

West Seattle and Ballard Link Extensions

Further Studies Results Deeper Dive

System Expansion Committee

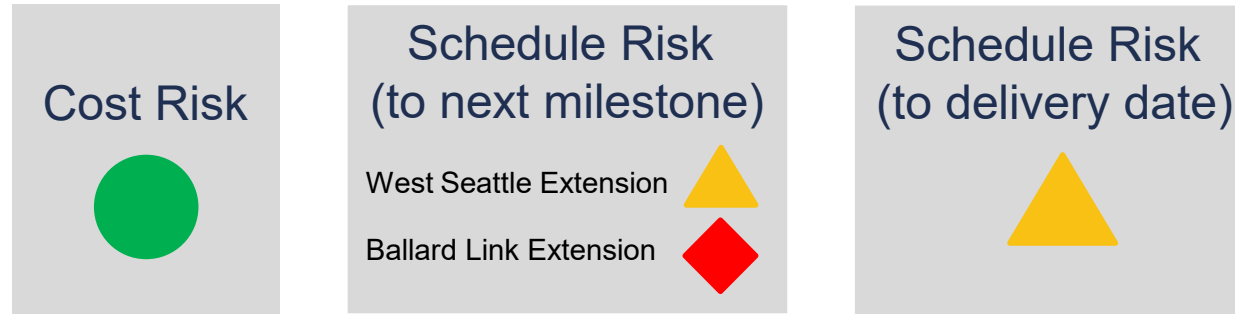
02/09/23



Why we're here today

- Further Studies results deeper dive
- No action today

Cost and schedule risks



Cost Risks

- Potential for additional costs associated with alternatives that cost more than anticipated in current financial plan.
- Potential for additional costs associated with permitting requirements.
- Potential impacts from higher real estate and construction costs.
- Potential that design or construction challenges could emerge as work progresses.

Schedule Risks

- **Delays in identifying preferred alternatives and potential additional environmental process requirements.**
- Potential permitting challenges and other necessary coordination/approvals associated with water crossings.
- Potential schedule risks associated with real estate acquisition process.
- Potential risk in processing reviews/approvals with permitting authorities in a timely manner.

Motion No. M2022-57

Confirms or modifies the preferred light rail route and station locations for the West Seattle and Ballard Link Extensions Final Environmental Impact Statement and requesting **further studies in some areas** to inform potential additional future Board action to confirm or modify the Preferred Alternative.

Board process

Jan 26, Board: Further Studies results overview

Jan 26 – Feb 17: Gather additional community feedback

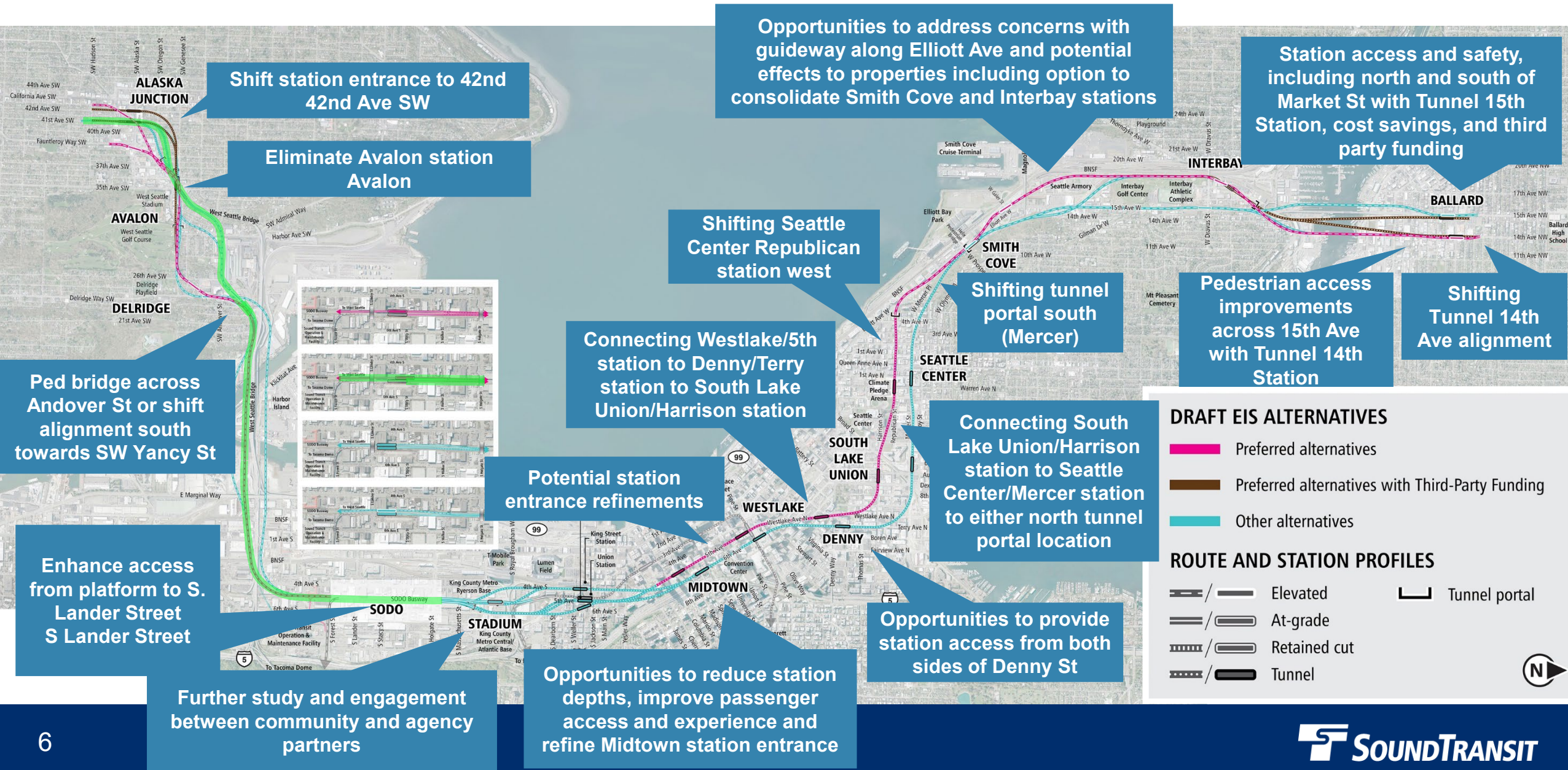
Feb 9, SEC: Further Studies results deeper dive

Feb 23, Board: Community feedback summary

Mar 9, SEC: Recommendation to Board

Mar 23, Board: Board identifies preferred alternative

Areas of Further Study



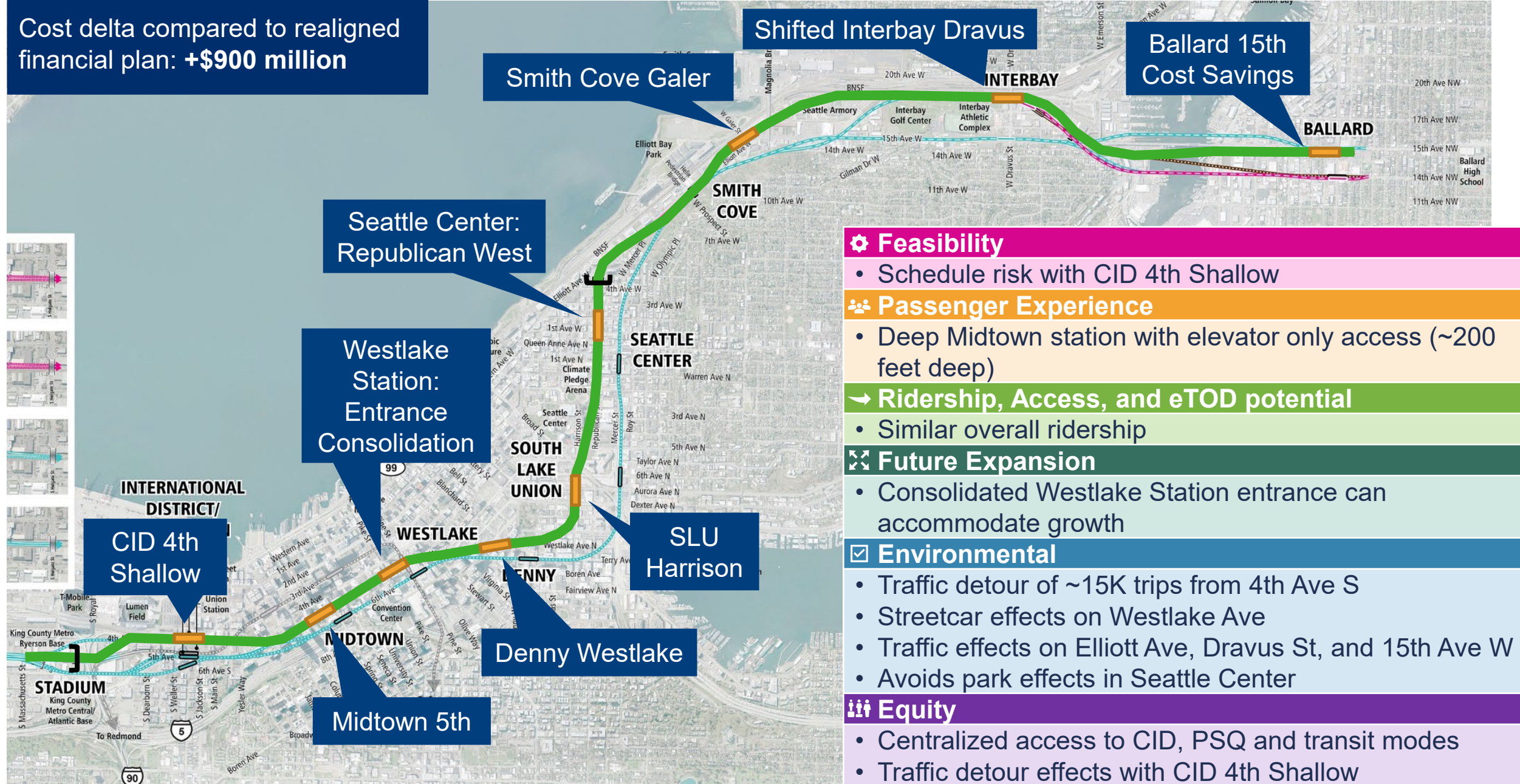
Today's discussion

Further Studies

- Ballard Link Extension
 - End-to-end scenarios
 - By segment (CID, Downtown, Interbay-Smith Cove, Ballard)
- West Seattle Link Extension

Ballard Link Extension end-to-end scenarios

Cost delta compared to realigned financial plan: **+\$900 million**



⚙ Feasibility

- Schedule risk with CID 4th Shallow

👤 Passenger Experience

- Deep Midtown station with elevator only access (~200 feet deep)

➔ Ridership, Access, and eTOD potential

- Similar overall ridership

🏗 Future Expansion

- Consolidated Westlake Station entrance can accommodate growth

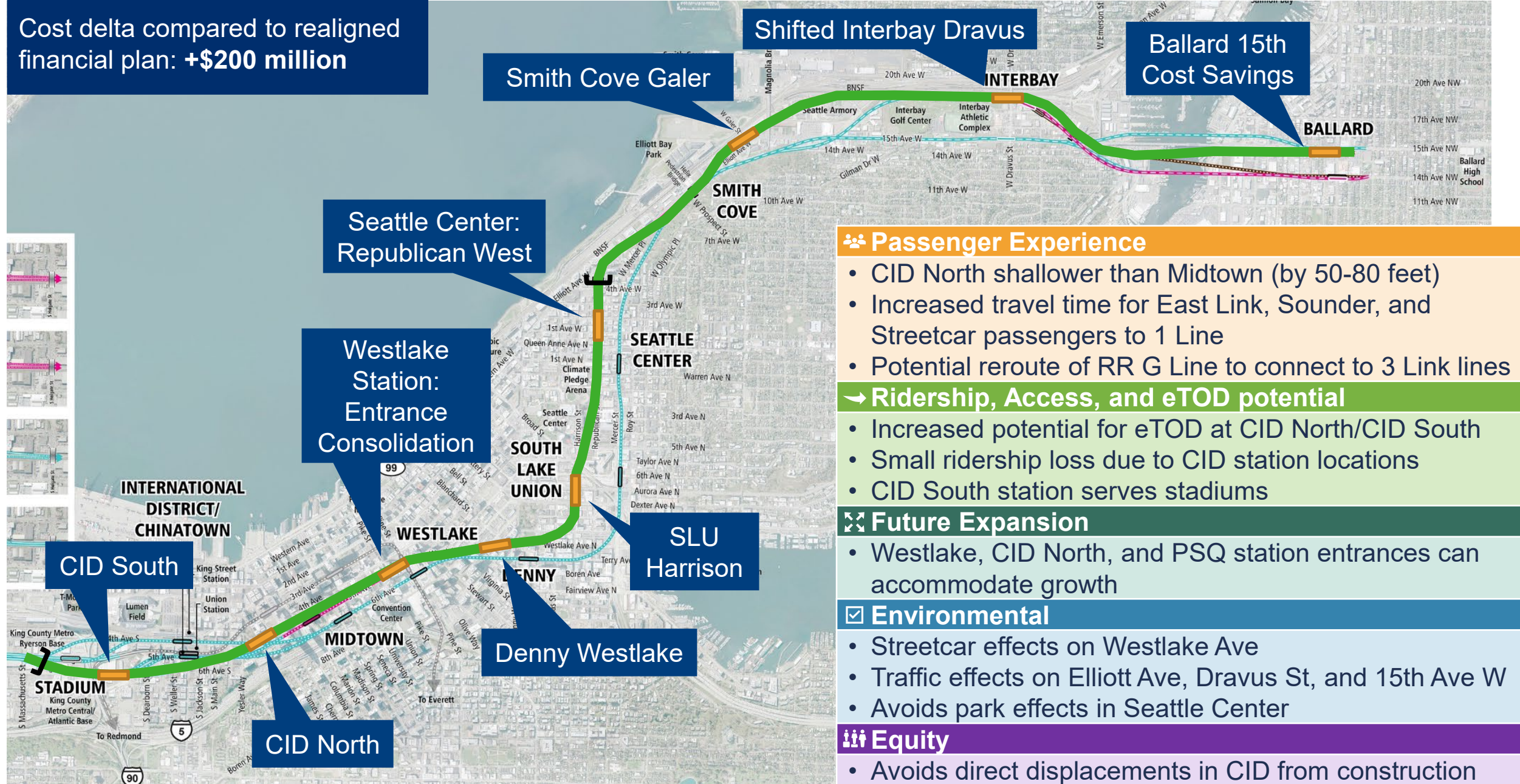
☑ Environmental

- Traffic detour of ~15K trips from 4th Ave S
- Streetcar effects on Westlake Ave
- Traffic effects on Elliott Ave, Dravus St, and 15th Ave W
- Avoids park effects in Seattle Center

👥 Equity

- Centralized access to CID, PSQ and transit modes
- Traffic detour effects with CID 4th Shallow

Cost delta compared to realigned financial plan: **+\$200 million**



Cost delta compared to realigned financial plan: **+\$600 million**

Interbay-Smith
Cove Consolidated

Ballard 15th
Cost Savings

Seattle Center
Mercer

Westlake
Station:
Entrance
Consolidation

CID South

SLU
Harrison

Denny Westlake

CID North

👤 Passenger Experience

- CID North shallower than Midtown (by 50-80 feet)
- Increased travel time for East Link, Sounder, and Streetcar passengers to 1 Line
- Potential reroute of RR G Line to connect to 3 Link lines

➡ Ridership, Access, and eTOD potential

- Increased potential for eTOD at CID North/CID South
- Moderate ridership loss due to CID station locations and consolidation of Interbay/Smith Cove Stations
- CID South station serves stadiums

🚧 Future Expansion

- Westlake, CID North, and PSQ station entrances can accommodate growth

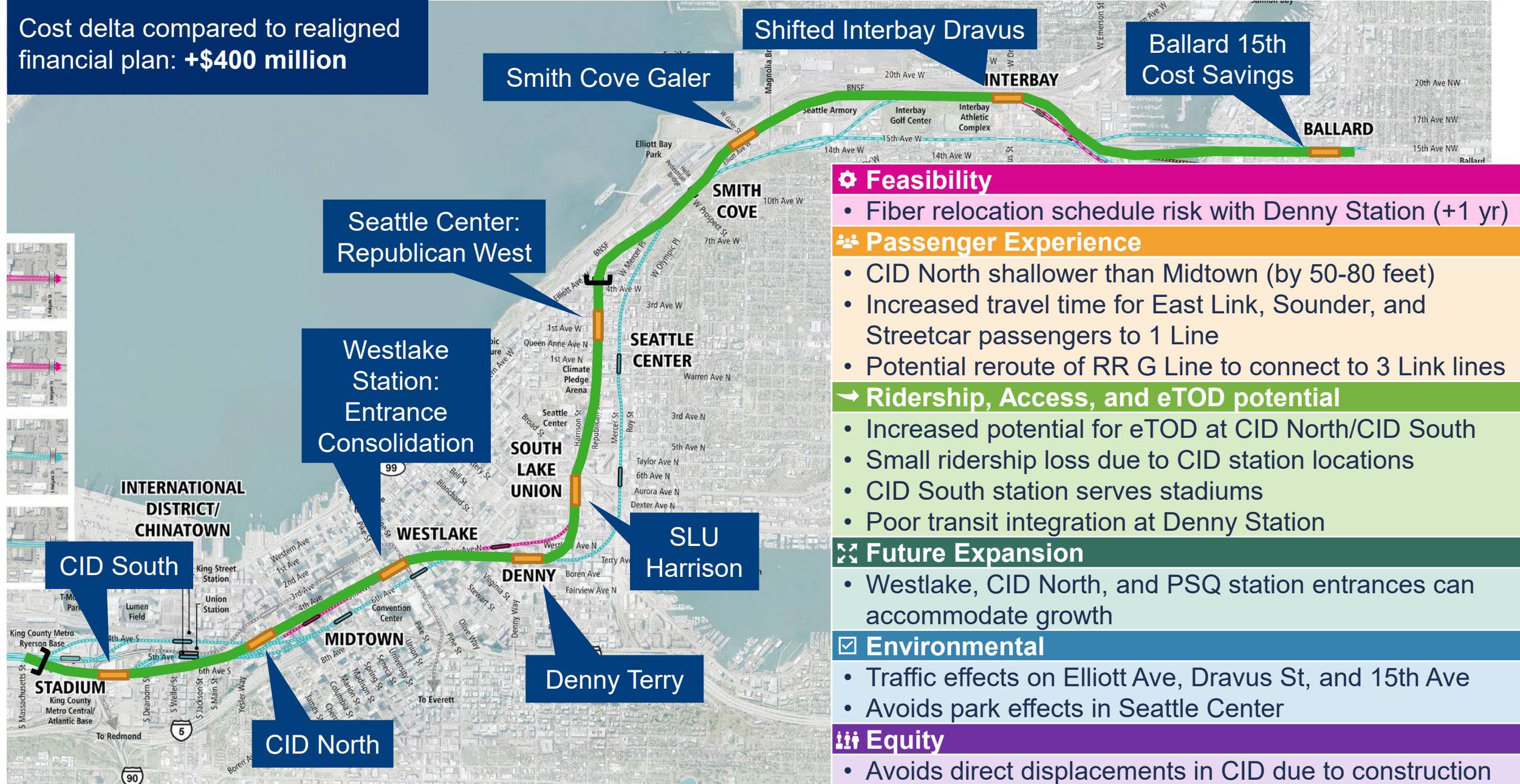
☑ Environmental

- Streetcar effects on Westlake Ave
- Traffic effects on Mercer St and 15th Ave
- Avoids park effects in Interbay and Seattle Center

👥 Equity

- Avoids direct displacements in CID from construction

Cost delta compared to realigned financial plan: **+\$400 million**



⚙ Feasibility

- Fiber relocation schedule risk with Denny Station (+1 yr)

👤 Passenger Experience

- CID North shallower than Midtown (by 50-80 feet)
- Increased travel time for East Link, Sounder, and Streetcar passengers to 1 Line
- Potential reroute of RR G Line to connect to 3 Link lines

➔ Ridership, Access, and eTOD potential

- Increased potential for eTOD at CID North/CID South
- Small ridership loss due to CID station locations
- CID South station serves stadiums
- Poor transit integration at Denny Station

🏗 Future Expansion

- Westlake, CID North, and PSQ station entrances can accommodate growth

☑ Environmental

- Traffic effects on Elliott Ave, Dravus St, and 15th Ave
- Avoids park effects in Seattle Center

👥 Equity

- Avoids direct displacements in CID due to construction

Board discussion

Chinatown-International District (CID) Further Studies



CID Further Studies Focus

Based on the Board Motion, the following study elements guided the further studies in CID:

- Seek to address remaining questions, minimize potential impacts, and maximize community benefits
- Explore how to create an integrated, well-connected hub for all modes, opportunities to enhance ridership and access, activate or modify use of Union Station and plaza, as well as funding and cost savings opportunities
- Include study concepts requested by community and agency partners, including but not limited to work to define a 4th Avenue shallow tunnel option with the goal to maximize benefits while minimizing costs and impacts

CID Engagement Process

WHAT COULD THIS PROCESS LOOK LIKE?

Iterative, facilitated, and responsive process adapts as needed to serve community

Oct. 13, 2022

Open House

- Context and Value
- How we got here
- Community informs engagement process and scope of studies



Nov. 2, 2022

Workshop 1: Options

- Bring forward and evaluate
- Breakout groups
- Explore challenges and opportunities and identify refinements



Nov. 16, 2022

Workshop 2: Tradeoffs

- Discuss tradeoffs and refine options



Dec. 14, 2022

Workshop 3: Key Issues

- Problem solving around key issues for each option
- Discussion of mitigation measures



Jan. 5, 2023

Workshop 4: Summary

- Bring it all together and get feedback on direction for Sound Transit Board



February 2023

Sound Transit Board: Status Report



Process informed by CID Engagement Toolkit and discussions with community

Key Questions

- What hasn't worked with previous engagement?
- What does a transparent process look like?
- What would you like to see in the process?
- Would you like a facilitator?

SUPPORTING THE PROCESS

General awareness building including media, social media posts, ethnic media

Interagency and consultant work

Optional small group, topic specific meetings (potential continuation of virtual breakout groups, focus groups, etc.)

Resident and business owner outreach with Community Liaisons

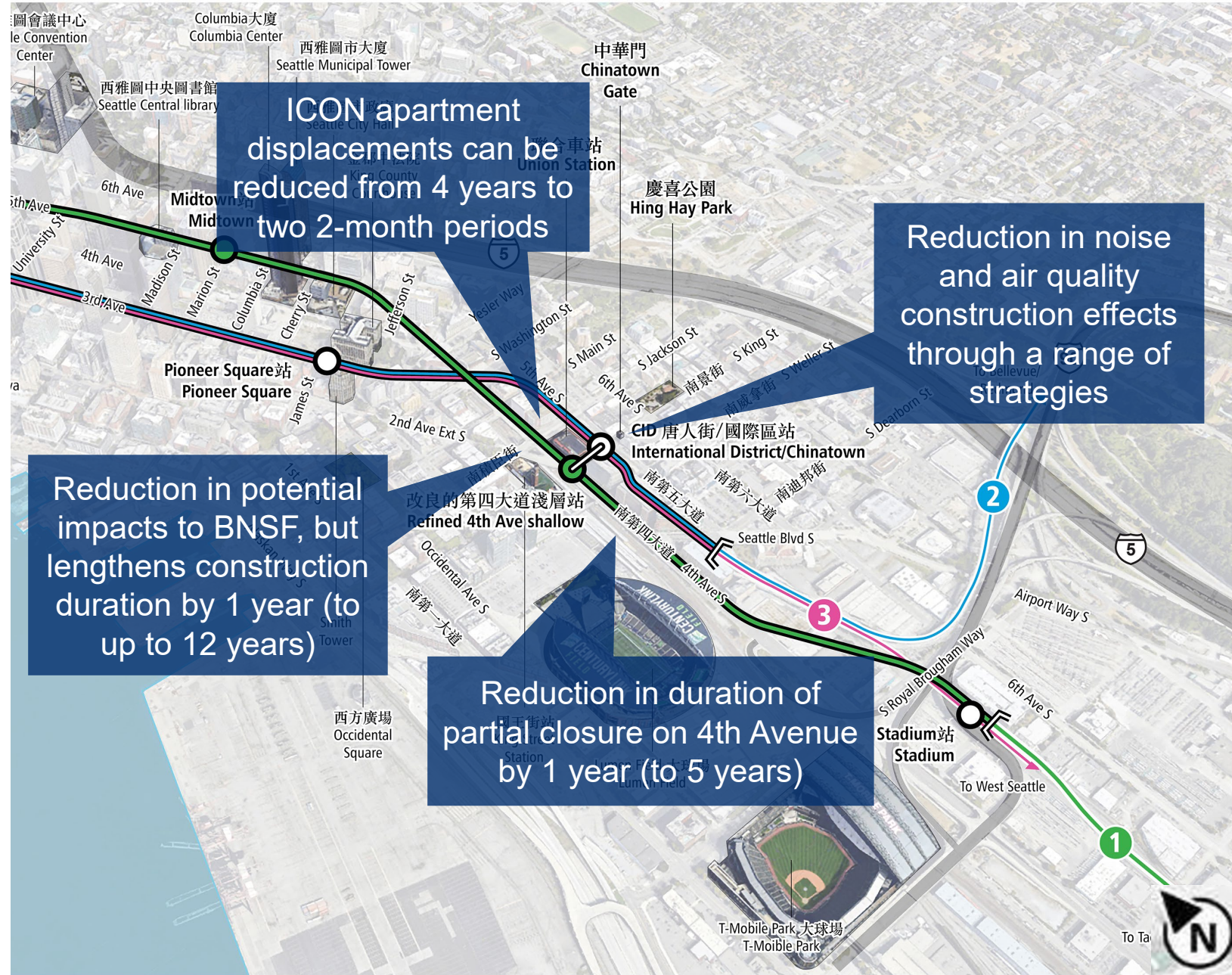
Targeted Level of Community Engagement: Involve
We will aim to engage at a Collaborate level wherever possible.

Refinements to 4th Ave Shallow (CID-1a)

Maximize community benefits while minimizing costs and impacts

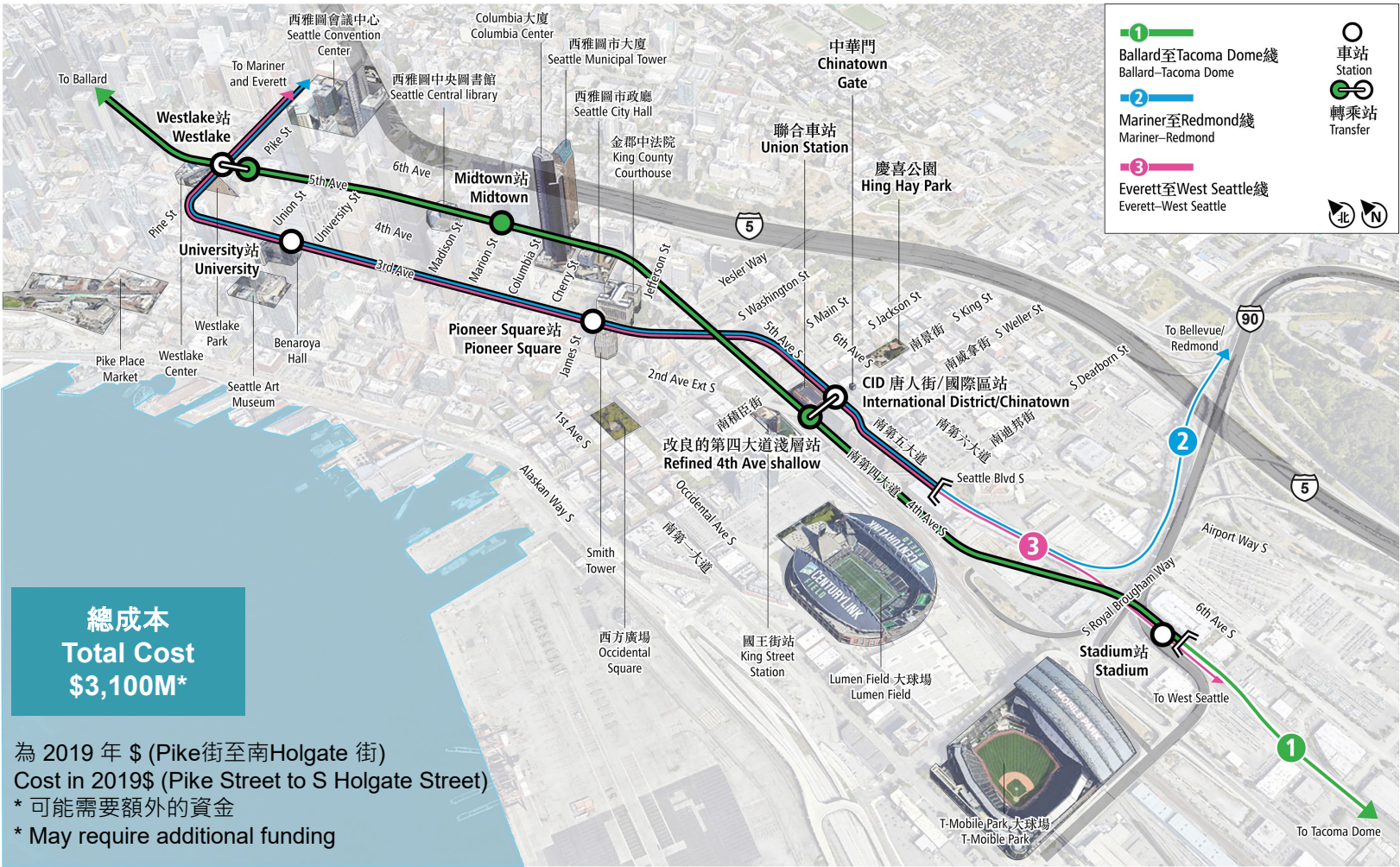
Cost (Pike to Holgate): **\$3.1 billion**

Cost delta compared to realigned financial plan: **+\$700 million**



改良的第四大道淺層站 + Midtown站

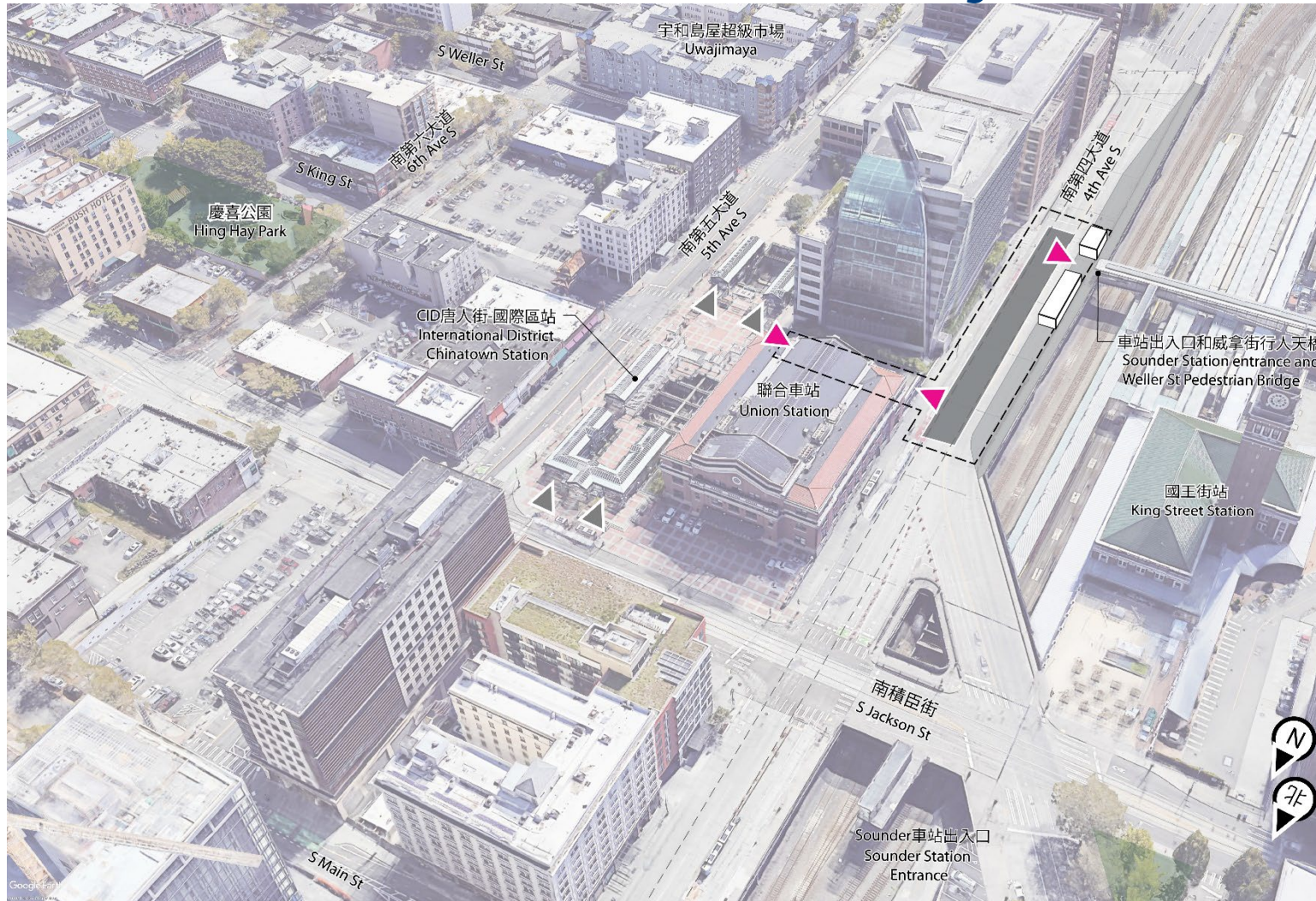
Refined 4th Ave Shallow + Midtown






載客量和乘客體驗 Ridership and passenger experience		
一號線在三個車站上的每日登車人次總和 Total 1 Line daily boardings at 3 stations		55,000 乘客 passengers
第四大道淺層站換乘時間 Transfer time at 4th Ave Shallow		3分 10 秒 3m 10s
車站深度 Station Depth		
Midtown 站 Midtown		195-205 英尺 feet
第四大道淺層站 4th Ave Shallow		80 英尺 feet
社區和區域交通連接 Community and regional access		
慶喜公園往SeaTac/機場站 Hing Hay Park to SeaTac/Airport Station		39 分鐘 minutes
西方廣場往SeaTac/機場站 Occidental Square to SeaTac/Airport Station		46 分鐘 minutes
Bellevue 市中心站往 Columbia City站 Downtown Bellevue to Columbia City		41 分鐘 minutes

第四大道淺層方案:車站佈局

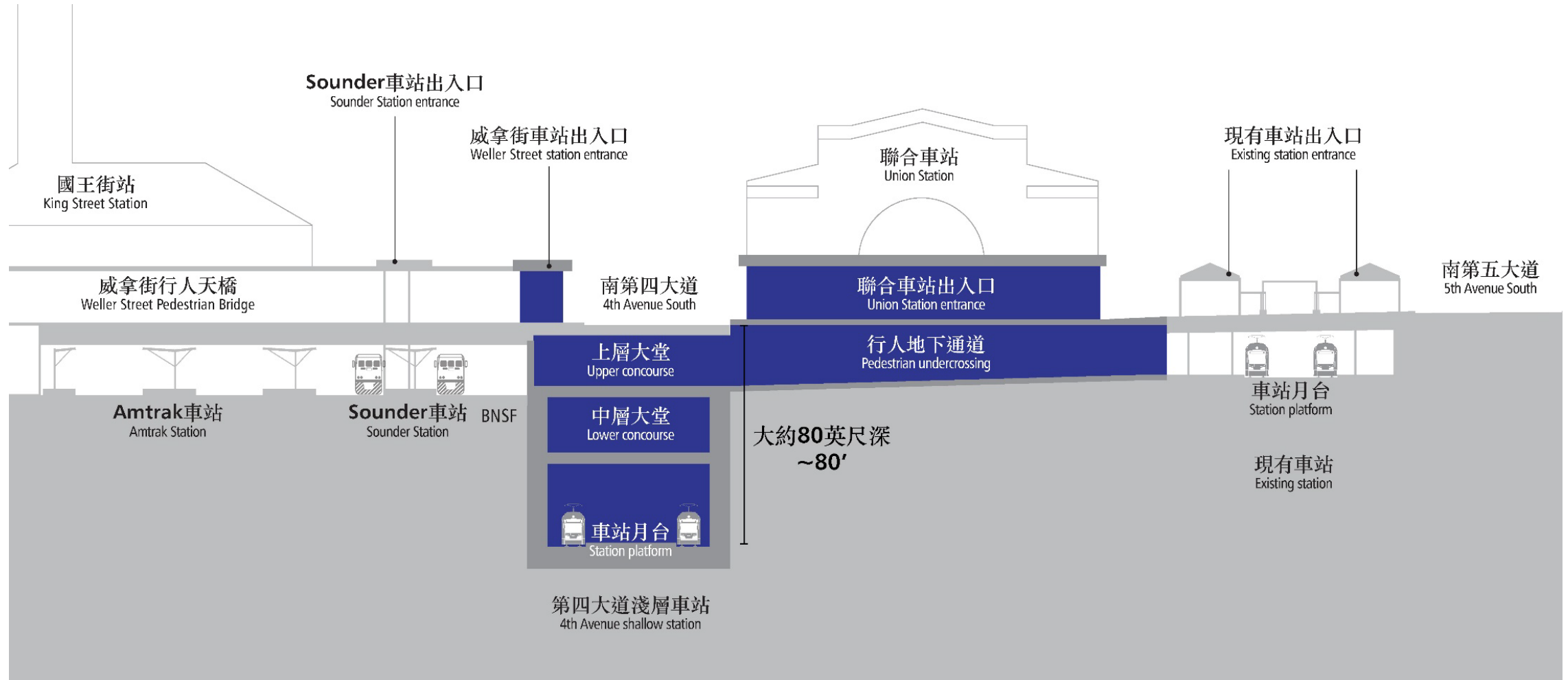
4th Ave Shallow: station layout



-  新車站出入口構思
Potential station entrance
-  現有車站出入口
Existing station entrance
-  新車站構思
Potential station
-  公園/開放空間
Park/open space
-  項目路線構思
Potential alignment

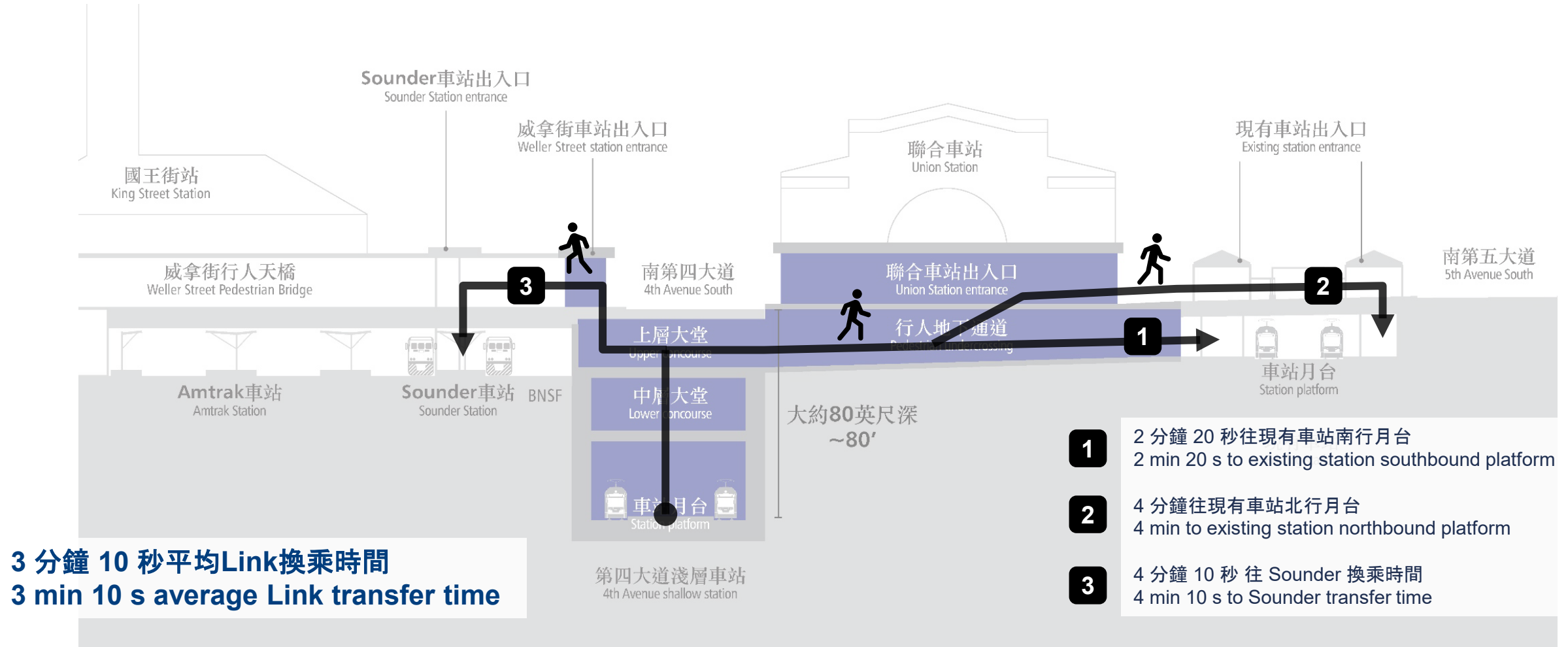
第四大道淺層方案:車站佈局

4th Ave Shallow: station layout



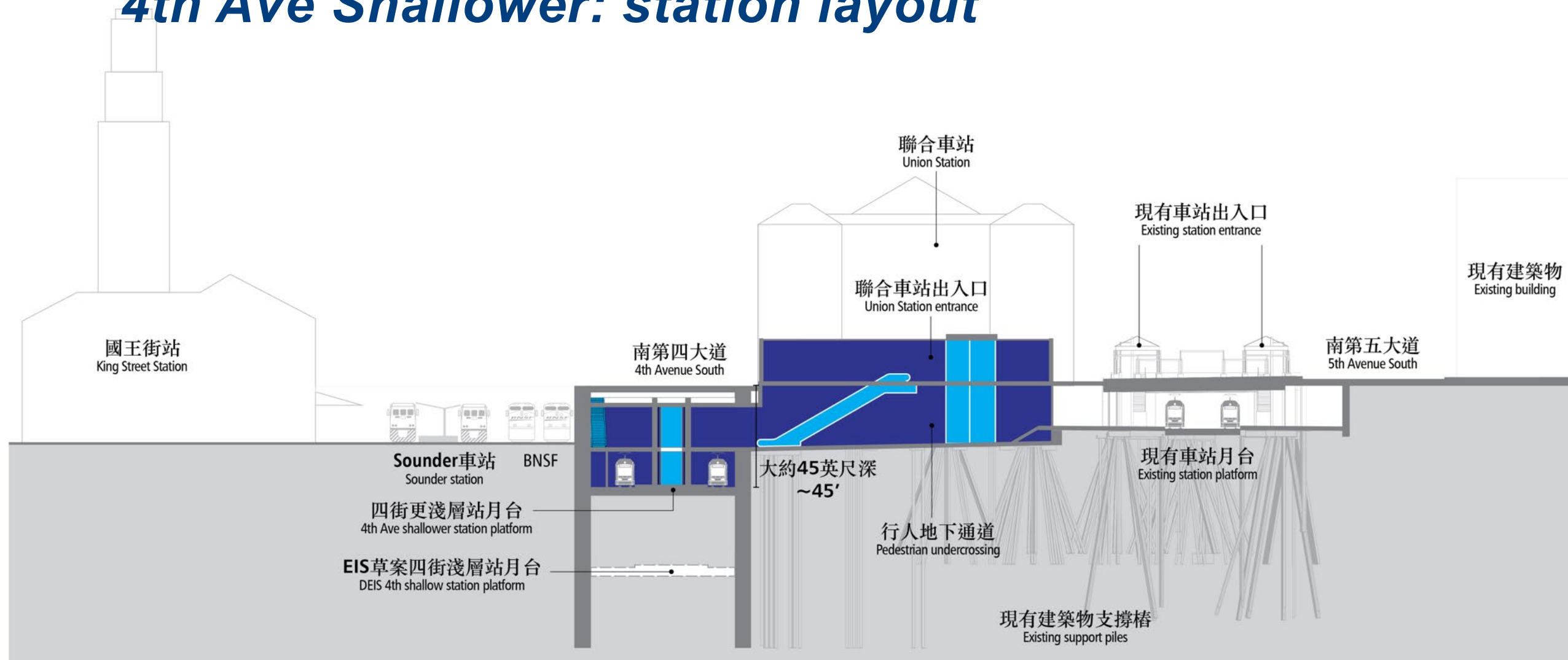
第四大道淺層方案: 轉乘通道和時間

4th Ave Shallow: transfer pathways and times



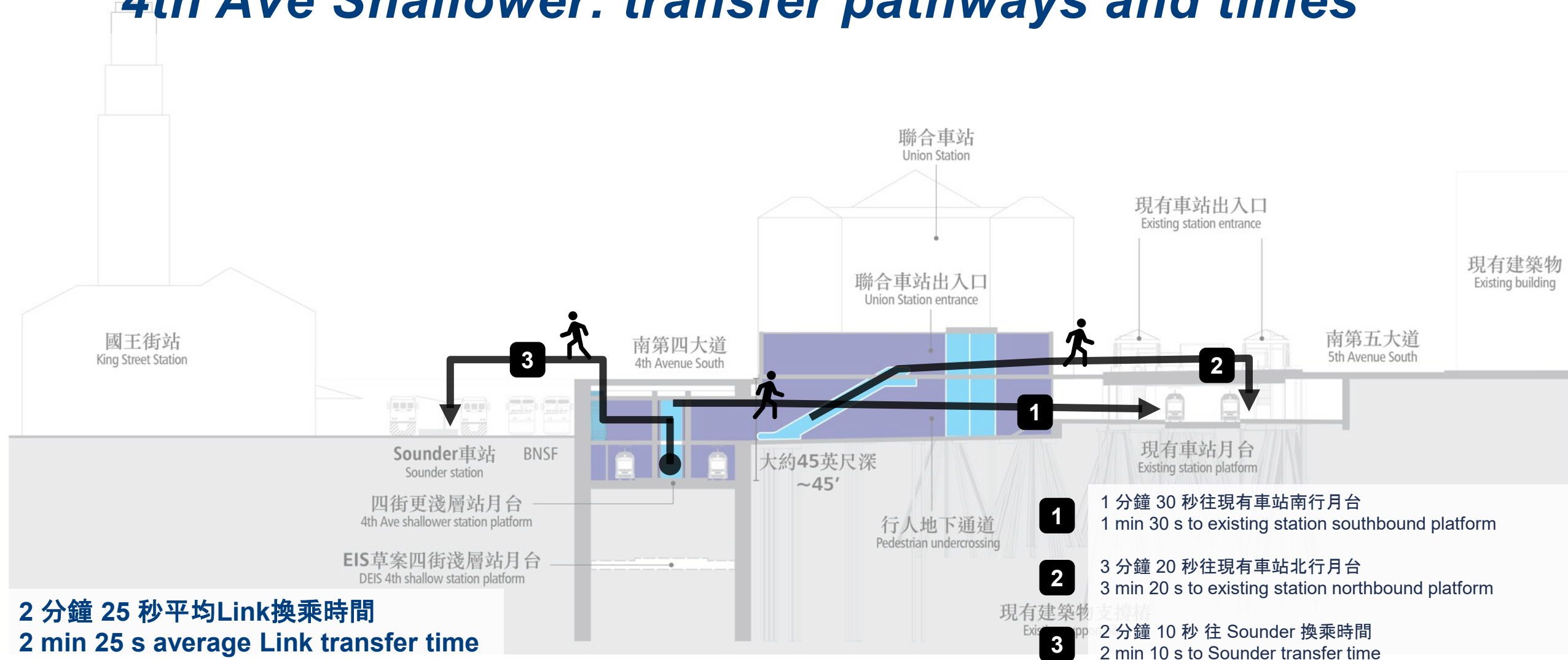
第四大道更淺層方案: 車站佈局

4th Ave Shallower: station layout



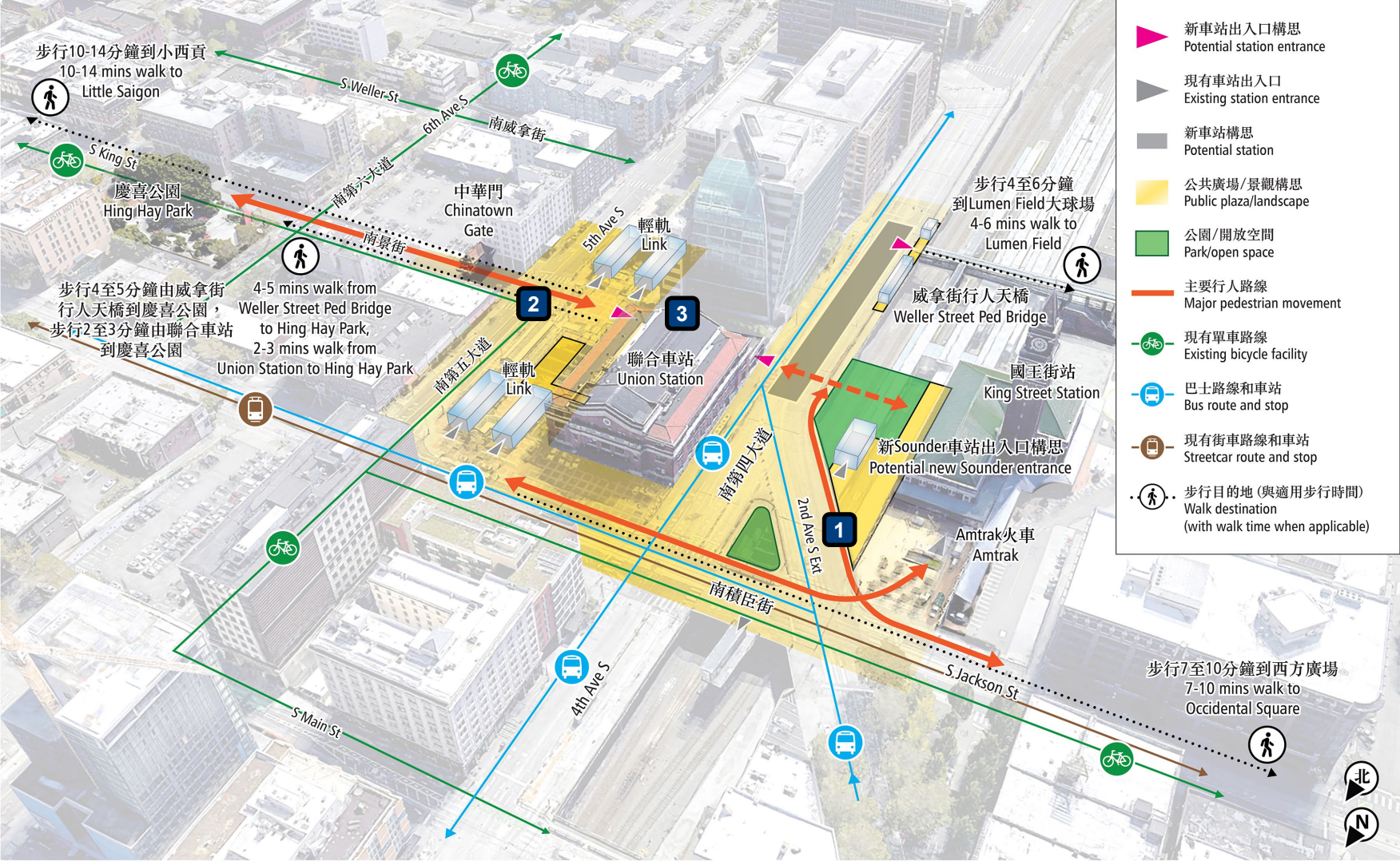
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4th Ave Shallower: transfer pathways and times



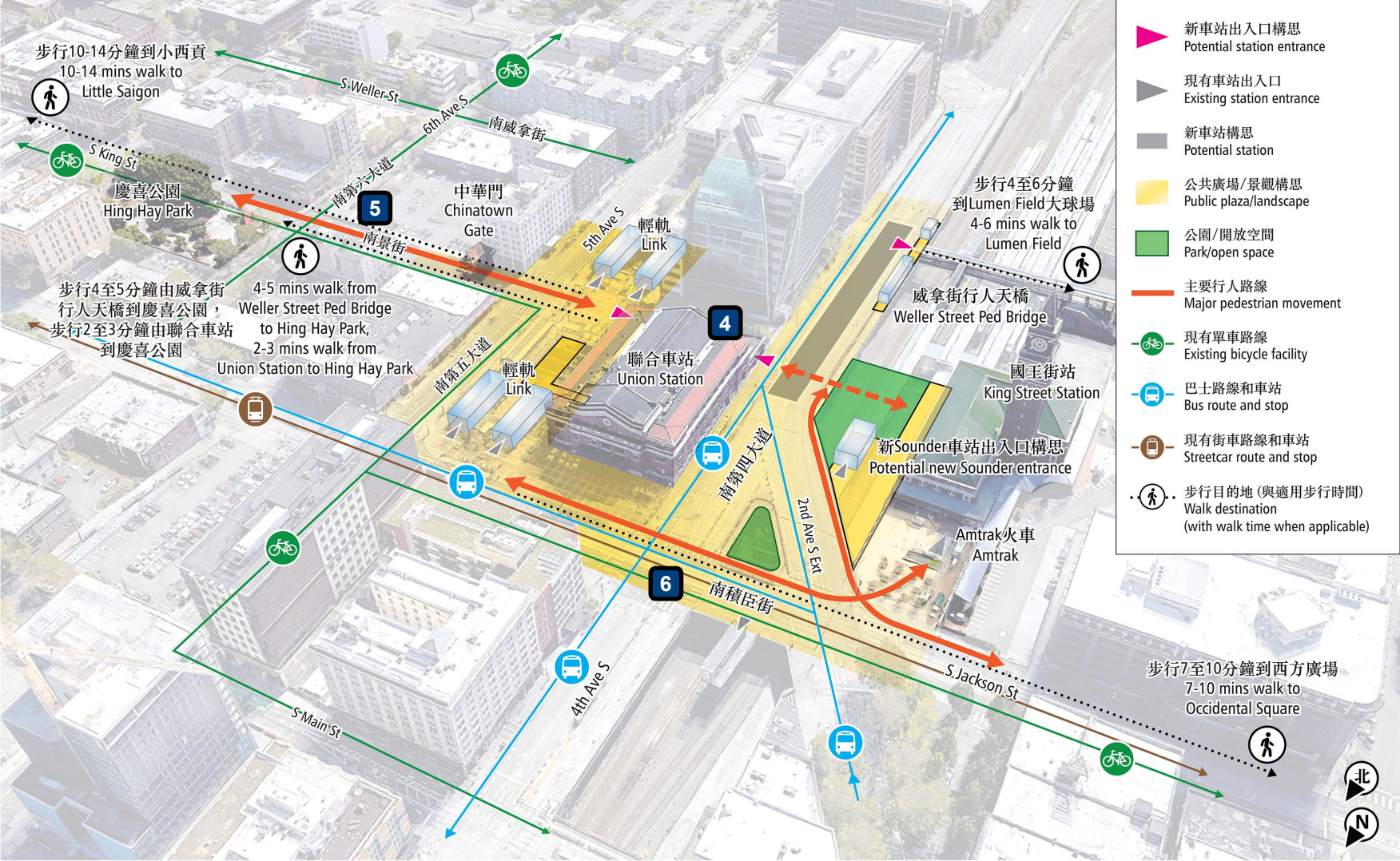
南第四大道淺層: 機遇與問題

4th Ave Shallow: opportunities and issues



南第四大道淺層: 機遇與問題

4th Ave Shallow: opportunities and issues

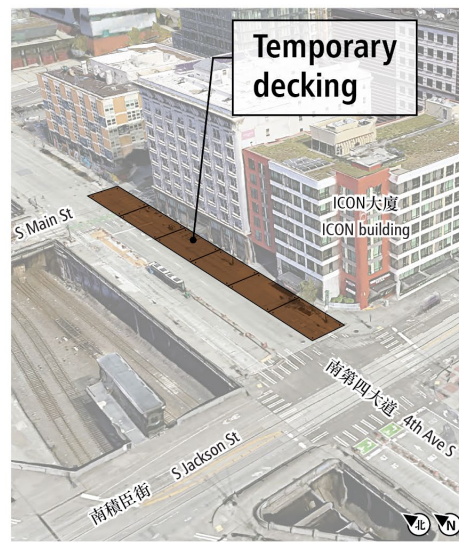


1
Key finding

ICON displacements can be reduced from 4 years to two 2 months periods

Supporting Strategies

- 1a** Install temporary decking on 4th Avenue to allow construction below grade to continue

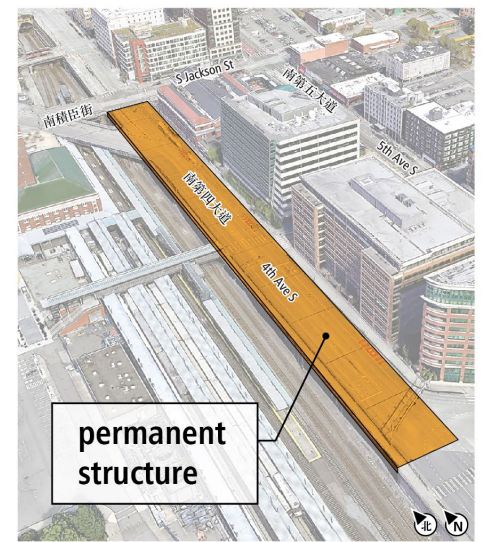


3
Key finding

Reduction in duration of partial closure on 4th Avenue by 1 year

Supporting Strategies

- 3a** Stage construction without temporary decking. Build permanent structure for 4th Ave viaduct



2
Key finding

Reduction in noise and air quality construction effects through a range of strategies

Supporting Strategies

- 2a** Measures to minimize air quality impact (cover truck loads, truck idling restrictions, wheel washing, etc.)
- 2b** Measures to minimize noise impact (noise barriers, keep noisy equipment and activities away from noise-sensitive locations as much as possible, etc.)

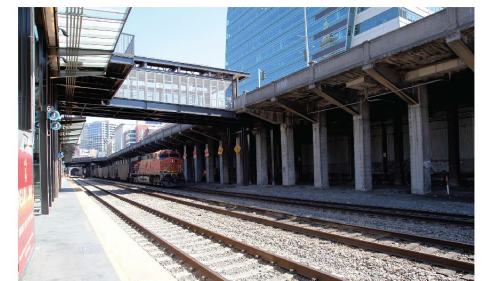


4
Key finding

Reduction in potential impacts to BNSF, but lengthens construction duration by 1 year

Supporting Strategies

- 4a** Use different construction method for support of excavation walls (such as secant pile walls instead of slurry walls)

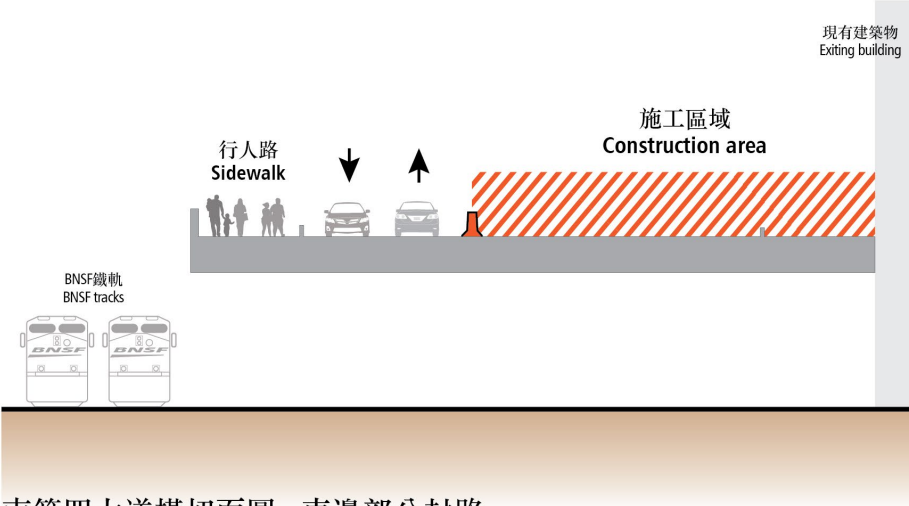


在 12.14.22 研討會上分享 Shared at 12.14.22 workshop.

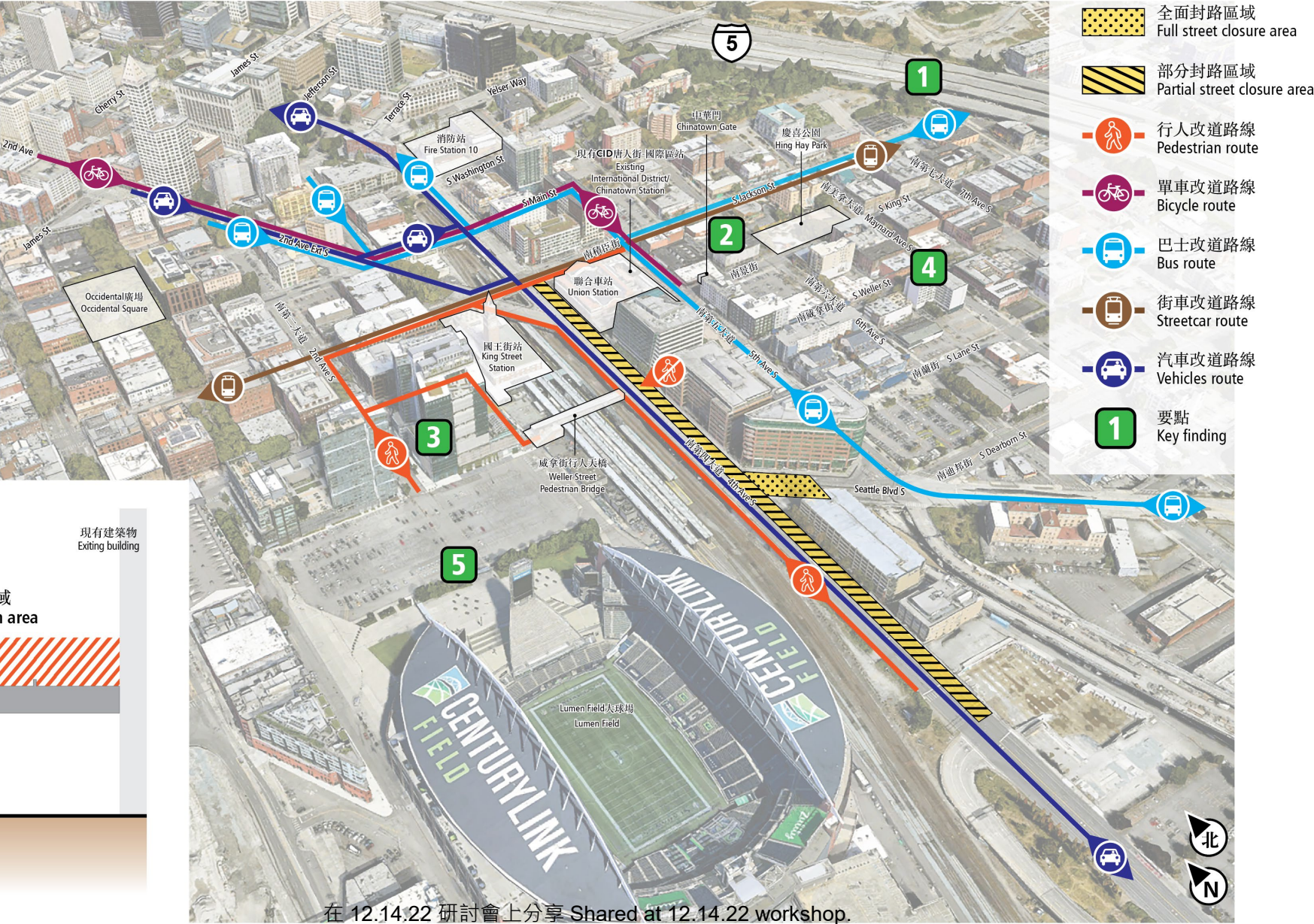
Preliminary findings. Analysis is ongoing and is subject to change.

南第四大道封路期間表 4th Avenue S roadway closure timeline

東邊部分封路 Partial closure (east)	
第一年	Year 1
第二年	Year 2
第三年	Year 3
第四年	Year 4
第五年	Year 5
第六年	Year 6
第七年	Year 7
第八年	Year 8
第九年	Year 9



南第四大道橫切面圖 - 東邊部分封路
4th Avenue S cross section - partial closure (east)

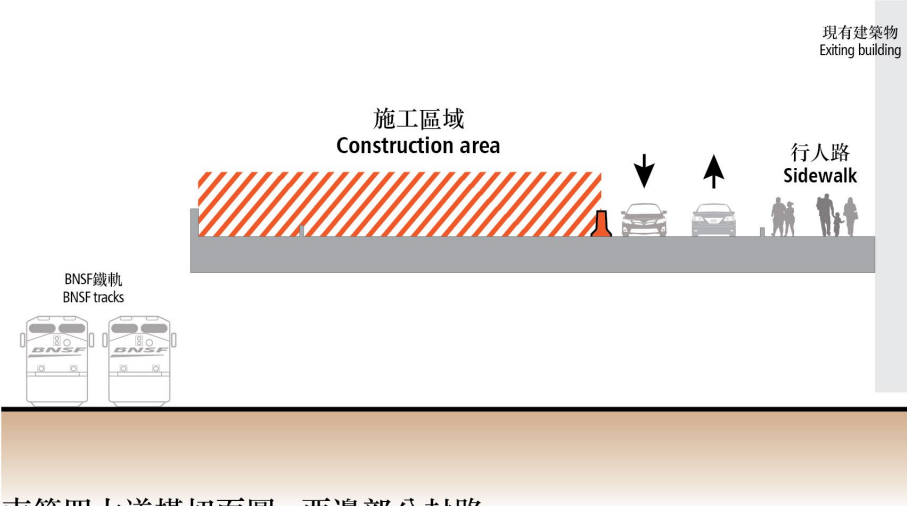


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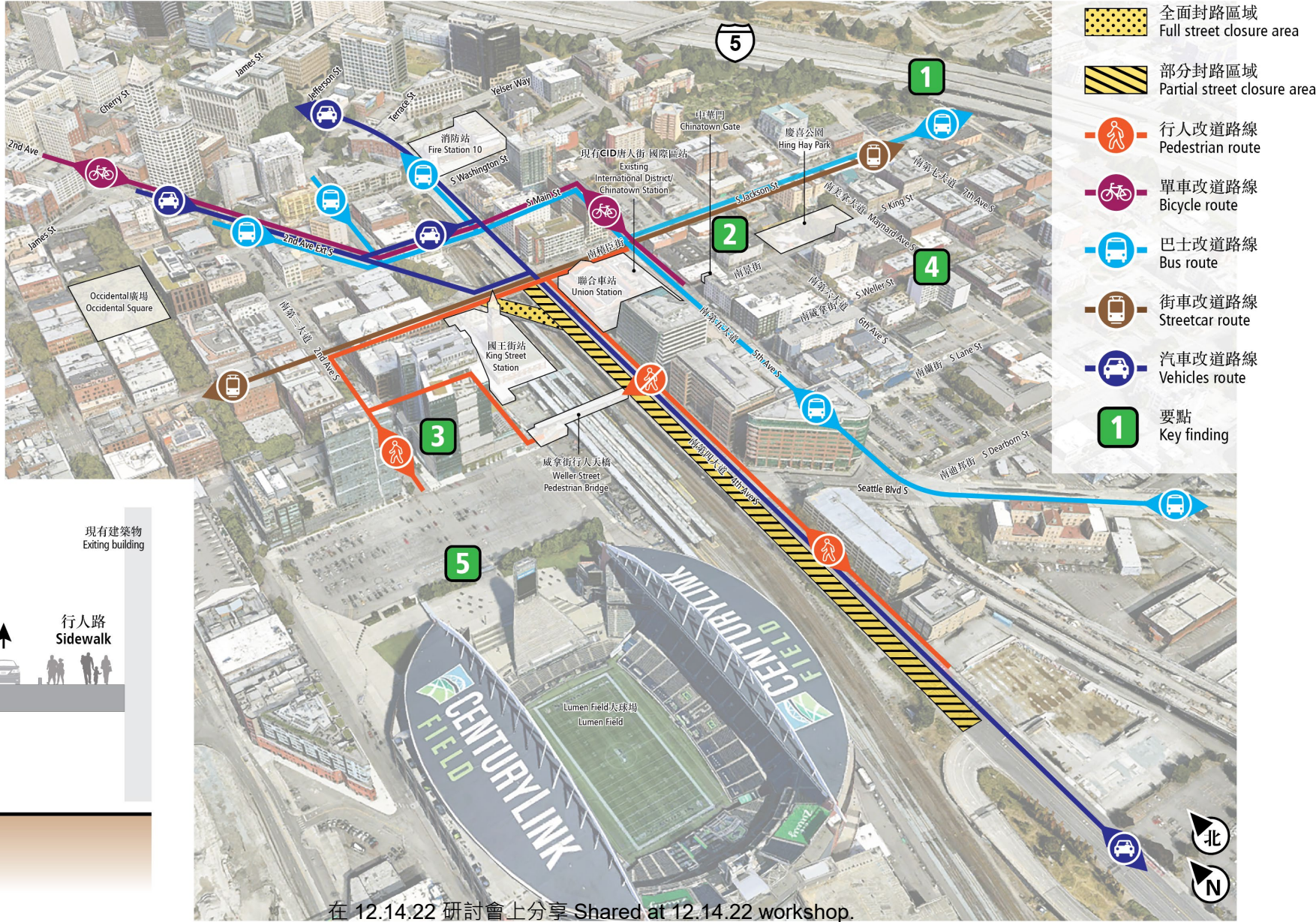
南第四大道封路期間表 4th Avenue S roadway closure timeline

西邊部分封路 Partial closure (west)

第一年	Year 1
第二年	Year 2
第三年	Year 3
第四年	Year 4
第五年	Year 5
第六年	Year 6
第七年	Year 7
第八年	Year 8
第九年	Year 9



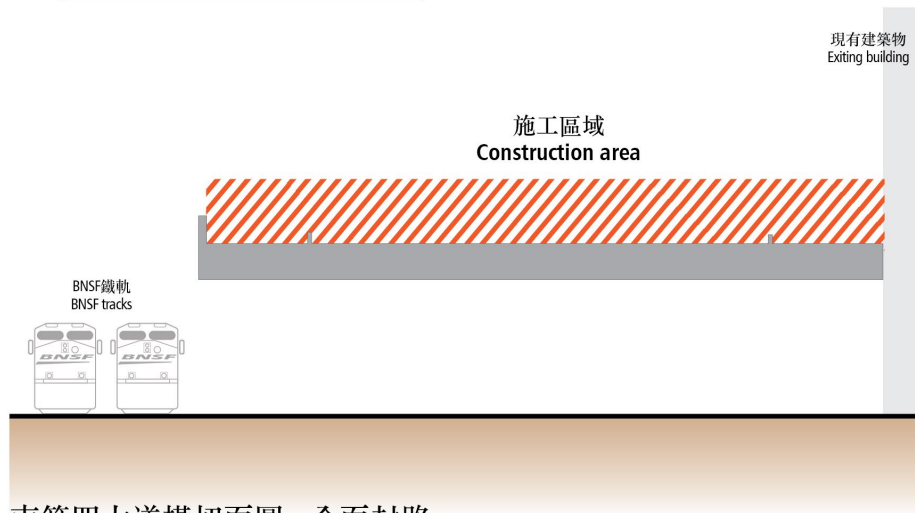
南第四大道橫切面圖 - 西邊部分封路
4th Avenue S cross section - partial closure (west)



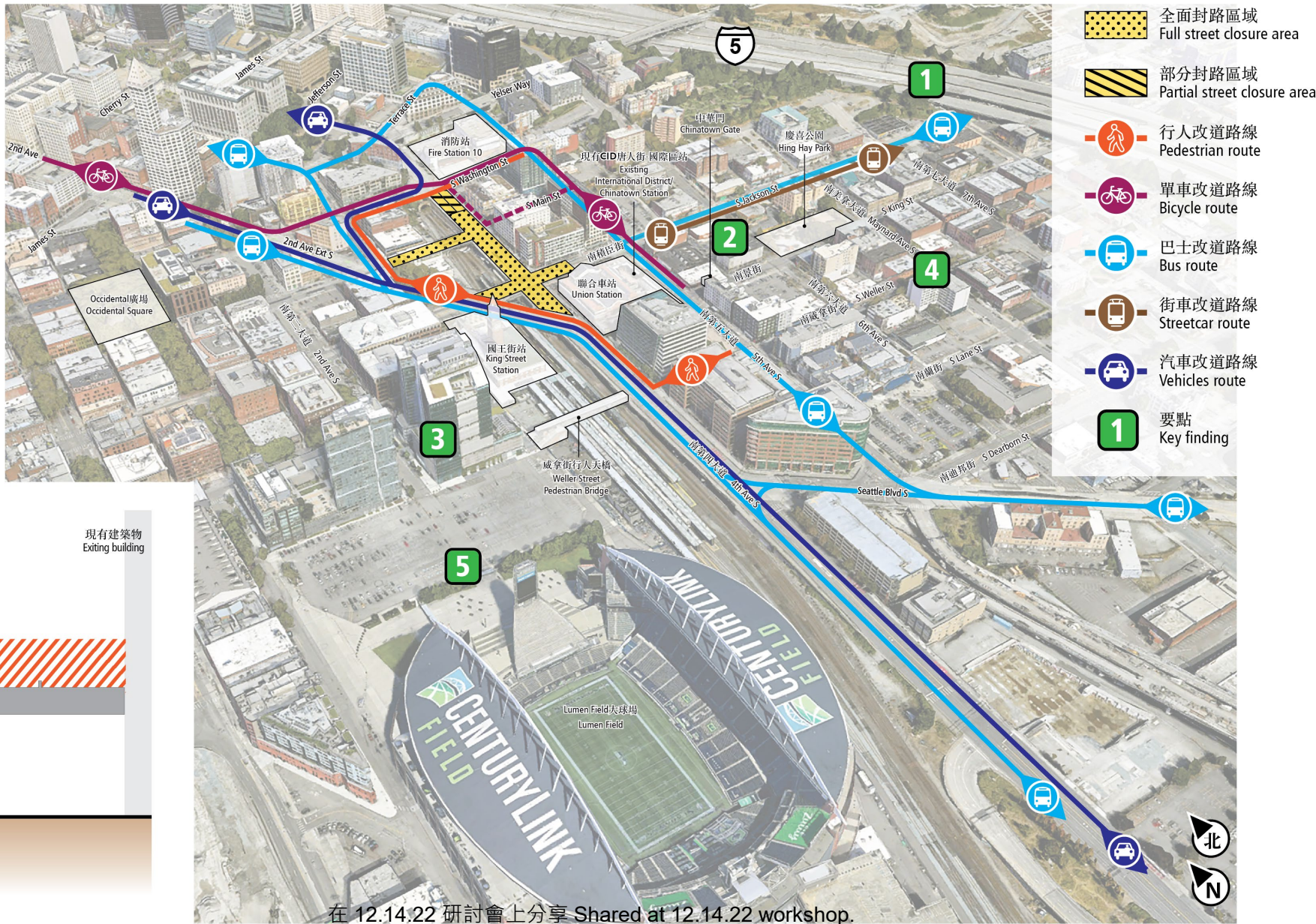
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南第四大道封路期間表 4th Avenue S roadway closure timeline

全面封路 Full closure	
第一年	Year 1
第二年	Year 2
第三年	Year 3
第四年	Year 4
第五年	Year 5
第六年	Year 6
第七年	Year 7
第八年	Year 8
第九年	Year 9



南第四大道橫切面圖 - 全面封路
4th Avenue S cross section - full closure



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Station North of CID

Other ideas from community and agency partners

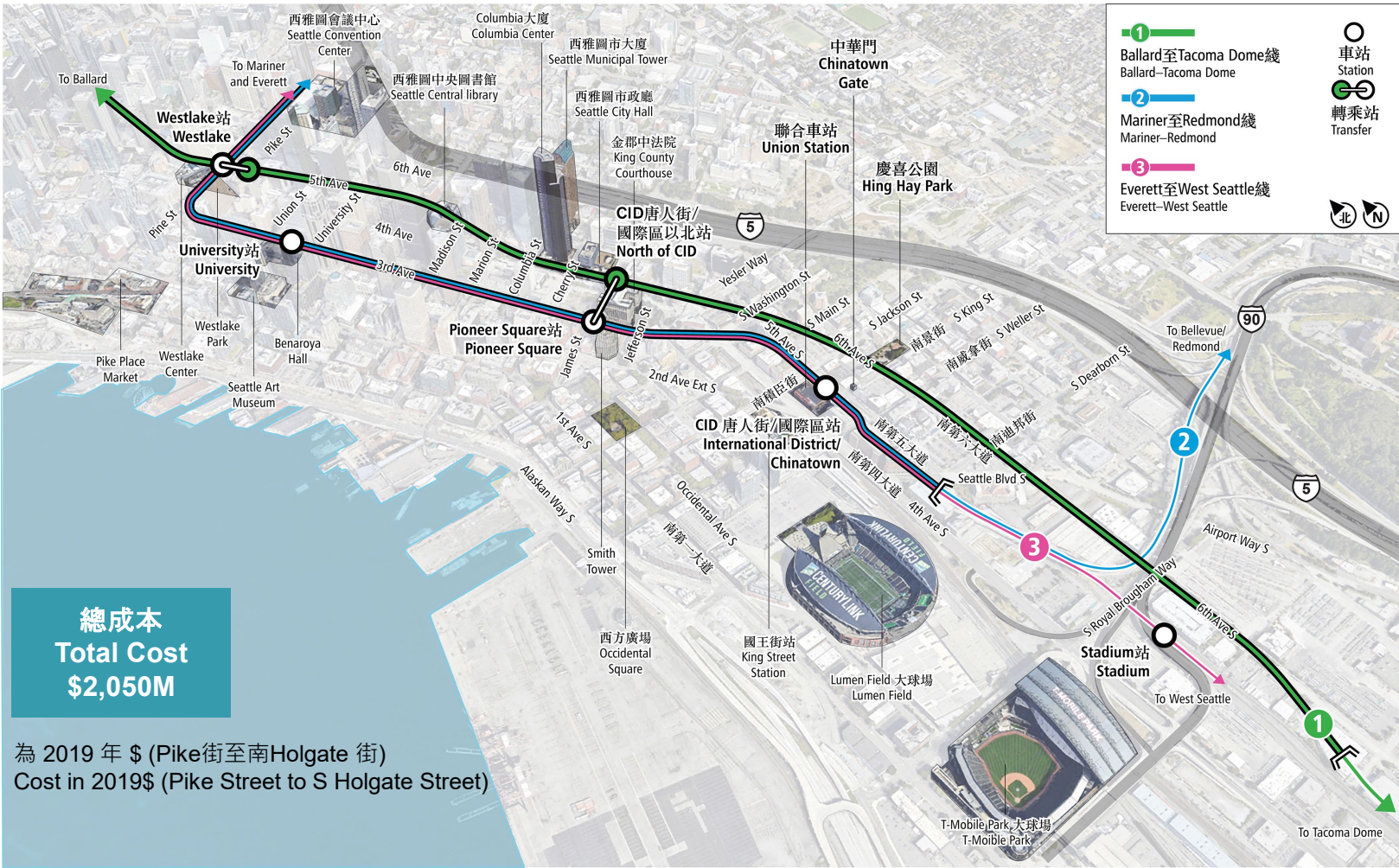
Cost (Pike to Holgate): **\$2.05 billion**

Cost delta compared to realigned financial plan: **-\$360 million**



CID 唐人街/國際區以北 (沒有Midtown站)

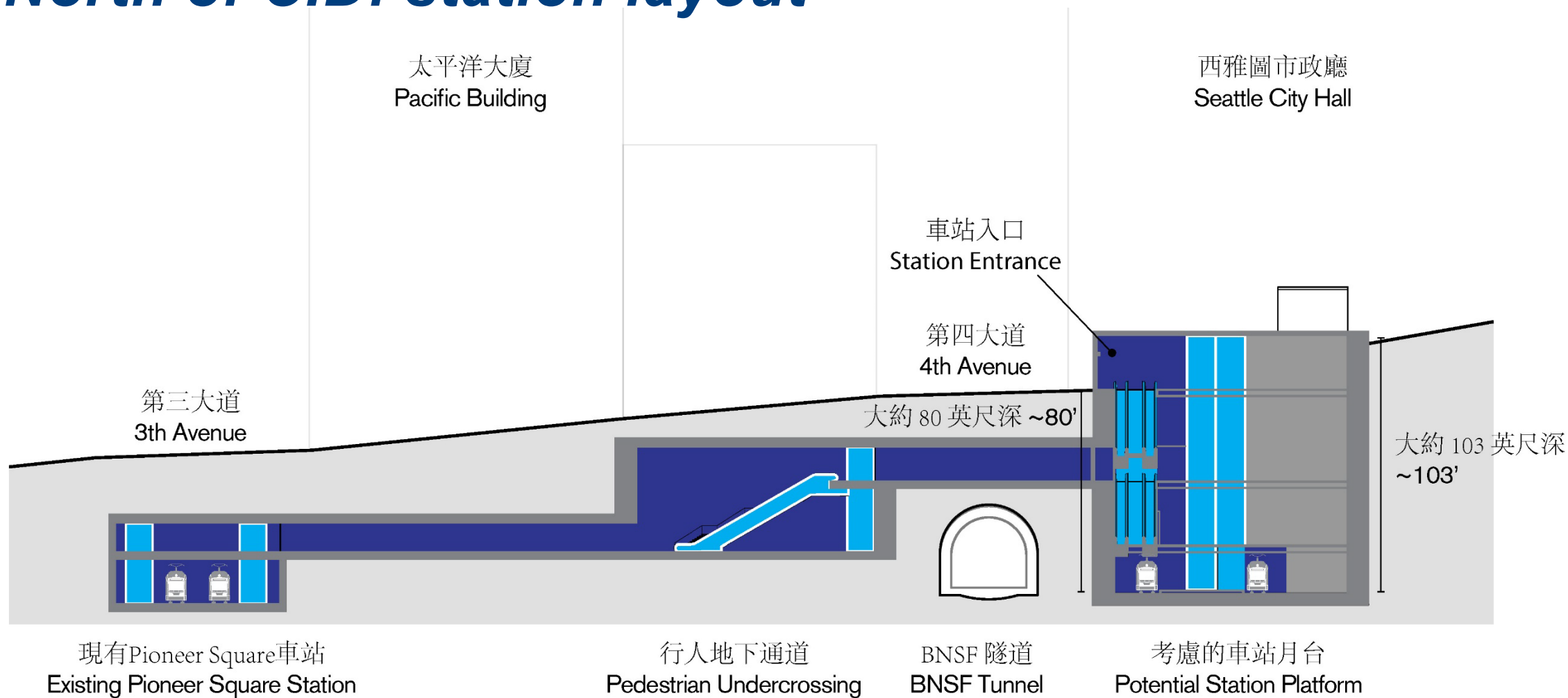
North of CID (No Midtown)



載客量和乘客體驗 Ridership and passenger experience		
一號線在兩個車站上的每日登車人次總和 Total 1 Line daily boardings at 2 stations		51,200 乘客 passengers
CID 唐人街/國際區以北站換乘時間 Transfer time at North of CID		3分 15 秒 3m 15s
車站深度 CID 唐人街/國際區以北站 North of CID	Station Depth	80-105 英尺 feet
社區和區域交通連接 Community and regional access		
慶喜公園往SeaTac/機場站 Hing Hay Park to SeaTac/Airport Station		44 分鐘 minutes
西方廣場往SeaTac/機場站 Occidental Square to SeaTac/Airport Station		45 分鐘 minutes
Bellevue 市中心站往 Columbia City站 Downtown Bellevue to Columbia City		44 分鐘 minutes

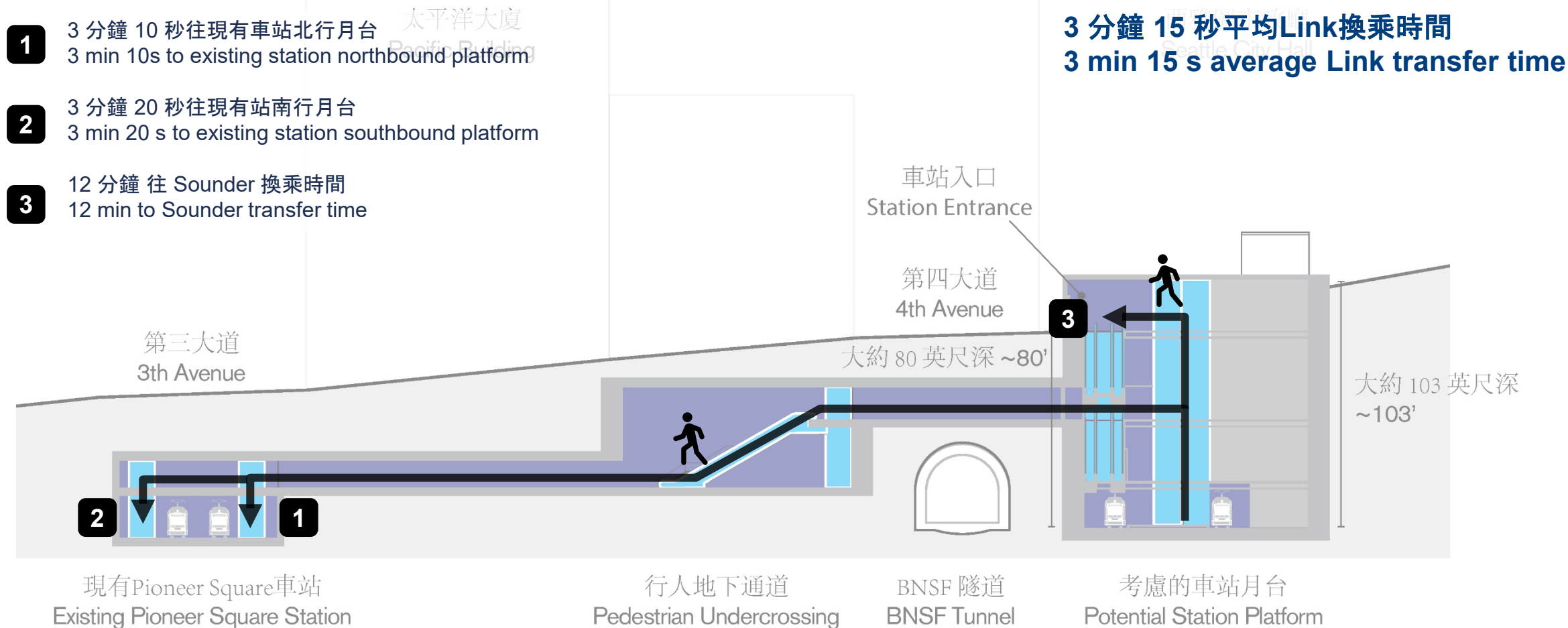
CID 唐人街-國際區以北車站: 車站佈局

North of CID: station layout



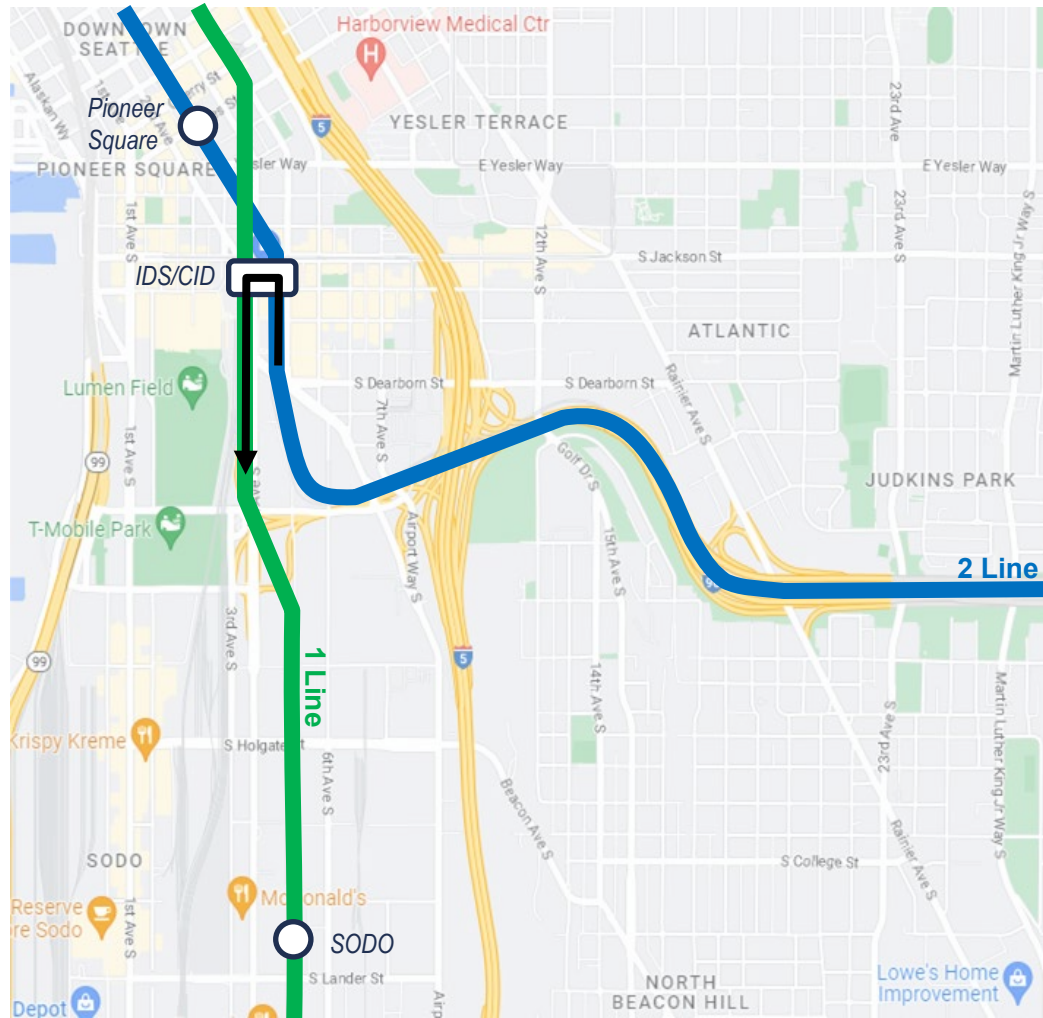
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North of CID: transfer pathways and times

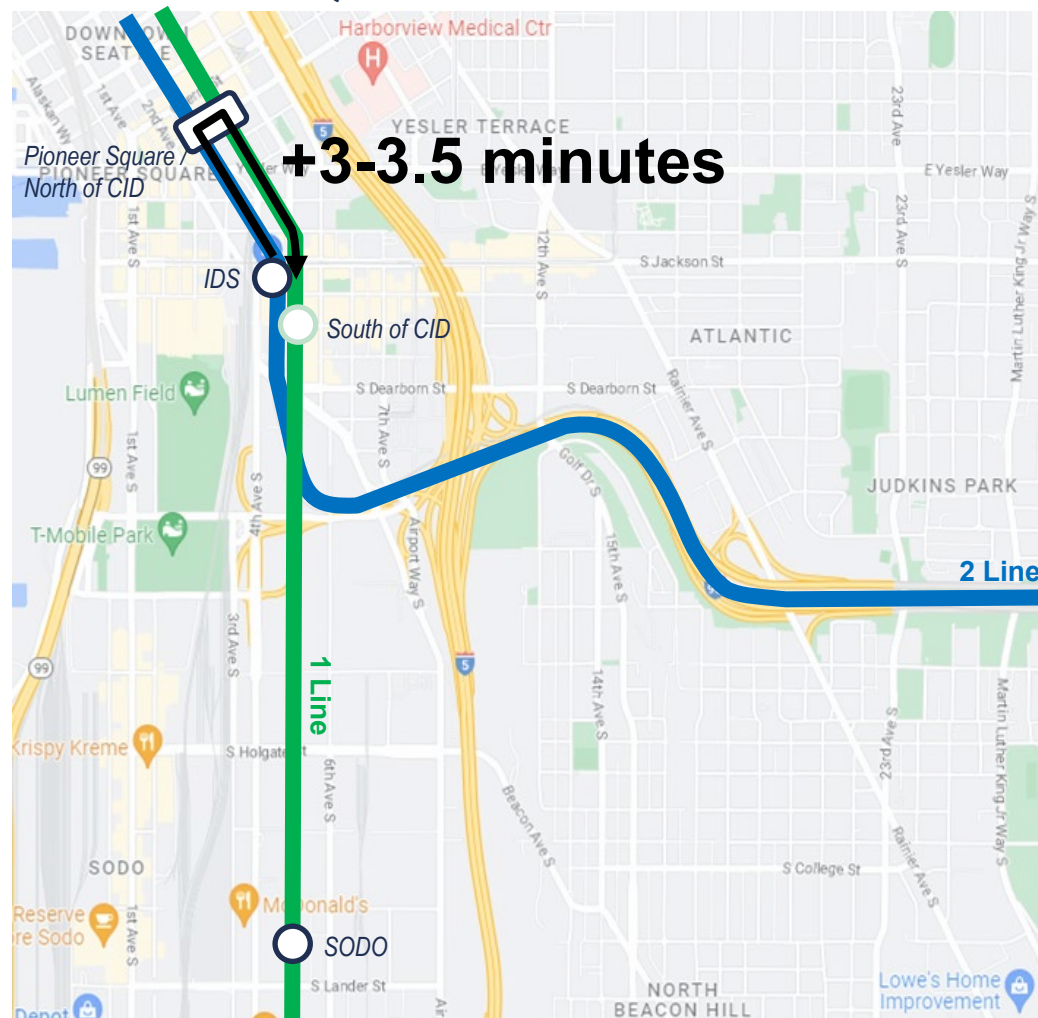


Transfer Difference for 2 Line (WB) to 1 Line (SB)

Transfer at CID

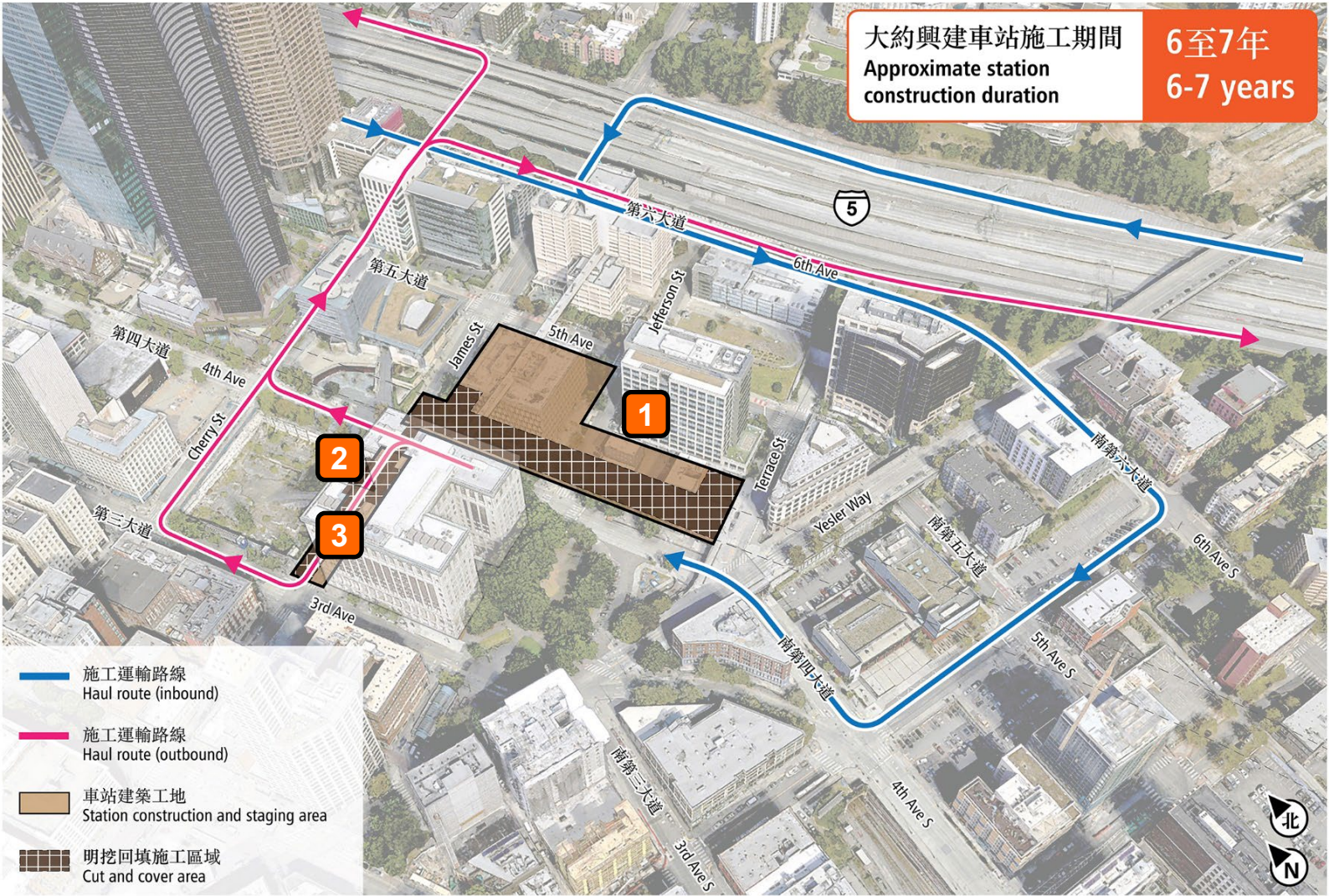


Transfer at PSQ/ North of CID



CID唐人街/國際區以北車站: 施工時的影響

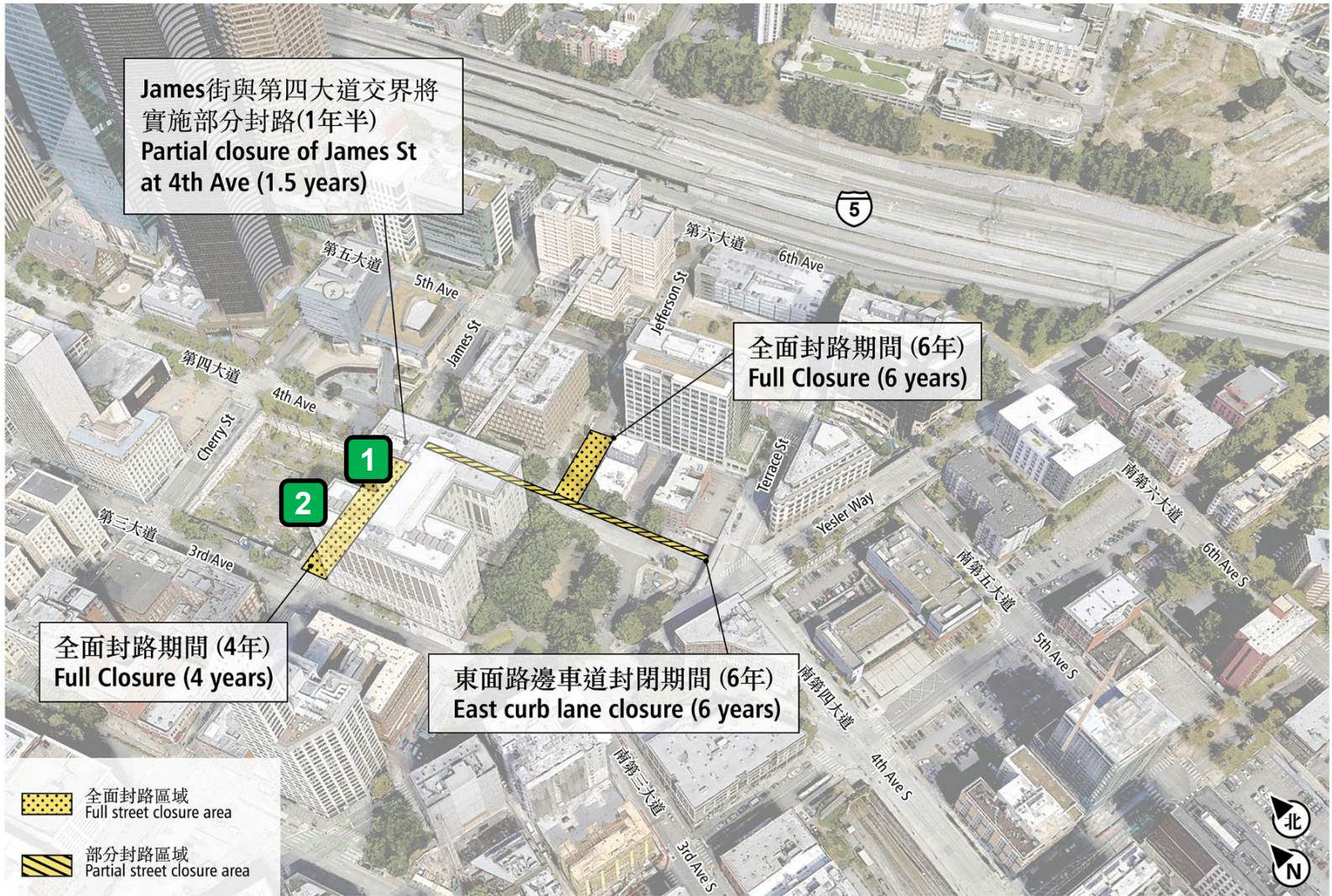
North of CID: construction effects



- 1** 搬遷金縣行政大樓和其他提供社會服務的建築物, 包括Hotel Reynolds (工作釋放設施) 和團體護理之家/公寓
Displaces King County Administration Building and other buildings that house social services, including Hotel Reynolds (Work Release Facility) & Group Care Home/Apartments
- 2** 未發展物業的潛在車站入口機遇, 需要與發展計劃協調
Opportunity for a potential station entrance at undeveloped property, requires coordination with development plans
- 3** 可以暫時將無軌電車從 James St 轉移到附近的走廊 (取決於車站格局設計)
Could temporarily relocate trolley wire buses from James St to nearby corridor (depending on configuration)

CID唐人街/國際區以北車站: 交通影響

North of CID: traffic effects



1 與現有Pioneer Square站的地下連接走廊建設可能需要關閉第三和第四大道之間的James街, 具體取決於車站格局設計

Construction of underground connection to existing Pioneer Square station could require closure of James St between 3rd and 4th Aves depending on configuration

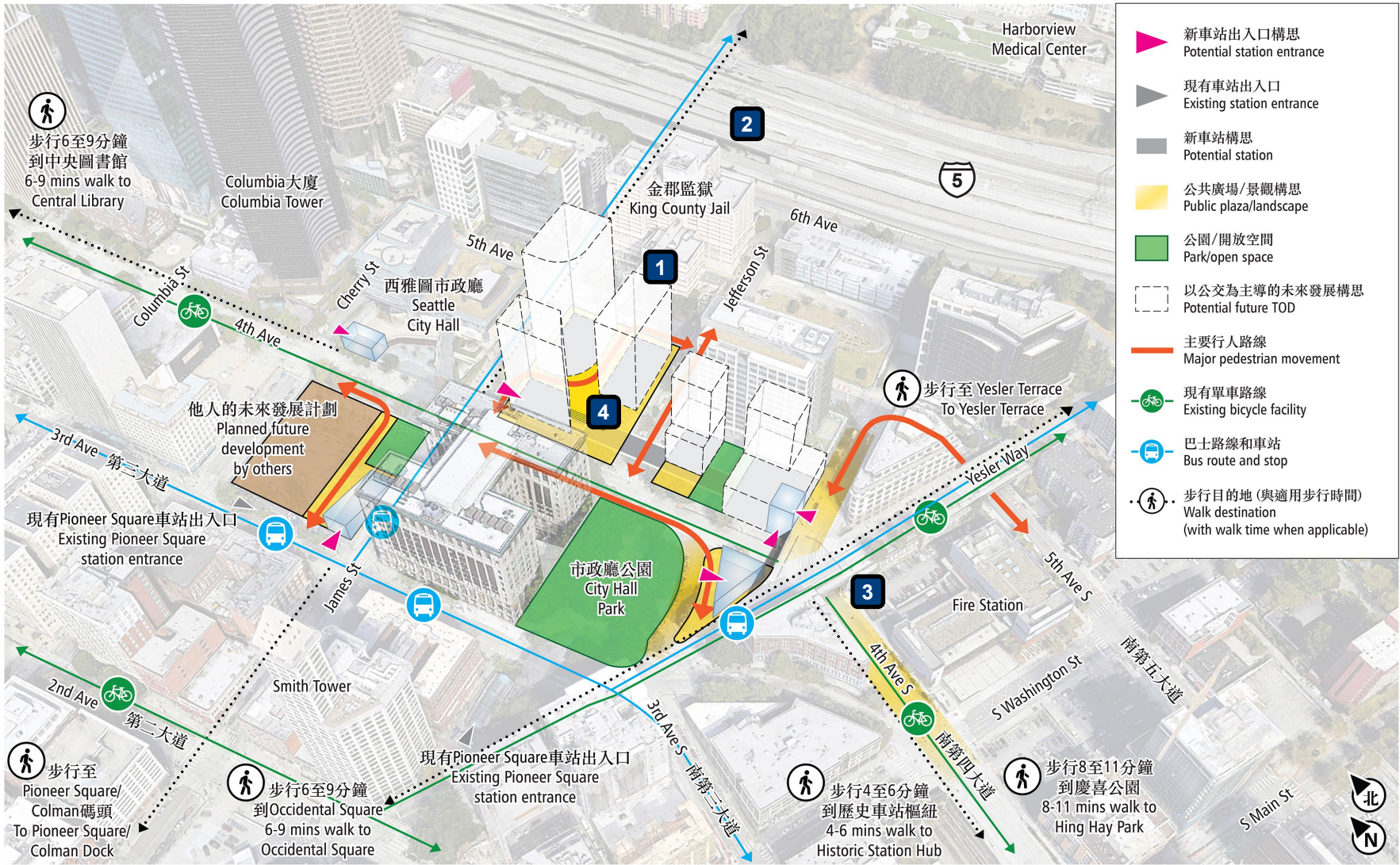
2 通過將地下連接走廊移動到私人物業來減少James街關閉的機會

Opportunity to reduce James Street closure by moving underground connection onto private property

初步研究結果。分析仍在進行中，可能會作出變更。
Preliminary findings. Analysis is ongoing and is subject to change.

CID唐人街/國際區以北車站: 機遇與問題

North of CID: opportunities and issues



- 1 與金郡合作進行政府設施規劃，重點打造充滿活力社區
Collaborate with King County on campus planning, focus on creating a vibrant neighborhood
- 2 橫跨 I-5 到 Harborview 的額外連接有助於解決高速公路作為障礙的問題
Additional connections across I-5 to Harborview to help address the freeway as a barrier
- 3 提升與CID唐人街/國際區，以及沿第四大道的歷史悠久車站樞紐的連接
Improve connection to CID and the historic station hub along 4th Ave
- 4 車站場地的 eTOD，包括零售、辦公室和住房
eTOD at station site, incorporating retail, offices, and housing

CID唐人街/國際區以北車站: 機遇與問題

North of CID: opportunities and issues



5 改善Pioneer Square車站出入口和車站之間連接的合作夥伴機遇，可支持改善該地區公共安全

Partnership opportunity to improve Pioneer Square station entrance and connection between stations, potentially supporting efforts to improve public safety in the area

6 於Yesler Way和第四大道交界的多層車站出入口有助於解決車站以東的陡坡地形

Multi-level station entrance serving Yesler Way and 4th Ave to help address steep terrain to the east of the station

7 市政廳和市政廳公園額外車站出入口的合作夥伴機遇

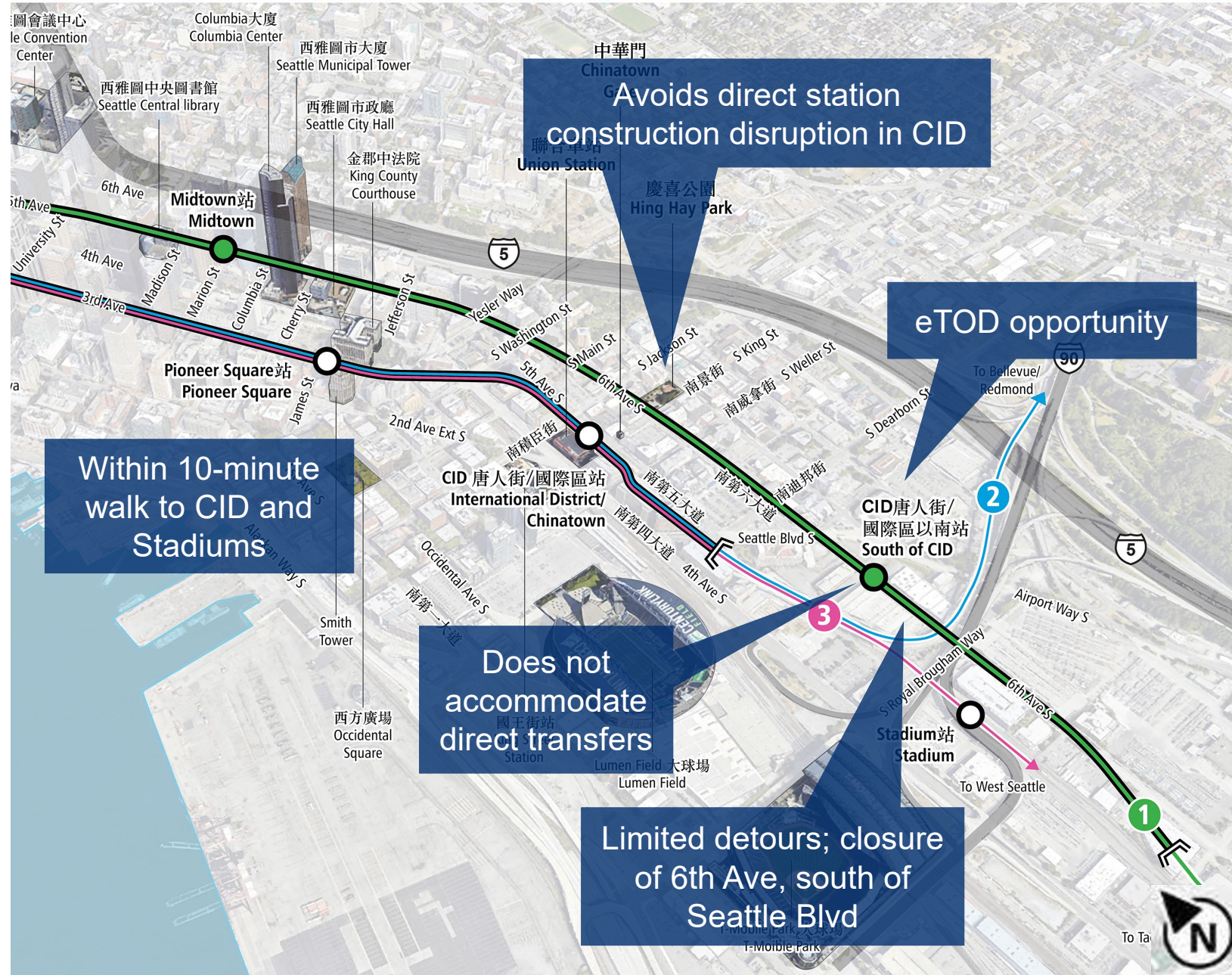
Partnership opportunity for additional entrances at City Hall and City Hall Park

Station South of CID

Other ideas from community and agency partners

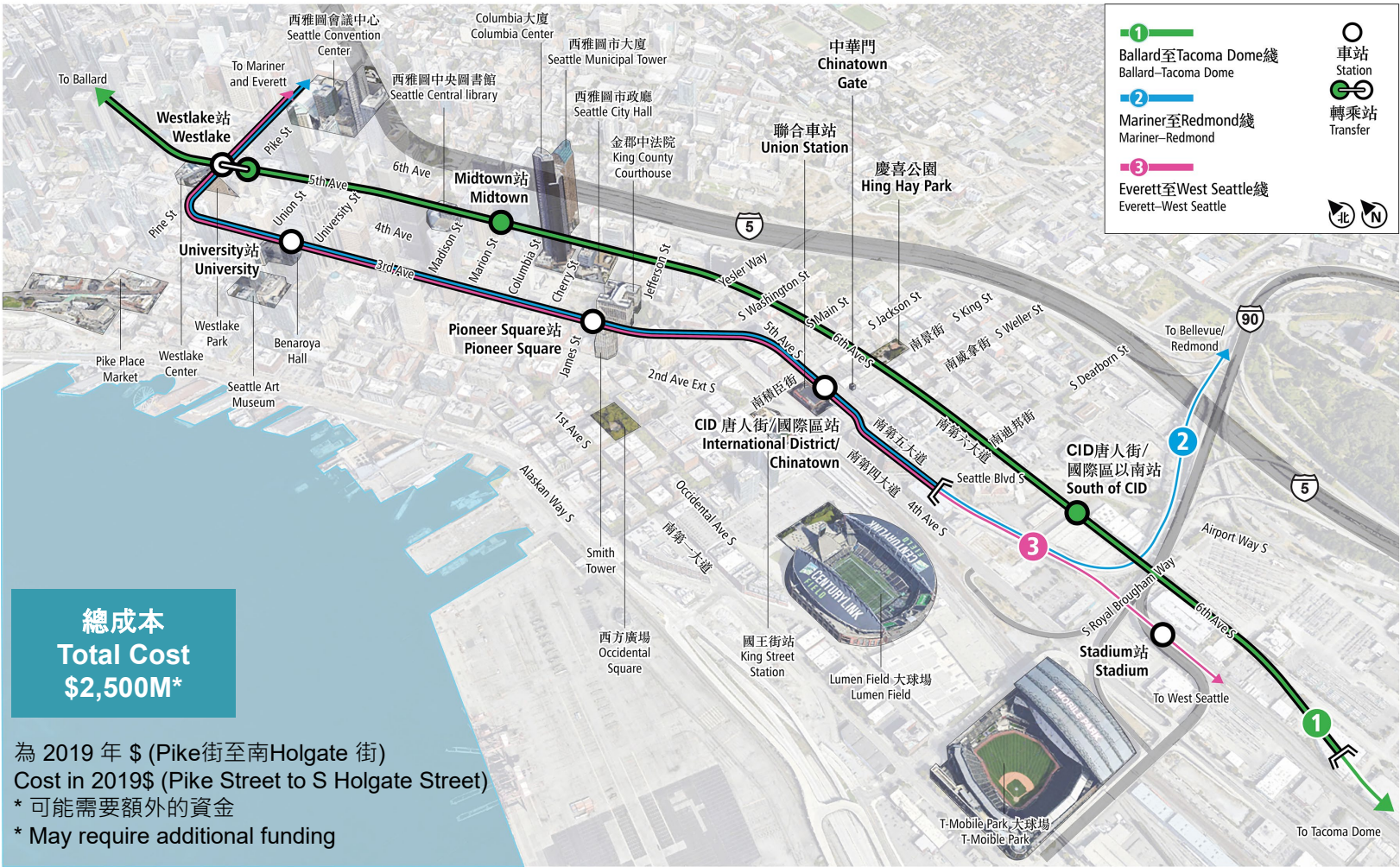
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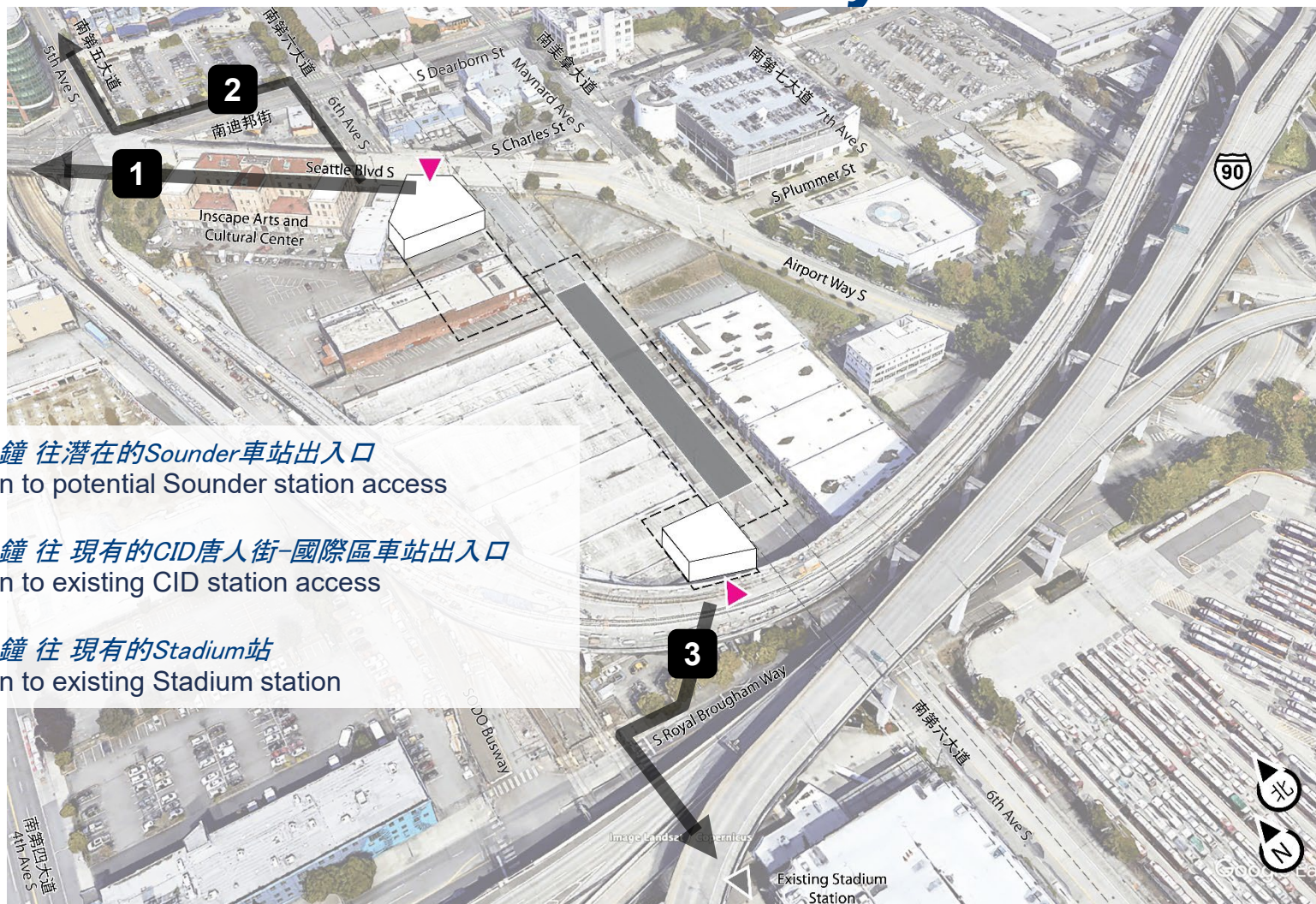
South of CID + Midtown



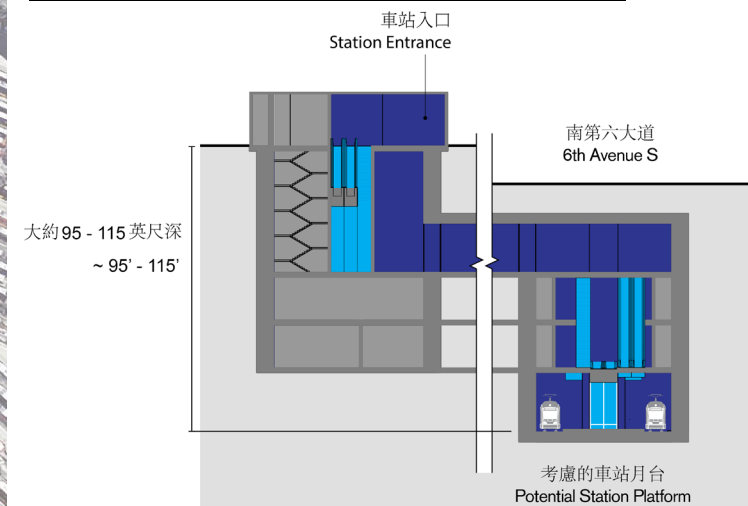
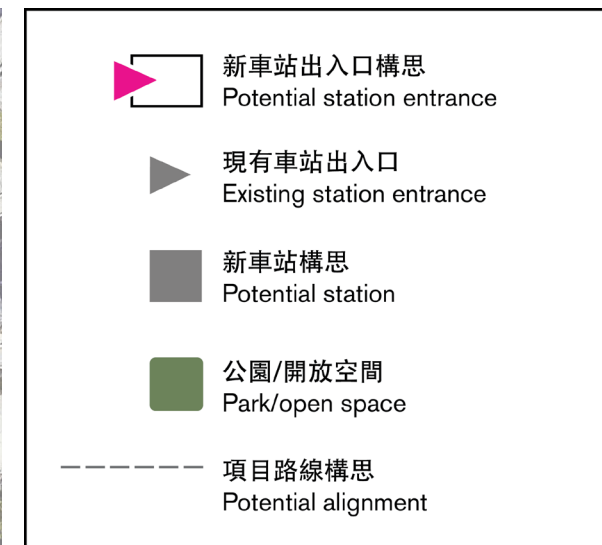
載客量和乘客體驗 Ridership and passenger experience		
一號線在三個車站上的每日登車人次總和 Total 1 Line daily boardings at 3 stations		51,200 乘客 passengers
從CID 唐人街/國際區以南站到現有CID唐人街/國際區站 換乘時間 Transfer/access to existing station in CID from South of CID		5-6 分 5-6 minutes
車站深度 Station Depth	Midtown 站 Midtown CID 唐人街/國際區以南站 South of CID	140-145 英尺 feet 95-115 英尺 feet
社區和區域交通連接 Community and regional access		
慶喜公園往SeaTac/機場站 Hing Hay Park to SeaTac/Airport Station		41 分鐘 minutes
西方廣場往SeaTac/機場站 Occidental Square to SeaTac/Airport Station		47 分鐘 minutes
Bellevue 市中心站往 Columbia City站 Downtown Bellevue to Columbia City		44-50 分鐘 minutes

CID唐人街-國際區以南車站: 車站佈局

South of CID: station layout

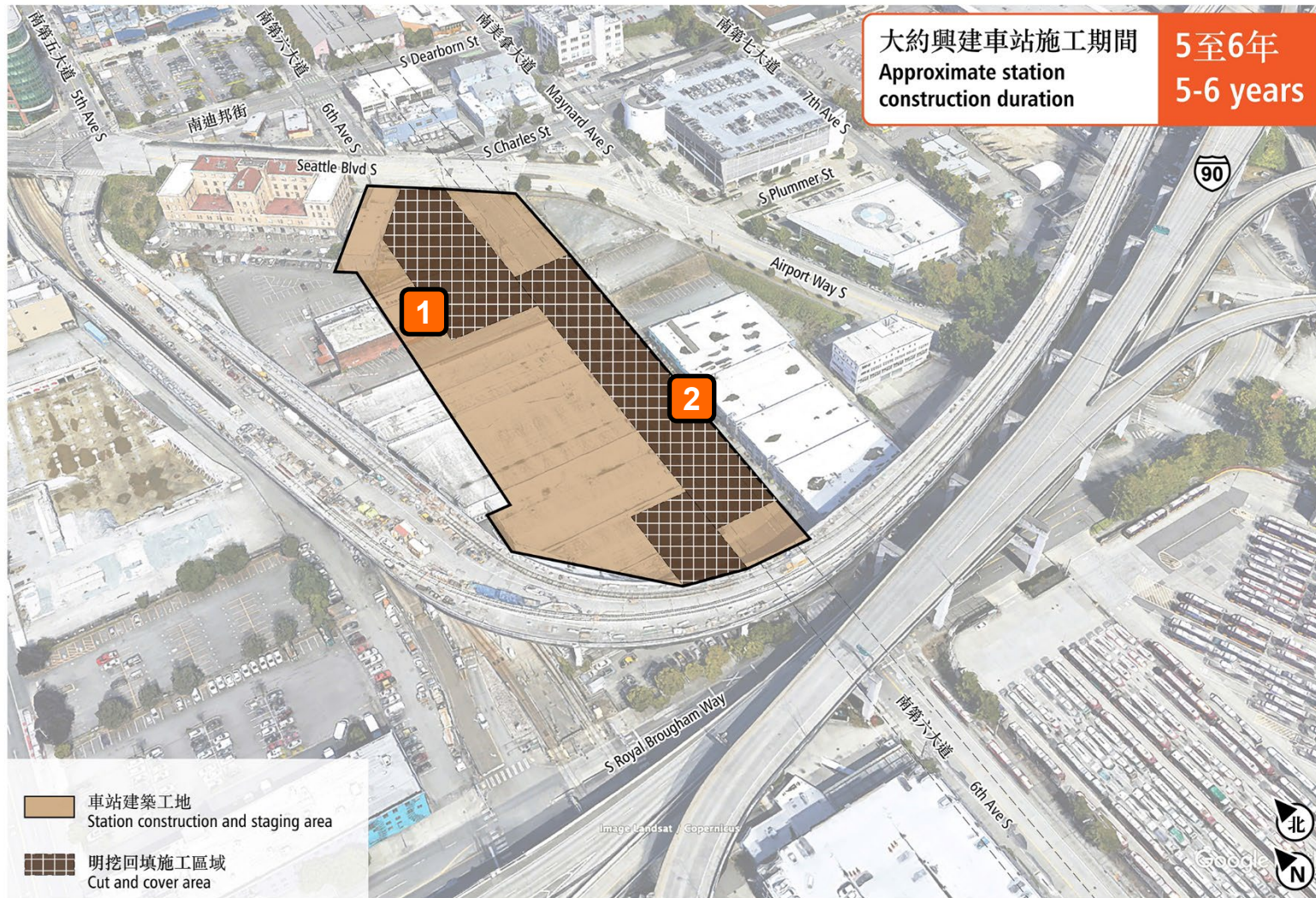


- 1 5 分鐘 往潛在的Sounder車站出入口
5 min to potential Sounder station access
- 2 8 分鐘 往 現有的CID唐人街-國際區車站出入口
8 min to existing CID station access
- 3 2 分鐘 往 現有的Stadium站
2 min to existing Stadium station



CID唐人街/國際區以南車站: 施工時的影響

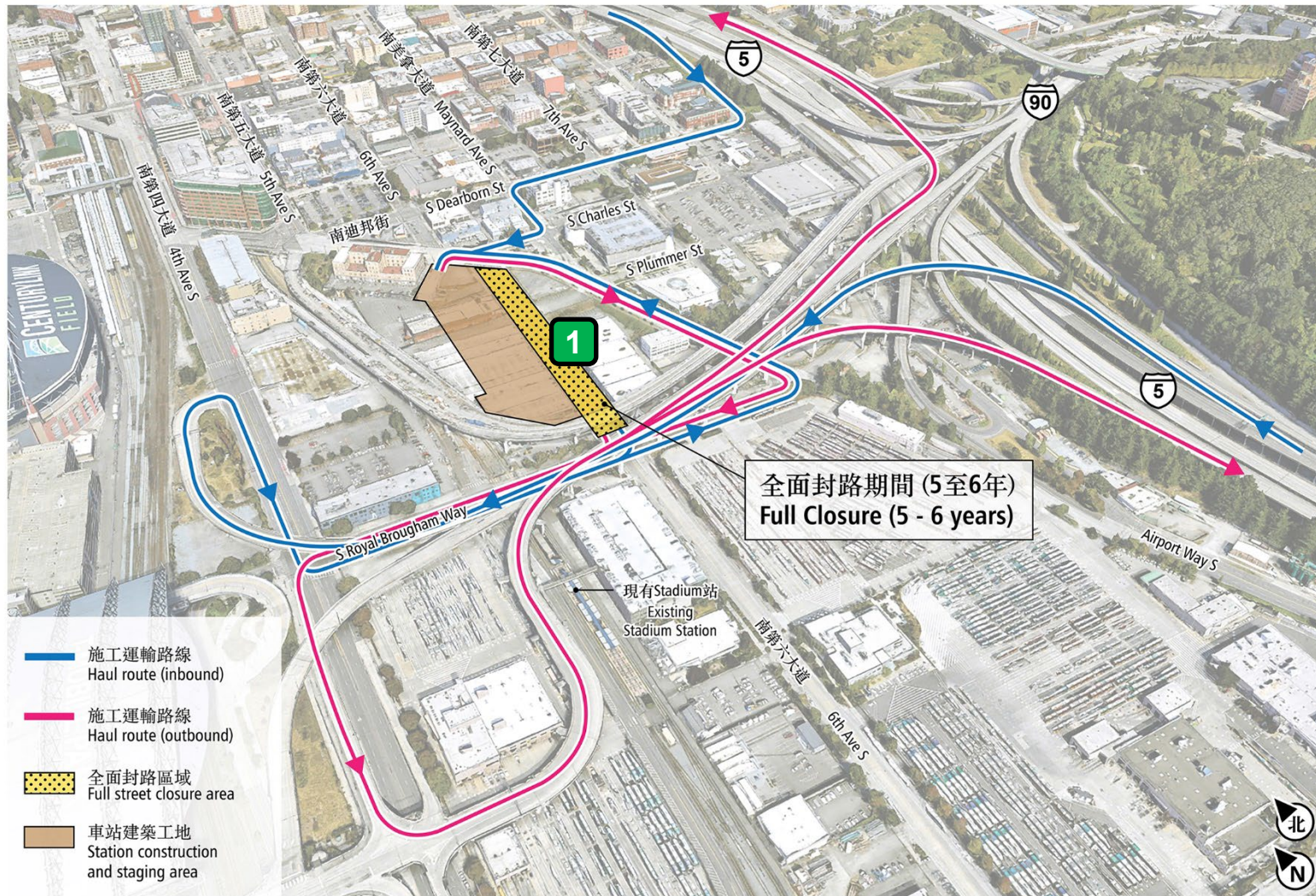
South of CID: construction effects



- 1 車站出入口和建築工地需要與任何未來的發展計劃互相協調
Station entrances and staging areas would need to be coordinated with any future development plans
- 2 與南第六大道的 16 英寸高壓輸氣管線和計劃中的 SCL 高壓電力線存在潛在衝突
Potential conflict with 16" high pressure gas line and planned SCL high voltage power line on 6th Ave S

CID唐人街/國際區以南車站: 交通影響

South of CID: traffic effects



1 施工需要完全關閉 Seattle Boulevard S 和 S Royal Brougham 之間的南第六大道, 這對整體交通和道路封閉影響較小

Construction requires full closure of 6th Ave S between Seattle Boulevard S and S Royal Brougham, which has fewer overall traffic and road closure implications

CID唐人街/國際區以南車站: 機遇與問題

South of CID: opportunities and issues



1 連接到潛在的 *Sounder* 車站
出入口和 *BNSF* 上的潛在行人天橋(合作夥伴關係)

Connection to potential *Sounder* Station entrance and potential ped bridge over *BNSF* (partnership)

2 靠近CID唐人街/國際區的車站出入口和新的公共空間

Station entrance closer to CID with new public space

3 重新配置街道/十字路口以改善流通和行人通道

Reconfigure street/intersection to improve circulation and pedestrian access

CID唐人街/國際區以南車站: 機遇與問題

South of CID: opportunities and issues



4 將車站出入口納入潛在的未來 eTOD, 提供經濟適用住房和零售

Incorporate station entrance into potential future eTOD with affordable housing and retail

5 激活連接公共空間、車站出入口和其他人的開發項目以激活的步行路線 (合作夥伴關係和潛在的 eTOD 機會)

Activate pedestrian route connecting public spaces, station entrance, and potential future development (partnership and potential eTOD opportunity)

6 通過充足的行人道和照明以改善體育場的連接

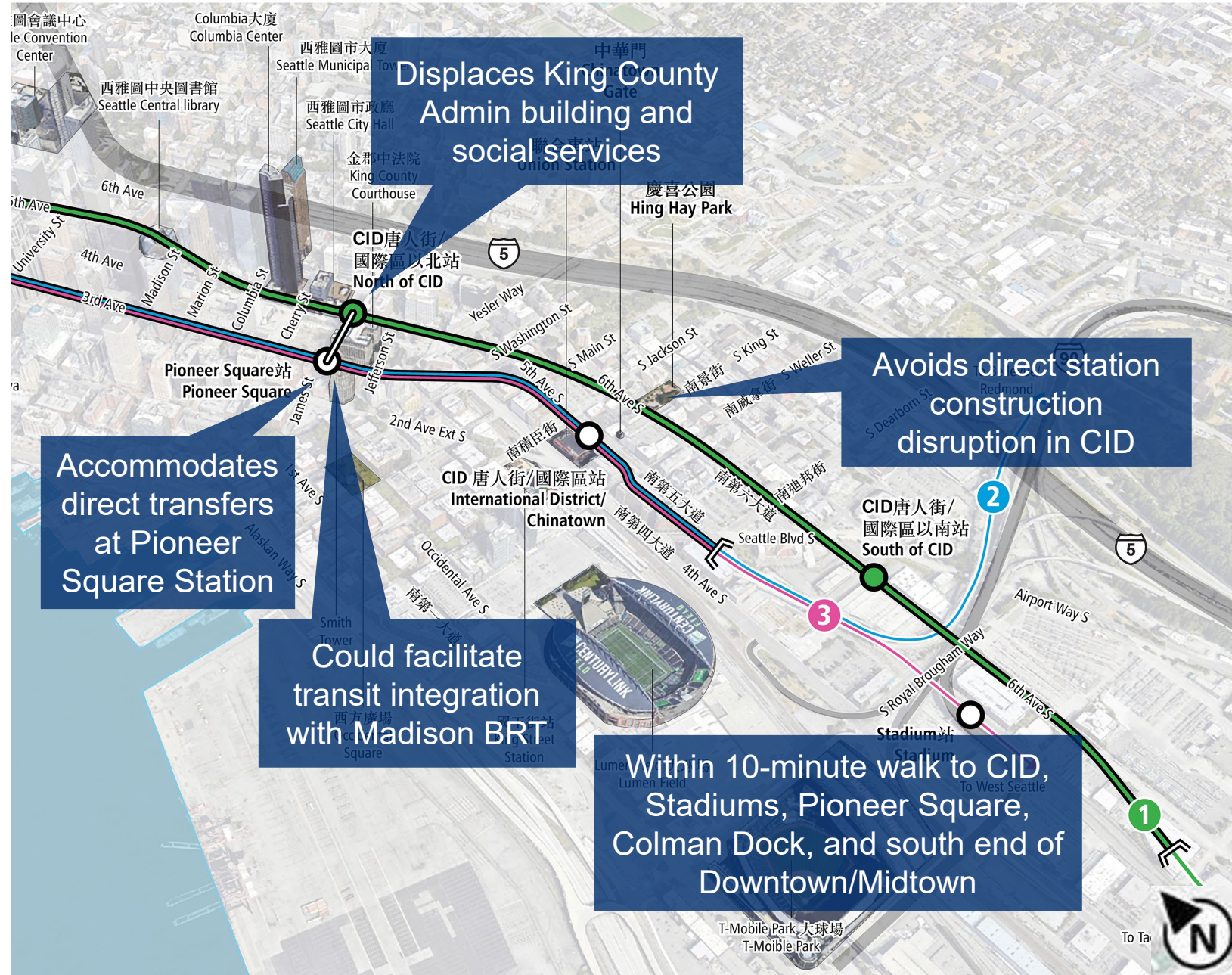
Improve stadium connection with ample sidewalks and lighting

Station North of CID and Station South of CID

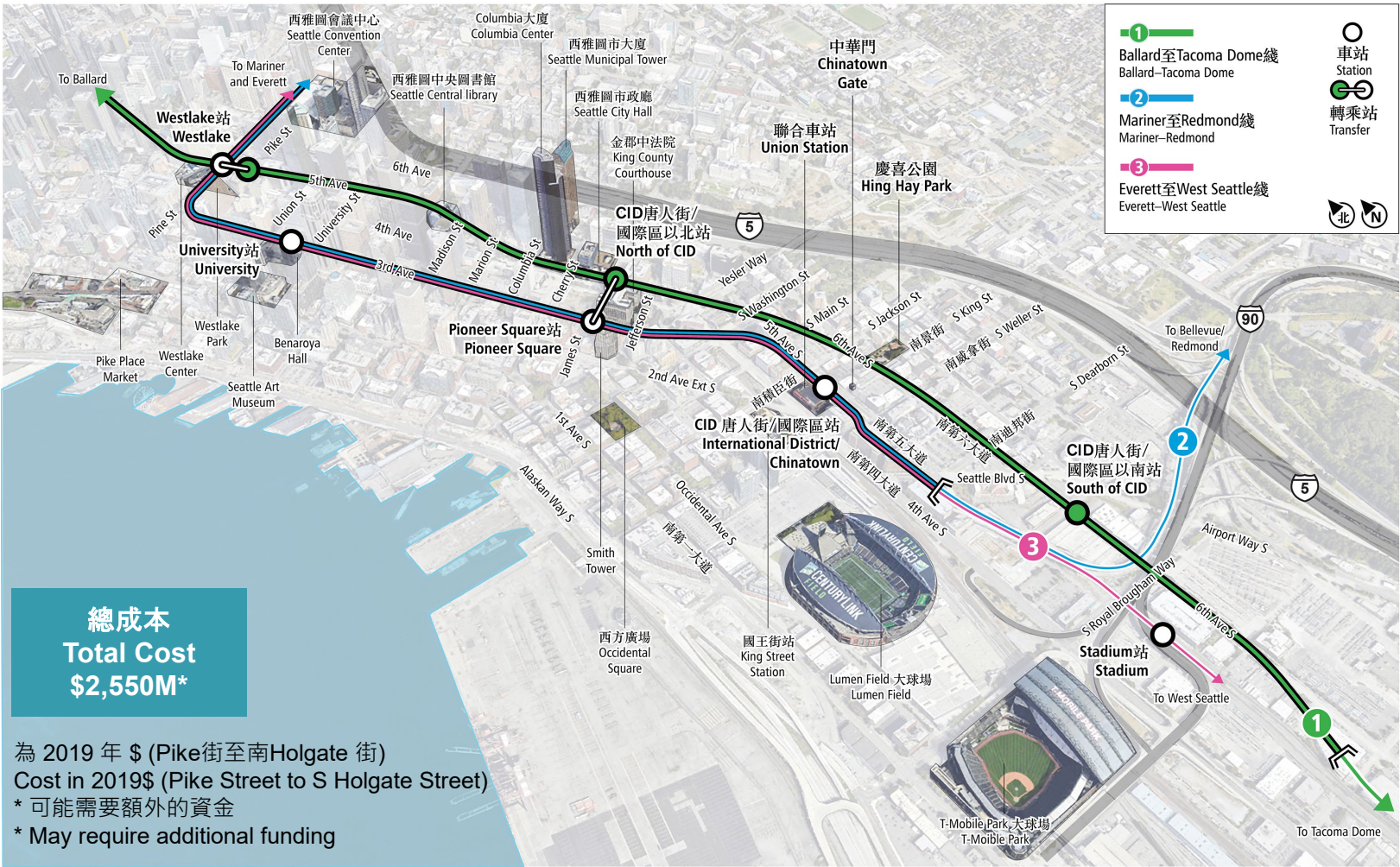
Other ideas from community and agency partners

Cost (Pike to Holgate): **\$2.55 billion**

Cost delta compared to realigned financial plan: **+\$160 million**



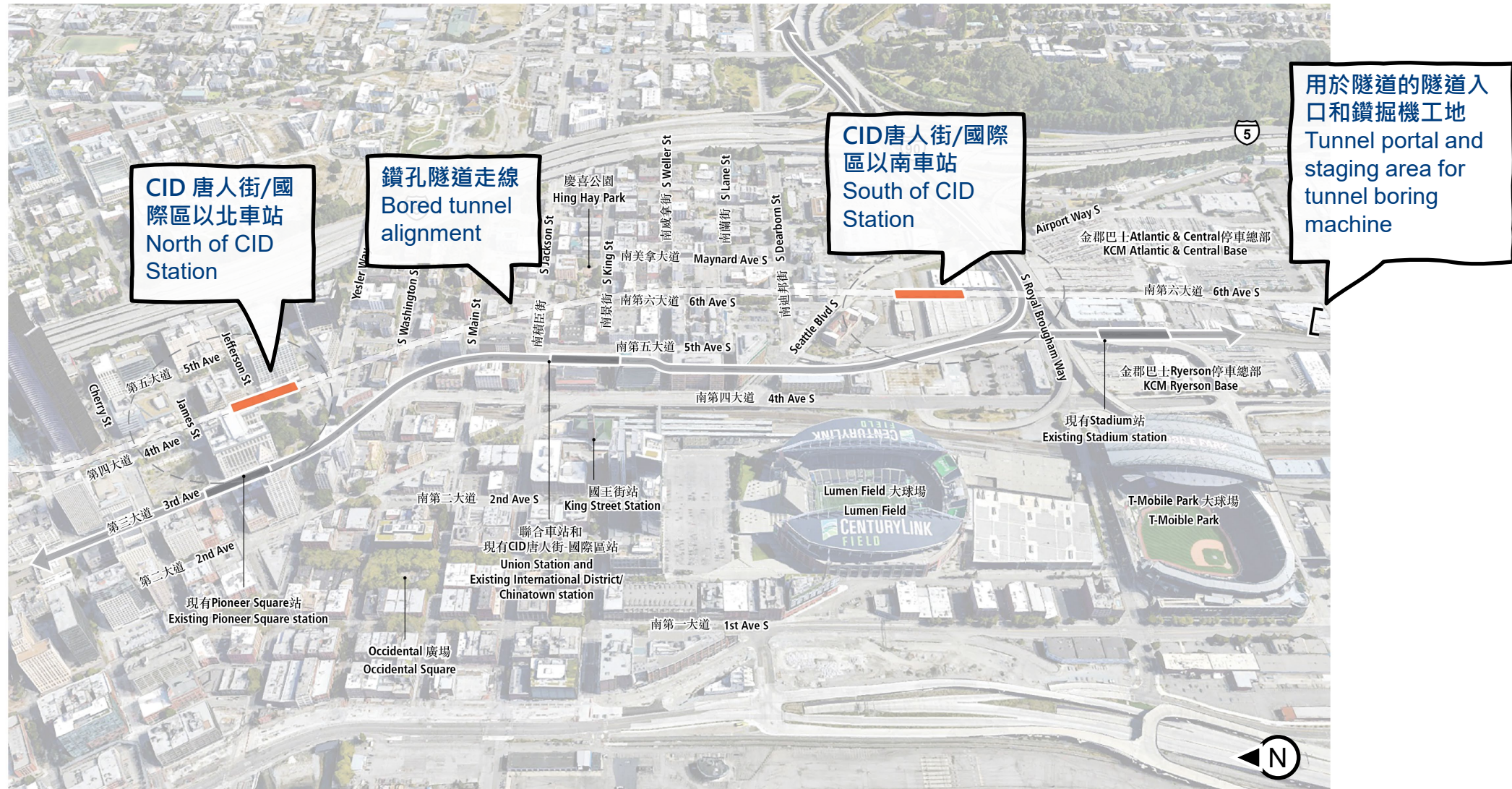
CID 唐人街/國際區以北站 + 以南站 (沒有Midtown站) North + South of CID (No Midtown)



載客量和乘客體驗 Ridership and passenger experience	
一號線在三個車站上的每日登車人次總和 Total 1 Line daily boardings at 3 stations	51,500 乘客 passengers
CID 唐人街/國際區以北站換乘時間 Transfer time at North of CID	3分 15 秒 3m 15s
車站深度 Station Depth	
CID 唐人街/國際區以北站 North of CID	80-105 英尺 feet
CID 唐人街/國際區以南站 South of CID	95-115 英尺 feet
社區和區域交通連接 Community and regional access	
慶喜公園往SeaTac/機場站 Hing Hay Park to SeaTac/Airport Station	41 分鐘 minutes
西方廣場往SeaTac/機場站 Occidental Square to SeaTac/Airport Station	46 分鐘 minutes
Bellevue 市中心站往 Columbia City站 Downtown Bellevue to Columbia City	45 分鐘 minutes

CID 唐人街/國際區以北站 + 以南站) : 主要特點概述

North + South of CID: key features overview



Hing Hay Park to SeaTac/Airport Station

4th Avenue Shallow + Midtown

$$\begin{array}{ccccccc} 3 \text{ min} & + & 2 \text{ min} & + & 34 \text{ min} & = & 39 \text{ min} \\ \text{walk to 4th Shallow} & & \text{to platform} & & \text{travel to SeaTac} & & \text{total travel time} \end{array}$$

North of CID (No Midtown)

$$\begin{array}{ccccccccc} 3 \text{ min} & + & 1 \text{ min} & + & 7.5 & + & 2 \text{ min} & + & 30.5 \text{ min} & = & 44 \text{ min} \\ \text{walk to existing IDS} & & \text{to platform} & & \text{travel to SODO} & & \text{transfer} & & \text{travel to SeaTac} & & \text{total travel time} \end{array}$$

South of CID + Midtown

$$\begin{array}{ccccccc} 6 \text{ min} & + & 3 \text{ min} & + & 32 \text{ min} & = & 41 \text{ min} \\ \text{walk to South of CID} & & \text{to platform} & & \text{travel to SeaTac} & & \text{total travel time} \end{array}$$

North + South of CID (No Midtown)

$$\begin{array}{ccccccc} 6 \text{ min} & + & 3 \text{ min} & + & 32 \text{ min} & = & 41 \text{ min} \\ \text{walk to South of CID} & & \text{to platform} & & \text{travel to SeaTac} & & \text{total travel time} \end{array}$$

Occidental Square to SeaTac/Airport Station

4th Avenue Shallow + Midtown

$$\begin{array}{ccccccc} 10 \text{ min} & + & 2 \text{ min} & + & 34 \text{ min} & = & 46 \text{ min} \\ \text{walk to 4th Shallow} & & \text{to platform} & & \text{travel to SeaTac} & & \text{total travel time} \end{array}$$

North of CID (No Midtown)

$$\begin{array}{ccccccc} 9 \text{ min} & + & 1.5 \text{ min} & + & 34.5 \text{ min} & = & 45 \text{ min} \\ \text{walk to North of CID} & & \text{to platform} & & \text{travel to SeaTac} & & \text{total travel time} \end{array}$$

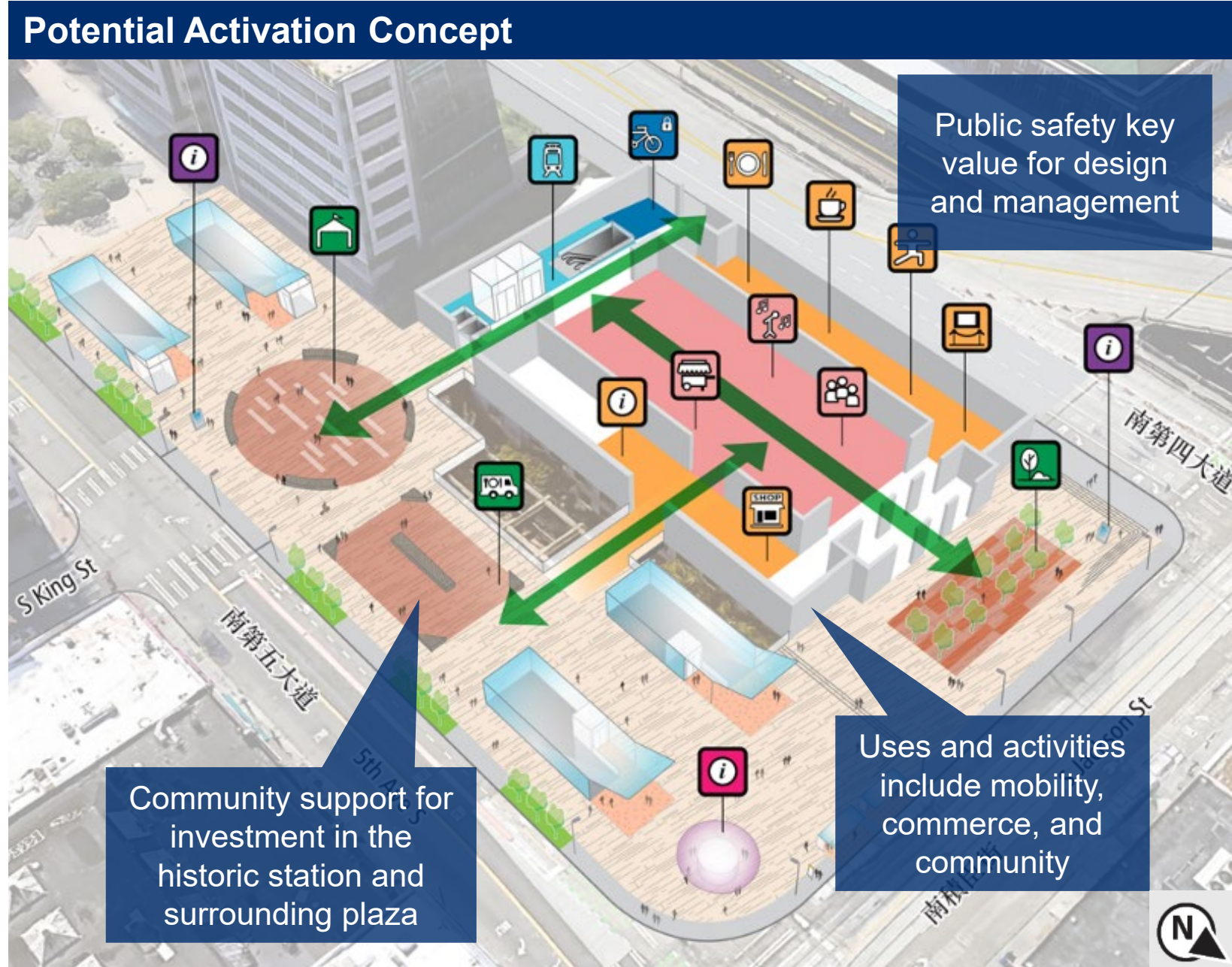
South of CID + Midtown

$$\begin{array}{ccccccccc} 5 \text{ min} & + & 1.5 \text{ min} & + & 8 \text{ min} & + & 2 \text{ min} & + & 30.5 \text{ min} & = & 47 \text{ min} \\ \text{walk to existing PSQ} & & \text{to platform} & & \text{travel to SODO} & & \text{transfer} & & \text{travel to SeaTac} & & \text{total travel time} \end{array}$$

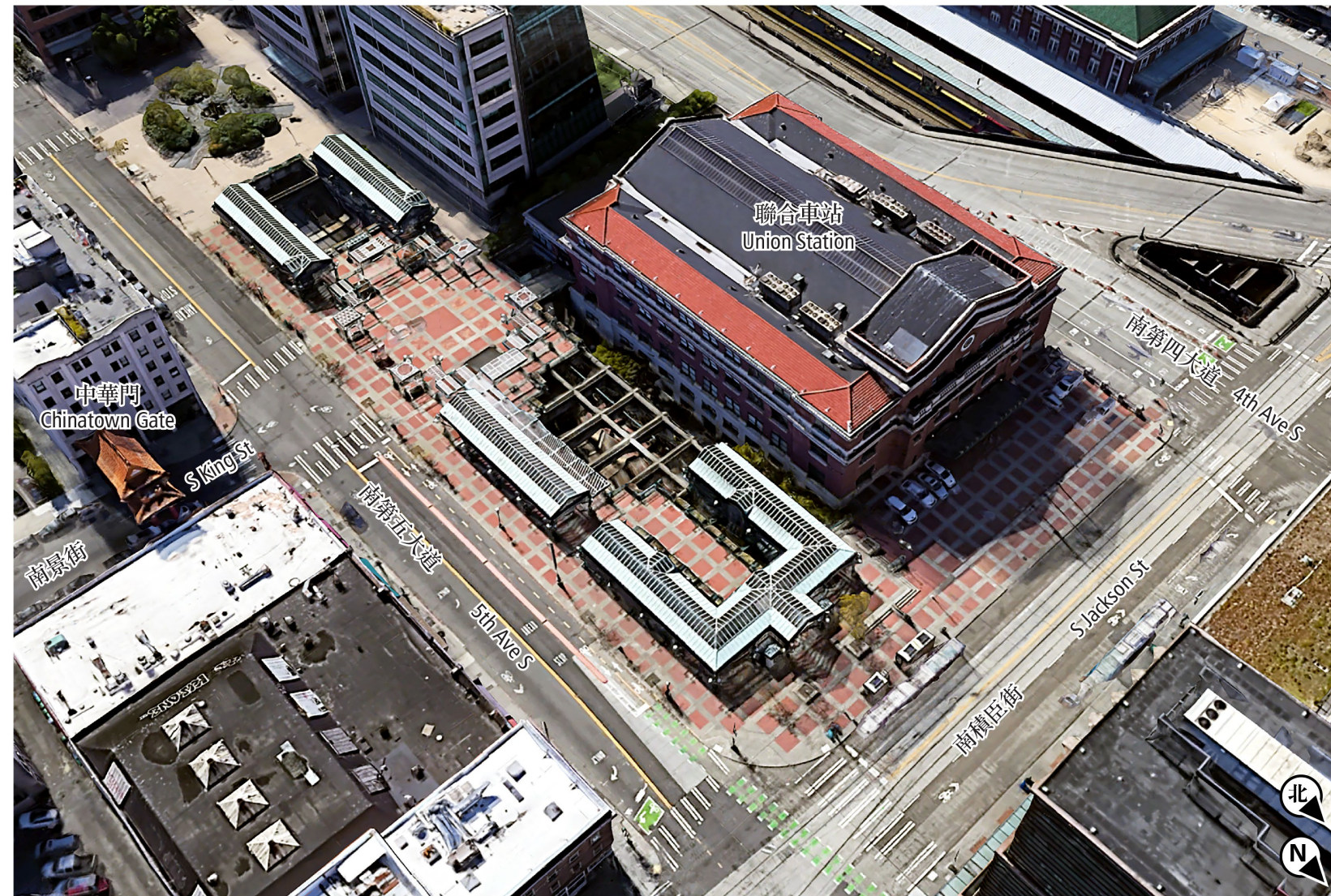
North + South of CID (No Midtown)

$$\begin{array}{ccccccc} 9 \text{ min} & + & 1.5 \text{ min} & + & 35.5 \text{ min} & = & 46 \text{ min} \\ \text{walk to North of CID} & & \text{to platform} & & \text{travel to SeaTac} & & \text{total travel time} \end{array}$$

***Activate and/or
modify uses of
Union Station and
the adjacent plaza***

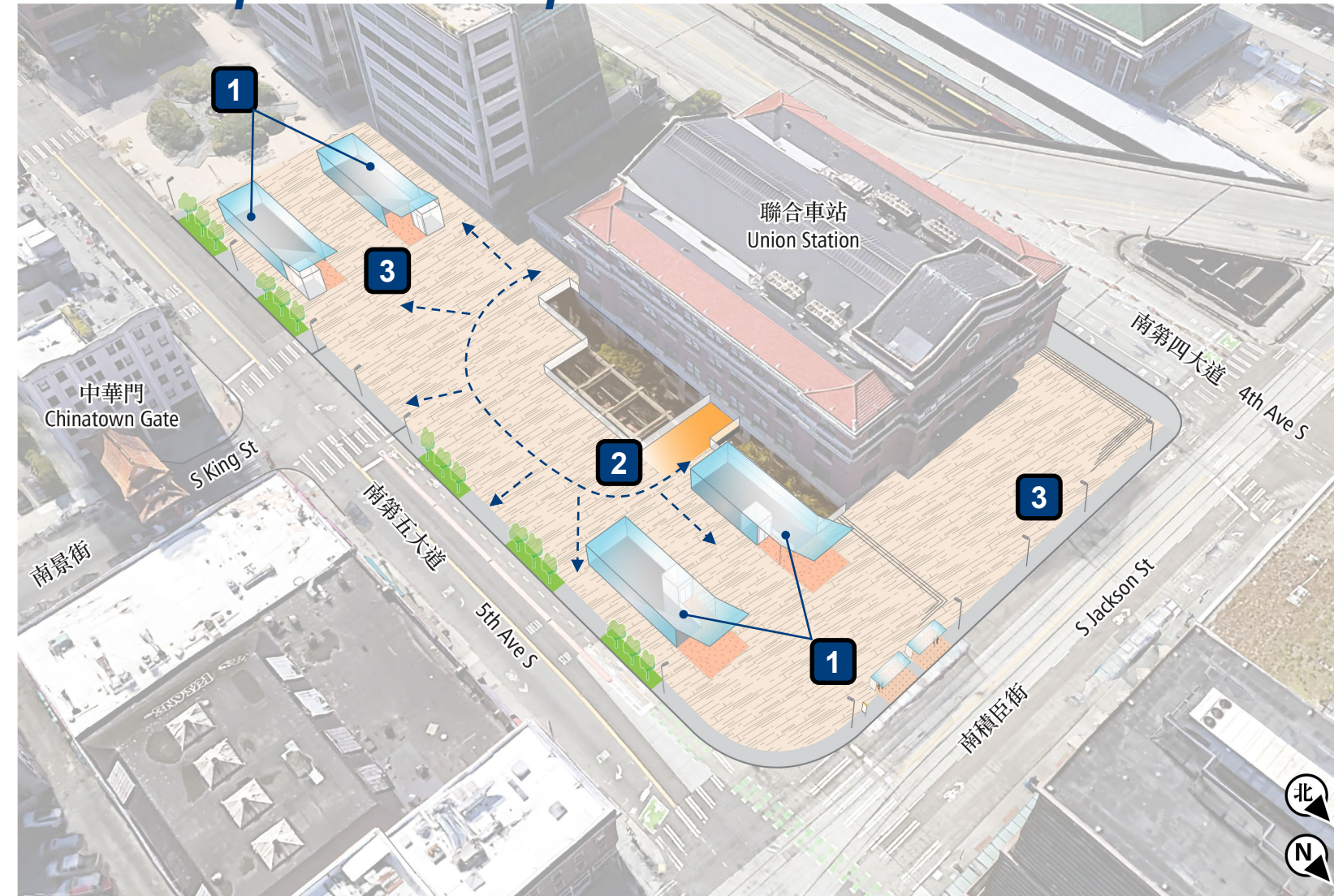


現有車站廣場 Existing Station Plaza



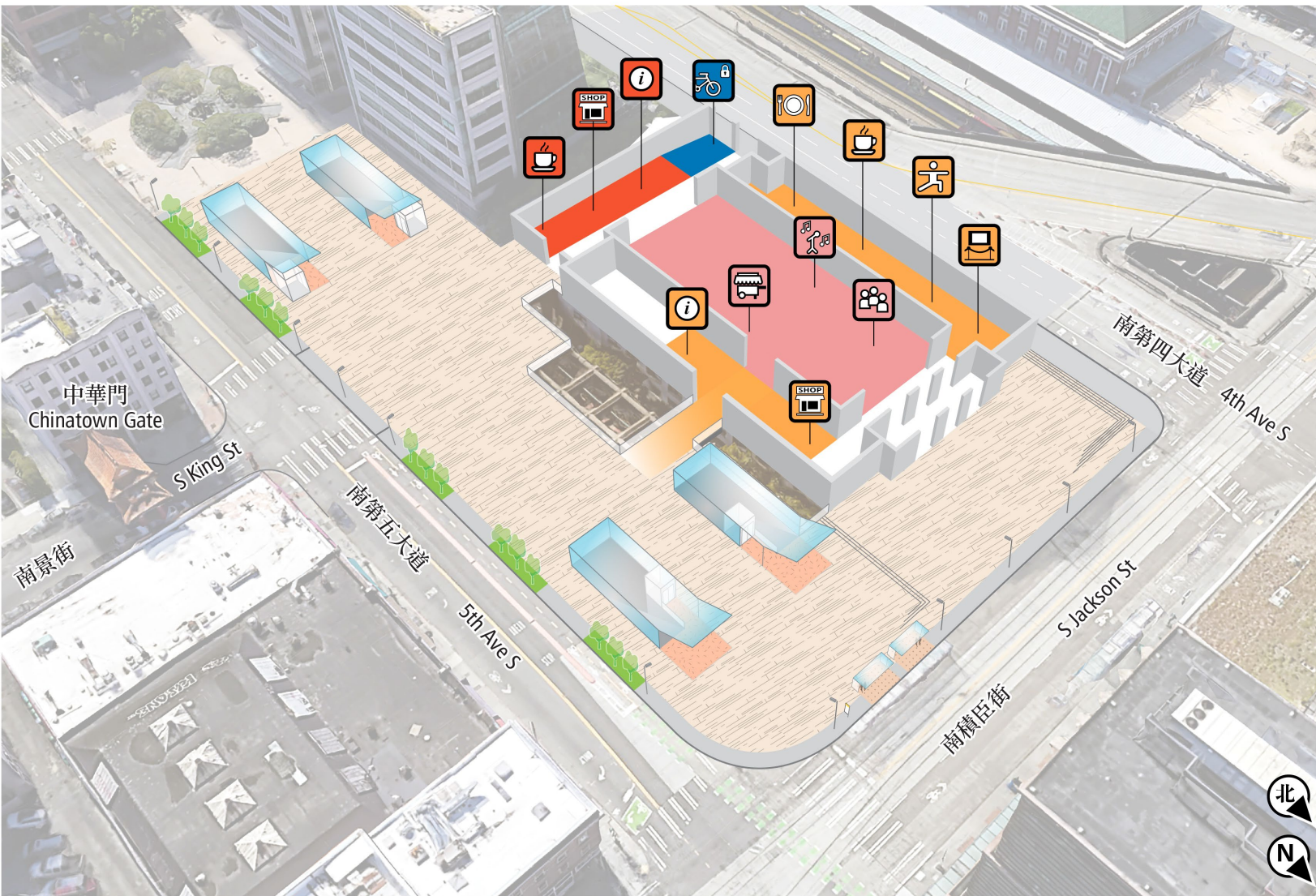
新車站廣場構思

Station plaza concept



- 1** 更換車站出入口簷篷
Replace station entry canopies
- 2** 打通廣場並連接到聯合車站建築物東面表面
Open up plaza and connect into Union Station east facade
- 3** 安裝新的統一路面和照明格式
Install new unified paving and lighting scheme

Union Station activation

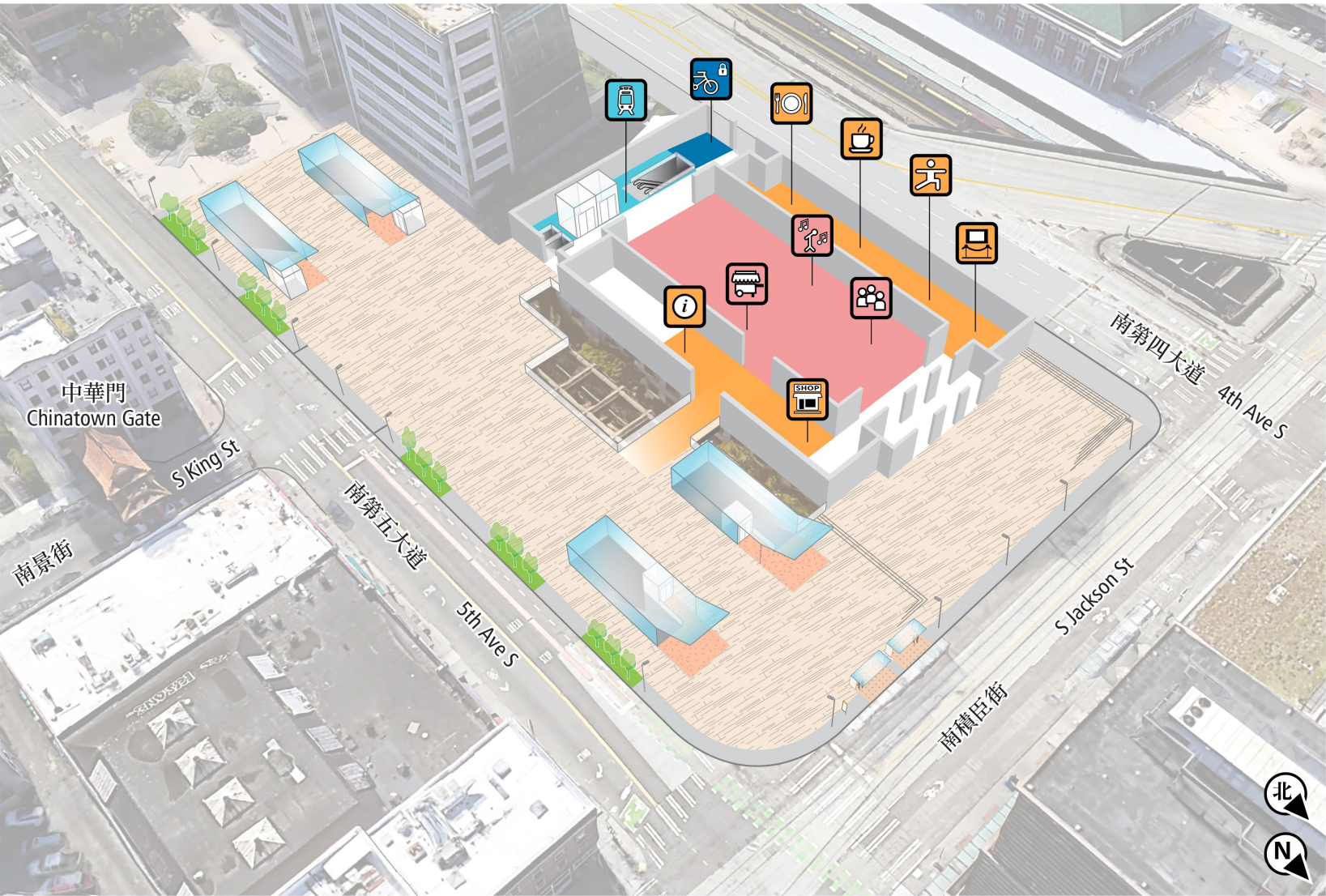


聯合車站內 Inside Union Station

	社區活動 Community events		餐廳 Dining
	音樂/表演 Music/performance		小食/咖啡店 Cafe
	零售/餐車 Vending/food carts		活動興趣班 Classes
	公共單車存放處 Public bike storage		展覽廳 Gallery
	交通詢問處 Transit info		快閃活動 Pop-ups
	零售處 Retail		詢問處 Kiosk
	小食/咖啡店 Cafe		

聯合車站激活 – 第四大道站出入口

Union Station activation – with 4th Ave station entrance

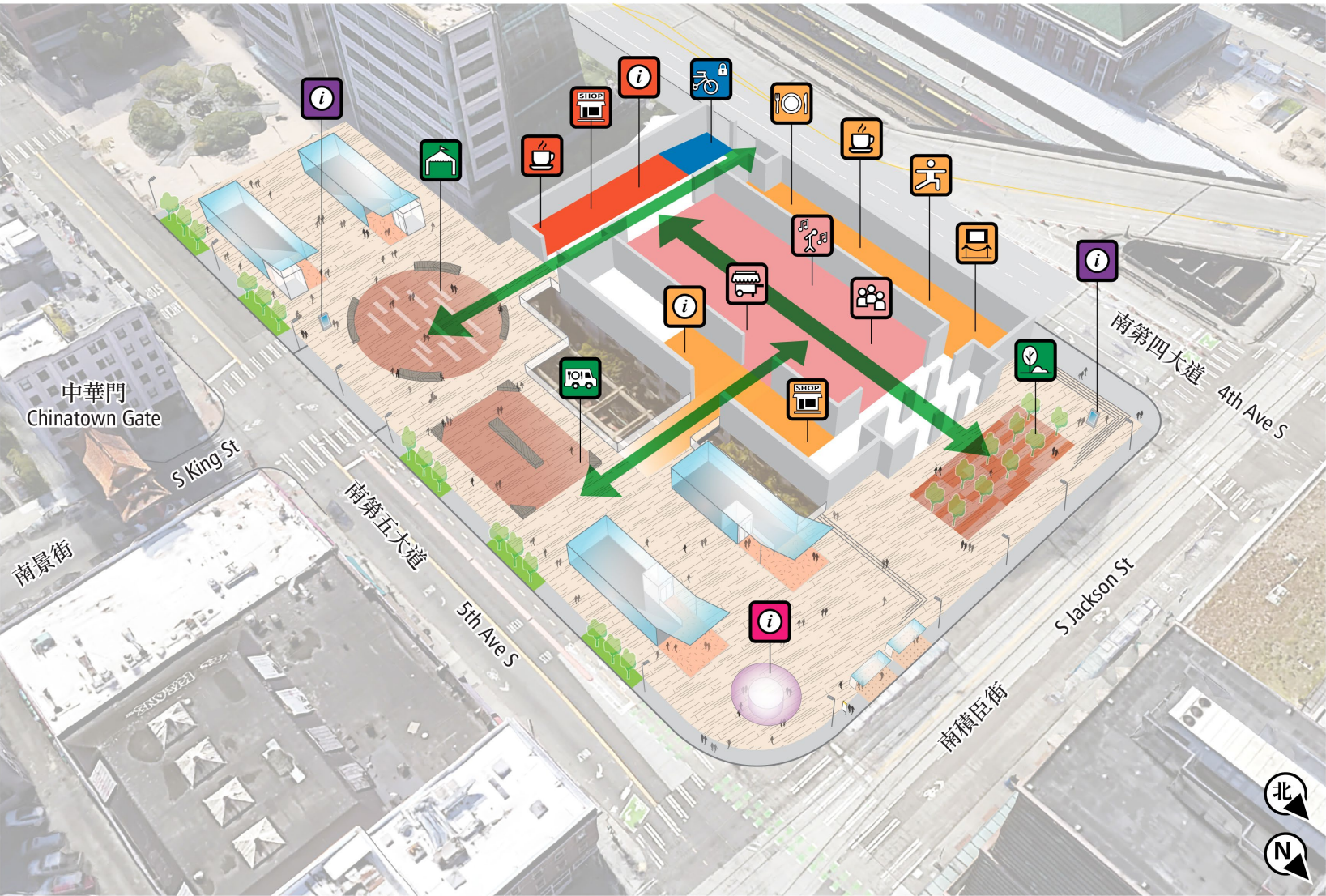


聯合車站內 Inside Union Station

社區活動 Community events	餐廳 Dining
音樂/表演 Music/performance	小食/咖啡店 Cafe
零售/餐車 Vending/food carts	活動興趣班 Classes
公共單車存放處 Public bike storage	展覽廳 Gallery
第四大道車站出入口 4th Ave station entrance	快閃活動 Pop-ups
	詢問處 Kiosk

聯合車站和廣場的概念和用途

Union Station, plaza concept and uses



聯合車站內 Inside Union Station

社區活動 Community events	餐廳 Dining
音樂/表演 Music/performance	小食/咖啡店 Cafe
零售/餐車 Vending/food carts	活動興趣班 Classes
公共單車存放處 Public bike storage	展覽廳 Gallery
交通詢問處 Transit info	快閃活動 Pop-ups
零售處 Retail	詢問處 Kiosk
小食/咖啡店 Cafe	

車站廣場 Station plaza

行人導向標示 Wayfinding	季節性市場/飲食/ 座位區 Seasonal market/ food/seating
公用廣場/ 園林景觀/藝術 Open plaza/ landscape/art	室外活動/表演/ 彈性空間 Events/performance/ flexible space
詢問亭 (有當席人員) Kiosk (with staff)	

Union Station, plaza concept and uses – with 4th Ave station entrance



- 社區活動**
Community events

餐廳
Dining

音樂/表演
Music/performance

小食/咖啡館
Cafe

零售/餐車
Vending/food carts

活動興趣班
Classes

公共單車存放處
Public bike storage

展覽廳
Gallery

第四大道車站出入口
4th Ave station entrance

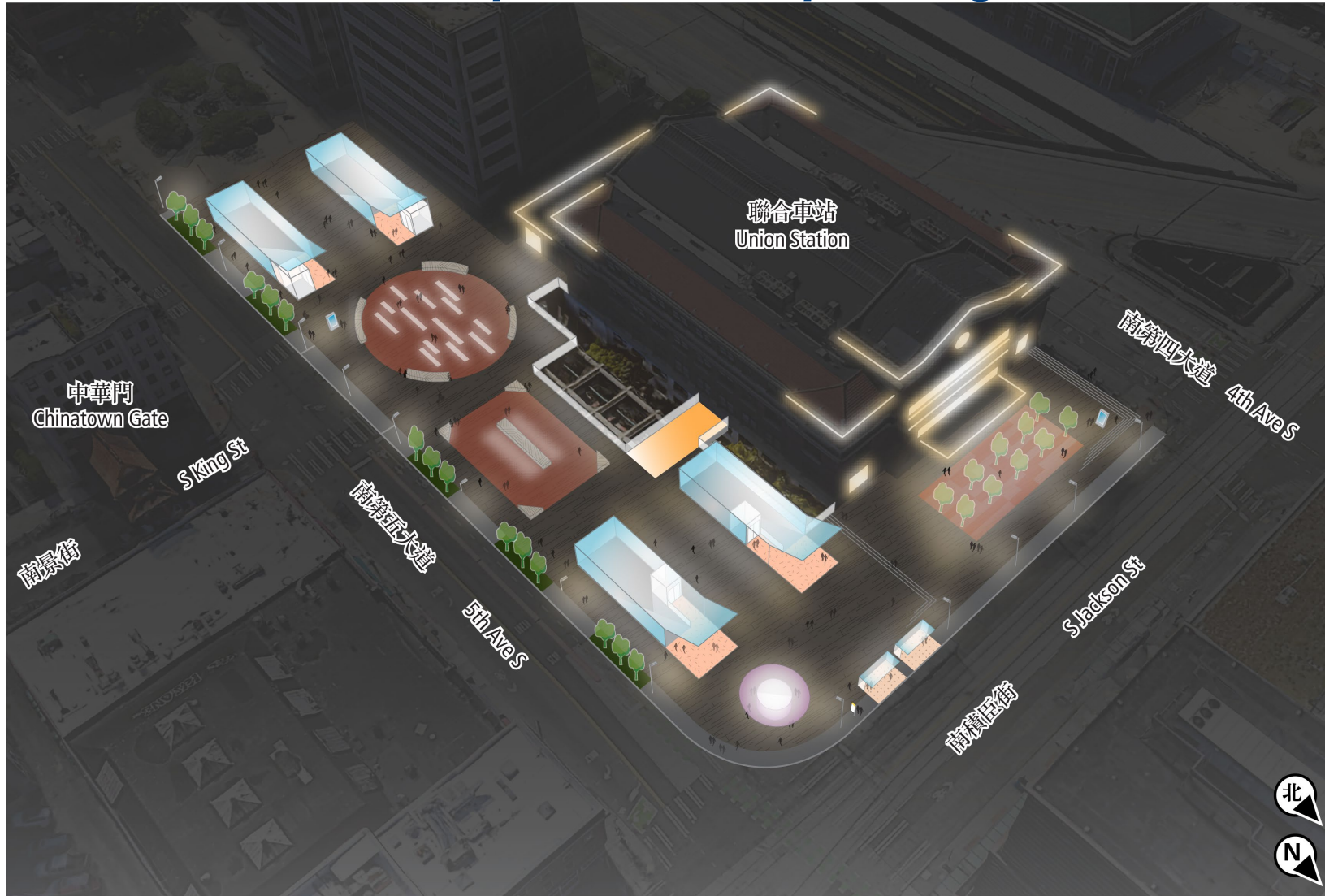
快閃活動
Pop-ups

詢問處
Kiosk

-  行人導向標示
Wayfinding
-  季節性市場/飲食/
座位區
**Seasonal market/
food/seating**
-  公用廣場/
園林景觀/藝術
**Open plaza/
landscape/art**
-  室外活動/表演/
彈性空間
**Events/performance/
flexible space**
-  詢問亭 (有當席人員)
Kiosk (with staff)

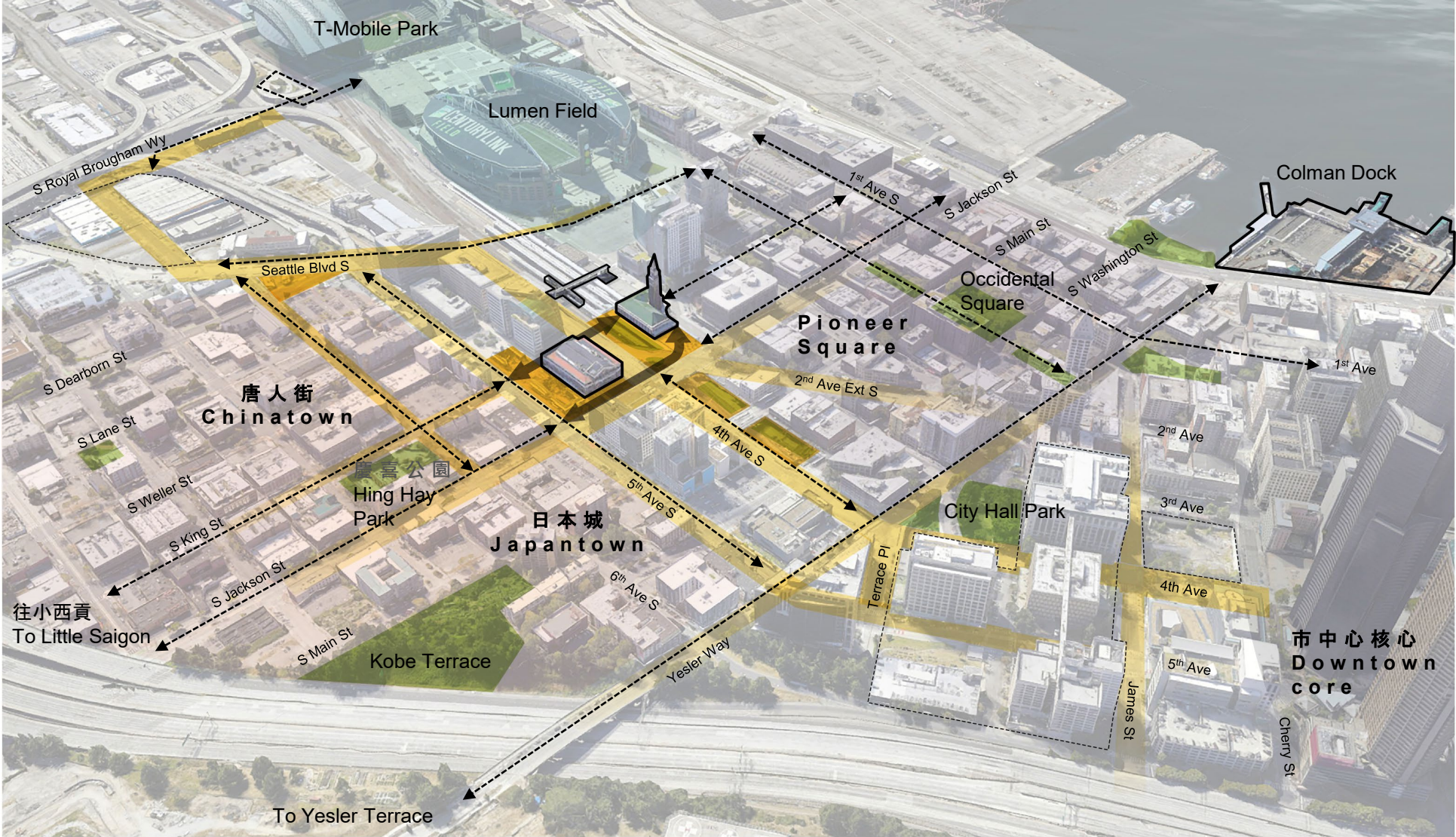
聯合車站和廣場概念——夜間方案

Union Station and plaza concept – night scheme



歷史悠久的車站樞紐和連接社區

Historic station hub and neighborhood connections



公共廣場（現有的和潛在的）
Public plaza (existing and potential)

步行街（現有的和潛在的）
Pedestrian-focused street (existing and potential)

公共公園
Public park

計劃的未來發展
Planned future development

重點步行路線
Key walking route

Board discussion

***Downtown
Further Studies***

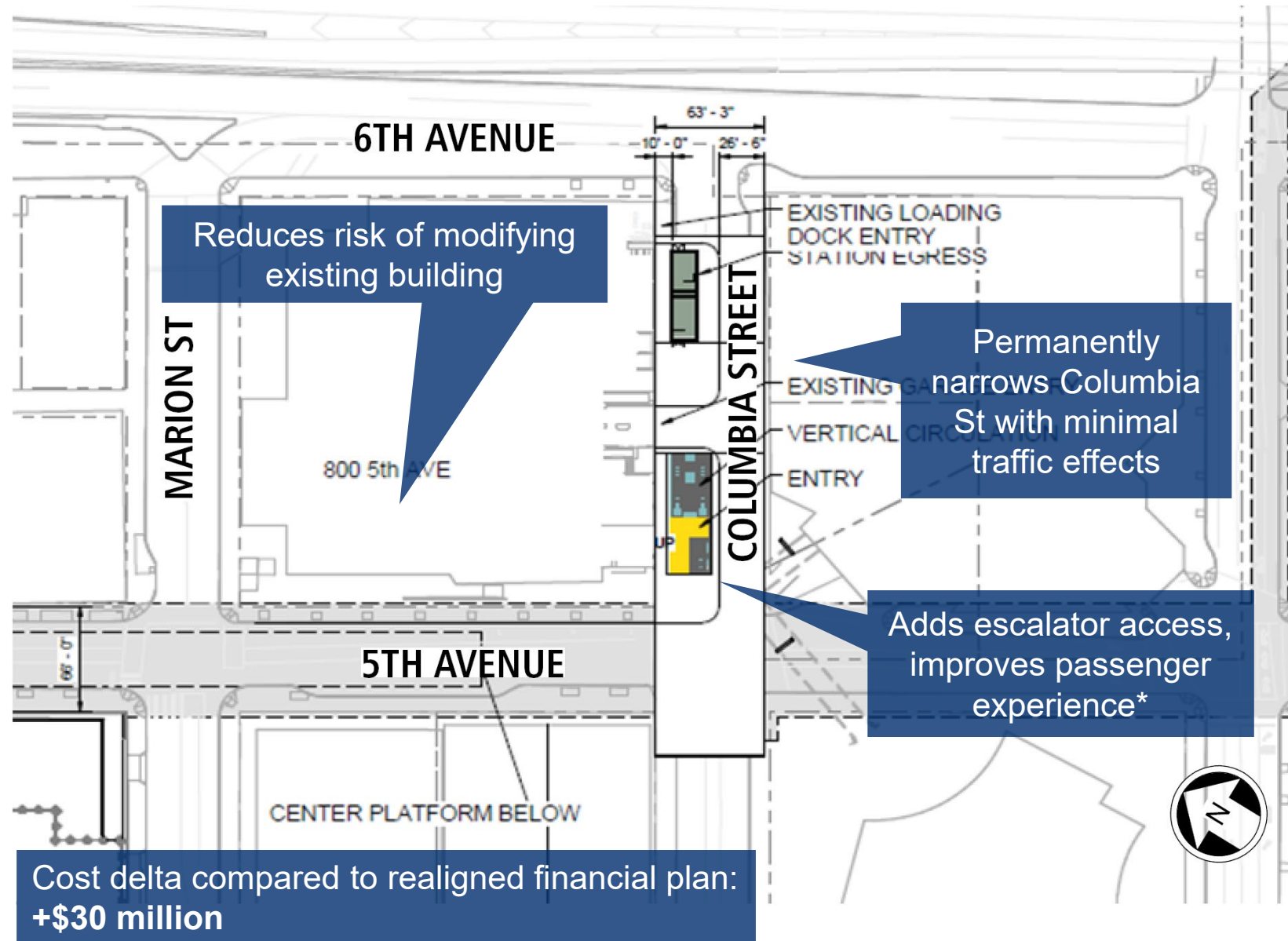
Midtown Station (DT-1): Columbia St Right-of-Way

*Shift station
entrance into public
right-of-way*

Study focus:

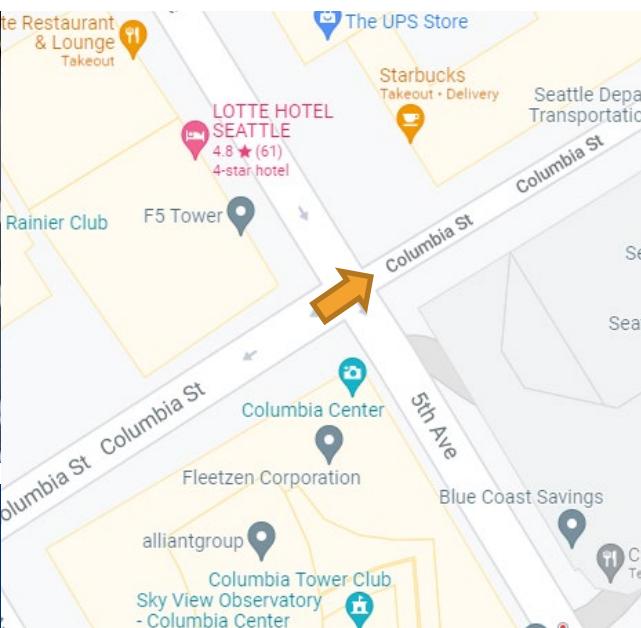
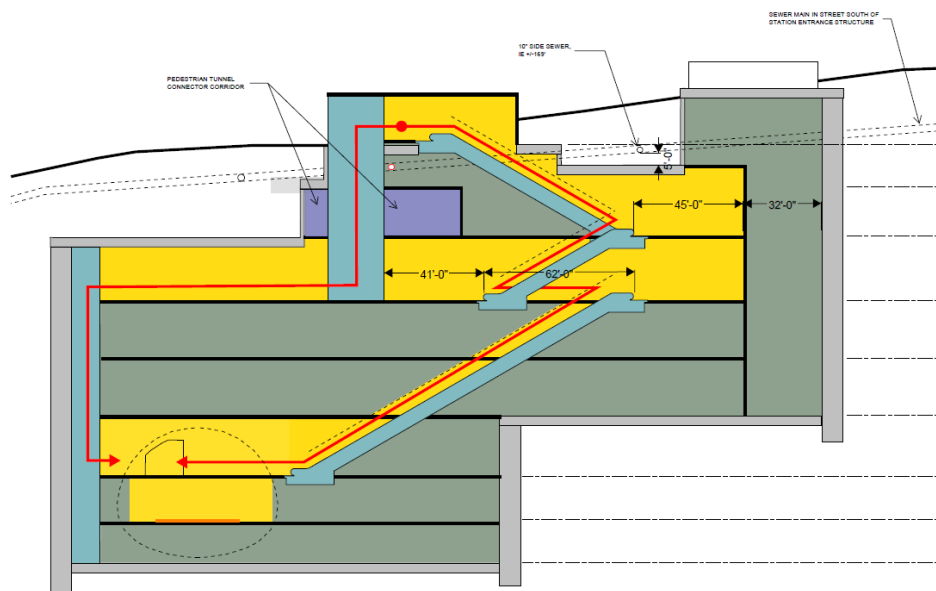
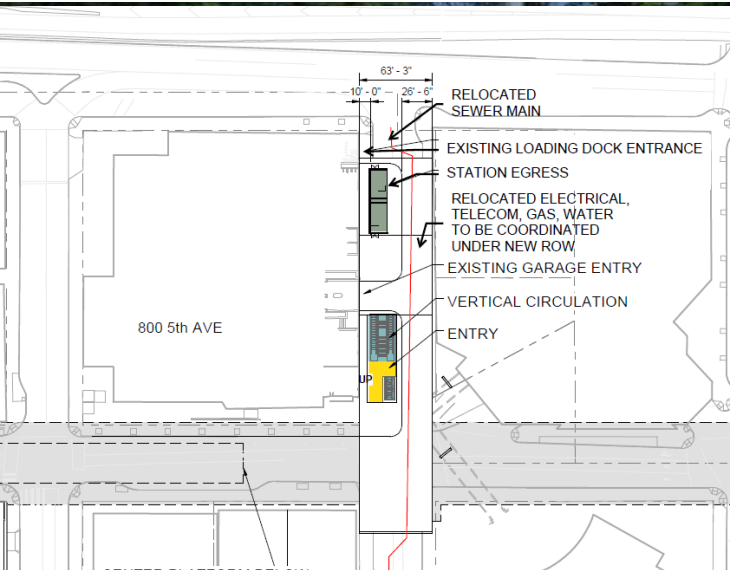
- Reduce costs and schedule risk
- Improve passenger experience

Compared to Preferred 5th / Harrison Alternative (DT-1)



Midtown Station: Columbia Street

Conceptual Layout



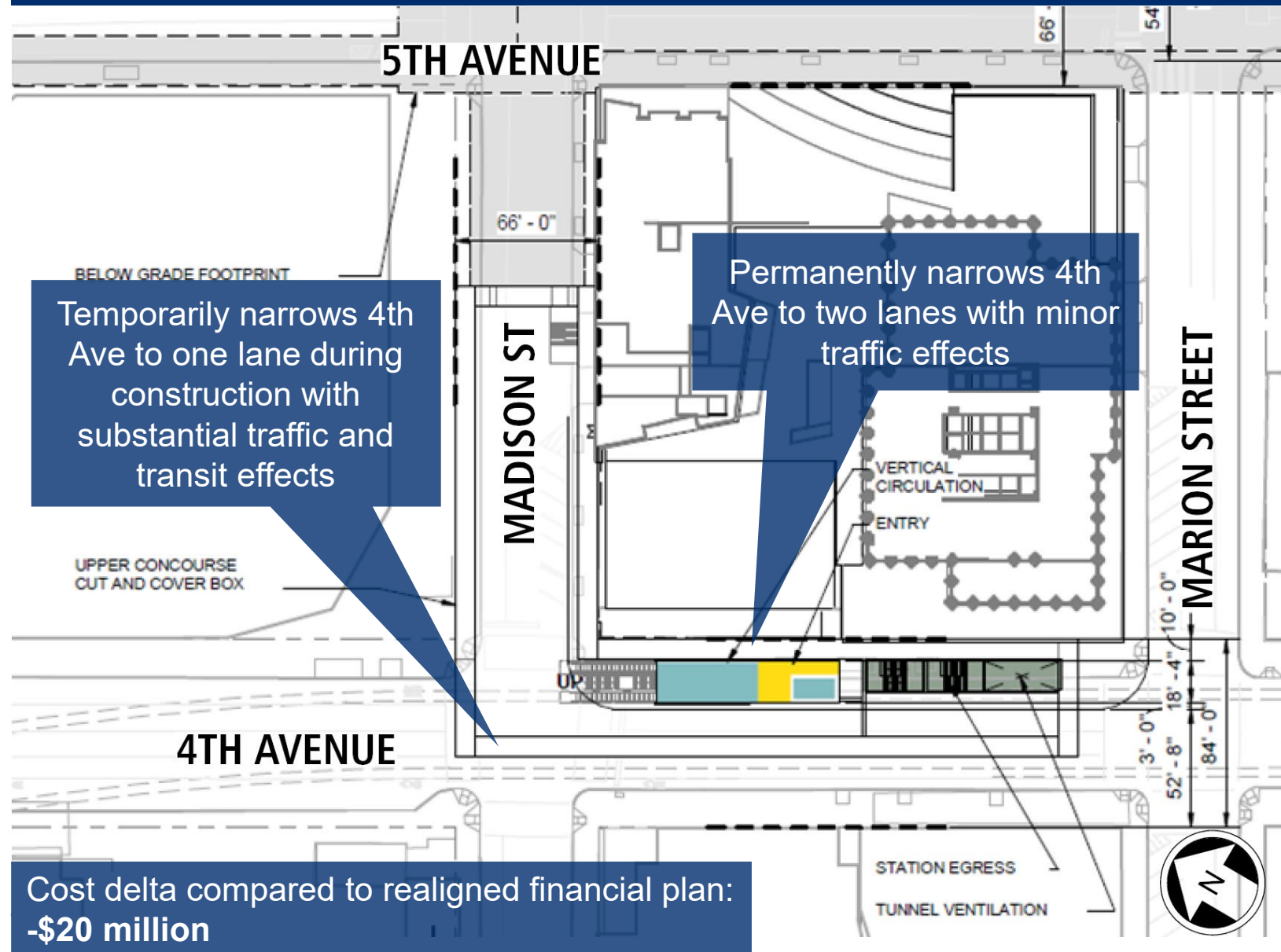
Midtown Station (DT-1): 4th Ave Right-of-Way

*Shift station
entrance into public
right-of-way*

Study focus:

**Reduce costs and schedule
risk**

Compared to Preferred 5th / Harrison Alternative (DT-1)



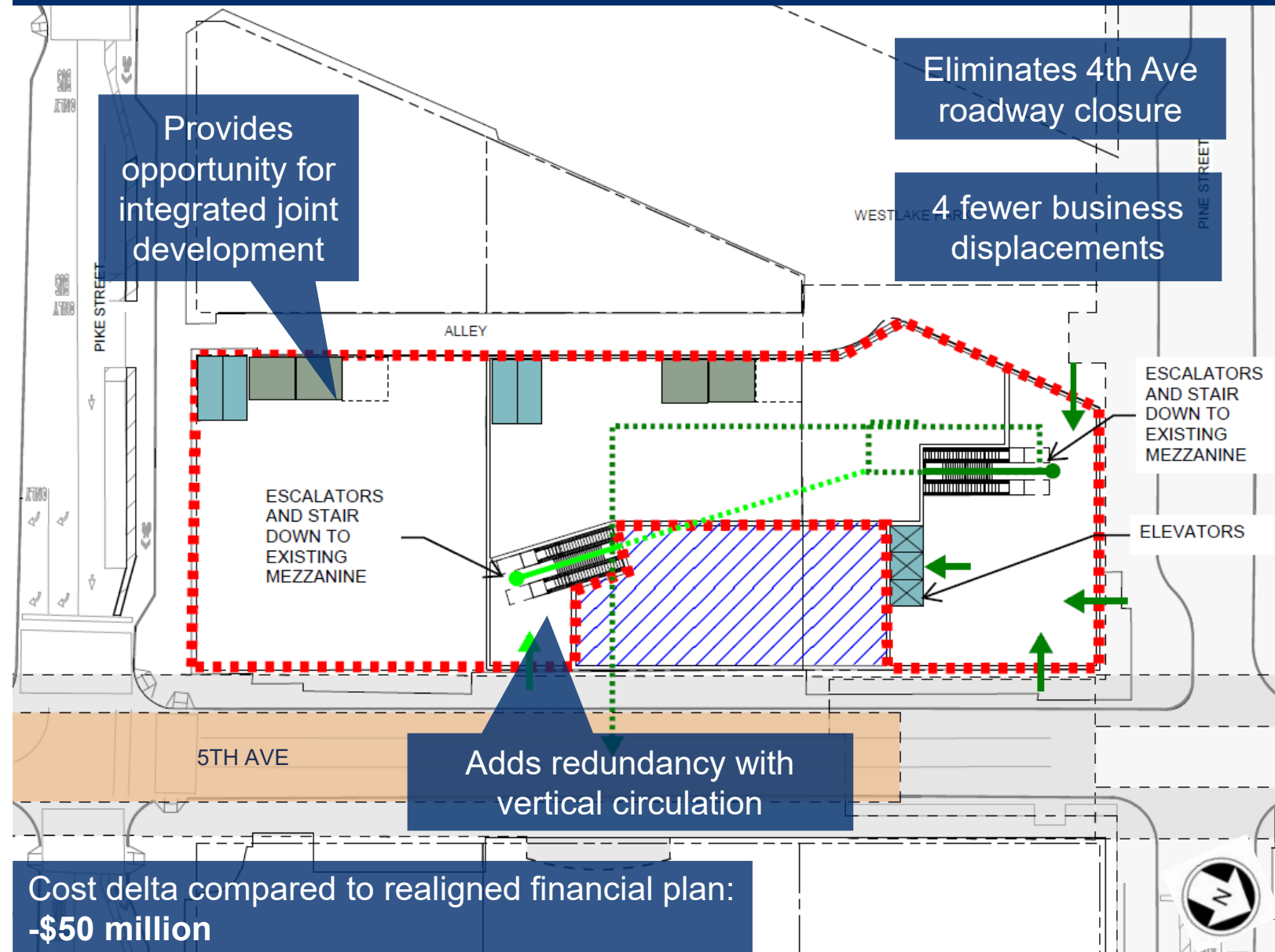
Westlake Station (DT-1): Entrance Consolidation

*Consolidate station
entrances*

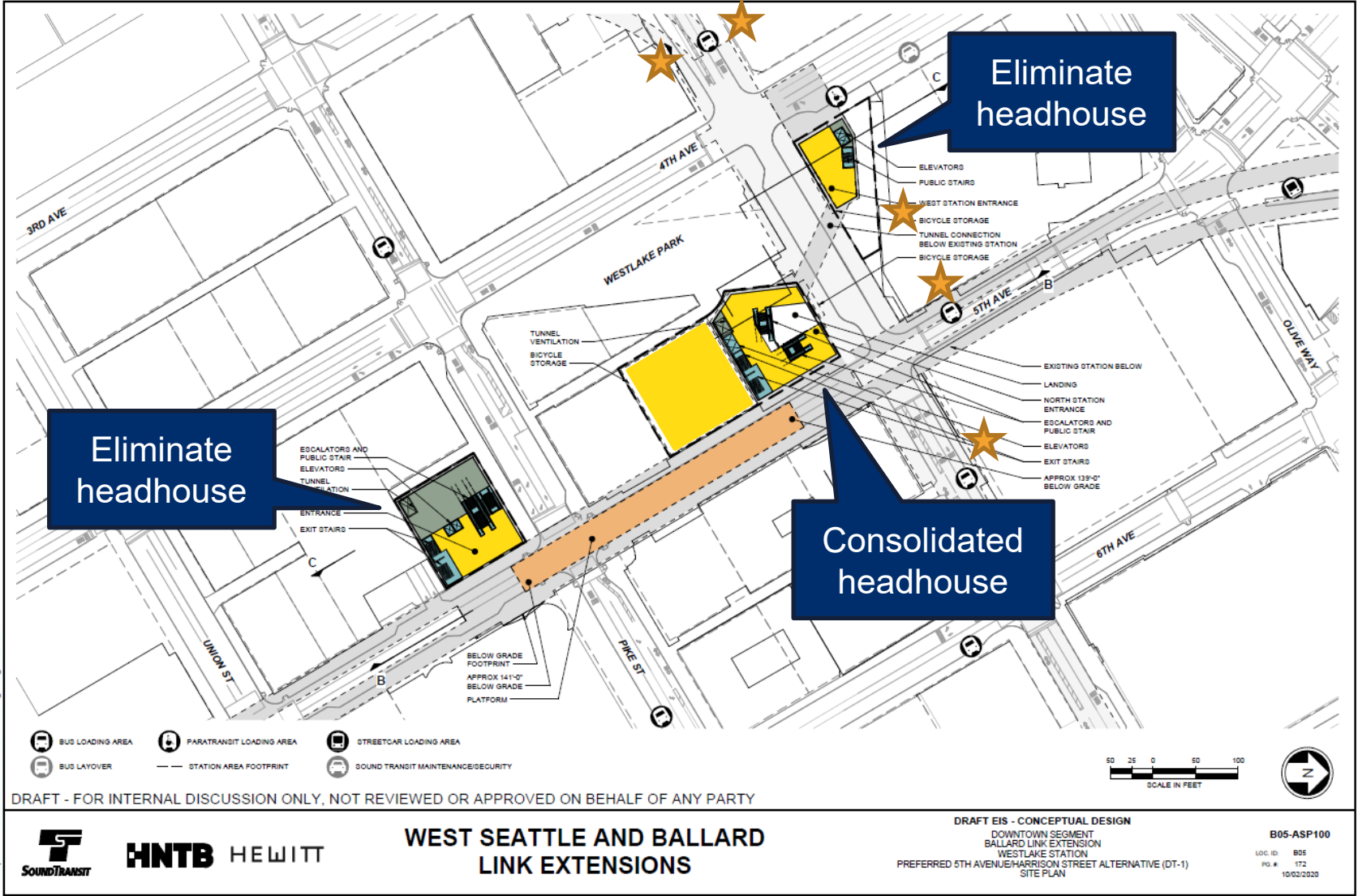
Study focus:

- **Reduce costs**
- **Improve passenger experience**

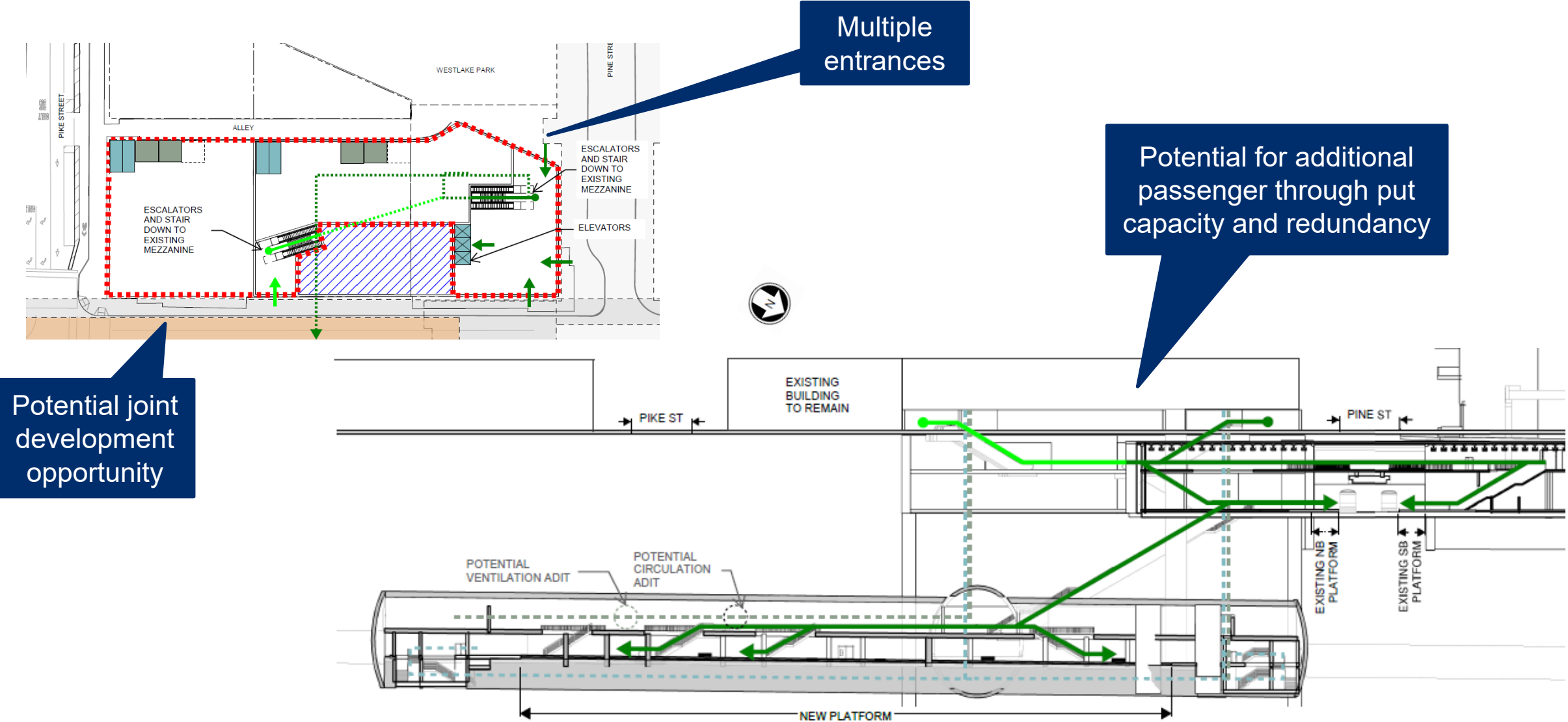
Compared to Preferred 5th / Harrison Alternative (DT-1)



Westlake Station – consolidated headhouse



Westlake Station – consolidated headhouse

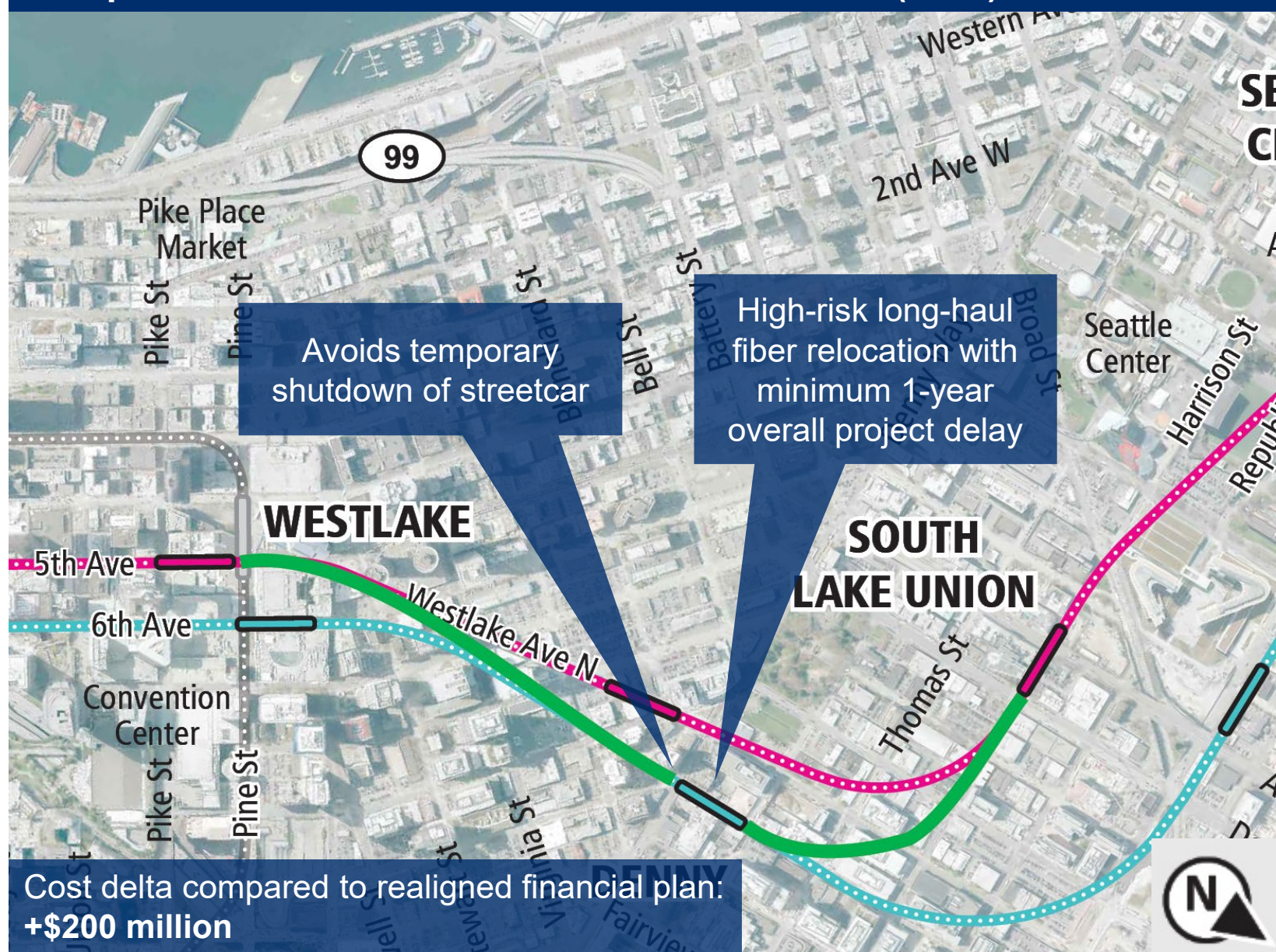


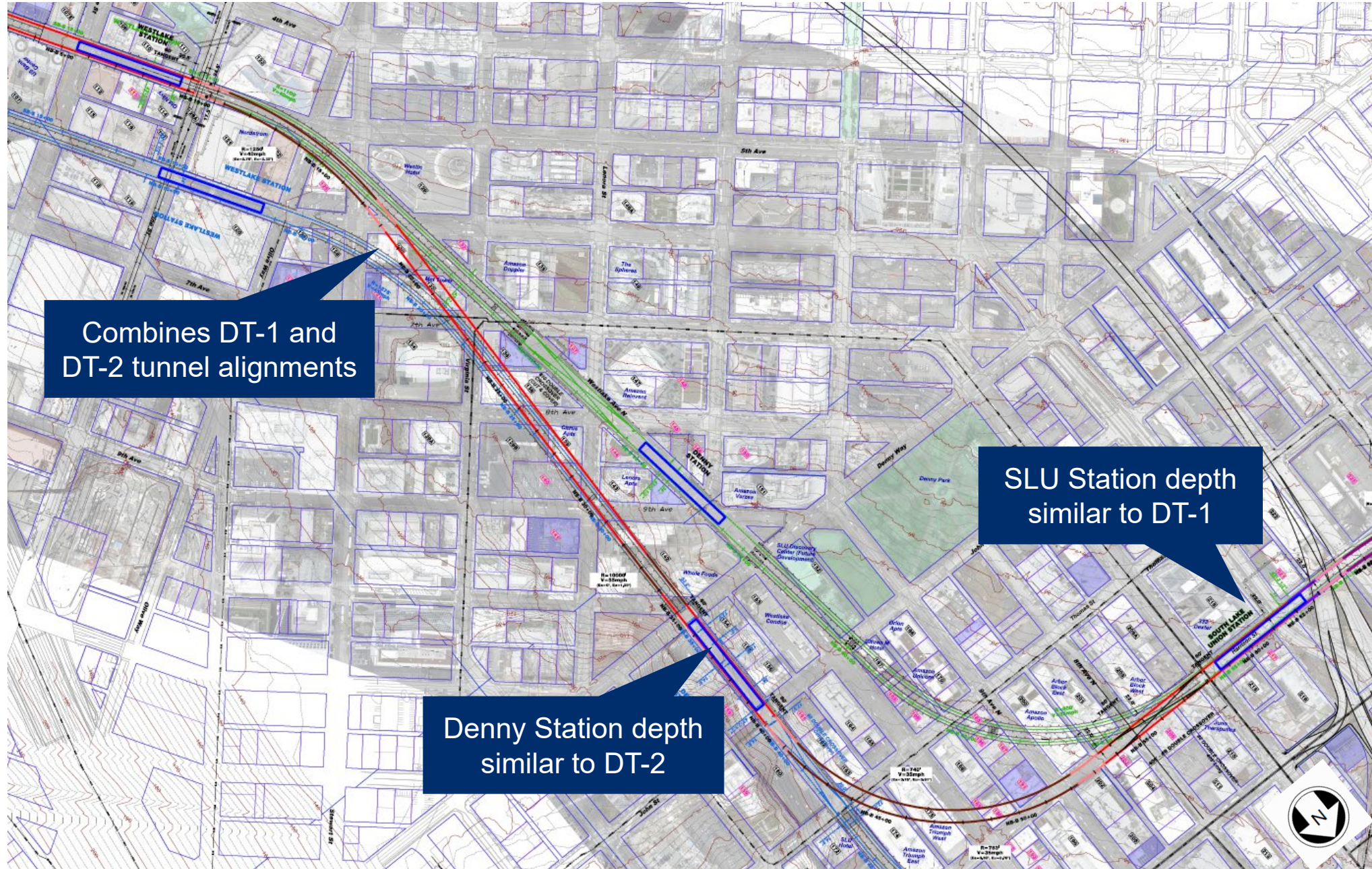
South Lake Union: Mix-and-Match

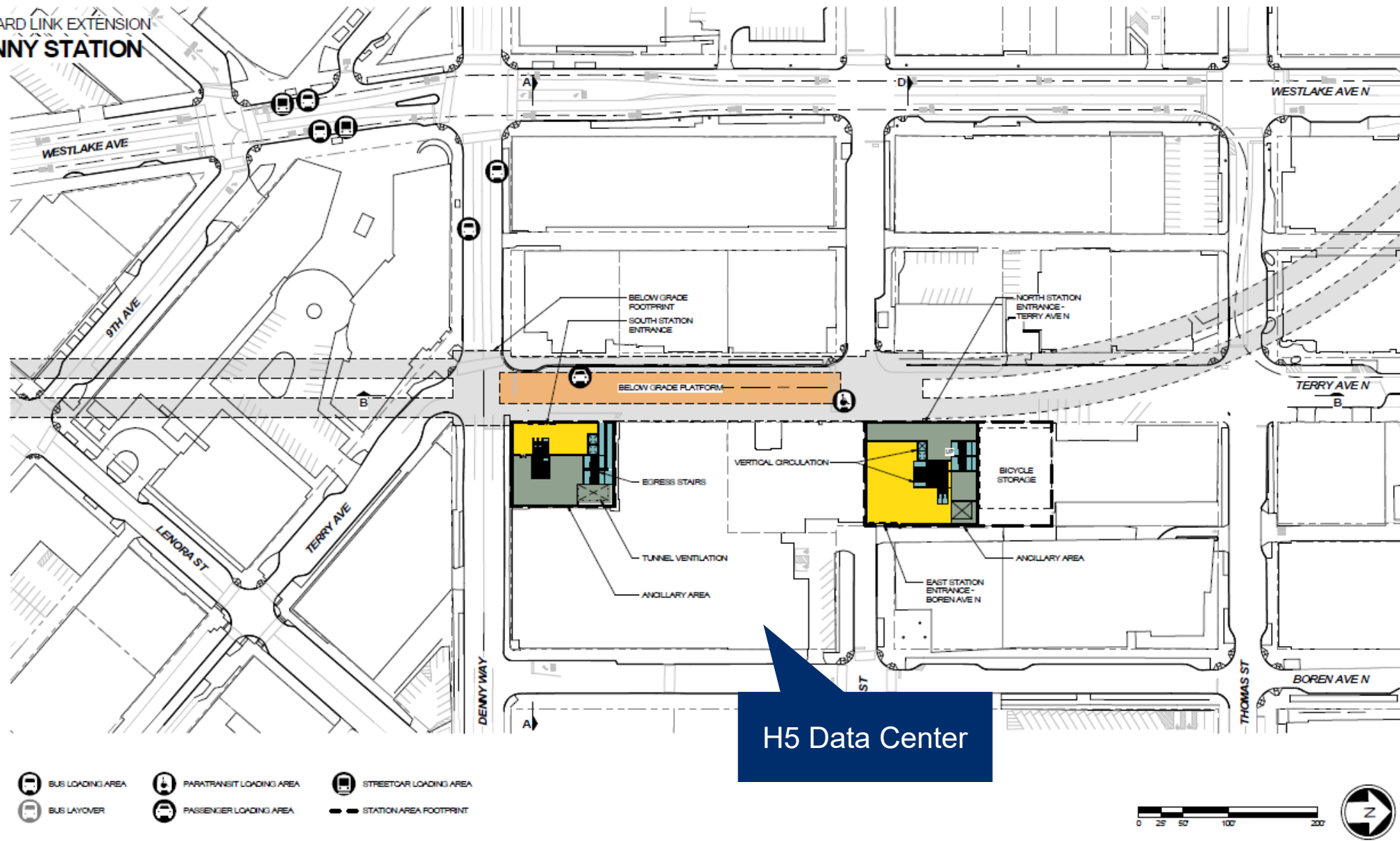
Connecting Westlake/5th station to Denny/Terry station to South Lake Union/Harrison station

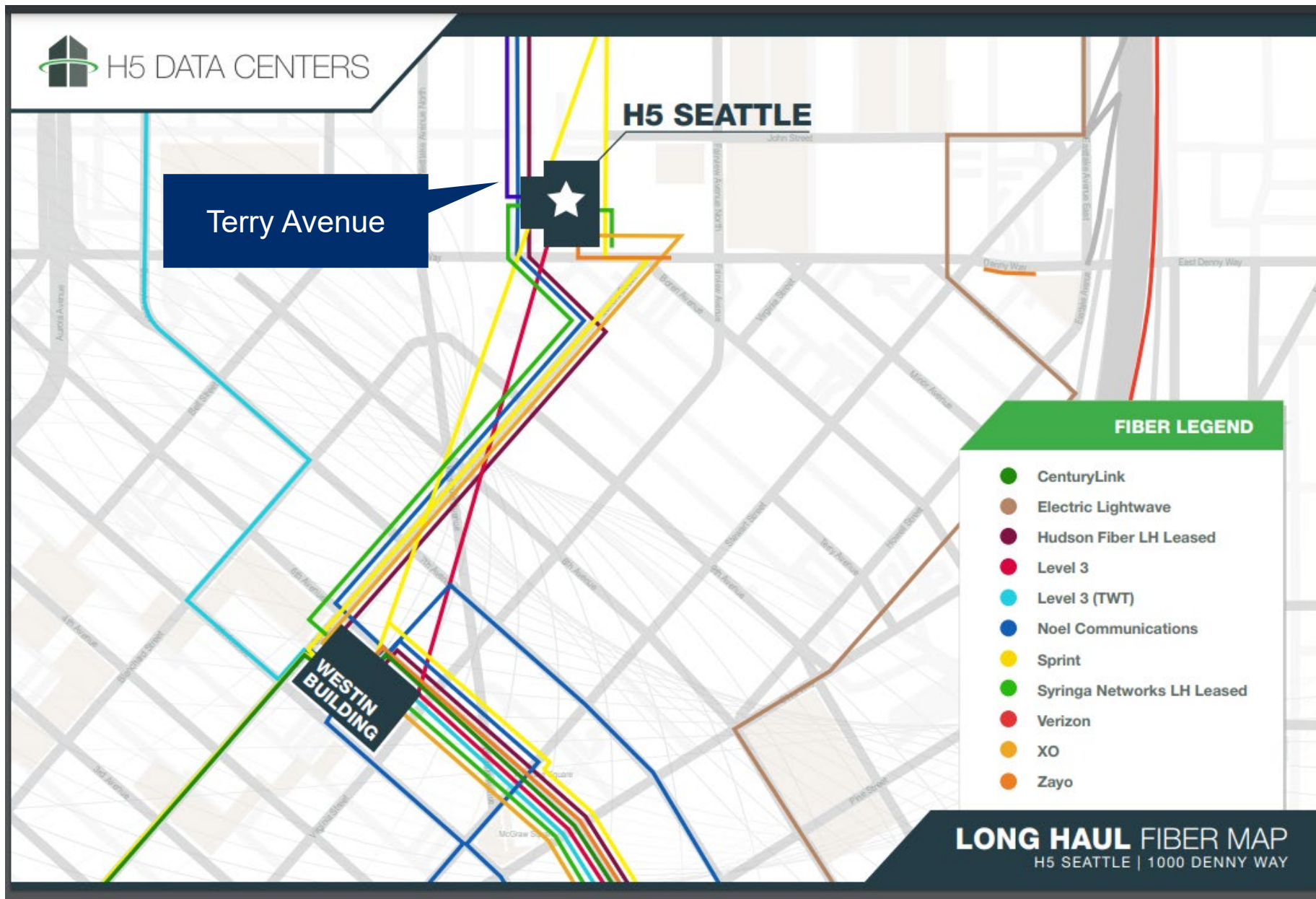
Study focus:
Feasibility of mix-and-match

Compared to Preferred 5th / Harrison Alternative (DT-1)







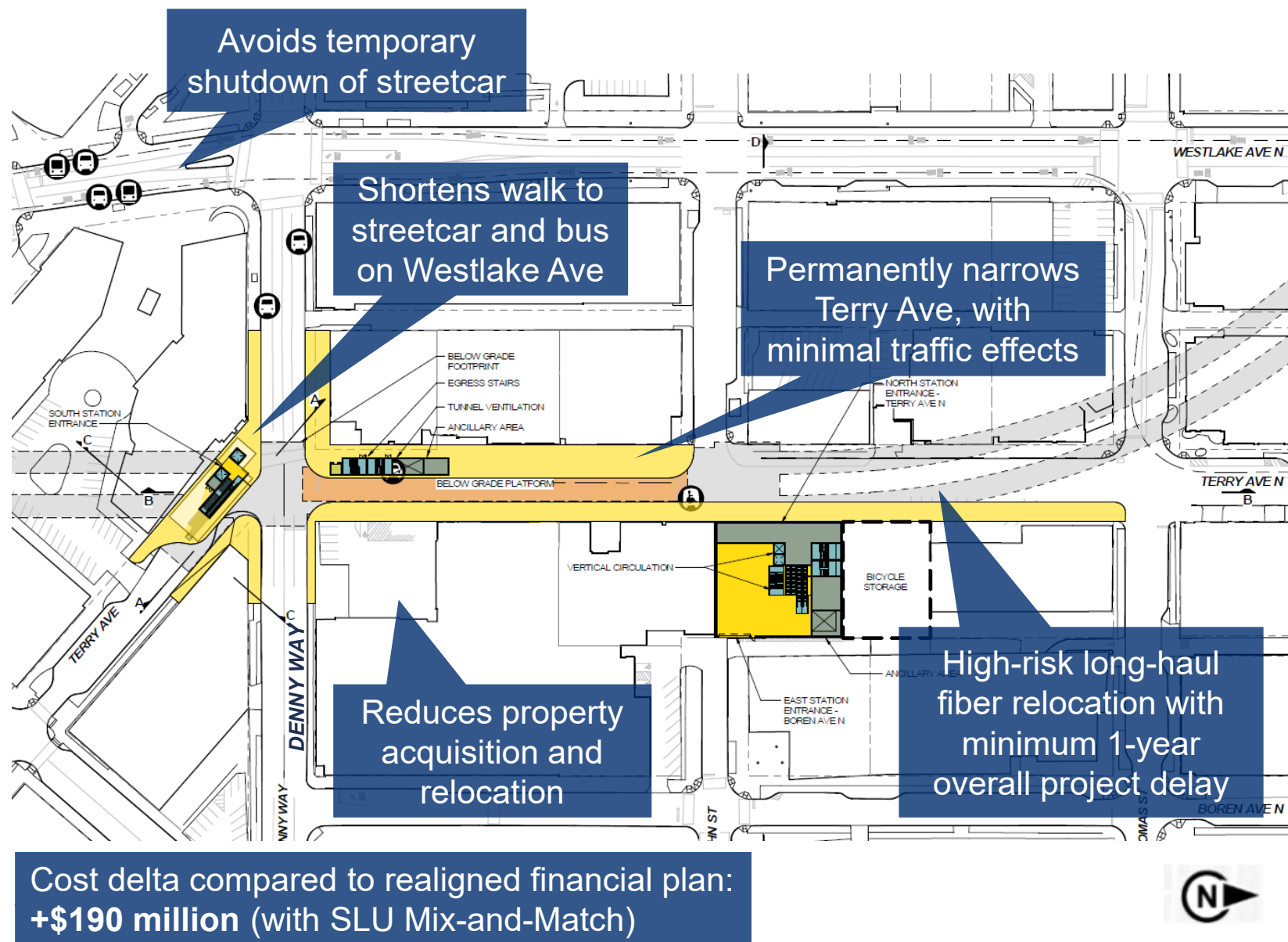


Denny Station: Entrance on Both Sides of Denny

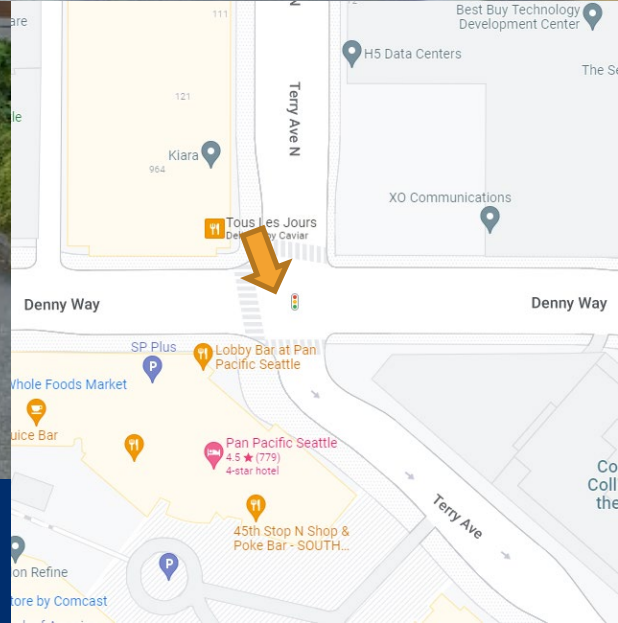
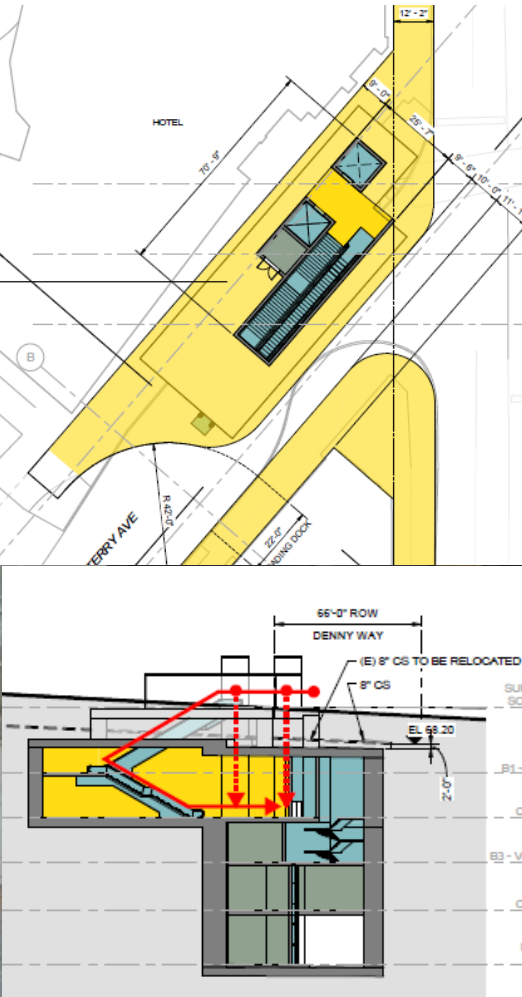
*Opportunities to
provide station
access from both
sides of Denny Way*

Study focus:
Improve passenger access

Compared to Preferred 5th / Harrison Alternative (DT-1)



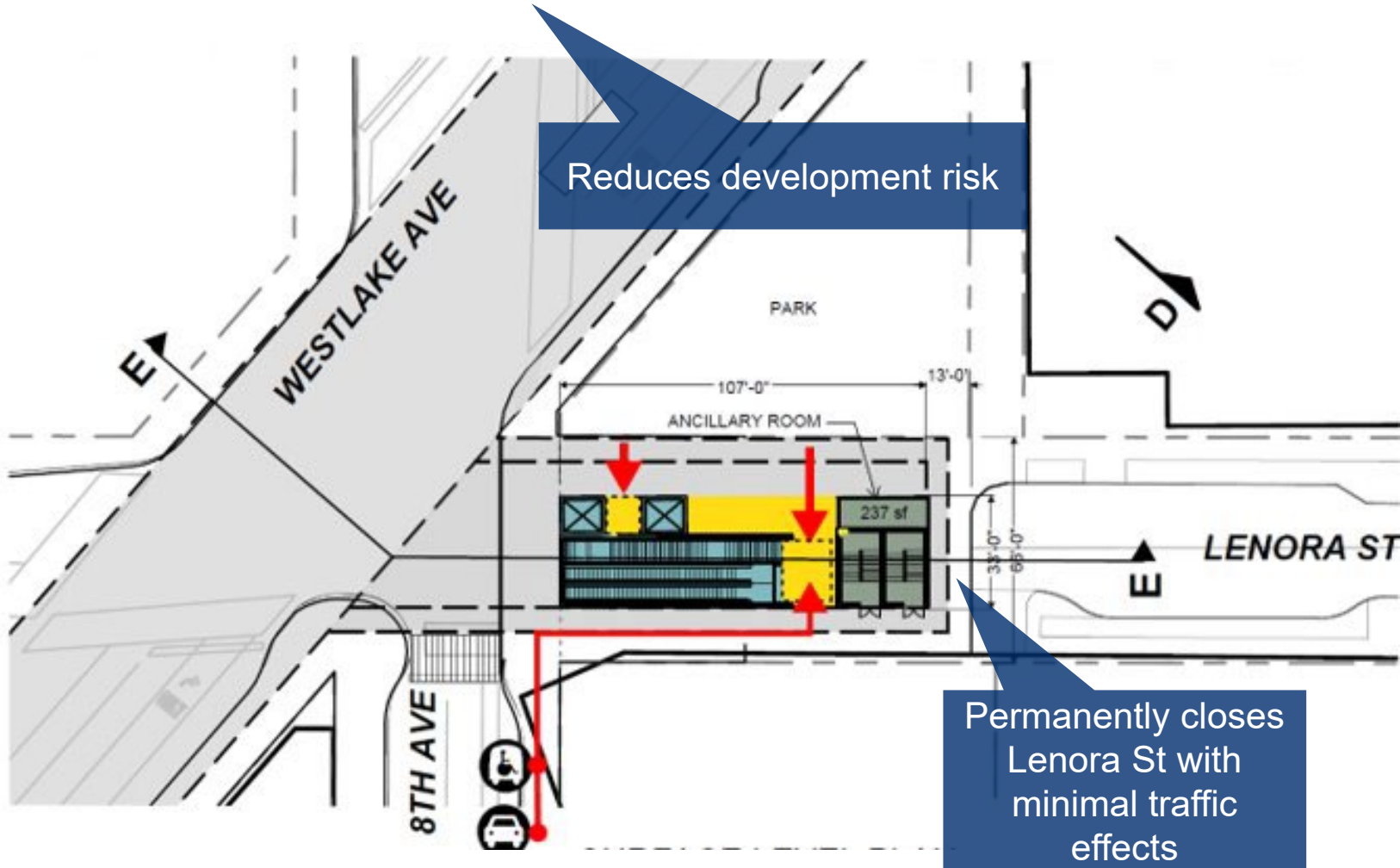
Denny Station: Terry Avenue (south of Denny)



Denny Station (DT-1): Lenora Street Right-of- Way

*Shift station
entrance into public
right-of-way*

Study focus:
Reduce costs

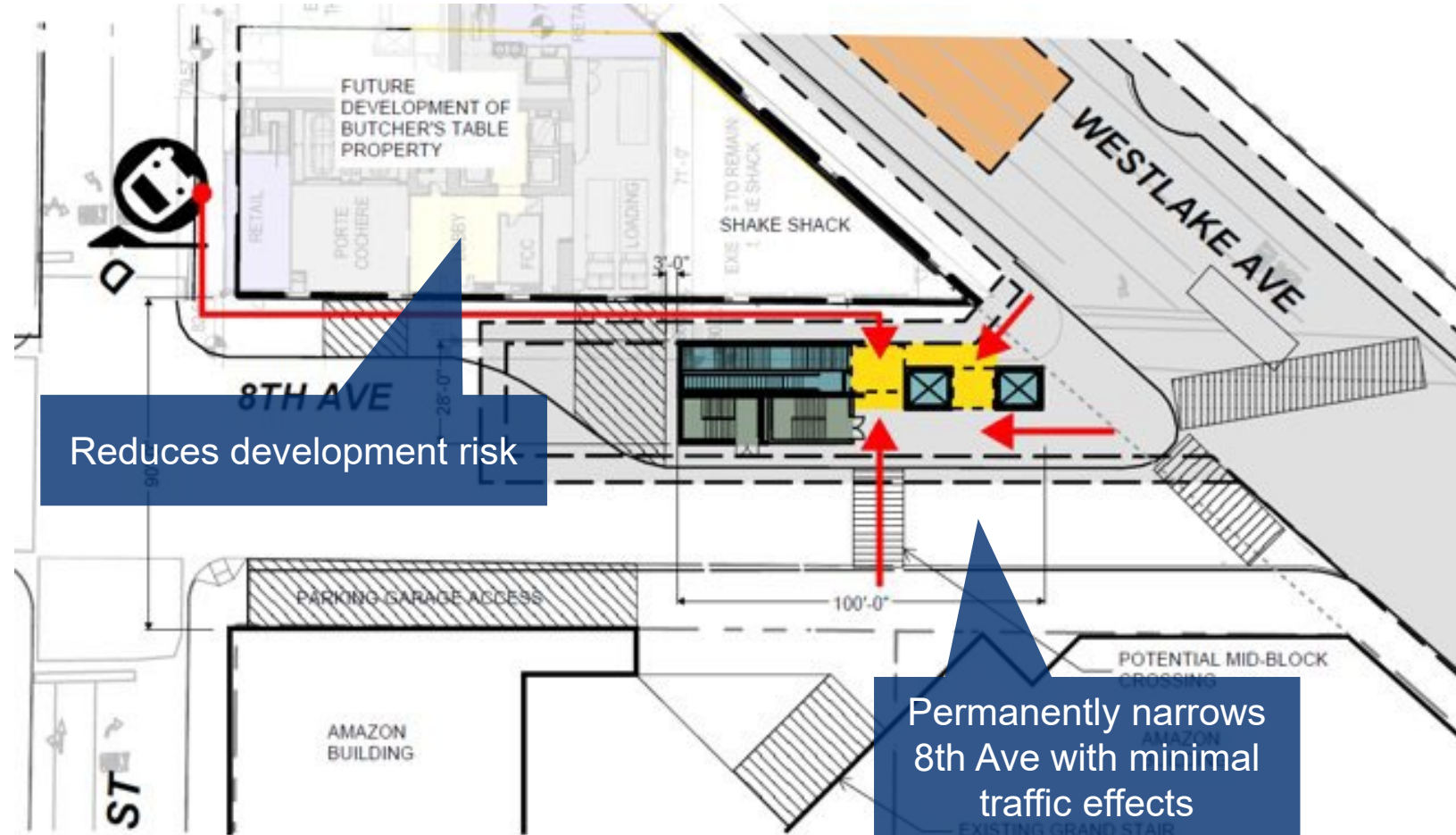


Cost delta compared to realigned financial plan:
-\$20 million



Denny Station (DT-1): 8th Ave Right-of-Way

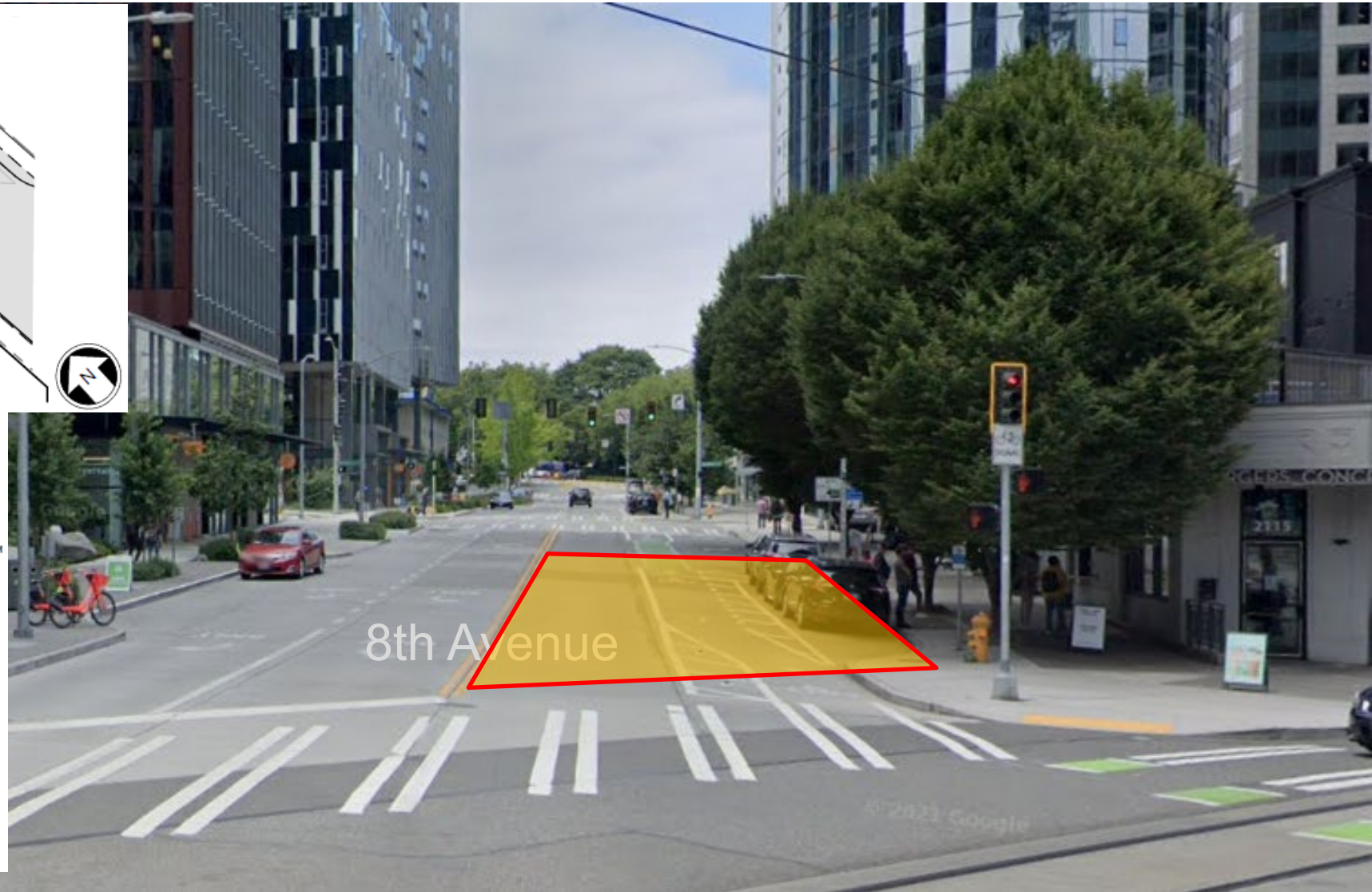
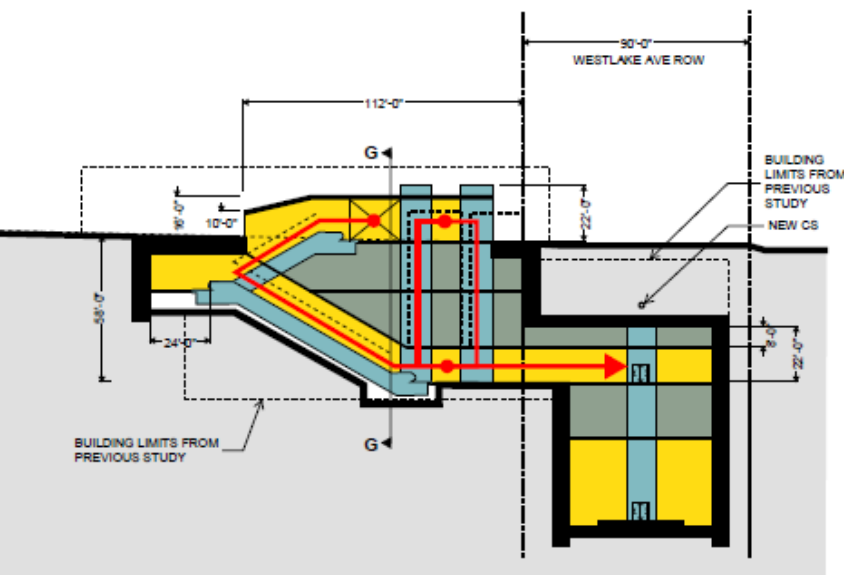
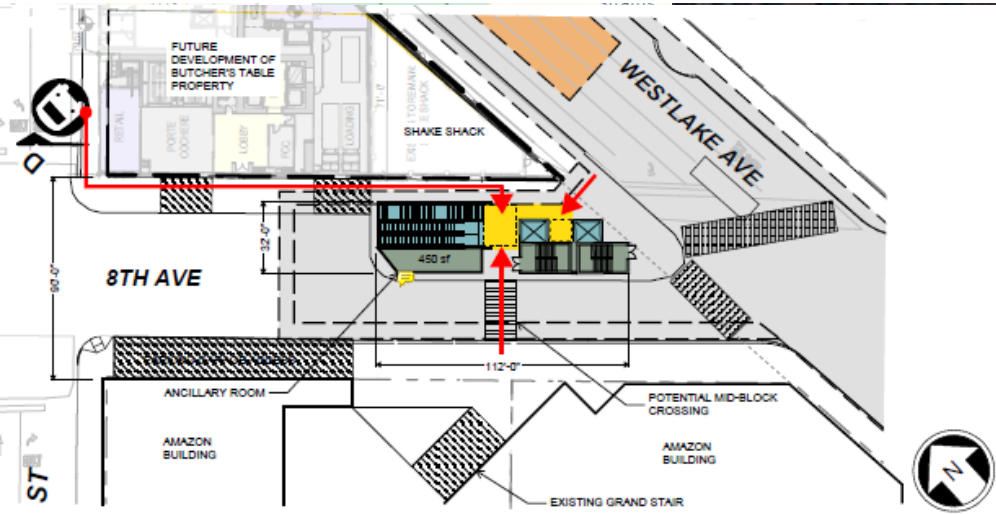
*Shift station
entrance into public
right-of-way*



Study focus:
Reduce costs

Cost delta compared to realigned financial plan:
-\$60 million

Denny Station: 8th Avenue

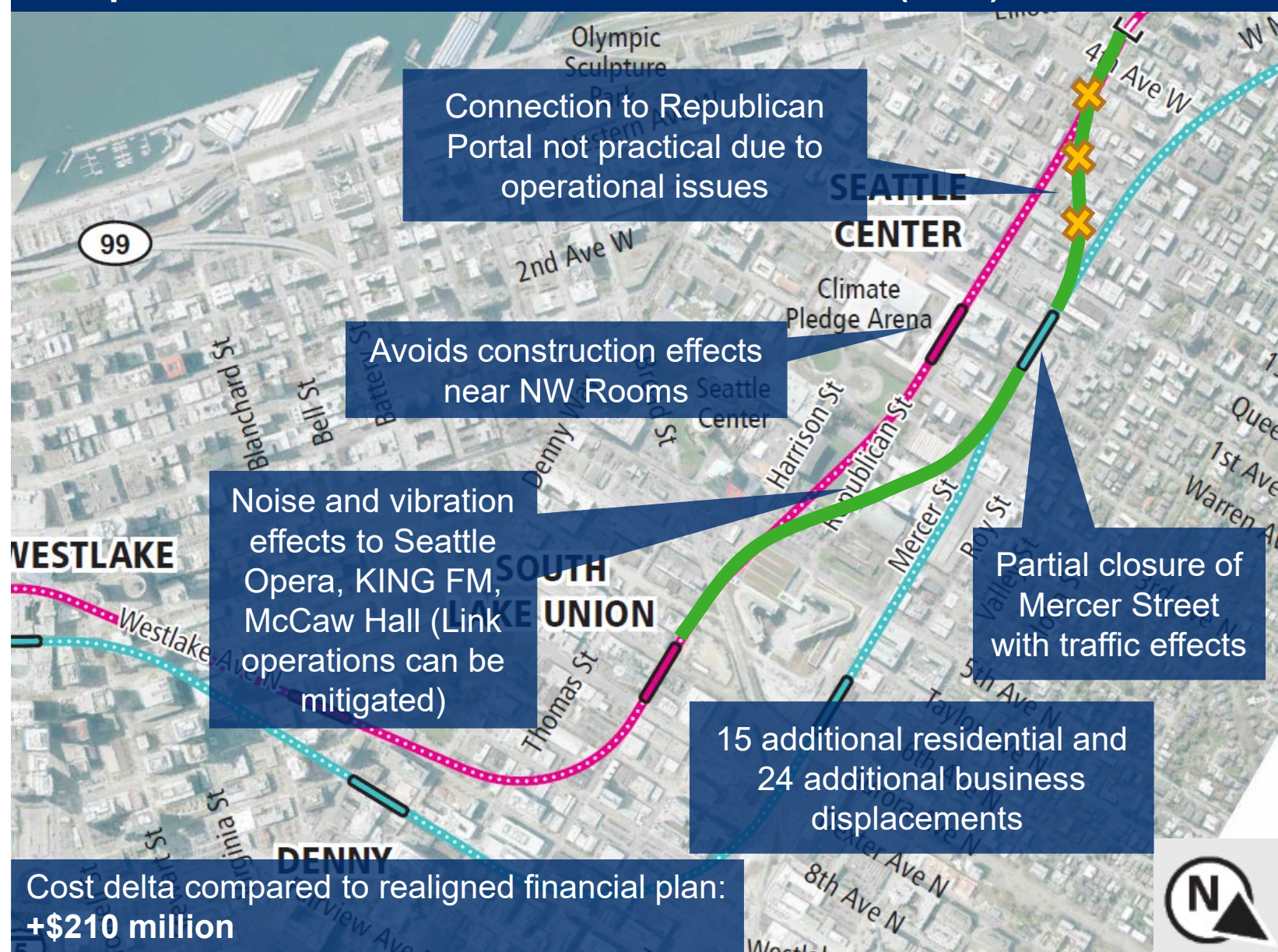


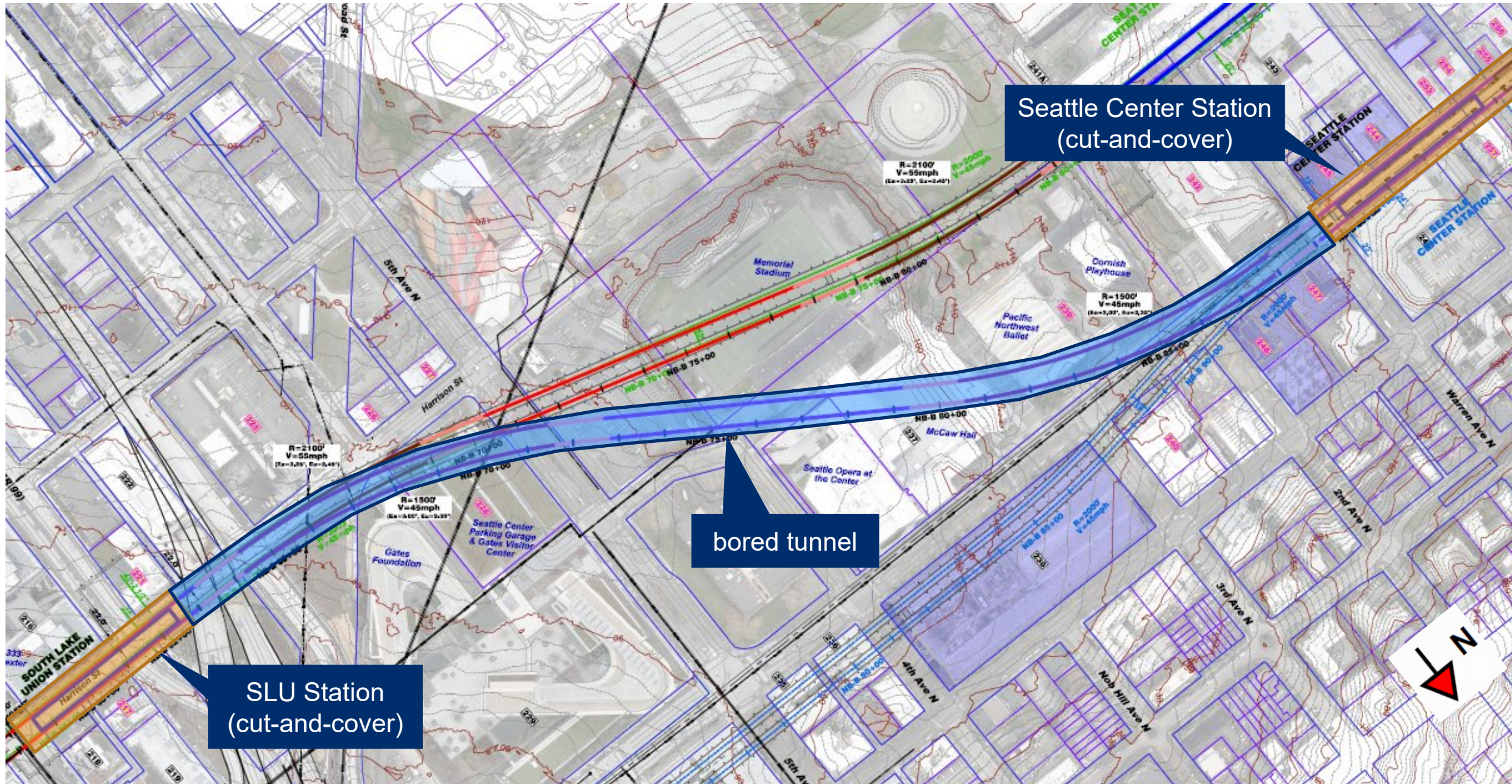
Seattle Center: Mix-and-Match

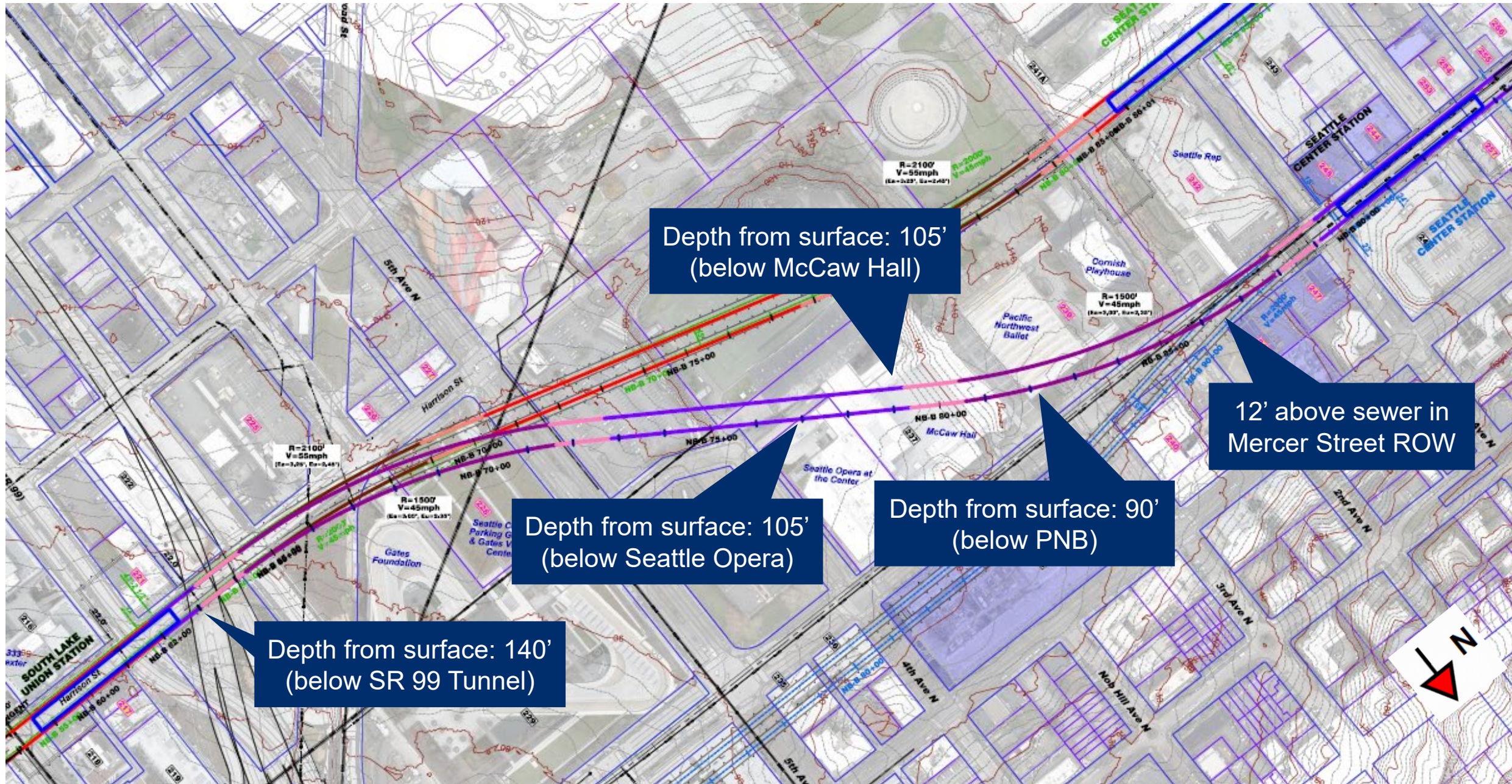
Connecting South Lake Union/Harrison station to Seattle Center/Mercer station to either north tunnel portal location

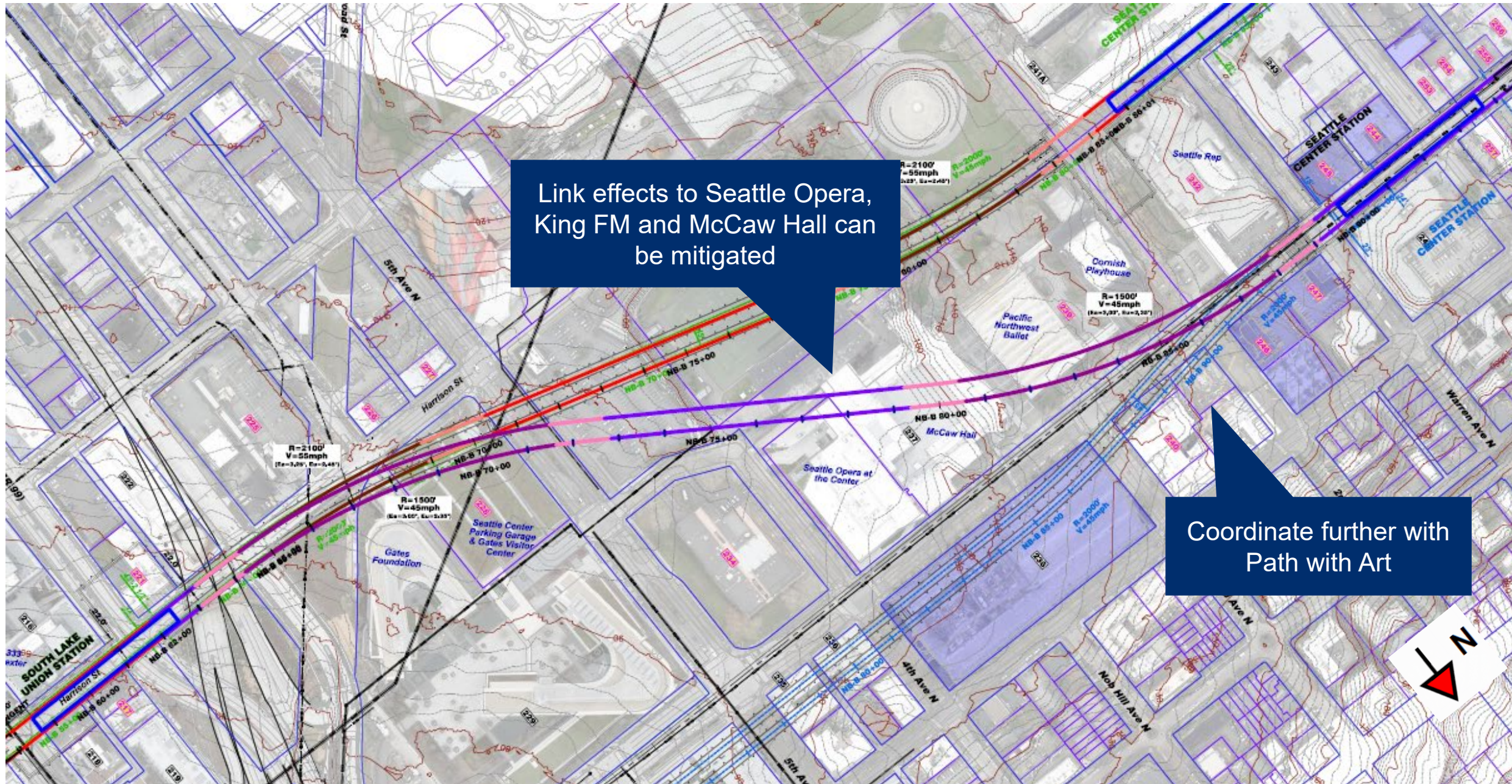
Study focus:
Feasibility of mix-and-match

Compared to Preferred 5th / Harrison Alternative (DT-1)







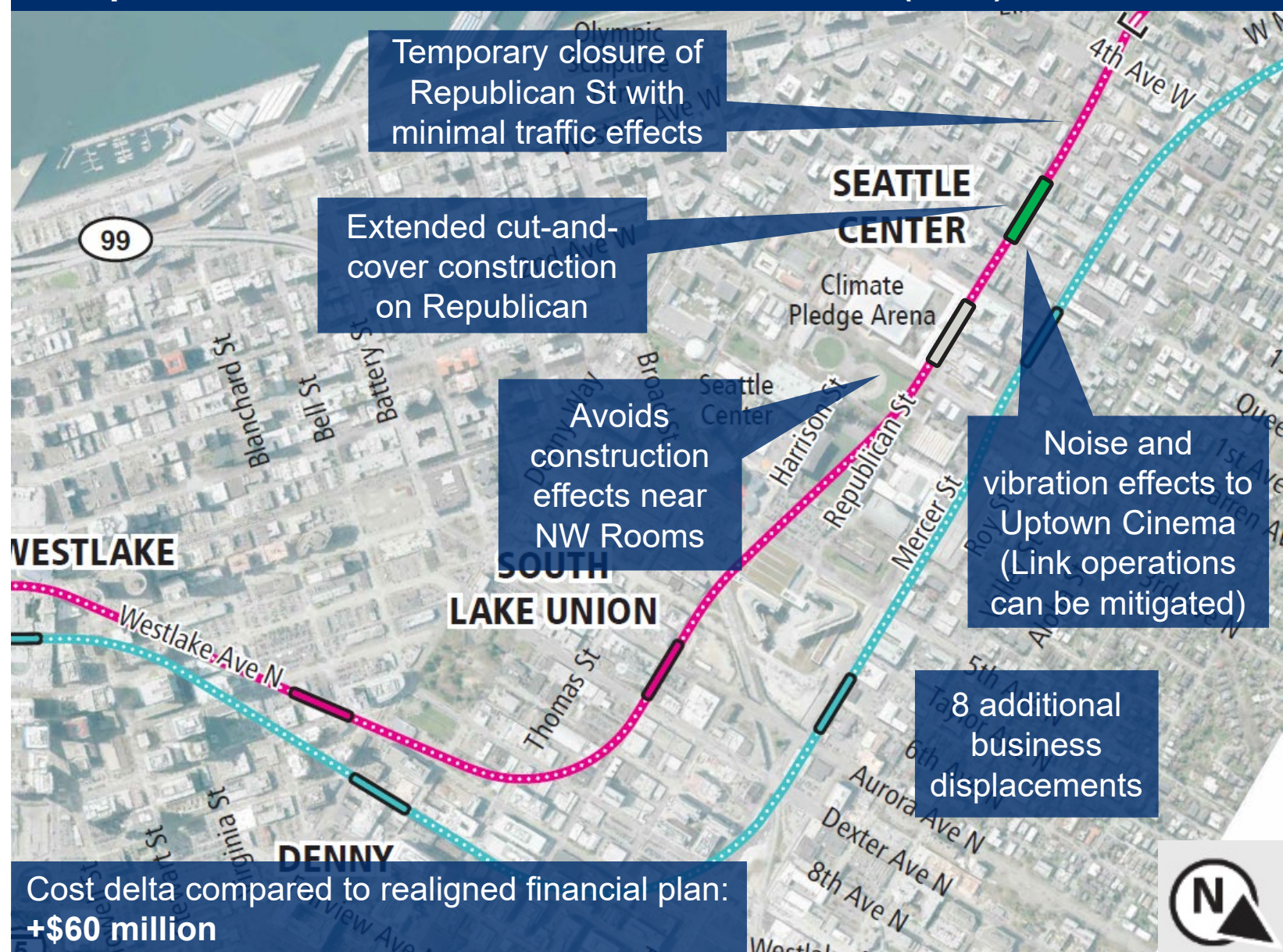


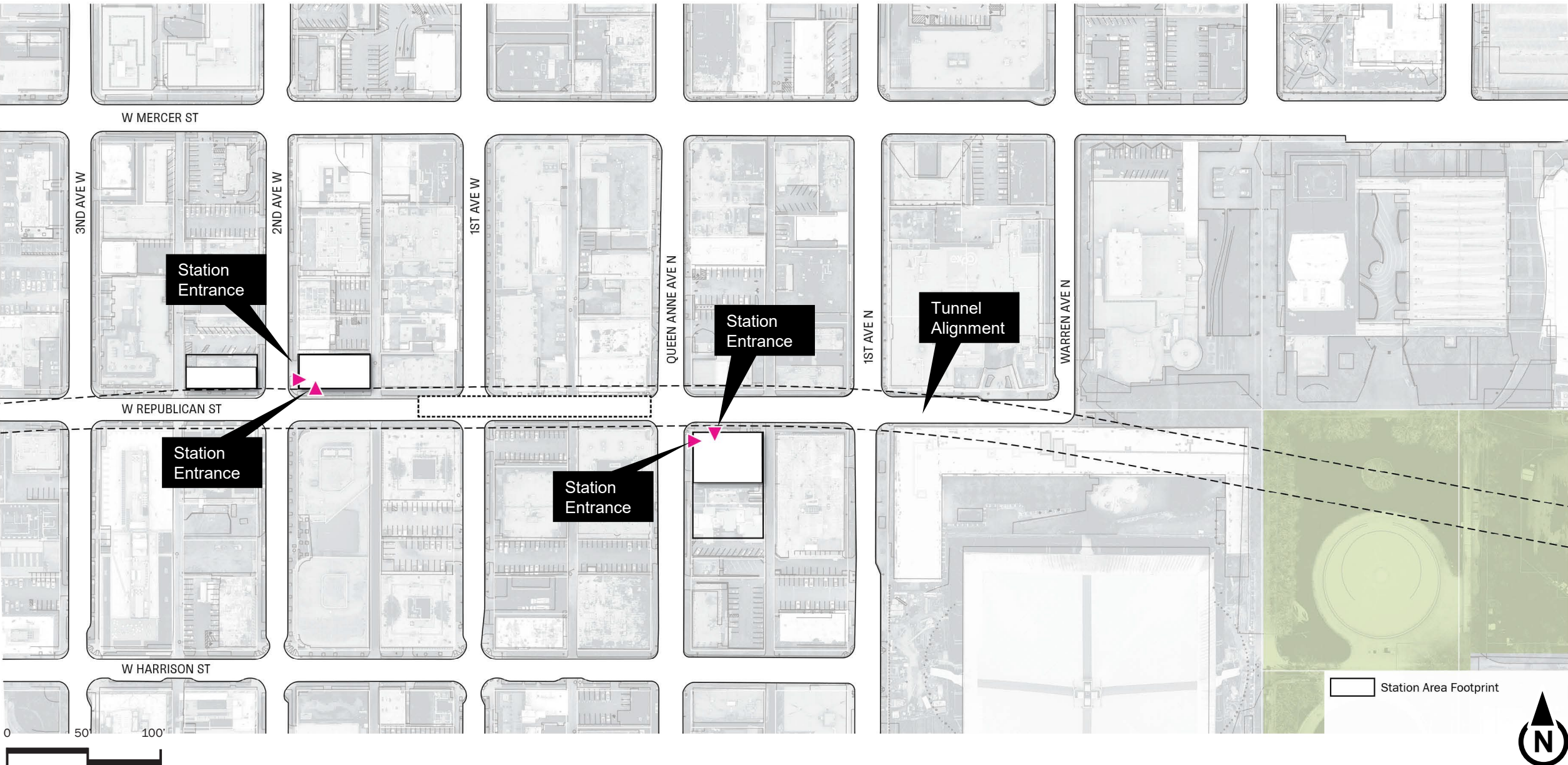
Seattle Center: Republican West

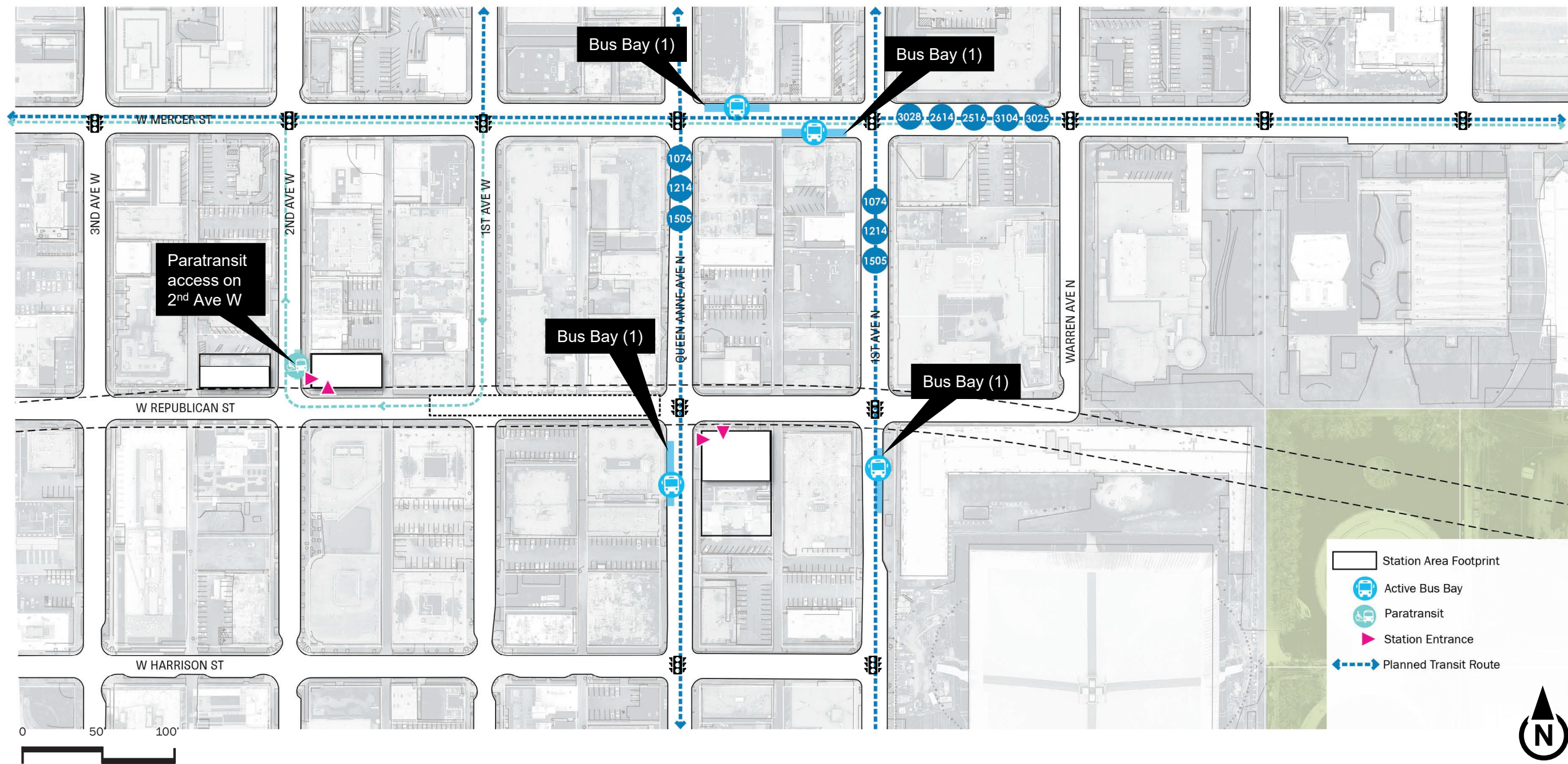
Shifting Seattle Center Republican station west

Study focus:
**Feasibility of shifting station
west**

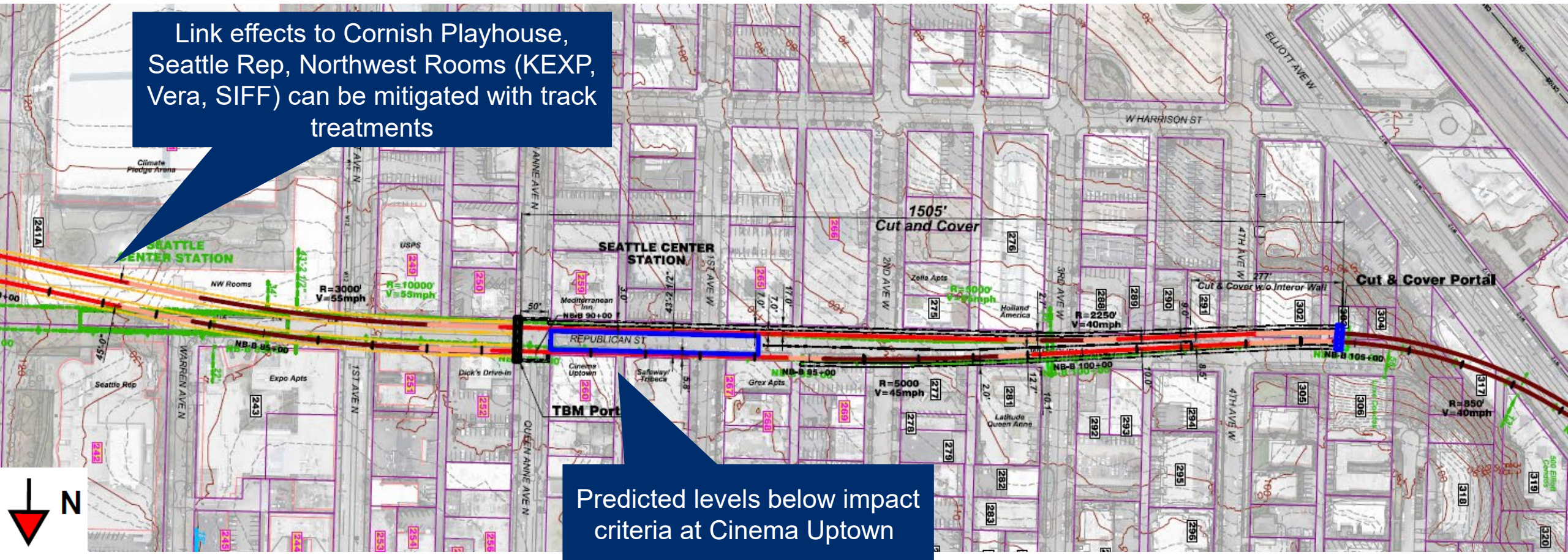
Compared to Preferred 5th / Harrison Alternative (DT-1)



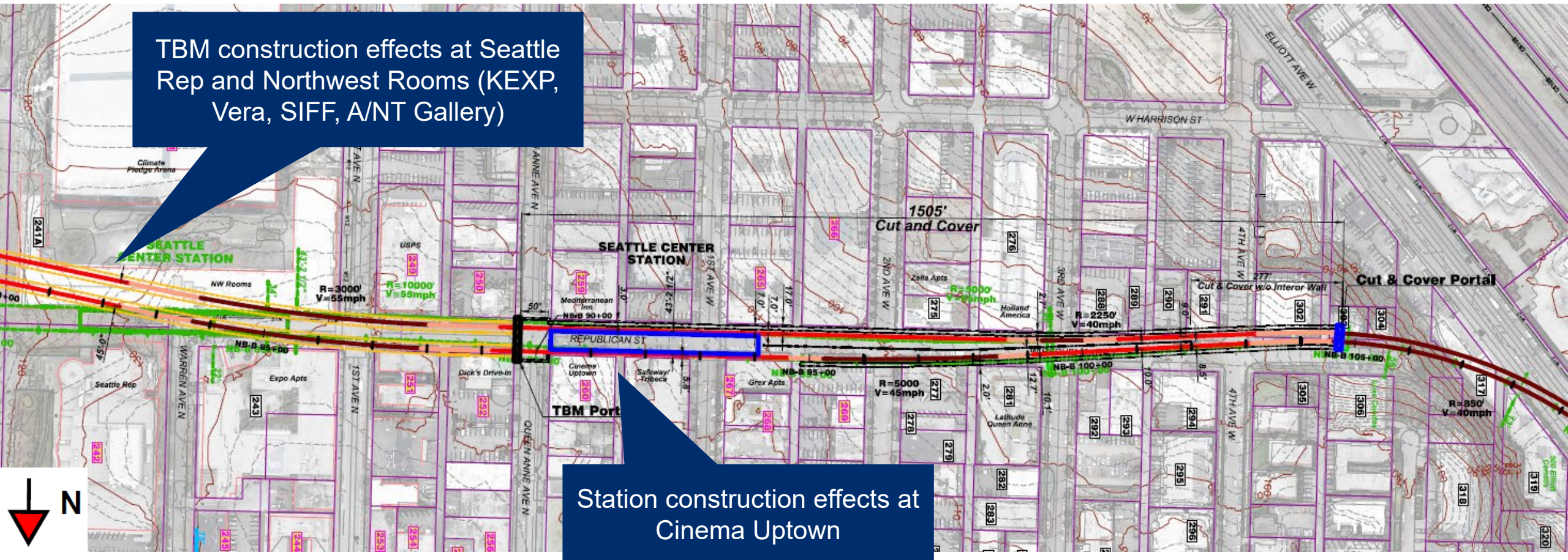




Noise and Vibration: Link Operational Effects



Noise and Vibration: Construction Effects



Board discussion

***Interbay-Smith Cove
Further Studies***

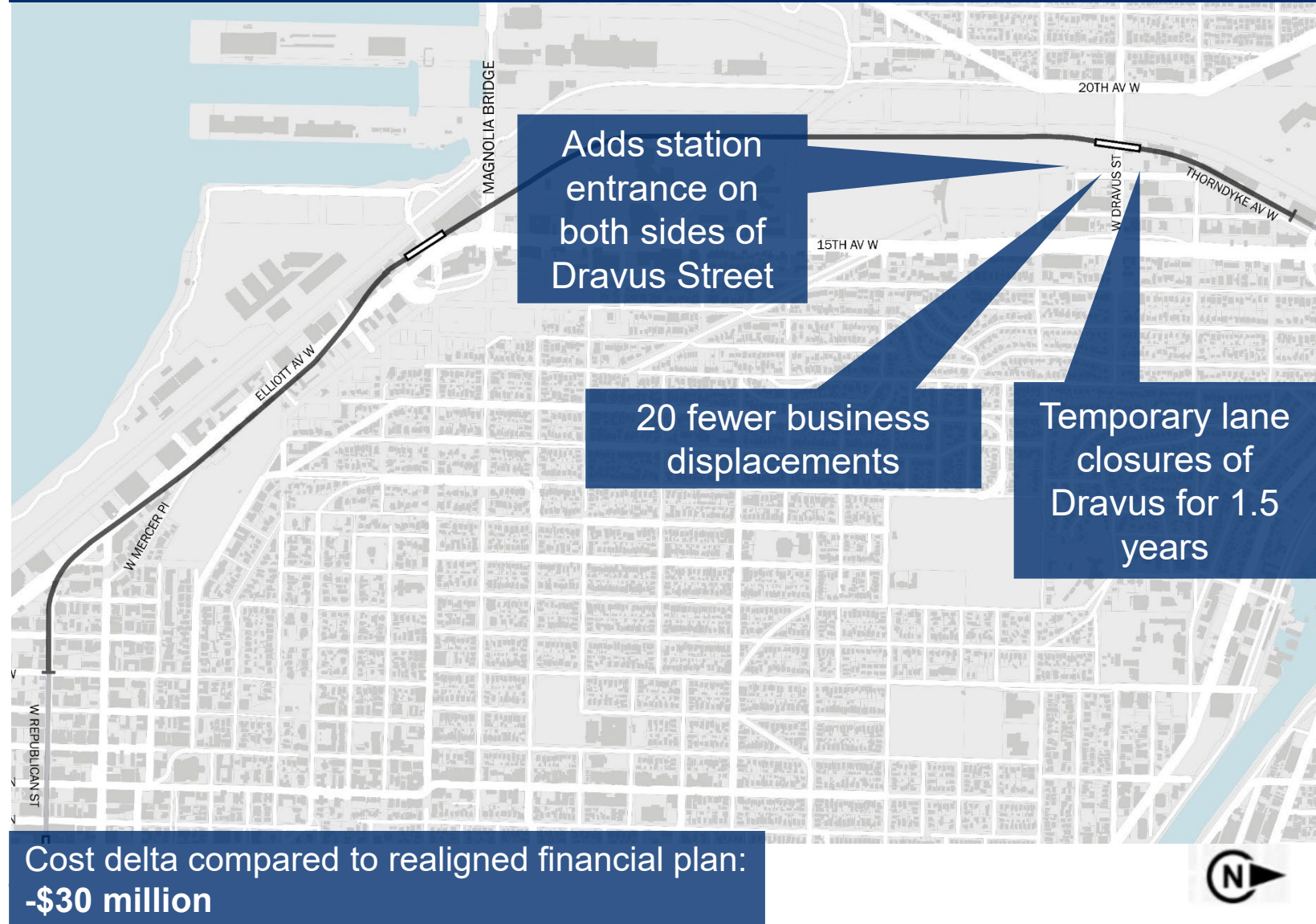
Modified SIB-1 Alignment

Shift Interbay Station south to straddle below Dravus St

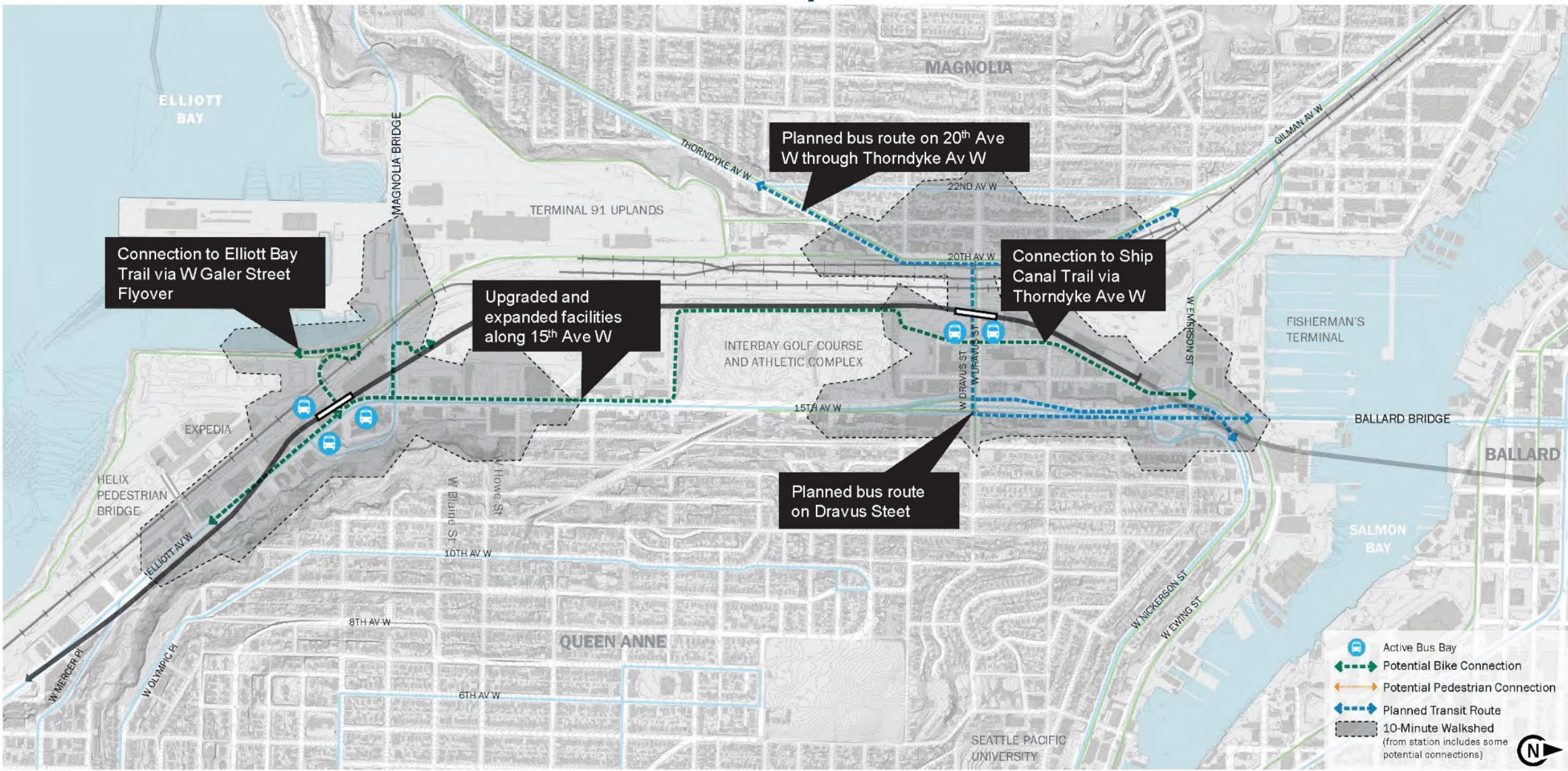
Study focus:

Avoid Seattle City Light and Seattle Storm properties

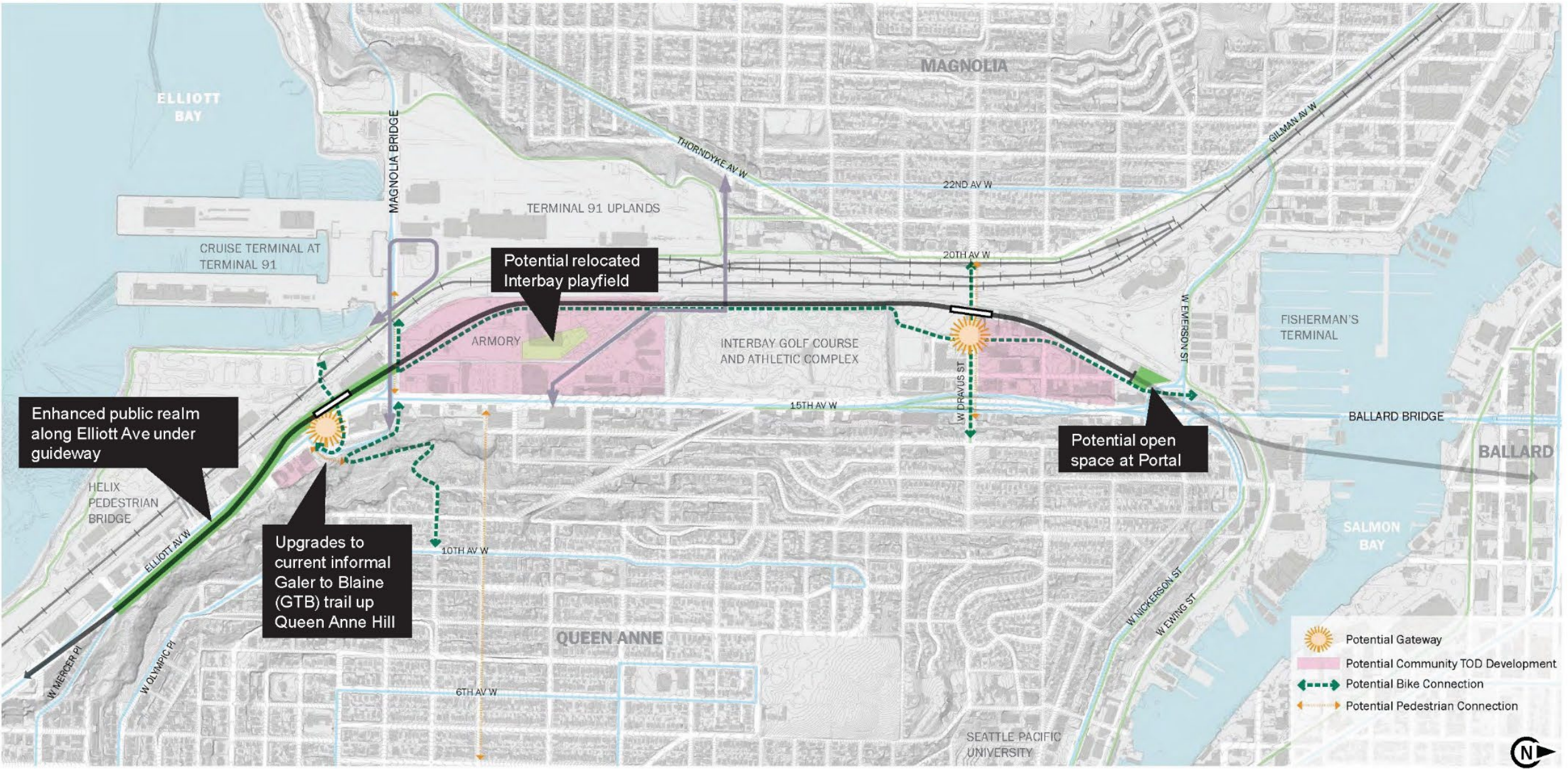
Compared to Preferred Galer Street Station/Central Interbay Alternative (SIB-1) to Preferred Tunnel 14th/15th Avenue (IBB-2a/b)



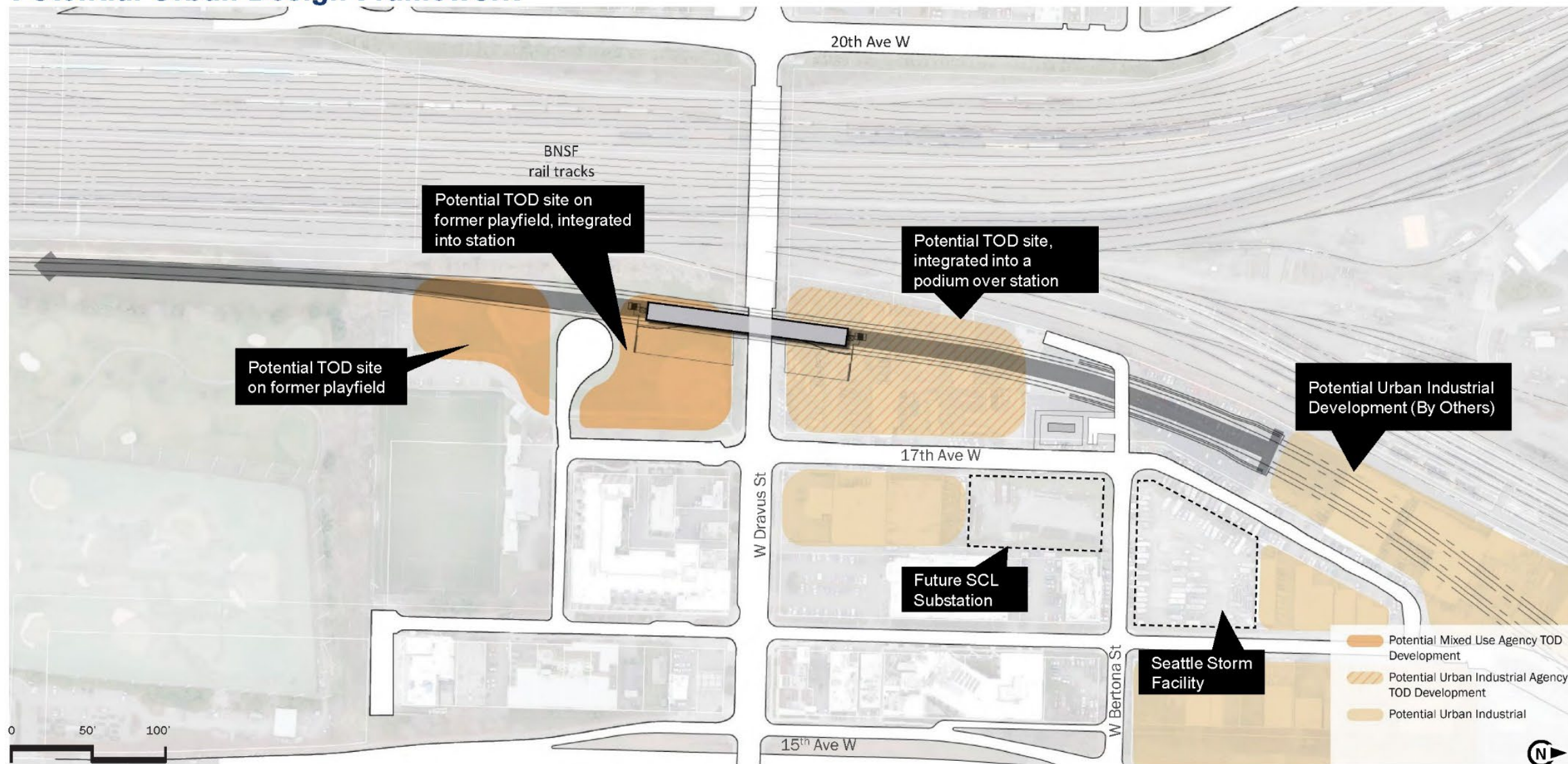
Potential access framework: Ideas for new or improved connections



Potential Urban Framework: Ideas for new spaces and uses



Potential Urban Design Framework



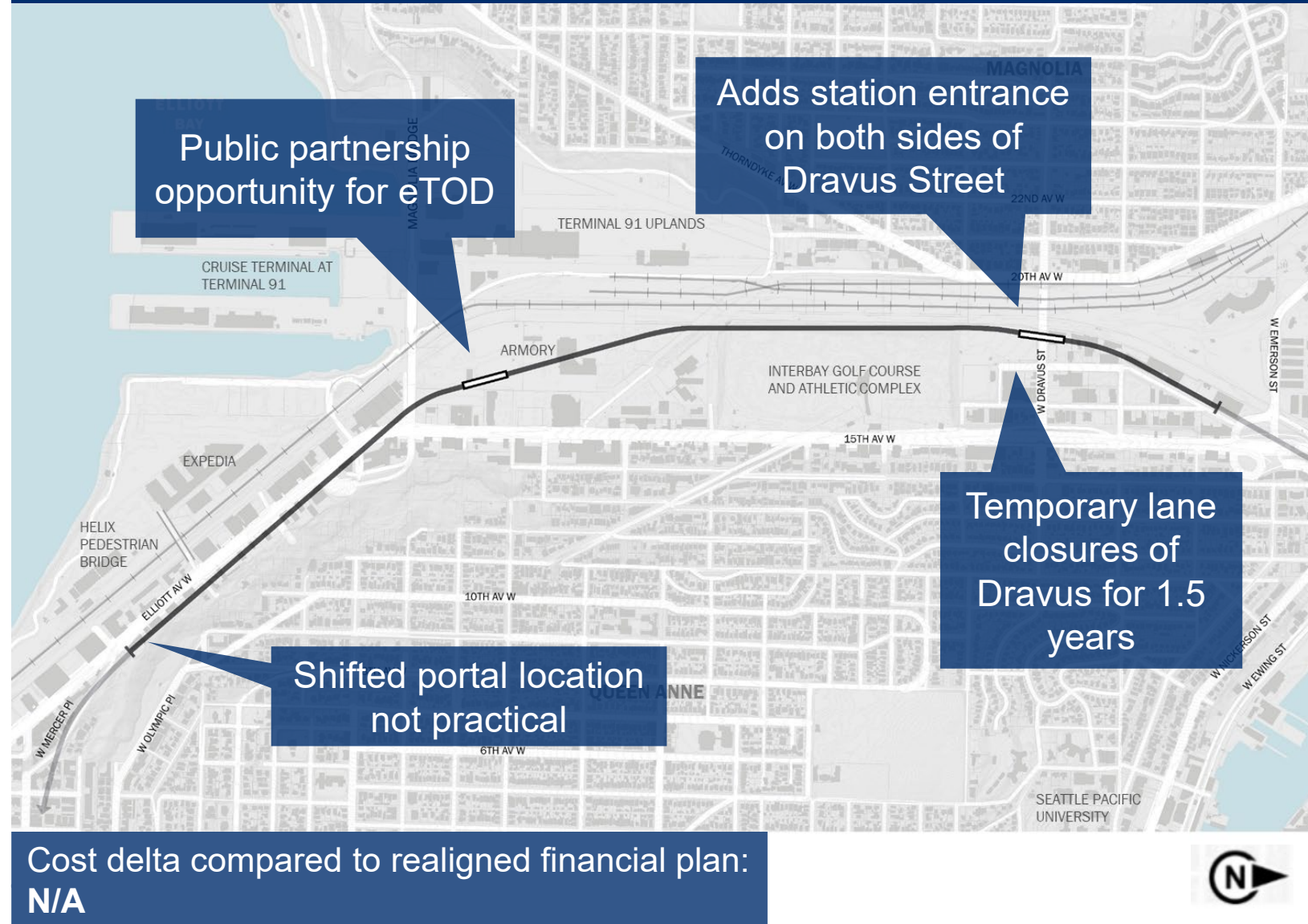
Modified SIB-3 Alignment

Shift north portal location south and shift Smith Cove Station north of Magnolia Bridge

Study focus:

- Avoid unstable slope risk on Queen Anne hillside
- Avoid Seattle City Light and Seattle Storm properties

Compared to Prospect Street Station/Central Interbay Alternative (SIB-3) to Preferred Tunnel 14th/15th Avenue (IBB-2a/b)



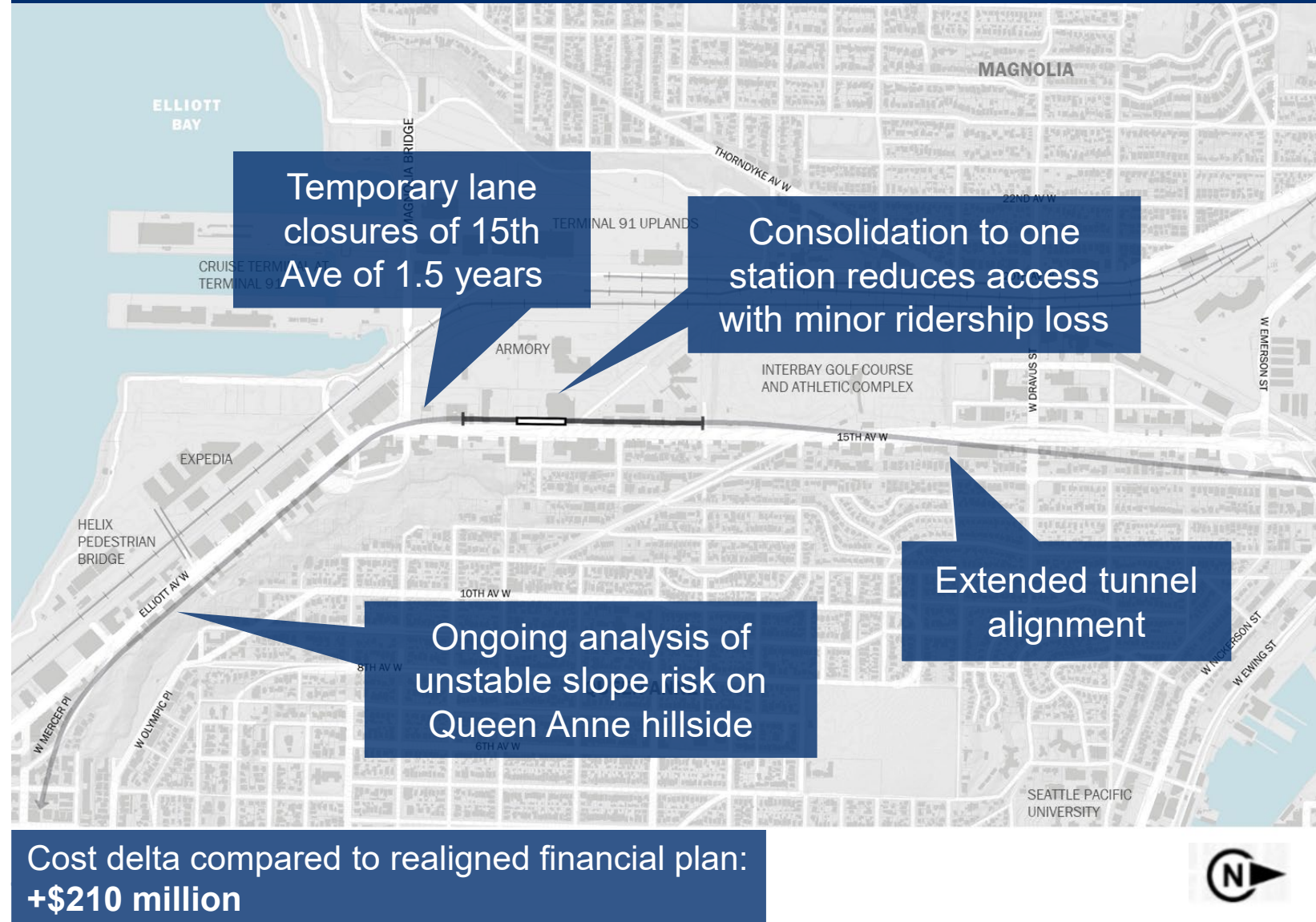
Consolidated Alignment

Consolidate Smith Cove and Interbay Stations with below grade alignment

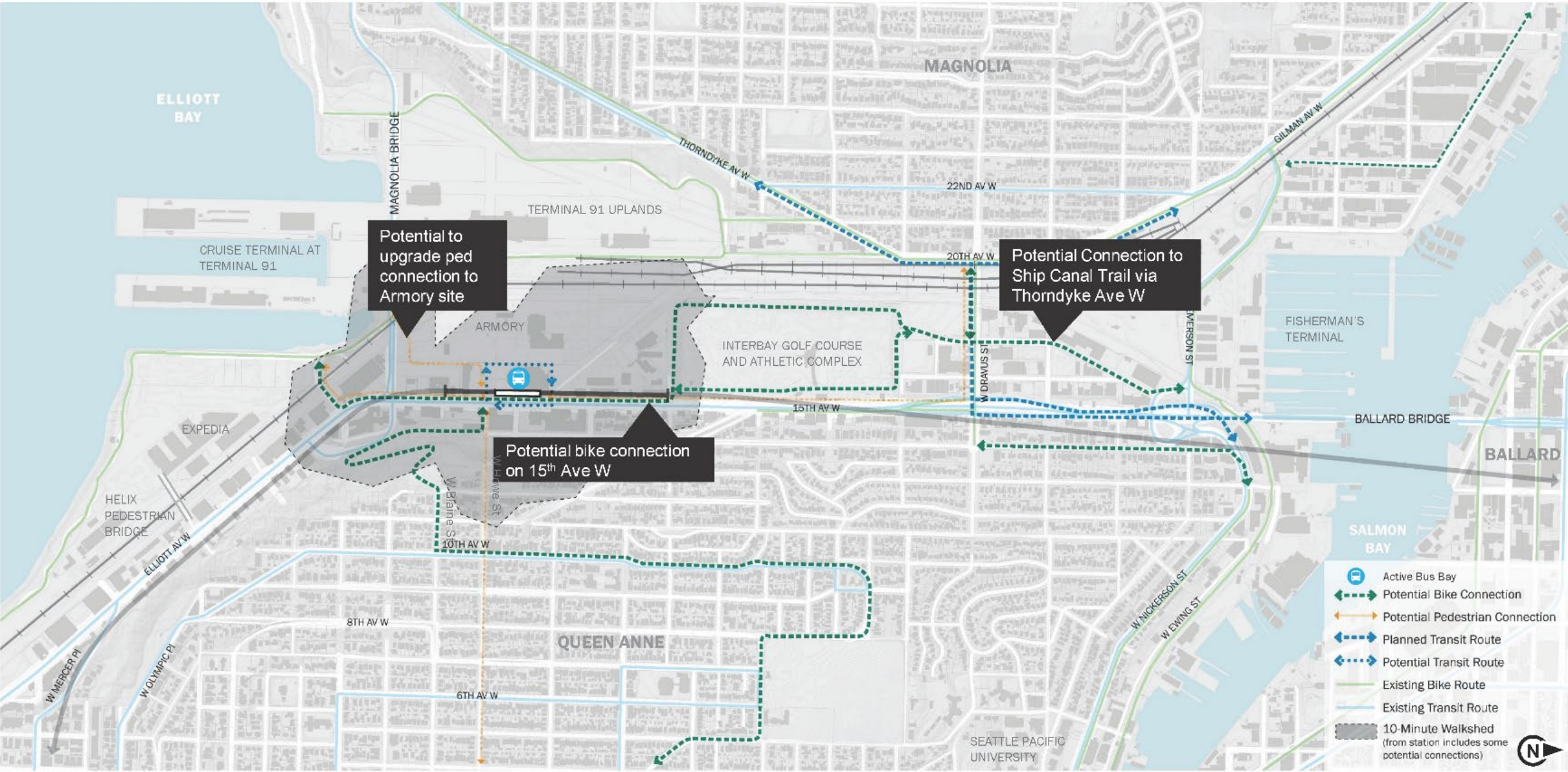
Study focus:

- **Avoid concerns with guideway along Elliott Ave**
- **Avoid unstable slope risk on Queen Anne hillside**
- **Avoid Seattle City Light and Seattle Storm properties**

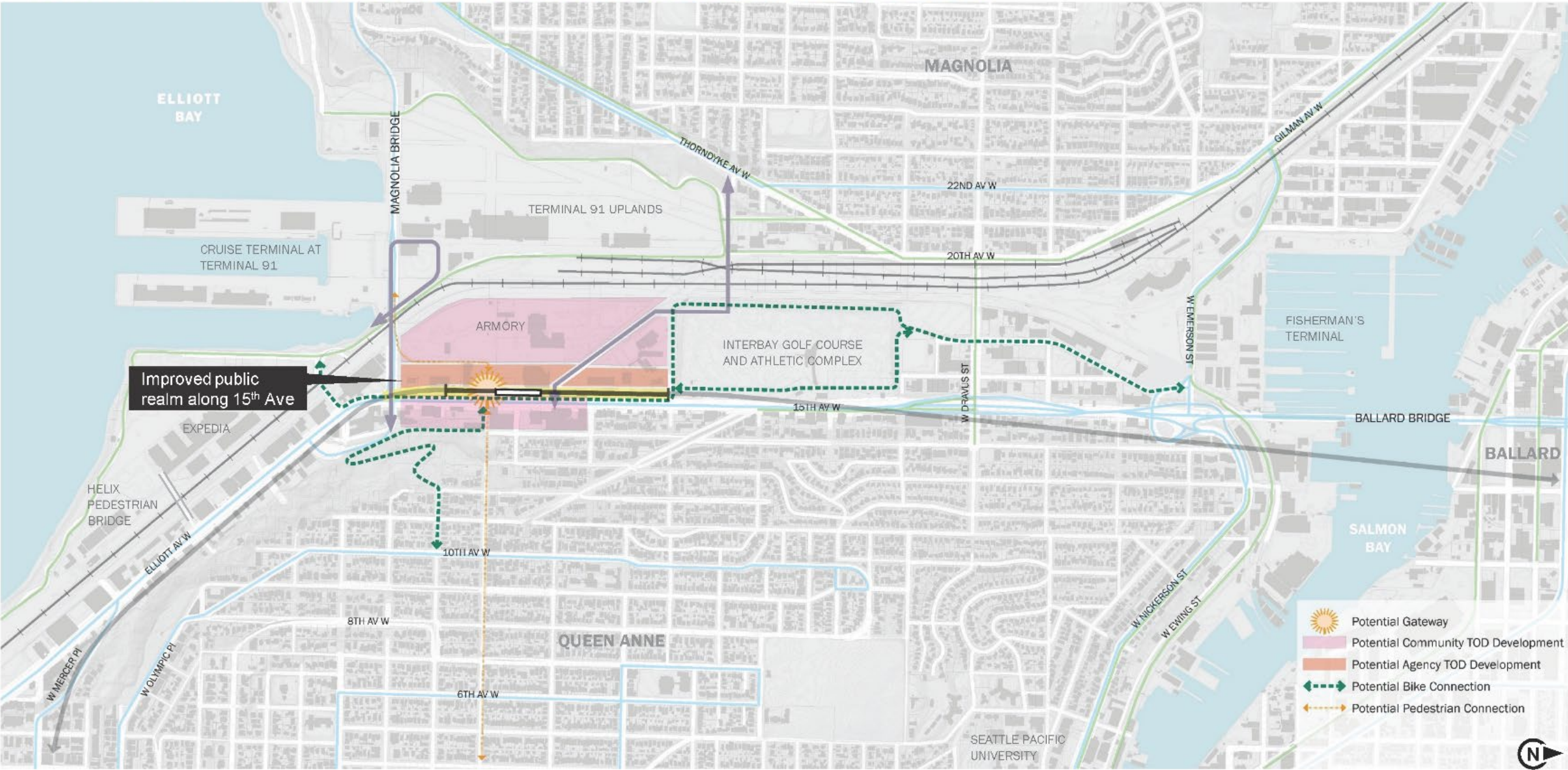
Compared to Preferred Galer Street Station/Central Interbay Alternative (SIB-1) to Preferred Elevated 14th Ave Alternative (IBB-1a)



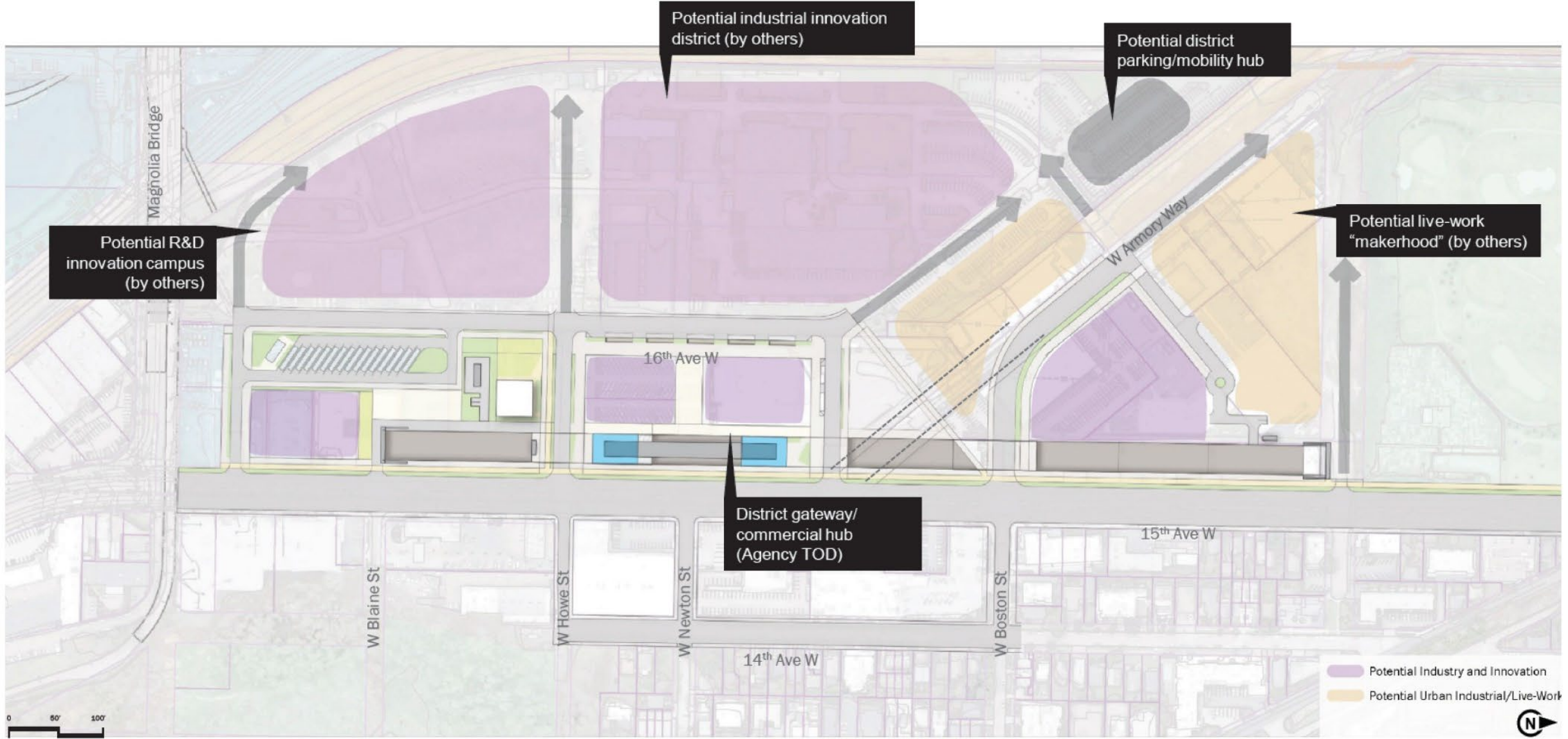
Potential access framework: Ideas for new or improved connections



Potential Urban Framework: Ideas for new spaces and uses



Potential Urban Design Framework



Board discussion

Ballard
Further Studies

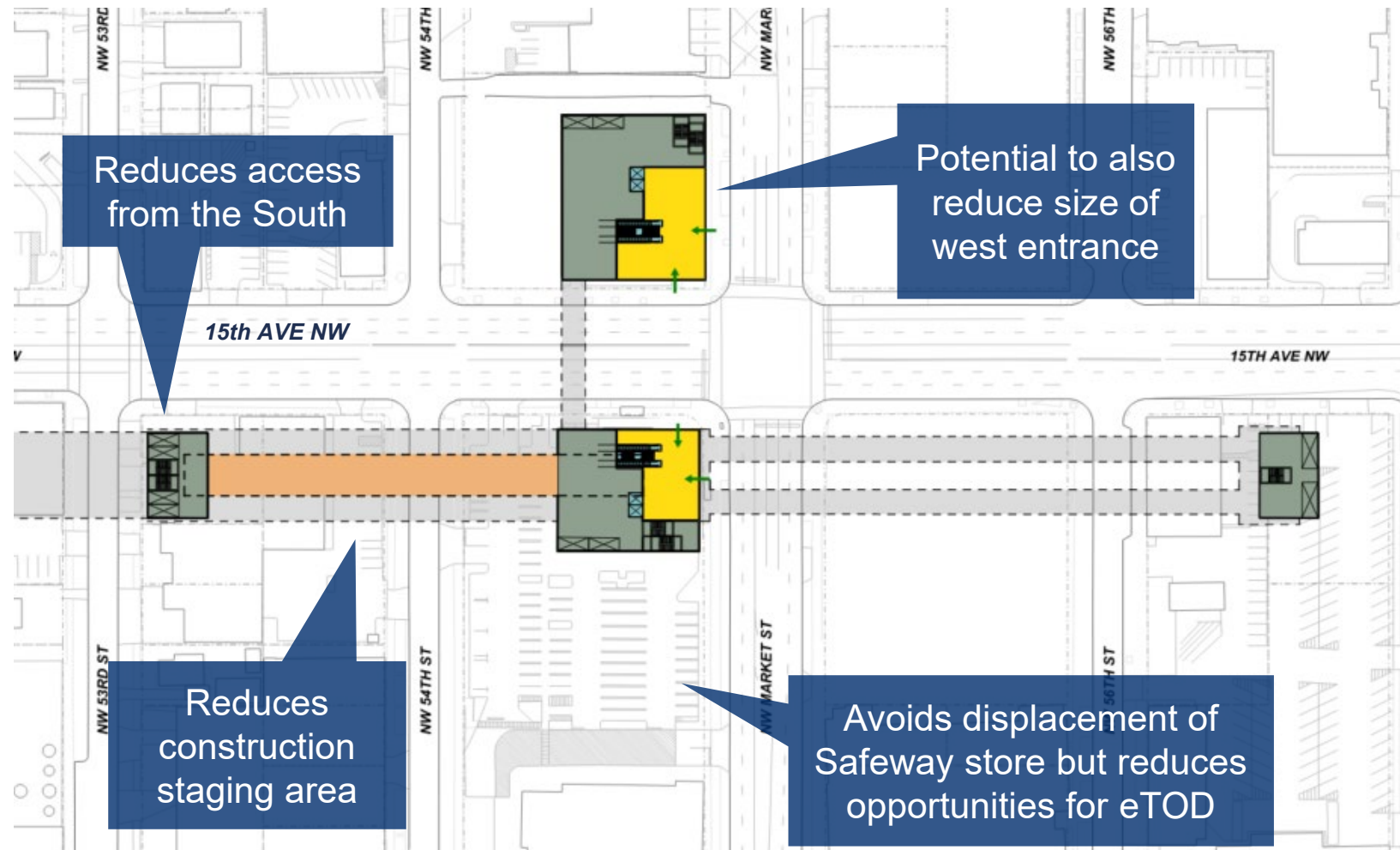
Tunnel 15th Ave

Cost Savings: Draft EIS Station Entrance Refinements

*Reduce size of east
station entrance and
eliminate south
entrance*

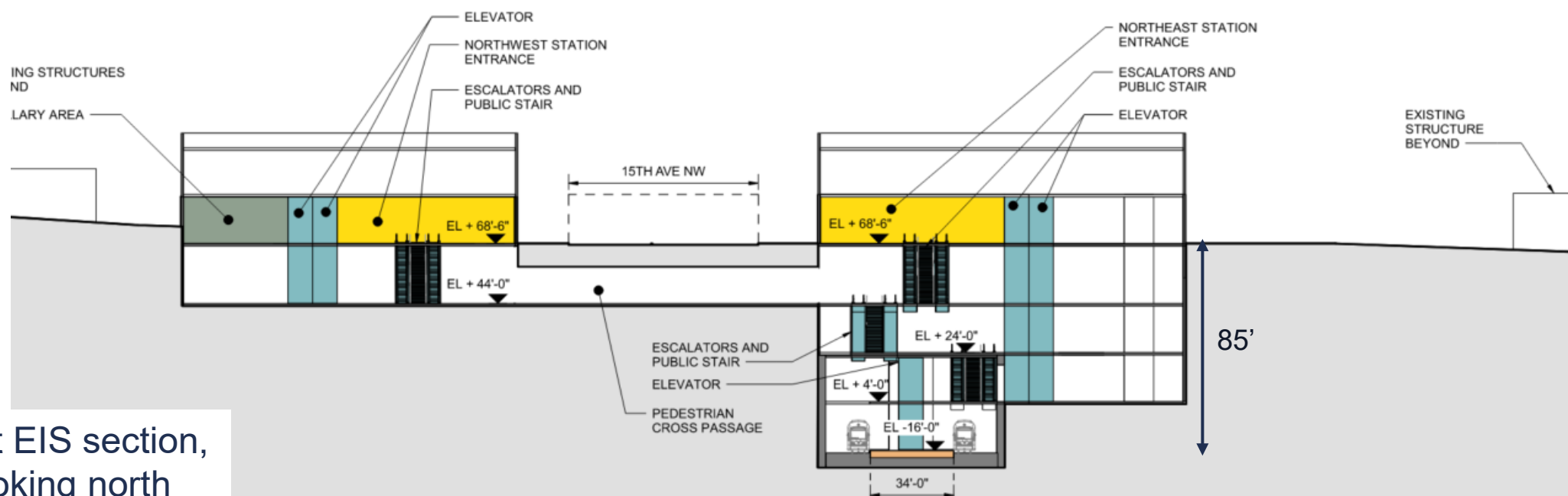
Study focus:
Reduce costs

Compared to Preferred Tunnel 15th Avenue Station Option (IBB-2b)

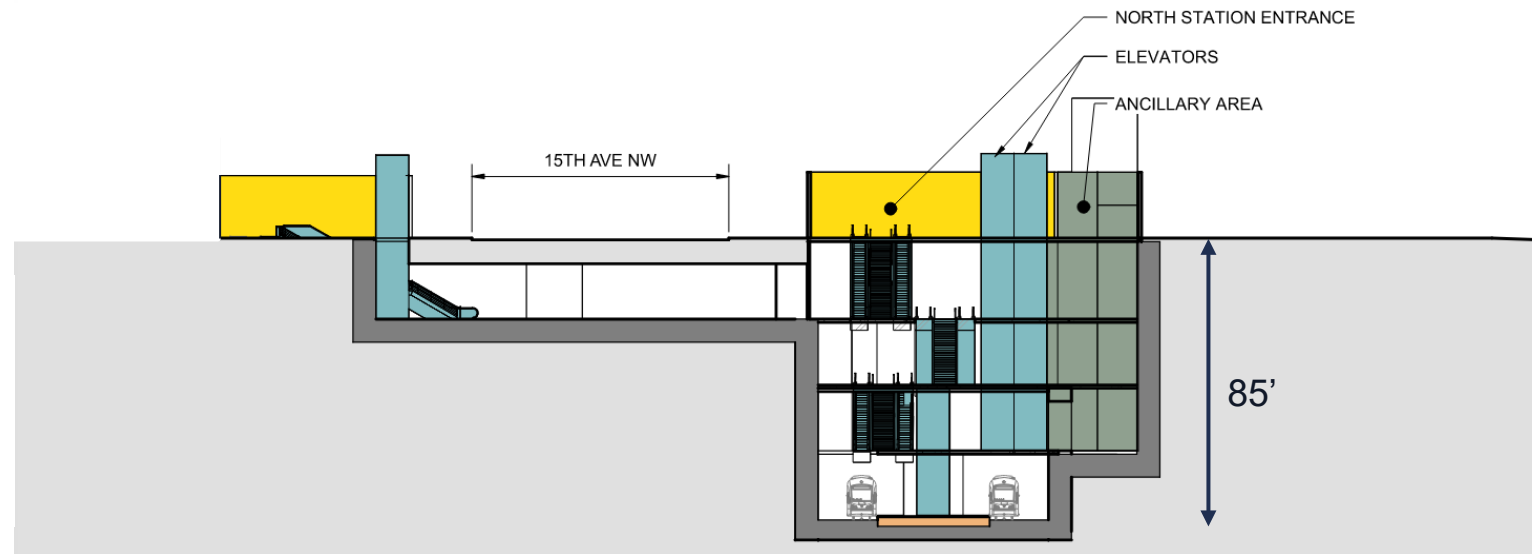


Cost delta compared to realigned financial plan:
+\$70 million (or +\$30 million with optional smaller west entrance)





Draft EIS section,
looking north



Refined section
with minimized
west entrance,
looking north

Tunnel 15th Ave

Cost Savings:

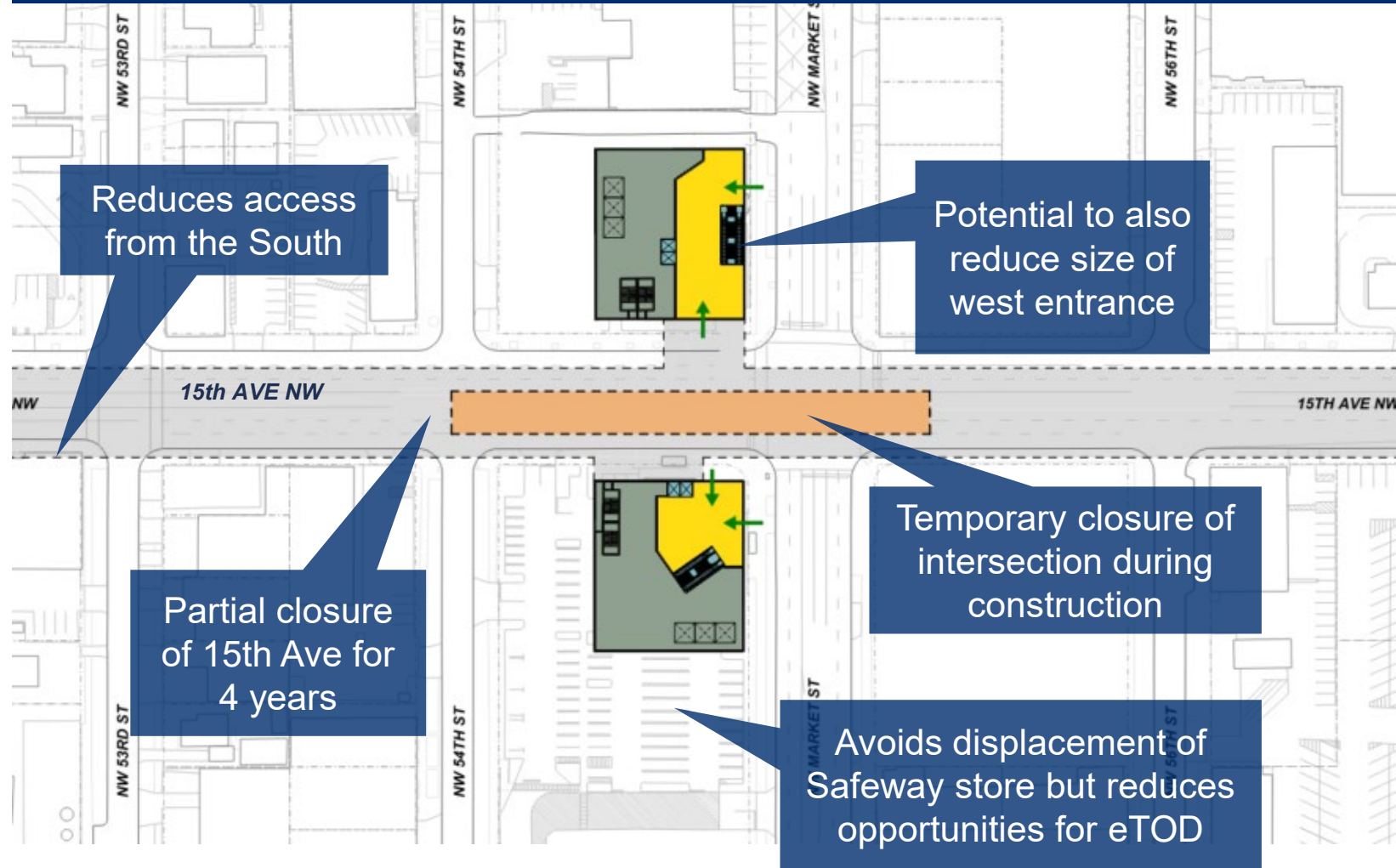
Station in

Right-of-Way

Shift station construction into 15th Ave NW and eliminate south entrance

Study focus:
Reduce costs

Compared to Preferred Tunnel 15th Avenue Station Option (IBB-2b)



Cost delta compared to realigned financial plan:
+\$70 million (or +\$30 million with optional smaller west entrance)



Tunnel 15th Ave: Station in Right-of-Way

Construction Traffic Analysis Summary:

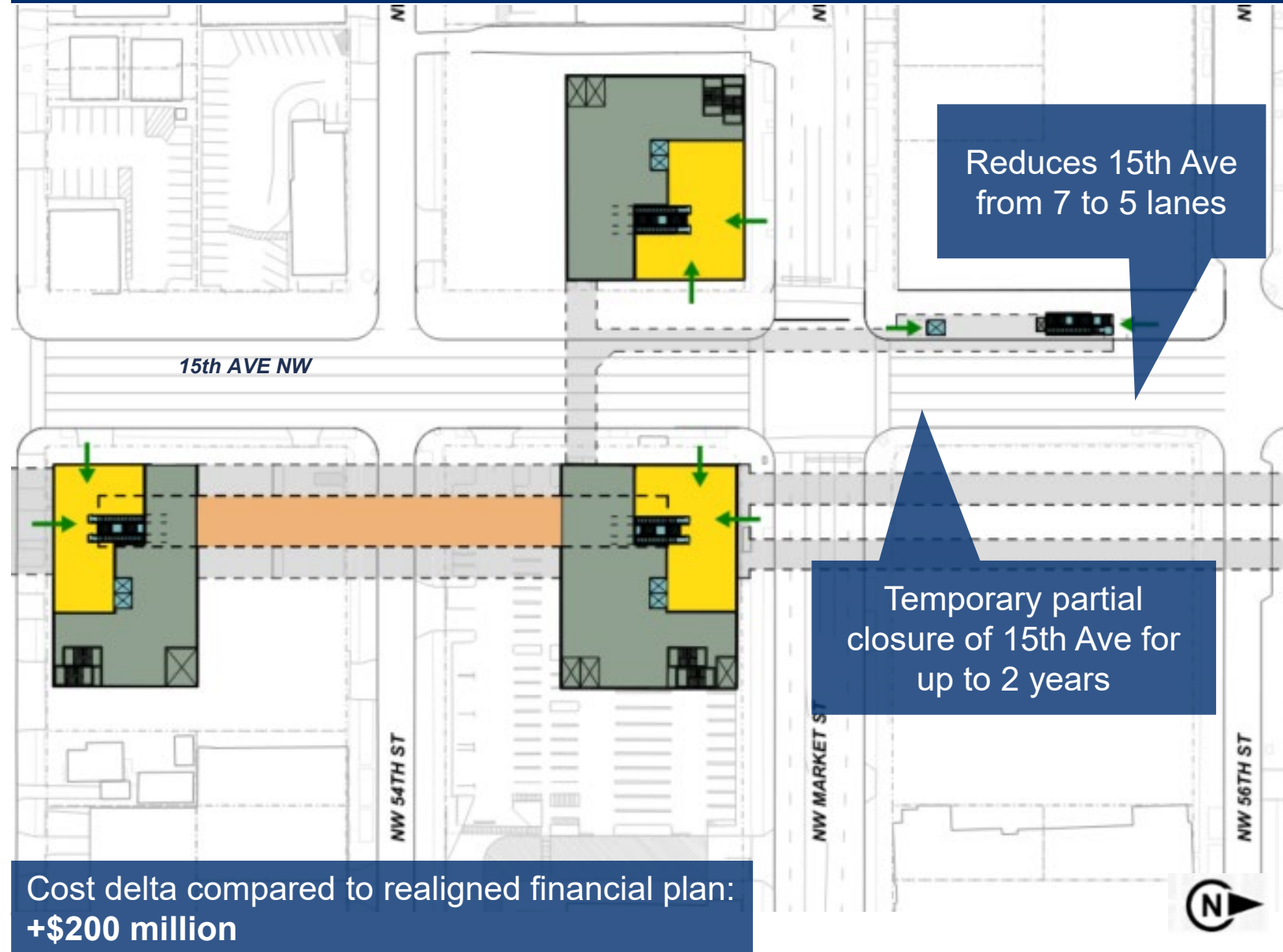
- During the most-constrained construction period, **northbound travel times could increase 10 to 25 minutes on 14th Ave NW and 15th Ave NW**; southbound travel times remain similar on 15th Ave NW and could increase by up to 6 minutes on 14th Ave NW
- Transit, freight, and bicycles can remain on their pathways; consider management strategies for transit and freight movements as well as overall travel demand and routing
- Pedestrian routes generally remain open except for short-term detours

Tunnel 15th Ave Entrance North of Market

*Add station
entrance to NW
corner in public
right-of-way*

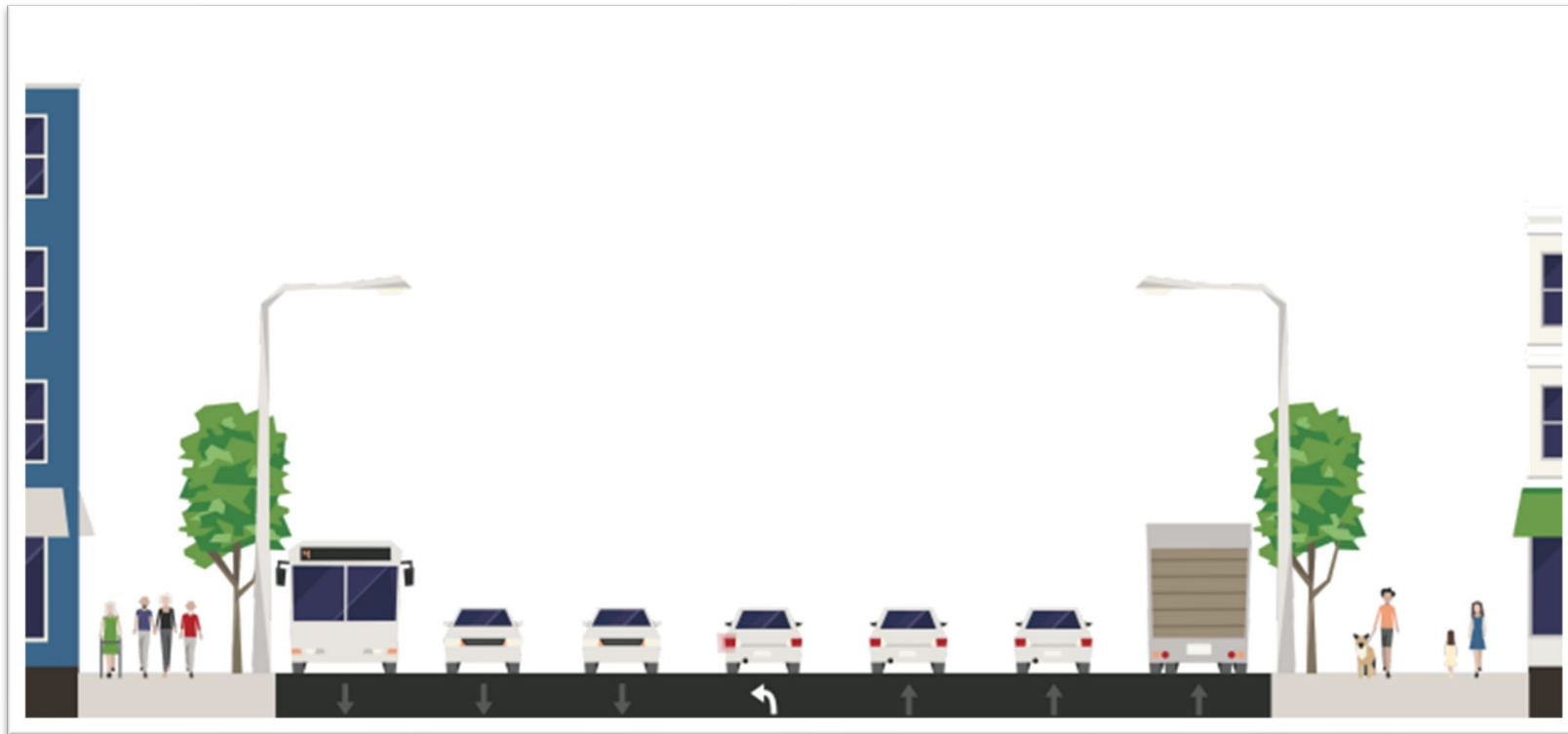
Study focus:
Improve passenger access to
the north

Compared to Preferred Tunnel 15th Avenue Station Option (IBB-2b)



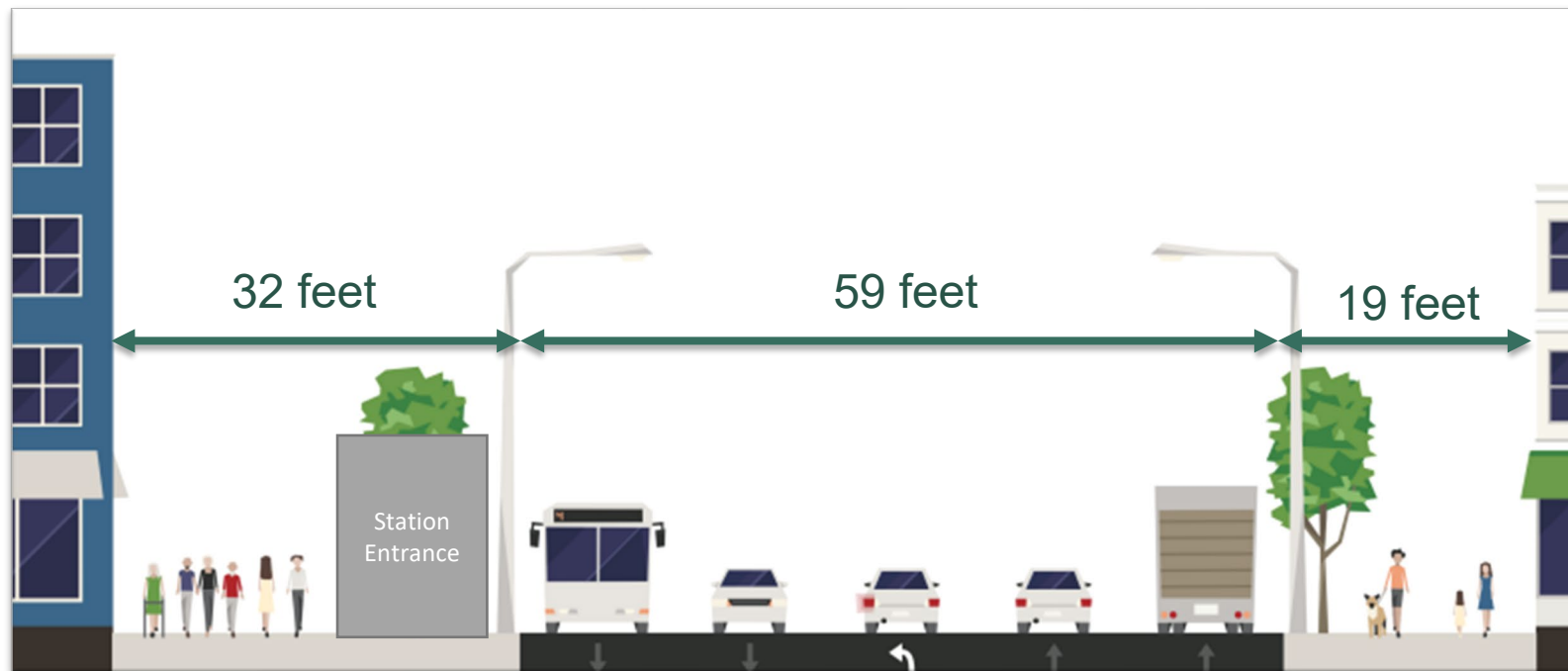
Tunnel 15th Ave Entrance North of Market

15th Avenue NW – Existing Cross-section



Tunnel 15th Ave Entrance North of Market

15th Avenue NW – Potential Cross-section



Tunnel 14th Ave Station Access

*Pedestrian access
improvements across 15th
Ave with Tunnel 14th Station*

At-grade improvements may reduce pedestrian travel time, but have minor effects on traffic and transit operations

Grade-separated improvements may add travel time, but reduce passenger-vehicle interactions

Study focus:
**Improve passenger access to
the west**

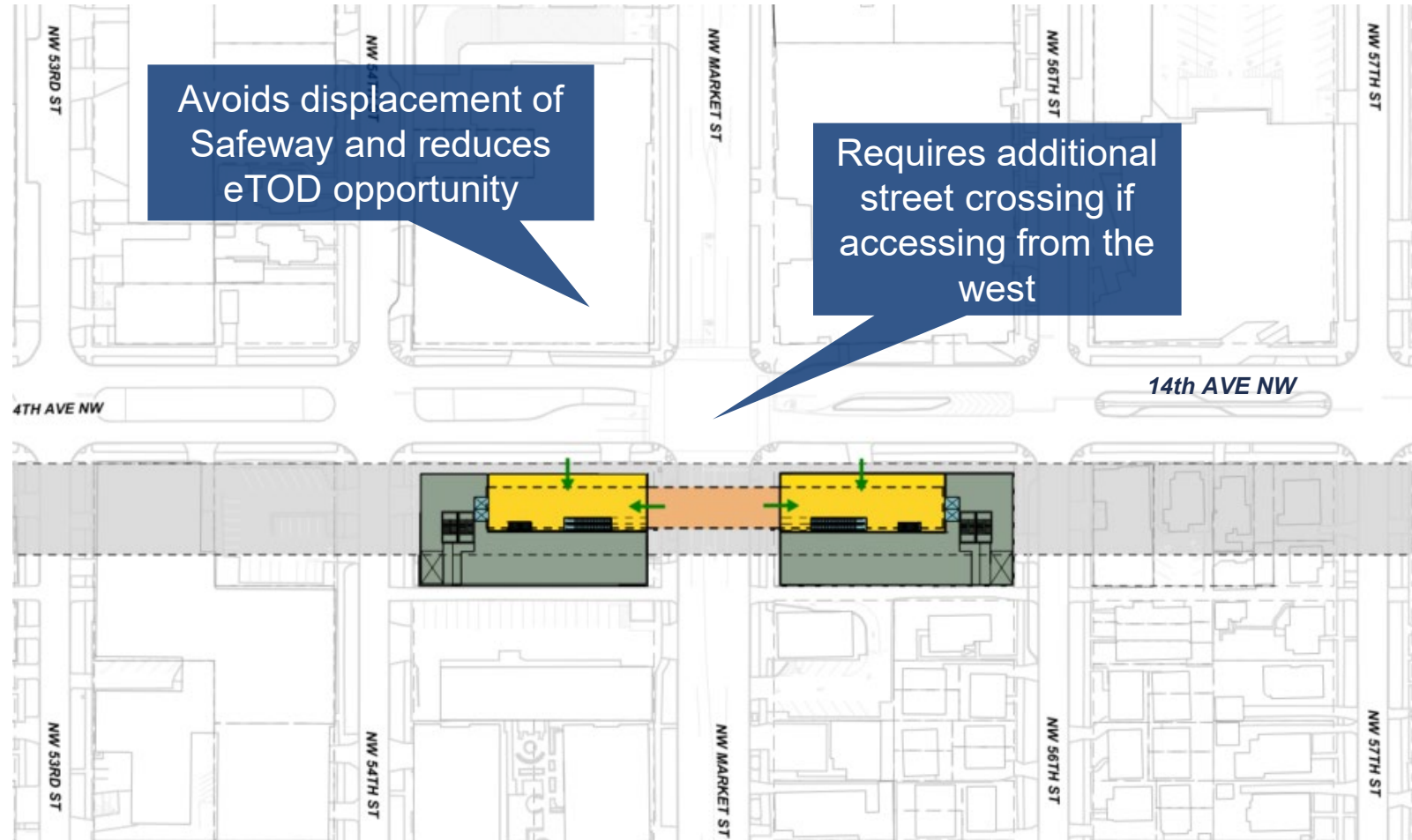


Cost delta compared to realigned financial plan:
+\$0.5-1 million for at-grade improvements
+\$20-100 million for grade-separated improvements (+ O&M costs)

Shifted Tunnel 14th Ave Station

*Shift tunnel
alignment to the
east and eliminate
western station
entrance*

Study focus:
Reduce costs



Cost delta compared to realigned financial plan:
-\$140 million



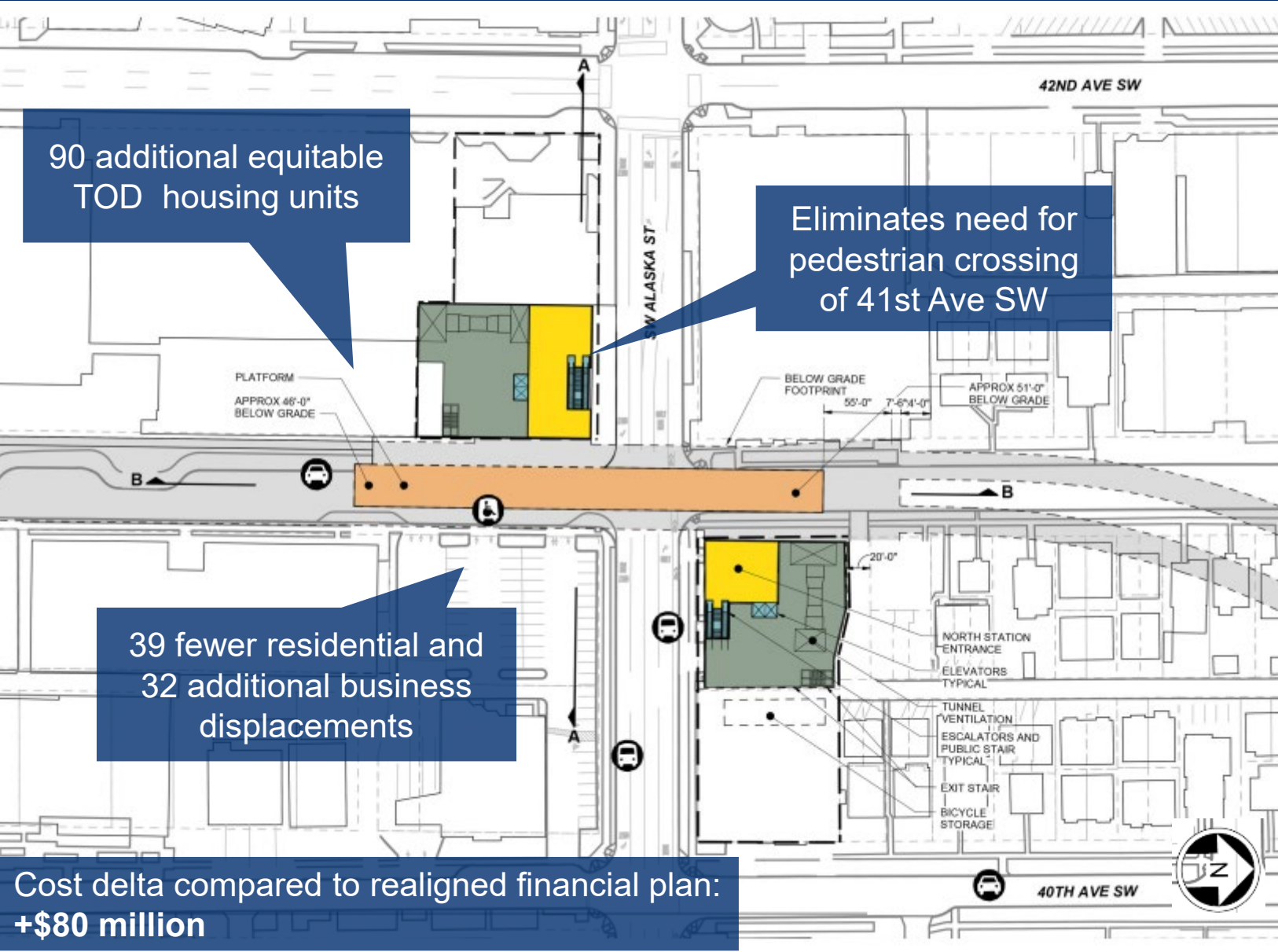
Board discussion

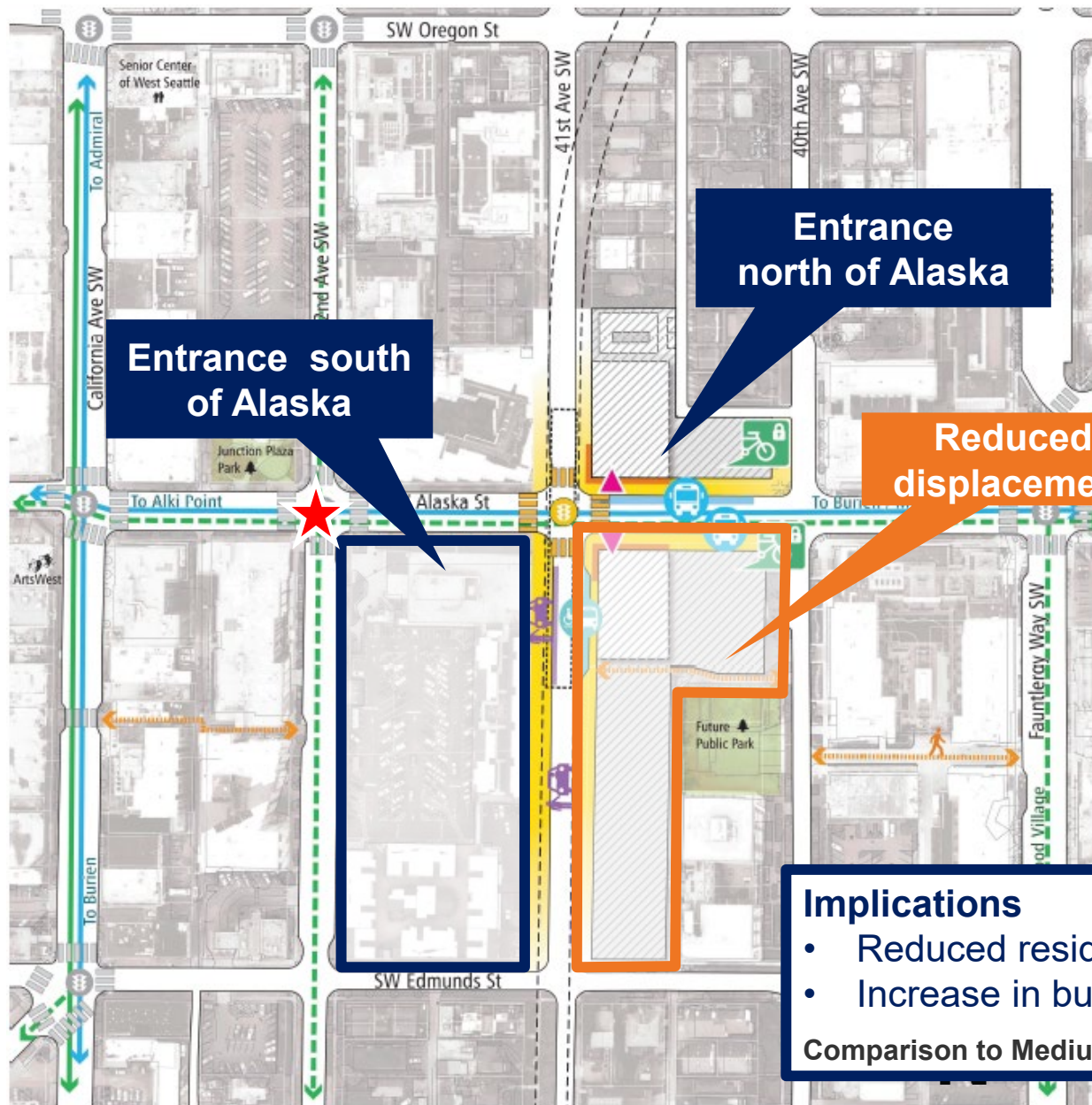
West Seattle Extension Further Studies

Shift station entrance to 42nd Ave SW

Study focus:
Improve passenger access

Compared to Medium Tunnel 41st Avenue Station (WSJ-5)





Delridge Access, Integration, and Alignment Refinement

Shift alignment south towards SW Yancy St

Study focus:

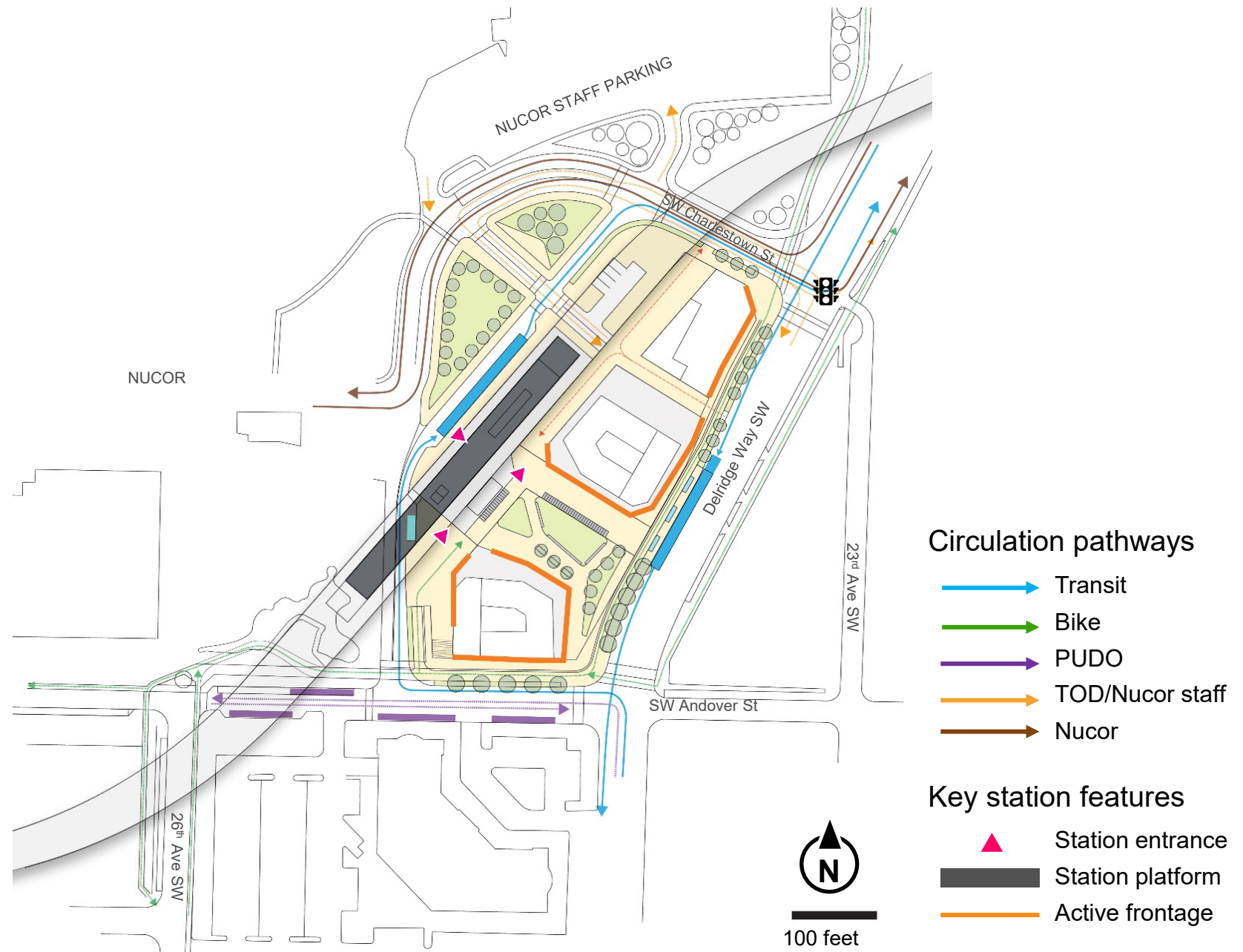
- Improve passenger access and transit integration
- Reduce effects to organizations serving low-income and communities of color

Compared to Andover Street Station Lower Height Alternative (DEL-6)

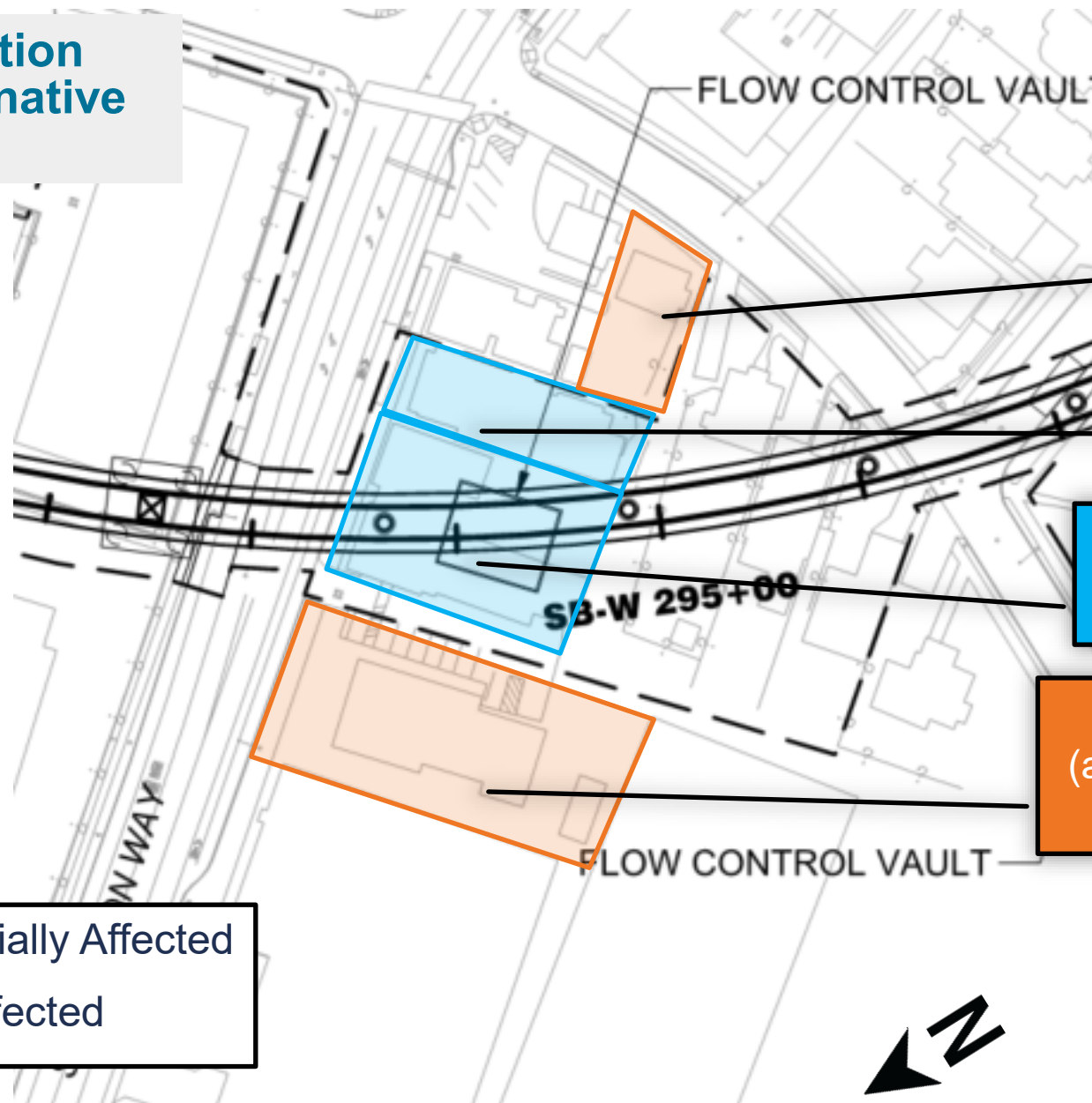


Updated access and circulation concept

- Consolidate Nucor and future TOD ingress/egress at new Delridge & Charlestown intersection
- Provide one-way transit-only road from Andover to Charlestown for northbound buses
- Study other street reconfigurations to divert station traffic from neighborhood



Andover Street Station Lower Height Alternative (DEL-6)



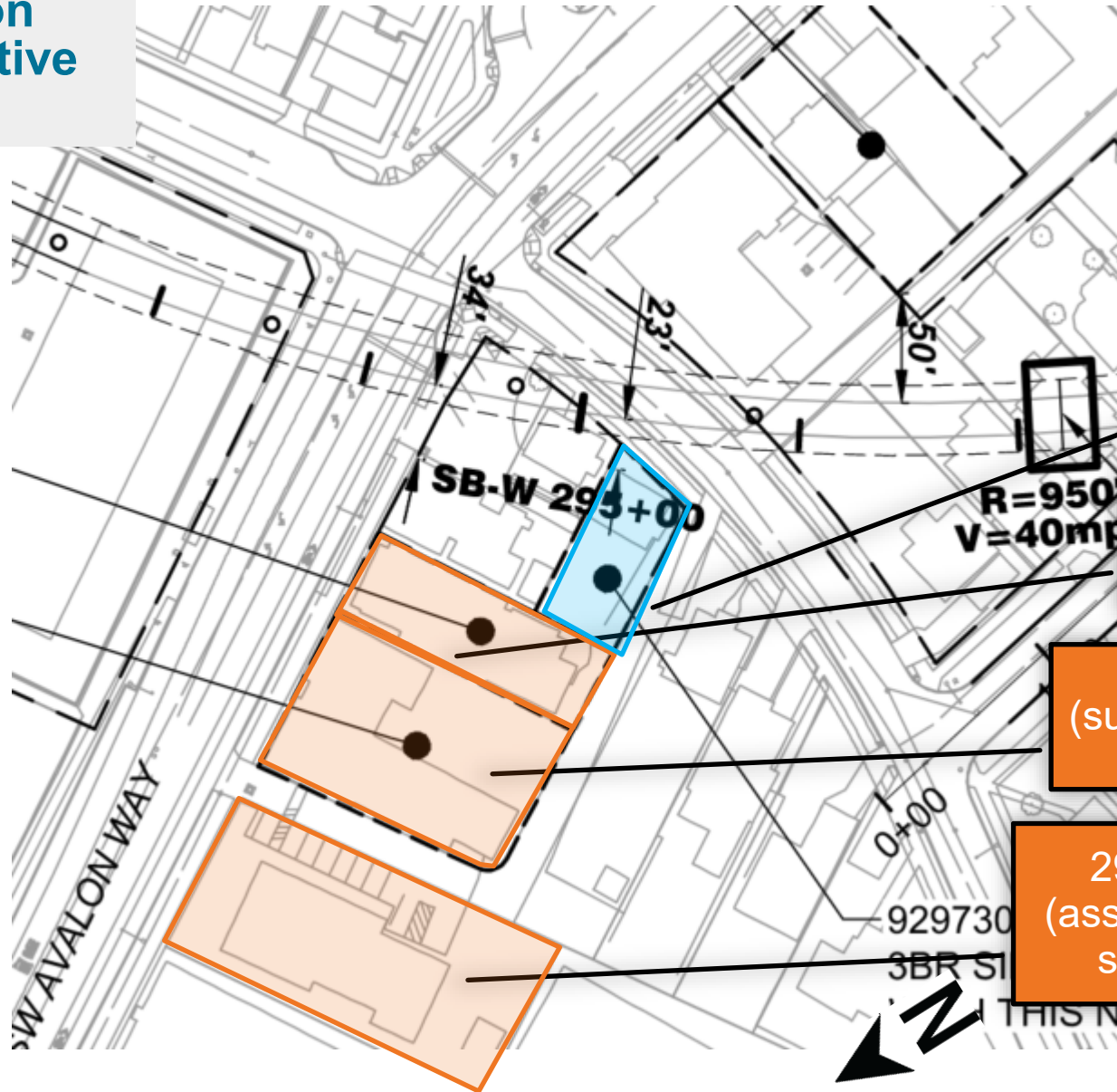
Transitional Resources
(single family 5 beds)

2988 Transitional Resources
(long-term supportive housing
16 beds)

2980 Transitional Resources
(supportive services and long-term
supportive housing 15 beds)

2970 Transitional Resources
(assisted living facility, after-hours
supportive services, offices)

Andover Street Station Lower Height Alternative (DEL-6 refinement)



Transitional Resources
(single family 5 beds)

2988 Transitional Resources
(long-term supportive housing
16 beds)

2980 Transitional Resources
(supportive services and long-term
supportive housing 15 beds)

2970 Transitional Resources
(assisted living facility, after-hours
supportive services, offices)

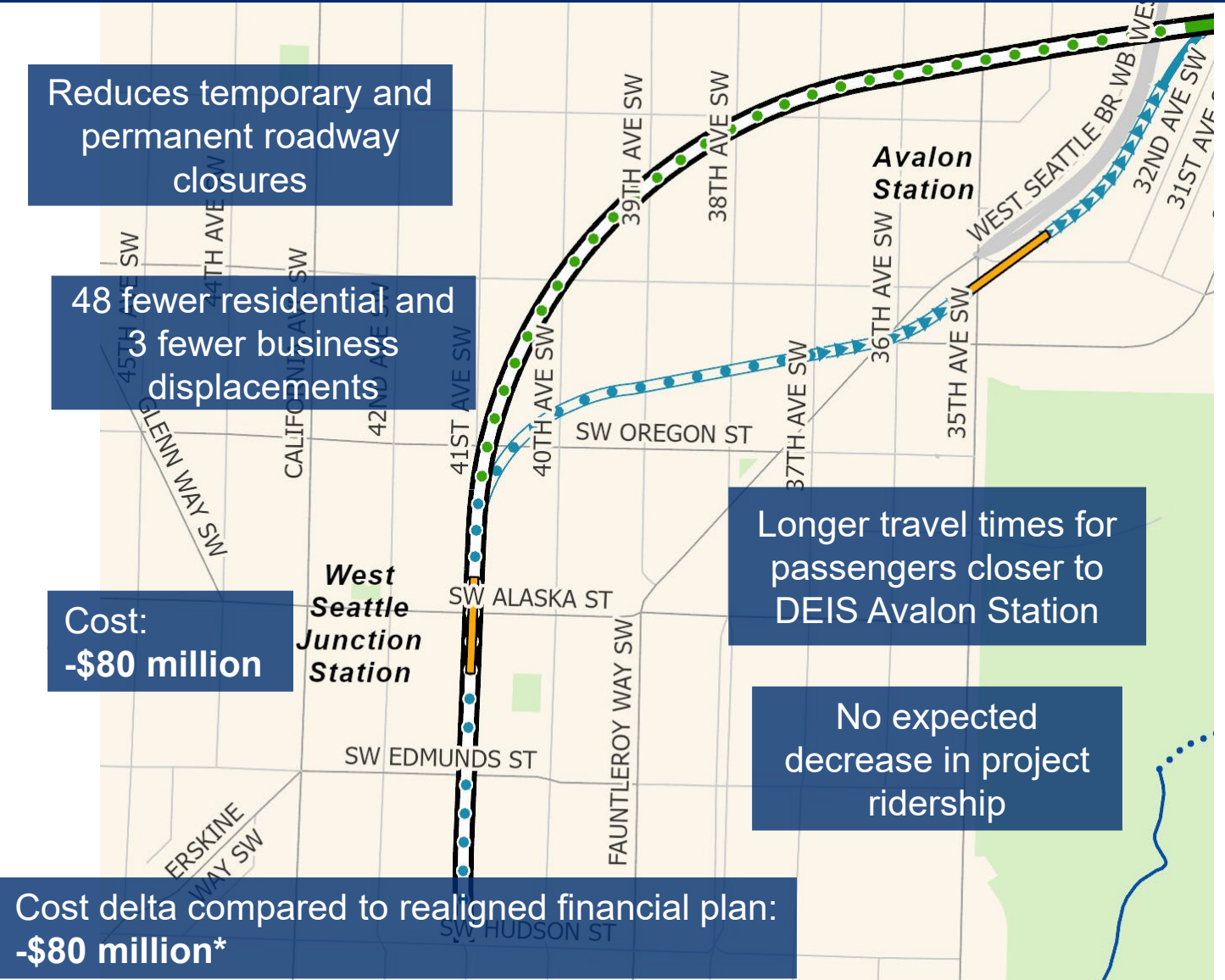
⊕ TR Owned Potentially
Affected by refinement

⊕ TR Owned Not
Affected by refinement

(assumes shifting alignment south towards SW Yancy St)

Study focus:
Reduce costs

Compared to Andover Street Station Lower Height Alternative (DEL-6) and Medium Tunnel 41st Avenue Station Alternative (WSJ-5)



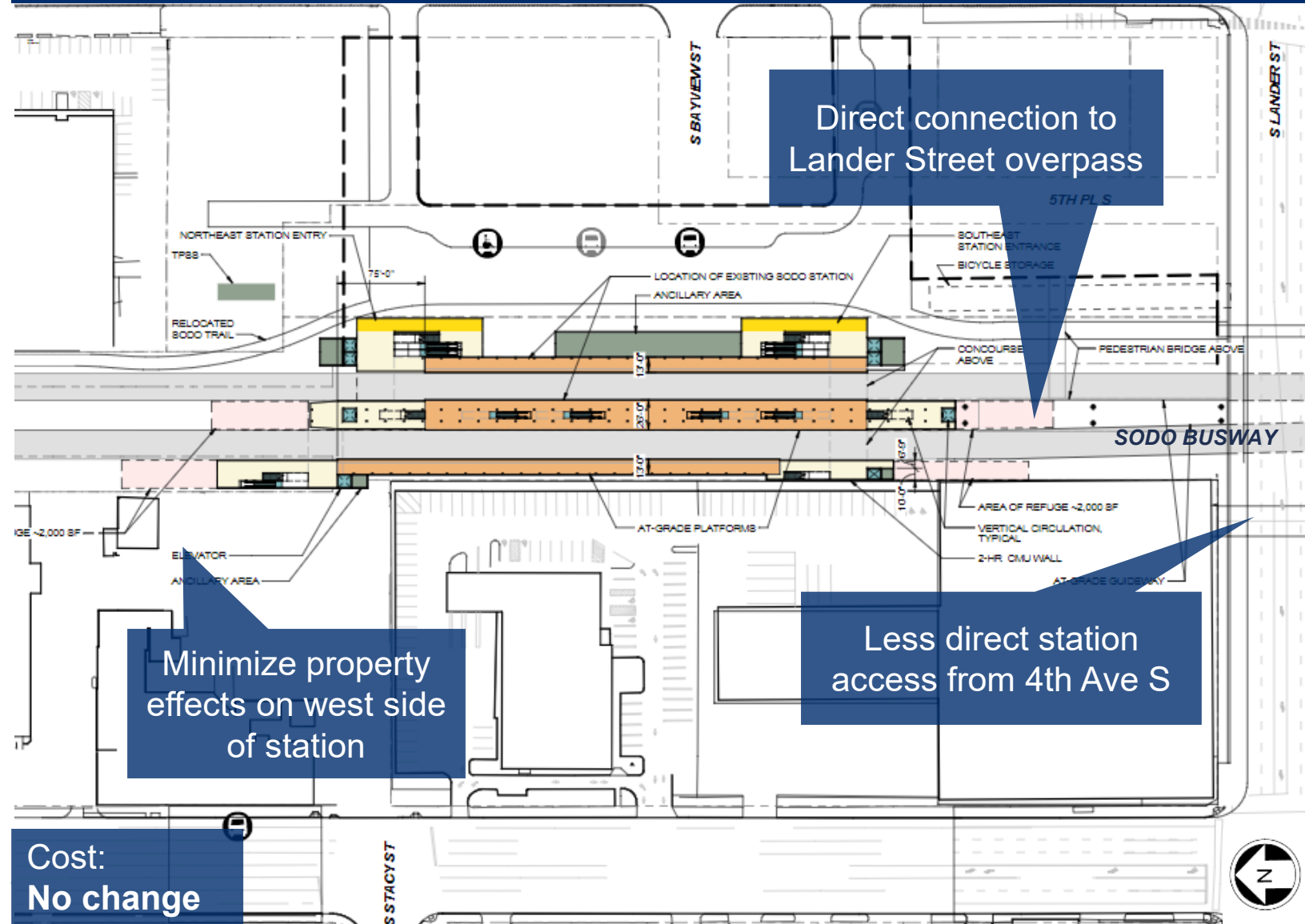
SODO Access to S Lander Street

Enhance access from platform to S Lander Street

Study focus:

- **Minimize property effects on west side of station**
- **Add connection to Lander Street**

Compared to At-Grade Alternative (SODO-1a) Staggered Station Configuration



***West Seattle Link Extension
end-to-end scenario***

Cost delta compared to realigned financial plan: **+\$130 million**

Andover Station
(shift station and
alignment south)

AVALON

DELDRIDGE

Medium Tunnel 41st
(shift entrance to 42nd)

ALASKA
JUNCTION

Passenger Experience

- Improved access to California Ave from Alaska Junction Station
- Improves bus to rail connection at Delridge Station

Ridership, Access, and eTOD potential

- Additional eTOD opportunity in Alaska Junction

Environmental








- 53 fewer residential and 35 additional business displacements
- Additional effects to Longfellow Creek

Equity








- Reduces effects to Transitional Resources

***Ballard Line Extension
results comparison***








CID: Results comparison

	Refined 4th Avenue Shallow Station	Station North of CID	Station North of CID and Station South of CID
Feasibility 	<ul style="list-style-type: none"> Construction and schedule risk 	-	<ul style="list-style-type: none"> Potential conflict with utility lines for South of CID station
Passenger Experience 	<ul style="list-style-type: none"> Deep Midtown Station (~200'); could reduce to 145' if connect to CID 4th Shallower station* Close to Sounder Station 	<ul style="list-style-type: none"> Shallower station (~80-105') Improved transfer experience at Pioneer Square Station Increased transfer time for some 	<ul style="list-style-type: none"> Shallower North of CID station (~80'-105') Walking connections between 1, 2, and 3 Lines
Ridership, Access, eTOD Potential 	<ul style="list-style-type: none"> No expected change in ridership 	<ul style="list-style-type: none"> Consolidates CID and Midtown Small reduction in ridership Additional eTOD potential 	<ul style="list-style-type: none"> Additional eTOD potential north and south of CID
Future Expansion 	<ul style="list-style-type: none"> Does not preclude 	<ul style="list-style-type: none"> Does not preclude 	<ul style="list-style-type: none"> Does not preclude
Environmental 	<ul style="list-style-type: none"> Full closure of 4th Ave for 4 years plus partial closure for 5 years Displacement of ICON apartments (for two 2-month periods) 	<ul style="list-style-type: none"> Full closure of James St for 4 years Displacement of KC Admin building and social service providers 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Centralized access to CID, PSQ and transit modes 4th Ave S traffic detour effects 	<ul style="list-style-type: none"> Avoids direct construction displacements in CID 	<ul style="list-style-type: none"> Avoids direct construction displacements in CID
Cost  compared to realigned financial plan in \$2019	+\$700M	-\$360M	+\$160M








South Lake Union: Results comparison

	Denny Station at Westlake Ave (DT-1)	Denny Station at Terry Ave (DT-2)	Denny Station at Terry Ave (DT-2) with Entrance Refinements
Feasibility 	<ul style="list-style-type: none"> Feasible 	<ul style="list-style-type: none"> Terry Avenue fiber relocation schedule risk (+1 year) 	<ul style="list-style-type: none"> Terry Avenue fiber relocation schedule risk (+1 year)
Passenger Experience 	<ul style="list-style-type: none"> Convenient transfer to transit on Westlake Avenue 	<ul style="list-style-type: none"> Less convenient transfer to transit on Westlake Ave 	<ul style="list-style-type: none"> Shortens walk to transit lines on Westlake Avenue
Ridership, Access, eTOD Potential 	-	<ul style="list-style-type: none"> Minimal impact to ridership 	<ul style="list-style-type: none"> Minimal impact to ridership
Future Expansion 	<ul style="list-style-type: none"> Does not preclude 	<ul style="list-style-type: none"> Does not preclude 	<ul style="list-style-type: none"> Does not preclude
Environmental 	<ul style="list-style-type: none"> Streetcar effects on Westlake Avenue 	<ul style="list-style-type: none"> Avoids streetcar effects 	<ul style="list-style-type: none"> Avoids streetcar effects Reduces property acquisitions
Equity 	-	-	-
Cost compared to realigned financial plan in \$2019 	-	+\$200M	+\$190M

Seattle Center: Results comparison

	Seattle Center Station at Republican (DT-1)	Seattle Center Station Shifted West on Republican	Seattle Center Station at Mercer (DT-2)
Feasibility 	• Feasible	• Feasible	• Feasible
Passenger Experience 	-	-	-
Ridership, Access, eTOD Potential 	-	-	-
Future Expansion 	• Does not preclude	• Does not preclude	• Does not preclude
Environmental 	<ul style="list-style-type: none"> • Partial closure of Republican • Effects to Seattle Center/ NW Rooms during construction 	<ul style="list-style-type: none"> • Partial closure of Republican • Avoids effects to Seattle Center • Effects to Uptown Cinema during construction 	<ul style="list-style-type: none"> • Partial closure of Mercer • Avoids effects to Seattle Center
Equity 	-	-	-
Cost  compared to realigned financial plan in \$2019	-	+\$60M	+\$210M

Interbay-Smith Cove: Results comparison

	Smith Cove Station at Galer Street (SIB-1)	Modified SIB-1 Alignment	Consolidated Alignment
Feasibility 	<ul style="list-style-type: none"> Feasible 	<ul style="list-style-type: none"> Feasible 	<ul style="list-style-type: none"> Potentially reduces risks along Queen Anne hillside
Passenger Experience 	-	<ul style="list-style-type: none"> Adds entrances on both sides of Dravus St at Interbay Station 	<ul style="list-style-type: none"> Results in a 2,000-2,200' retained cut on west side of 15th Ave W
Ridership, Access, eTOD Potential 	-	<ul style="list-style-type: none"> Allows private development adjacent to station 	<ul style="list-style-type: none"> Allows private development adjacent to station
Future Expansion 	<ul style="list-style-type: none"> Does not preclude 	<ul style="list-style-type: none"> Does not preclude 	<ul style="list-style-type: none"> Does not preclude
Environmental 	<ul style="list-style-type: none"> Affects SCL, Seattle Storm, and KCWTD properties Permanent columns within Elliott Ave and park effects in Interbay 	<ul style="list-style-type: none"> Avoids SCL and Seattle Storm properties Permanent columns within Elliott Ave and park effects in Interbay Partial closure of Dravus Street for 18 months 	<ul style="list-style-type: none"> Avoids SCL, Seattle Storm, and KCWTD properties Avoids columns within Elliott Ave and park effects in Interbay Fewer residential and more business displacements than SIB-1 Partial closure of 15th for 18 months
Equity 	-	-	-
Cost compared to realigned financial plan in \$2019 	-	-\$30M	+\$210M

Ballard Tunnel 15th Ave: Results comparison

	Tunnel 15th Ave Cost Savings	Tunnel 15th Ave Station Entrance North of Market
Feasibility 	<ul style="list-style-type: none"> Feasible 	<ul style="list-style-type: none"> Feasible
Passenger Experience 	<ul style="list-style-type: none"> Smaller west entrance could limit vertical circulation 	-
Ridership, Access, eTOD Potential 	<ul style="list-style-type: none"> Reduces access from southeast Reduces opportunity for eTOD Allows independent private development adjacent to station 	<ul style="list-style-type: none"> Improves travel time to station Eliminates passenger-vehicle interactions crossing Market
Future Expansion 	<ul style="list-style-type: none"> Does not preclude Smaller entrance could limit growth 	<ul style="list-style-type: none"> Does not preclude
Environmental 	<ul style="list-style-type: none"> Avoids Safeway displacement 	<ul style="list-style-type: none"> Permanently reduces 15th Ave from 7 to 5 lanes Partial closure of 15th Ave for 18-24 months
Equity 	-	-
Cost compared to realigned financial plan in \$2019 	+\$70M (or +\$30m with optional smaller west entrance)	+\$200M*

Board discussion

Next steps

Upcoming Board Process

Jan 26, Board: Further Studies results overview

Jan 26 – Feb 17: Gather additional community feedback

Feb 9, SEC: Further Studies results deeper dive

Feb 23, Board: Community feedback summary

Mar 9, SEC: Recommendation to Board

Mar 23, Board: Board identifies preferred alternative for Ballard Link Extension

Upcoming engagement opportunities

Further Studies online survey and open house



Online Survey

- Jan. 26 – Feb. 17, 2023

wsblink.participate.online/#further-studies



In-person Open House

- Feb. 8, 2023, 3 - 7 p.m., Union Station (Corridor-wide)
Stop by anytime to learn about the further studies, ask your questions and share your feedback.

In addition to updated online open house (wsblink.participate.online), ongoing community briefings, fairs/festivals/tabling events, flyering/postering and other engagement opportunities.

Upcoming Board Process

Jan 26, Board: Further Studies results overview

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Thank you.



 *soundtransit.org*

