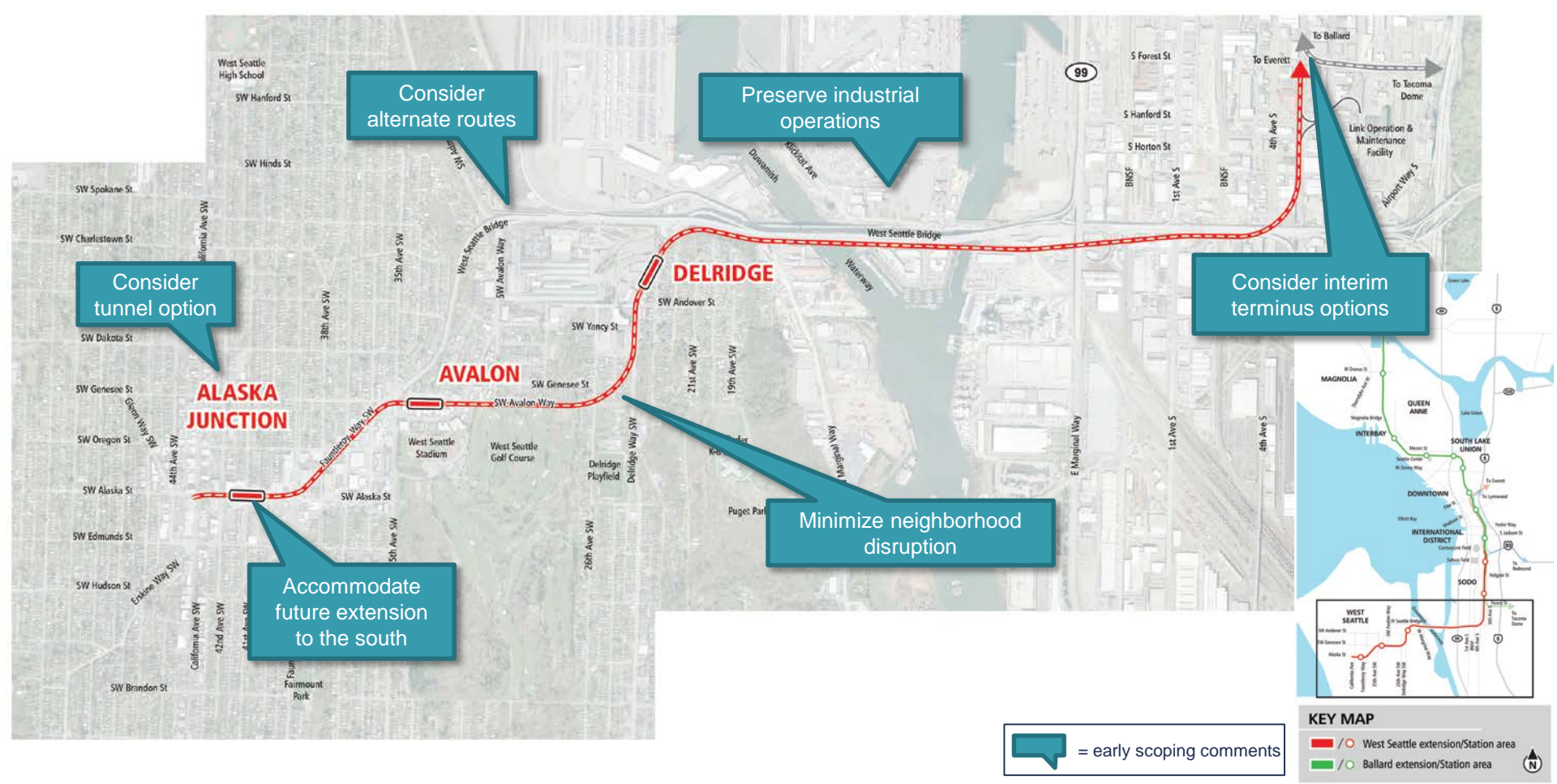
Sample segment summary

	ST3 Representative Project	<ul style="list-style-type: none"> • Baseline for comparison
Alternatives with more potential	Alaska Junction	<ul style="list-style-type: none"> • Avoids Fauntleroy and Alaska; better orientation south • Affects Oregon St and 44th Ave
	West Seattle Bridge/Fauntleroy	<ul style="list-style-type: none"> • Lessens effects to Junction and Delridge; better orientation south • Creates isolated Delridge Station
	Pigeon Ridge/West Seattle Tunnel	<ul style="list-style-type: none"> • Lessens effects to Port, Junction, Delridge; better orientation south • Requires two tunnels; may require 3rd Party funding
Alternatives with greater challenges	Yancy Street/West Seattle Tunnel	<ul style="list-style-type: none"> • Lessens effects to Junction and Delridge; better orientation south • Consolidates stations; potentially not consistent with ST3 Plan • Requires tunnel may require 3rd Party funding
	West Seattle Golf Course/Alaska Junction (Tunnel)	<ul style="list-style-type: none"> • Crosses golf course, Section 4(f) • Lessens effects to Junction, Delridge • Eliminates station; potentially not consistent with ST3 Plan
Not practical suggestions	Tunnel under Duwamish	<ul style="list-style-type: none"> • Impractical tunnel depth and length
	Delridge	<ul style="list-style-type: none"> • Existing structure not built to accommodate LRT • Constructability issues
	Delridge bridge	<ul style="list-style-type: none"> • Mode not consistent with ST3 Plan
	Extensions to Alki, Admiral, etc.	<ul style="list-style-type: none"> • Not included in ST3 Plan or long range plan

Funding identified?

Funding not identified?

may require 3rd Party funding




West Seattle/Duwamish – Early Scoping feedback

West Seattle / Duwamish evaluation

Evaluation Measures

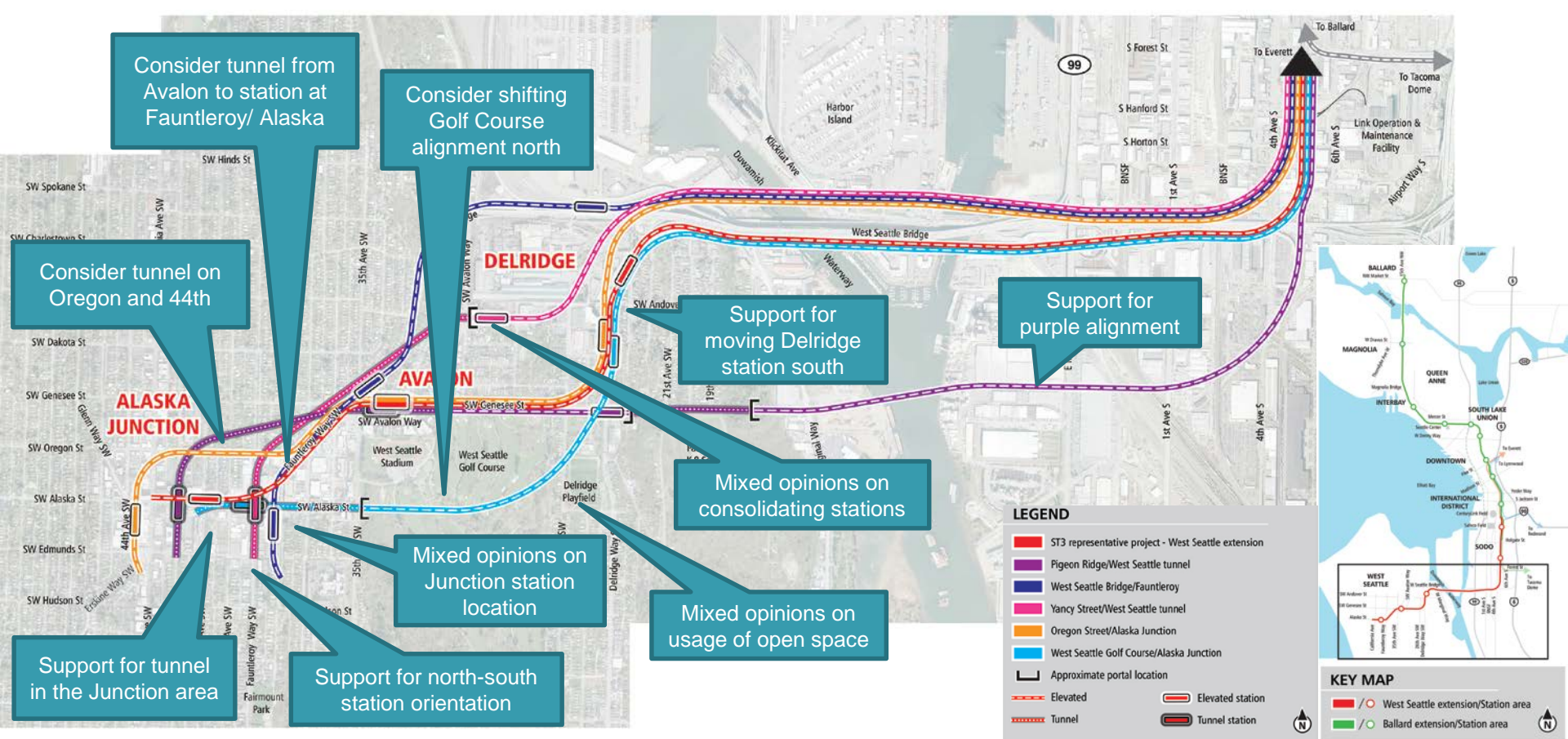
Qualitative Capital Costs

Station proximity to Urban Centers/Villages

	Reliable Service	Travel Time	Regional Connectivity	Transit Capacity	Protected Regional Transit Demand	ST Long Range Mode, Route, and Station Consistency	Potential ST3 Locations (per ST3)	Engineering Constraints	Constructability Issues	Operational Constraints	Historically Underserved Populations	Station Land Use Plan Consistency	Station Proximity to Urban Centers/Villages	Bus/Rail Integration	Bicycle/Pedestrian Connectivity	Station Area Development Potential	Protected Natural Resources	Burdened Traffic Environment	Freight Access/Business/Commerce	
 ST3 Representative Project (Baseline)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
 Pigeon Ridge / West Seattle Tunnel	●	●	●	●	○	●	●	●	●	○	●	●	●	●	○	○	●	●	●	●
 West Seattle Bridge / Fauntleroy	●	●	●	●	●	●	●	●	●	○	●	○	○	○	●	●	●	●	○	○
 Yancy Street / West Seattle Tunnel	●	●	●	○	○	●	○	●	○	●	○	○	○	○	●	●	●	○	○	○
 Oregon Street / Alaska Junction	●	●	●	●	●	●	●	●	●	○	●	●	●	●	○	○	●	○	○	○
 West Seattle Golf Course / Alaska Junction	●	●	●	○	●	○	●	●	●	○	●	○	○	○	○	○	●	○	○	○







Freight Access / Business Concerns

● Higher Performance ● Comparable Performance ○ Lower Performance









West Seattle/Duwamish – Neighborhood forums feedback

West Seattle / Duwamish summary

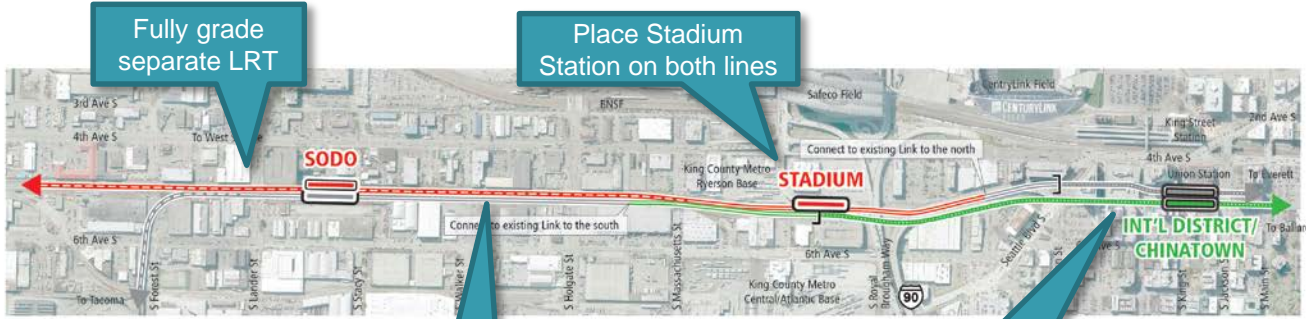
Alternatives with more potential	ST3 Representative Project 	<ul style="list-style-type: none"> • Baseline for comparison
	Oregon Street/Alaska Junction 	<ul style="list-style-type: none"> • Avoids Fauntleroy and Alaska; better orientation south • Affects Oregon St and 44th Ave
	West Seattle Bridge/Fauntleroy 	<ul style="list-style-type: none"> • Lessens effects to Junction and Delridge; better orientation south • Creates isolated Delridge Station
	Pigeon Ridge/West Seattle Tunnel 	<ul style="list-style-type: none"> • Lessens effects to Port, Junction, Delridge; better orientation south • Requires two tunnels; may require 3rd Party funding
Alternatives with greater challenges	Yancy Street/West Seattle Tunnel 	<ul style="list-style-type: none"> • Lessens effects to Junction and Delridge; better orientation south • Consolidates stations; potentially not consistent with ST3 Plan • Requires tunnel; may require 3rd Party funding
	West Seattle Golf Course/Alaska Junction (Tunnel) 	<ul style="list-style-type: none"> • Crosses golf course, Section 4(f) • Lessens effects to Junction, Delridge • Eliminates station; potentially not consistent with ST3 Plan
Not practical suggestions	Tunnel under Duwamish	<ul style="list-style-type: none"> • Impractical tunnel depth and length
	West Seattle Bridge	<ul style="list-style-type: none"> • Existing structure not built to accommodate LRT • Constructability issues
	Gondola, rail/bus bridge	<ul style="list-style-type: none"> • Mode not consistent with ST3 Plan
	Extensions to Alki, Admiral, etc.	<ul style="list-style-type: none"> • Not included in ST3 Plan or long range plan

West Seattle / Duwamish – SAG recommendations

	Alternative		Carry forward?	Do not carry forward?	Notes/Comments
Alternatives with more potential	ST3 Representative Project				
	Oregon Street/Alaska Junction		✓		Explore elevated and tunnel options
	West Seattle Bridge/Fauntleroy			✓	
	Pigeon Ridge/West Seattle Tunnel		✓		
Alternatives with greater challenges	Yancy Street/West Seattle Tunnel			✓	
	West Seattle Golf Course/Alaska Junction (Tunnel)			✓	Add Avalon station, modify to reduce 4(f) impact
Not practical suggestions	Tunnel under Duwamish			✓	
	West Seattle Bridge			✓	
	Gondola, rail/bus bridge			✓	
	Extensions to Alki, Admiral, etc.			✓	

West Seattle/Duwamish – ELG general discussion

- › Three stations in West Seattle
- › For future evaluation: visualizations, walksheds/ridership, multimodal & transit integration, and cost
- › Protect Longfellow Creek
- › Minimize impacts on residents and businesses
- › Potential effects to Port activities
- › Consider regional context and ST3 plan consistency
- › Avoid 4(f) impacts



= early scoping comments

SODO & Chinatown/ID – Early Scoping feedback 31



KEY MAP

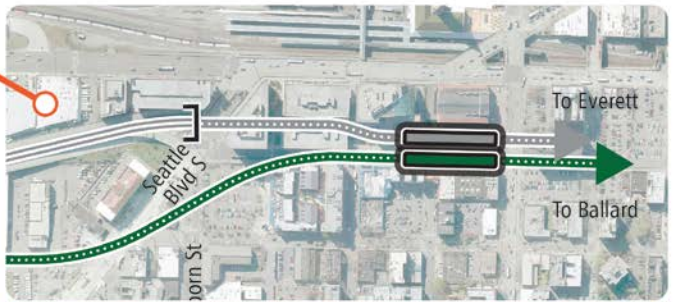
- West Seattle extension/Station area
- Ballard extension/Station area

LEGEND

- ST3 representative project - West Seattle extension/Ballard extension
- Massachusetts tunnel portal - West Seattle extension/Ballard extension
- Surface E-3 - West Seattle extension/Ballard extension
- Existing Link light rail
- Approximate portal location
- New roadway overcrossing
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- Surface station
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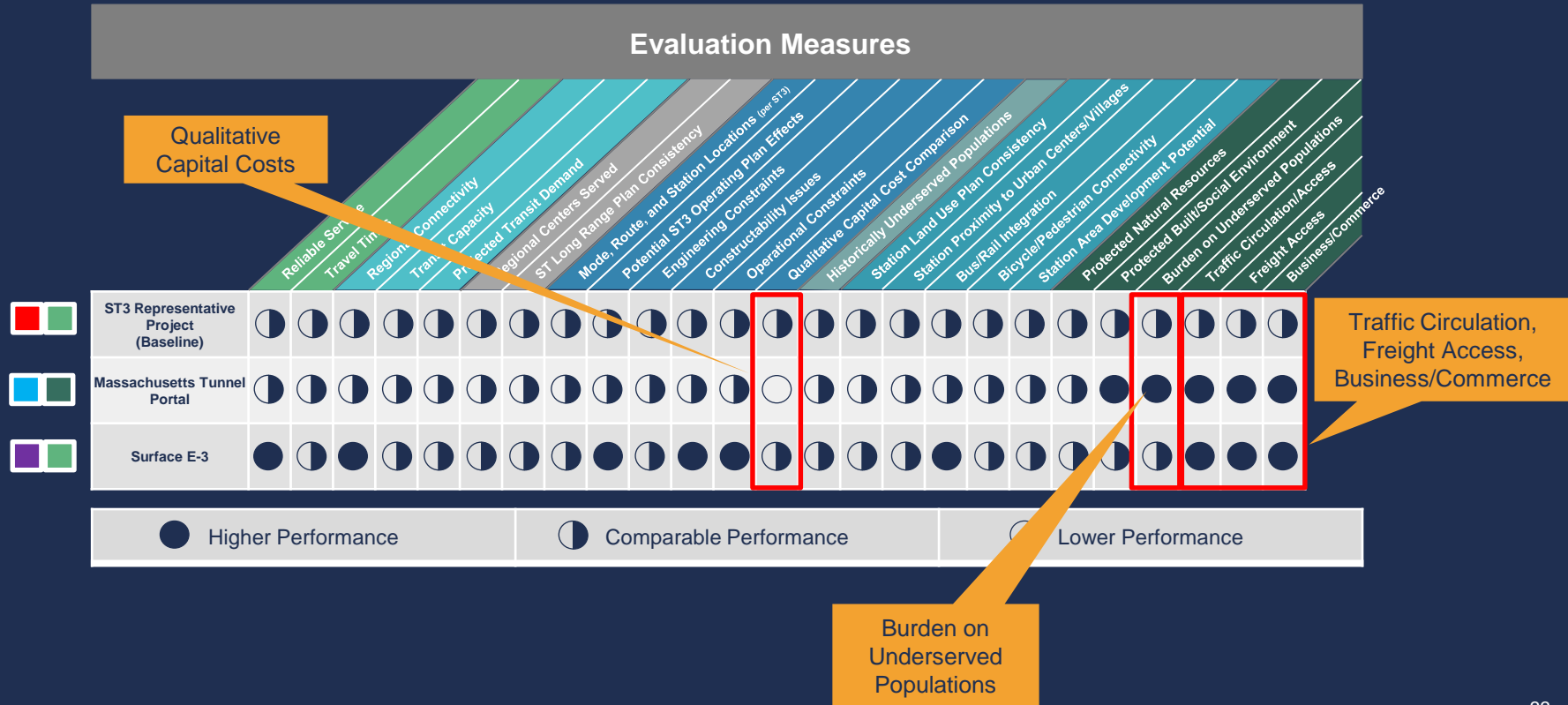
Station location alternative (straddle S Jackson St)
 Note: applicable to both cut and cover and bored tunnel alternatives



Bored tunnel alternative
 Reduces in-street cut-and-cover construction from 1,600' to 400'

Chinatown/ID station alternatives

SODO & Chinatown/ID evaluation





KEY MAP

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- Ballard extension/Station area

LEGEND

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- Tunnel
- Surface station
- Elevated station



Concern about displacing bike lanes and bus lanes

Consider adding grade-separated roadways

Consider ways to reduce cut-and-cover construction impacts (including potential 4th Ave station location)



Support for reducing cut-and-cover construction






Support for grade-separated roadways

Support for stations on both lines




Mixed opinions on closing Royal Brougham

SODO & Chinatown/ID – Neighborhood forums feedback

SODO & Chinatown/ID summary

Alternatives with more potential	ST3 Representative Project 	<ul style="list-style-type: none"> • Baseline for comparison
	Surface E-3 	<ul style="list-style-type: none"> • Less service disruption during construction • Accommodates Stadium Station on both lines • Eliminates existing grade crossings at Lander, Holgate; closes Royal Brougham
	Massachusetts Tunnel Portal 	<ul style="list-style-type: none"> • Reduces cut-and-cover construction on 5th Ave in Chinatown/Int'l District • Less service disruption during construction • Eliminates existing grade crossing at Holgate • Requires longer tunnel; more property; may require 3rd Party funding
Not practical suggestions	Maintain buses on E-3	<ul style="list-style-type: none"> • Not practical due to ROW constraints
	First Ave alignment	<ul style="list-style-type: none"> • Alignment and stations locations not consistent with ST3
	Design for potential extension south to Georgetown	<ul style="list-style-type: none"> • Not included in ST3 or long range plan

SODO & Chinatown/ID – SAG recommendations

	Alternative	Carry forward?	Do not carry forward?	Notes/Comments
Alternatives with more potential	ST3 Representative Project 			
	Surface E-3 	✓		
	Massachusetts Tunnel Portal 	✓		Consider hybrid with full grade separation
Not practical suggestions	Maintain buses on E-3		✓	Need to study impacts to buses during construction and long term
	First Ave alignment	✓		Explore modifications that meet operational requirements, including potential additional station to serve First Ave
	Design for potential extension south to Georgetown		✓	
New suggestion	Alternative station location	✓		Consider 4 th Ave Station in Chinatown/ID

SODO & Chinatown/ID – ELG general discussion

- Explore alternatives for SODO interim terminus that create good transfer environment
- Importance of minimizing impacts to Chinatown/ID (meeting with C/ID leaders will be scheduled by ST)
- Concerns with closing E-3 busway – importance of coordinating with King County Metro
- Port concerns with alignment along 1st Ave South – consider impacts on this major freight corridor



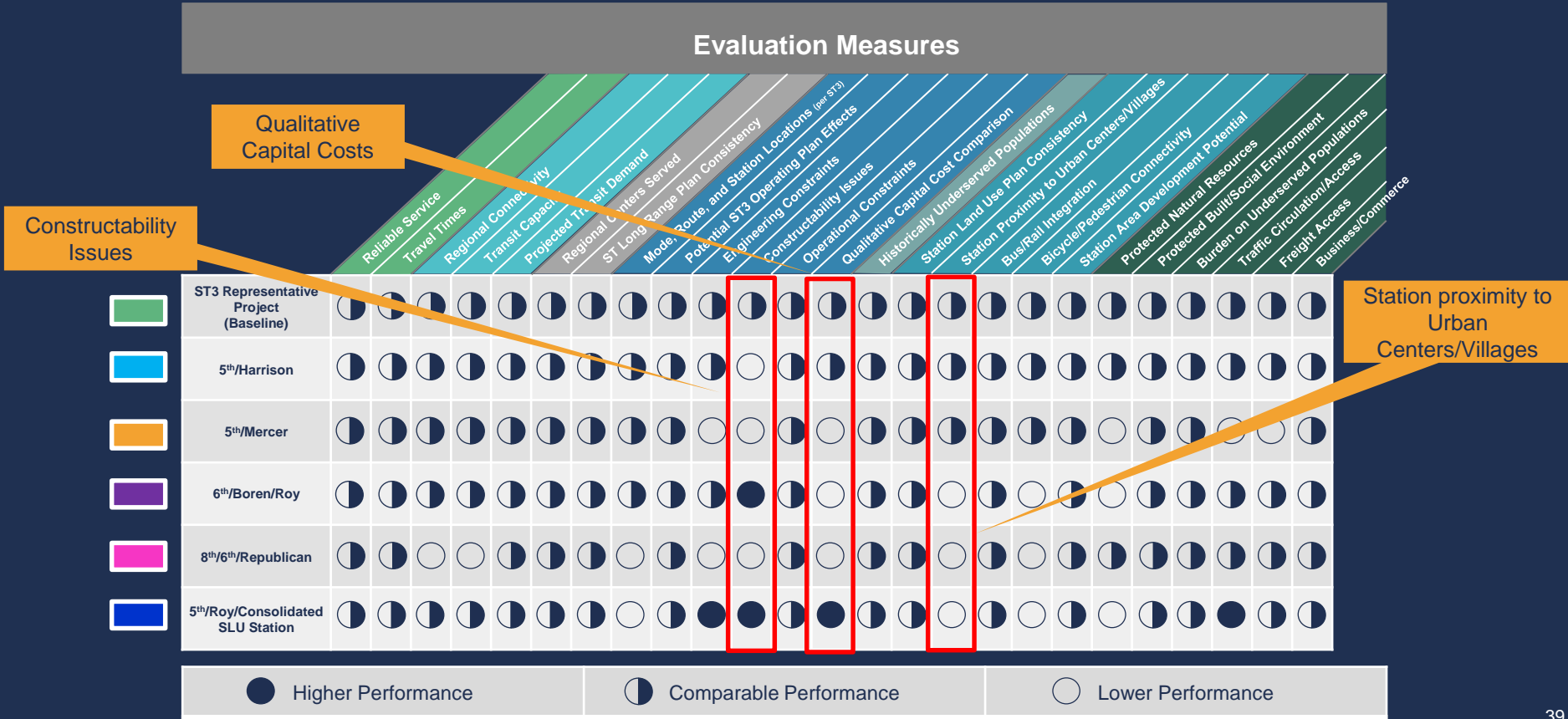
 = early scoping comments

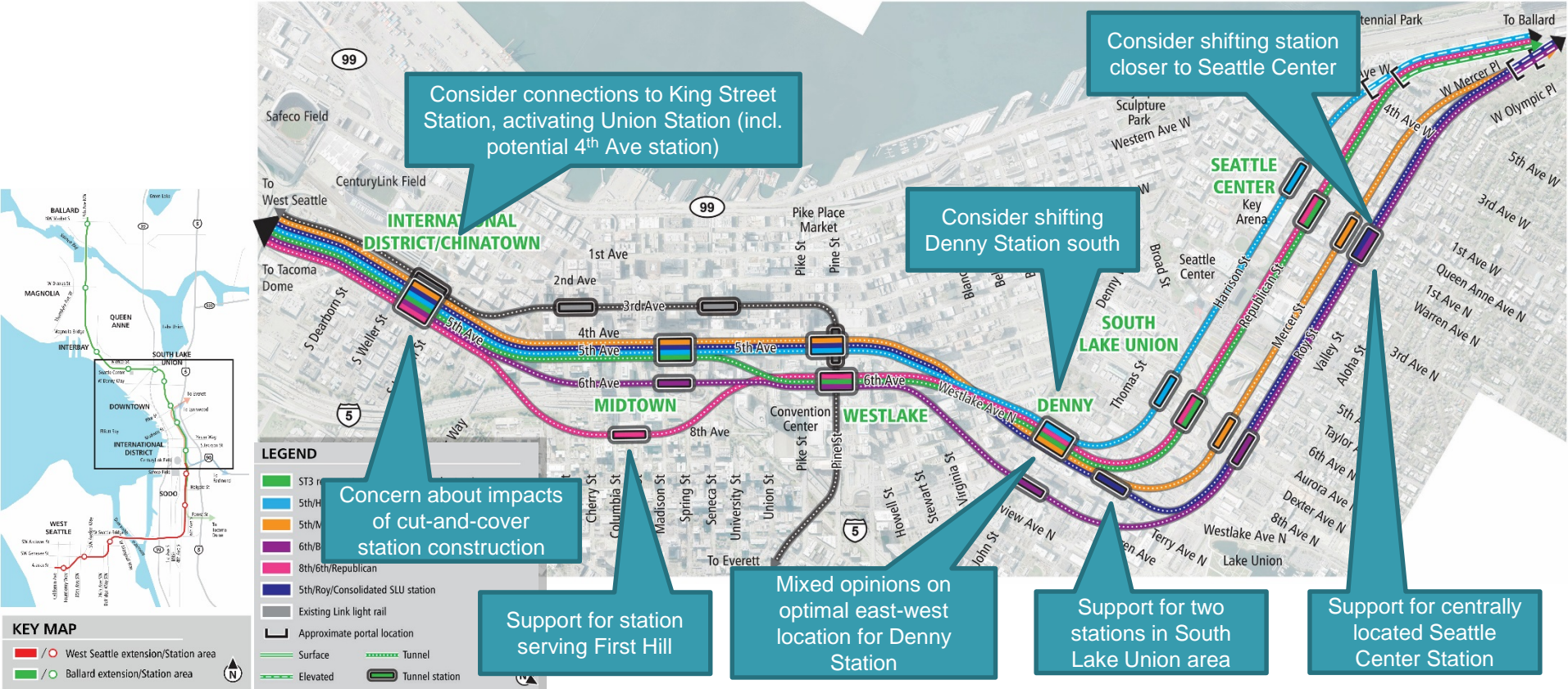
KEY MAP

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- Green line with circle icon: Ballard extension/Station area

Downtown – Early Scoping feedback







Downtown evaluation











Downtown — Neighborhood forums feedback

Downtown summary

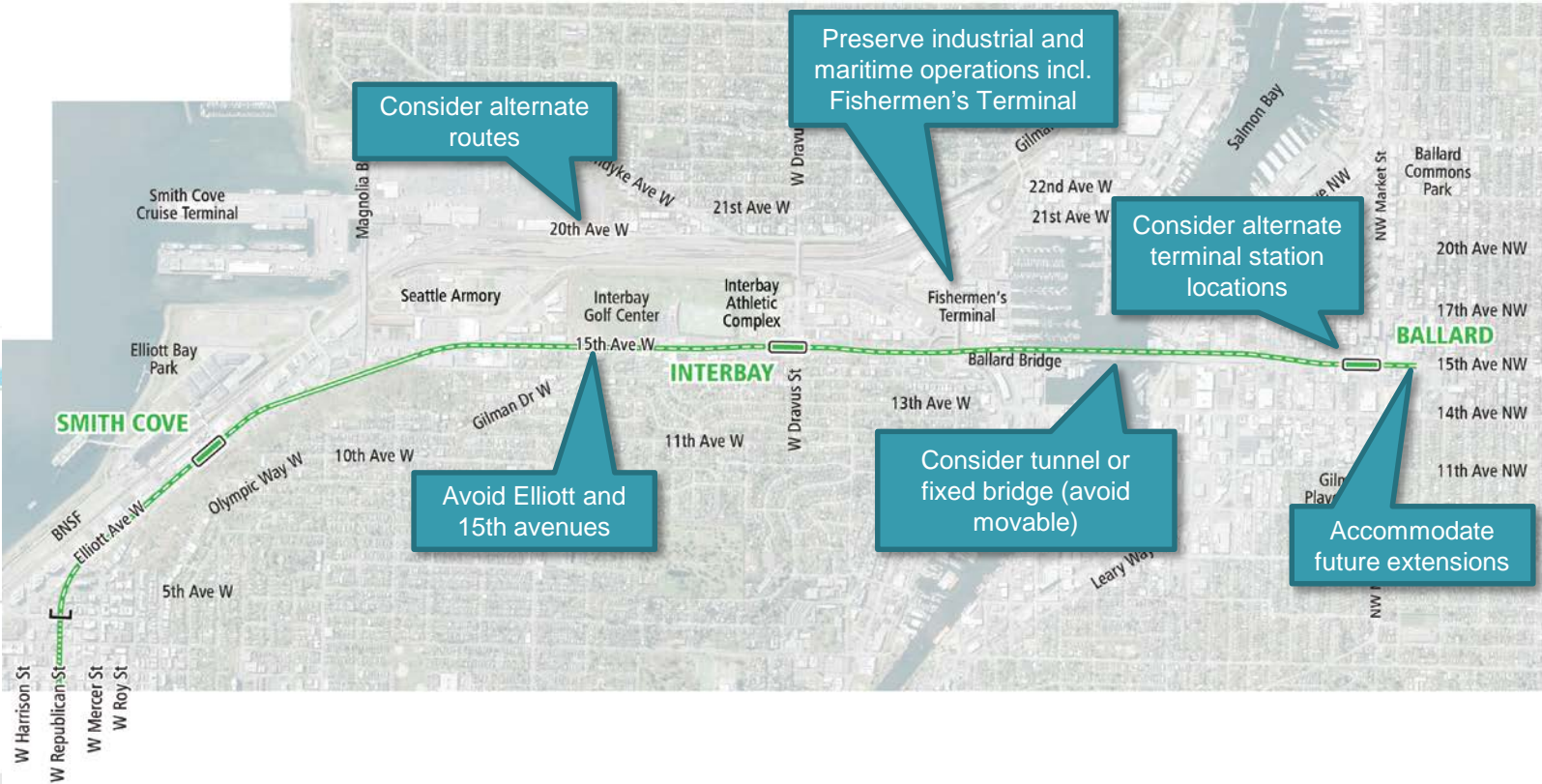
Alternatives with more potential	ST3 Representative Project 	<ul style="list-style-type: none"> • Baseline for comparison
	5th/Harrison 	<ul style="list-style-type: none"> • Avoids utility conflicts on Republican and station under SR 99 off-ramp • Decreased station coverage; potentially move Denny Station south
	6th/Boren/Roy 	<ul style="list-style-type: none"> • Avoids utility conflicts on Republican and station under SR 99 off-ramp • Increases construction risk due to I-5 walls along 6th Ave; avoids tiebacks on 5th Ave
Alternatives with greater challenges	5th/Mercer 	<ul style="list-style-type: none"> • Avoids utility conflicts on Republican and station under SR 99 off-ramp • Increases construction risk due to large sewer on Mercer
	5th/Roy/Consolidated SLU Station 	<ul style="list-style-type: none"> • Avoids utility conflicts on Republican and station under SR 99 off-ramp • Consolidates stations; potentially not consistent with ST3
	8th/6th/Republican (First Hill) 	<ul style="list-style-type: none"> • Increases construction risk due to two crossings under I-5 • First Hill station not consistent with ST3
Not practical suggestions	Use Downtown Seattle Transit Tunnel (DSTT)	<ul style="list-style-type: none"> • Existing DSTT capacity constraints
	Design for potential extensions to north and/or east	<ul style="list-style-type: none"> • Extensions to north and/or east not included in ST3 or long range plan


Downtown – SAG recommendations

	Alternative		Carry forward?	Do not carry forward?	Notes/Comments
Alternatives with more potential	ST3 Representative Project				
	5th/Harrison		✓		
	6th/Boren/Roy		✓		Move Seattle Center station south
Alternatives with greater challenges	5th/Mercer			✓	Freight impacts on Mercer; some prefer Seattle Center station location
	5th/Roy/Consolidated SLU Station			✓	
	8th/6th/Republican (First Hill)		✓		Mix of opinions on carrying forward
Not practical suggestions	Use Downtown Seattle Transit Tunnel (DSTT)			✓	
	Design for potential extensions to north and/or east			✓	

Downtown – ELG general discussion

- First Hill station alternative
 - Community interest in station location
 - Consistency with ST3 Plan
 - Concerns re: engineering feasibility and cost risks
 - Consideration of Madison BRT in evaluating improved transit service to neighborhood
- Importance of accommodating good transfers at Westlake Station
- Minimize overlap of station walksheds in South Lake Union area
- Consider effects on University of Washington facilities in South Lake Union, particularly Republican station site



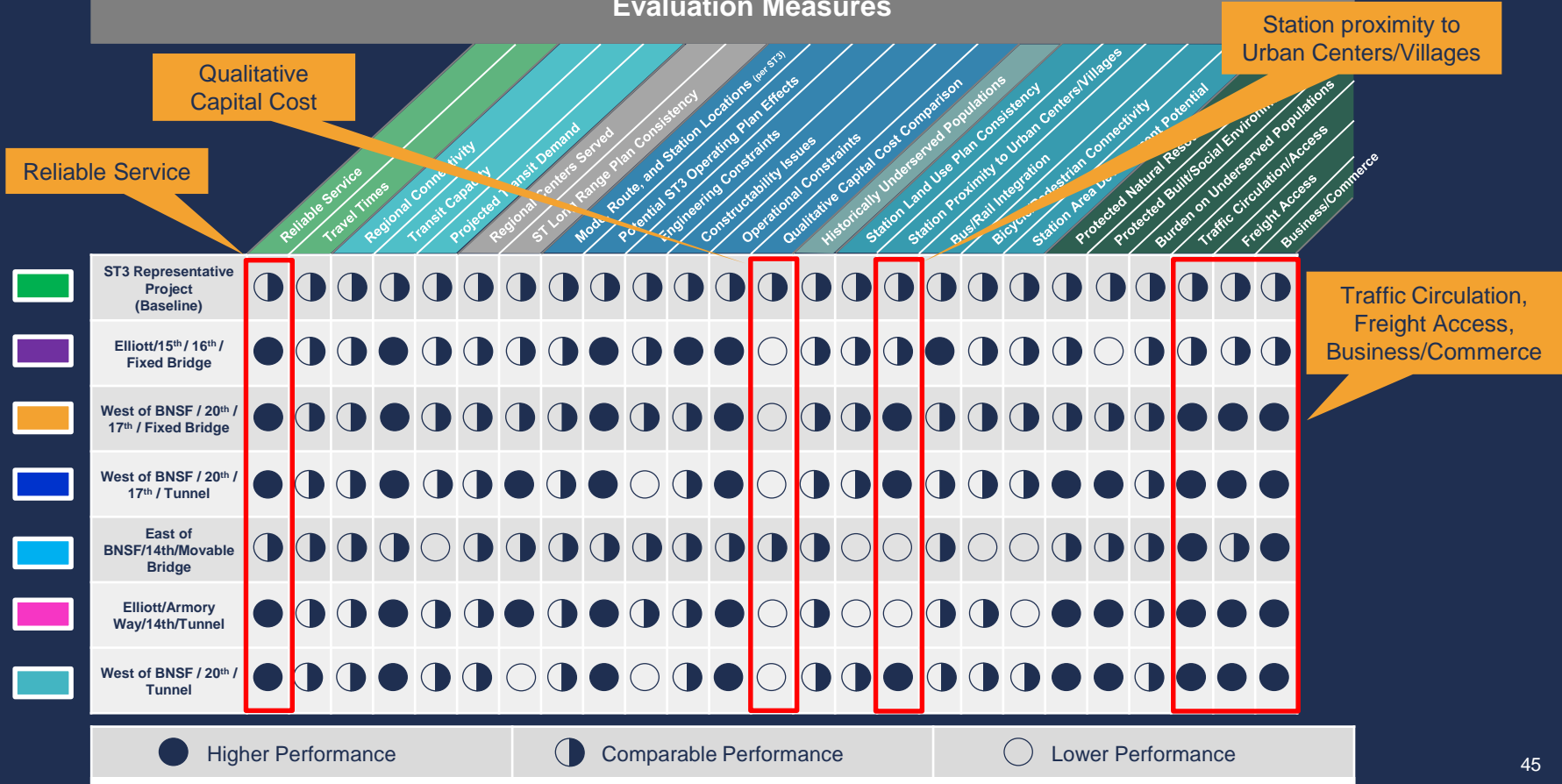
 = early scoping comments

KEY MAP
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 Green line / circle: Ballard extension/Station area

Interbay/Ballard – Early Scoping feedback

Interbay / Ballard evaluation

Evaluation Measures



Consider access between Smith Cove Station and current and potential future land uses

Consider access between Interbay Station and current and potential future land uses

Consider effects to maritime and industrial uses

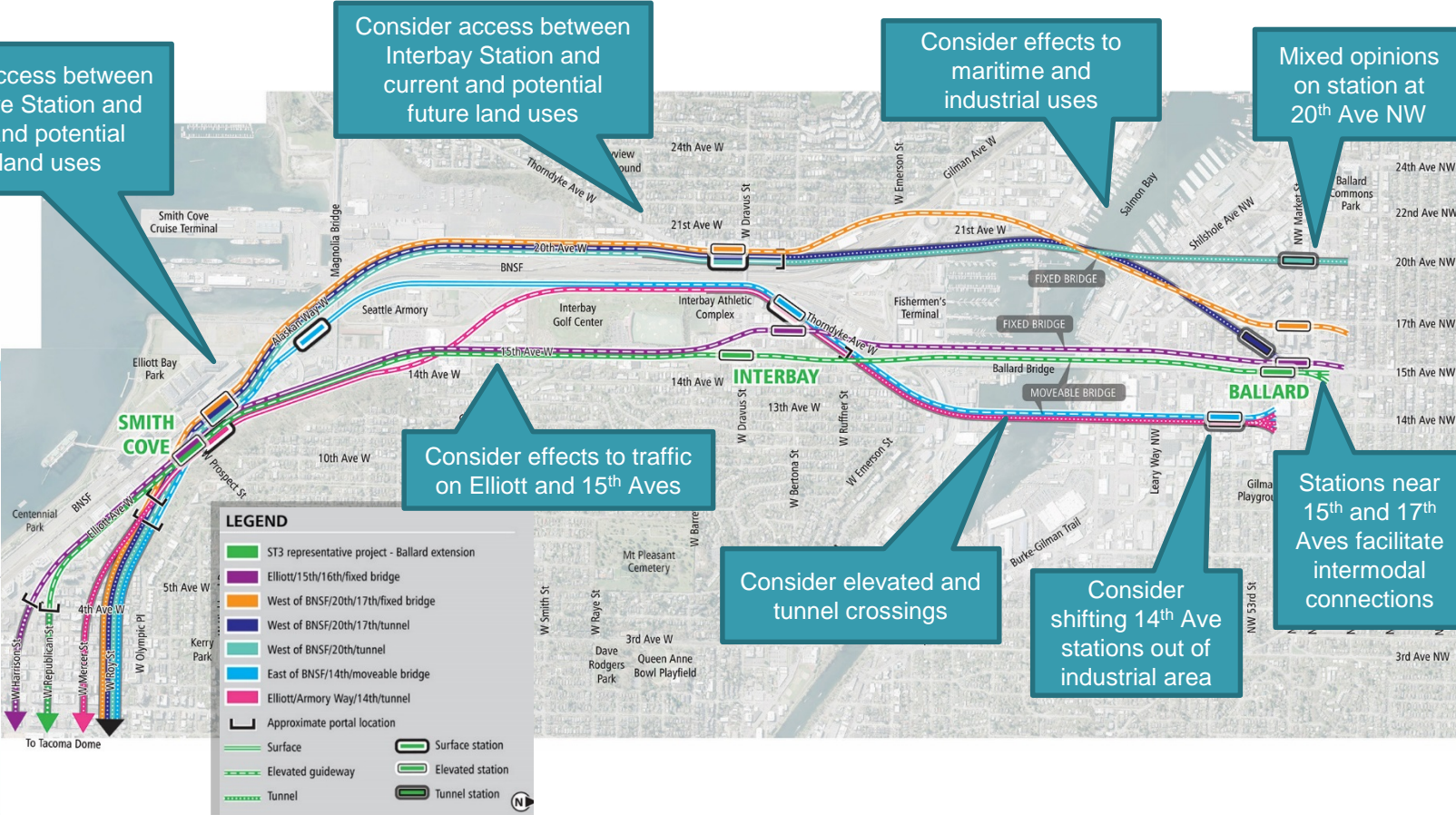
Mixed opinions on station at 20th Ave NW

Consider effects to traffic on Elliott and 15th Aves

Consider elevated and tunnel crossings








Consider shifting 14th Ave stations out of industrial area

Stations near 15th and 17th Aves facilitate intermodal connections








Interbay / Ballard – Neighborhood forums feedback

Interbay / Ballard summary

Alternatives with more potential	ST3 Representative Project 	<ul style="list-style-type: none"> • Baseline for comparison
	Elliott/15 th /16 th /Fixed Bridge 	<ul style="list-style-type: none"> • Avoids 15th Ave/Dravus interchange • Supports more reliable service (no bridge openings)
	West of BNSF/20 th /17 th /Fixed Bridge 	<ul style="list-style-type: none"> • Avoids Elliott Ave, 15th Ave and Fishermen's Terminal • Supports more reliable service
	East of BNSF/14 th /Movable Bridge 	<ul style="list-style-type: none"> • Avoids Elliott Ave, 15th Ave and Fishermen's Terminal • Locates station on 14th Ave within industrial area
Alternatives with greater challenges	West of BNSF/20 th /17 th Tunnel 	<ul style="list-style-type: none"> • Avoids Elliott Ave, 15th Ave, Fishermen's Terminal and Salmon Bay • Requires tunnel; may require 3rd Party funding
	Elliott/Armory Way/14 th /Tunnel 	<ul style="list-style-type: none"> • Avoids Elliott Ave, 15th Ave, Fishermen's Terminal and Salmon Bay • Requires tunnel; may require 3rd Party funding
Not practical suggestions	West of BNSF/20 th /Tunnel 	<ul style="list-style-type: none"> • Avoids Elliott Ave, 15th Ave, Fishermen's Terminal and Salmon Bay • Requires longer tunnel; may require 3rd Party funding • Requires construction and displacement within Ballard core
	Tunnel through Queen Anne/Interbay	<ul style="list-style-type: none"> • Depth and length impractical; would affect downtown tunnel depth
	Extensions to 65 th , 85 th , Northgate	<ul style="list-style-type: none"> • Not included in ST3 plan
	Multi-modal Salmon Bay bridge	<ul style="list-style-type: none"> • ST3 plan defined project as rail-only bridge
	Eliminate or add stations	<ul style="list-style-type: none"> • Not consistent with ST3 plan

Interbay / Ballard – SAG recommendations

	Alternative		Carry forward?	Do not carry forward?	Notes/Comments
Alternatives with more potential	ST3 Representative Project				
	Elliott/15 th /16 th /Fixed Bridge		✓		
	West of BNSF/20 th /17 th /Fixed Bridge		✓		
	East of BNSF/14 th /Movable Bridge		✓		
	West of BNSF/20 th /17 th Tunnel		✓		
Alternatives with greater challenges	Elliott/Armory Way/14 th /Tunnel		✓		
	West of BNSF/20 th /Tunnel		✓		Mix of opinions on carrying forward; agreement to carry forward
Not practical suggestions	Tunnel through Queen Anne/Interbay			✓	
	Extensions to 65 th , 85 th , Northgate			✓	
	Multi-modal Salmon Bay bridge			✓	Minority opinion to carry forward
	Eliminate or add stations			✓	

Interbay/Ballard – ELG general discussion

- Avoid impacts to 15th Avenue
- Community interest in tunnel crossing of Salmon Bay
- Consider combination of central Interbay location with tunnel to 15th/17th area
- Concerns with potential impacts to Fisherman's Terminal and other marine and industrial activities
- Support for stations with high development potential
- Importance of compatibility with future extensions north and east