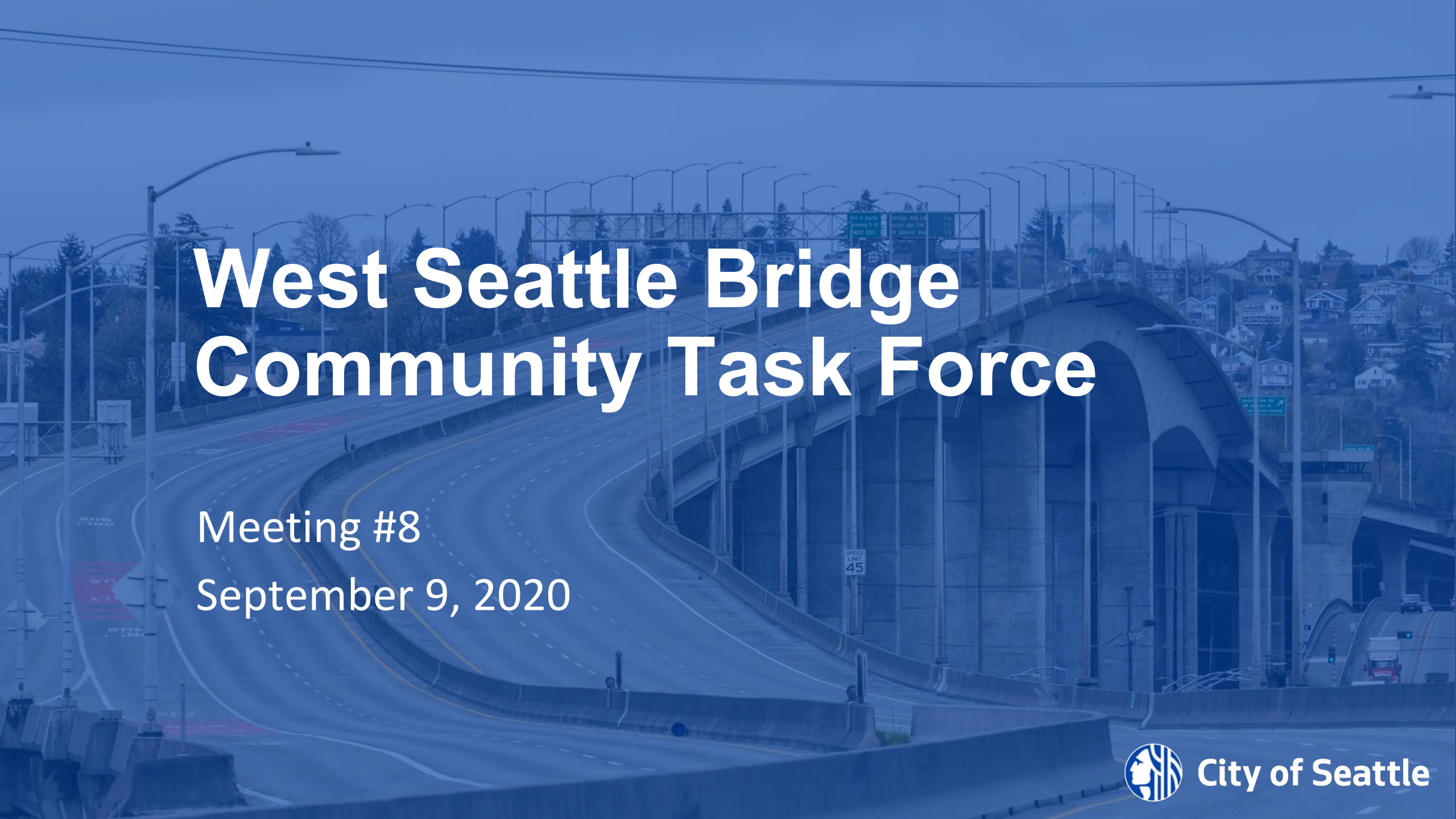


West Seattle Bridge Community Task Force

Meeting #8

September 9, 2020

City of Seattle

Agenda

- Welcome and Introductions
- Bridge Updates
- Low Bridge Access Policy
- Reconnect West Seattle update
- Cost-Benefit Analysis progress - WSP
- Q&A and Discussion

Please note, audio and video for this Webex Event is being recorded and afterward will be available online and accessible to media.

Bridge Updates

Heather Marx

September 9, 2020

City of Seattle

Bridge Program Updates

- Bridge Stabilization Work – Updates
- Bridge Program Funding Legislation – Update

Stabilization Measures Underway

Work platforms installed in July now moving to area 3.

Small “syringes” are placed into affected areas and used to channel epoxy into the cracks.

Stabilization Measures Underway

Crews working inside the bridge. In front, the post-tensioning brackets used to reinforce the concrete.

Epoxy crack injection and carbon fiber wrap in a section where many of the larger cracks were identified.

Low Bridge Access Policy

Heather Marx, Colin Drake

September 9, 2020

City of Seattle

Recommendation: Low Bridge Access Policy

- Many adjustments needed to manage Low Bridge Access
  - Automated Enforcement requires a license plate list
  - ILWU workers don't need access now – but will again in the spring
  - Vanpool requests are increasing (essential workers)
  - Employer shuttle proposals under development
  - Prior to Automated Enforcement, recommend allowing all essential vanpools without placards (utilizing unused employer shuttle capacity)
- Recommendation:
  - Take a phased approach to automated enforcement
  - Form a Task Force committee to inform allocation policies with representatives from businesses, employers maritime/industrial, labor with staff from City, Metro and the Port
  - Please let us know about your interest in the committee here: http://bit.ly/WSB-CTF-8

Low Bridge Subcommittee Goals And Next Steps

- Inform dynamic policy adjustments and recommend allocation approach to SDOT
- Membership represents current stakeholder perspectives and agency staff
  - West Seattle business
  - Maritime and industrial users proximate to Low Bridge
  - Labor
  - Schools
  - Employer shuttles (request representation from Employer Resource Group)
- Agency staff to include:
  - SDOT (lead) and OED
  - Port of Seattle (Freight) and King County Metro (Transit and Vanpools)
  - Other city agencies as needed: SPD, SFD, SPU and SCL
- Ideally about 4-5 members of Task Force representing the stakeholder perspectives
- Please indicate your interest in this week's reflection form

Reconnect West Seattle

Colin Drake, Danielle Friedman

September 9, 2020

City of Seattle

Reconnect West Seattle

A plan to:

- 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

Implementation Plan Highlights

- Initial investment of $6M for 2020-2021 project implementation, with additional funding allocation informed by project scoping, race and social equity, population, travel demand, and other considerations
- 2020: 23 community-prioritized projects or actions to improve mobility and neighborhood safety
- Fall 2020: 32 projects or programs elements move into project development for 2021 implementation
- The list is not exhaustive – it describes initial planned investments to support neighborhoods and travelers – work with community will continue as traffic conditions change
- SDOT's Home Zone program added to coordinate, combine and deliver safety and speed reduction efforts
- Mode Share goals for West Seattle within reach – with projects and programs implemented in partnership with our agency partners and employers across the region

Community Feedback and Responses

Feedback: Traffic calming is a majority priority not always reflected in the ballot priorities.

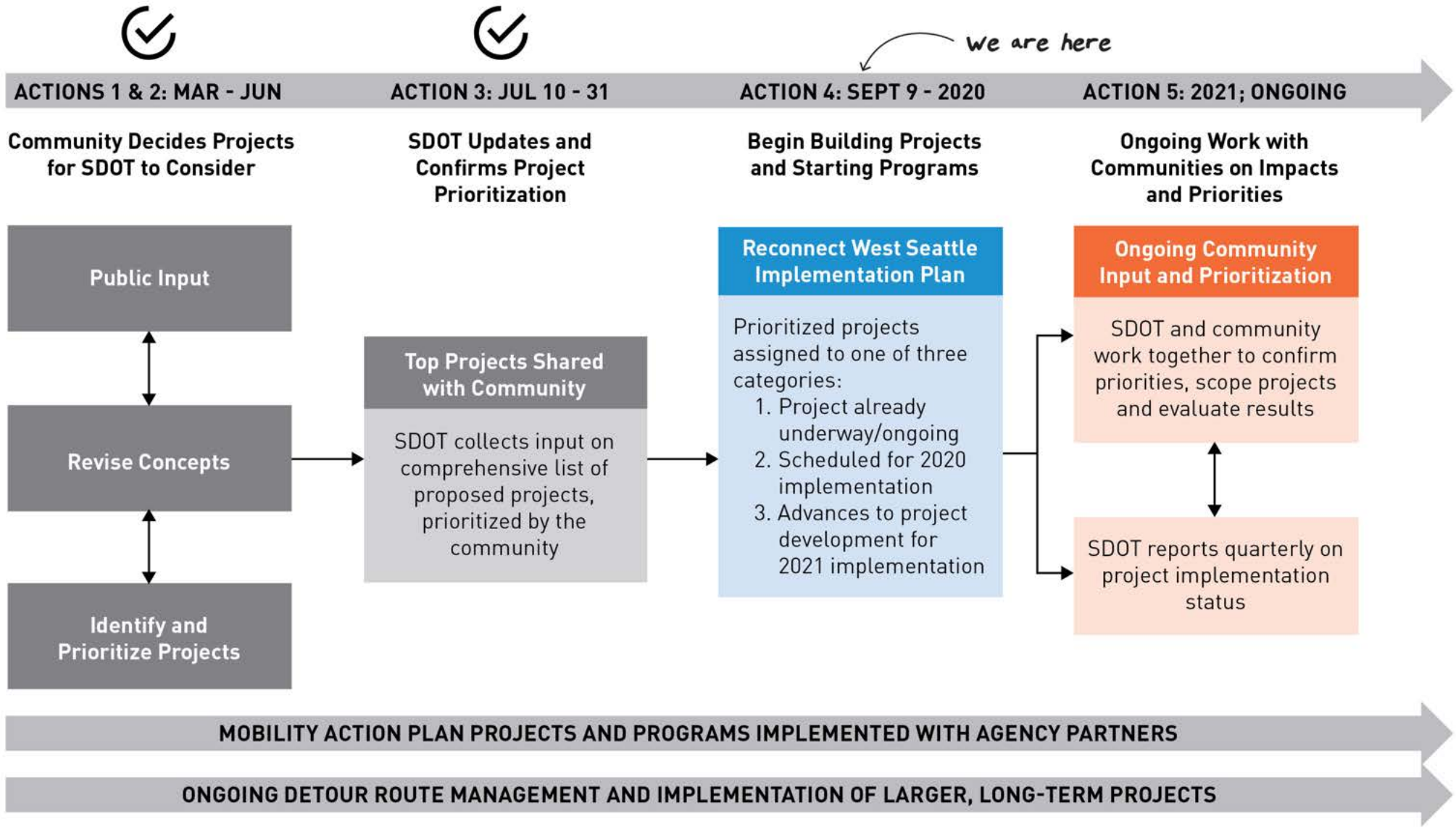
- Response: SDOT will expand Home Zone program to South Park, Georgetown, and Roxhill, Highland Park, Riverview and South Delridge; this is a holistic approach to encouraging slower vehicle speeds that can include traffic circles, speed humps, access management, and cost-effective walkways, coupled with neighborhood activation and beautification.

Feedback: Selected priorities reflected community need, but community members would like to see additional ideas and solutions implemented quickly.

- Response: Projects for 2020 implementation are well-defined, requiring little additional design or input. SDOT crew capacity limits – due to COVID-19 social distancing requirements and other factors – is the key determinant in project implementation

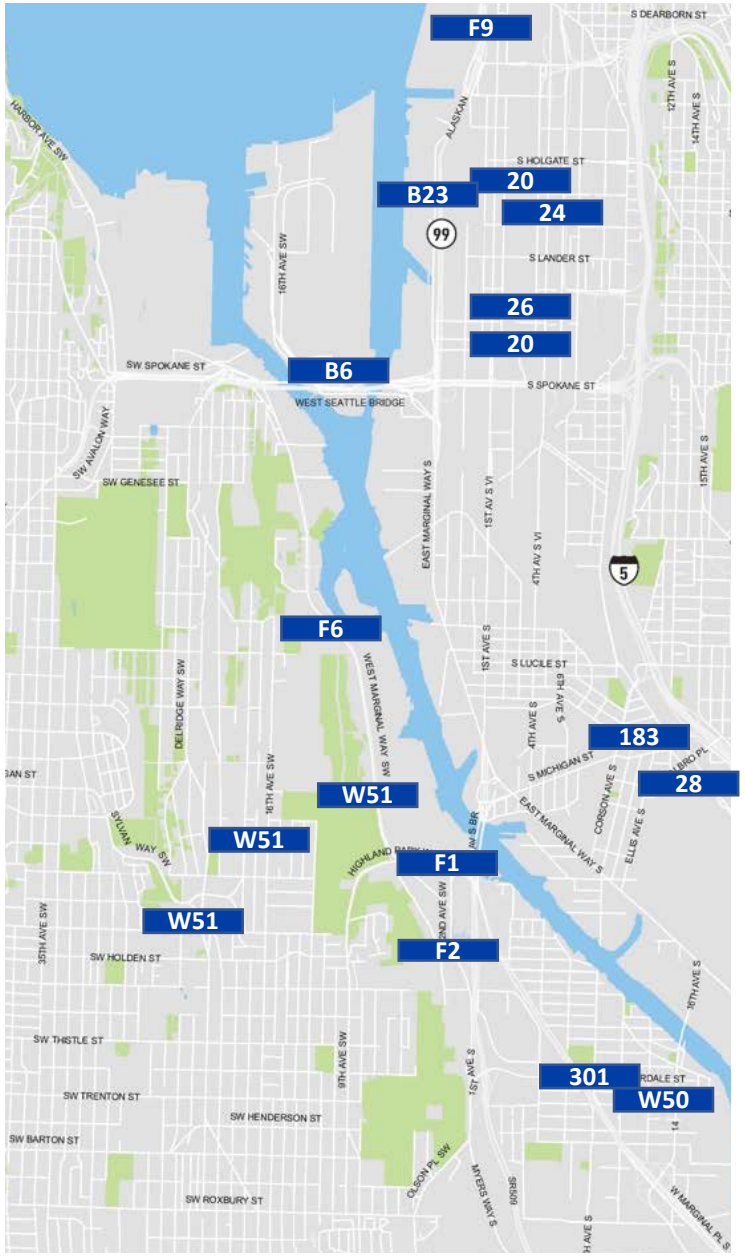
Feedback: Disappointment that ballots included detour-related projects already moving toward completion that took votes away from other needed projects.

- Response: The Implementation Plan identifies the initial project list that could be acted on quickly. SDOT and DON are reviewing ideas that came up outside the ballot selections and will continue discussions with community.


we are here
ACTIONS 1 & 2: MAR - JUN
ACTION 3: JUL 10 - 31
ACTION 4: SEPT 9 - 2020
ACTION 5: 2021; ONGOING
Community Decides Projects for SDOT to Consider
SDOT Updates and Confirms Project Prioritization
Begin Building Projects and Starting Programs
Ongoing Work with Communities on Impacts and Priorities
Public Input
Revise Concepts
Identify and Prioritize Projects
Top Projects Shared with Community
SDOT collects input on comprehensive list of proposed projects, prioritized by the community
Reconnect West Seattle Implementation Plan
Prioritized projects assigned to one of three categories:
1. Project already underway/ongoing
2. Scheduled for 2020 implementation
3. Advances to project development for 2021 implementation
Ongoing Community Input and Prioritization
SDOT and community work together to confirm priorities, scope projects and evaluate results
SDOT reports quarterly on project implementation status
MOBILITY ACTION PLAN PROJECTS AND PROGRAMS IMPLEMENTED WITH AGENCY PARTNERS
ONGOING DETOUR ROUTE MANAGEMENT AND IMPLEMENTATION OF LARGER, LONG-TERM PROJECTS

2020 Projects

#	Project	Approach
W50	14th and Cloverdale Intersection improvement	Relocate the STOP bars and signal detection and expand the width of the crosswalk on 14th Ave S at S Cloverdale St
301	Cloverdale Safety improvement	Install speed radar on Cloverdale
183	Michigan/Corson Traffic improvement	Channelization changes to EB Michigan. New left-turn arrow from eastbound Michigan to northbound Corson. The new left-turn arrow will create more gaps for SB to WB right turn.
28	Airport Way Safety improvement	Install speed radar on Airport Way
20	BNSF crossings improvement	Keep S Holgate St open for all modes and upgrade Holgate and Horton at-grade signs and markings at rail crossings to enhance safety for safety for all users.
26	SODO Detour Route maintenance	Prioritize pothole repair in SODO on routes impacted by additional traffic.
24	SODO Drainage	Prioritize ponding repair in SODO
W51	West Seattle Arterial Maintenance	Repair potholes on 35th Ave, W Marginal Way, SW Delridge Way, SW Holden St
B6	West Seattle Bridge Trail improvements	Implement striping, signing, wayfinding, and safety improvements
B23	East Marginal Way S improvements	Restripe PBL and refresh delineators
B27	West Marginal Way SW gap	Implement PBL
F06	West Marginal Way Freight	Implement NB freight-only lane
F09	Alaskan Way signal progression	Modify signal progression on Alaskan
F01	2nd Ave SW at Highland Park Way SW maintenance	Review and refresh any faded pavement markings at the intersection. Replace any damaged signs near the intersection.
F02	SB SR-509 / 2nd Ave S / 1st Ave S maintenance	Trim vegetation at the intersection so drivers can more easily merge onto northbound 2nd Ave S.



Implementation Plan Next Steps

- Outreach to community – project flyers and follow-up
- Project implementation for 2020
- Project development begins for 2021 – and Home Zone program
- Quarterly check-ins and implementation progress report
- Monitoring and evaluation

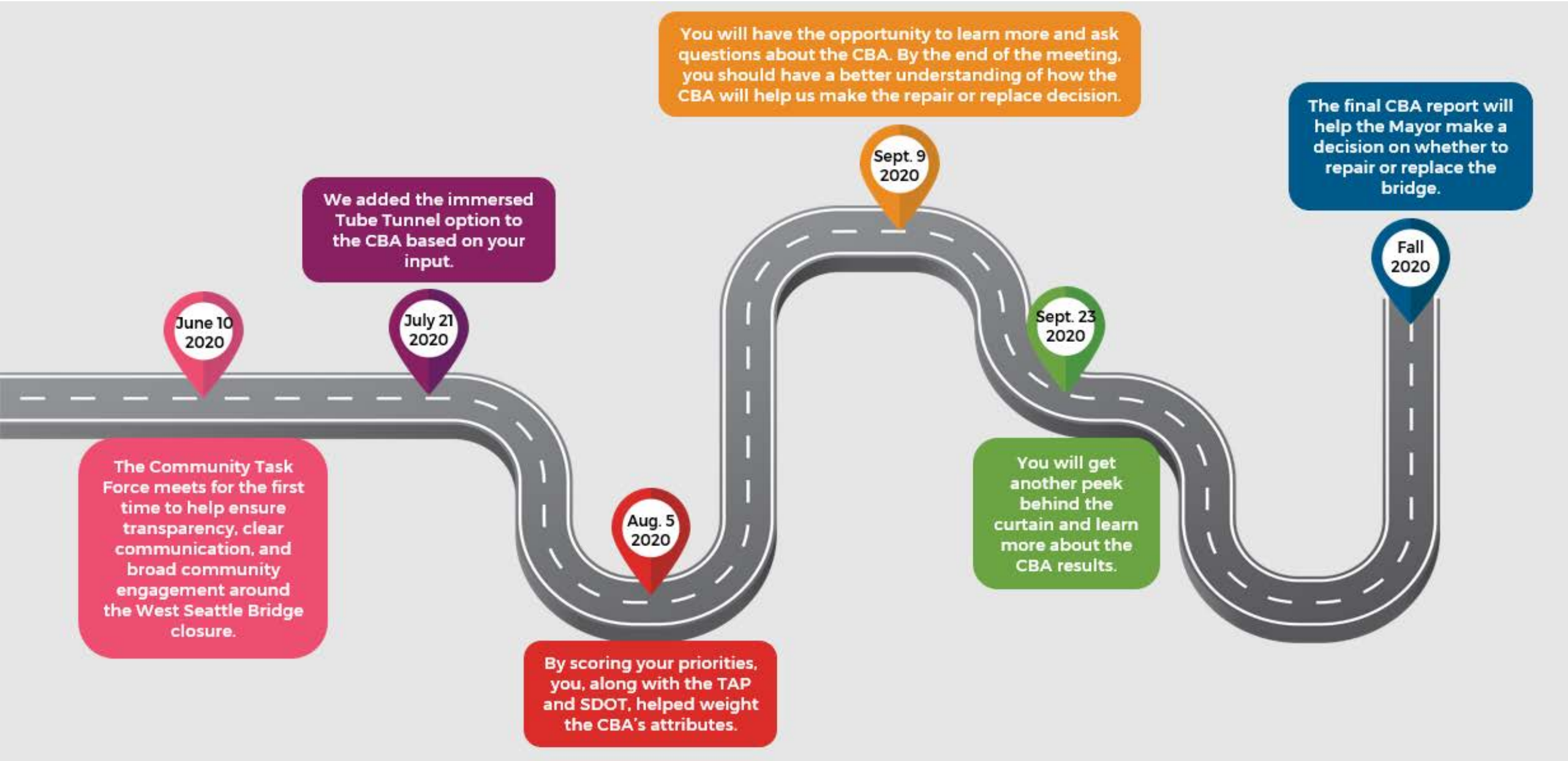
Questions and Discussion

Cost-Benefit Analysis (CBA)

Greg Banks, WSP

City of Seattle

Cost-Benefit Analysis and Community Task Force



Cost- Benefit Analysis: Today

- **CBA Objective & Schedule**
- Attribute Weighting
- Attribute Definitions & Measurables
- Incorporating Costs and Monetizing Risk
- Next Steps

Cost- Benefit Analysis Objective

The objective of the CBA is to help us make an informed decision to repair or replace the bridge by examining the pros and cons of multiple alternatives:

1. Temporary Shoring
2. Repairs
3. Accelerated Superstructure Replacement (on-alignment)
4. Accelerated Bridge Replacement (on-alignment)
5. Immersed Tube Tunnel (off-alignment)

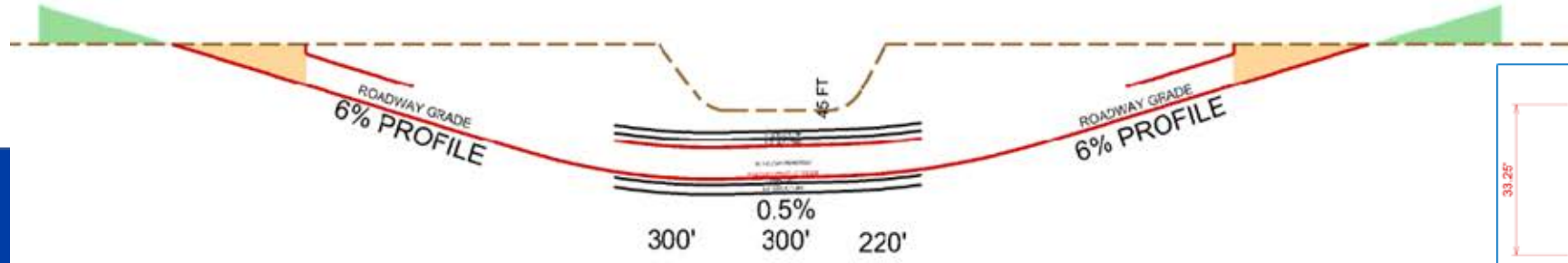
Cost-Benefit Analysis and Community Task Force

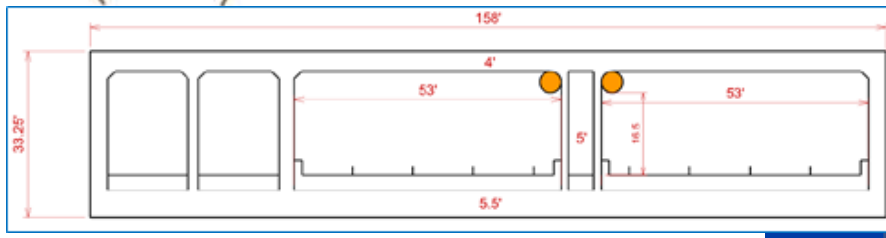
- By the end of this presentation, you should have a better understanding of:
  - How your feedback helped shape the CBA
  - How the CBA process works
  - How the CBA will help shape (but not dictate) the repair/replace decision
  - What the next steps for the CBA are
- On September 23, you will be able to see how we have incorporated risks and costs into the CBA
- In October, you will be able to see results of the CBA

Update: Immersed Tube Tunnel

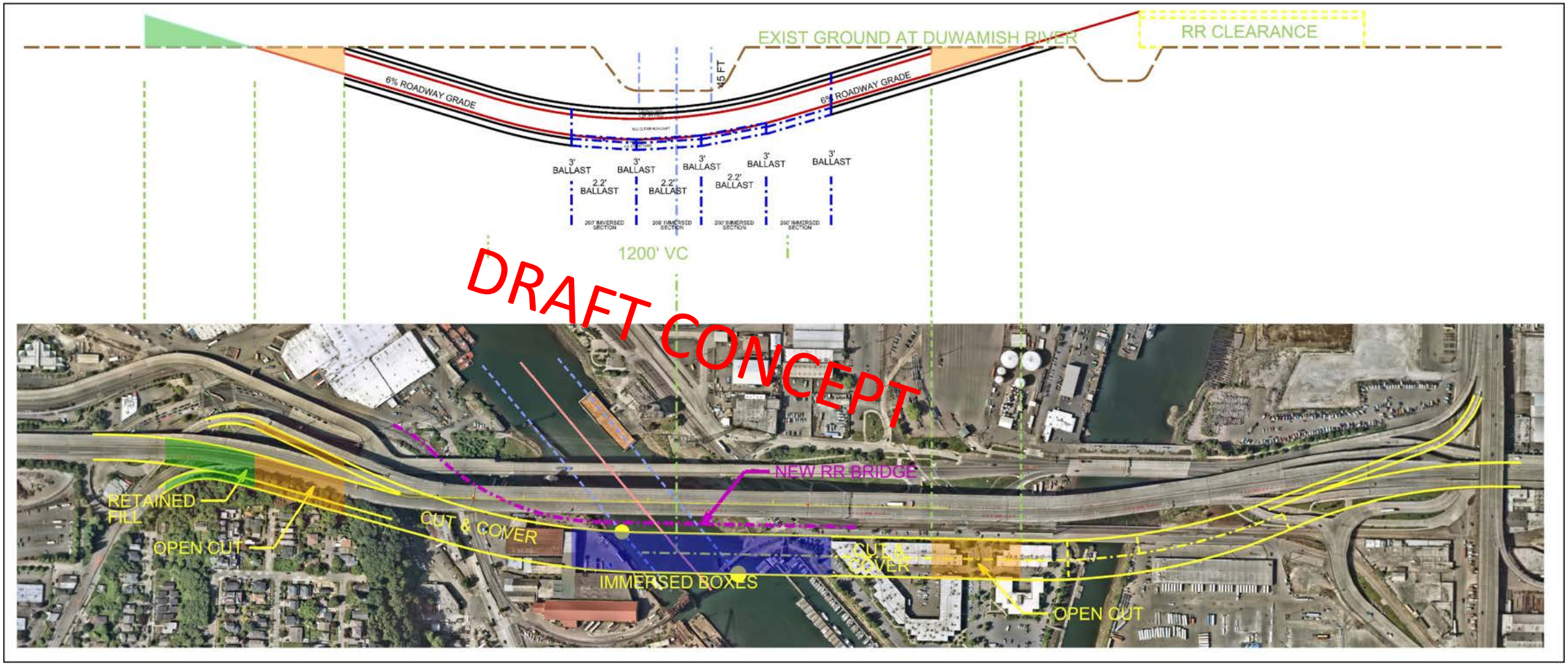
- Based on CTF feedback, we advanced several immersed tube tunnel concepts
- One of the three immersed tube tunnel concepts will be included as Alternative 5 in the CBA
- Evaluating now if it is more technically and logistically feasible to put the tunnel to the south or north of the existing bridge
- Traffic modifications, environmental impacts, cost, construction duration, and constructability will be key when evaluating the tunnel options

Immersed Tube Tunnel Concepts North of Bridge





Immersed Tube Tunnel Concept South of Bridge



Cost- Benefit Analysis

- CBA Objective
- **Attribute Weighting**
- Attribute Definitions & Measurables
- Incorporating Costs and Monetizing Risk
- Next Steps

Attribute Weighting

- In Phase 1: Identified key “attributes” or evaluation criteria
- Input on the attributes and weighting provided by SDOT, Technical Advisory Panel (TAP) and the Community Task Force
- All three inputs incorporated equally into the combined weighting
- Mobility impacts, seismic/safety and constructability have the highest weights
- Similar weights for other attributes
- This informs the most important criteria for the work in Phase 2

Attribute Weighting: CTF Input

	SDOT		TAP		CTF		Combined	
	TOTAL	%	TOTAL	%	TOTAL	%	TOTAL	%
Bridge Maintenance, Inspection & Operation	4.9	8.9%	6.4	11.7%	3.1	5.7%	14.4	8.8%
Constructability	5.0	9.0%	5.9	10.6%	6.7	12.1%	17.5	10.6%
Environmental	4.8	8.7%	3.3	6.0%	5.9	10.7%	14.0	8.5%
Equity	6.6	11.9%	2.3	4.2%	5.6	10.1%	14.4	8.7%
Forward Compatibility	4.0	7.2%	5.0	9.1%	5.1	9.3%	14.1	8.5%
Funding Opportunities	5.1	9.2%	5.6	10.1%	4.7	8.5%	15.3	9.3%
Local Business Impacts	4.2	7.6%	6.3	11.4%	4.1	7.5%	14.6	8.8%
Mobility Impacts	6.7	12.2%	9.6	17.4%	6.4	11.7%	22.7	13.8%
Multi-modal Impacts	5.7	10.4%	4.7	8.6%	5.1	9.3%	15.5	9.4%
Seismic/Safety	8.2	14.9%	6.0	10.9%	8.3	15.2%	22.5	13.7%
	55.0	100%	55.0	100%	55.0	100%	165.0	100%

CBA Process

Phase 1: June - Early August	Phase 2: August – Early October	Phase 3: This Fall
Narrow down the repair vs replace options and apply objective criteria to evaluate the feasibility of each. • Identify key “attributes” or evaluation criteria • Gain public input on the attributes • Determine the most important criteria to begin the analysis	Apply the agreed-upon attributes to the different options in the cost-benefit analysis. • **Score the attributes** • **Introduce rough order of magnitude (ROM) $ costs** • Quantify the results • Compare the options through the lens of the CBA • Present the results to the TAP for feedback	Analyze the quantified results and produce a report with the pros and cons of each option and a recommendation. • Present report to the CTF and TAP for feedback • Make a final determination on whether to repair or replace the bridge

Cost- Benefit Analysis

- CBA Objective
- Attribute Weighting
- **Attribute Definitions & Measurables**
- Incorporating Costs and Monetizing Risk
- Next Steps

Attributes Definition & Measurables

- Engineers who specialize in each attribute's "area of study" develop measurables and units of measure.
  - *For example: environmental engineers develop the measurables for Environmental Impacts and seismic engineers develop the measurables for Seismic/Safety*

- The engineers then "measure" each alternative using these units of measure
  - *For example, if a measurable is "Schedule Impacts" and the unit of measure is "Duration," we will identify the number of months/years it would take to build each alternative*

Attributes Definition & Measurables

- After taking these "measurements," engineers assign a number (1, 3, 5, 7, or 9) to each alternative for each attribute, with 1 being least preferable compared to the baseline alternative, and 9 being most preferable to the baseline.
  - *Alternative 2 (repair) is the baseline.*
  - *This means that, for every attribute, Alternative 2 receives a 5.*
  - *Other alternatives are scored as more preferable than (7 or 9), less preferable than (1 or 3), or equal to (5) the repair option.*

- Engineers are currently in the process of "measuring" each attribute and alternative

EXAMPLE: *Constructability* Attribute Definition & Measurables

An engineer who performs constructability reviews determines how easy and efficient it is to build each alternative relative to the schedule and potential means/methods.

Measurables	Unit of Measure	Alt #1 Shoring	Alt #2 Rehabilitation	Alt #3 Partial Superstructure Replacement	Alt #4 Superstructure Replacement	Alt #5 Full Replacement	Alt #6 Tunnel**
Schedule impacts	Duration of project	39 Mo	12 Mo	X Alt #3 eliminated from CBA because it carries higher technical risk and isn't the least cost option for repair	42 Mo	45 Mo	In progress! Stay tuned for our September 23 meeting!
Complexity	Standard construction or complex	Standard	Complex		Standard	Complex	
Specialty Contractors and Equipment	Are any required and if so how many	Yes, 2	Yes, 5		Yes, 5	Yes, 5	
Utility Relocations	Impacts on existing utilities, scope and magnitude of relocations	Average	Minor		Major	Major	
In-Water Work	Amount of in-water work and how many in water windows are needed	None	Foundation Retrofit – 2 Windows		Foundation Retrofit – 2 Windows	None –Ex. Piers Remain	
Demolition	Amount and complexity of demolition required	Complex & Truss Demo	Complex		Complex	Complex	
Poor soil conditions	Is substantial foundation work required?	No	Yes		Yes	Yes	
Staging/Laydown area required	Required footprint	Average	Minimal		Average	Large	
SCORE	**(1,3,5,7,9)**		**5**				

**Constructability* is just one of 10 attributes. Each attribute includes at least 3 measurables.

**Because the tunnel concept was added later than the other options, we are still calculating the results.

Engineers now considering:

Which option is best for each attribute? Give 1, 3, 5, 7, 9 Score

Alternative 2 = Baseline (gets a score of 5)

Other Alternatives = 1 if baseline is strongly preferred

= 3 if baseline is preferred

= 5 if is equal to the baseline

= 7 if alternative is preferred over the baseline

= 9 if alternative is strongly preferred over the baseline

Cost- Benefit Analysis

- CBA Objective
- Attribute Weighting
- Attribute Definitions & Measurables
- **Incorporating Costs and Monetizing Risk**
- Next Steps

Alternative Rough Order of Magnitude Cost Ranges – General Assumptions

- Rough Order of Magnitude (ROM) cost ranges are in part metrics-based, and in part based on engineering and calculated quantities.
- Limited estimate based on assumptions of the CBA
  - On-Alignment and matching existing profile (except tunnel)
  - High-Rise Only (no consideration of approach costs)
- Capital costs are reported in 2021 dollars
- Capital costs are inclusive of ROM design and construction costs

Approach to Incorporating Capital Costs and Monetizing Risk

Engineers now considering: What are the costs associated with impacted properties?

Engineers now considering: Are there risks missing? Do we appropriately capture/monetize the risks within the context of the CBA?

- Construction Costs
  - Developed material quantities, supported with metrics from recent and relevant experience
  - Incorporated design and construction contingencies
- Right-of-Way
  - Developed map of impacted properties
- Risk Monetization
  - Created risk registry
  - Identified and then monetized risks that could be assigned a $ value
  - Risks assigned a rating based on probability and severity
- Design and Planning Costs
  - Designated as “soft costs” or “other costs”
  - Estimated as 30% of construction costs
  - Considered engineering, CA&I, CSS, third-party review costs, City costs, etc.

Approach to Incorporating Lifecycle Costs and Monetizing Risk

Engineers now considering: Is there concurrence on Operations & Maintenance values in the context of the CBA?

- Construction Durations
  - Based on a preliminary conceptual schedule
  - Considers when work would occur
- Anticipated Lifespan of Structure, e.g.:
  - Alternative 2 (repair) = 15-40 years
  - Alternative 5 (full replacement) = 75+ years
- Rates
  - Inflation = 3% | Discount = 2%
- Operating and Maintenance (O&M) Costs
  - Based on CITY historical data
  - Scaled based on projected O&M costs for each alternative
- Repair and Replacement (R&R) Costs
  - Estimated for 50 years into each alternative's lifecycle

Risk Management Plan Process: Step 1

1. **Risk Identification** is a continuous process. It defines all possible risks that may significantly impact the project.

***Identified Risk**: As part of the Bridge Permit, the USCG requires additional vertical clearance over the Duwamish Waterway - requiring a modified height/profile of the bridge and revisions to approaches and ramps. This means that, if we replace the bridge, we will have to raise the vertical clearance. If we have to raise the clearance, it will affect the approach spans.*

We're here

Risk Identification		Qualitative Analysis			Risk Response		Monitoring & Controlling		Absolute Cost (Monetized Risk) – Approach	Prob abilit u	ern– at	Monetized Risk – Value
	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(J)
Category	Specific Risks or Opportunity	Probability Table IV (VH, H M, L,	Impact Table V (a&b) (VH, H M, L,	Overall Rating Table VI (H, M, L)	Strategy (Avoid, Transfer, Mitigate Accept	Planned Response	Assigned Responsible Pers	Current Status, Date	Associated cost if risk cannot be mitigated.	Assigned probability of occurring	Option risk applies to (if not a	Associated cost if risk cannot be mitigated.
Environmental	As part of the Bridge Permit, the USCG requires additional vertical clearance over the Duwamish Waterway - requiring a modified height/profile of the bridge and revisions to approaches and ramps.	M	VH	H	Transfer	For consideration beyond the CBA. If Sound Transit is accomodated, this will require a complete corridor replacement due to grade limitations.	CITY	Will identify this in the CBA report as a risk with significant cost implications.	Monetize the risk by looking at the additional project length required to tie back into the existing corridor. This is controlled by grade limitations associated with accommodating sound transit. This could be two numbers; (a) w/o considering ST, and (b) w/ considering ST.	70%	4,5	$ 146.0

Risk Management Plan Process: Step 2

2. **Qualitative Risk Analysis** identifies:
   - Probability: "What is the likelihood of the identified risk occurring?"
   - Impact: "What is the level of influence it will have on the project outcome?"
   - Overall Rating: Based on the individual risks probability and impact, identify the overall risk rating.

***Qualitative Risk Analysis**: Environmental engineers who specialize in permitting determined, based on past experience and understanding of USCG regulations, the probability, potential severity, and overall rating for the risk.*

They rated this risk's probability as High, its potential impact as Very High, and its Overall Rating as High.

We're here

Risk Identification		Qualitative Analysis			Risk Response		Monitoring & Controlling		Absolute Cost (Monetized Risk) – Approach	Prob abilit u	ern– at	Monetized Risk – Value
	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(J)
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Risk Management Plan Process: Step 3

3. **Risk Response** is developing specific strategies and planned responses for each risk.

Strategies fall into 4 categories:

- *Avoid*: Changes the project plan to eliminate the risk by adjusting the scope, schedule, and/or the budget
- *Transfer*: Shifts (but doesn't eliminate) the risk and responsibility
- *Mitigate*: Reduces the probability and/or effect of the risk to an acceptable level
- *Accept*: The "Do Nothing Strategy", until/if the risk materializes and then address.

***Risk Response**: Based on project understanding and expertise, engineers determined that the best way to manage this risk is to Transfer the risk to "consideration beyond the CBA." This means it will be revisited in later studies, like the TS&L.*

We're here

Risk Identification		Qualitative Analysis			Risk Response		Monitoring & Controlling		Absolute Cost (Monetized Risk) – Approach	Prob abilit u	ern- at	Monetized Risk – Value
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Risk Management Plan Process: Step 4

4. **Monitoring and Controlling** of each risk continues throughout the life of the project.

***Monitoring and Controlling Risk**: The CBA has determined that the best option is for the City to be responsible for monitoring and controlling the risk in the future, depending on the Repair/Replace decision, as only certain options would be affected by this risk.*

We're here

Risk Identification		Qualitative Analysis			Risk Response		Monitoring & Controlling		Absolute Cost (Monetized Risk) – Approach	Prob abilit y	ern- at	Monetized Risk – Value
	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(J)
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Risk Monetization

The engineers try to monetize this risk by looking at the additional project length required to tie back into the existing corridor. This is controlled by grade limitations associated with accommodating Sound Transit. This could be two numbers; (a) w/o considering ST, and (b) w/ considering ST.

With a 70% probability of encountering this risk in Alternatives 4 and 5, the engineers have determined that the financial impact of this risk could be approximately $146 million.

This means that this risk would only be encountered in a Replace scenario, but that there is a high probability that it would occur.

We're here

Risk Identification		Qualitative Analysis			Risk Response		Monitoring & Controlling		Absolute Cost (Monetized Risk) – Approach	Prob abilit y	ern- at	Monetized Risk – Value
	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(J)
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Risk Register

An excerpt from the CBA's risk register. Results are not finalized, and risks evolve as the project progresses.

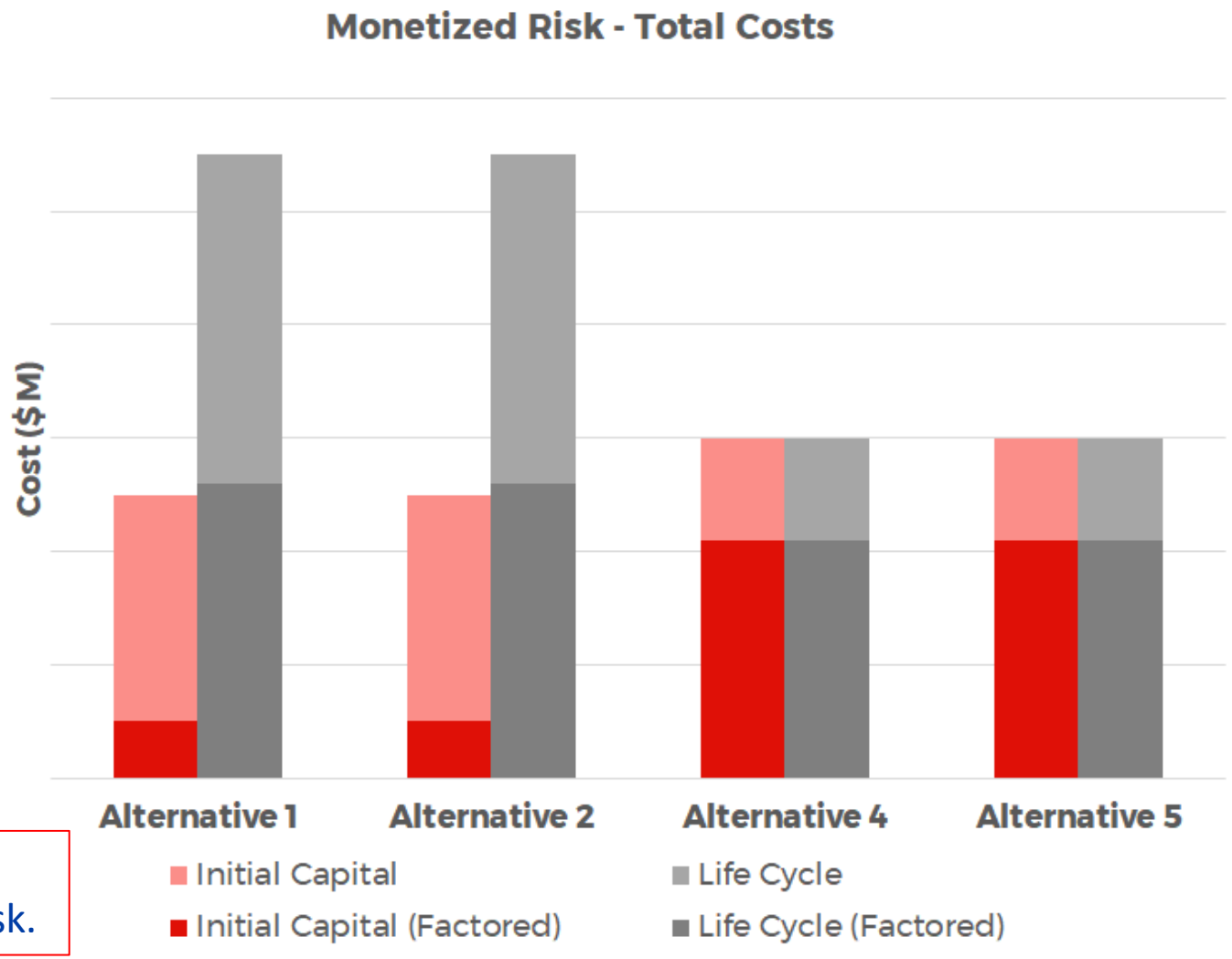
Risk Identification		Qualitative Analysis			Risk Response		Monitoring & Controlling		Absolute Cost (Monetized Risk) – Approach	Prob abilit u	ern– at	Monetized Risk – Value
	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(J)
Category	Specific Risks or Opportunity	Probability Table IV (VH, H, M, L,	Impact Table V (a&b) (VH, H, M, L,	Overall Rating Table VI (H, M, L)	Strategy (Avoid, Transfer, Mitigate, Accept	Planned Response	Assigned Responsible Pers	Current Status, Date	Associated cost if risk cannot be mitigated.	Assigned probability of occurring	Option risk applies to (if not a	Associated cost if risk cannot be mitigated.
Schedule	Securing funding to avoid delays in construction	M	H	H	Accept	Identified as an attribute and are identifying the available funding sources and differences between	CITY		Attribute. This is an opportunity. Do we want to quantify costs?	TBD	All	
Schedule	Delays in getting agency approval could lead to overall project delays	VL	H	M	Accept	Develop a detailed design schedule with appropriate agency approval periods. Post CBA	CITY		No monetization planned	na	All	
Cost	Geotechnical standards for seismic acceleration will likely change in next couple years, which may change design and sizing. This is relation to Subduction Zones, Near Fault Effects, and Basin Effects.	VH	M	H	Accept	Rehabilitation alternatives are treated as a normal structure following FHWA SRM and SDOT BSRPPC document. Replacement alternatives are being considered essential or critical structures following multi-hazard level, ground	WSP	Parameter Study - Conducting a site specific hazard analysis and getting S&W input on anticipated spectral acceleration magnification relative to site specific hazard.	Yes, use cost delta from parameter study – material differences based on findings from S&W site specific analysis.	70%	4,5	$ 3.5
Construction	FAA height restrictions	H	VH	H	Transfer	For consideration beyond the CBA. Consideration of alternate structure type or configuration to comply with requirements.	CITY	Will identify this in the CBA report as a risk with significant cost implications.	Cost difference between a two tower vs single tower cable stayed bridge or cost difference between an extradosed bridge vs cable stayed (Single versus two tower cable stayed is greater – used)	70%	5	$ 45.5
Environmental	As part of the Bridge Permit, the USCG requires additional vertical clearance over the Duwamish Waterway - requiring a modified height/profile of the bridge and revisions to approaches and ramps.	M	VH	H	Transfer	For consideration beyond the CBA. If Sound Transit is accomodated, this will require a complete corridor replacement due to grade limitations.	CITY	Will identify this in the CBA report as a risk with significant cost implications.	Monetize the risk by looking at the additional project length required to tie back into the existing corridor. This is controlled by grade limitations associated with accommodating sound transit. This could be two numbers; (a) w/o considering ST, and (b) w/ considering ST.	70%	4,5	$ 146.0

Approach to Incorporating Costs and Monetizing Risks

Key Risk Items*:

- Change in geotechnical standards for seismic acceleration
- Bridge Stabilization measure performance
- Bridge Importance classification
- FAA height restrictions
- USCG navigation clearance

*Selected risk items have been presented here. Additional risk items which may have monetary impact are included in the full risk register.



Once rough order of magnitude costs are determined, they will be used to monetize risk.

Cost-Benefit Analysis: Next Steps

1. Performance Rankings for each Attribute
   - Complete measurements for Alternative #6 (immersed tube tunnel)
   - Engineers will assign the 1,3,5,7,9 ranking for each alternative and each attribute
2. Review of Cost Development
   - Operations & Maintenance costs
   - Risk monetization
   - Right-of-way costs calculation
3. Initial Findings
4. Final Review
5. Recommendation
6. Decision to Repair or Replace

Task Force Questions and Discussion

Thank you!

www.seattle.gov/transportation/WestSeattleBridge