

# ***Ballard Link Extension***

*Feasibility study of potential new  
alternative in South Lake Union*

*Board of Directors*

*04/25/24*



# *Why we're here today*

**Motion No. M2023-109** – approved in December 2023

Directing staff to assess the feasibility of an additional alternative in the South Lake Union area for potential inclusion in the Draft Environmental Impact Statement for the Ballard Link Extension

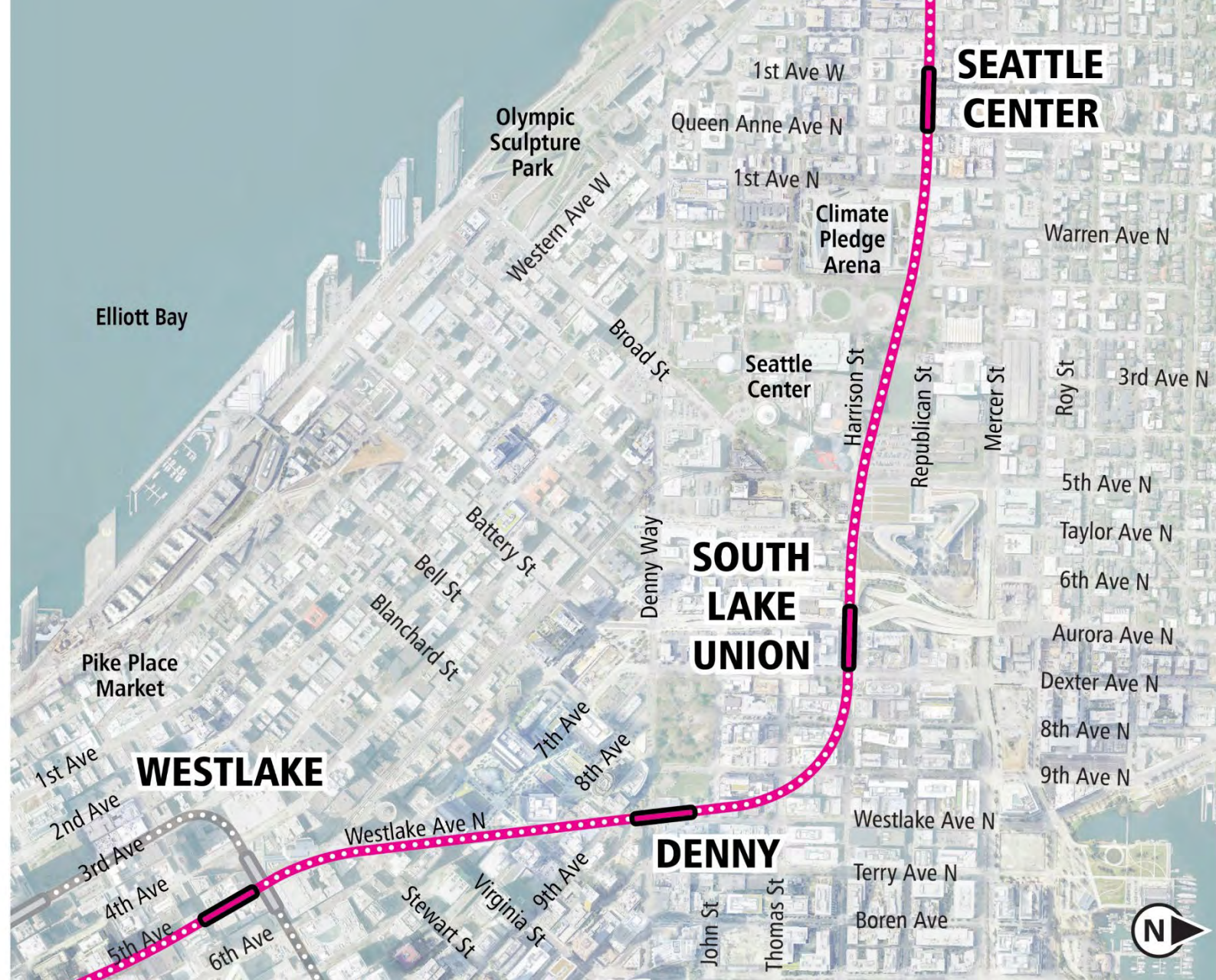
***Staff report only today. Potential board action in May.***

# *Responding to TAG recommendations*

1. Quantify the cost of delay (today's presentation)
  - "The TAG strongly recommends that if the Board decides to extend a comment period or delay a decision for further study, the costs of such a delay be quantified and acknowledged by the Board ..." (p.10)
2. Provide a staff recommendation (May SEC)
  - "ST staff have the responsibility to implement Board policy, as well as to recommend which alternatives to analyze, recommend a preferred alternative..." (p.9)
  - "Include staff recommendations on all actions going to Board." (p.17)

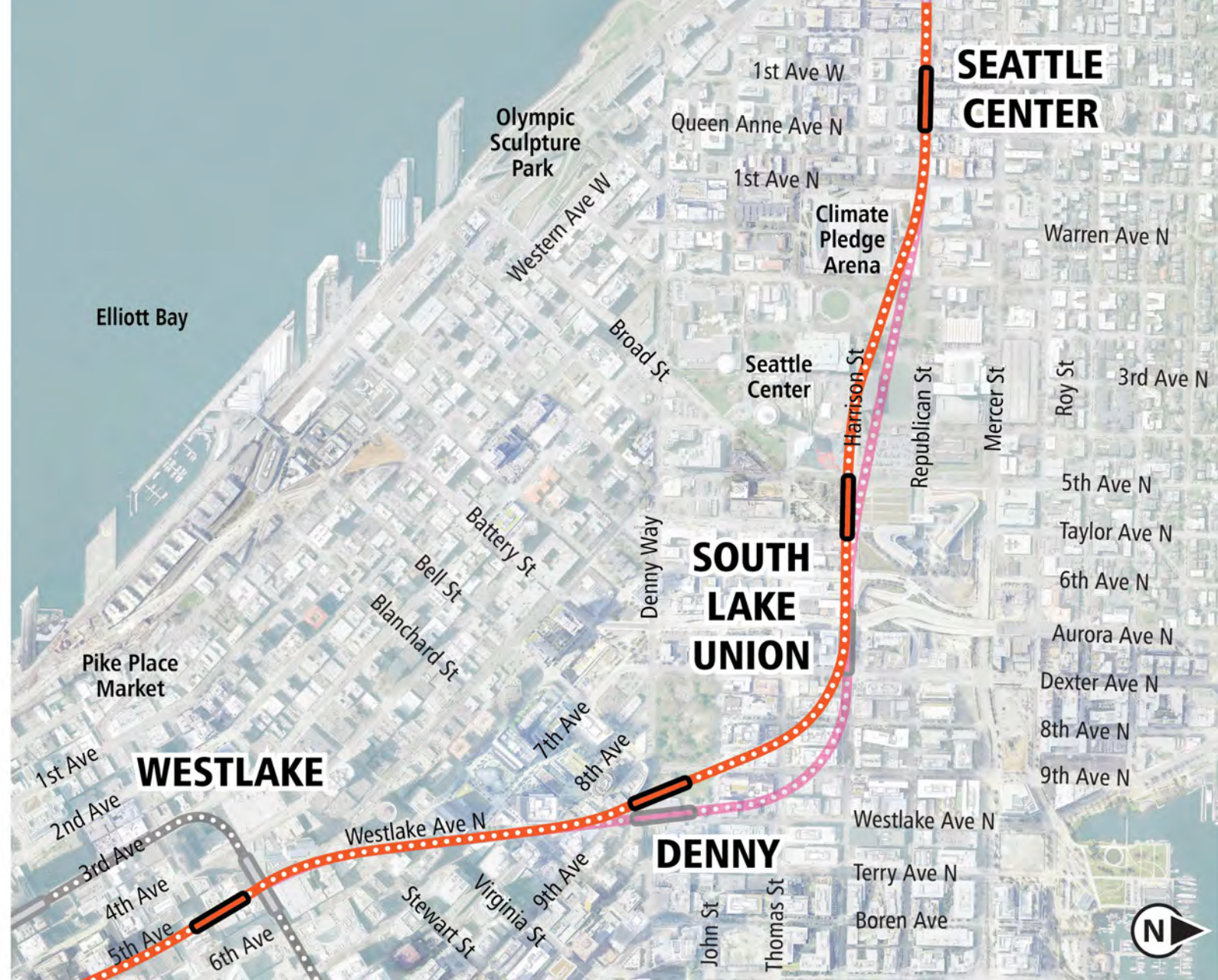
# Current preferred alternative

Current preferred alternative identified by the Board in July 2023



# Potential new alternative

Potential new alternative identified for feasibility study in December 2023



# Potential new alternative

## Study scope

Evaluate cost & schedule implications

Evaluate system implications

Evaluate environmental implications – roadway closure/access, utilities, noise & vibration, properties

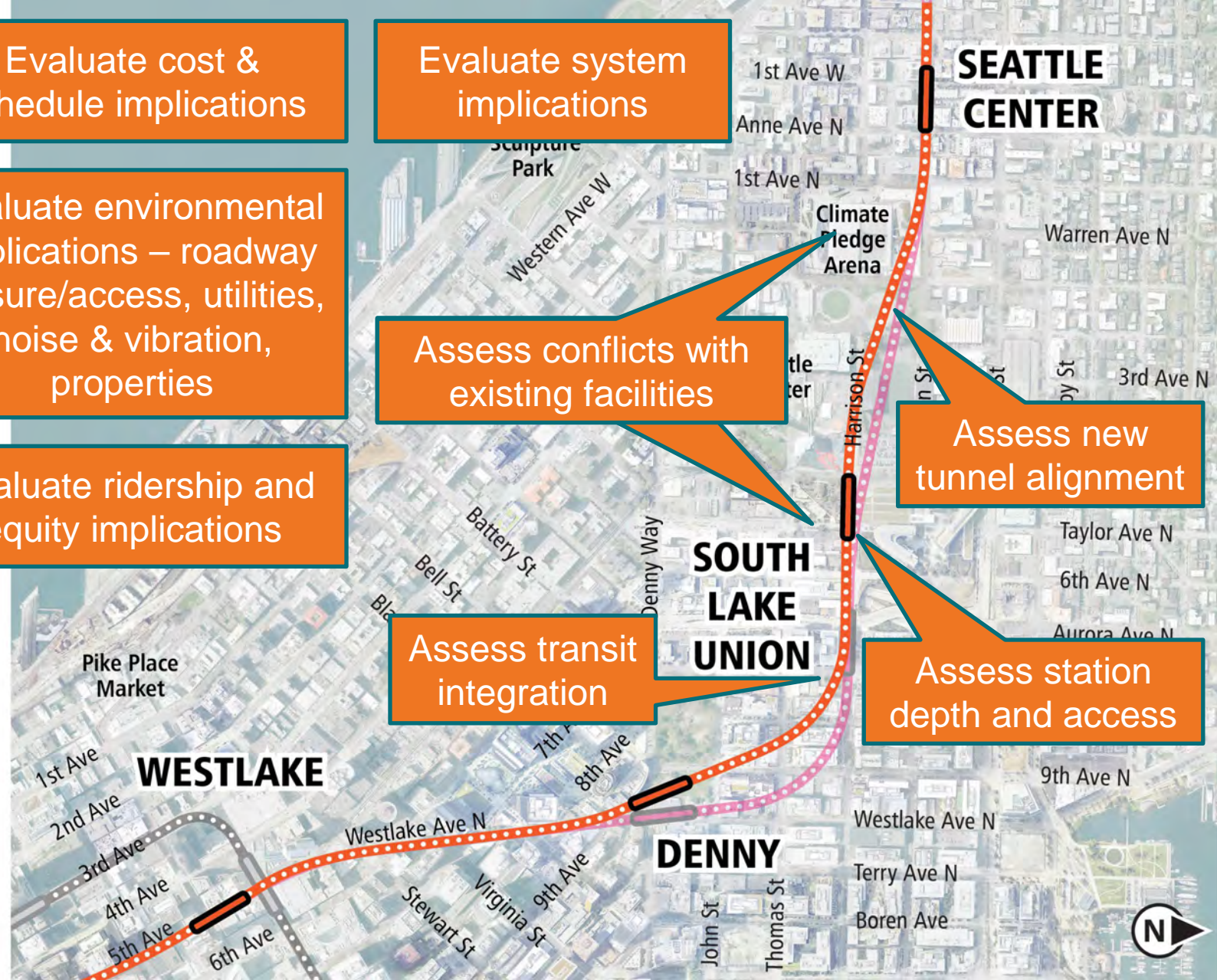
Assess conflicts with existing facilities

Evaluate ridership and equity implications

Assess transit integration

Assess new tunnel alignment

Assess station depth and access

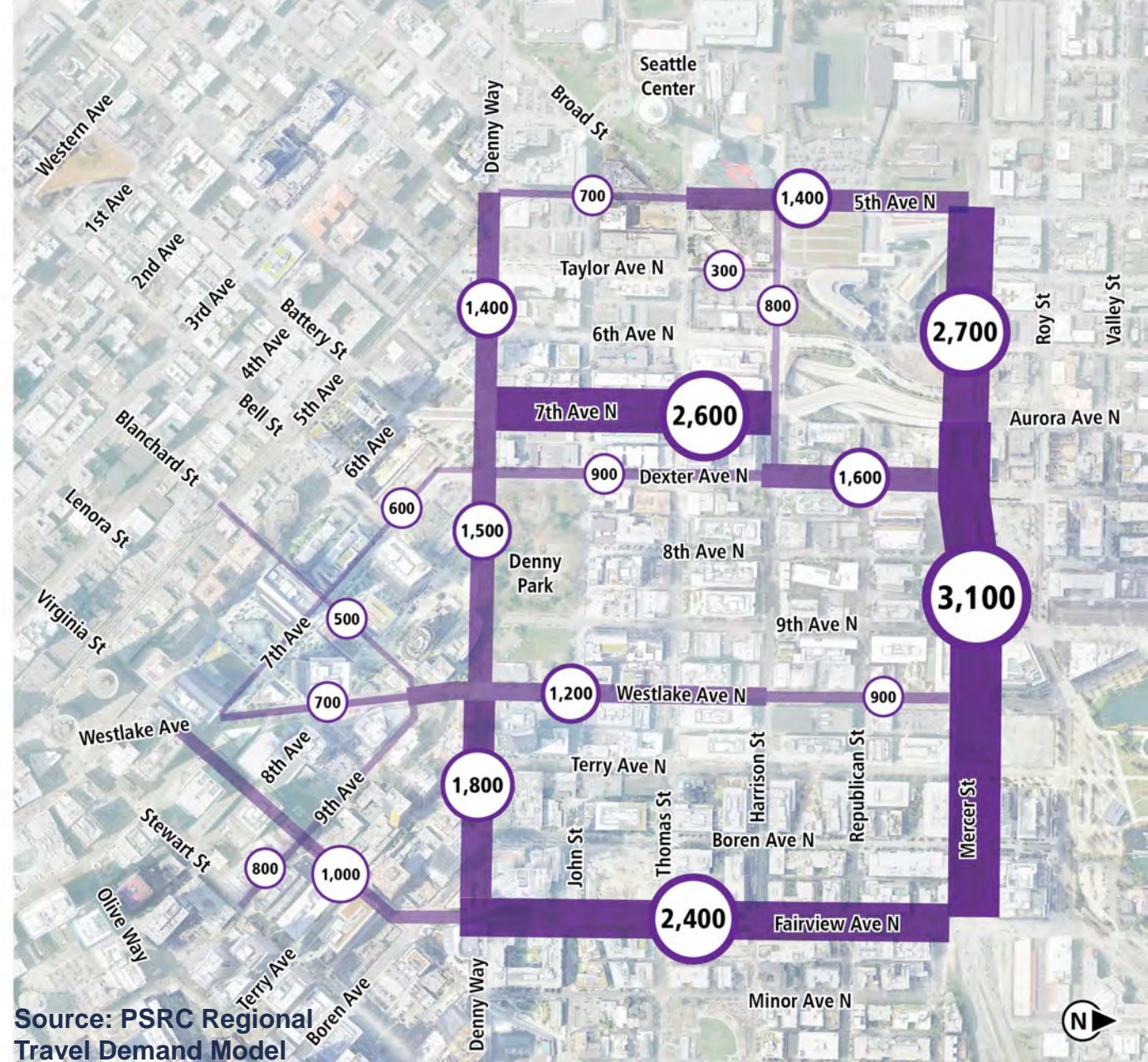


# ***Denny Station***

***Construction impacts / Street closures***

# 2032 PM peak hour no-build volumes

- Mercer Street carries highest east-west volume in the area and provides I-5 access
- Fairview Avenue N and 7th Avenue N carry highest north-south volumes in the area
- Harrison Street volume is relatively low during typical peak hours, but increases before and after Seattle Center events
- Denny Way carries relatively high east-west volumes and provides I-5 access





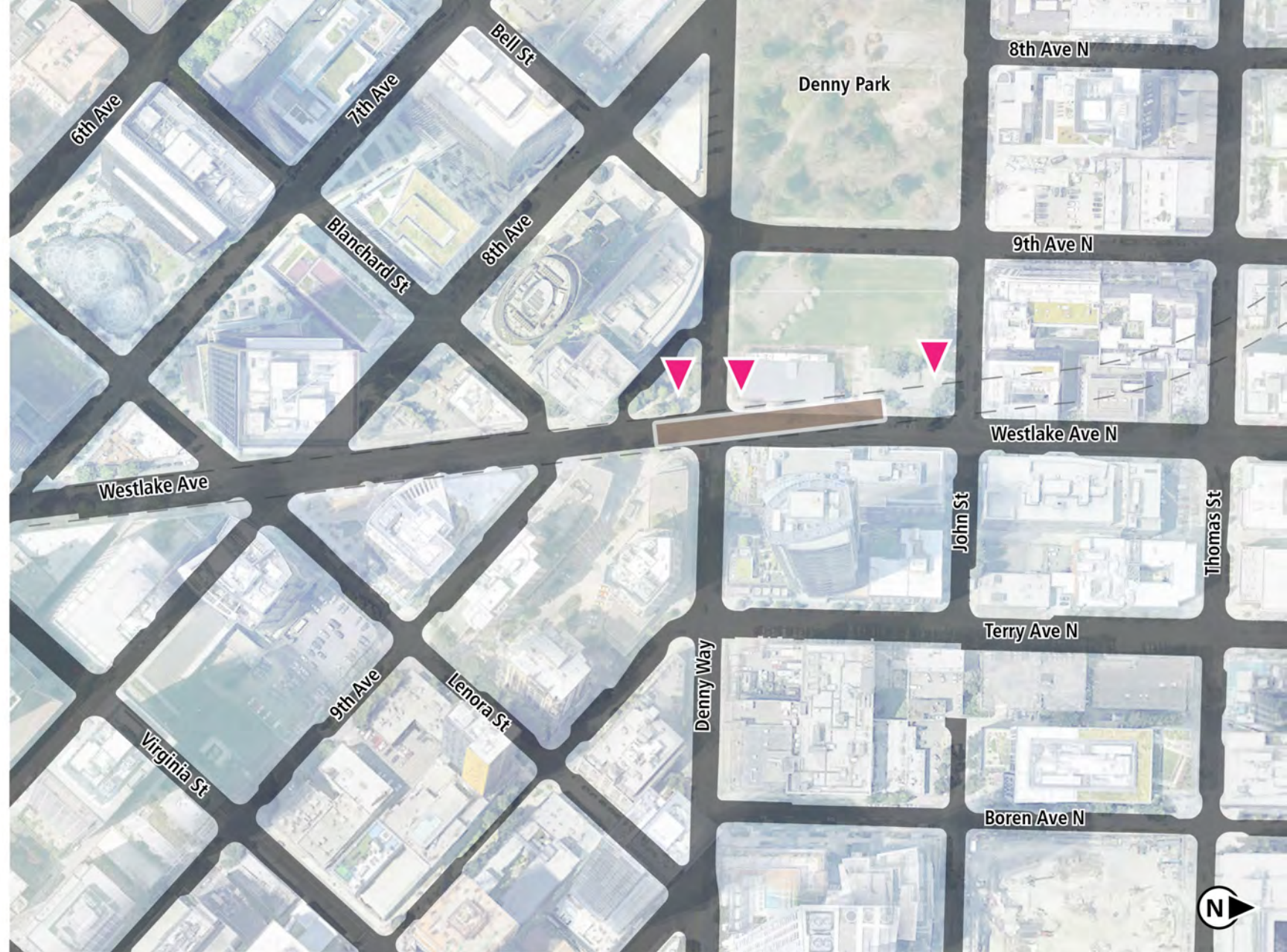
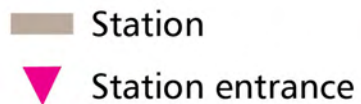
# Current preferred alternative

Key streets affected during construction:

- Westlake Ave
- Denny Way

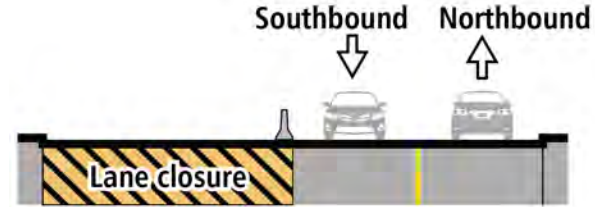
Streetcar closed

\* Potentially affected low volume streets not listed



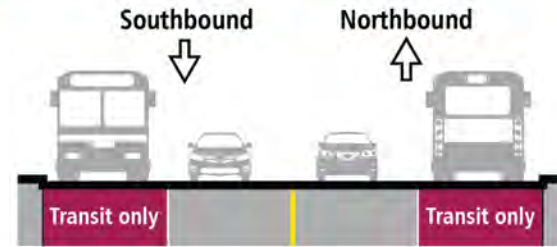
# Westlake Ave during construction

2 years



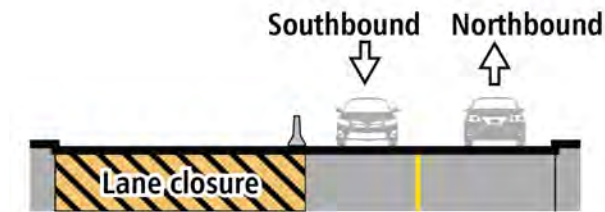
- *Two general purpose lanes*

5 years



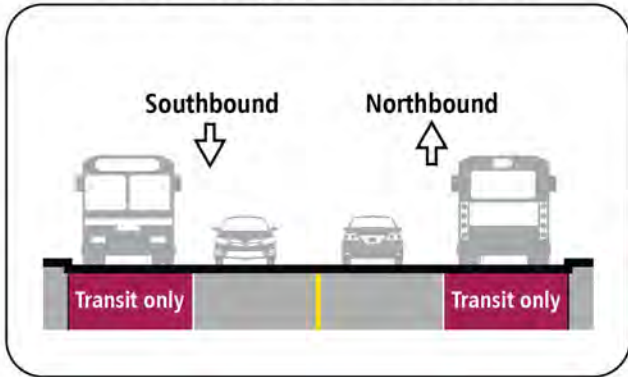
- *Two general purpose lanes*
- *Two transit lanes*

1 year



- *Two general purpose lanes*

## Existing Condition



- *Two general purpose lanes*
- *Two transit lanes*

# *Roadway decking during construction*



# *Westlake Ave during construction*



# *Westlake Ave during construction*



# *Westlake Ave during construction*

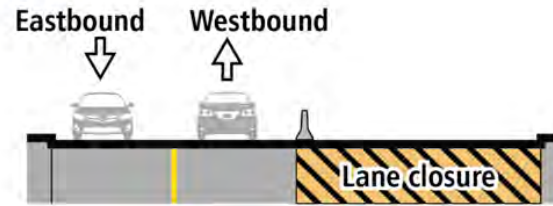


# *Westlake Ave during construction*



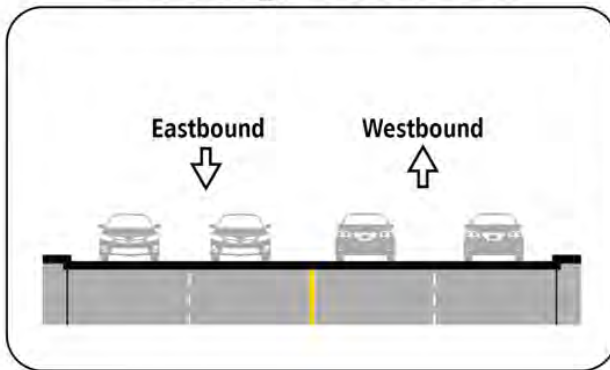
# Denny Way during construction

2 years



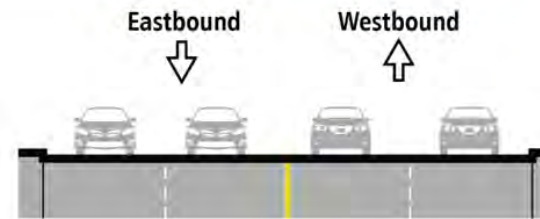
- Two general purpose lanes

## Existing Condition



- Four general purpose lanes

5 years



- Four general purpose lanes

1 year



- Two general purpose lanes



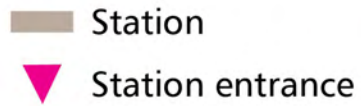
# Potential new alternative

Key streets affected during construction:

- Denny Way

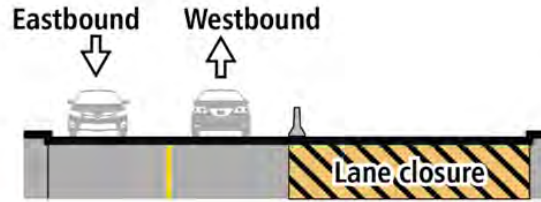
Streetcar remains open

\* Potentially affected low volume streets not listed



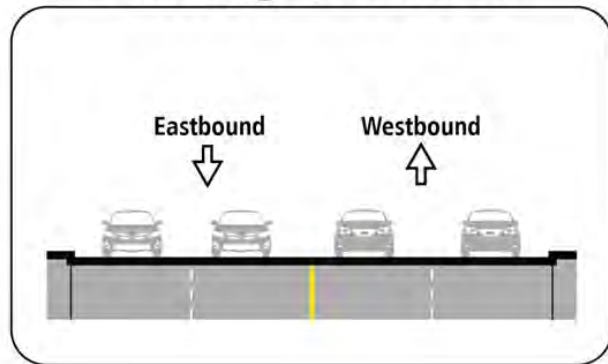
# Denny Way during construction

6 months



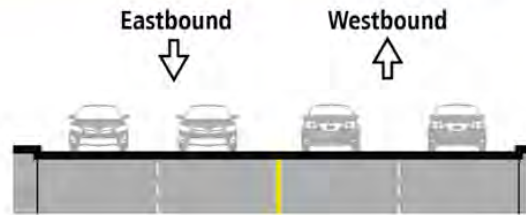
- Two general purpose lanes

## Existing Condition



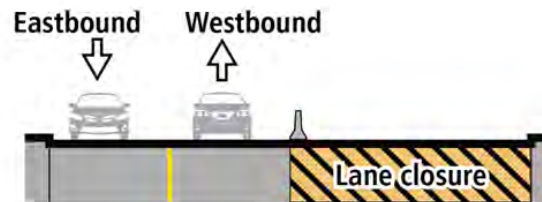
- Four general purpose lanes

7 years



- Four general purpose lanes

6 months



- Two general purpose lanes

# ***SLU Station***

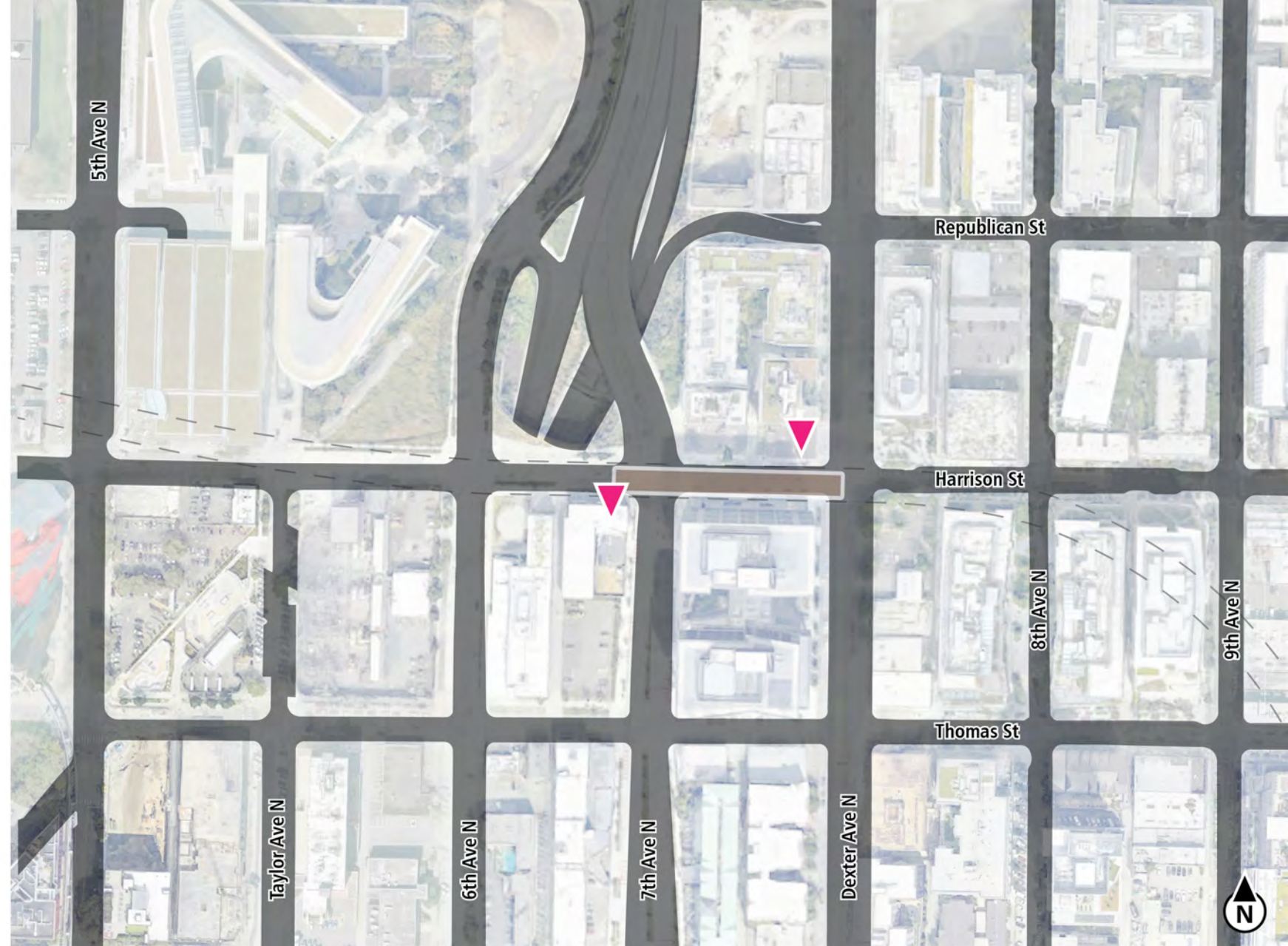
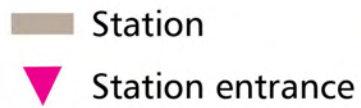
***Construction impacts / Street closures***

# Current preferred alternative

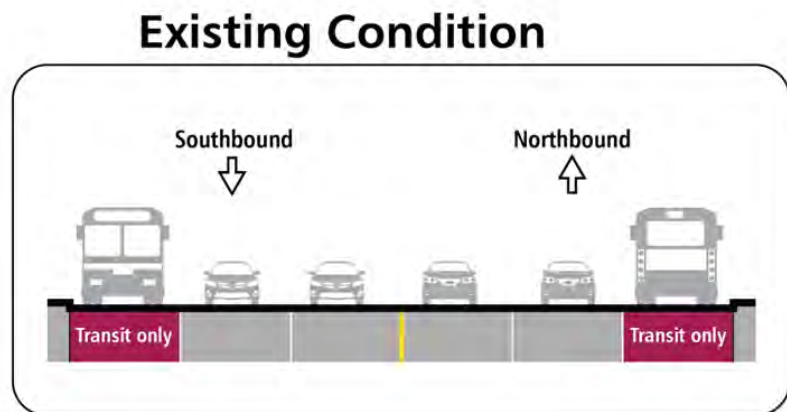
Key streets affected during construction:

- 7<sup>th</sup> Ave
- Harrison St

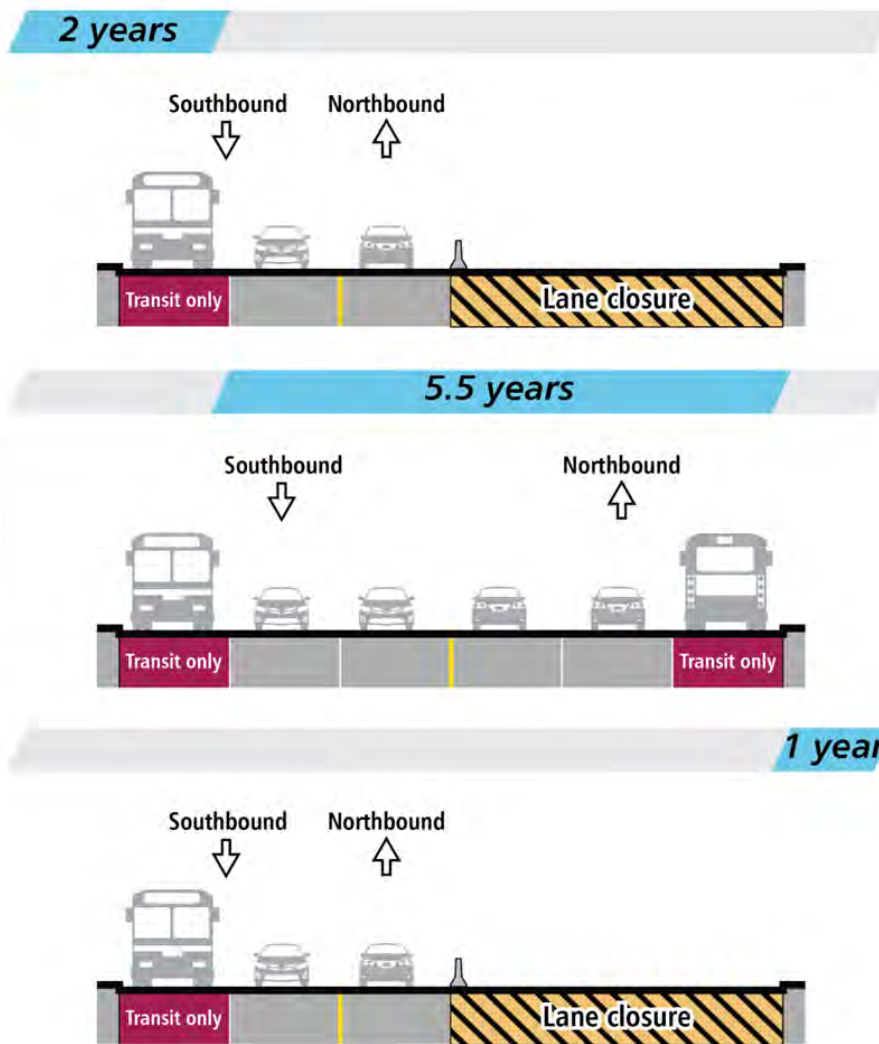
\* Potentially affected low volume streets not listed



# 7<sup>th</sup> Ave during construction



- *Four general purpose lanes and two transit lanes*



- *Two general purpose lanes and one transit lane*

- *Four general purpose lanes and two transit lanes*

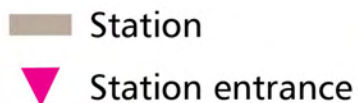
- *Two general purpose lanes and one transit lane*

# Potential new alternative

Key streets affected during construction:

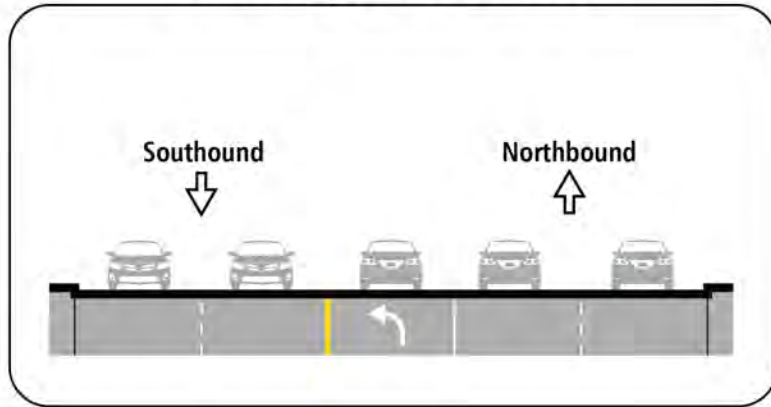
- 5th Ave
- Harrison St

\* Potentially affected low volume streets not listed



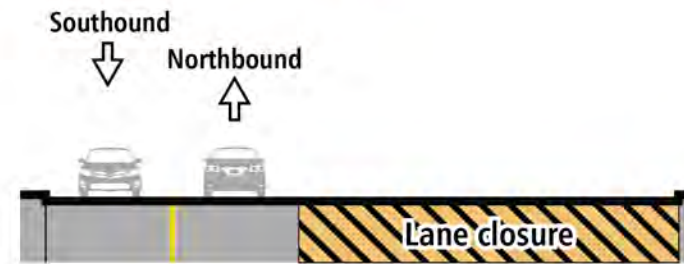
# 5<sup>th</sup> Ave during construction

## Existing Condition

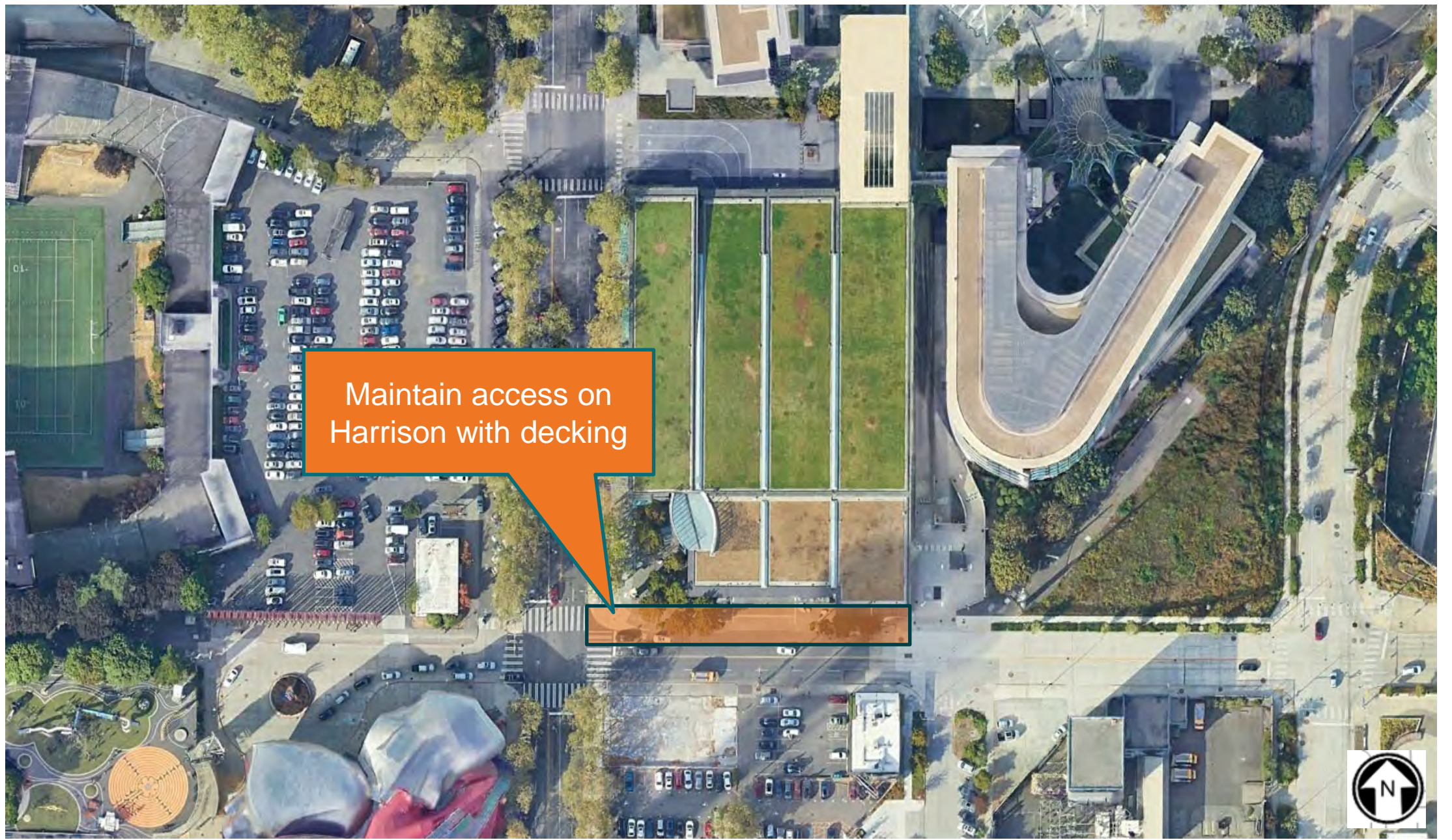


- *Four general purpose lanes*

8.5 years



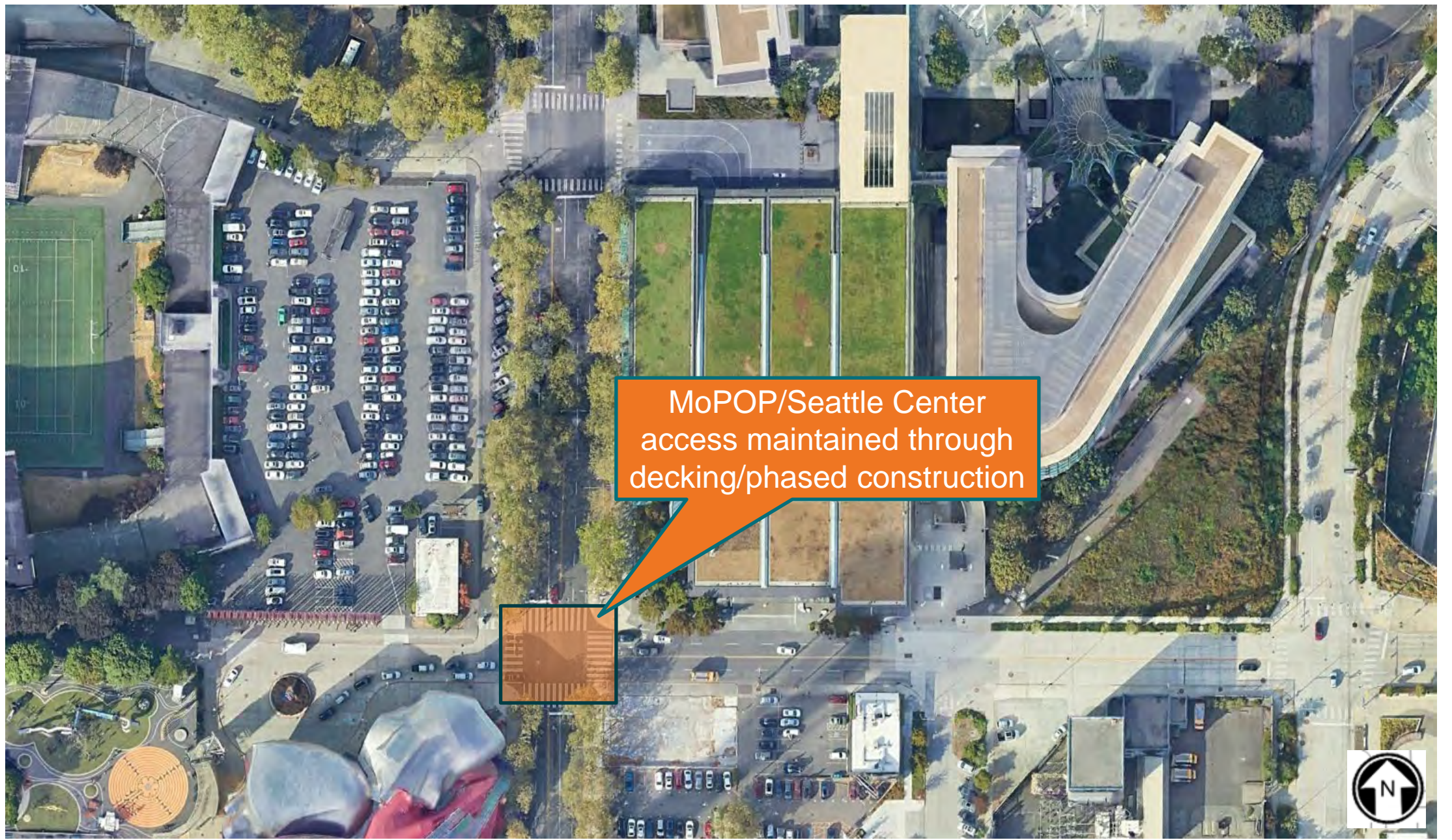
- *Two general purpose lanes*



Maintain access on Harrison with decking







MoPOP/Seattle Center  
access maintained through  
decking/phased construction



# Key Roadway Effects

## Denny Shifted North + SLU 7th/Harrison

Street	2032 Peak Hour Volume	Construction Year							
		1	2	3	4	5	6	7	8
Westlake Ave	700-1,200								
Denny Way	1,500-1,800								
Harrison St*	800	E W							
5th Ave	700-1,400								
7th Ave	2,600								

## Denny Shifted West + SLU 5th/Harrison

Street	2032 Peak Hour Volume	Construction Year								
		1	2	3	4	5	6	7	8	9
Westlake Ave	700-1,200									
Denny Way	1,500-1,800									
Harrison St*	800									
5th Ave	700-1,400									
7th Ave	2,600									

\*E is Harrison Street east of 7<sup>th</sup> Ave, W is Harrison Street west of 7<sup>th</sup> Ave

\*Closure only west of 7<sup>th</sup>

**Legend**

- Reduced GP Lanes
- Full Closure
- Transit Lanes Closure Only

\* Potentially affected low volume streets not listed

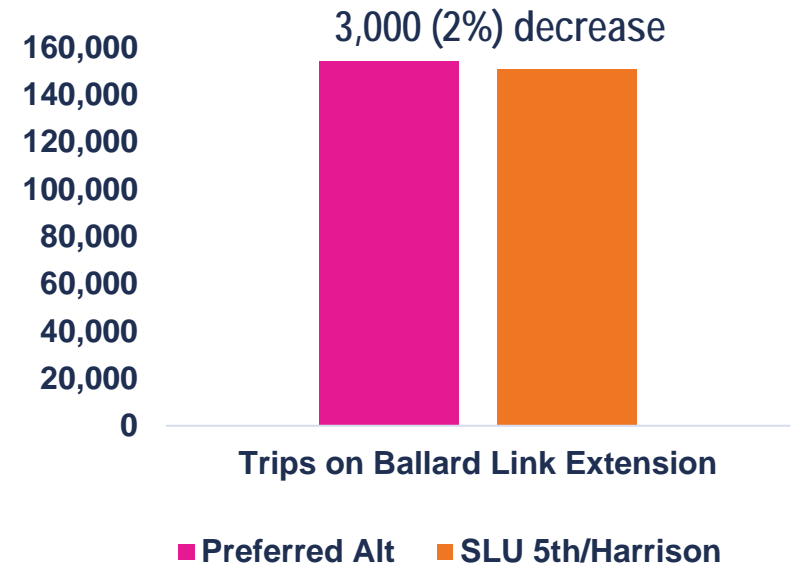
# *Ridership results*

# Ridership modeling results

*What would happen if the SLU station were moved from 7th to 5th...*

Overall transit ridership would remain steady but Link ridership would be slightly lower. Link ridership reduction due to lower volume of transit transfers – notably from E Line.

Average Weekday (2042)



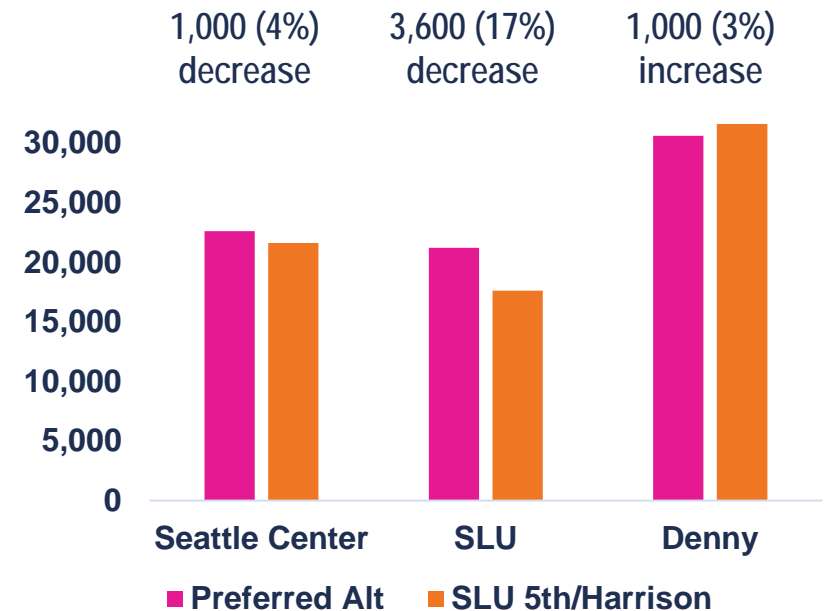
# Ridership modeling results

## How do travel patterns shift in SLU area...

Ridership decreases at the SLU Station in the SLU 5<sup>th</sup>/Harrison scenario because of fewer transit transfers.

Some riders shift from Seattle Center Station to SLU Station while others shift from SLU Station to Denny Station.

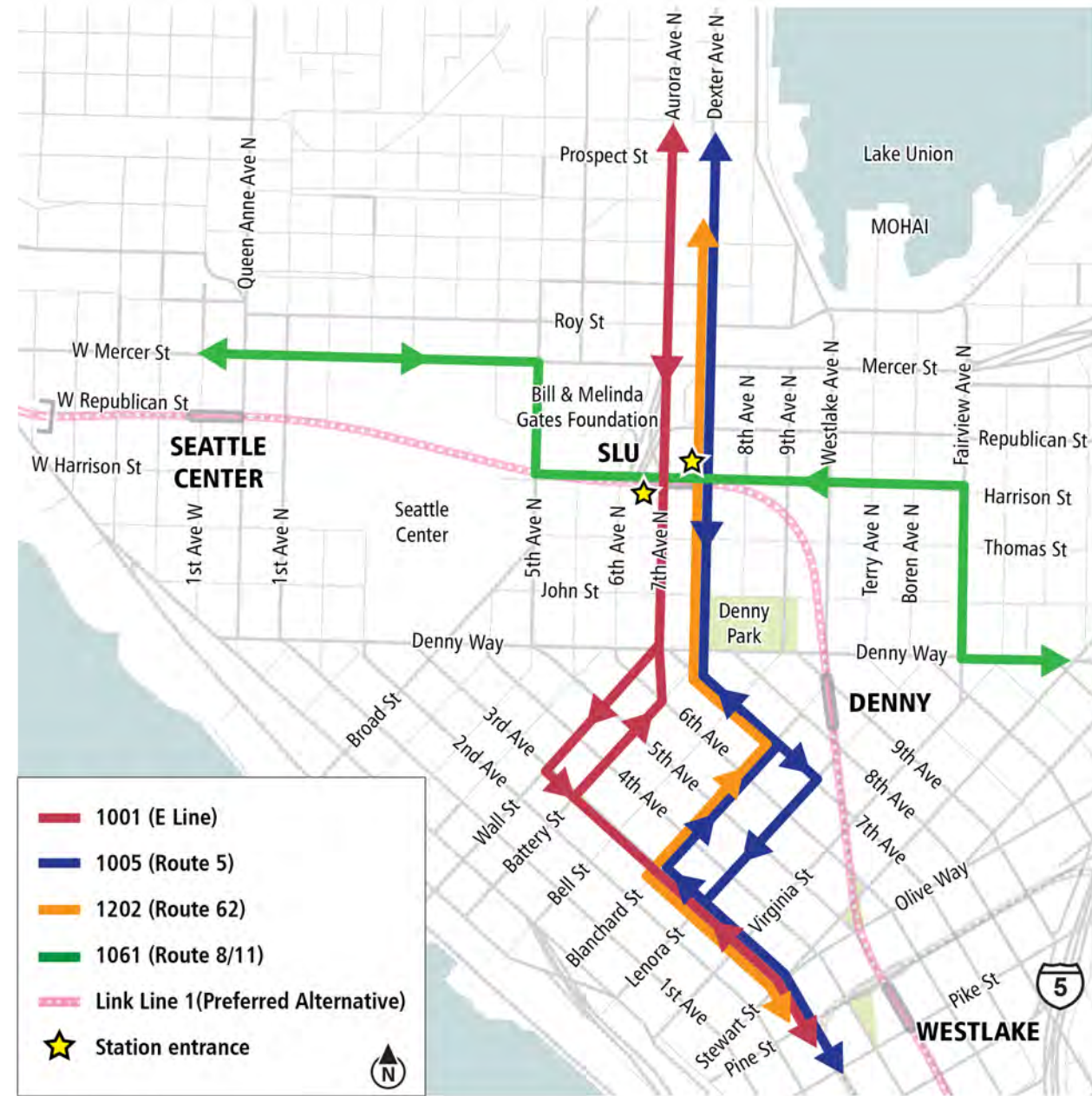
Average Weekday Boardings/Alightings (2042)



# Transit Integration

## Current preferred alternative

- 80% of all bus-rail transfers at SLU 7th/Harrison related to four routes:
  - 1001 (E Line)
  - 1005 (similar to Route 5) Downtown-Fremont-Greenwood
  - 1202 (similar to Route 62) Downtown-Wallingford-Sand Pt
  - 1061 (similar to Route 8/11) Interbay-Capitol Hill-Madison Park
- Most transfers from **E Line** and **Route 62**



# Transit Integration

## New potential alternative

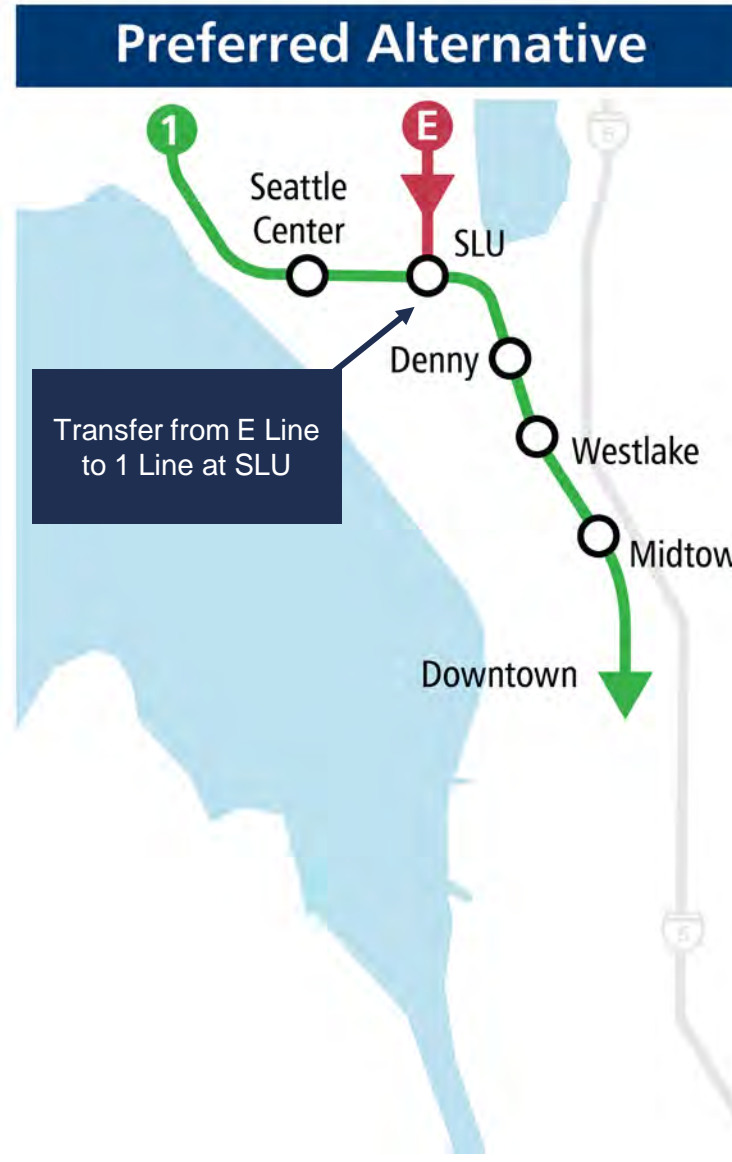
- 80% of all bus-rail transfers at SLU 5th/Harrison related to three routes:
  - 1220 (similar to Route 3/4) Queen Anne-Downtown-Central District
  - 1001 (E Line)
  - 1061 (similar to Route 8/11) Interbay-Capitol Hill-Madison Park
- Fewer bus-rail transfers overall (62% fewer transfers from E Line)
- Most transfers from Route 3/4



# Ridership modeling results

## How trips could change...

Someone who rides the E Line from the north into downtown might have transferred to Link at SLU for the remainder of their trip but instead chooses to stay on the bus to access their destination



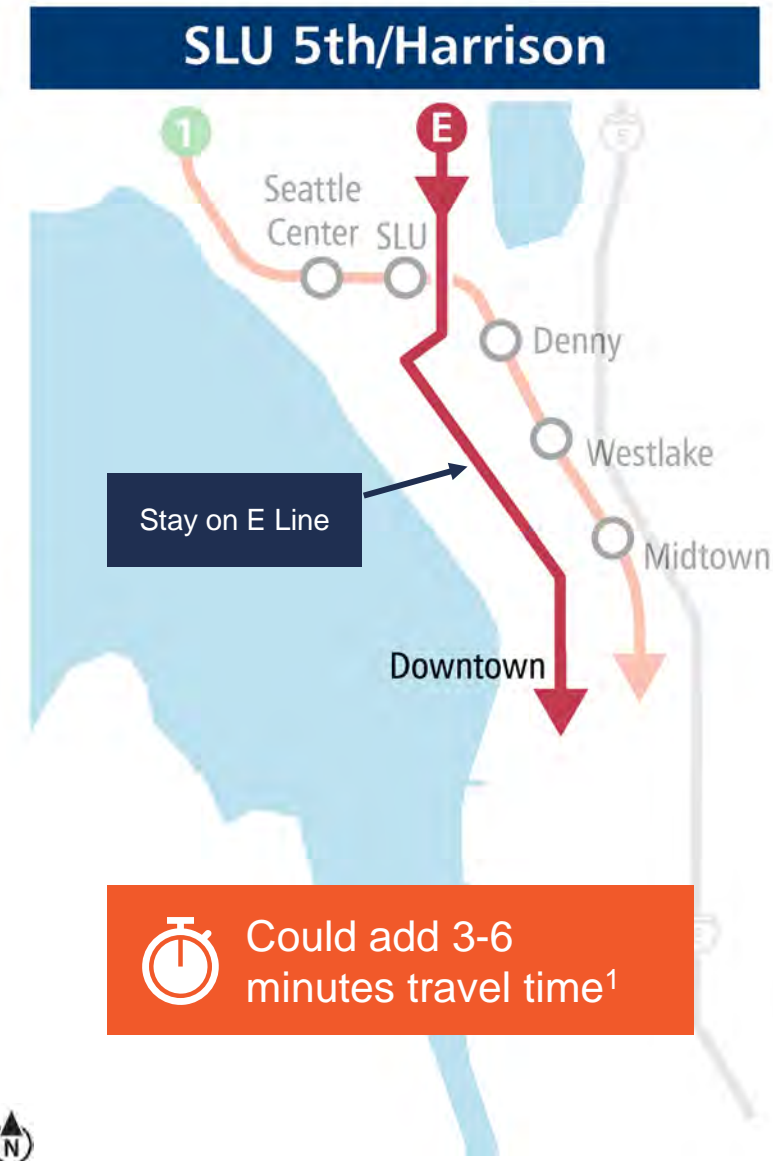
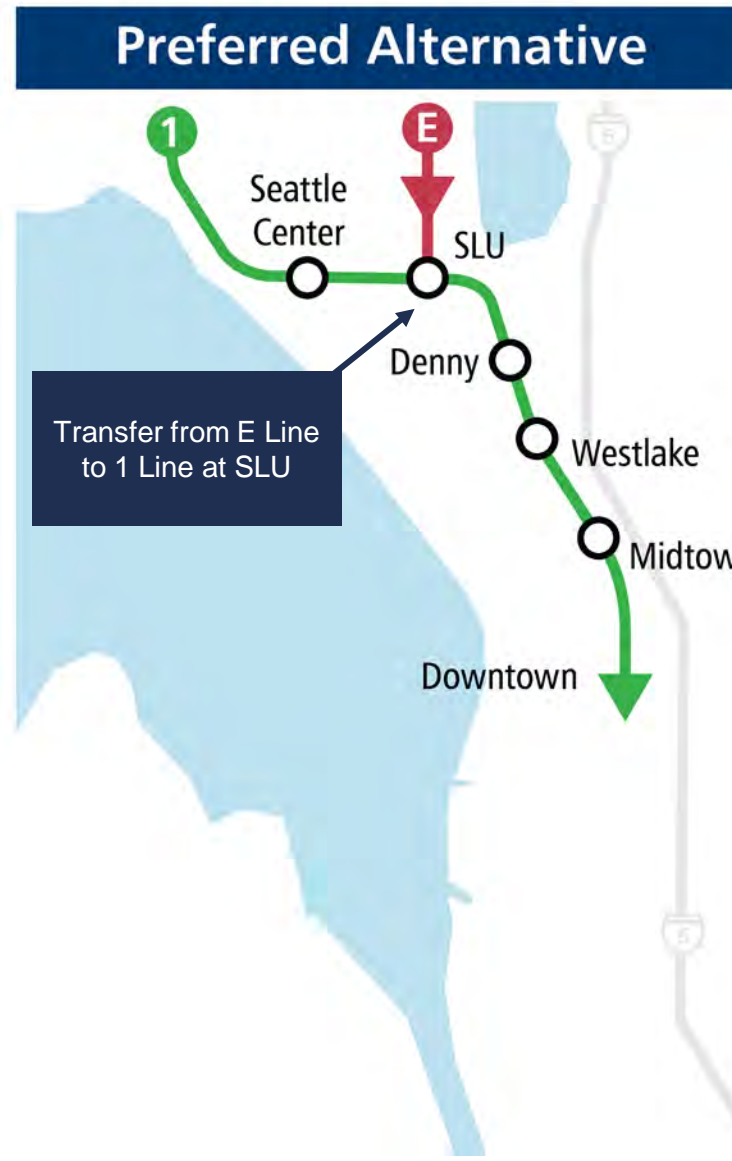


# Ridership modeling results

## How trips could change...

Someone who rides the E Line from the north into downtown might have transferred to Link at SLU for the remainder of their trip but instead chooses to stay on the bus to access their destination

<sup>1</sup> Low end of range reflects trip on bus, high end reflects trip on Link. Bus travel times subject to variable speed and reliability.



***Equitable access***

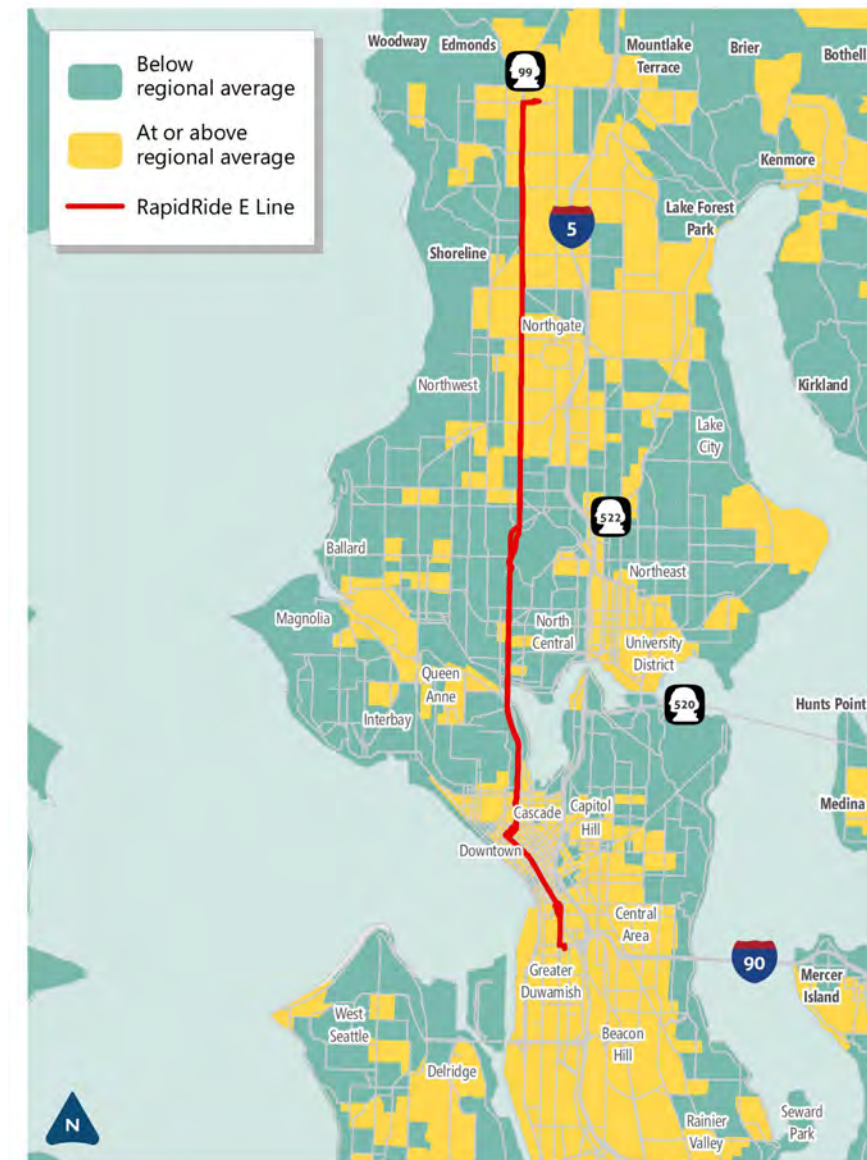
# Equitable access

## Denny Shifted North + SLU 7th/Harrison

- Convenient transfer to bus routes on Harrison Street
- Convenient transfer to 7th Ave (E-Line)

## Denny Shifted West + SLU 5th/Harrison

- Convenient transfer to bus routes on Harrison Street
- Two-block transfer to 7th Ave E-Line (3 to 5-minute walk with crossing of 7th Ave for NB travel)

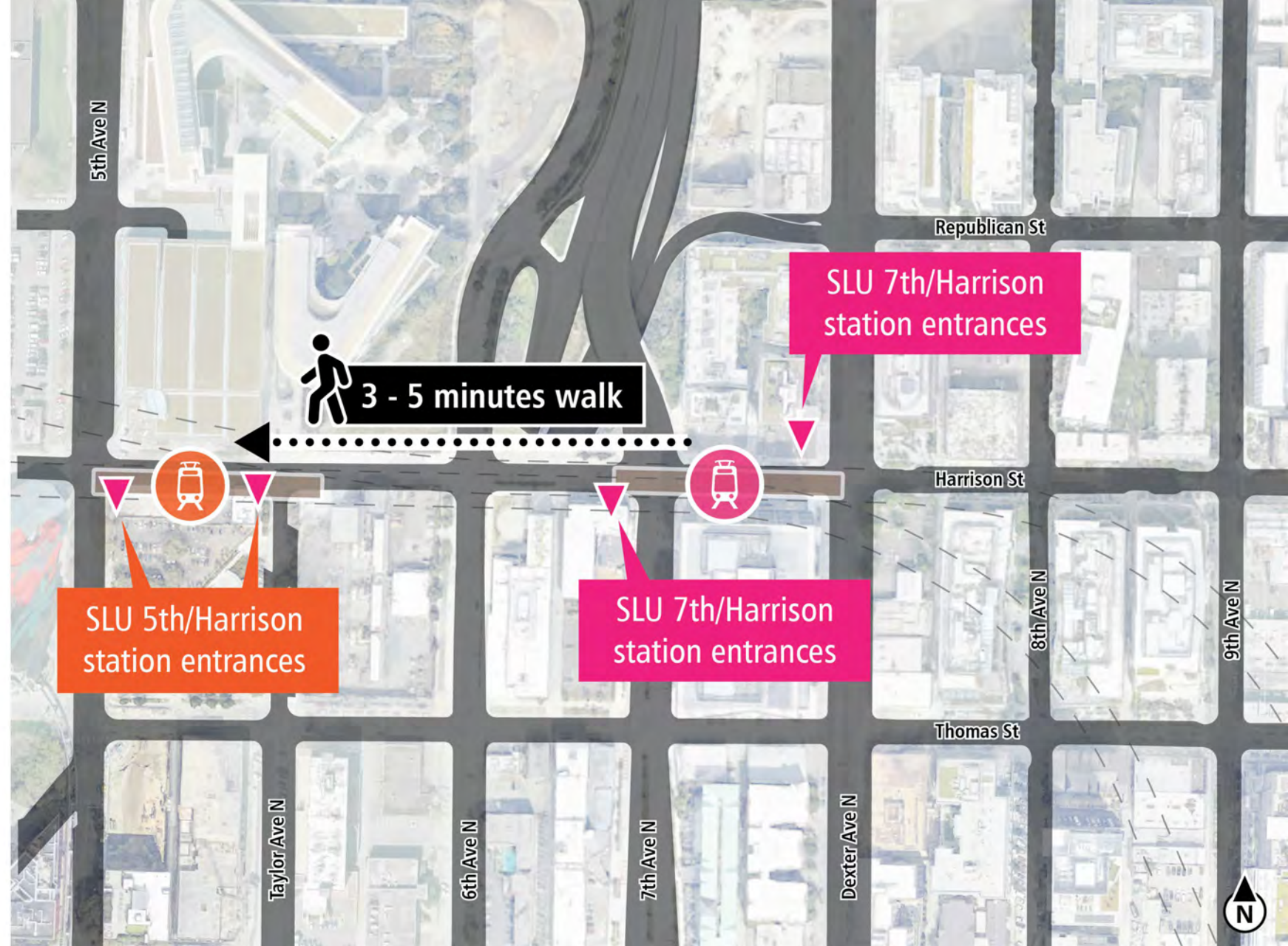
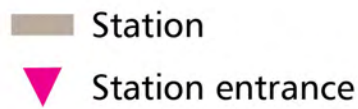


Low-Income, Communities of Color, or Limited English Proficiency populations

***Walk access***

# Walk Access

- SLU 5<sup>th</sup>/Harrison station concept is 3-5 minute walk from preferred alternative
- Adds crossing of 7th Ave from northbound E Line and SLU core/Dexter
- SLU 5<sup>th</sup>/Harrison station concept farther from SLU core, closer to Seattle Center



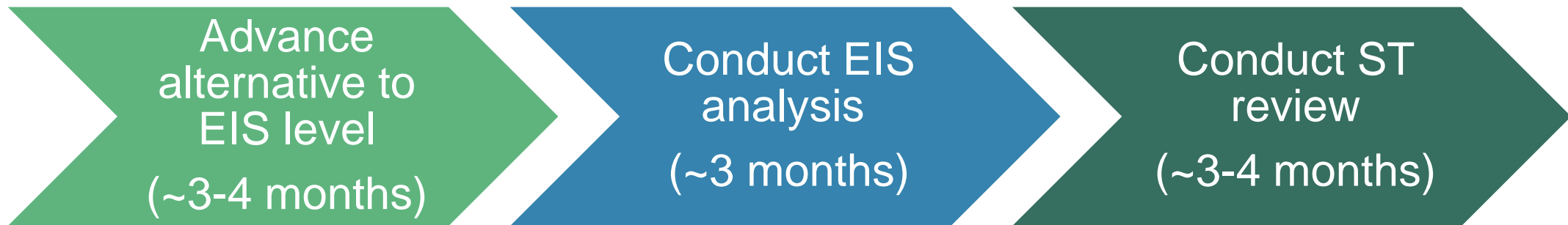
***Schedule***

# Overall schedule

- Downtown tunnel construction activities include utility relocation, station excavation, Tunnel Boring Machine (TBM) tunnel construction, station and finishes, testing and commissioning
- Critical path relies on station excavation being completed in time for arrival of TBM
- Completion of Denny station excavation early would not affect schedule for TBM tunneling because excavation of other stations would not be completed and, therefore, would not improve overall schedule

# *Delay to add new alternative*

Adding a new alternative involves doing the following steps in coordination with federal partners:



Total: ~10 months delay



# Cost of delay

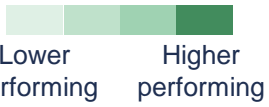
*"The TAG strongly recommends that if the Board decides to extend a comment period or delay a decision for further study, the costs of such a delay be quantified and acknowledged by the Board ..."*

- Methodology: Adjust the schedule assumptions for the project in the financial plan
- As costs are delayed, they become more expensive in year-of-expenditure dollars due to inflation
- 1 year of delay would increase cost by approx. \$0.5B in year-of-expenditure dollars

# *Results comparison*

## Current preferred alternative

## Potential new alternative



	Denny Shifted North and SLU 7th/Harrison	Denny Shifted West and SLU 5th/Harrison
<b>Performance</b> <i>Ridership/Transit Integration/Equity</i>	<p>Convenient transfer to bus routes on Harrison St and 7<sup>th</sup> Ave E Line serving communities of color and low-income populations along the SR 99 corridor</p> <p>2% higher ridership (~3,000 more trips per day)</p> <p>More convenient access to SLU core</p> <p>Denny station depth: 90 ft, SLU station depth: 110 ft (both stations facilitate stair, escalator and elevator access)</p>	<p>Convenient transfer to bus routes on Harrison St. Two-block transfer to 7<sup>th</sup> Ave E Line (3-5 min walk).</p> <p>More convenient access to Seattle Center</p> <p>Denny station depth: 100 ft, SLU station depth: 130 ft (both stations facilitate stair, escalator and elevator access)</p>
<i>System Implications</i>	No delay to opening of BLE; does not affect other Link extension projects	Delays opening of BLE; results in trains operating through existing downtown tunnel – which will be constrained in capacity – for a longer period, and results in trains from West Seattle operating longer as a shuttle to SODO
<b>Construction effects</b> <i>Street closures</i>	<p>Closure of transit lanes on Westlake Ave for ~3 years; streetcar closed for ~8 years</p> <p>Harrison St closed from 6<sup>th</sup> to 7<sup>th</sup> Ave and from 7<sup>th</sup> to Dexter Ave; maintain local access via decking/phased construction</p> <p>Reduced number lanes on Denny Way for ~3 years</p>	<p>Avoids closures on Westlake Ave; reduces number of lanes on 5<sup>th</sup> Ave for ~8.5 years</p> <p>Harrison St closed between 5<sup>th</sup> Ave and Taylor Ave; maintain local access (MoPOP, 5<sup>th</sup> Ave garage) via decking/phased construction</p> <p>Reduced number of lanes on Denny Way for ~1 year</p>
<i>Utilities</i>	Major electrical utilities on Harrison St, but fits within overall project schedule	Less intensive electrical utilities on Harrison St; avoids utilities on Westlake Ave
<i>Noise and vibration</i>	Potential noise and vibration effects to NW Rooms during tunnel construction	<p>Potential noise and vibration effects to NW Rooms during tunnel construction</p> <p>Potential effects to MoPOP during station and tunnel construction</p>

## Current preferred alternative

## Potential new alternative



### Cost and Schedule Cost

**Denny Shifted North and SLU 7th/Harrison**

Similar construction costs for both options (~\$60M more than finance plan)\*

**Denny Shifted West and SLU 5th/Harrison**

Similar construction costs for both options (~\$90M more than finance plan)

5th/Harrison would add some cost due to additional work associated with environmental review, PE, Admin, etc. costs (~\$25M)

Main cost implication will be escalation from EIS delay associated with adding new alternative (~\$500M in year of expenditure dollars)

### Schedule

No delay to current project timeline

Reduces complexity of Denny station construction but overall project construction not faster because driven by the duration to tunnel from Queen Anne to SODO

Delay associated with environmental review/PE for new alternative potentially adds 10 months to 2 years to overall project schedule depending on if/when it is identified as preferred alternative

### Risk

Hazardous materials risk

Potential property development risk (Block 48)

Potentially higher hazardous materials risk

Additional potential property development risk (Block 48, 9<sup>th</sup>/John, 9<sup>th</sup>/Thomas)

\*Cost differential updated since prior further studies effort

***Next steps***

# ***Community feedback to inform potential board action in May***

## **Take our survey:**

April 25 – May 7

## **Join a webinar:**

April 29, 5:30 – 6:30 p.m.

May 2, 12 – 1 p.m.

*ballardlink.participate.online*

## **ST Board Presentation:**

April 25 – Board Meeting

## **Potential Board Action:**

May 9 – System Expansion Committee

May 23 – Board Meeting

# Potential board action in May

Potential board action	Schedule delay	Cost of delay (YOES)
1. No action (i.e. do not add the new alternative to the Draft EIS)	None	None
2. Add the new alternative to the Draft EIS:		
a) Add the new alternative to the Draft EIS	~10 months	~\$0.5B
b) Add the new alternative to the Draft EIS and later identify it as the preferred after Draft EIS publication	~2 years	~\$1B
c) Add the new alternative to the Draft EIS and identify it now as the preferred alternative	~10 months	~\$0.5B

*Thank you.*



 [soundtransit.org](https://www.soundtransit.org)

