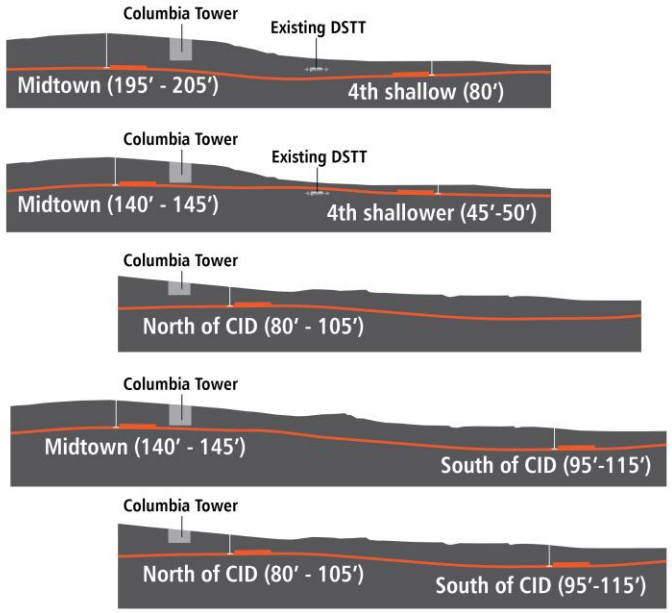
Questions and staff responses on the West Seattle and Ballard Link Extension
February 23, 2023

At the February 9, 2023 meeting of the System Expansion Committee, Boardmembers asked the following questions on the West Seattle and Ballard Link Extension project. The questions and responses below have been grouped by segment.

Question	**Answer**
CID	
1. Is it possible to have a more shallow Midtown Station with 4th Shallow? (Roscoe)	The depth of the Midtown Station would be 195-205' when connected to the CID 4th Shallow alternative (80'). See Figure 1 (Midtown and CID station depths comparison). It is possible to reduce the depth of the Midtown Station to 140-145' if connected to a CID 4th Shallow(er) alternative (40-45'). The connection between the CID 4th Shallower alternatives and the Midtown Station would go over the existing downtown transit tunnel rather than under it. This would require extending the cut and cover construction area on 4th Avenue north of Yesler Way and would result in additional street closures, reconstruction of Yesler Bridge, displacement of KC Admin building and social service providers and result in additional cost (+$100 million).
a. What portion of the cost of a deeper station has to do with elevators and escalators, and what cost can be anticipated for maintenance of those amenities?	For the Midtown station connecting to 4th Shallow, 8% of the total station cost is attributed to elevators and escalators. There would be 8 higher-rise elevators [more than 100']) and 6 lower-rise elevators [less than 60']. Costs of elevator maintenance for higher-rise elevators ($2,100 per month/per elevator) is more than double the cost of maintenance for lower-rise elevators ($877 per month/per elevator). There would also be 12 lower-rise escalators (less than 40') with a maintenance cost of $4,800 per month.
2. What drives station depth (at Midtown and through downtown)? (Balducci)	See Figure 1 (Midtown and CID station depths comparison). The depth at Midtown Station is driven by the depth of the station in the CID as well as other factors. • For CID 4th Shallow alternative, the depth of the Midtown Station (195-205') is driven by

	the need to cross below the existing downtown transit tunnel as well as the depth of the Columbia Tower. • For the CID 4th Shallower alternative, the depth of the Midtown Station (140-145') is driven by the depth of the Columbia Tower.

Figure 1: Midtown and CID station depths comparison



Existing Station depth in the system:


Capitol Hill Station (65')

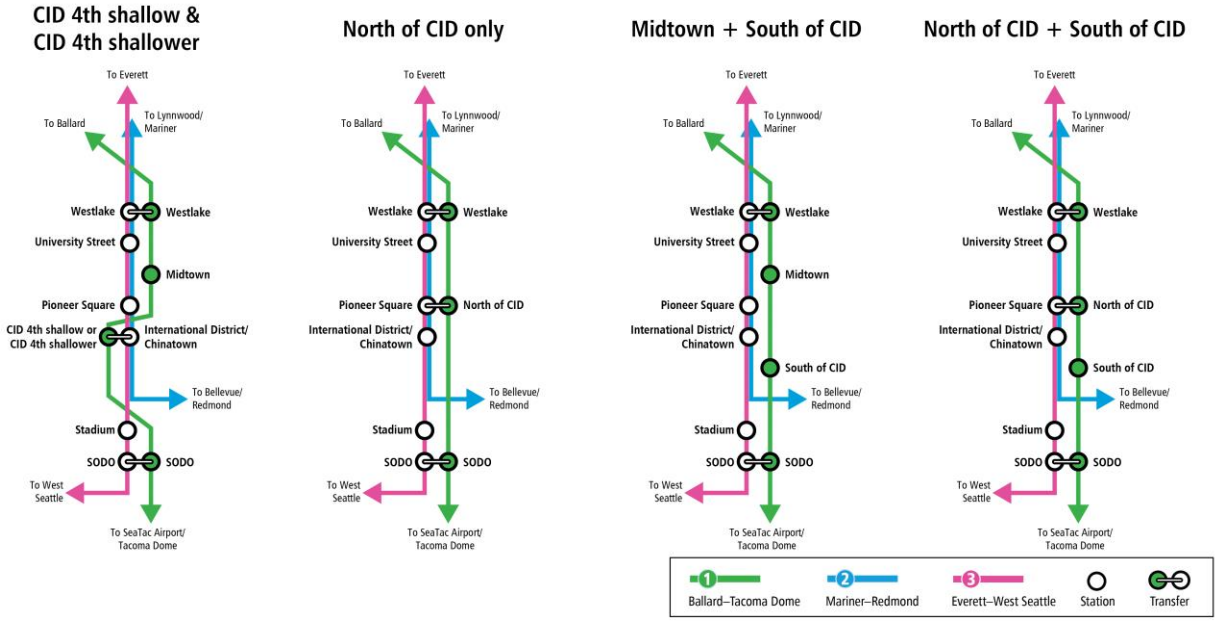

Roosevelt Station (80')


UW Station (95')


Beacon Hill Station (160')

3. Where do you transfer to go to the airport (from the various CID options)?	See Figure 2 (CID transfer comparison). Assuming this question relates to travelers from the east who wish to connect south to access the airport: • With a CID 4th Shallow alternative, the transfer would be from the existing IDS station to the new 4th Shallow Station. • With a CID North alternative, the transfer would be from the existing PSQ station to the new CID North Station. • With a CID South + Midtown alternative, passengers could transfer at the existing IDS station from the northbound direction to the southbound direction, then transfer to the 1 Line at SODO towards the airport. Or transfer at Westlake. Or they could exit the IDS station, walk to the CID South station and Board the 1-Line towards the airport. • Another alternative for travelers from the east would be to use STRIDE BRT service, transfer to light rail at Tukwila, then continue to the airport.

Figure 2: CID transfer comparison



4. CID North and South are relatively new. What outreach has been done on these options and what does outreach look like between now and the March Board action? How do we fine tune (our understanding of) community benefits and impacts (public safety, eTOD, etc)? (Harrell)	While the North of CID and South of CID concepts are newer than those alternatives studied in the Draft EIS, these ideas emerged directly from extensive community engagement during the further study period. Community members shared ideas about opportunities and issues and these ideas were refined based on community feedback. Specifically, we hosted 5 open houses/community workshops engaging nearly 500 participants, conducted 2 online surveys with over 300 responses, engaged in 30+ community briefings and tours, engaged businesses through door-to-door outreach and two business focused forums and hosted 3 resident forums engaging more than 190 community members in-language. In addition, the latest survey on further study results for CID has gathered feedback from an additional 1250 respondents. All feedback is being summarized to share with the Sound Transit Board on 2/23 and a community engagement report will be shared at the end of the month.
5. How do options compare in terms of timelines/schedule? How long would additional environmental work take for CID North and South? What are anticipated construction durations and overall implications for project schedule? (McDermott)	Given the number of new ideas under study throughout the corridor – and acknowledging that community feedback is ongoing and Board direction is still pending – there is a high likelihood that additional environmental review will be required regardless of whether a North of CID or South of CID station is advanced. The scope and schedule of any

	potential additional environmental review will depend on the Board's actions relating to all areas of the corridor. Beyond the environmental phase, additional design delay is likely for scenarios including South Lake Union mix-and-match and CID 4th Shallow, due to additional time for coordination with third parties (multiple years). During construction, scenarios including CID 4th Shallow will require additional time for construction (~2 yrs) due to 4th Ave viaduct reconstruction, traffic detour phasing, etc. There is also a potential risk of additional delay for CID 4th Shallow due to poor ground conditions, deep Midtown station, proximity to BNSF and existing downtown transit tunnel, phasing of Link closures.
6. Can we see a side-by-side comparison of all the station options, including 4th Shallow(er)? (Balducci)	Yes, a side-by-side comparison of all CID options (to be presented in the Feb 23 board presentation) is as follows:

CID: Results comparison

	Refined 4th Avenue Shallow Station (CID-1a)	Station North of CID Only	Station North of CID and Station South of CID
Feasibility	• Construction and schedule risk	-	-
Passenger Experience	• Shallow CID (80') and deep Midtown station (195-205') • 3.2 min transfer time btw Link	• Shallower station (80-105') • 3.3 min transfer time btw Link* • Fully below-grade Link transfer • Adds transfer btw 1 Line and Sounder	• Shallower stations (80-115') • 3.3 min transfer time btw Link* • Fully below-grade Link transfer • Adds transfer btw 1 Line and Sounder
Ridership, Access, eTOD Potential	• No expected change in ridership • Link light rail closure (6 to 7 weeks)	• Small reduction in ridership • eTOD potential north of CID	• Small reduction in ridership • eTOD potential north and south of CID
Future Expansion	• Does not preclude	• Does not preclude	• Does not preclude
Environmental	• Construction duration of 10-12 years • Full closure of major traffic spine 4th Ave S for 4 years plus partial closure for 5 years • Reduces displacement of ICON apartments (to two 2-month periods)	• Construction duration of 6-7 years • Full closure of James St for 4 years • Displacement of KC Admin building and social service providers	• Construction duration of 6-7 years • Full closure of James St for 4 years and closure of 6th Ave S (south of Seattle Blvd) for 5-6 years • Displacement of KC Admin building and social service providers
Equity	• Centralized access to CID, PSQ, and transit modes • 4th Ave S traffic detour effects	• Avoids direct station construction disruption and traffic detours in CID	• Avoids direct station construction disruption and traffic detours in CID
Cost compared to realigned financial plan in $2019 (Pike to Holgate)	+$700M	-$360M	+$160M

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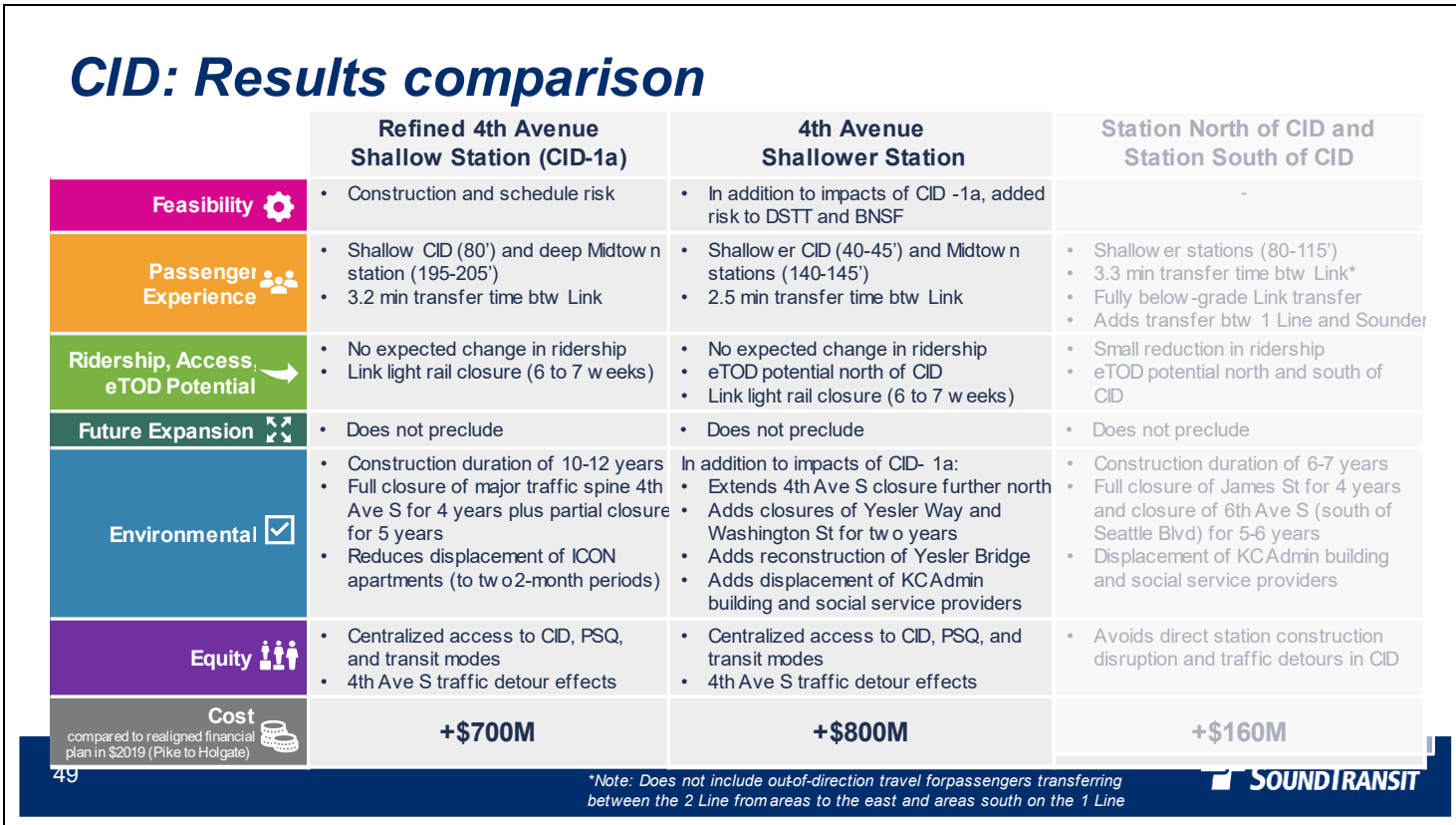
*Note: Does not include out-of-direction travel for passengers transferring between the 2 Line from areas to the east and areas south on the 1 Line

SOUNDTRANSIT

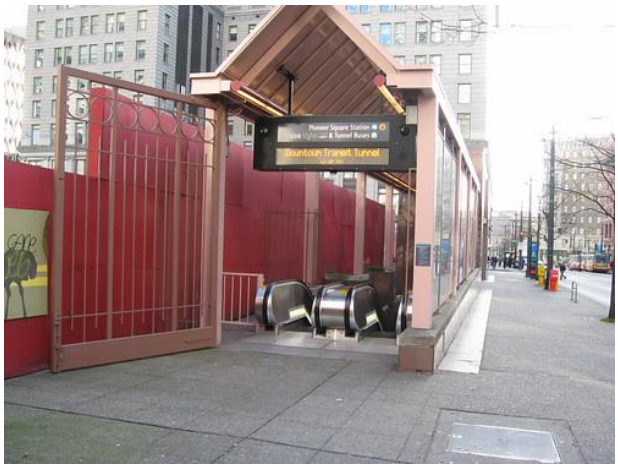


7. What work is anticipated in this area in the future? Does the 4th Ave viaduct need to be replaced, 2nd ave extension, etc.? (Balducci)	Note that the CID 4th Avenue Shallow and Shallow(er) alternatives would not require the replacement of the existing Jackson Street or 2nd Avenue Extension structures over the railroads. Only the 4th Avenue viaduct would be affected by the project. The 4th Ave viaduct is actually two structures both built in 1910. The east bridge overhangs the parking garage and access to Union Station (currently ST parking) and the office building campus. The west bridge abuts the BNSF tracks. According to SDOT, both structures were extensively rehabilitated in 1979, underwent seismic retrofit in 2015 and are not slated for replacement in the near future. SDOT is initiating a study of the condition of 2nd Avenue Extension and Jackson Street bridges (the latter being the section between 4th Ave and the existing DSTT in front of Union Station), which may result in a recommendation to either rehabilitate or replace.

Downtown	
1. What are the tunnel construction impacts to NW Rooms and the SIFF Uptown Cinema with the various options at Seattle Center? (Roscoe)	The Republican station alternative studied in the Draft EIS assumed a cut and cover station would be constructed within the right of way of Republican Street adjacent to the NW Rooms. After utility relocation and site clearing activities, heavy civil construction associated with excavating the station box would continue over a period of several years with associated noise and vibration effects during the construction period. As part of the further studies effort, a Republican West alternative was examined which would locate station box construction a couple of blocks to the west avoiding immediate proximity to the NW Rooms. The tunnel boring machine (TBM) would pass under the NW Rooms (depth of Top of Rail would be about 90' to 100' below the NW Rooms). There would be two passes of the TBM, one for each of the two twin bored tunnels. Each pass would take about a week. During that time, there could be noise and vibration impacts and ST would coordinate the construction timing with the activity schedule of the various organizations in the NW Rooms to the extent possible. Once the TBM has passed, we would not anticipate further construction disruption to the NW Rooms. The Republican West alternative, though less impactful to the NW Rooms would, however, be in closer proximity to the SIFF Uptown Cinema. The station structure would be under Republican Street and, due to the narrow right of way width of Republican Street, a portion of the station structure would be constructed under the Uptown Cinema (along the south side of the building). Noticeable construction effects would include noise & vibration and traffic, during the heavy civil construction period which usually occurs during the first 3 years of the construction period. Mitigation would include development of a Construction Access and Traffic Management Plan, a Construction Noise and Vibration Control Plan including specifying limits on working hours and noise-generating activity, construction outreach throughout construction, installing measures to maintain access to affected properties, and promotional activities for affected businesses. The Mercer Street alternative (DT-2) would not affect the NW Rooms or the SIFF Uptown Cinema but would result in traffic effects and business displacements along Mercer Street.

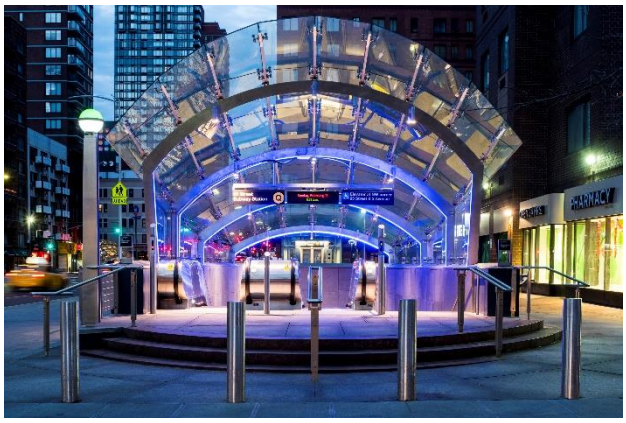
2. Want to understand duration of streetcar closure and comparison of utilities impacts. (Balducci, Keel, Harrell)	For the DT-1 alternative, with Denny Station under Westlake Avenue, the streetcar would be closed for 4 years due to the closure of Westlake Avenue during construction south of Denny Way, with temporary decking across Westlake Avenue to maintain traffic on cross-streets. Major anticipated utilities relocation would include a 24" sewer (built in 1893 and 24-26' deep), and a 28"x 42" brick sewer (built in 1905 about 20-21' deep). These utilities would be temporarily relocated to a nearby street and then restored back to Westlake Avenue after the construction of the station structure. Other typical street utilities would also need to be relocated such as power, water, gas and sewer distribution and storm drain. For the Mix and Match alternative, with Denny Station under Terry Avenue, there would be no streetcar closure effects. Relocation of major utilities under Terry Avenue would include Long Haul Fibers and associated communication manholes in addition to typical street utilities such as power, water, gas and sewer distribution and storm drain.
<u>Interbay/Ballard</u>	
1. What is the tunnel portal issue in this location? (Balducci)	There were concerns related to the Prospect tunnel portal included in one of the Draft EIS alternatives in the South Interbay segment (Prospect Street Station/Central Interbay Alternative, SIB-3). The portal for this alternative would be located just north of Prospect Street on the east side of Elliott Avenue at the base of a hillside that is an environmentally critical area with steep slopes and known slide areas. Two of the further study concepts sought to address concerns with this portal and the associated station and guideway to the north of the portal: • The "SIB-3 Modified" concept looked at shifting the Prospect tunnel portal south to approximately Mercer Place. The result of this study was that the portal location did not reduce risks associated with the hillside. • The "Consolidated Alignment" concept looked at a consolidated Smith Cove/Interbay station located in a retained cut west of 15th Avenue W between approximately Blaine Street and Wheeler Street. The guideway to the north and south of the retained cut would be in tunnel, with the portal connecting to downtown being shifted north to approximately Blaine Street, north of the Magnolia Bridge, and avoiding surface disruption of the Queen Anne hillside. Note that the results of the further studies identified the increased cost of the consolidated alignment as approximately $210 million which would also be coupled with the increased cost of the Seattle Center mix-and-match alternative in Seattle Center of approximately $210 million.

2. In Ballard, how many people do we anticipate needing to access the various station entrances and what impact might smaller entrances have on future capacity? (Keel)	For the 15th Tunnel alternative, approximately 75% of ingress movements are expected to use the west entrance. This demand would be highest during the AM Peak hour where approximately 2,000 passengers would be entering the station at this location. With the cost savings option to move this entrance into the public ROW, the entrance would feature a single escalator (likely running in the up direction,) a public stair, and 2 elevators. During the AM Peak the down direction would operate at LOS D/E (goal for LOS C during standard operations). Future expansion at this station or growth in ridership beyond projections would further constrain this entrance.

3. Visual examples of full-size station vs. smaller footprint. (Balducci)	See attached visual examples of a typical station entrance (U-District Station) and a smaller footprint entrance (PSQ north entrance) **From Sound Transit System:** **Typical full size entrance (U-District Station)**  **Slim in-ROW entrance (Pioneer Square Station)**  **Larger in-ROW entrance (Pioneer Square Station)** 

Other system in-ROW entrances

New York (96th Street)



Pittsburgh (Gateway Station)