Interstate BRIDGE Replacement Program

Equity Advisory Group

April 18, 2022

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Interstate BRIDGE Replacement Program

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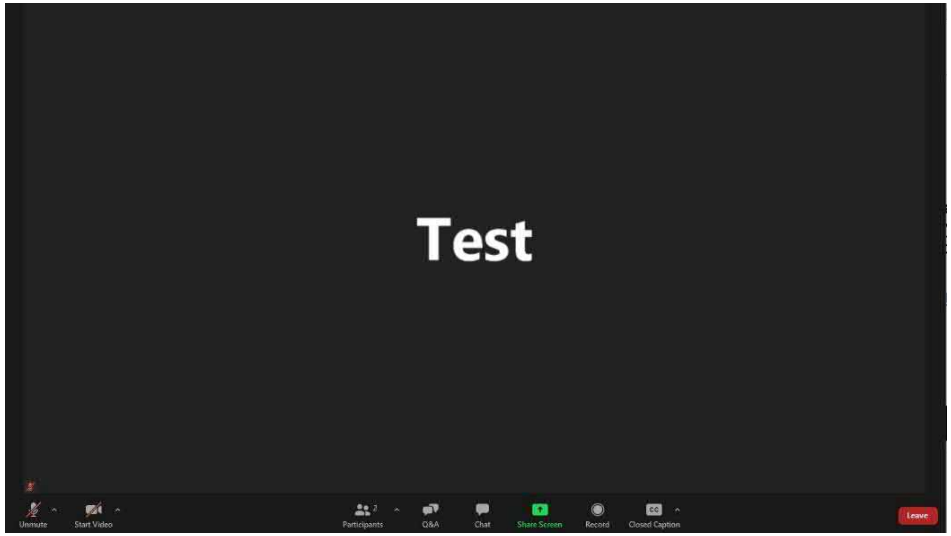

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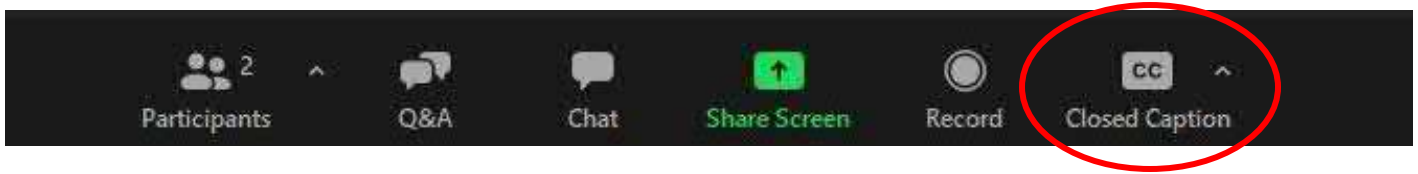
2. Click on the "CC" icon and a separate window with captions will appear.



Interstate BRIDGE Replacement Program

Reminders

- We encourage EAG members to turn on your video.
- Please say your name when you begin to speak.
- If you experience technical difficulties, please contact program staff at: (360) 329-6744

Public Input Instructions

- **There will be an opportunity to provide brief public input later in the meeting today.**

- **To submit input after the meeting:**
  - Email comments to info@interstatebridge.org with “EAG Public Comment” in the subject line

  - Call 888-503-6735 and state “EAG Public Comment” in your message

Interstate BRIDGE Replacement Program

Today's agenda

- High-Capacity Transit Options: What We Heard From You
- Hayden Island/Marine Drive Discussion Redux
- Auxiliary Lanes Presentation
- Auxiliary Lanes Breakout Session
- Public comment
- Close out

High-Capacity Transit Options: What We Heard From You

Emilee Thomas Peralta, Equity Team

High Capacity Transit Investment: What we heard from you

- **Regarding the decision between Light Rail and Bus Rapid Transit:**
  - Rely on data (e.g. differences in rider demographics between BRT and LRT, including who will be relying on transfers)
  - Equity objectives need to be front and center in evaluating options
  - Whatever is selected, there needs to be strong coordination between TriMet and C-Tran

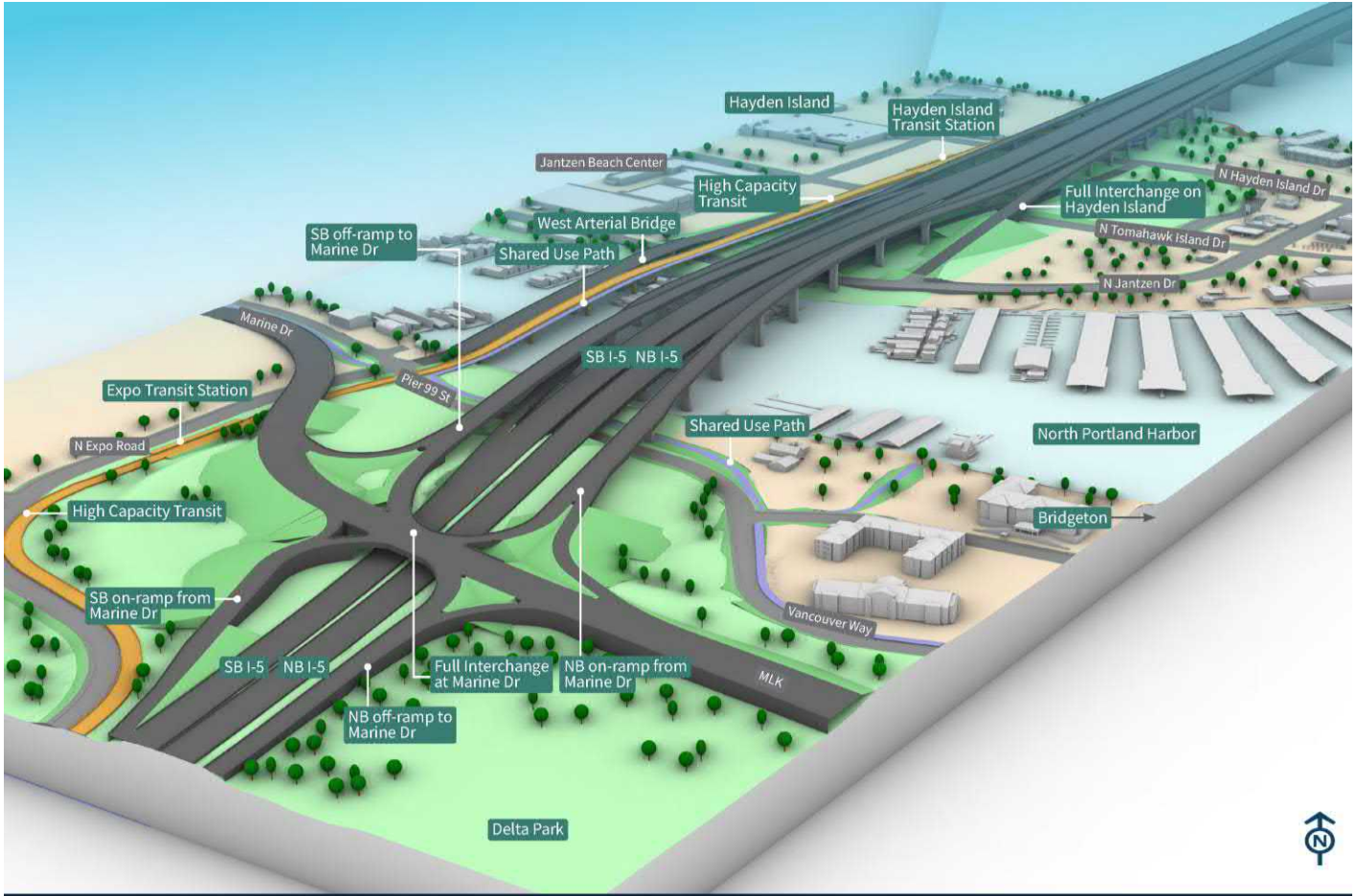
High Capacity Transit Investment: What we heard from you

- **Regarding complementary strategies:**
  - Partners should incorporate the Equity Framework
  - Take initiative to prevent gentrification and displacement that may result
  - Target hiring locally and lower income workers for both construction and ongoing operations
  - Utilize Universal Design principles
  - Develop a Community Benefits Agreement

Hayden Island/Marine Drive redux

Jake Warr, Equity Lead

Option 1 Full Interchange



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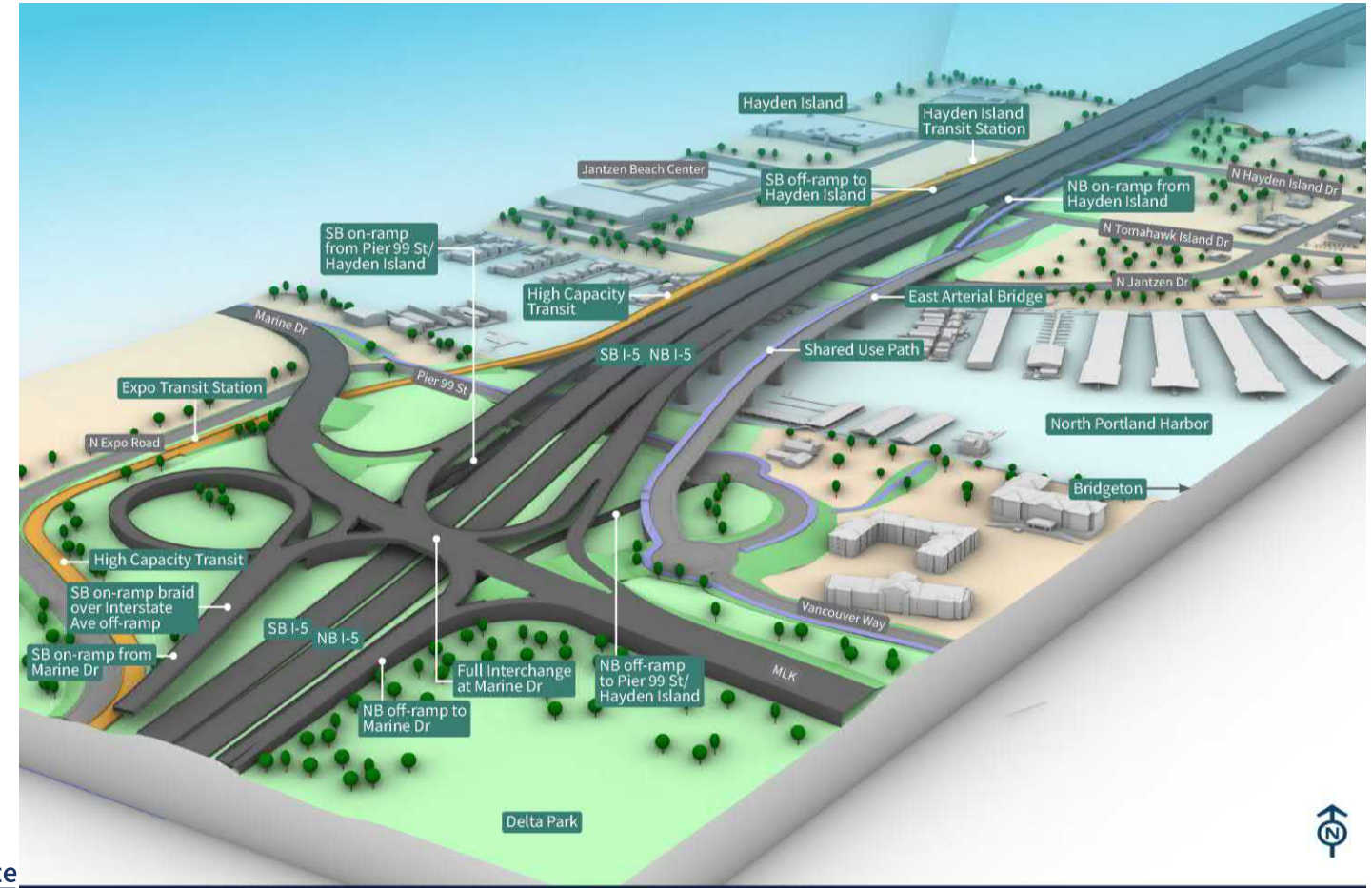
Option 5 Partial Interchange



*For illustration purposes only; not representative of specific property impacts.

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Screening Summary

Design Option 1: Full Interchange		
Climate Impacts/Adaptation	◑	- Larger construction footprint (comparison is not based on expected user emissions) - Addresses future river elevation and integrates with new Levee Ready Columbia flood protection improvements **(RE)**
Natural Environment	◑	- Larger footprint over aquatic habitat - Larger footprint over terrestrial habitat
Built Environment	◑	- Fewer non-residential building impacts **(AH)** - Most floating home displacements **(AH)** - Large scale and complexity of I-5 structures over Hayden Island challenge for local placemaking opportunities **(AH, CB, CC)** - Includes Tomahawk Island Drive crossing **(CC)**
Active Transportation	◕	- More direct north-south shared use path **(MA, ME)** - Lower quality of active transportation experience on east-west streets **(MA, ME)** - Higher number of shared use path road/transit crossings **(MA)**
Transit Access	◕	- Inclusion of Tomahawk Island Drive improves east-west island connectivity **(MA, ME)** - Wider highway footprint **(ME)**
Vehicles	●	- Intersection traffic operations meet ODOT and City of Portland performance standards at Hayden Island and Marine Drive study area intersections **(RI)**
Freight	●	- Freight to/from Marine Drive area operates acceptably with minimal delay through the interchange **(RI)**
Cost	◑	- Higher construction cost
Seismic	●	- Replaces North Portland Harbor Bridge

Equity Lens — Medium

- ◑ Avoids Harm **(AH)**
- ◑ Community Benefit **(CB)**
- ◕ Mobility/Accessibility **(MA)**

Climate Lens — Medium-High

- ◕ Multimodal Environmental Factors **(ME)**
- ◑ Complete Communities **(CC)**
- ● Reduces Idling **(RI)**
- ◕ Resilience **(RE)**

Best ● ◕ ◑ ◔ ○ Good

Design options are evaluated in comparison to each other and do not reflect overall program ratings.

Hayden Island/Marine Drive

Design Option 5: Partial Interchange

☑ Meets Purpose and Need

Screening Summary

Design Option 5: Partial Interchange		
Climate Impacts/Adaptation	◕	- Smaller construction footprint (comparison is not based on expected user emissions) - Addresses future river elevation and integrates with new Levee Ready Columbia flood protection improvements **(RE)**
Natural Environment	◕	- Smaller footprint over aquatic habitat - Smaller footprint over terrestrial habitat - Levee closure structure part of freeway interchange ramps
Built Environment	◕	- Fewer non-residential building impacts **(AH)** - Least floating home displacements **(AH)** - Smaller scale and complexity of I-5 structures over Hayden Island is less challenging for local placemaking opportunities **(AH, CB, CC)** - Includes Tomahawk Island Drive crossing **(CC)**
Active Transportation	●	- More direct north-south shared use path **(MA, ME)** - Higher quality of active transportation experience on east-west streets **(MA, ME)** - Lower number of shared use path road/transit crossings **(MA)**
Transit Access	●	- Inclusion of Tomahawk Island Drive improves east-west island connectivity **(MA, ME)** - Narrower highway footprint **(ME)**
Vehicles	◕	- Intersection traffic operations meet ODOT and City of Portland performance standards at Hayden Island and Marine Drive study area intersections **(RI)** - Longer routing and more challenging wayfinding for Hayden Island traffic to/from Portland via I-5 and/or Interstate Ave
Freight	●	- Freight to/from Marine Drive area operates acceptably with minimal delay through the interchange **(RI)**
Cost	◑	- Higher construction cost
Seismic	●	- Replaces North Portland Harbor Bridge

Equity Lens — High

- ◕ Avoids Harm **(AH)**
- ◕ Community Benefit **(CB)**
- ● Mobility/Accessibility **(MA)**

Climate Lens — High

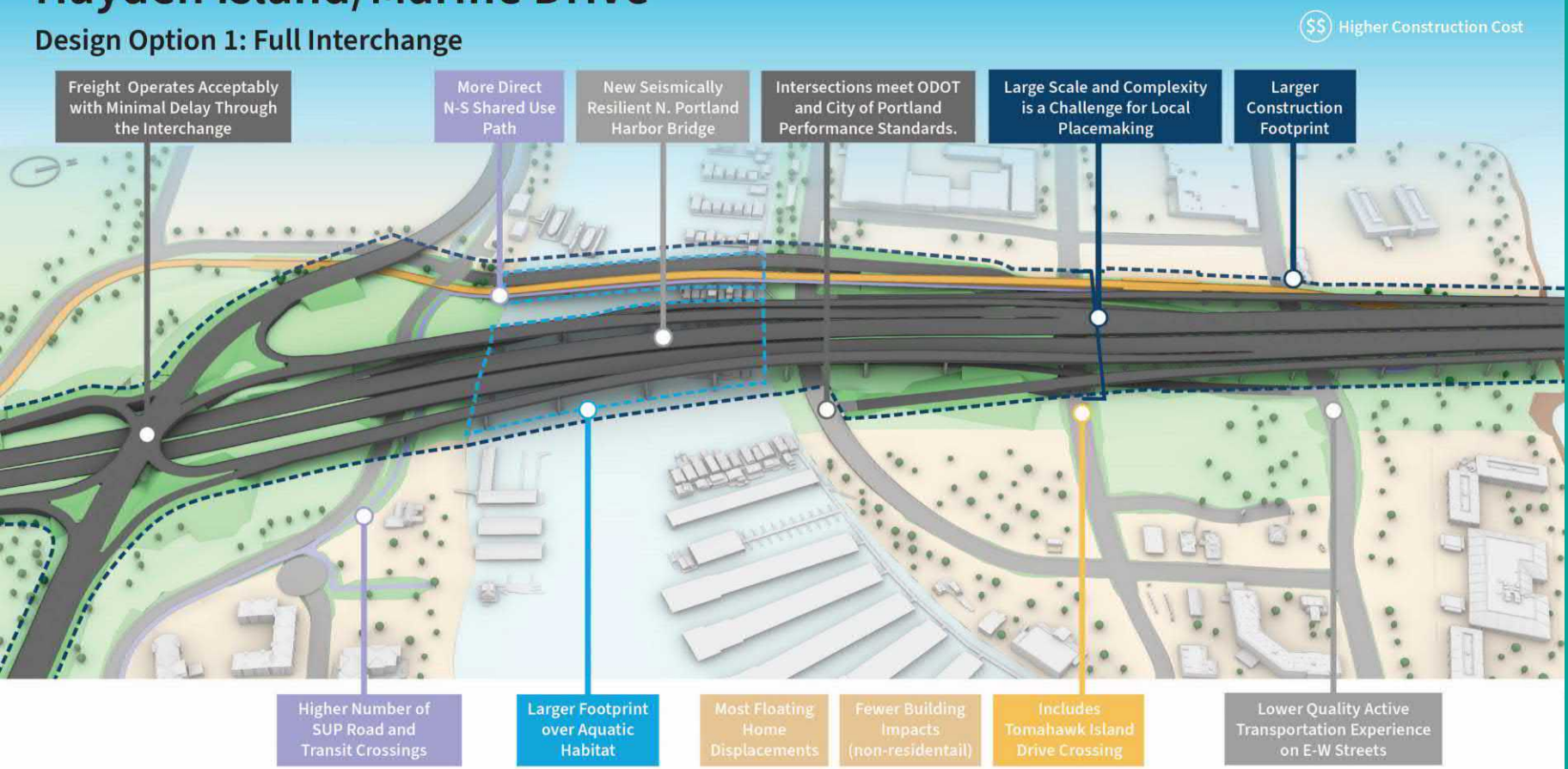
- ● Multimodal Environmental Factors **(ME)**
- ◕ Complete Communities **(CC)**
- ● Reduces Idling **(RI)**
- ◕ Resilience **(RE)**

Best ● ◕ ◑ ◔ ○ Good

Design options are evaluated in comparison to each other and do not reflect overall program ratings.

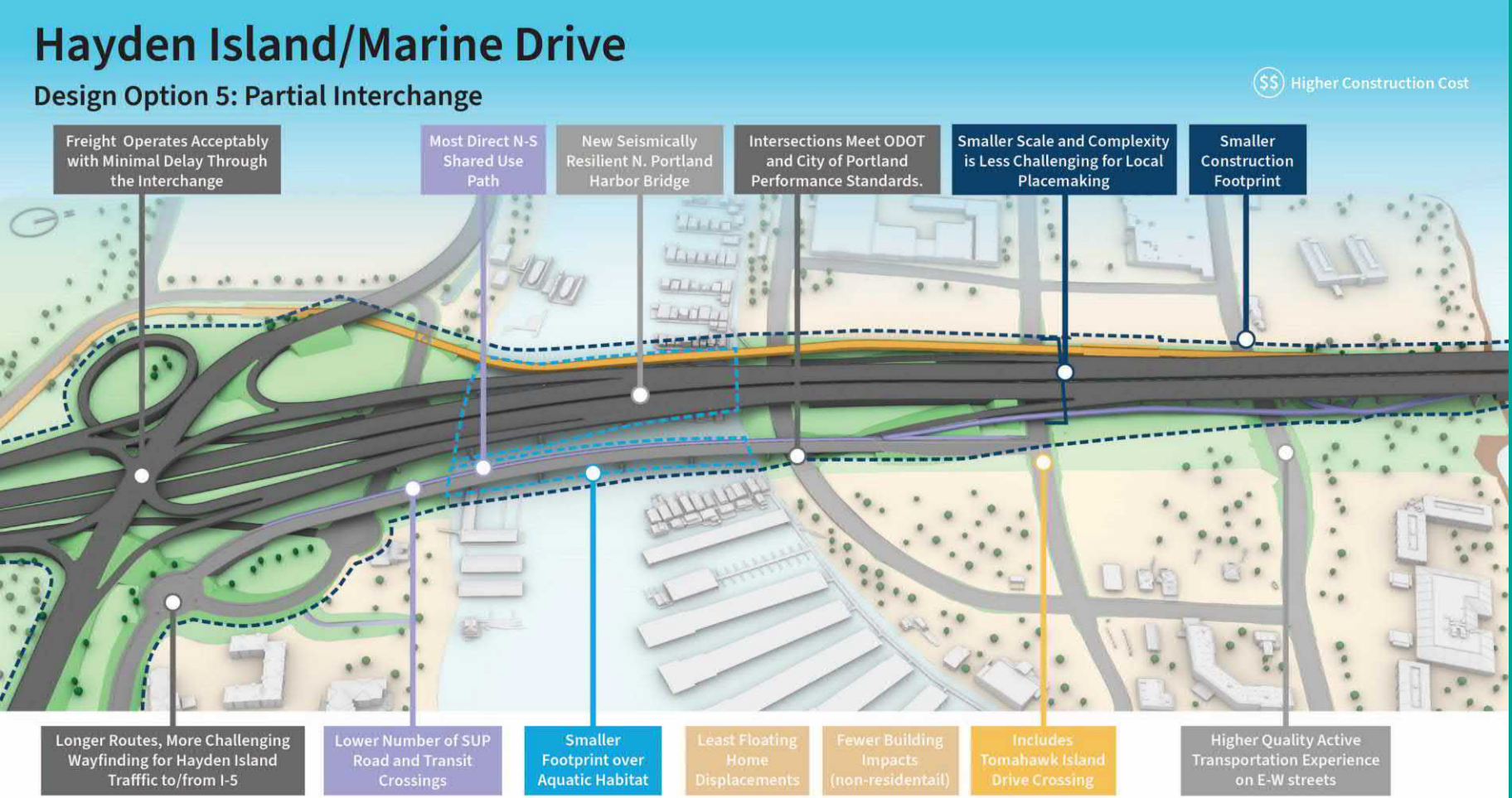
Hayden Island/Marine Drive

Design Option 1: Full Interchange



Hayden Island/Marine Drive

Design Option 5: Partial Interchange



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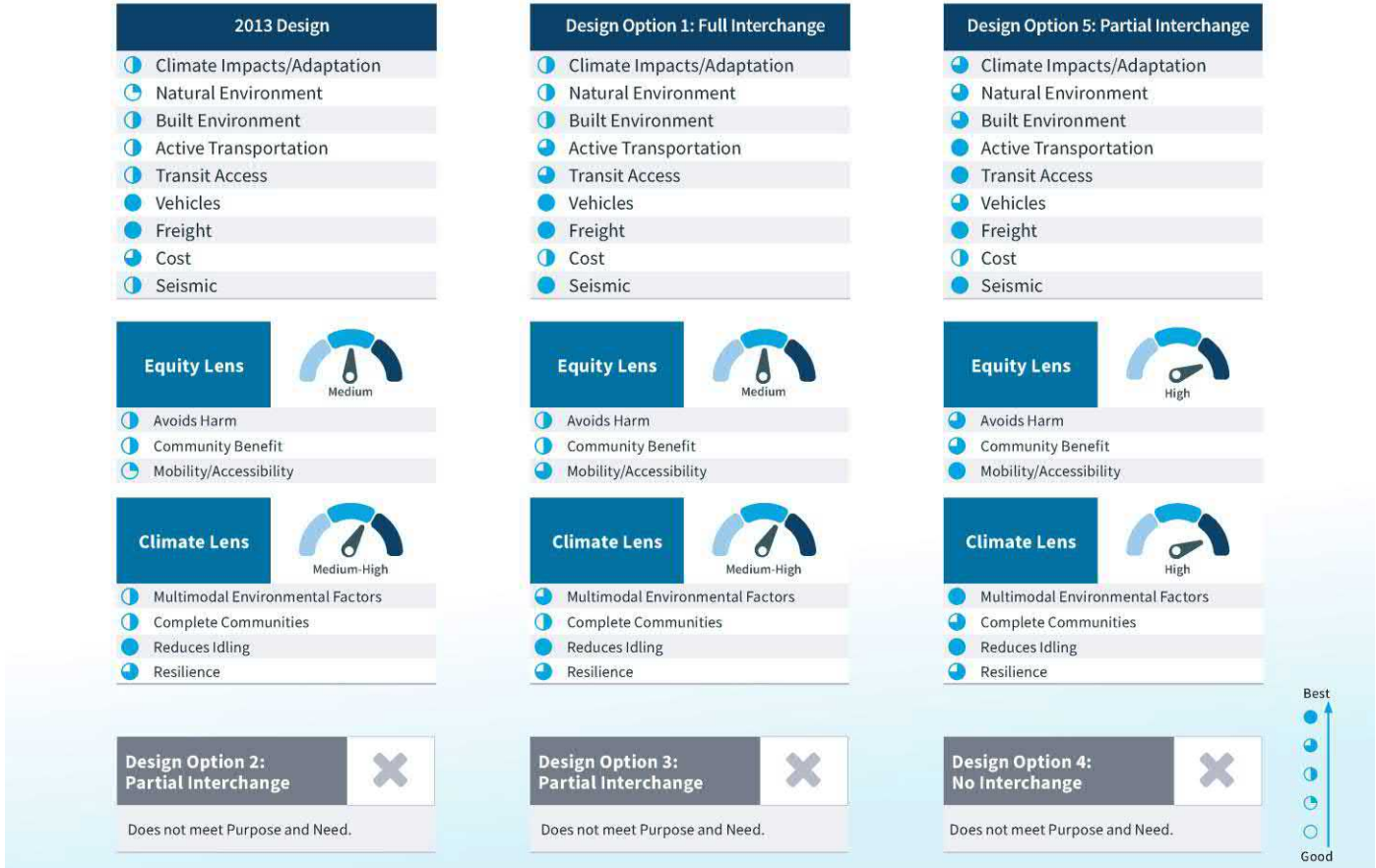
Hayden Island/Marine Drive | Relative Design Option Comparison



Design options are evaluated in comparison to each other and do not reflect overall program ratings.

Hayden Island/Marine Drive: What We Heard From You

Jake Warr, Equity Lead

Feedback from Hayden Island/Marine Drive Breakout Discussions

- A lot of information to digest, difficult to understand all of it
- It is crucial to always understand the human experience and impact
- It appears Option 5 has a bigger footprint – why does it score better for equity and climate?
- Does one option provide more opportunities for construction work than the other?
- Both options provide economic and community benefits, but it is difficult to understand which option provides more of these benefits.
- Wayfinding signage will need to be very clear

Interstate BRIDGE Replacement Program

IBR EAG Update on Ramp-to-ramp Connections (Auxiliary Lanes)

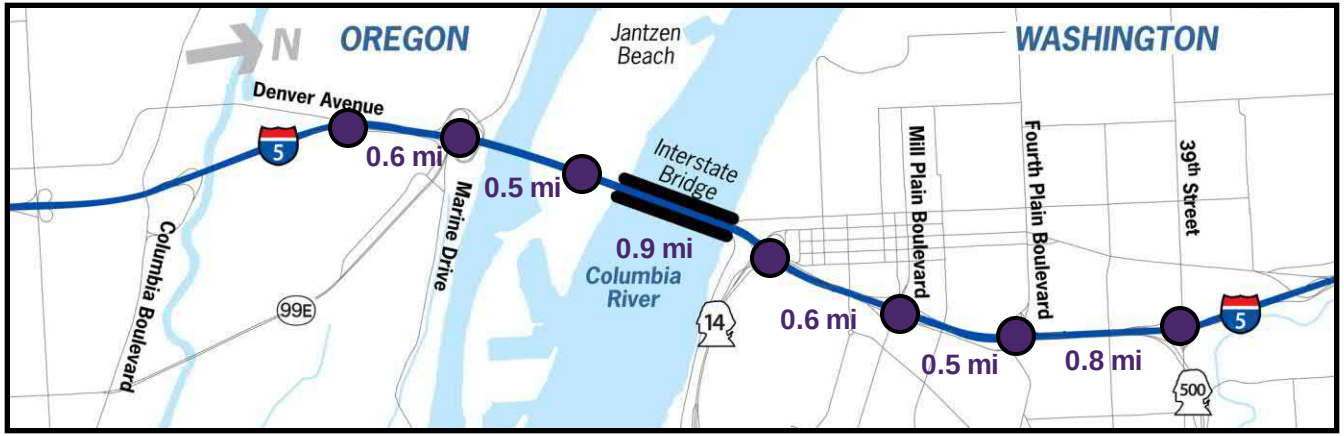
April 18, 2022

www.interstatebridge.org

IBR Background Traffic/Design Information

Interstate BRIDGE Replacement Program

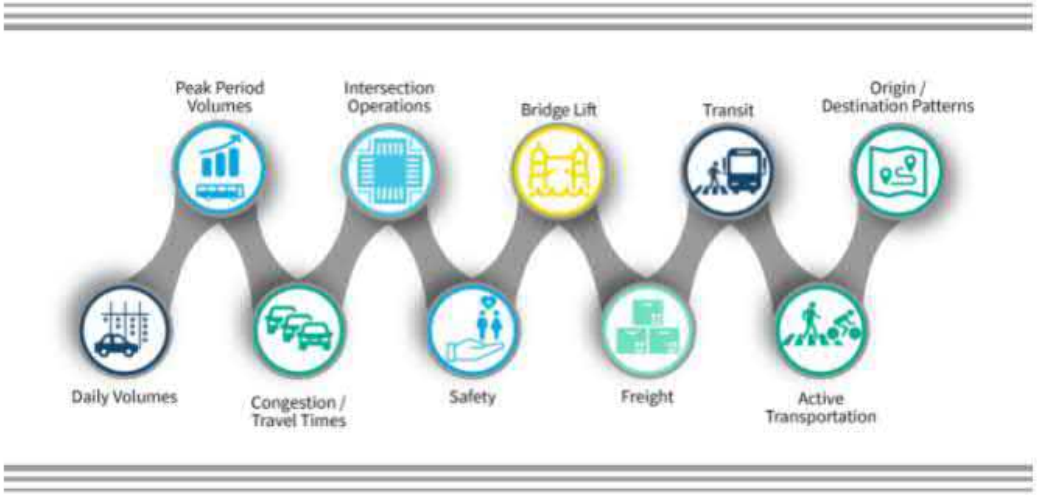
Seven Closely Spaced Interchanges



Standard Spacing: Desirable = 2 Miles
Minimum = 1 Mile

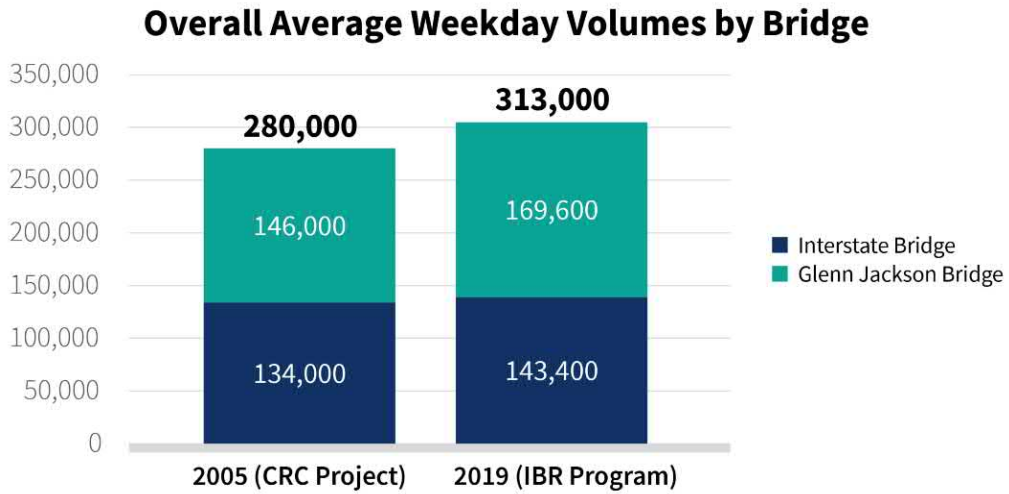
Existing Counts

- Started with current data/counts from 2019
- Collected additional data in 2021 to fill in where counts weren't available
  - *This 2021 data was factored to represent 2019 conditions*

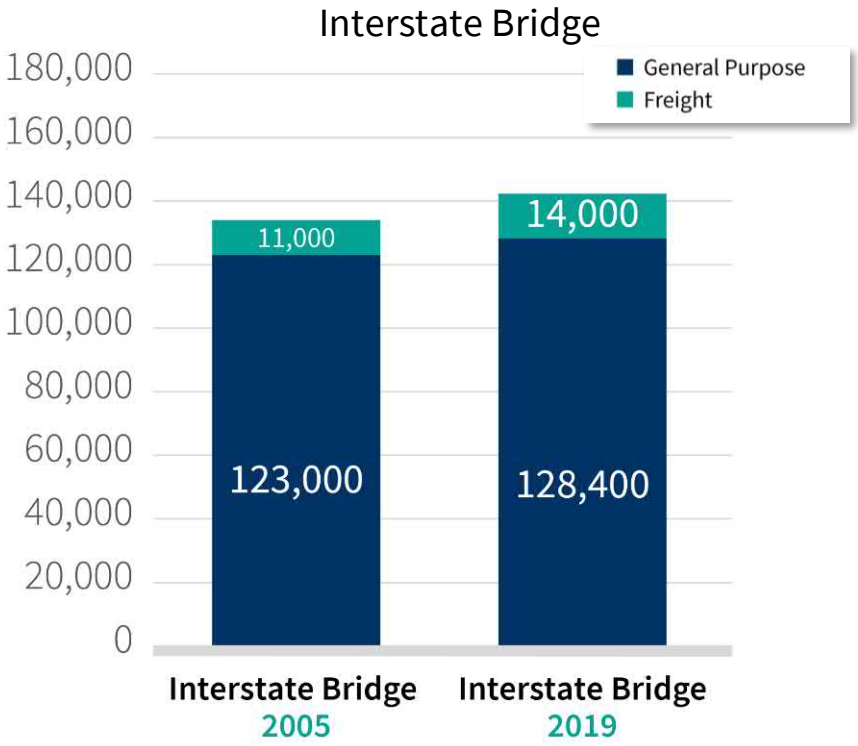


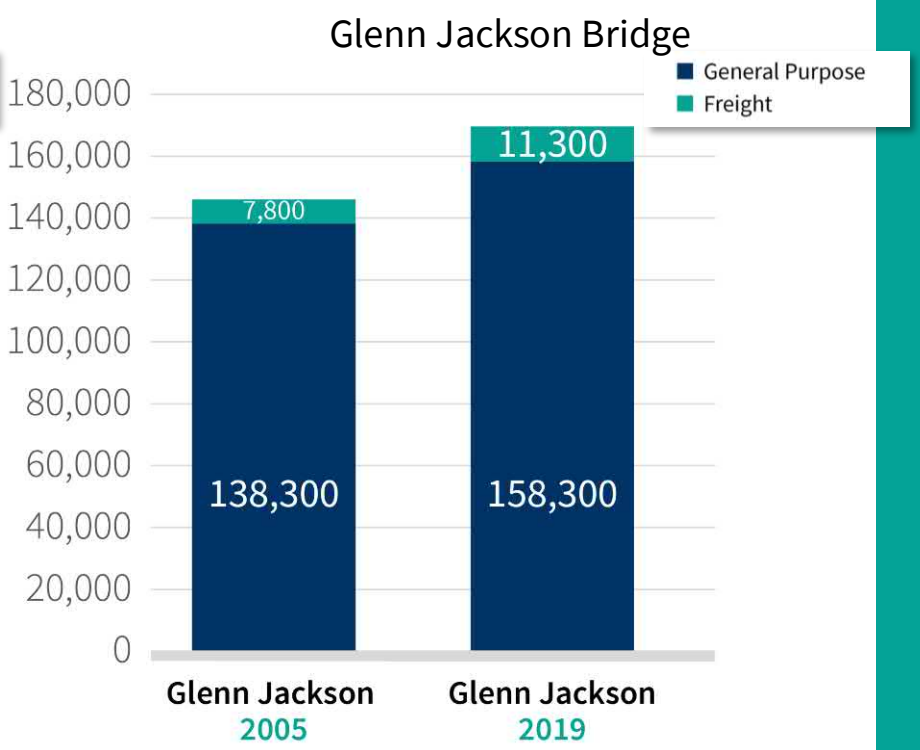
Traffic Growth Rates

- Overall average weekday daily traffic (AWDT) increased 12% between 2005 and 2019.

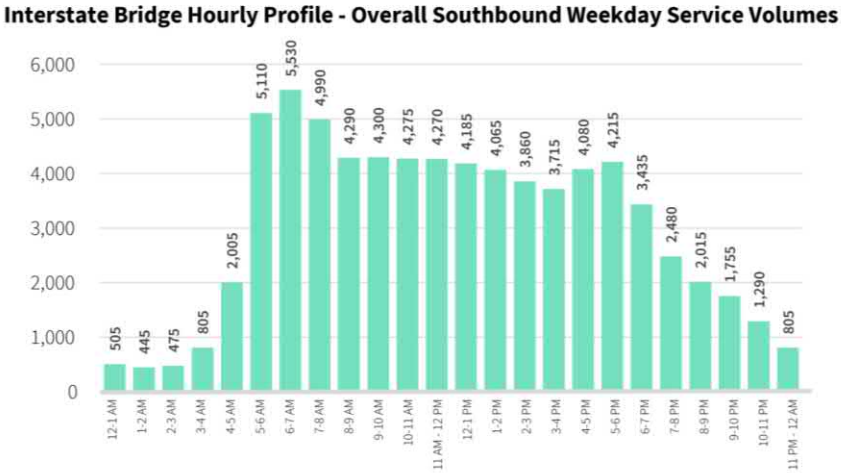


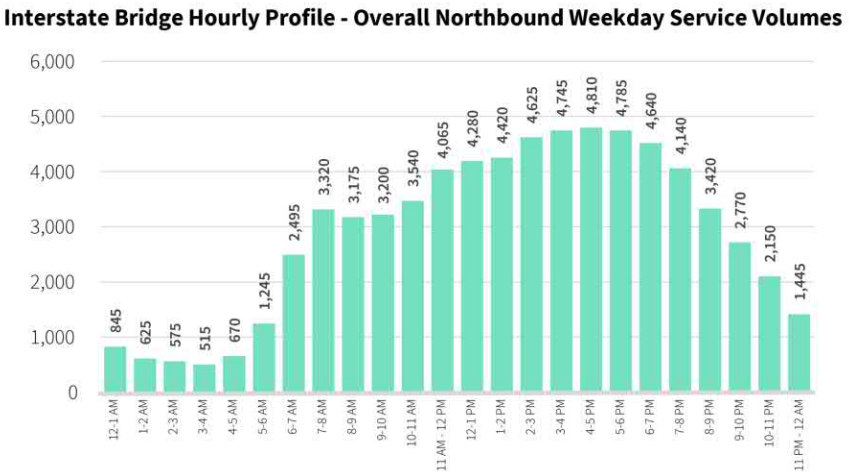
Average Weekday Volumes – Vehicles and Freight



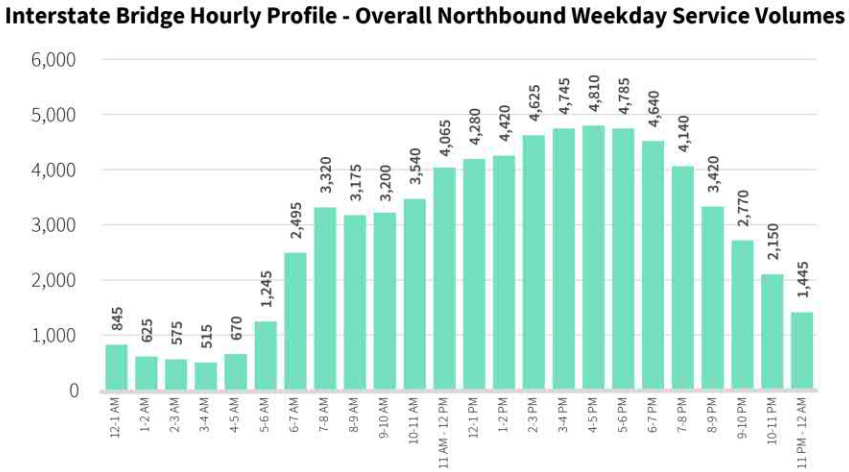


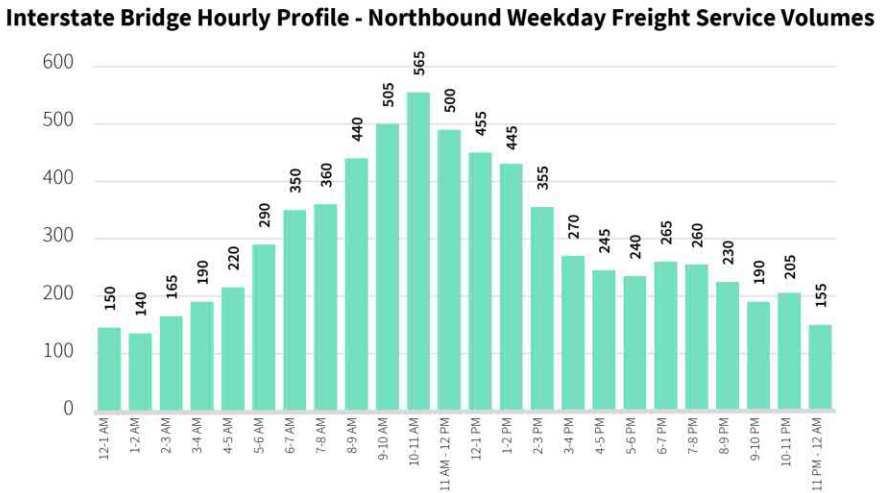
Interstate Bridge Hourly Profiles –Daily Southbound and Northbound





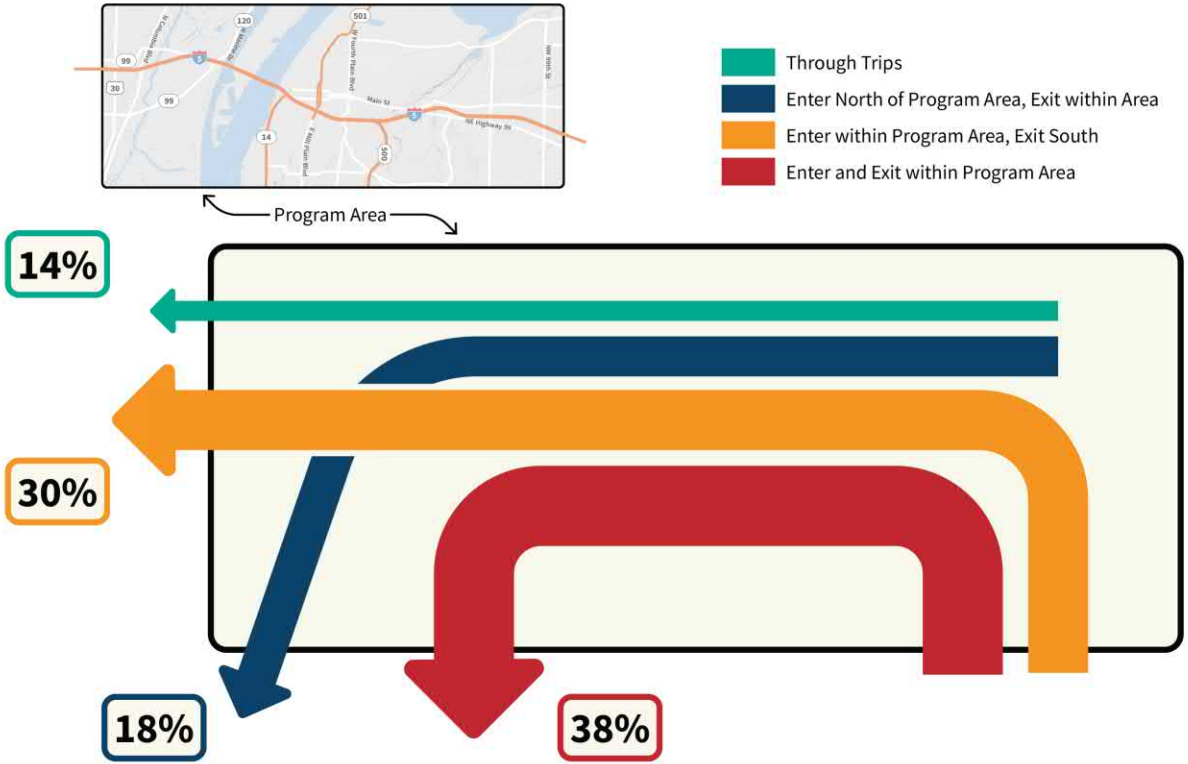
Interstate Bridge Hourly Profiles – Northbound Vehicles and Freight Volumes



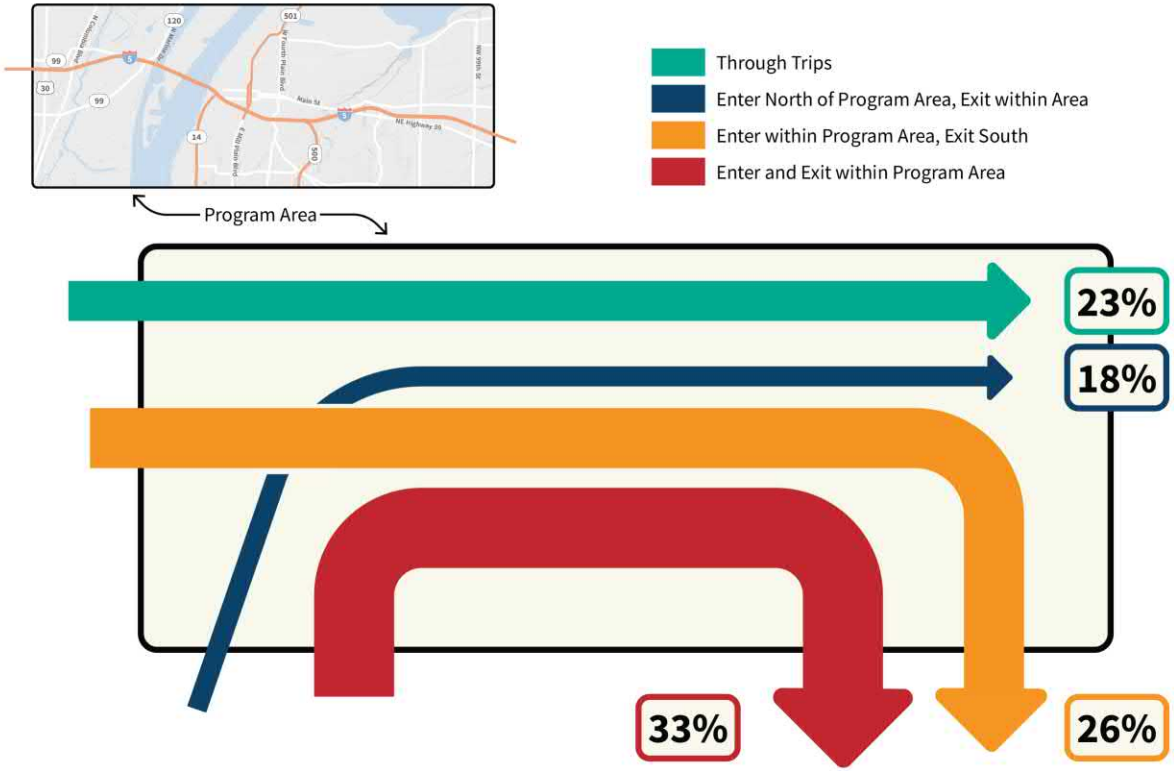


Freight traffic does not peak during typical commute hours (6-9 AM and 3-6 PM). The highest freight volumes occur during the middle of the day, as freight trucks try to avoid the most congested periods of the day.

AM Peak Hour – Southbound
85% of Traffic to/from 7 interchanges

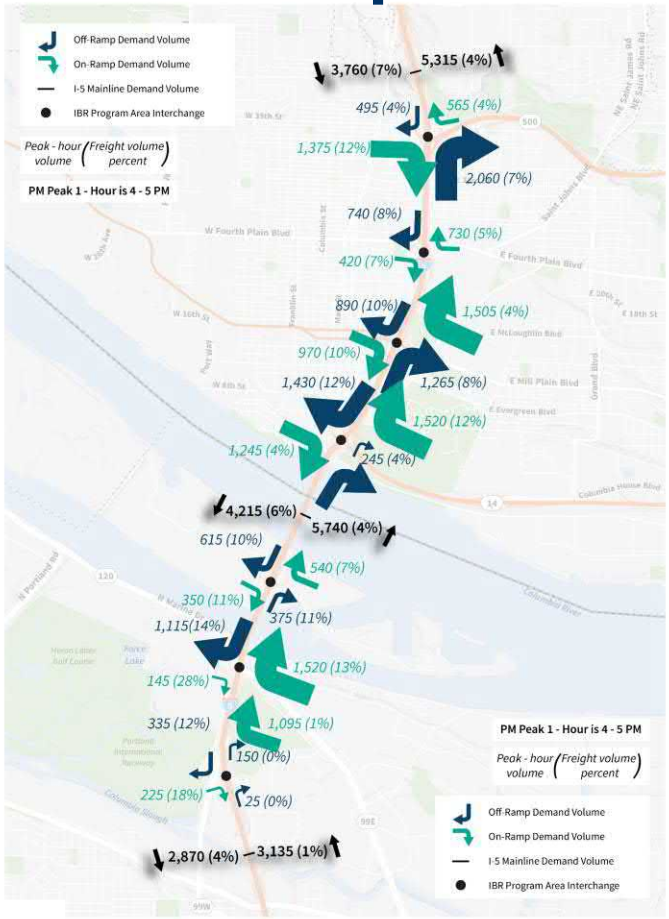


PM Peak Hour - Northbound
75% of Traffic to/from 7 interchanges



AM Peak 1-hour IBR Ramp Traffic Volumes

PM Peak 1-hour IBR Ramp Traffic Volumes

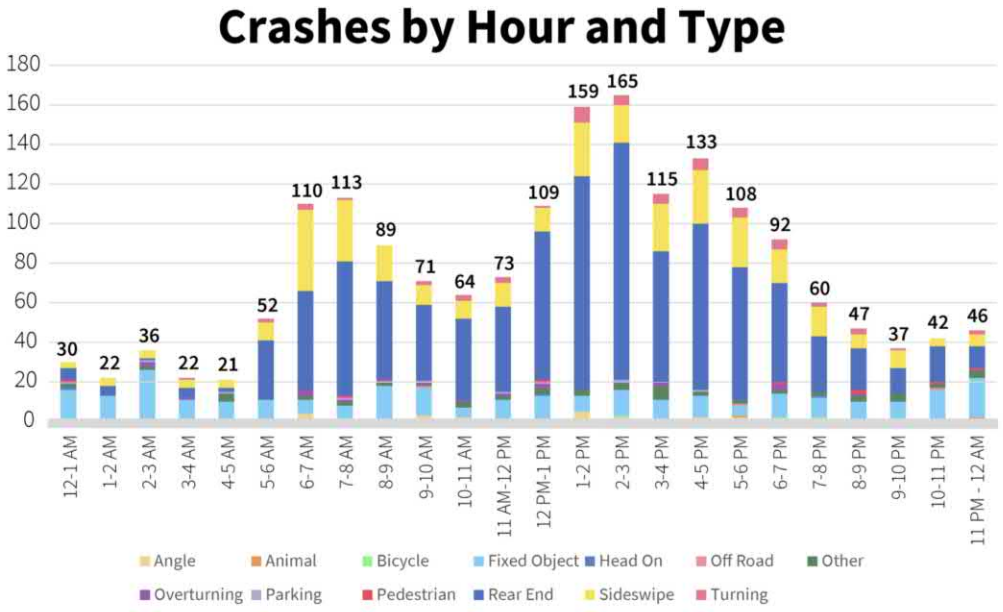


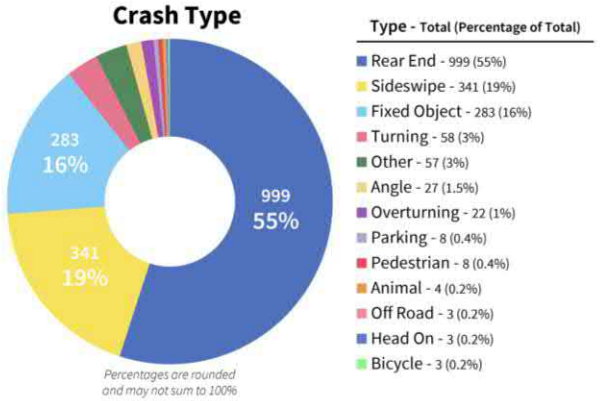
Interstate BRIDGE Replacement Program

Bottleneck Locations in the Program Area

- **There are multiple bottleneck locations within and influencing the IBR Program Area.**
- **These include:**
  - **Northbound I-5** – Capitol Hwy to Interstate Bridge for 7 hours from 12:30-7:30 PM
  - **Southbound I-5 -** Main Street to Interstate Bridge for 3.5 hours from 6-9:30 AM.
  - **Southbound I-5** – Marine Drive to Going Street for 4 hours from 7-11 AM.

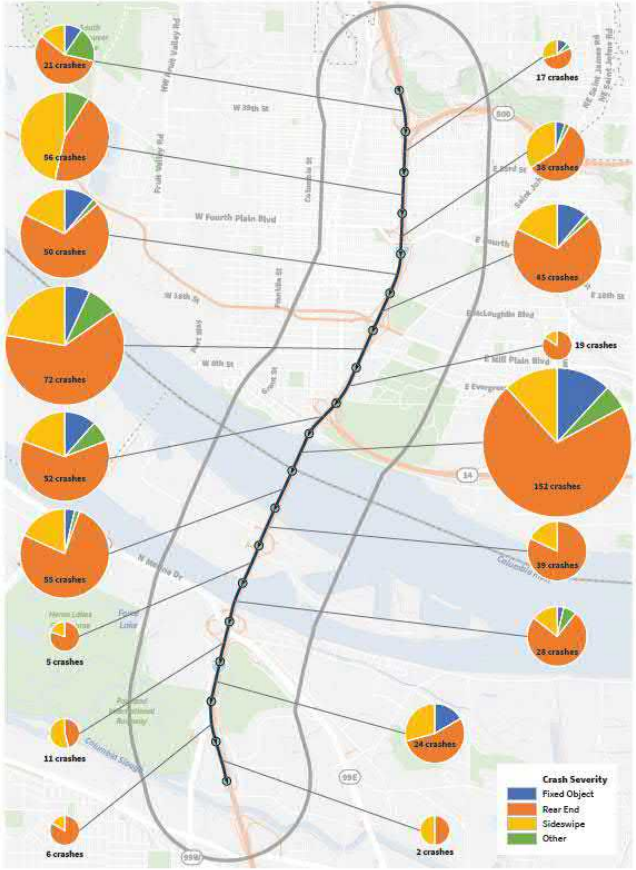
Over 1,800 Crashes in the IBR Program Area (2015-2019)



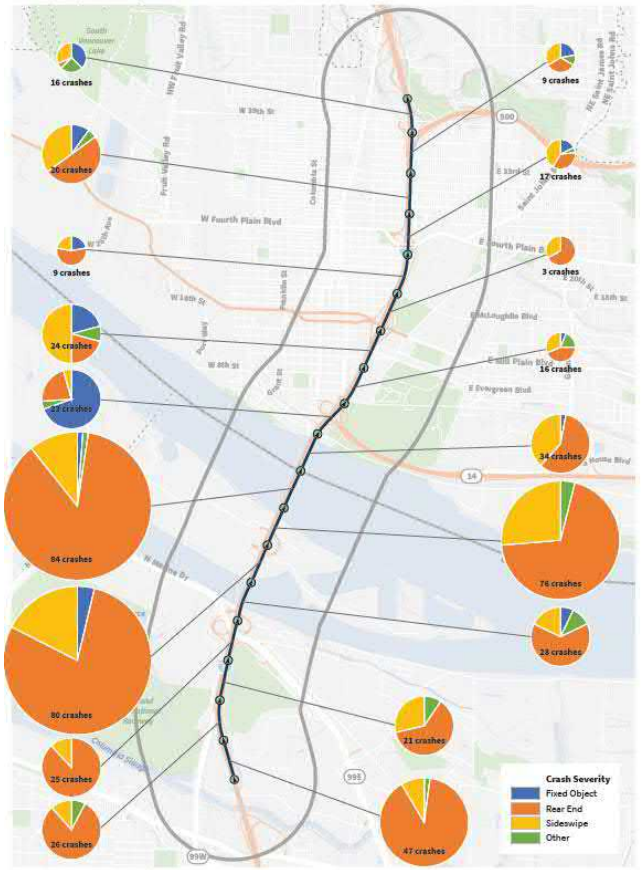


Crash Data in the IBR Program Area by Type

Southbound



Northbound



Safety Issues

- **Following features all contribute to the high number of crashes and crash rate within the I-5 IBR Program Area**
  - Short merges, diverges, & weaving sections
  - Presence and duration of congested traffic conditions
  - Bridge lifts / traffic stops

Ramp to Ramp Connections
(Auxiliary Lanes)

Interstate BRIDGE Replacement Program

What are Auxiliary Lanes?

- **Ramp-to-ramp connections** to facilitate acceleration and deceleration, weaving, merging, and diverging for automobiles and trucks between two or more interchanges

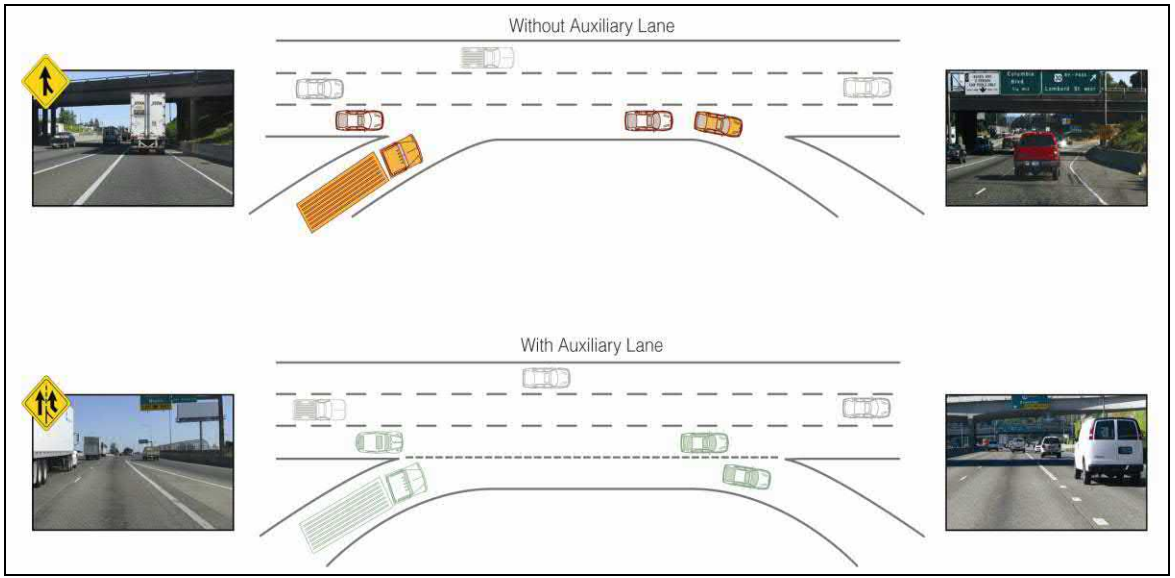
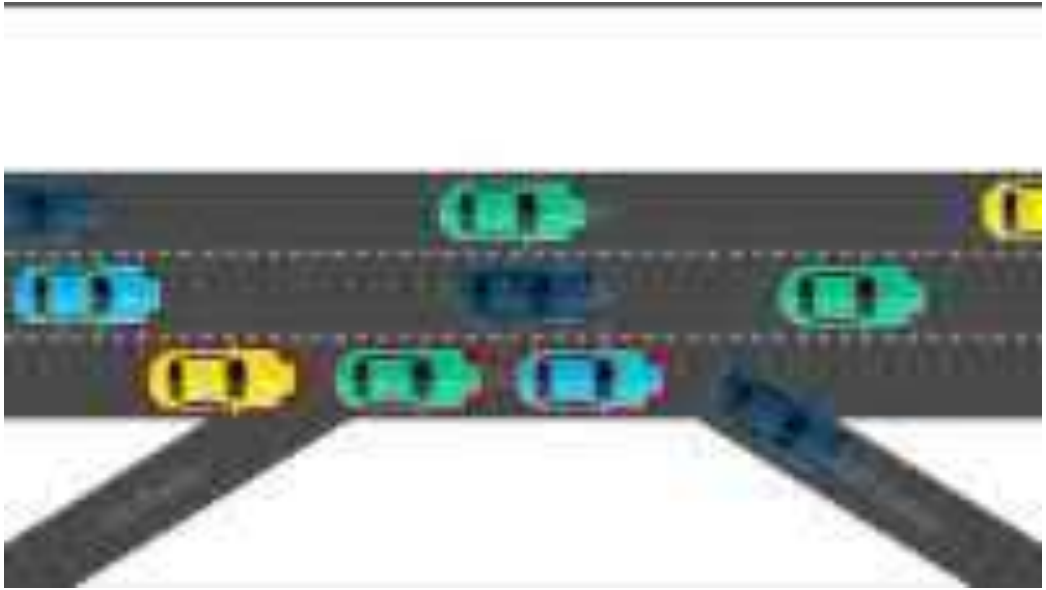
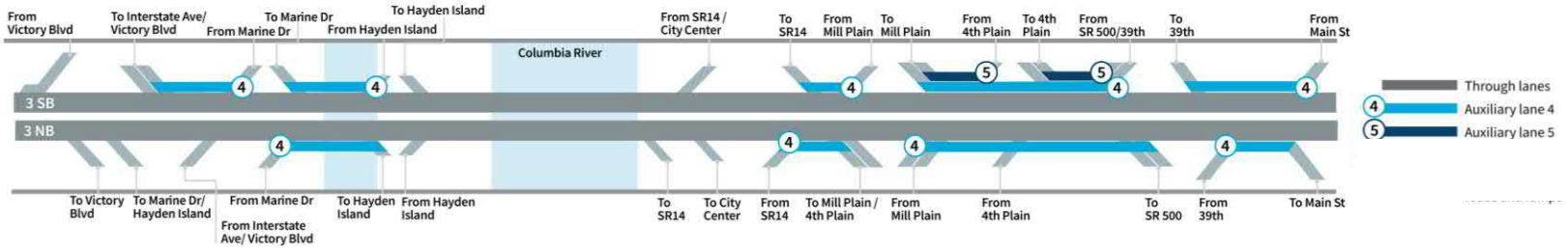


Figure shows typical highway Merge and Diverge Conditions, with (top) and without (bottom) Aux Lane

Auxiliary Lanes Described



Auxiliary Lanes exist today in the IBR Program Area



IBR Program Design Considerations

- Design throughout the corridor needs to address multiple issues:
  - *Traffic congestion*
  - *Interchange spacing not allowing adequate time for vehicles to make on/off decisions*
  - *High on and off ramp traffic volumes*
  - *Conflicts between through, regional, and local traffic*
  - *Freight requirements (volumes, origin/destination patterns, steep grades)*
  - *Crashes caused by short merging/weaving distances resulting in idling vehicles and increased emissions*
  - *Diversion to local roadways to avoid I-5 congestion causing increased volumes and emissions in local communities*
  - *Transit sitting in general purpose lanes subject to the same back-ups as vehicles*
  - *Limited active transportation facilities*
  - *Maintenance of traffic during construction*

Ramp to Ramp Connections (Auxiliary Lanes) Analysis

Interstate BRIDGE Replacement Program

IBR Desired Outcomes

PURPOSE AND NEED	DESIRED OUTCOMES
1. Travel demand and congestion	More people can move through the program area.
	Travel times through the program area are faster and more predictable.
	People of all ages, abilities, and incomes have access to move through the program area, regardless of mode.
	Regional trips stay on I-5.
2. Freight movement	Freight travel through the program area is more reliable.
	Freight travel times through the program area are faster.
	Accommodates high, wide, and heavy cargo in existing and future routes.
3. Public transportation	More people use transit.
	Travel by transit is competitive with other modes.
	Transit connects people to their origins and destinations.
	Travel by transit is predictable, reliable, and consistent.
	More people have access to high-quality, affordable, and reliable transit.

IBR Desired Outcomes

PURPOSE AND NEED	DESIRED OUTCOMES
4. Safety	Reduce overall crashes on I-5, including severe injury and fatal crashes.
	Reduce overall crashes, including severe injury and fatal crashes, on I-5 ramps, local streets, and active transportation networks in the program area.
	Fewer diverted trips from I-5 to local streets.
	Safety is reflected in designs for all modes.

CLIMATE CHANGE & RESILIENCY
Reduce GHG emissions in support of state climate goals.
Minimize operational and embodied carbon during construction.
All structures are resilient to and operable following anticipated climate disruptions (e.g., heat events, flooding, sea level rise).
Program limits other environmental impacts that exacerbate effects of climate change (e.g., heat island, runoff).

IBR Desired Outcomes

EQUITY (as excerpted from the Equity Framework and to be refined by EAG)

Improved mobility, accessibility, and connectivity especially for lower income travelers, people with disabilities, and communities who experience transportation barriers.
Fewer identity-based disparities in travel time, access, transportation costs, and exposure to air pollution, road noise, and traffic crashes.
Local community improvements are implemented in addition to required mitigations.
Economic opportunities generated by the program benefit minority and women owned firms, BIPOC workers, workers with disabilities, and young people.
Equity priority communities have access, influence, and decision-making power throughout the program in establishing objectives, design, implementation, and evaluation of success.
Disproportionate impacts on equity priority communities are avoided rather than simply mitigated.

COST EFFECTIVENESS AND FINANCIAL RESOURCES

Pursue and leverage any and all federal, state, and other funding sources that support all modes and address long-term needs.
Identify equitable tolling and pricing strategies supporting multimodal construction costs and improved operations and access , in coordination with statewide tolling programs and in support of each state's climate goals.
Consider fiscal responsibility across the program and into the future, including new technology to solve future problems.

Auxiliary lanes for IBR are proposed to address:

- Close interchange spacing
  - *All interchanges are spaced below **minimum interchange spacing standards:** For example, Marine Drive to Hayden Island interchange spacing is 0.5 mile.*
- Short Merges, weaves & diverges
  - ***Example Short Merge:** Northbound Hayden Island On-Ramp acceleration distance is not long enough to get up to freeway speeds*
- High on-ramp & off-ramp volumes
  - ***Example:** Southbound Marine Drive Off-Ramp is 1,400 – 1,800 vehicles per hour.*
- High vehicle crashes
  - ***Example of Importance:** Substandard merge, diverge, weaving lengths combined with heavy volumes lead to more crashes, and crashes, of any severity increases congestion & impact reliability*
- Lane balancing
  - *Proper arrangement of traffic lanes on the freeway and ramps to realize efficient traffic operations by **minimizing the required number of lane shifts**.*

Future Volume/Mode Share Forecasting

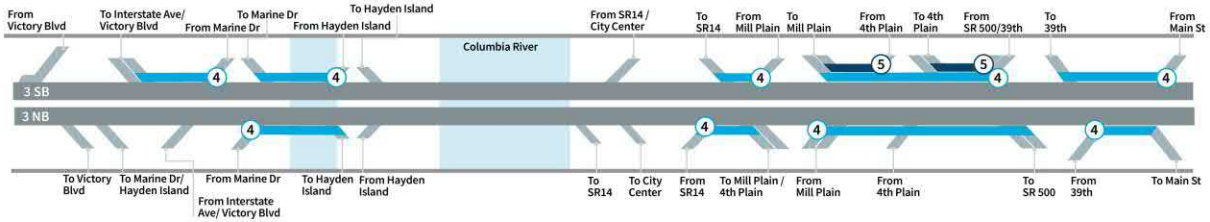
- **Travel Demand Modeling is the process used to predict travel behavior and resulting demand for a specific timeframe given a defined set of assumptions.**
- **Projects future demand, mode choice, traffic volumes, likely travel patterns (origins/destinations) out to 2045 based on current data**
  - The Model includes land use plans and transportation projects identified by the region to be built into the future, which are included in the Regional Transportation Plans (e.g., Rose Quarter, Division BRT Transit, etc.)
  - Metro/RTC (ESG partner agencies) owns this model, and other regional agencies use it to predict travel behavior

Modeling Assumptions

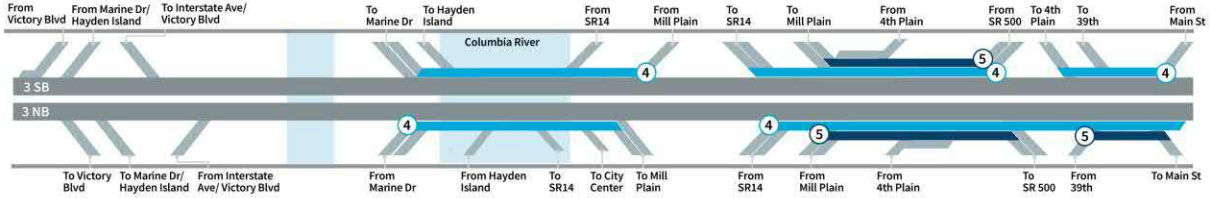
- **Screening work has utilized the 2018 Regional Transportation Plan model as the basis for modeling**
  - LRT High-capacity transit to Clark College including 3 Park-n-rides
    - *Clark College (1900 spaces)*
    - *Mill District (420 spaces)*
    - *SR-14 (570 spaces)*
  - 2 auxiliary lanes across Interstate Bridge
  - Full Hayden Island Interchange
  - Draft variable toll rates on Interstate Bridge
- **Updates will be made in the coming months to prepare for modeling during the environmental phase of IBR**

IBR Program - Auxiliary Lane Options

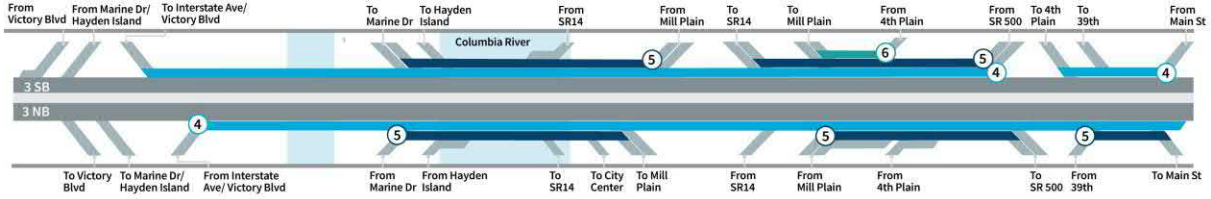
No Build



1 Auxiliary Lane



2 Auxiliary Lane



All options, have 3 lanes thru traffic Northbound and Southbound

Through lanes
4 Auxiliary lane 4
5 Auxiliary lane 5
6 Auxiliary lane 6
Collector-distributor roads and ramps

Auxiliary Lane Trade Offs and Considerations
(Example list)

Metric	No Build	1 auxiliary lane	2 auxiliary lanes
Congestion/hot spot locations			
Freeway ramps/arterial streets impacted by I-5 congestions			
Duration of congestion			
Number of annual crashes			
I-5 Interstate Bridge Vehicle Trips			
Weekday Transit Trips crossing Interstate Bridge			
Mode split			
Travel times			
Cost			
Environmental Measures (e.g., VMT, GHG)			
Equity			

Auxiliary Lanes Breakout Discussion

Auxiliar Lanes Breakout Prompts

1. What connections do you see between the aux lane decision and equity?

2. What kinds of analysis would you recommend we conduct to evaluate these options from an equity perspective?

Public comment

Comment Instructions

To make a verbal comment:

- To make a live comment via phone, dial: 253-215-8782
- Meeting ID: 986 0940 5983
  - Passcode: 701376
- Dial *9 to raise your hand
- The facilitator will call on participants to provide comment
- Dial *6 to unmute yourself
- Please provide your name and affiliation.
- Commenters will be given 2 minutes to speak.

If we run out of time and you have not had a chance to speak, you can still provide comments after the meeting.

Interstate BRIDGE Replacement Program

Comment Instructions

To submit comment after the meeting:

- Fill out the comment form on the program website or email your comments to **info@interstatebridge.org** with “EAG Public Comment” in the subject line.

- Call **888-503-6735** and state “EAG Public Comment" in your message.
- Written comments need to explicitly say “**EAG Public Comment**” in the subject line or in the body of the message for them to be identified and distributed to EAG members.
- All written comments must be received prior to 48 hours in advance of each upcoming meeting in order to be distributed to advisory group members. Comments received after that point will be distributed to members in advance of their next meeting.

Interstate BRIDGE Replacement Program

Wrap up

- Takeaways
- Meeting evaluation
- Next meeting: May 16, 5:30-7:30pm

Interstate BRIDGE Replacement Program

Thank you!