

Seattle City Council

West Seattle High-Rise Bridge Safety Project

Sam Zimbabwe and Heather Marx, SDOT

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City of Seattle

Presentation Overview

Background and what has changed since April 20 Full Council briefing

- West Seattle High Bridge closure declared a City of Seattle emergency
- Stabilization work nearly completed for High Bridge and being designed for Low Bridge
- Broad and targeted community engagement to share information and improve traffic
- Over 185 traffic and detour route improvements made to date, including 12 Reconnect West Seattle Projects identified by community through ballot process
- Multi-prong funding strategy progressing, passed legislation to fund project through December 2021
- Completed Cost Benefit Analysis to inform repair or replace decision
- Continued moving ahead on repair and replace options simultaneously

Key Issues

- Delivering Reconnect West Seattle traffic management commitments
- Managing access to the Lower Spokane Street Bridge
- Choosing pathway forward on repair or replace

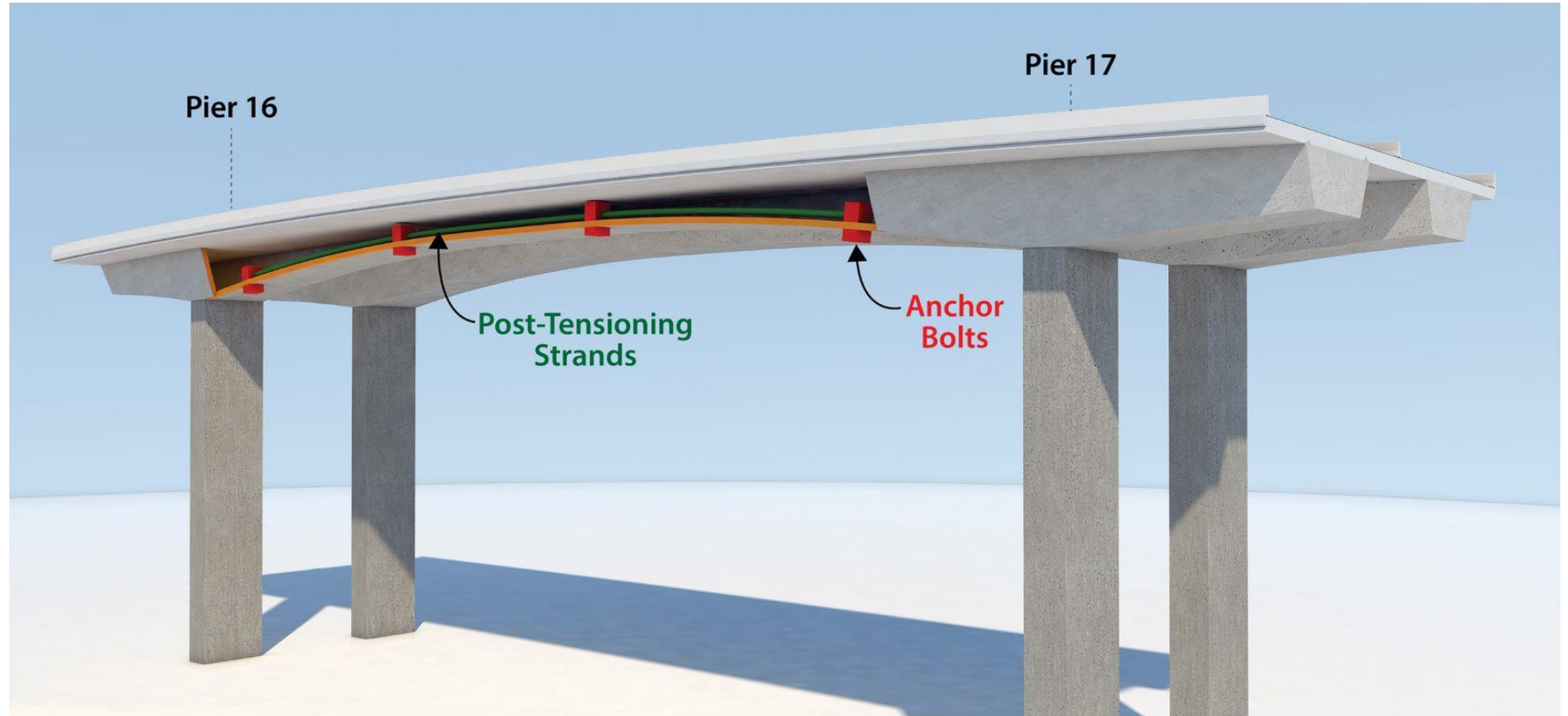
West Seattle Bridge emergency closure

- Bridge closed on March 23 due to rapid growth in cracking along the center section of the bridge
- After closure, crack growth continued, confirming immediate removal of live traffic load was essential
- Mayor declared the closure a City emergency in July
- Public safety is our top priority as we work to stabilize the bridge and determine a path forward



Stabilization measures underway

- New post tensioning and Pier 18 restraint release will stabilize the bridge
- Stabilization will not restore traffic, but it improves the safety of the standing bridge and preserves the structure from further impacts from the environment



Stabilization measures underway

- Installation of post-tensioning strands inside the Bridge girders
- Stabilization puts us on the right path if we repair the bridge and is also necessary for safe demolition if we replace.



Working with the community



8,200 people receive
weekly email updates



51 blog postings
shared with community



2x the number of blog users
this year as compared with 2019



200+ interviews or
responses to media requests



Met with **100+** stakeholder
groups



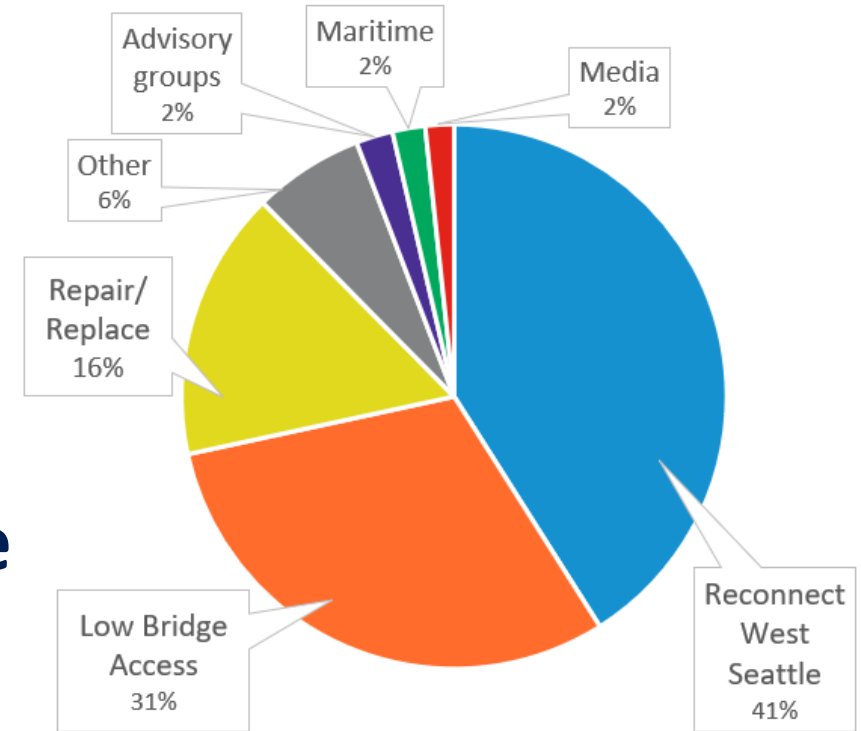
Created **4** advisory groups to inform
and guide City's response to the
Bridge closure:

- Community Task Force
- Technical Advisory Panel
- Employee Resource Group
- Maritime Town Hall

Working with the community

- Created westseattlebridge@seattle.gov to focus community concerns for rapid response
- Launched **Reconnect West Seattle** to build traffic management and transportation projects based on community input
- Working with a **Low Bridge Subcommittee** to manage access to the Lower Spokane Street Bridge

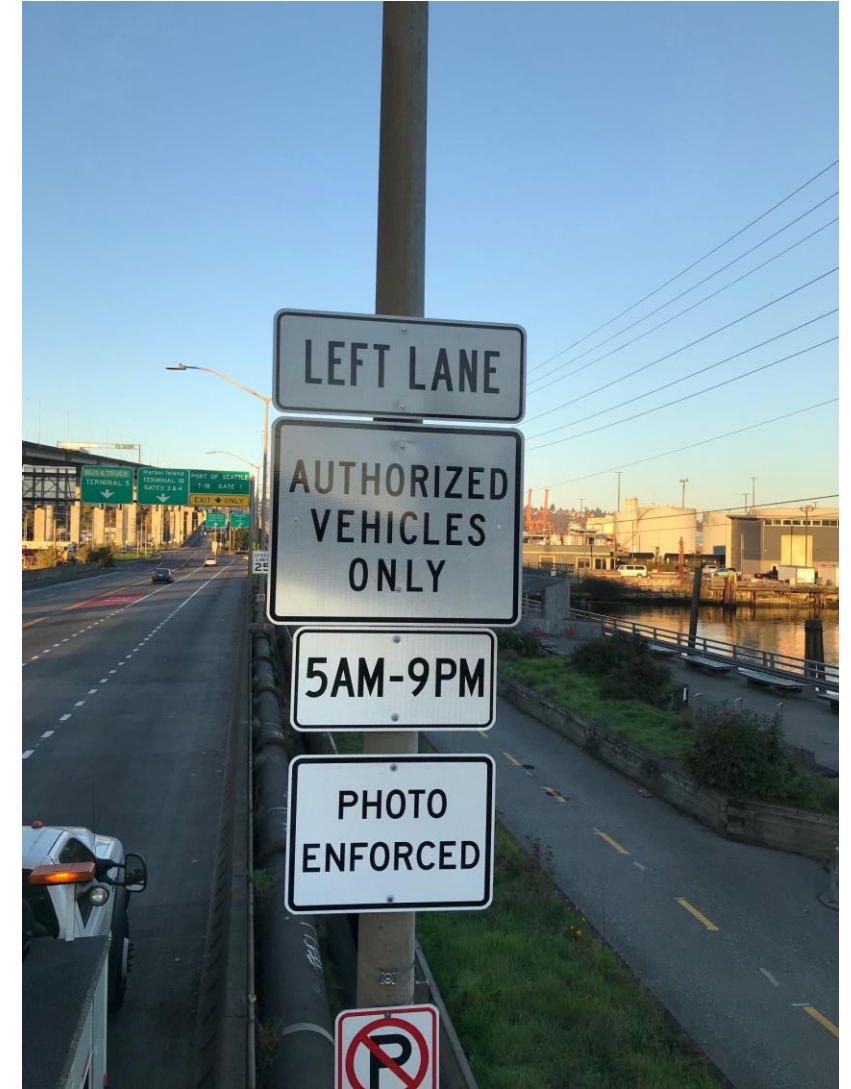
INBOX CORRESPONDENCE TOPICS



General topics in 300+ emails and voicemails submitted to the program since July

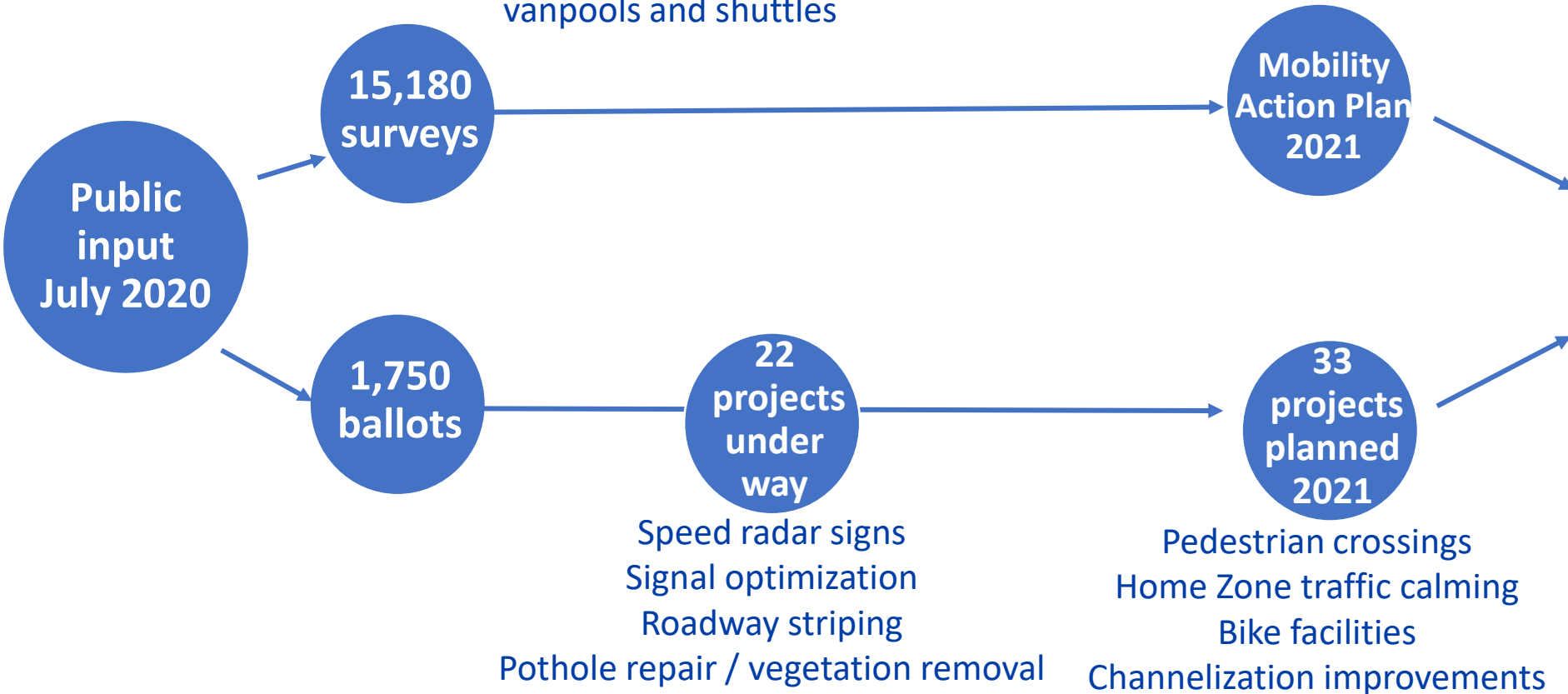
Managing Low Bridge Access

- Emergency vehicle response is top priority
- Allowed Users:
 - Everyone between 9 pm and 5 am
 - School buses (none currently operating)
 - Employer shuttles (none currently operating)
 - 15 Vanpools of essential workers
 - Placard holders
 - 75 Maritime/industrial users proximate to Harbor Island
 - 108 ILWU
 - 13 West Seattle Chamber/Junction BIA for small business access
- Automated enforcement cameras will be installed in November, testing in December, monetary penalties in early January
- Access policy will be dynamic with on-going monitoring and adjustment



Reconnect West Seattle

- Drive alone and work from home targets within reach
- Opportunities for improvement to get people on transit, vanpools and shuttles



Reconnect West Seattle Goals:

Allow similar levels of travel across the Duwamish to those seen before the closure of the West Seattle High-Rise Bridge

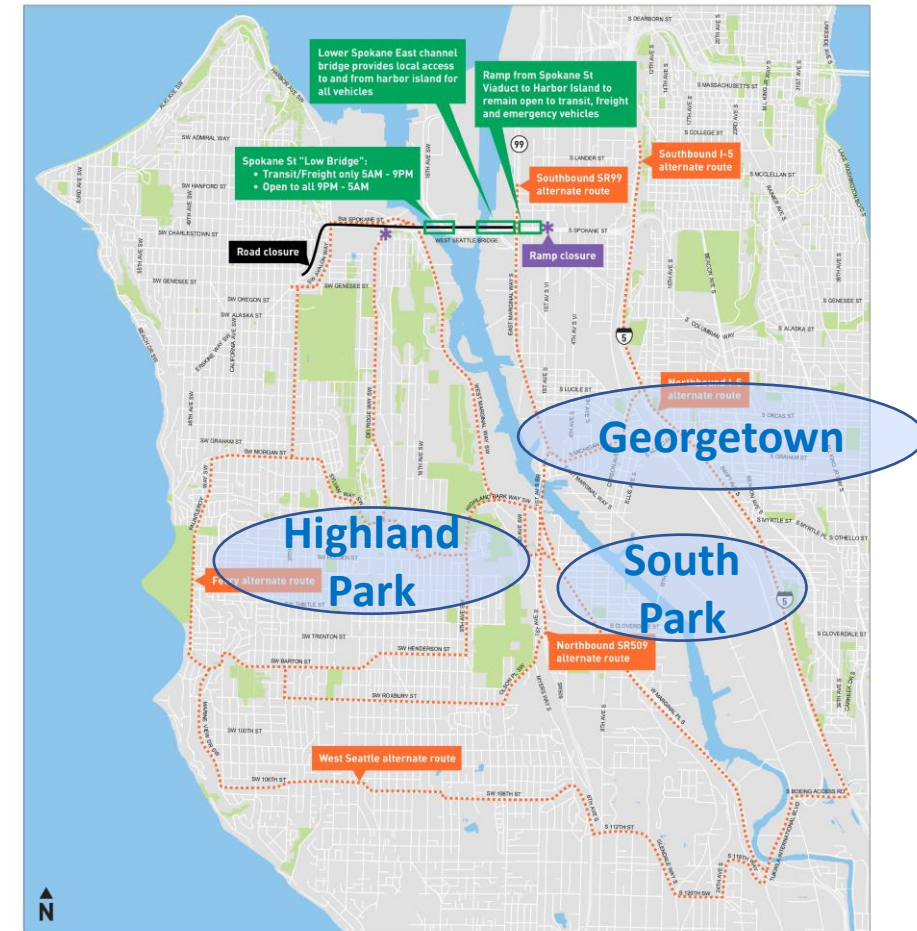
Reduce the impact of environmental injustice in the Duwamish Valley

Ongoing engagement along the detour routes

- Partnership with Department of Neighborhoods to engage and elevate input from black, indigenous and people of color communities
- Regular updates and engagement via Community Liaisons in 7 languages
- Walking tours, briefings and meetings to understand neighborhood safety priorities



Highland Park North Home Zone walk with community



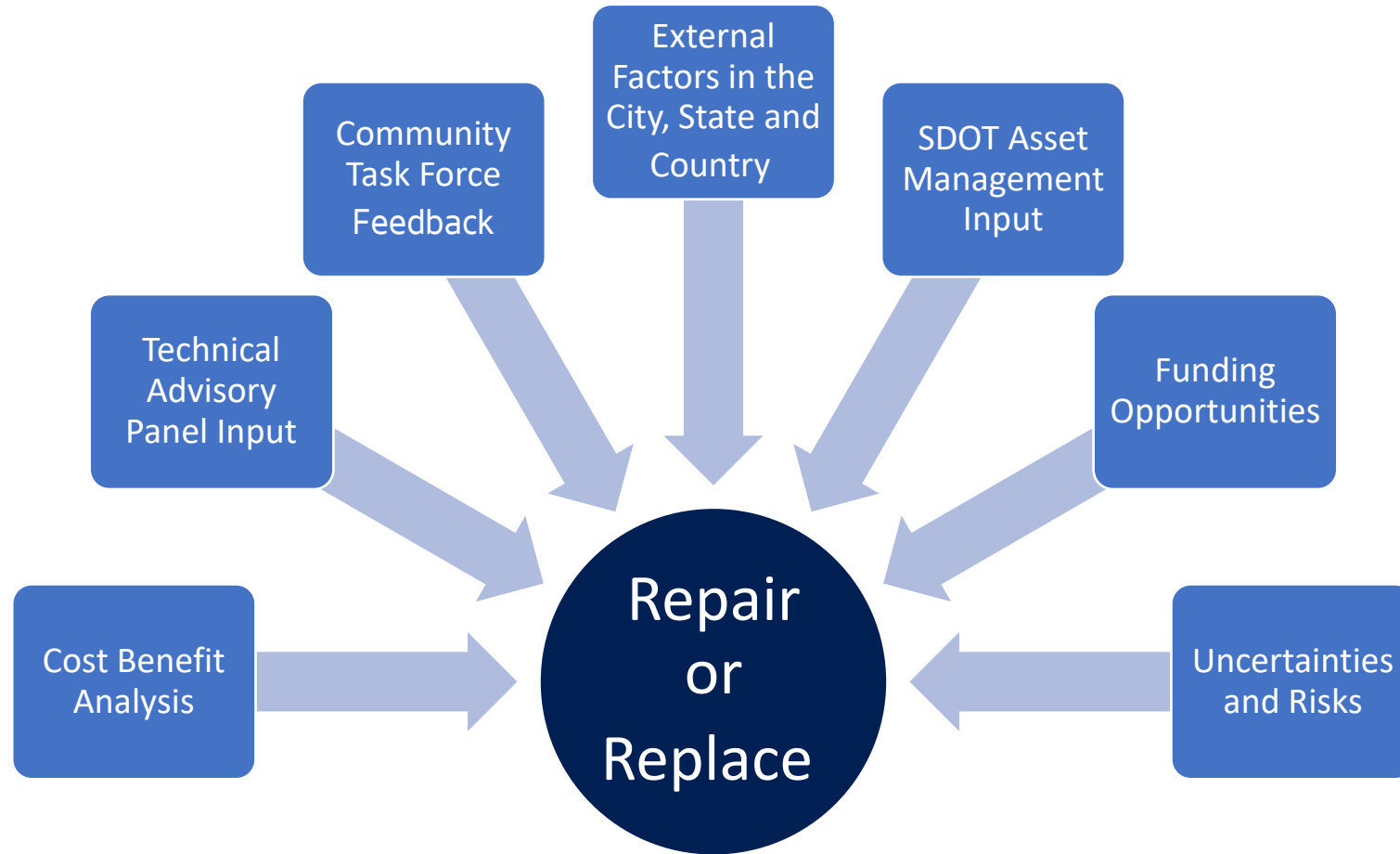
Home Zone projects in development for 3 neighborhoods to slow vehicle speeds and encourage walkability

Moving Ahead Urgently To Restore Traffic

- Since bridge closure, simultaneously advancing both repair and replace pathways
- Not yet at divergence of different pathways
- All work to date informs decision and provides improved understanding of risks
- Risk tolerance is key consideration
- Many factors and perspectives to consider



Inputs to repair or replace decision



Costs Benefit Analysis to Understand Repair vs. Replace

- The CBA provides analysis for five alternatives
 - Alternative 1: Shoring
 - Alternative 2: Full Repair
 - ~~Alternative 3: Removed from analysis due to cost and feasibility issues~~
 - Alternative 4: Superstructure Replacement
 - Alternative 5: Full Replacement (on alignment)
 - Alternative 6: Immersed Tube Tunnel (off alignment)
- CBA is a conservative evaluation reflecting 0% design – costs are not actual estimates, just rough order of magnitude conceptual cost data
- CBA does not yield a decision; it helps us understand and compare the performance, costs and risks associated with different repair and different replacement alternatives

Cost Benefit Analysis synopsis

Repair (Alternative 2)

- Better cost to performance ratio
- Lower upfront capital cost
- Higher lifecycle maintenance costs
- Quicker return of traffic
- Requires future long-term bridge closure
- Lower Seismic/Safety performance
- Success depends on bridge's reactions to repair and stabilization
- Higher risk of another unplanned shutdown in the future

Replace (Alternatives 4, 5, 6)

- Better performing overall
- Higher upfront capital costs
- Lower lifecycle maintenance costs
- Longer time to return traffic
- No future long-term bridge closure
- Success doesn't depend on bridge reactions to current stabilization
- Lower risk that the new structure wouldn't achieve its 75+ year service life

Rapid Replacement Option

- Concept developed by HNTB, SDOT's replacement design consultant
- Steel bridge lightens load on existing, shortened piers
- Similar to Lake Champlain bridge
- Needs further evaluation, but offers accelerated schedule
- Streamlines permitting and construction



Comparing the Alternatives

Alternative	Estimated Upfront Construction Costs	Estimated Total Ownership Costs (Life Cycle Costs)	Restores traffic	Lifespan
Alternative 1 (Shoring)	\$103.5M	\$1,558.9M	Partial traffic by 2025	5 years
Alternative 2 (Repair)	\$47.0M	\$916.0M	2022	15-40 years*
Alternative 4 (Superstructure Replacement)	\$383.1M	\$1,005.7M	2026	75 years
<i>Rapid Replacement</i>	<i>\$391.0M-\$522.0M</i>	<i>TBD</i>	<i>As soon as 2023</i>	<i>75-100 years</i>
Alt 5 (Full Replacement)	\$564.7M	\$1,542.7M	2026	75 years
Alt 6 (Immersed Tube Tunnel)	\$1,992.1M	\$2,821.0M	2030	75 years

** Derived life span range, CBA costs based on 40-year lifespan, per AASHTO codes*

West Seattle Bridge CIP – Immediate Response

Program Component	Total
Emergency Repairs	\$19-22M
High Bridge Replacement Planning/Design	\$10-13M
Low Bridge Repair/Improvements	\$14-19M
Bridge monitoring/testing and maintenance	\$3-5M
Reconnect West Seattle	\$36-58M
Program Development	\$6-10M
Shoring/Demolition	\$71-98M
Total	\$159-225M

- Note: Project is still in preliminary design and therefore costs are presented in rough order of magnitude range estimates
- ~\$190M added in the new CIP this year
- \$100M in existing bond authority, up to \$150M anticipated, with additional sources TBD
- \$8.4M in federal grants secured

Funding Strategy

- Leverage up to \$150 million of the City of Seattle's current financial commitment
 - Spent \$20M to date primarily on the stabilization and emergency repairs but also on traffic mitigation efforts, high bridge planning, low bridge design, and program development.
- Partner with Washington State, the Port of Seattle, Puget Sound Regional Council and other stakeholders – all recognize the local, regional and state-wide economic and mobility significance of the Bridge
- Seek federal funding, both discretionary grants and formula
 - Support new investment for bridges in the next surface transportation authorization
 - Utilize USDOT INFRA, BUILD, TIFIA and other competitive programs
 - Pursue additional funding for bridges in FY 2022 Appropriations and any potential future infrastructure package

Questions / Discussion

www.seattle.gov/transportation/WestSeattleBridge

